FINAL REPORT

AIRPORT MASTER PLAN UPDATE

VOLUME II - APPENDICES

FOR THE BOCA RATON AIRPORT AUTHORITY | NOVEMBER 2023

PREPARED BY

RICONDO®

IN ASSOCIATION WITH

American Infrastructure Development, Inc.

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Nova Consulting, Inc.

BOCA RATON AIRPORT

INTEGRITY | EXCELLENCE | RESPECT | LEADERSHIP | COLLABORATION

APPENDIX A

Stakeholder Engagement and Public Outreach Program

Airport Master Plan Update

Boca Raton Airport Authority Board Briefing

February 17, 2021

BOCA RATON AIRPORT

Agenda

- Master Plan Update Overview
  - Project Background
  - Primary Master Plan Goals
  - Project Process
- Review of Key Tasks
  - Aviation Activity Forecasts
  - Facility Requirements
  - Alternatives Analysis
  - Public Involvement and Stakeholder Outreach
- Key Milestones and Next Steps

Master Plan Update Overview
Project Background

What is an Airport Master Plan?

- Local level planning effort tailored to BCT
- Intended to guide future airport development over a 20-year timeframe that:
  - Satisfies future aviation demand
  - Identifies facility requirements for all Airport users
  - Considers environmental and socioeconomic impacts
  - Enables the Airport to achieve its mission
  - Complies with all applicable FAA requirements

"An airport master plan is a comprehensive study of an airport and usually describes the short-, medium-, and long-term development plans to meet future aviation demand."

- FAA Advisory Circular 150/5070 – 6B – Airport Master Plans

Master Plan Update Overview
Project Background – Physical Changes

BCT Airport – 2004*

SOURCE: Google Earth Pro, January 2004.

**Completion Date of the Airport Enhancement Plan (Previous Master Plan)*

BCT Airport - 2020

SOURCE: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, January 2020.

Master Plan Update Overview
Project Background – Regulatory Changes

U.S. Department of Transportation
Federal Aviation Administration

Advisory Circular

Subject: Airport Design **Date:** 2/26/2014
Initiated by: AAS-100

1. What is the purpose of this advisory circular (AC)?

This Change primarily includes updates to the standards for T

2. What are the principal changes in this Change?

Text revised in this Change is indicated by vertical bars in the consolidated AC. We have not indicated the change number revised pages. See the Record of Changes, discussed below, this Change. Principal changes include:

a. New Approach and Departure Reference Code replace Runway Reference Code (RRC).
b. Expanded Taxiway Fillet information, includin Fillet Design, discussing description, dimensio
c. Adjusted TDG limits, with associated changes
d. Moved Figure 4-1 to Chapter 1 where it is first
e. Combined Tables 3-4 and 3-5 to form Standard Procedures.
f. This Change contains minor editorial correctio
g. This Change incorporates a Record of Changes We will log all substantive revisions made in th Record.
h. This Change also incorporates revisions descri the original release and the Change release.

Michael J. O'Donnell
Director of Airport Safety and Standards

U.S. Department of Transportation
Federal Aviation Administration

Advis Circu

Subject: General Guidance and Specifications for Submission of Aeronautical Surveys to NGS: Field Data Collection and Geographic Information System (GIS) Standards **Date:** 2/24/2014 **Initiated by:** AAS-100

1. What is the purpose of this advisory circular (AC)?

This change incorporates updated airport data collection standards and deletes outc These changes clarify airport data collection and ongoing Airports GIS and other s

2. What are the principal changes in this change?

Vertical bars in the margins of the attached consolidated AC indicate the text revis have not indicated the change number or change date in the headers of revised pag Changes at the end of this document for a log of the revisions made in this Change include:

a. Updates to Computer-Aided Design (CAD) standard guidelines – specifica lineweights, and color definitions – to align with the National CAD Standa 002g.
b. Deletion of Data Migration Tool (DMT).
c. The addition of FAA standard symbols as published in the Terminal Proce
d. Values updates to maintain consistency with other aeronautical informatio Aeronautical Information Exchange Model (AIXM).
e. Minor editorial corrections.
f. The Record of Changes at the end of this consolidated AC. This record lis change by paragraph or item number.
g. Incorporated revisions described in the Errata Sheet for the original release.

U.S. Department of Transportation
Federal Aviation Administration

Advisory Circular

Subject: Critical Aircraft and Regular Use Determination **Date:** 6/20/2017
Initiated By: APP-40

1 Purpose.

- This advisory circular (AC) defines the term Critical Aircraf the use of Critical Aircraft in facility planning and design st decision making, for federally obligated airports. Specifica common, uniform definition of Critical Aircraft for all delib Airports, inclusive of planning and environmental, design a decision making regarding airport development. The Critic key consideration in FAA decision making on project justifi does not establish project justification for Federal Airport In funding. Refer to FAA Order 5100.38, *Airport Improvemen* specifics on justifying a project for AIP funding.
- This guidance also clarifies when the Critical Aircraft deter owned aircraft under military or other government agency c Aircraft determination may include military aircraft activity.
- The term "Regular Use" is also defined and replaces the ter

2 Application.

- There are multiple published definitions of Critical Aircraft FAA Orders and Advisory Circulars (ACs), as shown in the the Office of Airports is to use this synthesized definition of contained in this AC, in place of all previous definitions of use found in the documents listed below. The Office of Air documents to reflect the new definition of Critical Aircraft.
- The application of the Critical Aircraft determination to Eng Systems (EMAS) is unchanged from AC 150/5220-22, *Engi Systems (EMAS) for Aircraft Overruns*.

U.S. Department of Transportation
Federal Aviation Administration

Advisory Circular

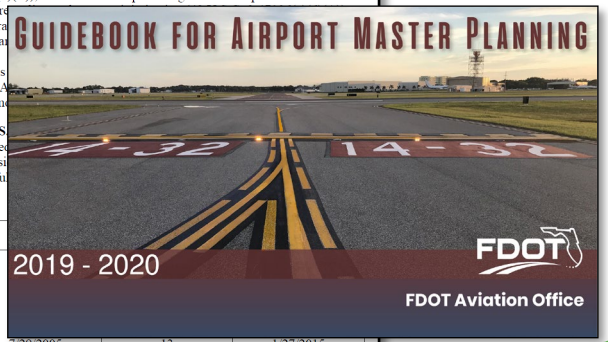
Subject: Change 2 to Airport Master Plans **Date:** 1/27/2015 **AC No.:** 150/5070-6B
Initiated by: APP-400 **Change:** 2

1. PURPOSE. This Change 2 incorporates additional guidance on passenger convenience, ground access, and access to airport facilities, as identified in Section 131 of Public Law 112-95, "FAA Modernization and Reform Act of 2012 (49 U.S.C. § 47101(g)(2))." Additional provisions of Public Law 112-95 such as Section 132 (b) which amended the definition of airport planning to include plans for recycling and minimizing the generation of airport solid waste (49 U.S.C § 47102(b)(5)(C)), and Section 133 providing that master plans address issues related to solid waste r have been addressed in separa incorporated into a future cha

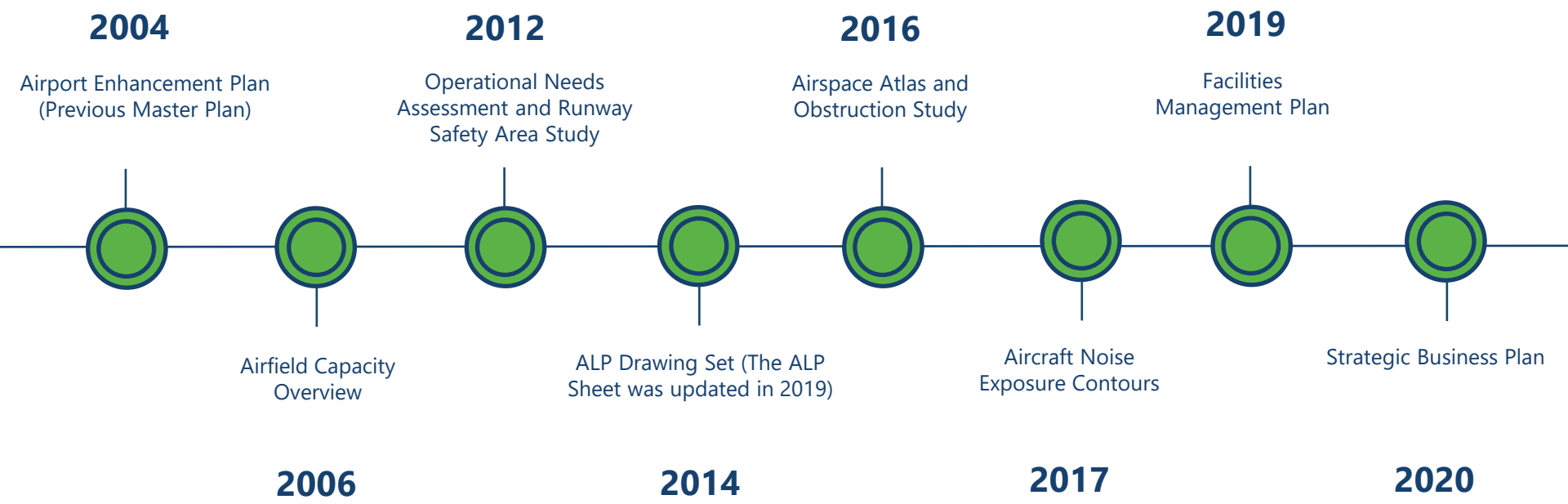
This change also incorporates Circular (AC) 150/5300-13, A Procedures for preparation an

2. PRINCIPAL CHANGES primary revisions are containe limited editorial and text revisi incorporated throughout. A fu

Remove Pages	
i-iii	
iv	
7-8	
13	



Master Plan Update Overview
Project Background – Previous Studies



Master Plan Update Overview
Project Background – Relationship to Other Plans

Master Plan Update Overview
Primary Master Plan Goals

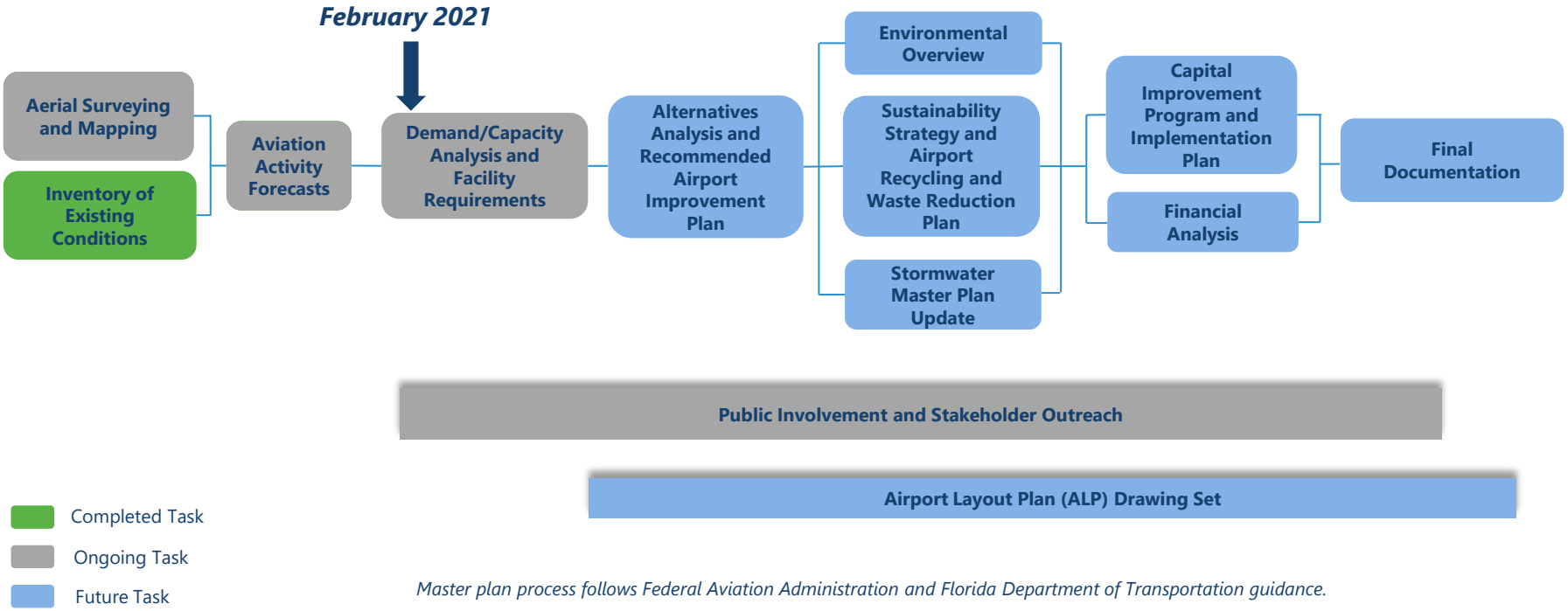
To evaluate the fleet of business jet aircraft that operate at the Airport

To define, evaluate, and recommend safety, capacity, and operational enhancements for BCT

To update the 10-year Capital Improvement Program (CIP) for the Airport

To establish a plan that optimizes the use of BCT's limited land assets

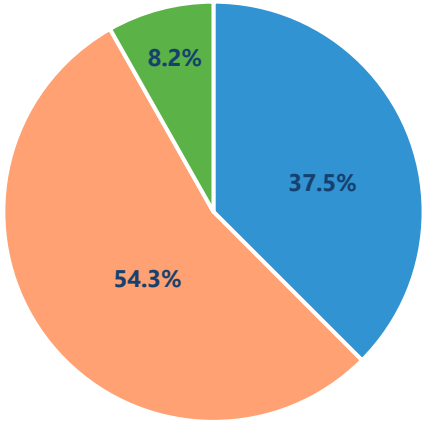
Master Plan Update Overview
Project Process



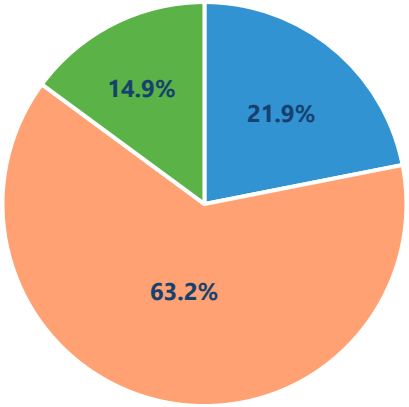
Master plan process follows Federal Aviation Administration and Florida Department of Transportation guidance.

Review of Key Tasks
Aviation Activity Forecasts – Business Jet Activity

Business Jet Activity CY 2010



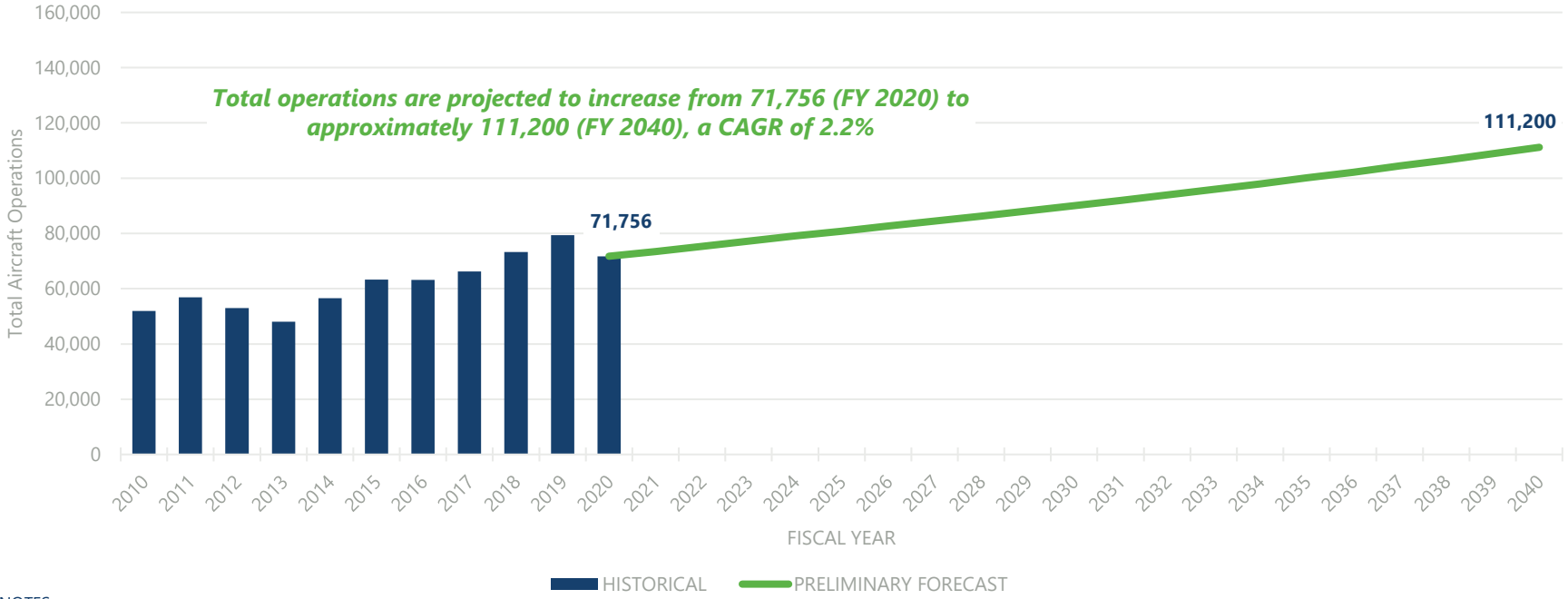
Business Jet Activity CY 2019



Light Jets (<21,000 lbs.) Midsize Jets (21,000 - 65,000 lbs.) Heavy Jets (> 65,000 lbs.)

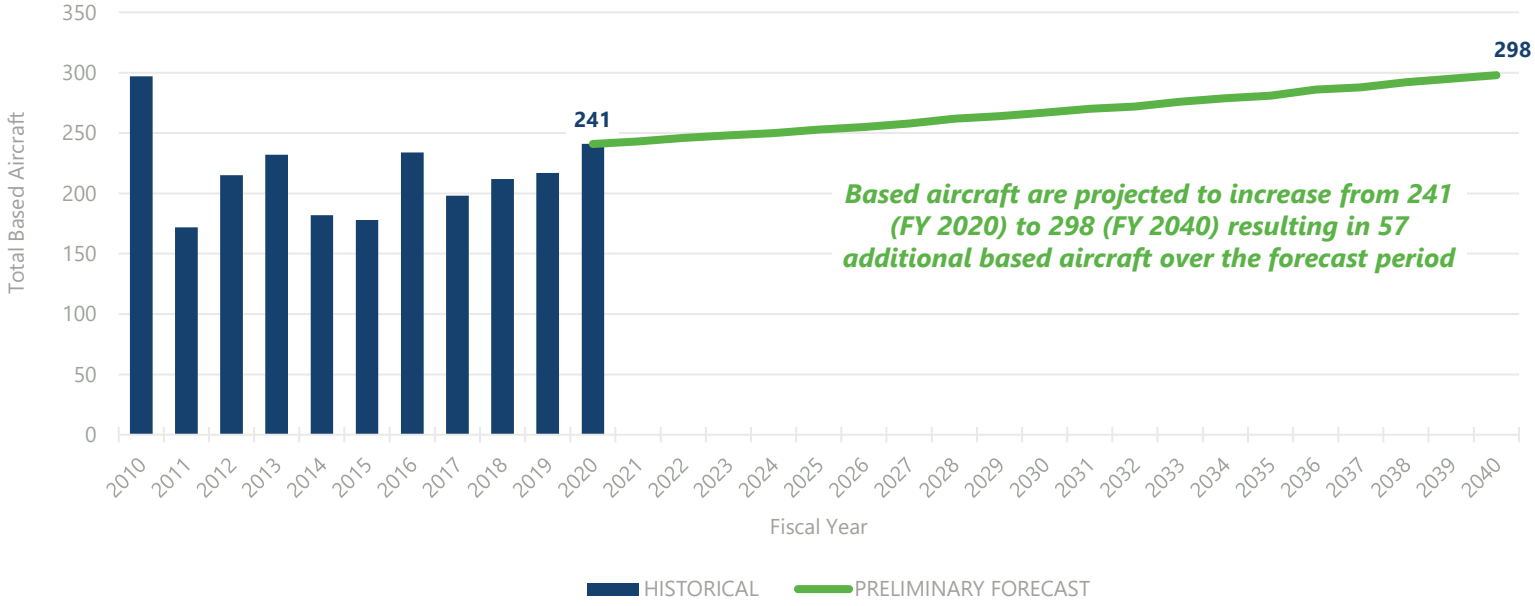
SOURCES: Boca Raton Airport Authority, Airport Noise Operations and Monitoring System, September 2020; Ricondo & Associates, Inc., *Operational Needs Assessment and Runway Safety Area Study*, June 2012.

Review of Key Tasks
Aviation Activity Forecasts – Operations Forecast



NOTES:
The fiscal year (FY) is October 1 through September 30.
GAGR = Compound Annual Growth Rate
SOURCES: Federal Aviation Administration, Operations Network (OPSNET) (accessed October 2020) (Historical); Ricondo & Associates, Inc. November 2020. (Preliminary Forecast).

Review of Key Tasks
Aviation Activity Forecasts – Based Aircraft Forecast



NOTE:
The fiscal year (FY) is October 1 through September 30.
SOURCES: Federal Aviation Administration, *Terminal Area Forecast FY 2019 – 2045,* February 2020; Ricondo & Associates, Inc., October 2020.

Review of Key Tasks
Facility Requirements – Critical Aircraft

2004 Airport Enhancement Plan[1]

Gulfstream III

- Approach Speed – 125 knots
- Wingspan – 77.8 feet

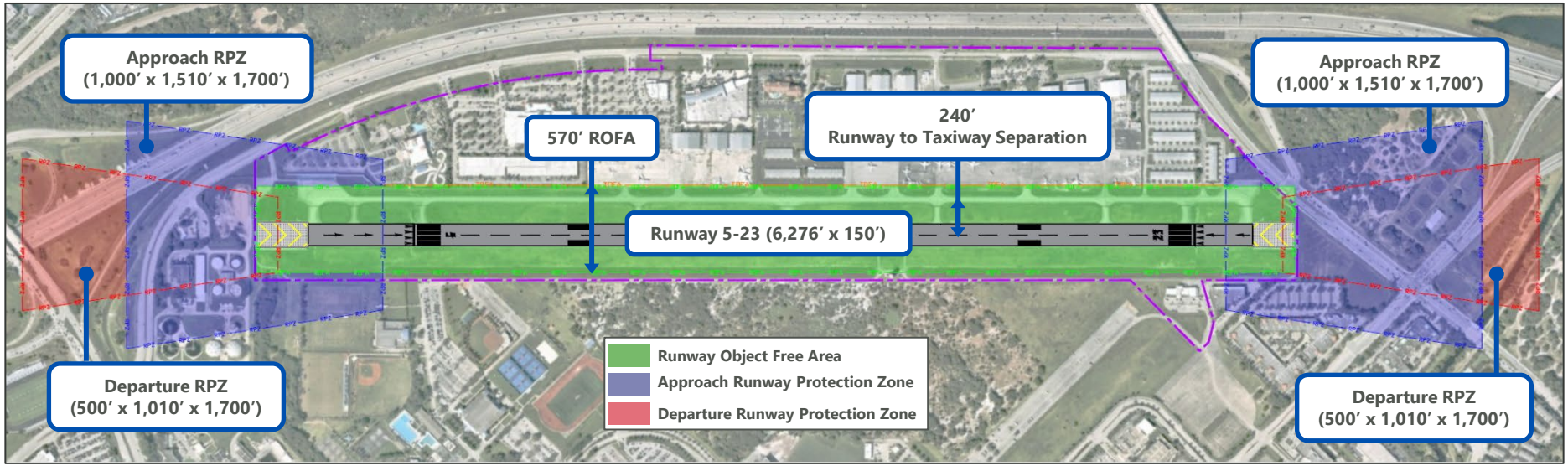
2020 Airport Master Plan

Gulfstream G550 (G500, GV-SP, G-V)

- Approach Speed – 150 knots
- Wingspan – 93.3 feet

NOTE: 1. The 2004 Airport Enhancement Plan is considered the previous Airport Master Plan.
SOURCES: Boca Raton Airport Authority, CY 2015-2019 ANOMS Database, September 2020; Robb Report, https://robbreport.com/motors/aviation/gulfstreams-g550-business-jet-flew-from-shanghai-to-seattle-in-10-5-hours-2850852/ (accessed November 18, 2020); Liberty Jet, https://www.libertyjet.com/private_jets/G-1159A (accessed January 11, 2021).

Review of Key Tasks
Facility Requirements – Design Standard Evaluation



NOTES:
1. Existing conditions based upon approach visibility minimums of not lower than ¾ mile.
2. BCT has approved MOSs for ROFA length and width and runway centerline to taxiway centerline separation distance, EMAS on both ends, and ADG III operational restrictions.

SOURCES:
U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13A, *Airport Design*, February 2014; Ricondo and Associates, *Airport Layout Plan*, June 2018; Nearmap, November 2019 (aerial photo).

Review of Key Tasks
Alternatives Analysis

Evaluation Criteria

- Compliance with FAA standards
- Ability to provide required capacity and/or capability
- Potential environmental impacts
- Relative costs
- Constructability/ease of implementation

Preferred Alternatives

- Roadmap for future development
- Phased and incorporated into capital improvement program
- Evaluated in stormwater master plan update
- Graphically depicted on the Airport Layout Plan

Review of Key Tasks
Public Involvement and Stakeholder Outreach

Technical Advisory Committee 2

The TAC will include representatives from various organizations

- Internal Persons/Groups – BRAA staff and major airport tenants
- External Person – representative from nearby counties and municipalities, regulatory agencies, public officials, and business leaders

Small Group Meetings 3

Three (3) small group meetings at staff discretion

BRAA Board Workshop* 2

Two (2) Board Workshops to discuss:

- Alternatives
- Capital Improvement Plan and Phasing

BRAA Board Briefings* 2

Two (2) Board Briefings to discuss:

- Project Overview
- Final Master Plan Deliverable

*Timing of Board Workshops and Briefings to be coordinated with BRAA staff.

Key Milestones and Next Steps

Public Involvement and Stakeholder Coordination

• Tenant Survey	December 2020
• Small Group Meeting (Air Traffic Control Tower)	January 2021
• BRAA Board Briefing #1	February 2021
• Technical Advisory Committee Meeting #1	Spring 2021
• BRAA Board Workshop #1	Summer 2021

Master Plan Documentation and Completion

• Stormwater Master Plan Update Completion	Fall 2021
• Airport Layout Plan Update Completion	Winter 2021
• Master Plan Update Project Completion	Early 2022

Master Plan key milestones subject to change.

Next Steps

- Coordinate the review of the Aviation Activity Forecast Chapter with the FAA
- Establish future facility requirements and evaluate design standards
- Collaborate with BCT staff and tenants on airport development alternatives
- Finalize aerial surveying and mapping
- Conduct Technical Advisory Committee meeting #1

BOCA RATON AIRPORT

Questions

THANK YOU

Airport Master Plan Update

Technical Advisory Committee (TAC) Meeting #1

April 22, 2021

BOCA RATON AIRPORT

Meeting Agenda

- Introductions
- Master Plan Update Overview
- Technical Advisory Committee (TAC) Role and Responsibilities
- Airport Baseline Conditions/Tenant Survey Feedback
- Forecast of Aviation Activity
- BCT's Critical Design Aircraft
- Preliminary Facility Requirements (Hangar, Apron, FBO, and Automobile Parking Spaces)
- Next Steps

Introductions

Project Team

BRAA Team/Officials

- **Randy Nobles**, Vice Chair
- **Clara Bennett**, Executive Director
- **Scott Kohut**, Deputy Director
- **Travis Bryan**, Operations Manager
- **Christine Landers**, Business Manager

Consultant Team | Project Role

- **Pete Ricondo** (Ricondo) | Officer-in-Charge
- **Brad Weston** (Ricondo) | Project Manager
- **Sebastien Carreau** (Ricondo) | Deputy Project Manager
- **Ryan Flicek** (Martinez) | Aerial Surveying and Photogrammetry
- **Mark Jansen, P.E.** (AID) | Civil Engineering Support/Cost Estimates
- **Elton Smith, P.E.** (AID) | Stormwater Planning
- **John Phillips** (Brown & Philips) | Ground Survey

Primary Stakeholders

Aeronautical Tenants

- Atlantic Aviation
- Boca Aircraft Maintenance
- Boca Aircraft Owners
- Global Wings
- Journey Aviation
- Lynn University
- Privaira
- Reliable Jet Maintenance
- Runway 5-23 Hangar Condo Association
- Signature Flight Support
- Southern Jet

Non-Aeronautical Tenants

- Boomer's/ Palace Entertainment, L.L.C.
- Cinemark
- City Furniture
- Fairfield Inn & Suites by Marriott
- Premier Aviation of Boca Raton

Federal and State Agencies

- FAA Orlando Airports District Office
- Florida Department of Transportation
- Air Traffic Control Tower

Local Agencies and Organizations

- Boca Raton Chamber of Commerce
- City of Boca Raton
- Florida Atlantic University
- Palm Beach International Airport
- Palm Beach Transportation Planning Agency

Master Plan Update Overview

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Project Background – Physical Changes

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SOURCE: Google Earth Pro, January 2004.

**Completion Date of the Airport Enhancement Plan (Previous Master Plan)*

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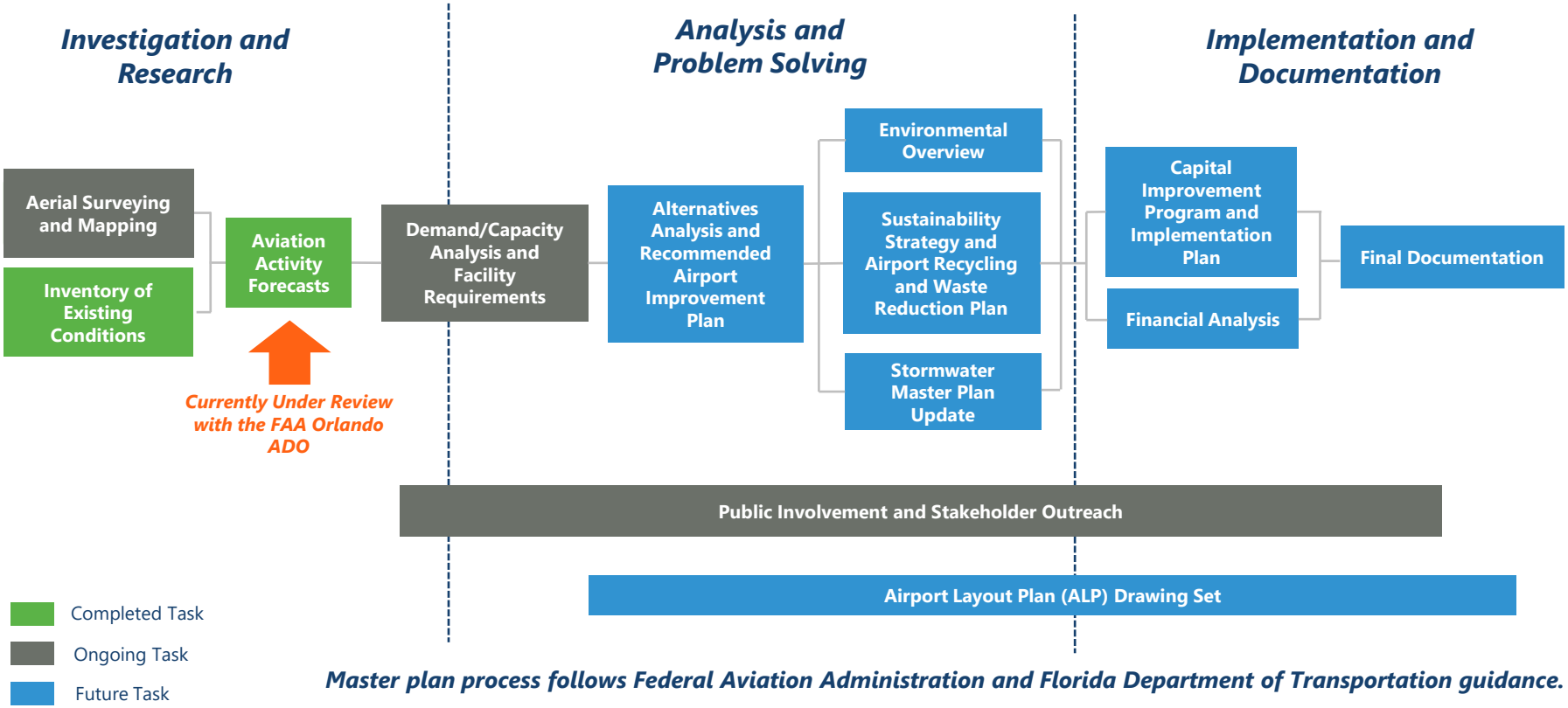
Project Process



Master plan process follows Federal Aviation Administration and Florida Department of Transportation guidance.

Airport Master Plan Deliverables

Master Plan Study Document

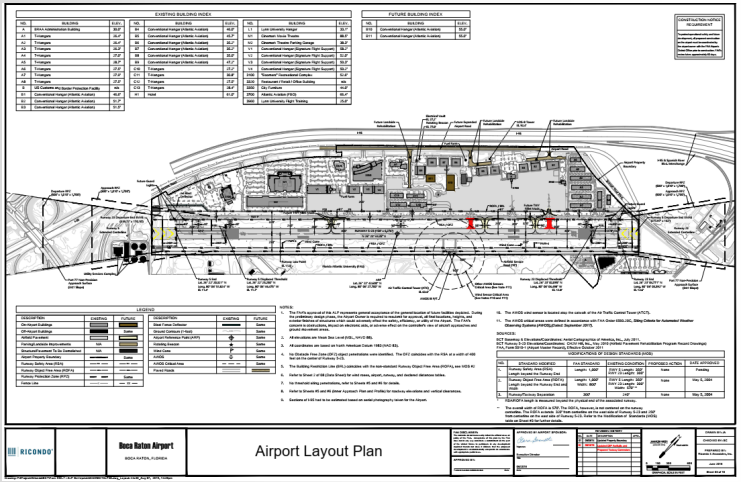
- Compilation of technical documentation
- Includes FAA approved activity forecast
- Includes updated Capital Improvement Program (CIP)
- Accepted by FAA and conditionally approved by FDOT

Airport Layout Plan (ALP)

- Graphical representation of existing and future airport facilities (drawing set)
- Ensures development is consistent with design standards, safety requirements, and airport/community land use plans
- FAA/FDOT approved ALP is required for issuance of grants

Airport Data Set

- Compliant with FAA's AGIS (Airport GIS) standards
- Allows FAA to protect airspace and instrument approach procedures



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Project Schedule

Public Involvement and Stakeholder Coordination	
Technical Advisory Committee Meeting #1	April 2021
Technical Advisory Committee Meeting #2	Summer/Fall 2021
BRAA Board Workshop #1	May 2021
BRAA Board Workshop #2	Fall 2021

Master Plan Documentation and Completion	
Stormwater Master Plan Update Completion	Fall 2021
Airport Layout Plan Update Completion	Winter 2021
Master Plan Update Project Completion	Early 2022

Master Plan key milestones subject to change.

Technical Advisory Committee Role and Responsibilities

Technical Advisory Committee Role

- Advisory in nature. Will provide consensus opinion for Airport staff to consider when making planning decisions.
- Provide feedback and technical guidance on each element of the Master Plan Update:
  - Bring various master local perspectives to the master planning process
  - Reach consensus on key master plan topics

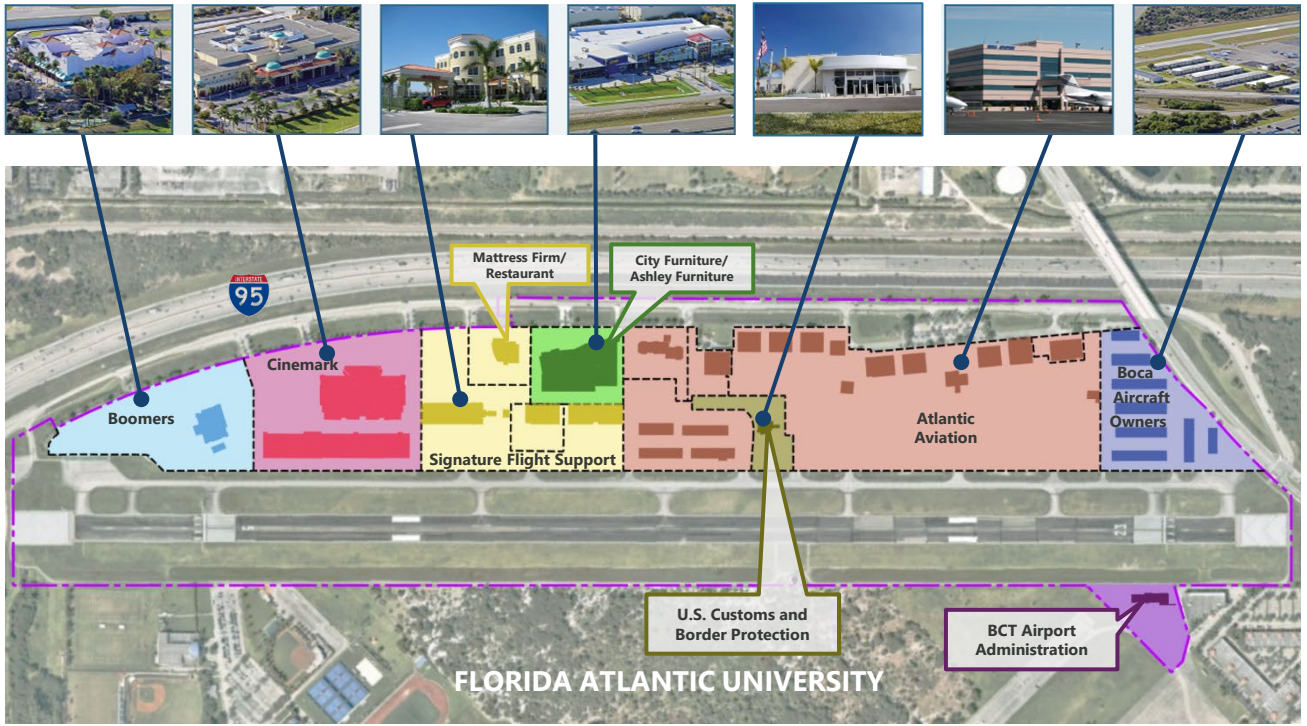
Technical Advisory Committee Responsibilities

- Attend two meetings over the course of the study
- Provide input and guidance on technical analyses
- Provide ideas for consideration in the Master Plan
- Help build the Airport's future by sharing what you learn from your participation in the Technical Advisory Committee

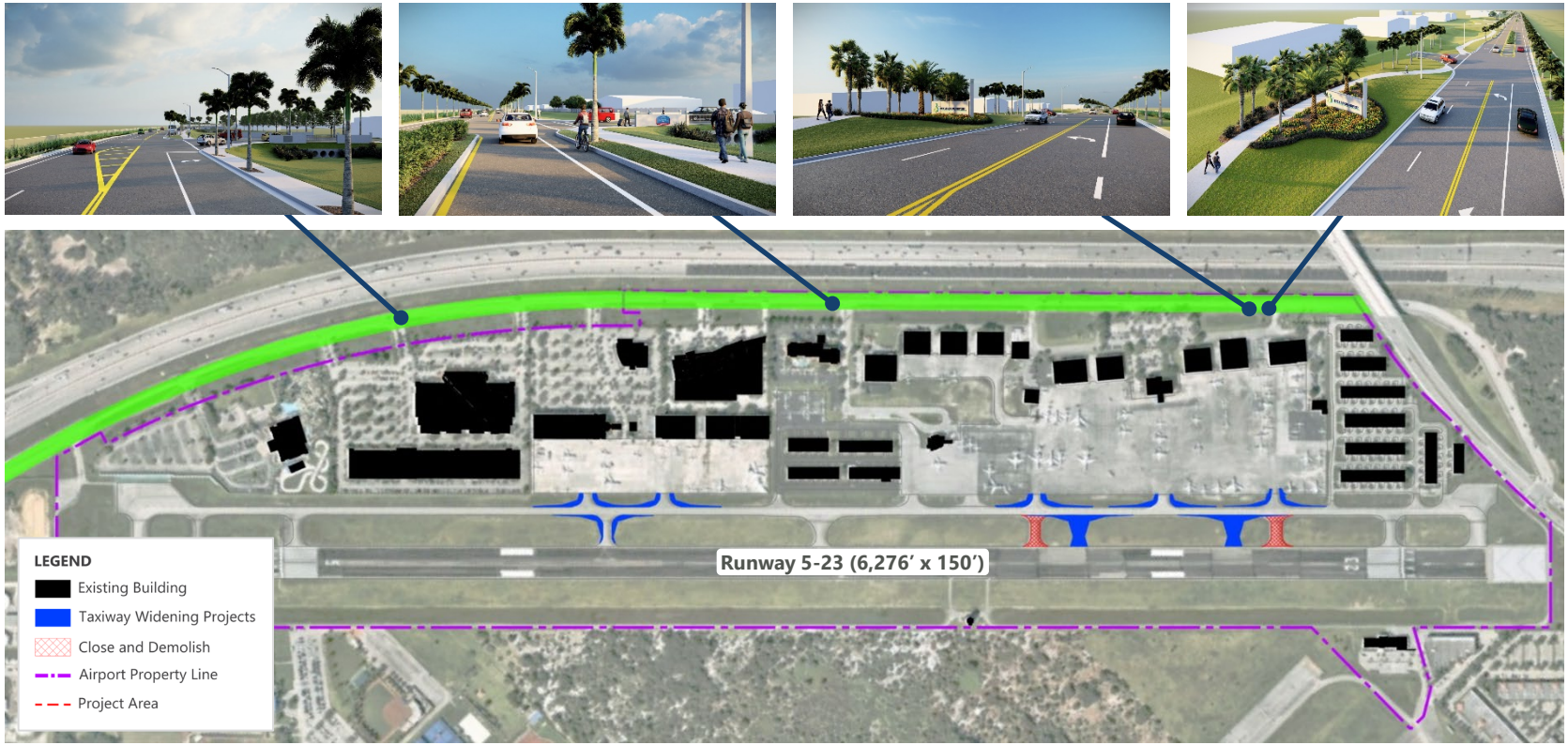
Airport Baseline Conditions/ Tenant Survey Feedback

Current Conditions

- Airport Size: 215 acres
- Existing Leaseholds: 95 acres
- Designated as a General Aviation Reliever Airport
- One runway:
  - Runway 5-23 (non-precision)
- Contract Air Traffic Control Tower

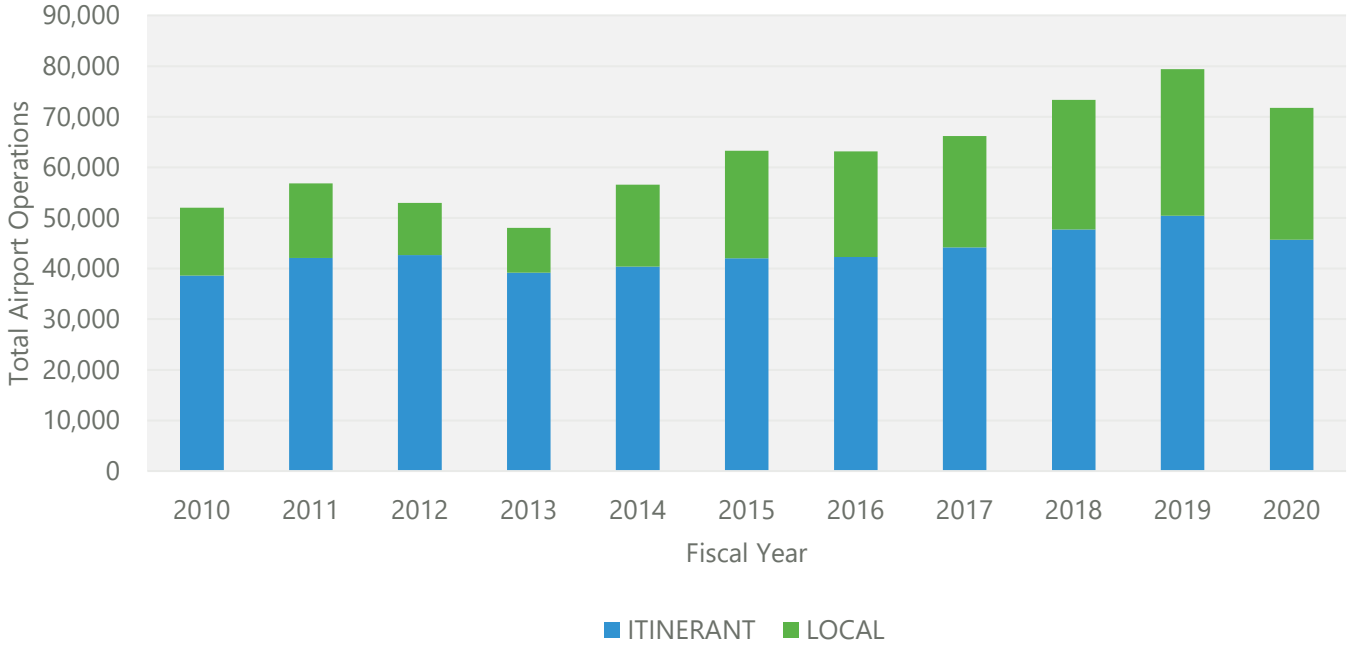


Baseline Conditions



Aircraft Operations – FY 2010 to FY 2020

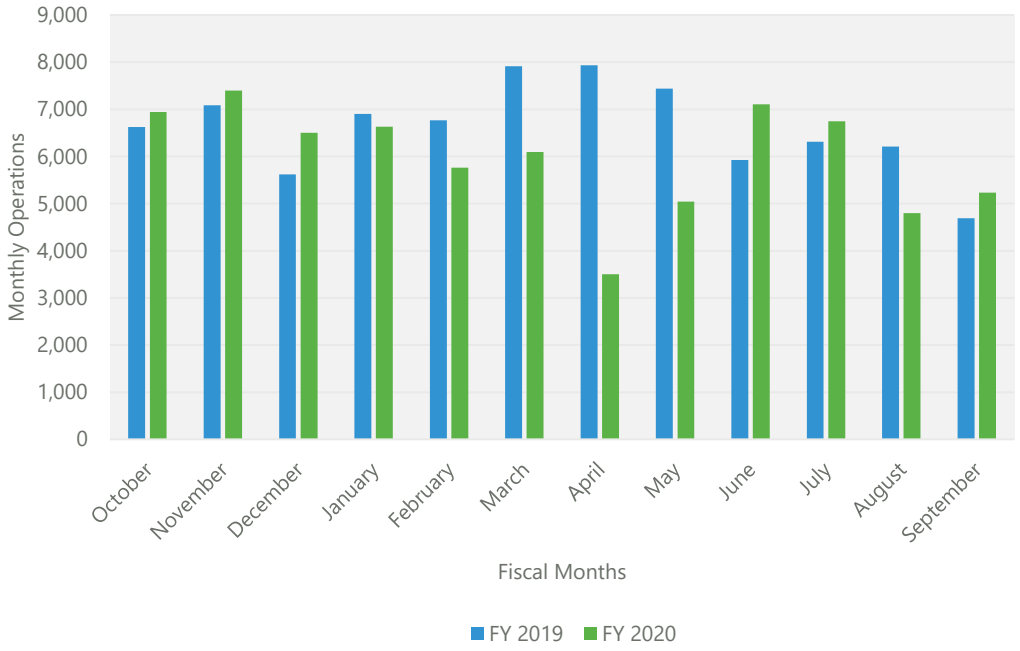
- Overall operations - 3.3% CAGR
- Itinerant operations - 1.7% CAGR
- Local operations - 6.9% CAGR



SOURCE: FAA Operations Network (OPSNET) (accessed October 2020).

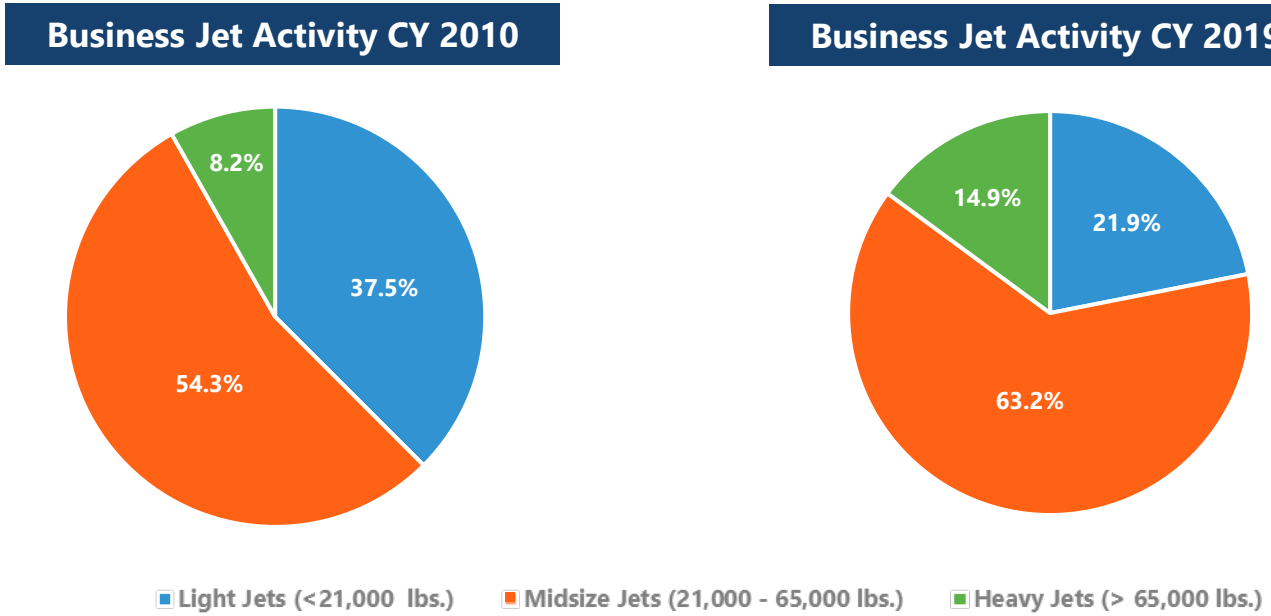
COVID-19 Impact on BCT Operations

	BCT MONTHLY OPERATIONS		
Fiscal Month	**FY 2019**	**FY 2020**	**Change (%)**
October	6,622	6,941	4.8%
November	7,088	7,399	4.4%
December	5,617	6,505	15.8%
January	6,903	6,630	-4.0%
February	6,766	5,760	-14.9%
March	7,914	6,093	-23.0%
April	7,932	3,505	-55.8%
May	7,437	5,041	-32.2%
June	5,924	7,107	20.0%
July	6,310	6,745	6.9%
August	6,210	4,797	-22.8%
September	4,689	5,233	11.6%
FY Total	**79,412**	**71,756**	**-9.6%**



NOTE: FY = Fiscal Year (October – September)
SOURCES: FAA Operations Network (OPSNET) (accessed October 2020). Innovata; U.S. DOT T100 (scheduled passenger data), (accessed October 2020); Ricondo & Associates, Inc., October 2020.

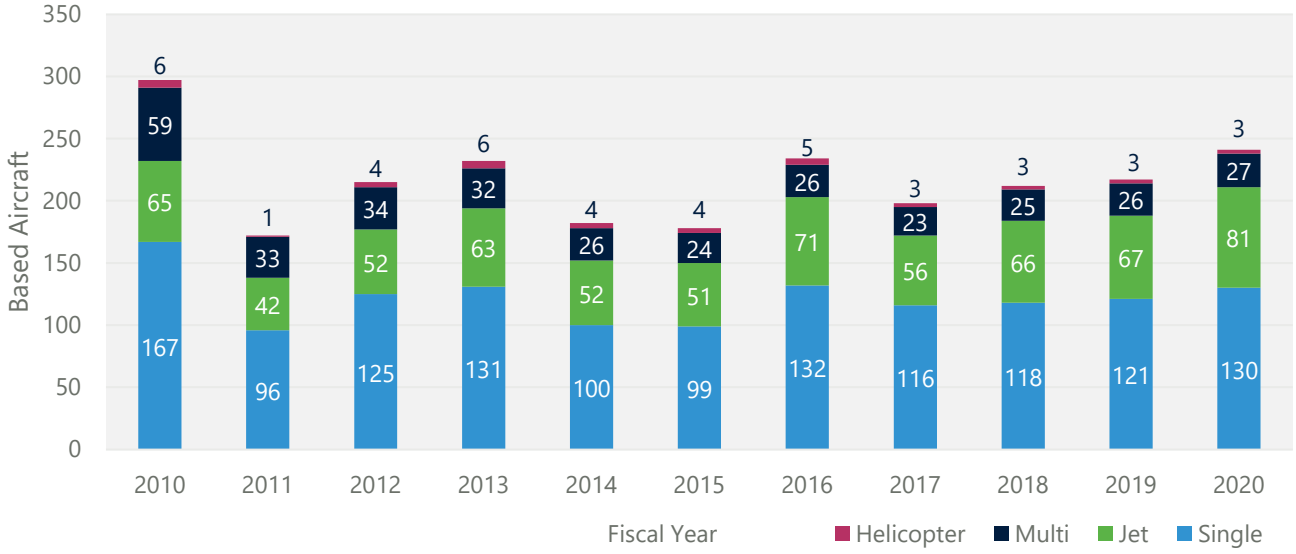
Business Jet Activity



SOURCES: Boca Raton Airport Authority, Airport Noise Operations and Monitoring System, September 2020; Ricondo & Associates, Inc., *Operational Needs Assessment and Runway Safety Area Study*, June 2012.

Based Aircraft – FY 2010 to FY 2020

- Historically, single-engine aircraft represent over 50% of total based aircraft; however, jet-based aircraft have experienced an increased share of total based aircraft



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total	297	172	215	232	182	178	234	198	212	217	241

SOURCES: FAA National Based Aircraft Inventory Program (FY 2020 data), (accessed September 2020); FAA Terminal Area Forecast (TAF) (FY 2010 – FY 2019 data), (accessed October 2020).

Tenant Survey Feedback

Airfield Improvements:

- Widening and strengthening of taxiway exits onto FBO ramps
- Ramp resurfacing
- LED airfield lighting
- New fuel farm

Landside Improvements:

- Additional vehicular parking
- Four lane expansion of airport road
- Underground utilities
- Improved landscaping
- Security lighting along airport road
- Self fueling station
- Aircraft viewing area
- Larger corporate aircraft hangars
- Larger t-hangars
- Additional office space (e.g., classroom space)
- Hangar and FBO improvements

Other Comments:

- Limited space to expand
- Convert commercial areas to aeronautical uses

Tenant Survey Feedback

- Key Trends:
  - Larger aircraft (e.g., Global 7500)
  - Electric vertical takeoff and landing (EVTOL) Aircraft Operations
  - Sustainable Aviation Fuels (SAF)

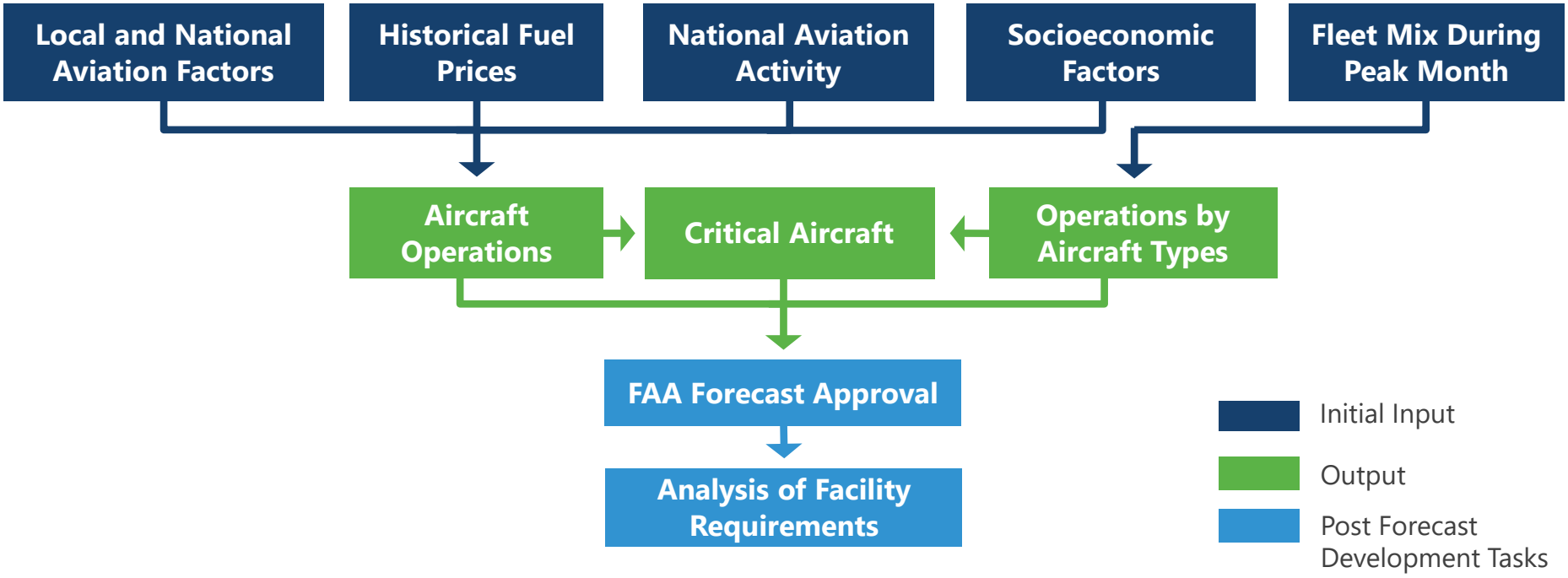
Bombardier Global 7500[1]

Lilium[2]

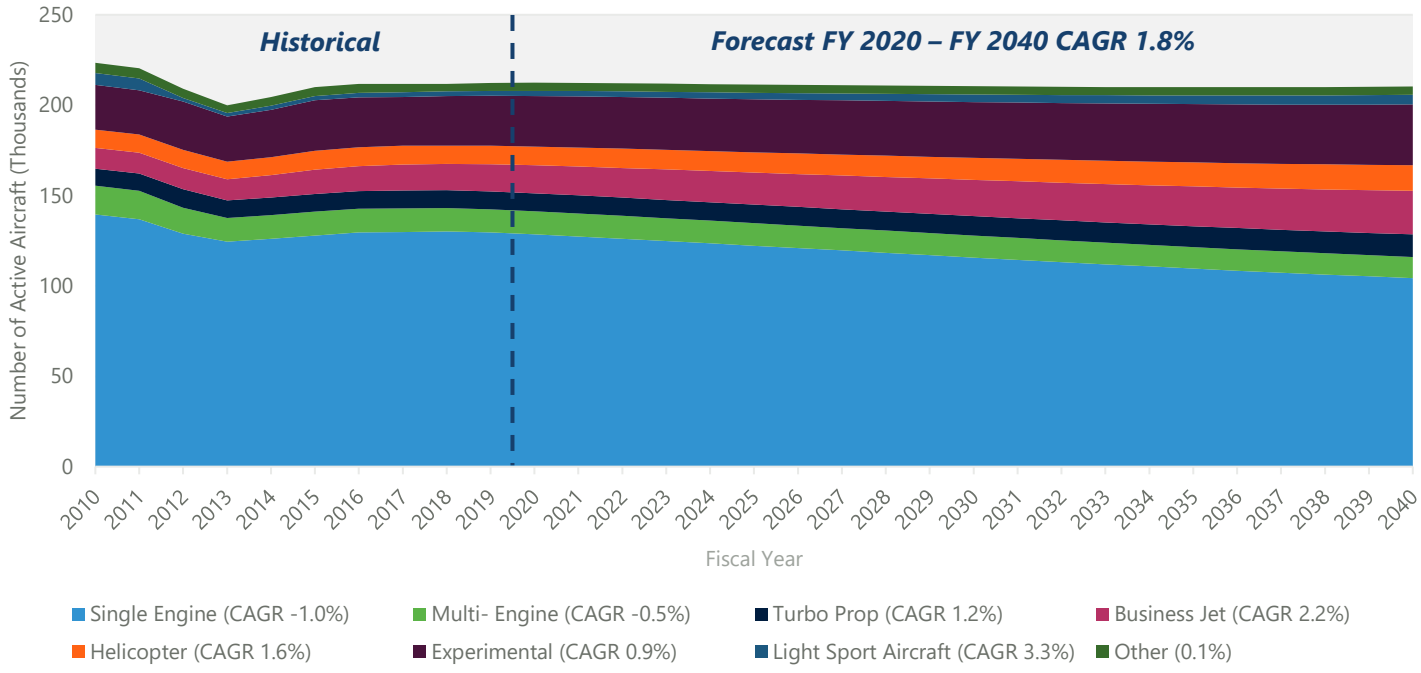
SOURCE:
1/ AIN Online, Global 7500 to Drive Delivery Increase at Bombardier, https://www.ainonline.com/aviation-news/business-aviation/2020-02-13/global-7500-drive-delivery-increase-bombardier (accessed April 2021).
2/ Lilium, Daniel Bachmann, https://robbreport.com/tag/lilium/(accessed April 2021).

Forecast of Aviation Activity

The Master Plan Forecast Development Process

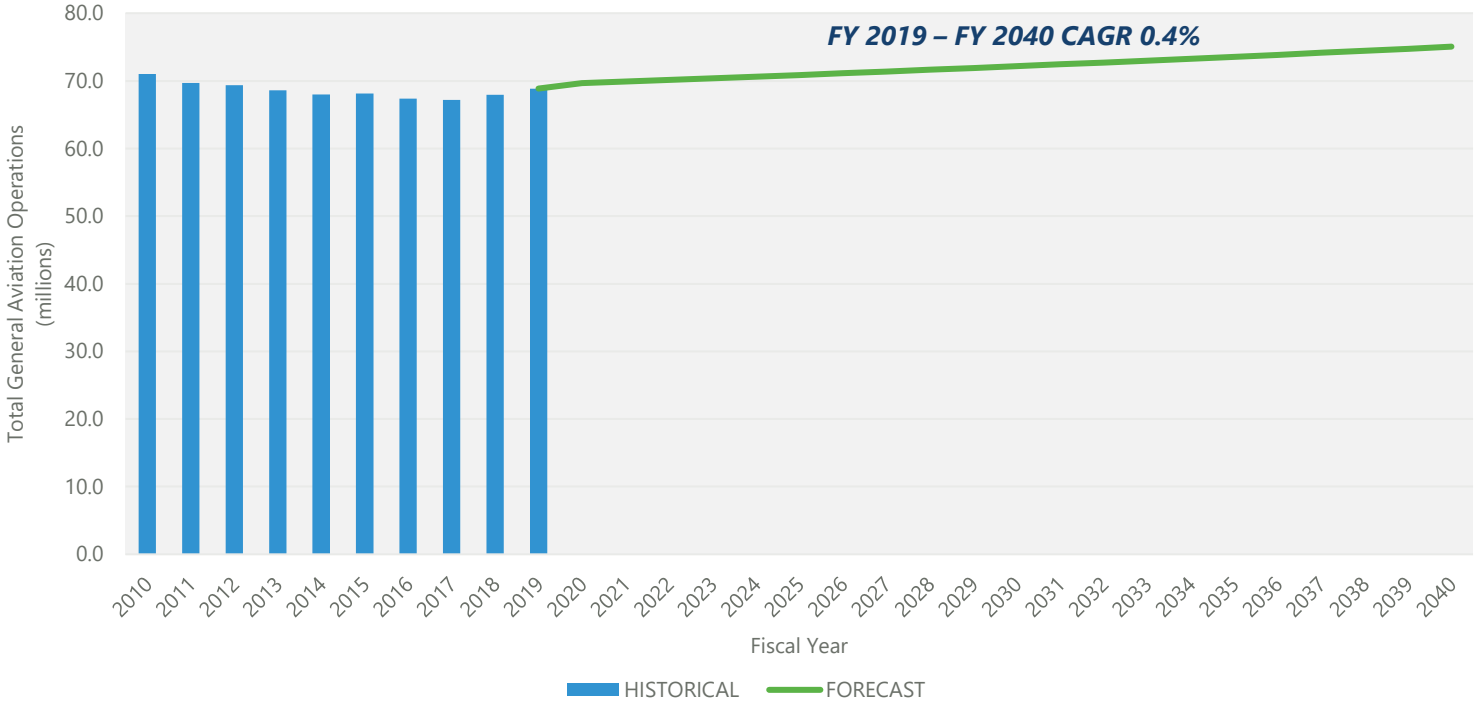


General Aviation Market – Active General Aviation Aircraft



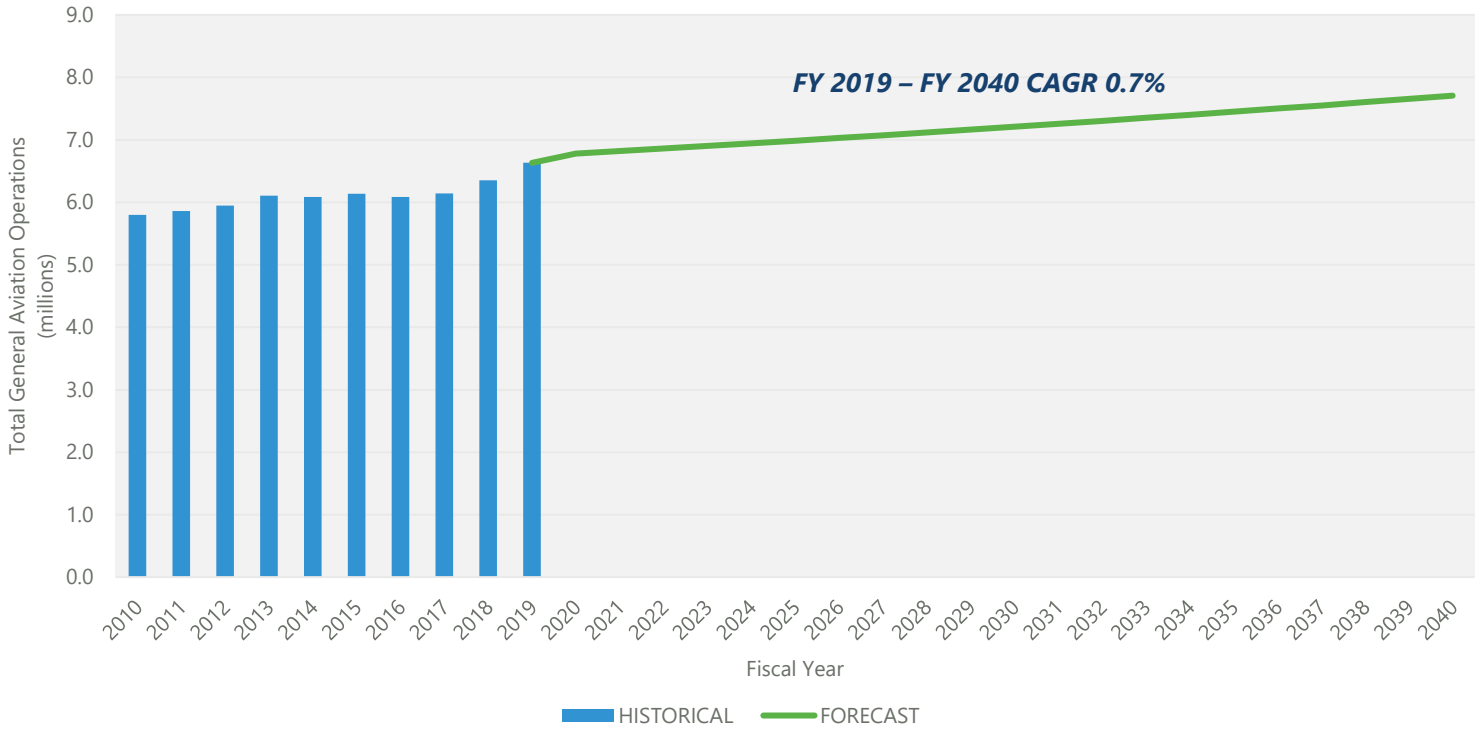
SOURCE: FAA Aerospace Forecast *FY 2020 – 2040* (accessed October 2020).

General Aviation Market – National Forecast



SOURCE: FAA Terminal Area Forecast *FY 2019 – 2045* (TAF) (accessed October 2020).

General Aviation Market – State Forecast



SOURCE: FAA Terminal Area Forecast *FY 2019 – 2045* (TAF) (accessed October 2020).

Industry Trends and Opportunities

- New electric aircraft could revitalize recreational general aviation activity.

Pipistrel, Panthera, 4-Seater Single Engine Propeller Aircraft
Photo Credit: Pipistrel: http://www.pipistrel-ca.com/panthera.html

Bye Aerospace Sun Flyer 2, 2-seater single engine propeller aircraft
Photo Credit: Bye Aerospace: https://byeaerospace.com/3603-2/

Industry Trends and Opportunities

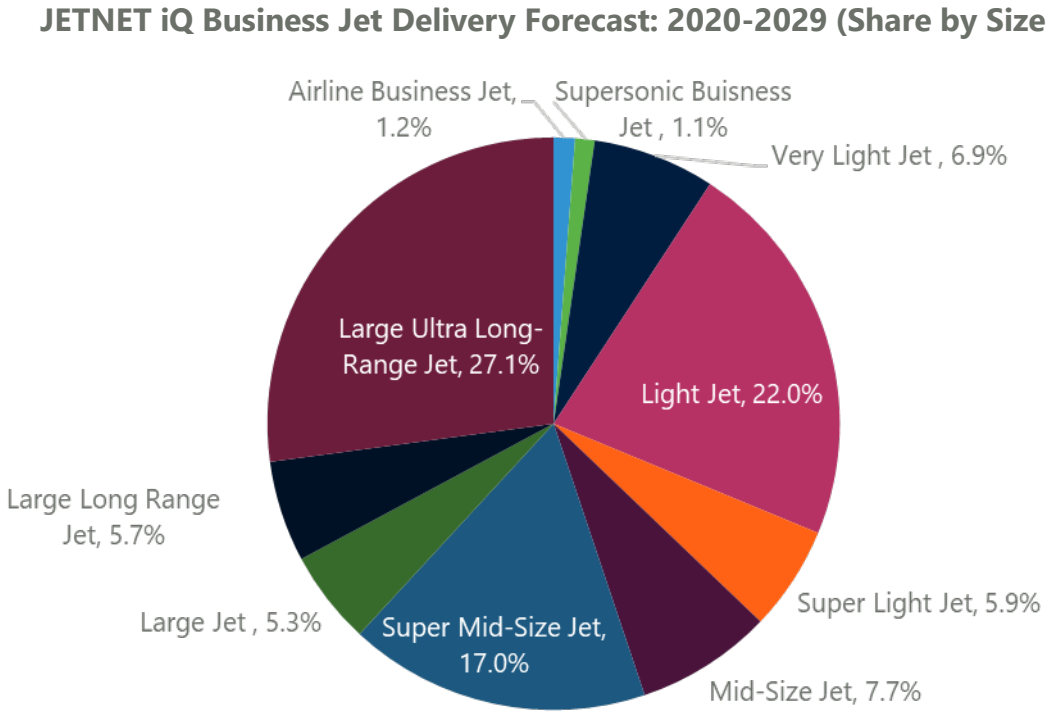
- New products (VTOL aircraft) and service offerings (VTOL air taxi including UBER Elevate, Lilium, etc.) may offer new opportunities for airports like BCT.

Lilium
Photo Credit: Daniel Bachmann
https://robbreport.com/tag/lilium/

Aurora (A Boeing Company) Passenger Air Vehicle (PAV)
Photo Credit: Aurora Flight Sciences https://www.aurora.aero/pav-evtol-passenger-air-vehicle/

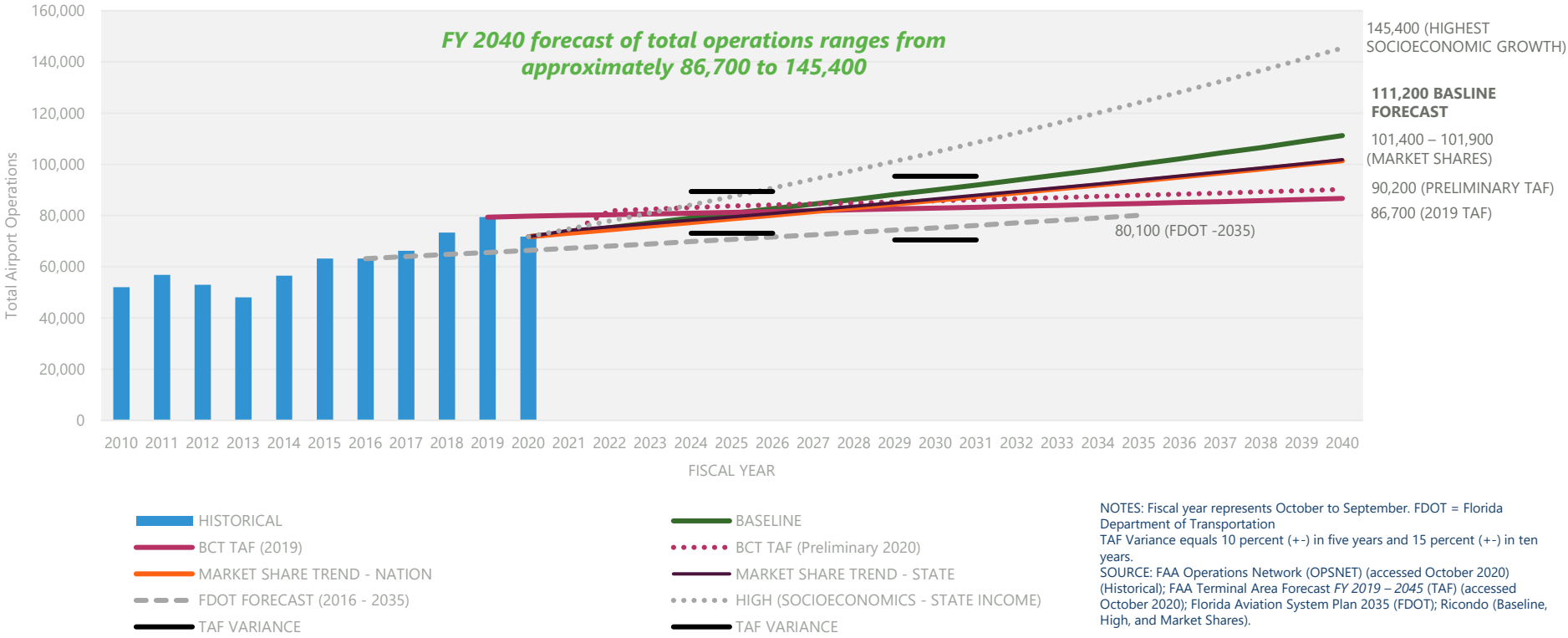
Bell Nexus
Photo Credit: Bell Flight https://www.bellflight.com/products/bell-nexus

Industry Trends and Opportunities



SOURCE: Sherpa Report, https://www.sherpareport.com/aircraft/2020-business-jet-forecasts.html (accessed November 2020).

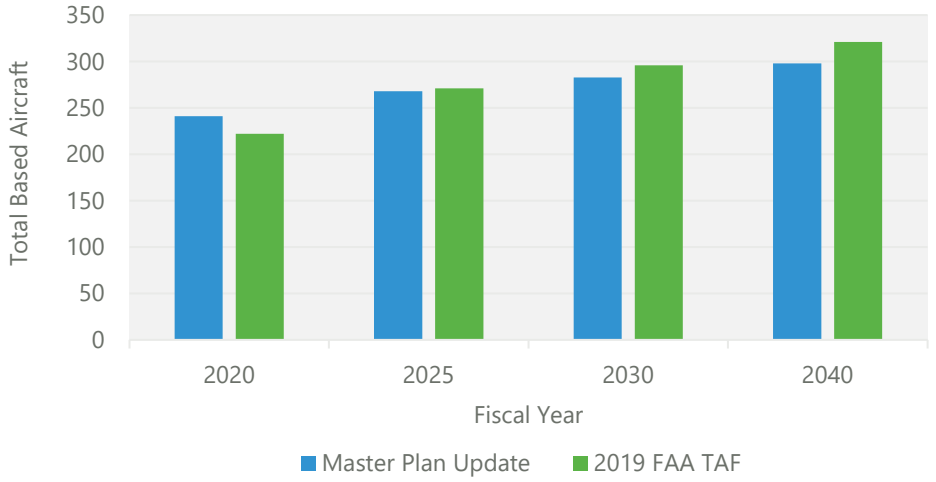
Operations Forecast Comparison



NOTES: Fiscal year represents October to September. FDOT = Florida Department of Transportation
TAF Variance equals 10 percent (+-) in five years and 15 percent (+-) in ten years.
SOURCE: FAA Operations Network (OPSNET) (accessed October 2020) (Historical); FAA Terminal Area Forecast *FY 2019 – 2045* (TAF) (accessed October 2020); Florida Aviation System Plan 2035 (FDOT); Ricondo (Baseline, High, and Market Shares).

Based Aircraft Forecasts

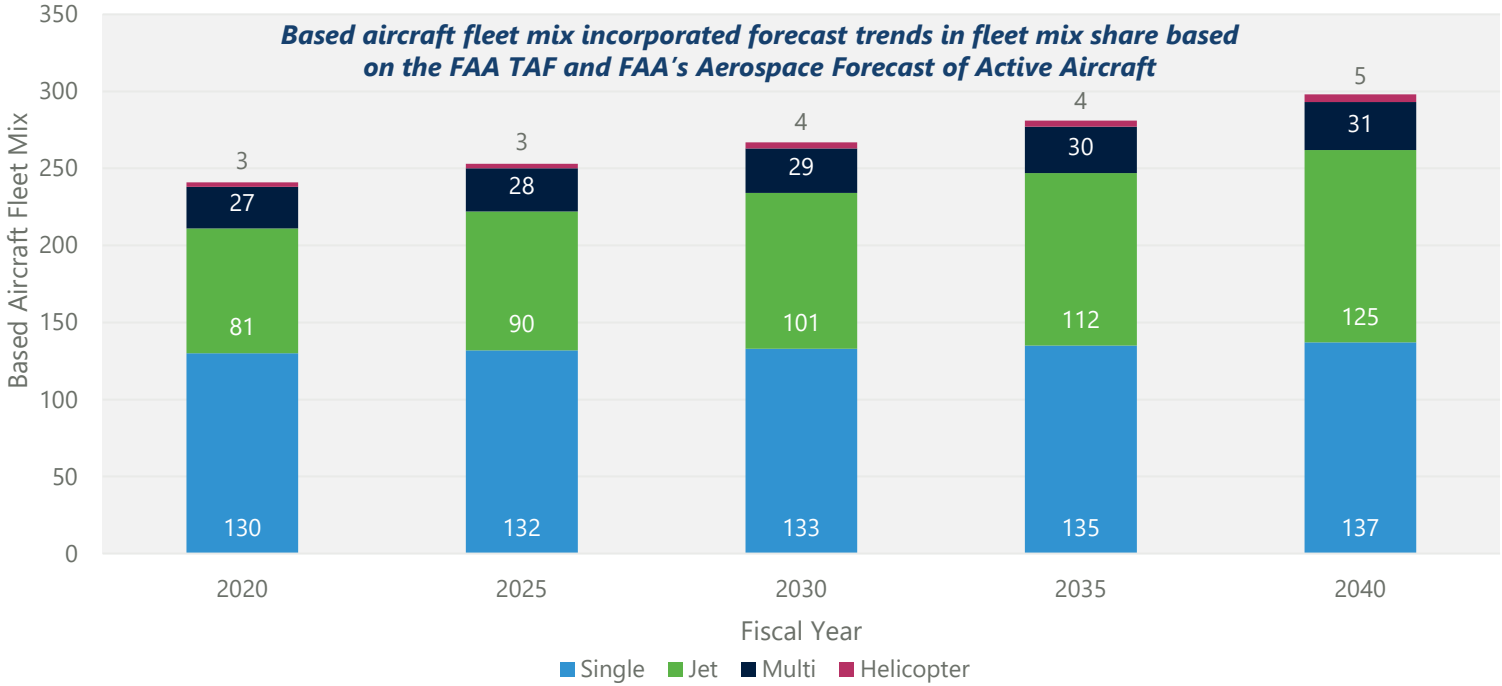
Fiscal Year	Master Plan Update	2019 FAA TAF
2020	241	222
2025	268	271
2030	283	296
2040	298	321
CAGR	1.1%	1.9%



NOTES:
CAGR – Compound Annual Growth Rate
Fiscal year represents October to September.

SOURCE: FAA Terminal Area Forecast *FY 2019 – 2045* (TAF) (accessed October 2020); Ricondo & Associates, October 2020.

Based Aircraft Fleet Mix Forecast



NOTES: Fiscal year represents October to September.
SOURCE: FAA Terminal Area Forecast *FY 2019 – 2045* (TAF) (accessed October 2020); FAA Aerospace Forecast *FY 2020 – 2040* (accessed October 2020).; Ricondo.

Future Demand Summary (Pending FAA Approval)

CATEGORY	PROJECTED			
	FY 2020	FY 2025	FY 2030	FY 2040
Total Aircraft Operations	**71,756**	**80,800**	**90,000**	**111,200**
Itinerant	45,683	50,600	55,800	67,200
Local	26,073	30,200	34,200	44,000
Total Based Aircraft	**241**	**253**	**267**	**298**
Single Engine	130	132	133	137
Multi Engine	27	28	29	31
Jet	81	90	101	125
Helicopter	3	3	4	5

Net Increase – 55%
- *Airfield Infrastructure*
- *Itinerant Aircraft Parking Apron*
- *Fuel Farm Requirements*
- *General Aviation/FBO Terminal*
- *Vehicular Parking*

Net Increase – 24%
- *Hangar Requirements*
- *Maintenance Requirements*
- *Based Aircraft Parking Apron*

NOTE: FBO – Fixed Base Operator; FY – Fiscal Year (October 1 – September 30)
SOURCE: Ricondo & Associates, Inc., March 2021.

BCT's Critical Design Aircraft

Existing Airport Reference Code

- Airport design standards are determined by the Airport Reference Code (ARC)

AIRCRAFT APPROACH CATEGORY (AAC)	
AAC	**APPROACH SPEED**
A	Approach speed less than 91 knots
B	Approach speed 91 knots or more, but less than 121 knots
C	Approach speed 121 knots or more, but less than 141 knots
D	Approach speed 141 knots or more, but less than 166 knots
E	Approach speed 166 knots or more

ARC / family of aircraft exceeding 500 annual operations

AIRPLANE DESIGN GROUP (ADG)		
ADG	**WINGSPAN (FEET)**	**TAIL HEIGHT (FEET)**
I	<49	<20
II	49 to <79	20 to <30
III	79 to <118	30 to <45
IV	118 to <171	45 to <60
V	171 to <214	60 to <66
VI	214 to <262	66 to <80

AAC + ADG = ARC

SOURCE: US Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13A, Change 1, *Airport Design*, February 26, 2014.

Representative Aircraft by Airport Reference Code

A-I Cessna 172[1]

B-I Hawker Beechjet 400[3]

C-I Learjet 45[5]

A-II Cessna 208[2]

B-II Embraer Phenom [4]

C-II Bombardier Challenger 300[6]

SOURCES: Reference next slide.

Representative Aircraft by Airport Reference Code

D-I Learjet 35[7]

C-III Global Express[9]

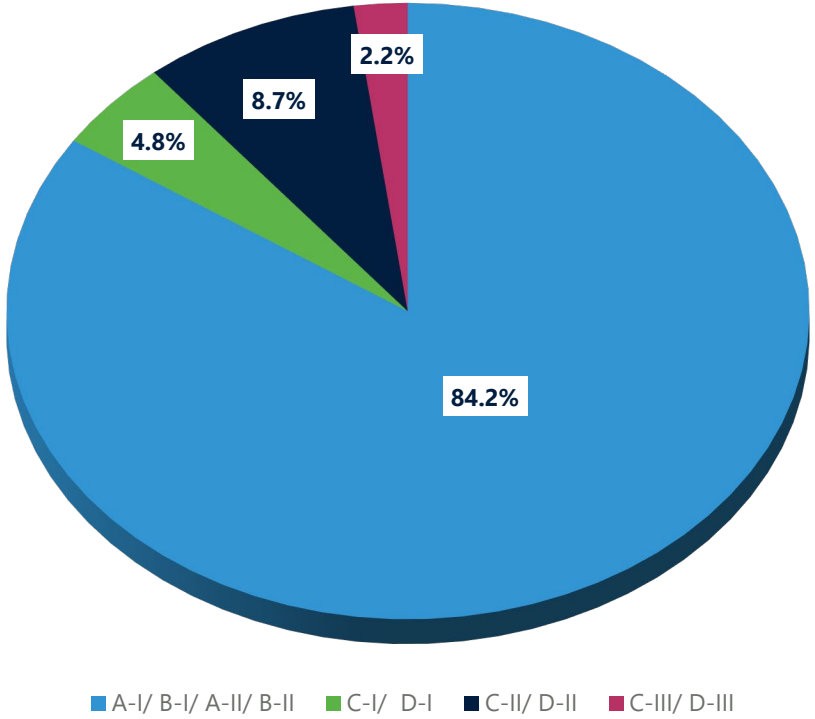
D-II Gulfstream 450[8]

D-III Gulfstream 550[10]

SOURCES:

1. BWI Aviation Insurance, November 16, 2019, https://bwifly.com/aircraft-insurance/cessna-172-insurance-cost/
2. Air Vectors, Dec 01, 2020, http://www.airvectors.net/avcvan.html
3. Nextant Aerospace, July 18, 2018, https://www.nextantaerospace.com/faa-awards-nextant-aerospace-true-blue-powertm-lithium-ion-battery-installation-stc-for-beechjet-400a-and-hawker-400xp/
4. Privatejet, https://privatejetcardcomparisons.com/embraer-phenom-300/
5. Business Jet Traveler, https://www.bjtonline.com/aircraft/bombardier-learjet-45
6. Magellan Jets, Bombardier Challenger 300, https://magellanjets.com/travel/bombardier-challenger-300-html/
7. Paramount Business Jets, Learjet 35, https://www.paramountbusinessjets.com/aircraft
8. Pro Aircraft Interiors, Gulfstream IV, https://proaircraftinteriors.com/portfolio_page/gulfstream-iv-sn-1337/
9. Controller, Bombardier Global Express XRS, https://www.controller.com/listings/for-sale/bombardier/global-express-xrs/aircraft
10. Paramount Business Jets, Gulfstream G550, https://www.paramountbusinessjets.com/aircraft/gulfstream-g550.html

CY 2019 Total Operations by Airport Reference Code



ARC	CY 2019 Operations
A-I/ B-I/ A-II/ B-II	68,109
B-III	75
C-I/ D-I	3,851
C-II/ D-II	7,059
C-III/ D-III	1,742
Helicopters	90
Total Operations (CY 2019)	**80,926**

ARC / family of aircraft exceeding 500 annual operations

Note: C-V and D-V operations are excluded. Totals may be slightly lower than 100 percent due to rounding.
SOURCE: Boca Raton Airport Authority, CY 2019 ANOMS Database (accessed September 2020).

Existing and Future Aircraft Operations by ARC

Airport Reference Code (ARC)	Representative Aircraft (Typical)	Existing Fleet Mix	Forecast Aircraft Operations Fleet Mix		
		FY 2020	FY 2025	FY 2030	FY 2040
A-I/B-I	Cessna 172, Cirrus SR22, Beechjet 400, Cessna 525	50,253	56,587	63,030	77,877
A-II/B-II	Pilatus PC-12, Cessna 208, Cessna 560X, Embraer Phenom 300	10,138	11,416	12,716	15,711
B-III	Dassault Falcon 7X	67	75	83	103
C-I/D-I	Raytheon Hawker 800, Learjet 60, Learjet 45, Learjet 35	3,415	3,845	4,283	5,292
C-II/D-II	Bombardier Challenger 300/350/600, Gulfstream IV	6,259	7,048	7,851	9,700
C-III/D-III	Bombardier Global 5000, Global Express, Gulfstream V/500/550, Gulfstream 650	1,545	1,739	1,937	2,394
N/A	Helicopter	80	90	100	124
	Total	71,756	80,800	90,000	111,200

NOTE:
N/A – Not Applicable

ARC / family of aircraft exceeding 500 annual operations

SOURCE: Boca Raton Airport Authority, CY 2015-2019 ANOMS Database, September 2020.

BCT's Critical Design Aircraft

2004 Airport Enhancement Plan[1]

Gulfstream III – C-II

- Approach Speed – 125 knots
- Wingspan – 77.8 feet

2020 Airport Master Plan

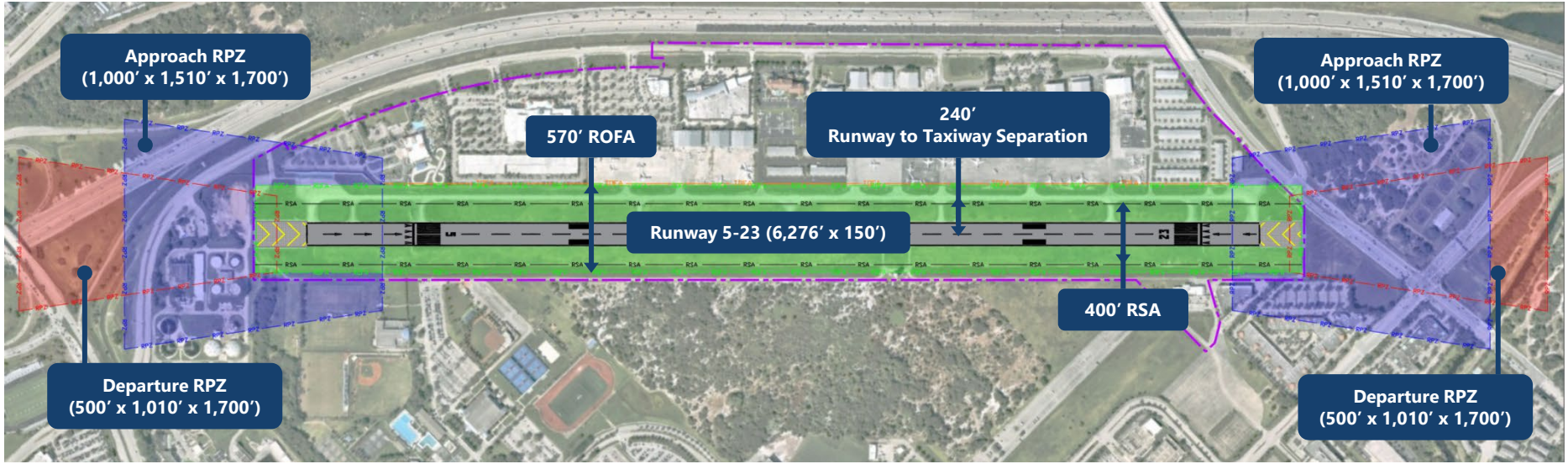
Gulfstream G550 (G500, GV-SP, G-V) - D-III

- Approach Speed – 150 knots
- Wingspan – 93.3 feet

NOTE: 1. The 2004 Airport Enhancement Plan is considered the previous Airport Master Plan.
SOURCES: Boca Raton Airport Authority, CY 2015-2019 ANOMS Database, September 2020; Robb Report, https://robbreport.com/motors/aviation/gulfstreams-g550-business-jet-flew-from-shanghai-to-seattle-in-10-5-hours-2850852/ (accessed November 18, 2020); Liberty Jet, https://www.libertyjet.com/private_jets/G-1159A (accessed January 11, 2021).

Runway Design Standards

Existing Conditions – ARC C-II



NOTES:
1. Existing conditions based upon approach visibility minimums of not lower than ¾ mile.
2. BCT has approved MOSs for ROFA length and width and runway centerline to taxiway centerline separation distance, EMAS on both ends, and ADG III operational restrictions.

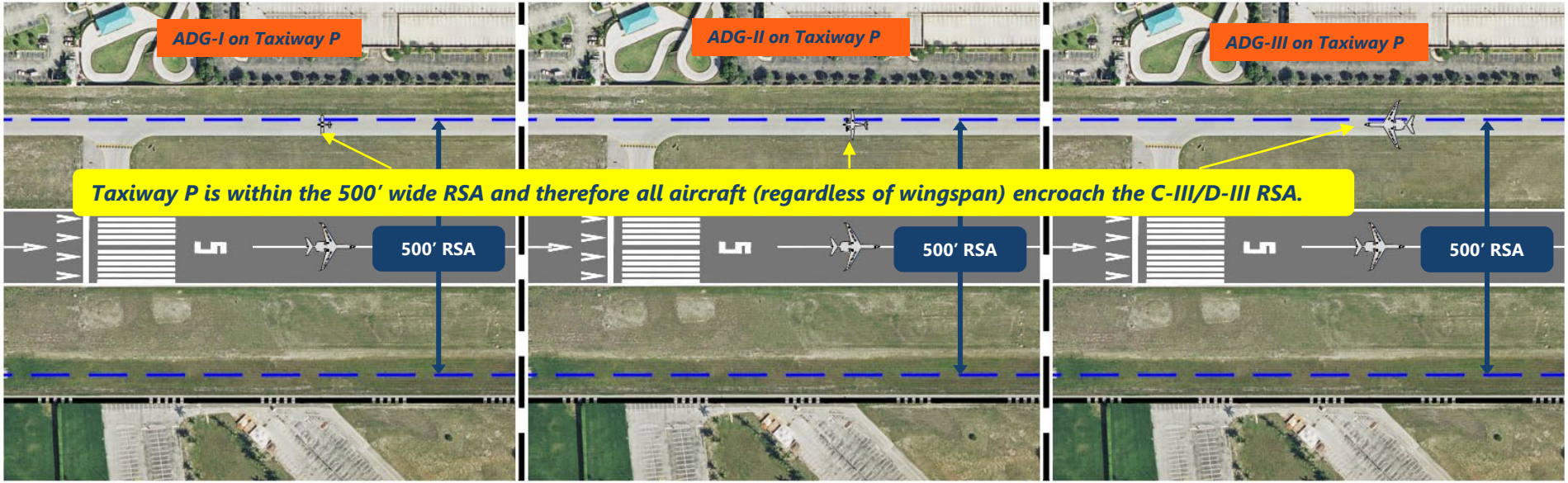
Runway Object Free Area
Approach Runway Protection Zone
Departure Runway Protection Zone

SOURCES: U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13A, *Airport Design*, February 2014; Ricondo and Associates, *Airport Layout Plan*, June 2018; Nearmap, November 2019 (aerial photo).

Runway Design Standards

DESIGN STANDARD	RUNWAY 5-23 DESIGN STANDARD		
	EXISTING CONDITIONS	C-III/D-III (FUTURE ARC)	DIFFERENCE
Runway Safety Area Width	400 ft	500 ft	100 ft
Runway Object Free Area Width	570 ft	800 ft	230 ft
Runway Safety and Object Free Area Length	Length beyond Runway 5: 300 ft Length beyond Runway 23: 350 ft *Mitigated with non-standard EMAS on both runway ends*	Length beyond Runway 5: 1,000 ft Length beyond Runway 23: 1,000 ft	To be Determined
Runway-Taxiway Centerline Separation	240 ft	400 ft	160 ft gap

C-III/D-III Runway Safety Area (500’ Wide)



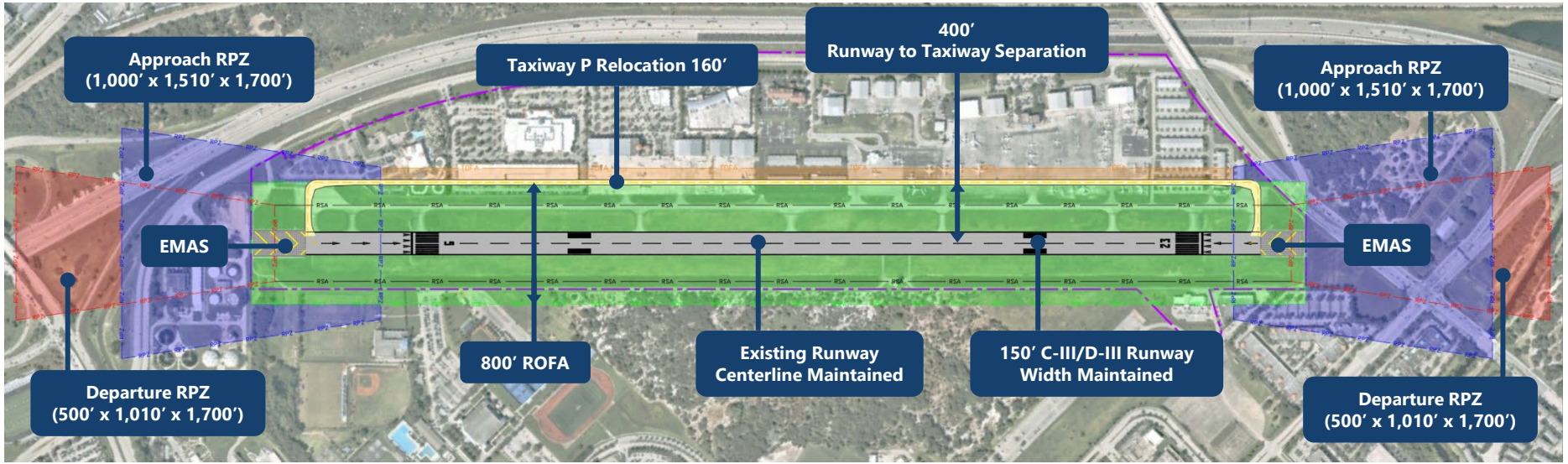
C-III/D-III Runway Safety Area (RSA)

Airport Property Boundary

AIRPLANE DESIGN GROUP (ADG)	
ADG	WINGSPAN (FEET)
I	<49
II	49 to <79
III	79 to <118

SOURCES: Aerial Photography and Basemap: Boca Raton Airport Authority, May 2011; US Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13A, Change 1, *Airport Design*, February 26, 2014.

Preliminary Alternative – ARC C-III/D-III
Relocate Taxiway

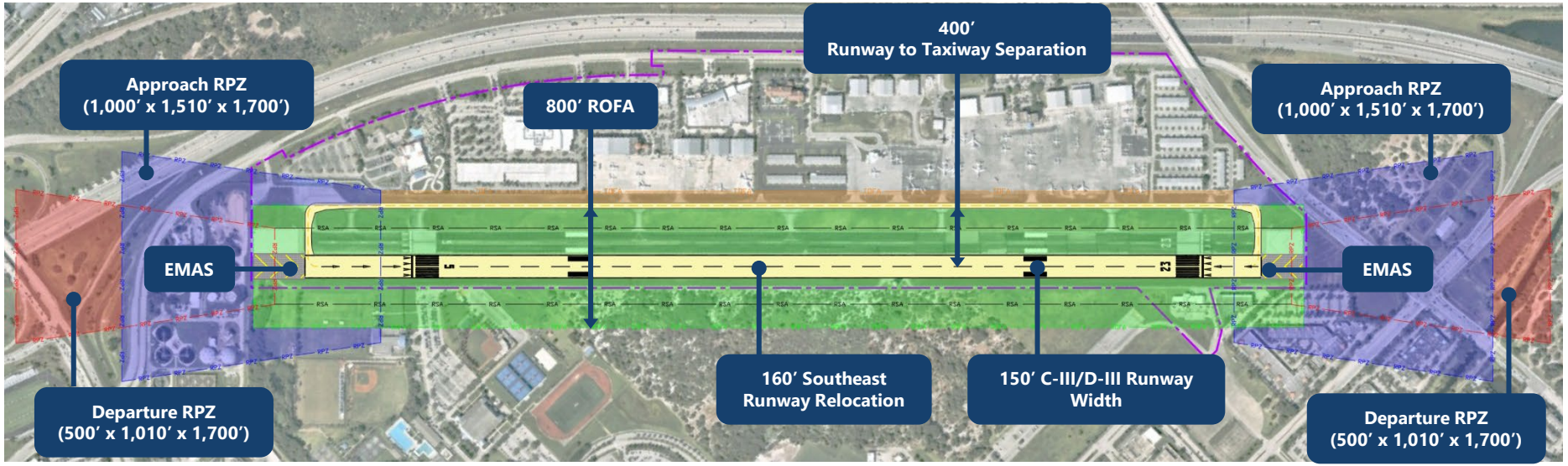


Runway Object Free Area
Approach Runway Protection Zone
Departure Runway Protection Zone

NOTES:
1. Preliminary alternative includes relocating Taxiway P 160′ northwest.
2. Design standards based upon an approach visibility minimums not less than ¾ mile.

SOURCES: Federal Aviation Administration Advisory Circular 150/5300-13A, *Airport Design*, February 2014; Ricondo and Associates, *Airport Layout Plan*, June 2018; Nearmap, November 2019 (aerial photo).

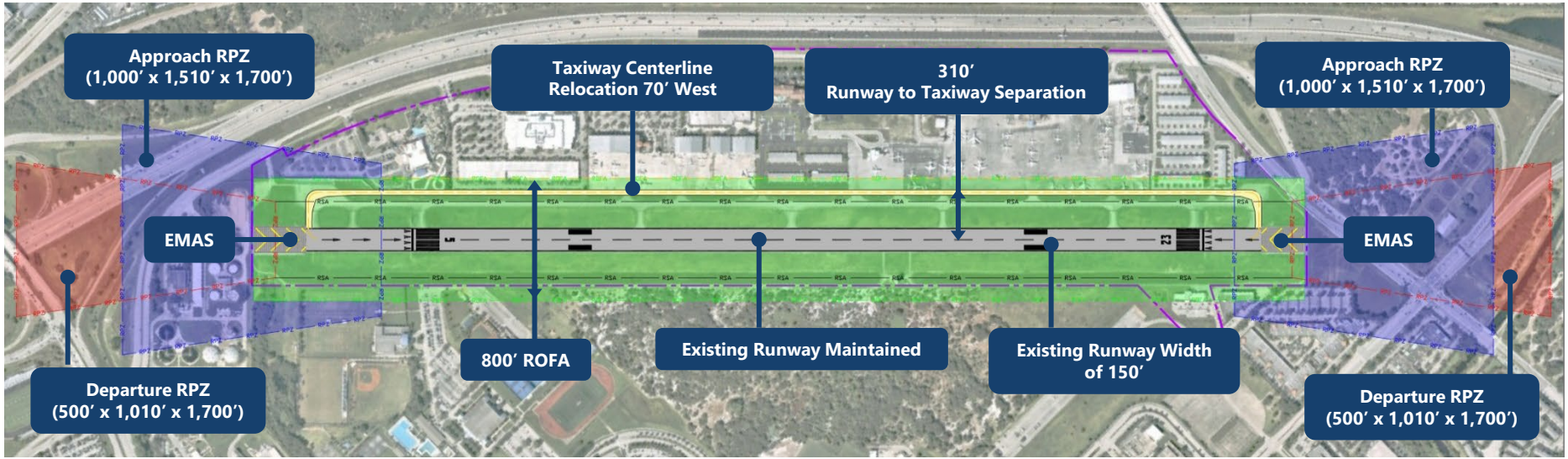
Preliminary Alternative – ARC C-III/D-III Relocate Runway



NOTES:
1. Preliminary alternative includes relocating Runway 5-23 160′ southeast.
2. Design standards based upon an approach visibility minimums not less than ¾ mile.

SOURCES: Federal Aviation Administration Advisory Circular 150/5300-13A, *Airport Design*, February 2014; Ricondo and Associates, *Airport Layout Plan*, June 2018; Nearmap, November 2019 (aerial photo).

Preliminary Alternative – ARC C-III/D-III
Relocate Taxiway (Non-Standard Separation Distance)



NOTES:
1. Preliminary alternative includes maintaining the existing runway and increasing the runway to taxiway separation from 240′ to 310′ by relocating the Taxiway P centerline 70′ west.
2. Design standards based upon an approach visibility minimums not less than ¾ mile.

SOURCES: Federal Aviation Administration Advisory Circular 150/5300-13A, *Airport Design*, February 2014; Ricondo and Associates, *Airport Layout Plan*, June 2018; Nearmap, November 2019 (aerial photo).

Non-Standard Conditions

- Would require approval of Modification of Standards (MOS) by FAA
- Could lead to operational restrictions
- Per FAA Order 5300.1G, a MOS is not applicable for:
  - Non-standard RSA dimensions
  - Non-standard Obstacle Free Zone (OFZ) surfaces
  - Non-standard approach / departure surfaces
  - To match existing equipment owned by the airport
  - Impermissible land use within Runway Protection Zone (RPZ) limits
- All MOS associated with design standards expire no later than 5 years from the approved date. The airport must re-submit the MOS for review and approval if an extension is requested.

Aircraft Hangar Requirements

Demand/Capacity and Facility Requirements Assumptions

- Aircraft Hangar Space Requirement:
  - Aircraft Length * Wingspan + Clearance
- Share of Based Aircraft in Hangars:
  - Single Engine/Multi Engine: 80%
  - Jets: 70%
- Share of Itinerant Aircraft in Hangars:
  - Single Engine/Multi Engine: 0%
  - Large Jets: 10%
- Maintenance Hangar Space Requirement
  - ≈ 20% of Conventional Hangar Space

Aircraft Hangar Requirements

Description	Actual	Projected		
	FY 2020	FY 2025	FY 2030	FY 2040
Hangars[1/]				
T-Hangars	149,500	180,000	182,000	190,000
Conventional Hangars	164,000	263,000	294,000	361,000
Maintenance Hangars	39,000	62,000	70,000	86,000
Total Hangars	**352,500**	**505,000**	**546,000**	**637,000**

NOTES:
FY – Fiscal Year
1/ Values are presented in square feet.
SOURCE: Ricondo & Associates, Inc., March 2021.

Apron Requirements

Demand/Capacity and Facility Requirements Assumptions

BASED APRON

- Aircraft Space Requirements:
  - Single Engine: 1,700 sq.ft. (Cessna 172)
  - Multi Engine: 2,900 sq.ft. (Cessna 421)
  - Jet: 7,700 sq.ft. (Falcon 2000*)
  - Helicopter: 1,600 sq.ft. (Bell 206/407)

**Representative mid-size corporate jet based at BCT*

Demand/Capacity and Facility Requirements Assumptions

ITINERANT/TRANSIENT APRON

- 10% of PMAD Arrivals for Busy Day
- 65% of PMAD Busy Day Arrivals on Ground
- Aircraft Space Requirements:
  - ADG-I: 5,400 sq.ft.
  - ADG-II: 13,500 sq.ft.
  - ADG-III: 28,700 sq.ft.
  - Helicopter: 3,200 sq.ft.

NOTE:
PMAD – Peak Month Average Day

Apron Requirements

Description	Actual	Projected		
	FY 2020	FY 2025	FY 2030	FY 2040
Apron[1/]				
Hangar Access	352,500	505,000	546,000	637,000
Based Aircraft	296,000	271,000	299,000	357,000
Itinerant Aircraft	708,000	718,000	786,000	954,000
Total Apron	**1,356,500**	**1,494,000**	**1,631,000**	**1,948,000**

NOTES:
FY – Fiscal Year
1/ Values are presented in square feet.
SOURCE: Ricondo & Associates, Inc., March 2021.

BOCA RATON AIRPORT

General Aviation/FBO Terminal and Vehicle Parking Requirements

Demand/Capacity and Facility Requirements Assumptions

FBO TERMINAL

- Peak Hour Operations:
  - 15.3% of Peak Day
- Passengers per Operation: 5
- Space Needs per Passenger: 125 sq.ft.
  - Common Waiting Area: 30 sq.ft.
  - FBO Retail: 15 sq.ft.
  - Public Convenience: 20 sq.ft.
  - Concessions: 20 sq.ft.
  - Circulation: 40 sq.ft.

AUTOMOBILE PARKING

- Stalls Required (for Aircraft Operators)
  - Peak Hour Aircraft Operations x 2.0 Stalls
- Stalls Required (for Office Users)
  - One parking stall per 175 sq.ft. of administrative space

General Aviation/FBO Terminal and Vehicle Parking Requirements

TERMINAL AREA REQUIREMENTS								
Year	Peak Month Average Day Operations	Peak Hour Operations (15.3% of Peak Day)	Passengers Per Operation	Total Passengers per Peak Hour	Space Needs Per Passenger (sq.ft.)	Total Space Needs (sq.ft.)	Existing (sq.ft.)	Surplus / (Deficit)
2025	278	43	5	213	125	27,000	31,000	4,000
2030	309	47	5	237	125	30,000	31,000	1,000
2040	382	59	5	293	125	37,000	31,000	(6,000)

STANDARD AUTOMOBILE PARKING REQUIREMENTS							
	For Aircraft Operators		For Administrative Space Users				
Year	Peak Hour Aircraft Operations	Automobile Parking Spaces Required	Estimated FBO Administrative Space (sq.ft.)	Automobile Parking Spaces Required	Total Automobile Parking Spaces Required	Existing Parking Spaces	Surplus / (Deficit) [# of Stalls]
2025	43	85	79,000	451	537	526	(11)
2030	47	95	83,000	474	569	526	(43)
2040	59	117	91,000	520	637	526	(111)

BOCA RATON AIRPORT

Summary of Requirements

General Aviation Facility Deficiency Summary

General Aviation Facility Description[1/]	FY 2025	FY 2030	FY 2040
Hangars			
T-Hangars	(30,500)	(32,500)	(40,500)
Conventional Hangars	(99,000)	(130,000)	(197,000)
Maintenance Hangars	(23,000)	(31,000)	(47,000)
Subtotal Hangars	(152,500)	(193,500)	(284,500)
Apron			
Hangar Access	(152,500)	(193,500)	(284,500)
Based Aircraft		(3,000)	(61,000)
Itinerant Aircraft	(10,000)	(78,000)	(246,000)
Subtotal Apron	(162,500)	(274,500)	(591,500)
General Aviation / FBO Terminal			(6,000)
Vehicle Parking	(3,000)	(14,000)	(36,000)
Landscaping/Drainage	(72,000)	(120,000)	(229,000)
Grand Total	**(390,000)**	**(602,000)**	**(1,147,000)**
Grand Total in Acres	**(9.0)**	**(13.8)**	**(26.3)**

NOTES:

FBO – Fixed Base Operator
FY – Fiscal Year (October 1 – September 30)

1/ Values are presented in square feet unless otherwise noted.

SOURCE: Ricondo & Associates, Inc., March 2021

BOCA RATON AIRPORT

Next Steps

Next Steps

- Additional TAC comments accepted through April 30, 2021. Please submit to bctmpu@ricondo.com
- Address FAA comments on the aviation activity forecasts
- Finalize the analysis of future facility requirements
- Continue the development of airport development alternatives

THANK YOU

BOCA RATON AIRPORT

Airport Master Plan Update

Boca Raton Airport Authority Board Workshop #1

May 26, 2021

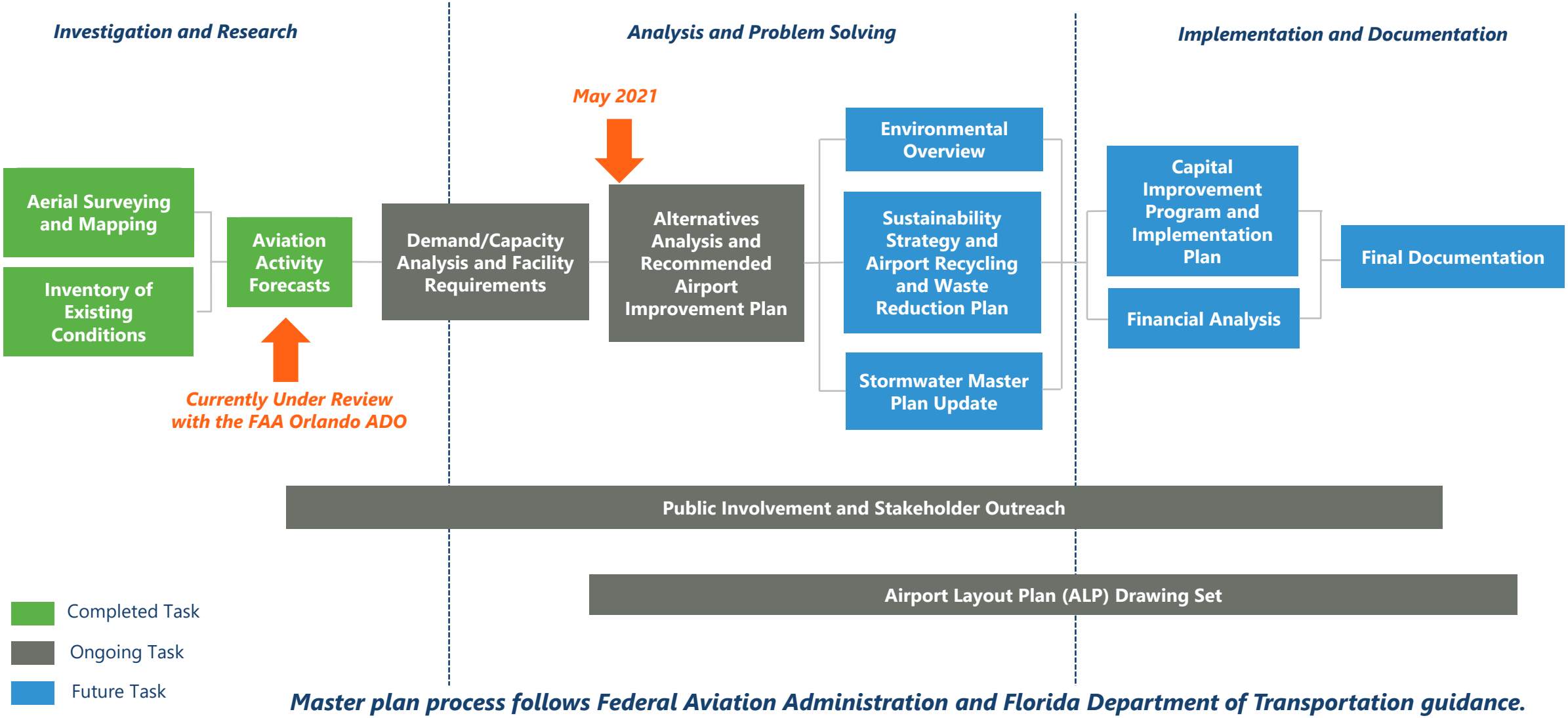
BOCA RATON AIRPORT

Meeting Agenda

- Master Plan Update Project Status
- Airport Baseline Conditions / Tenant Survey Feedback
- Review of Future Demand and Critical Aircraft
- Summary of Airfield Design Standards and Preliminary Scenarios
- Aeronautical Facility Requirements and Land Use Discussion
- Next Steps

Master Plan Update Project Status

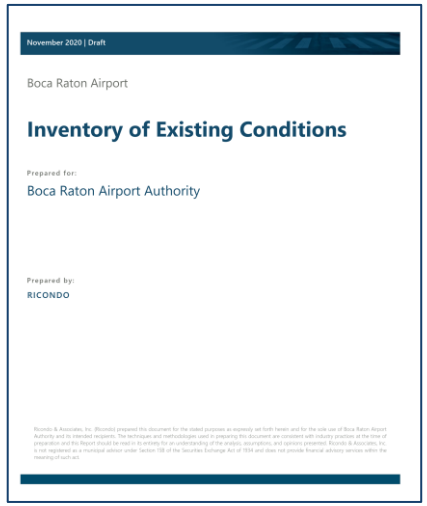
Master Plan Update Project Status

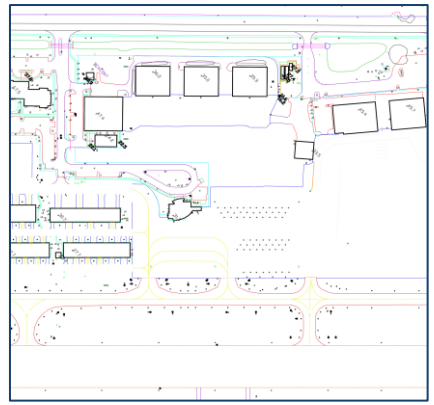


Master plan process follows Federal Aviation Administration and Florida Department of Transportation guidance.

Master Plan Update Key Dates

- **Inventory of Existing Conditions**
  - *Report Finalized* → *November 2020*
- **Aviation Activity Forecasts**
  - *Submitted to FAA* → *February 2021*
- **Aerial Surveying and Mapping**
  - *Aerial Photography* → *April 2021*
  - *Planimetric Mapping* → *April 2021*
- **Public Involvement and Stakeholder Outreach**
  - *Tenant Survey* → *December 2020*
  - *Air Traffic Control Tower Meeting* → *January 2021*
  - *Board Briefing #1* → *February 2021*
  - *Technical Advisory Committee #1* → *April 2021*
  - *Board Workshop #1* → *May 2021*

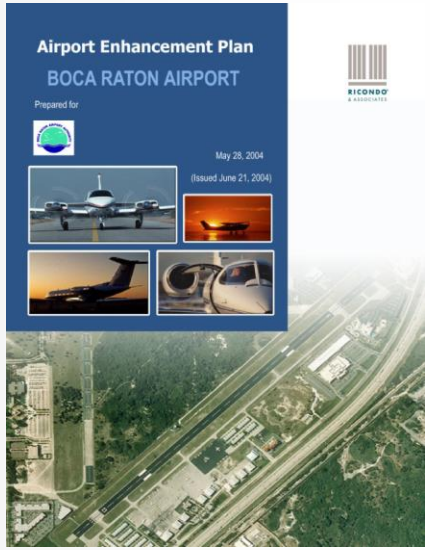




Master Plan Update Deliverables

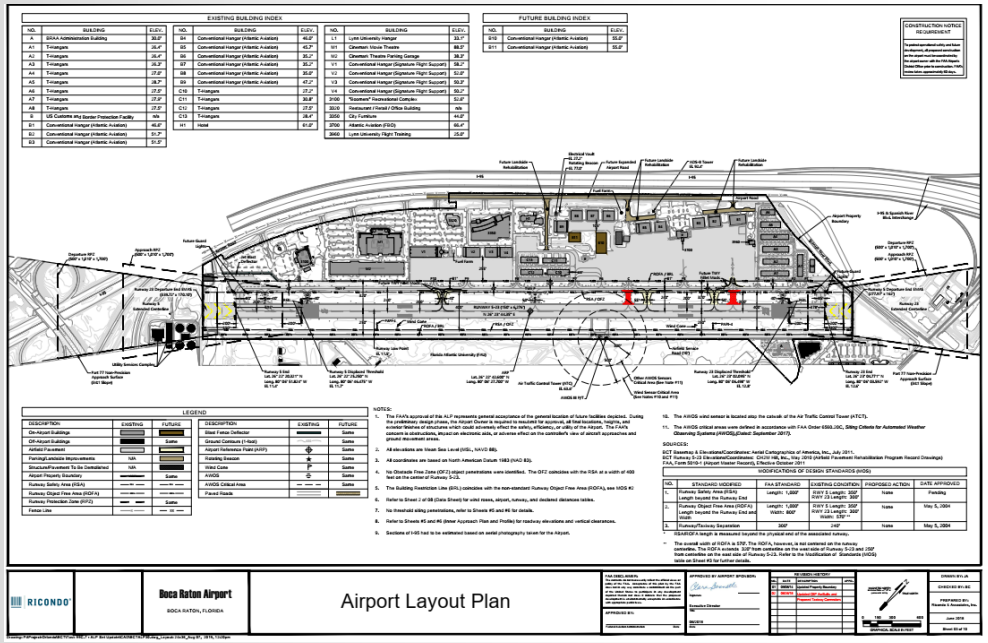
Master Plan Study Document

- Compilation of technical documentation
- Includes FAA approved activity forecast
- Includes updated Capital Improvement Program (CIP)
- Accepted by FAA and conditionally approved by FDOT



Airport Layout Plan (ALP)

- Graphical representation of existing and future airport facilities (drawing set)
- Ensures development is consistent with design standards, safety requirements, and airport/community land use plans
- FAA/FDOT approved ALP is required for issuance of grants



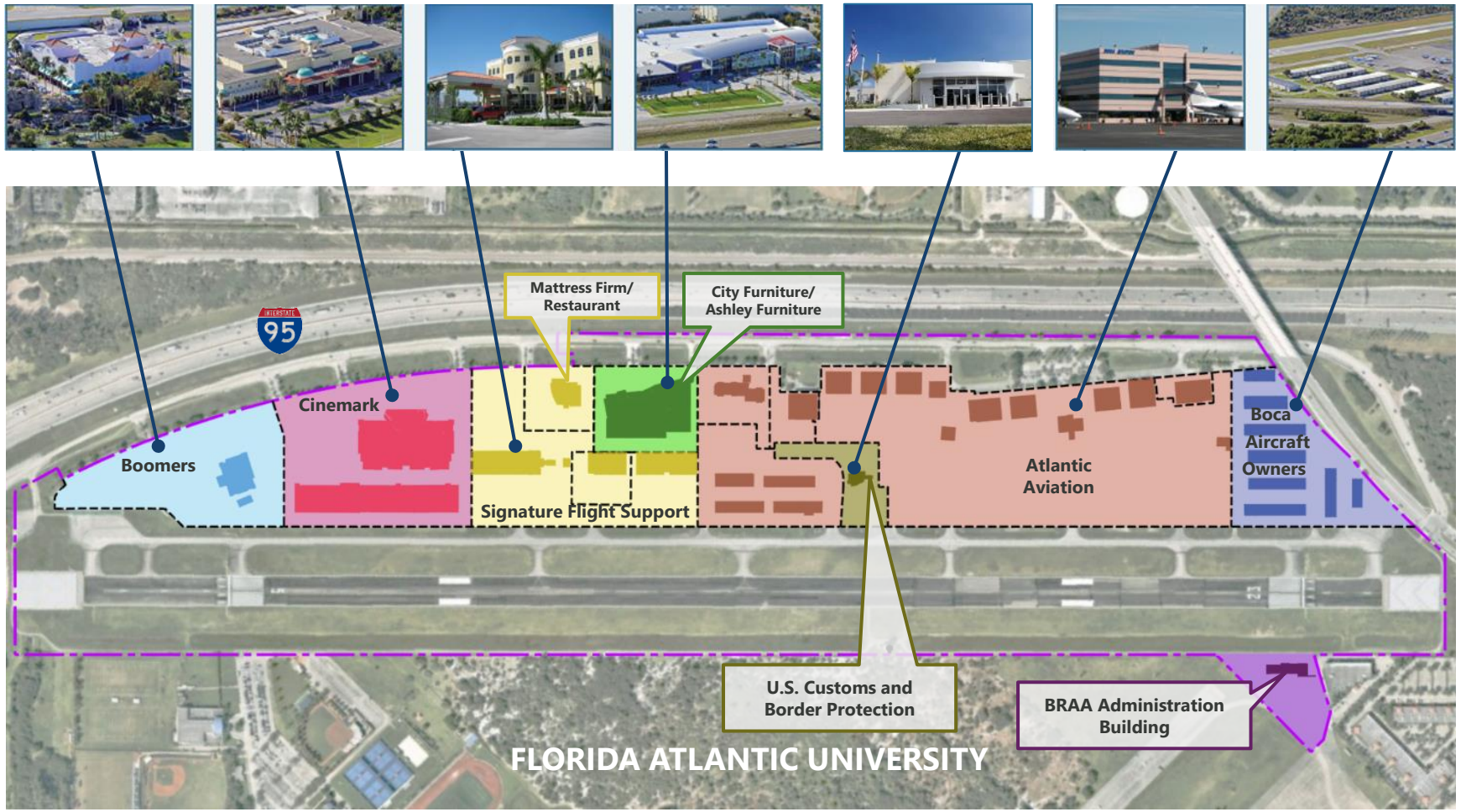
Airport Data Set

- Compliant with FAA's AGIS (Airport GIS) standards
- Allows FAA to protect airspace and instrument approach procedures

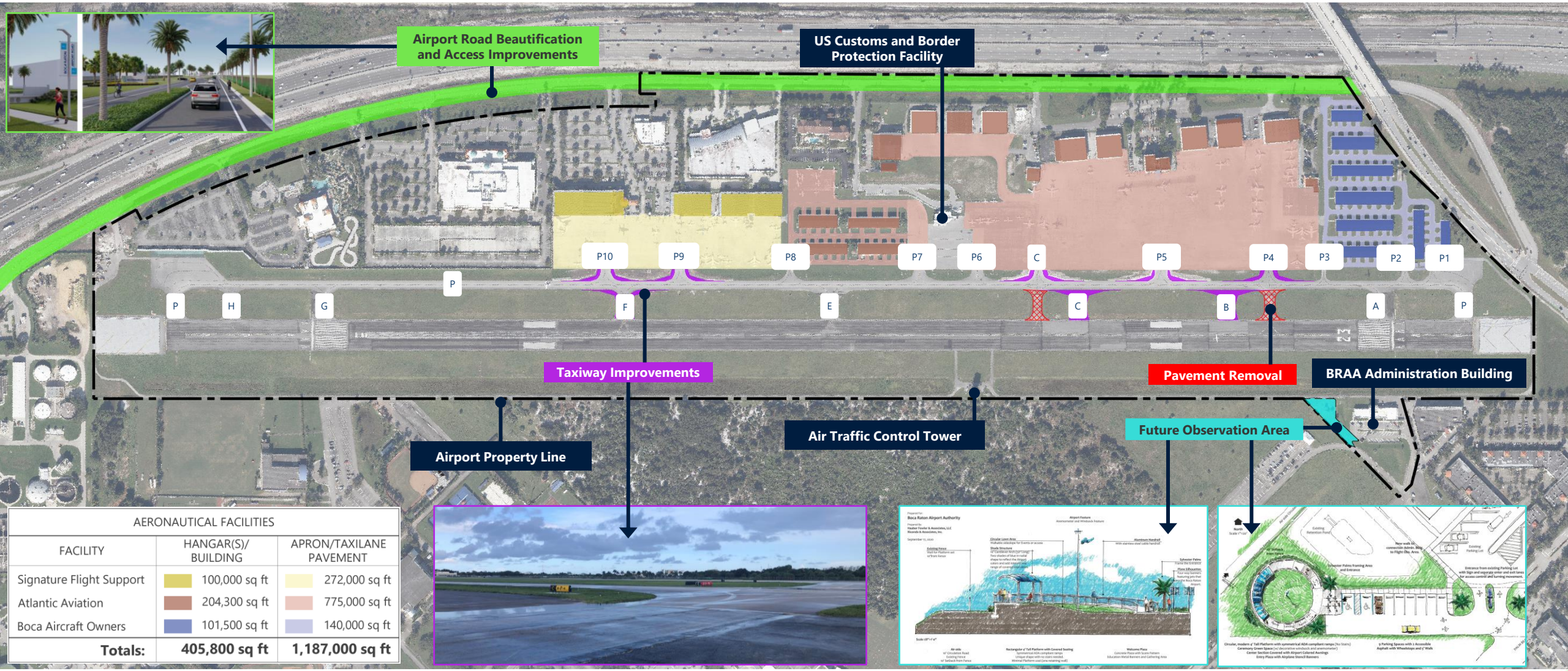
Airport Baseline Conditions/ Tenant Survey Feedback

Current Conditions

- Designated as a General Aviation Reliever Airport
- Airport Size: 215 acres
- Existing Leaseholds: 95 acres
- One runway:
  - Runway 5-23 (non-precision)
- Contract Air Traffic Control Tower
- Based Aircraft: 241
- FY 2020 Operations: 71,756



Baseline Conditions



AERONAUTICAL FACILITIES		
FACILITY	HANGAR(S)/ BUILDING	APRON/TAXILANE PAVEMENT
Signature Flight Support	100,000 sq ft	272,000 sq ft
Atlantic Aviation	204,300 sq ft	775,000 sq ft
Boca Aircraft Owners	101,500 sq ft	140,000 sq ft
Totals:	**405,800 sq ft**	**1,187,000 sq ft**

Tenant Survey Feedback

Airfield Improvements:

- Widening and strengthening of taxiway exits onto FBO ramps
- LED airfield lighting
- Ramp resurfacing
- New fuel farm

Landside Improvements:

- Aircraft viewing area
- Four lane expansion of airport road
- Underground utilities
- Improved landscaping
- Security lighting along airport road
- Additional vehicular parking
- Self fueling station
- Larger corporate aircraft hangars
- Larger t-hangars
- Additional office space (e.g., classroom space)
- Hangar and FBO improvements

Other Comments:

- Limited space to expand
- Convert commercial areas to aeronautical uses

Tenant Survey Feedback

- Key Trends:
  - Larger aircraft (e.g., Global 7500)
  - Electric vertical takeoff and landing (EVTOL) Aircraft Operations
  - Sustainable Aviation Fuels (SAF)

Bombardier Global 7500[1]

Lilium[2]

SOURCES:
1/ AIN Online, Global 7500 to Drive Delivery Increase at Bombardier, https://www.ainonline.com/aviation-news/business-aviation/2020-02-13/global-7500-drive-delivery-increase-bombardier (accessed April 2021).
2/ Lilium, Daniel Bachmann, https://robbreport.com/tag/lilium/(accessed April 2021).

Review of Future Demand and Critical Aircraft

Primary Master Plan Goals

To evaluate the fleet of business jet aircraft that operate at the Airport

To define, evaluate, and recommend safety, capacity, and operational enhancements for BCT

To update the 10-year Capital Improvement Program (CIP) for the Airport

To establish a plan that optimizes the use of BCT's limited land assets

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Future Demand Summary (Pending FAA Approval)

CATEGORY	ACTUAL	PROJECTED		
	FY 2020	FY 2025	FY 2030	FY 2040
Total Aircraft Operations	**71,756**	**80,800**	**90,000**	**111,200**
Itinerant	45,683	50,600	55,800	67,200
Local	26,073	30,200	34,200	44,000
Total Based Aircraft	**241**	**253**	**267**	**298**
Single Engine	130	132	133	137
Multi Engine	27	28	29	31
Jet	81	90	101	125
Helicopter	3	3	4	5

Net Increase – 55%
- *Airfield Infrastructure*
- *Itinerant Aircraft Parking Apron*
- *Fuel Farm Requirements*
- *General Aviation/FBO Terminal*
- *Vehicular Parking*

Net Increase – 24%
- *Hangar Requirements*
- *Maintenance Requirements*
- *Based Aircraft Parking Apron*

NOTE: FBO – Fixed Base Operator; FY – Fiscal Year (October 1 – September 30)
SOURCE: Ricondo & Associates, Inc., March 2021.

Existing Airport Reference Code / Critical Aircraft

- Airport design standards are determined by the **Airport Reference Code (ARC)**
- **Critical aircraft** is the most demanding aircraft type, or grouping of aircraft with similar characteristics
- **ARC** and **critical aircraft** determined by **regular use (500 annual operations)**

AIRCRAFT APPROACH CATEGORY (AAC)	
AAC	**APPROACH SPEED**
A	Approach speed less than 91 knots
B	Approach speed 91 knots or more, but less than 121 knots
C	Approach speed 121 knots or more, but less than 141 knots
D	Approach speed 141 knots or more, but less than 166 knots
E	Approach speed 166 knots or more

AIRPLANE DESIGN GROUP (ADG)		
ADG	**WINGSPAN (FEET)**	**TAIL HEIGHT (FEET)**
I	<49	<20
II	49 to <79	20 to <30
III	79 to <118	30 to <45
IV	118 to <171	45 to <60
V	171 to <214	60 to <66
VI	214 to <262	66 to <80

AAC + ADG = ARC

SOURCE: US Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13A, Change 1, *Airport Design*, February 26, 2014.

Representative Aircraft by Airport Reference Code

A-I Cessna 172[1]

B-I Hawker Beechjet 400[3]

C-I Learjet 45[5]

A-II Cessna 208[2]

B-II Embraer Phenom [4]

Airport Reference Code - Pre 2004
Aligns with existing runway to taxiway separation

C-II Bombardier Challenger 300[6]

Airport Reference Code - 2004 Airport Enhancement Plan
Reflected on current Airport Layout Plan

SOURCES: Reference next slide.

Representative Aircraft by Airport Reference Code

D-I Learjet 35[7]

C-III Global Express[9]

D-II Gulfstream 450[8]

D-III Gulfstream 550[10]

Airport Reference Code – 2020 Airport Master Plan
Consistent with existing operations

SOURCES:

1. BWI Aviation Insurance, November 16, 2019, https://bwifly.com/aircraft-insurance/cessna-172-insurance-cost/
2. Air Vectors, Dec 01, 2020, http://www.airvectors.net/avcvan.html
3. Nextant Aerospace, July 18, 2018, https://www.nextantaerospace.com/faa-awards-nextant-aerospace-true-blue-powertm-lithium-ion-battery-installation-stc-for-beechjet-400a-and-hawker-400xp/
4. Privatejet, https://privatejetcardcomparisons.com/embraer-phenom-300/
5. Business Jet Traveler, https://www.bjtonline.com/aircraft/bombardier-learjet-45
6. Magellan Jets, Bombardier Challenger 300, https://magellanjets.com/travel/bombardier-challenger-300-html/
7. Paramount Business Jets, Learjet 35, https://www.paramountbusinessjets.com/aircraft
8. Pro Aircraft Interiors, Gulfstream IV, https://proaircraftinteriors.com/portfolio_page/gulfstream-iv-sn-1337/
9. Controller, Bombardier Global Express XRS, https://www.controller.com/listings/for-sale/bombardier/global-express-xrs/aircraft
10. Paramount Business Jets, Gulfstream G550, https://www.paramountbusinessjets.com/aircraft/gulfstream-g550.html

Aircraft Operations by Airport Reference Code

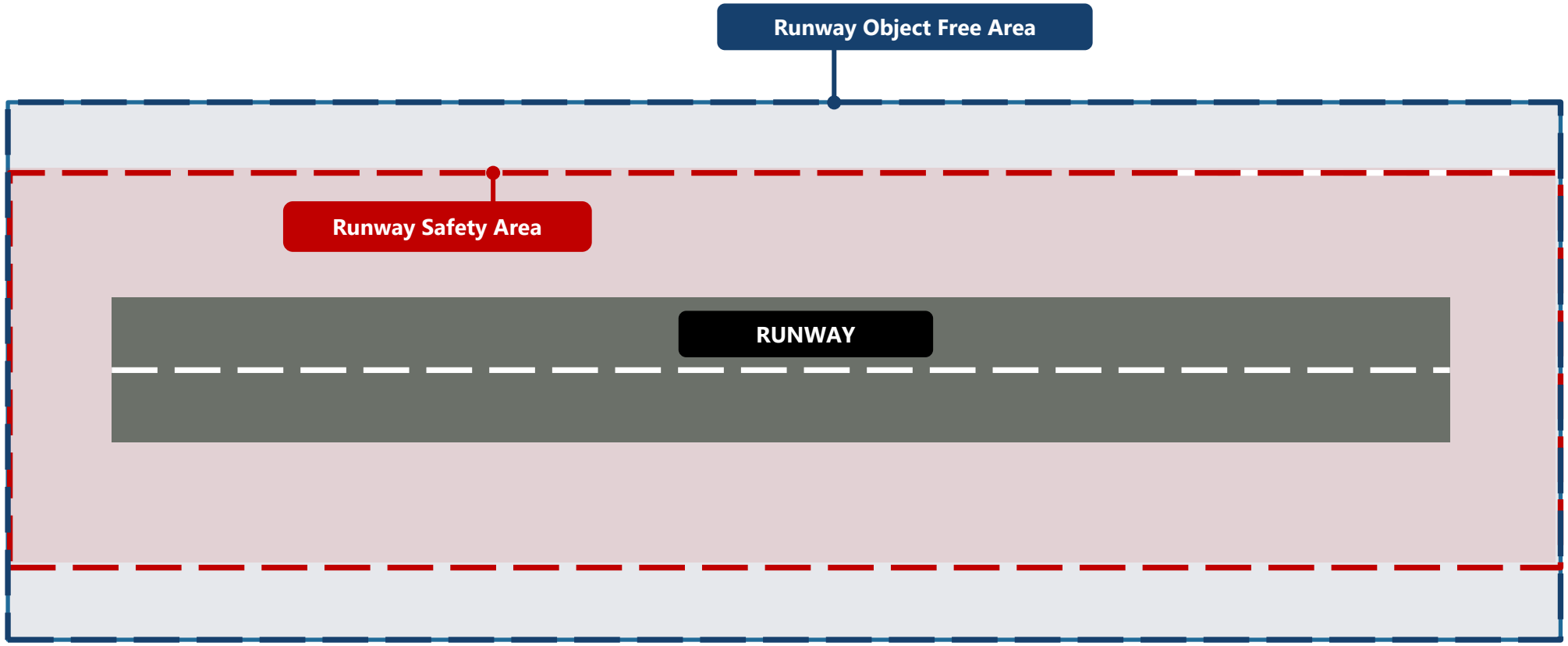
Airport Reference Code (ARC)	Representative Aircraft (Typical)	Existing Fleet Mix	Forecast Aircraft Operations Fleet Mix		
		FY 2020	**FY 2025**	**FY 2030**	**FY 2040**
A-I/B-I	Cessna 172, Cirrus SR22, Beechjet 400, Cessna 525	50,253	56,587	63,030	77,877
A-II/B-II	Pilatus PC-12, Cessna 208, Cessna 560X, Embraer Phenom 300	10,138	11,416	12,716	15,711
B-III	Dassault Falcon 7X	67	75	83	103
C-I/D-I	Raytheon Hawker 800, Learjet 60, Learjet 45, Learjet 35	3,415	3,845	4,283	5,292
C-II/D-II	Bombardier Challenger 300/350/600, Gulfstream IV	6,259	7,048	7,851	9,700
C-III/D-III	**Bombardier Global 5000, Global Express, Gulfstream V/500/550, Gulfstream 650**	**1,545**	**1,739**	**1,937**	**2,394**
N/A	Helicopter	80	90	100	124
	Total	71,756	80,800	90,000	111,200

NOTE:
N/A – Not Applicable

ARC / family of aircraft exceeding 500 annual operations

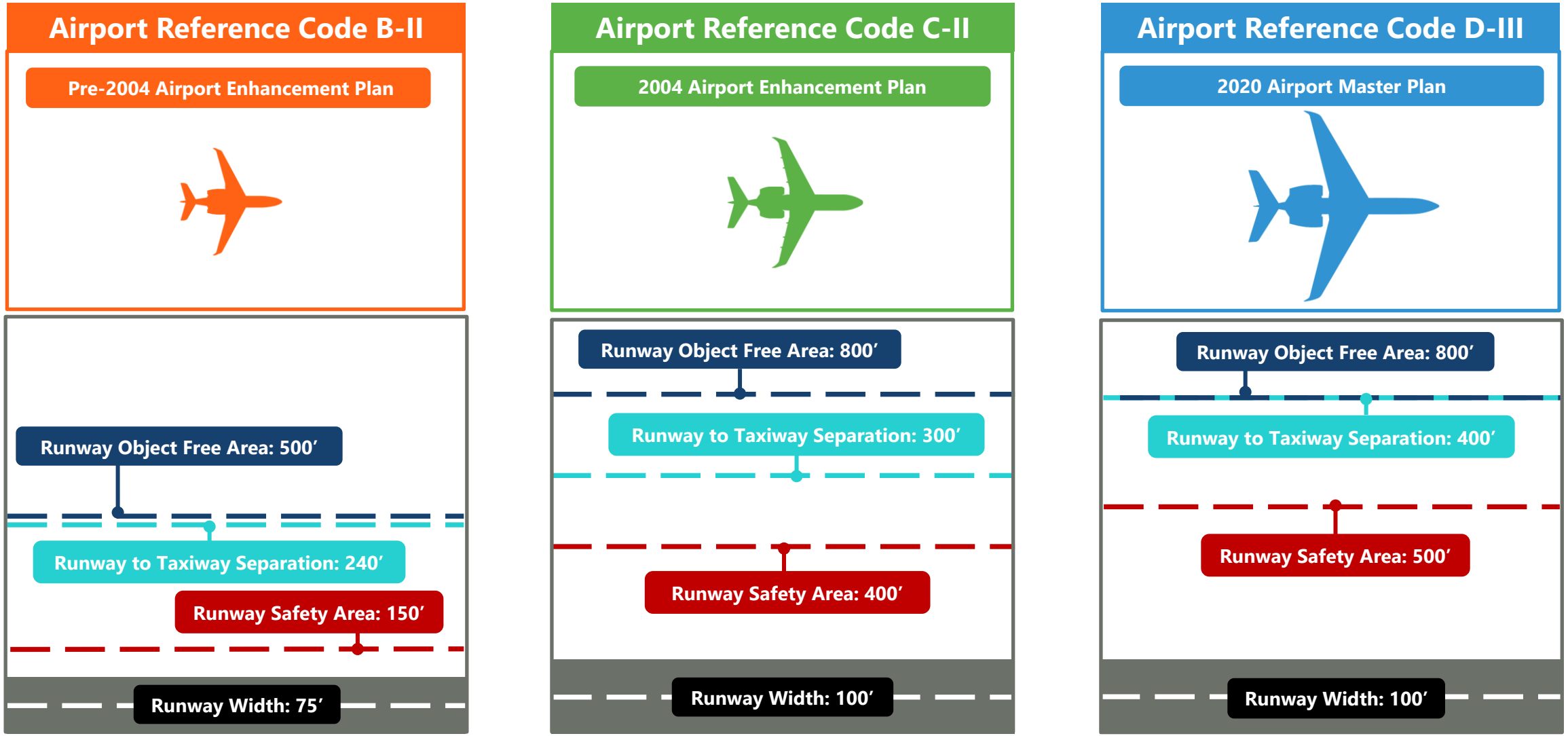
SOURCE: Boca Raton Airport Authority, CY 2015-2019 ANOMS Database, September 2020.

Airport Design Standard Dimensions



SOURCES: U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13A, *Airport Design*, February 2014; Ricondo & Associates, Inc., May 2021.

Airport Design Standard Dimensions



SOURCES: U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13A, *Airport Design*, February 2014; Ricondo & Associates, Inc., May 2021.

Summary of Airfield Design Standards and Preliminary Scenarios

Primary Master Plan Goals

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Plan for financial resiliency in a dynamic and uncertain future environment

Develop land use policies and practices that enhance the value of the Airport to business and community stakeholders

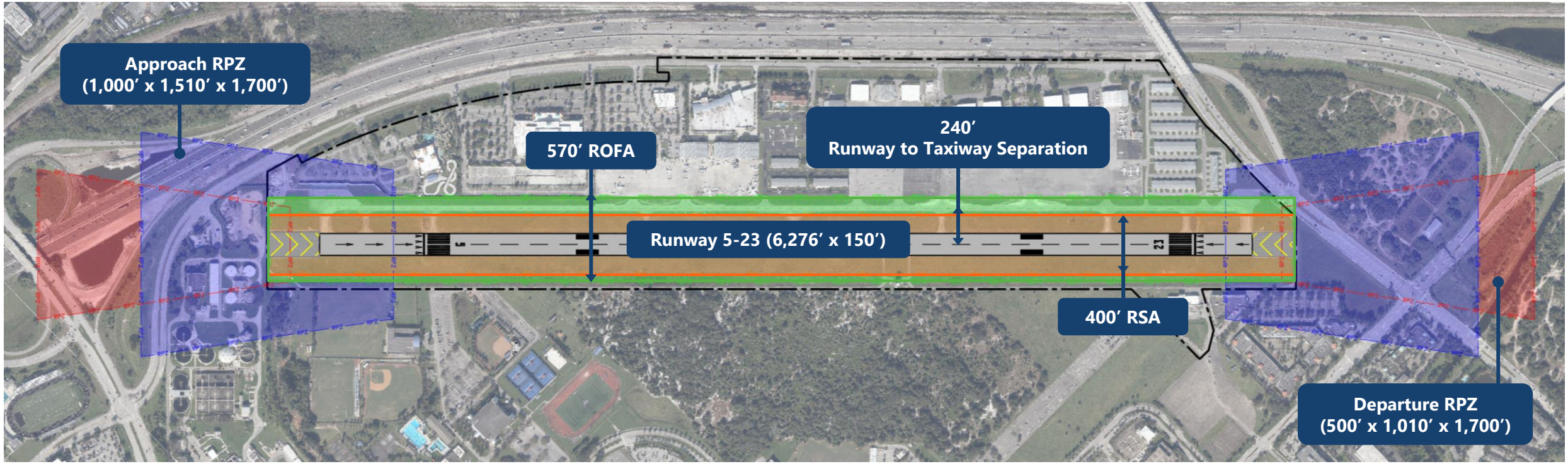
Promote the Airport's value to the community and contributions to the regional economy

Shape the organizational structure to continue responding to a dynamic operating environment and deliver excellence in all we do

Preserve and improve infrastructure assets and the operational integrity of the Airport

SOURCE: Ricondo & Associates, Inc., *Strategic Business Plan*, July 2020.

Existing Conditions – Airport Reference Code C-II



NOTES:
1. Existing conditions based upon approach visibility minimums of not lower than ¾ mile.
2. BCT has approved MOSs for ROFA length and width and runway centerline to taxiway centerline separation distance, EMAS on both ends, and ADG III operational restrictions.

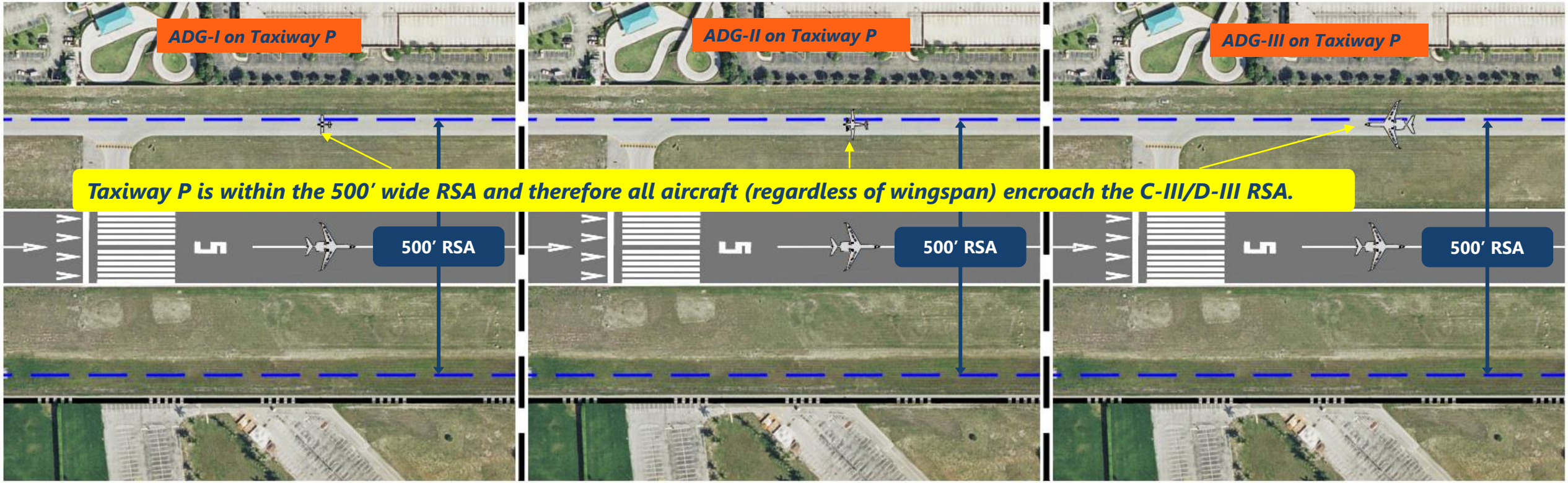
SOURCES: U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13A, *Airport Design*, February 2014; Ricondo and Associates, *Airport Layout Plan*, June 2018; Martinez Geospatial, Inc., November 2019 (aerial photo).

- Runway Object Free Area
- Approach Runway Protection Zone
- Departure Runway Protection Zone
- Runway Safety Area

Runway Design Standards

DESIGN STANDARD	RUNWAY 5-23 DESIGN STANDARD		
	EXISTING CONDITIONS	C-III/D-III (FUTURE ARC)	DIFFERENCE
Runway Safety Area Width	400 ft	500 ft	100 ft
Runway Object Free Area Width	570 ft	800 ft	230 ft
Runway Safety and Object Free Area Length	Length beyond Runway 5: 300 ft Length beyond Runway 23: 350 ft *Mitigated with non-standard EMAS on both runway ends*	Length beyond Runway 5: 1,000 ft Length beyond Runway 23: 1,000 ft	To be Determined
Runway-Taxiway Centerline Separation	240 ft	400 ft	160 ft gap

Airport Reference Code C-III/D-III Runway Safety Area (500’ Wide)



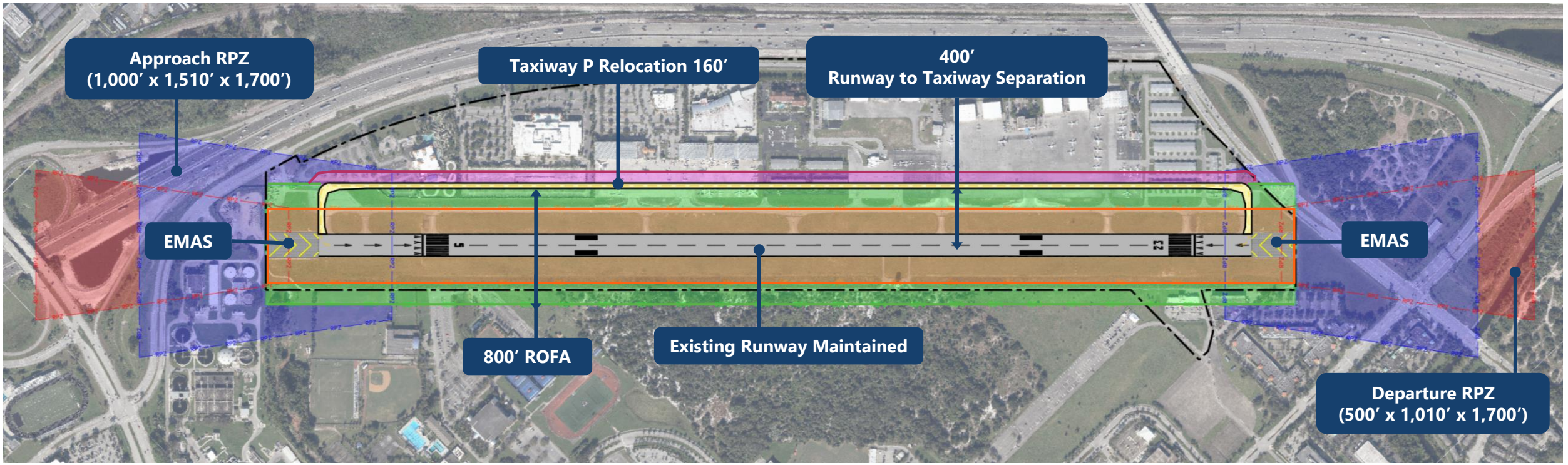
C-III/D-III Runway Safety Area (RSA)

Airport Property Boundary

AIRPLANE DESIGN GROUP (ADG)	
ADG	WINGSPAN (FEET)
I	<49
II	49 to <79
III	79 to <118

SOURCES: Aerial Photography and Basemap: Boca Raton Airport Authority, May 2011; US Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13A, Change 1, *Airport Design*, February 26, 2014.

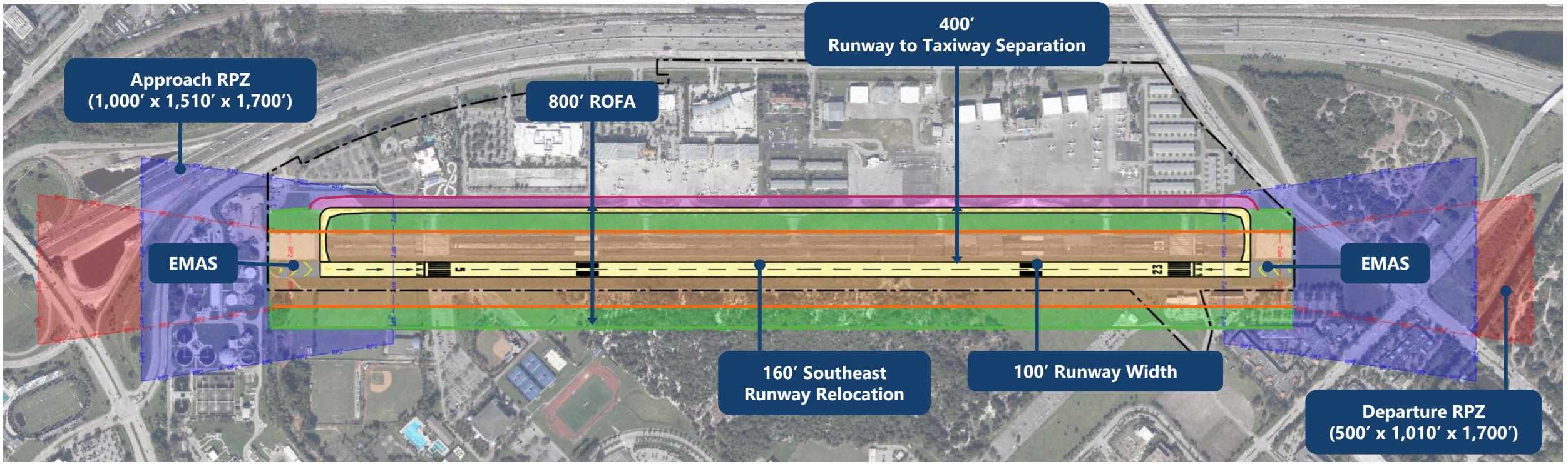
FAA Design Compliance Scenarios
ARC C-III/D-III - Relocate Taxiway



NOTES:
1. Preliminary FAA design compliance scenairo includes relocating Taxiway P 160′ northwest.
2. Design standards based upon an approach visibility minimums not less than ¾ mile.

SOURCES: Federal Aviation Administration Advisory Circular 150/5300-13A, *Airport Design*, February 2014; Ricondo and Associates, *Airport Layout Plan*, June 2018; Martinez Geospatial, Inc., November 2019 (aerial photo).

FAA Design Compliance Scenarios
ARC C-III/D-III - Relocate Runway



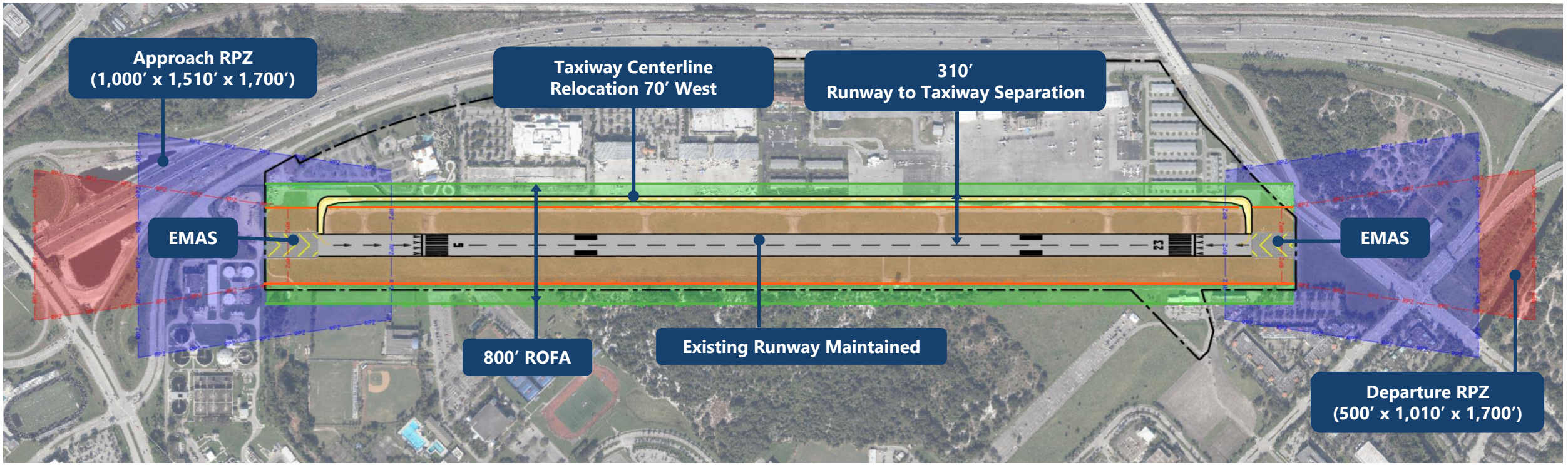
NOTES:
1. Preliminary FAA design compliance scenario includes relocating Runway 5-23 160′ southeast.
2. Design standards based upon an approach visibility minimums not less than ¾ mile.

SOURCES: Federal Aviation Administration Advisory Circular 150/5300-13A, *Airport Design*, February 2014; Ricondo and Associates, *Airport Layout Plan*, June 2018; Martinez Geospatial, Inc., November 2019 (aerial photo).

Runway Relocation Issues

- Incompatible land uses within the Runway Protection Zones (RPZ)
- Off-airport land area requirements
- Engineered Materials Arresting System (EMAS) reconstruction
- Aircraft noise impacts
- Environmental impacts (e.g., Florida Atlantic University conservation area)
- Reduced runway width (150’ vs. 100’)
- Operational impacts during construction
- Construction costs

FAA Design Compliance Scenarios
ARC C-III/D-III - Relocate Taxiway (Non-Standard Separation)



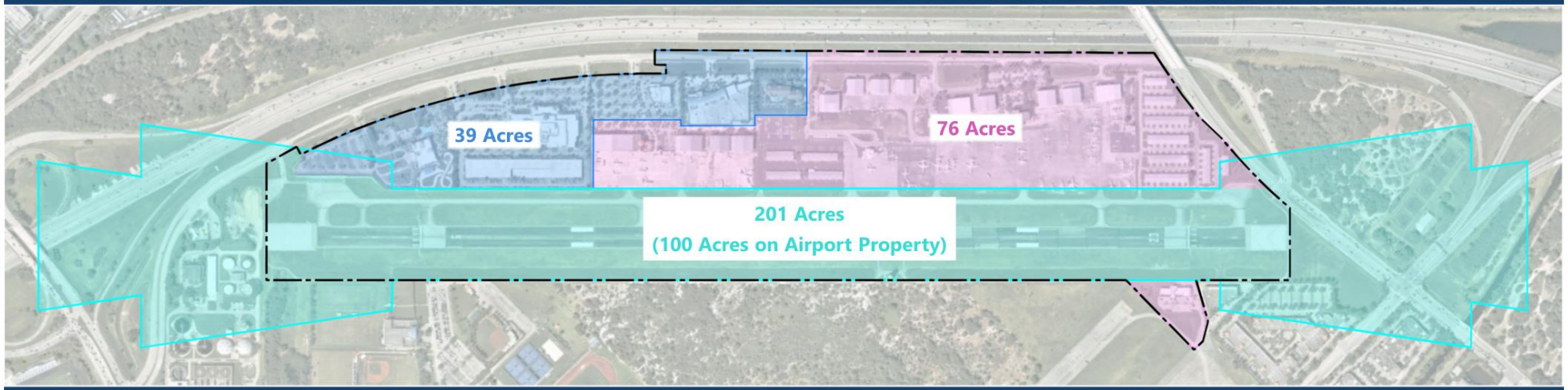
NOTES:
1. Preliminary FAA design compliance scenario includes maintaining the existing runway and increasing the runway to taxiway separation from 240′ to 310′ by relocating the Taxiway P centerline 70′ west.
2. Design standards based upon an approach visibility minimums not less than ¾ mile.

SOURCES: Federal Aviation Administration Advisory Circular 150/5300-13A, *Airport Design*, February 2014; Ricondo and Associates, *Airport Layout Plan*, June 2018; Martinez Geospatial, Inc., November 2019 (aerial photo).

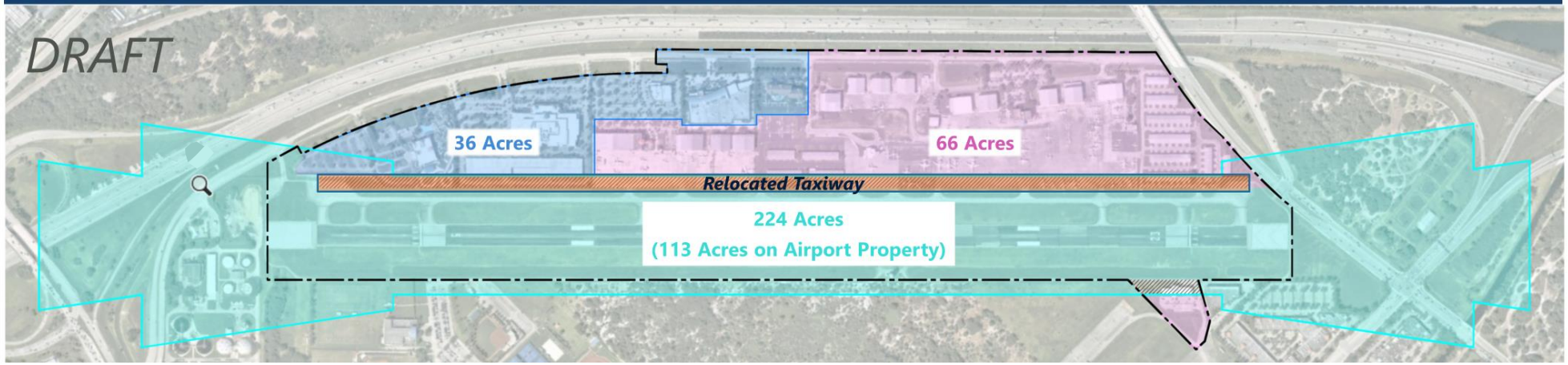
- Runway Object Free Area
- Approach Runway Protection Zone
- Departure Runway Protection Zone
- Runway Safety Area

Taxiway Relocation Impacts Existing Facilities (Non-Standard Separation)

Existing Land Area Allocation (Airport Reference Code C-II (Non-Standard))



Future Land Area Allocation (Airport Reference Code D-III (Non-Standard))



Airfield / Airspace

Thirteen (13) acres of existing airport property be converted to **Airfield** to accommodate taxiway relocation.

Aeronautical Development

Ten (10) acres of Aeronautical Development to be converted to **Airfield.**

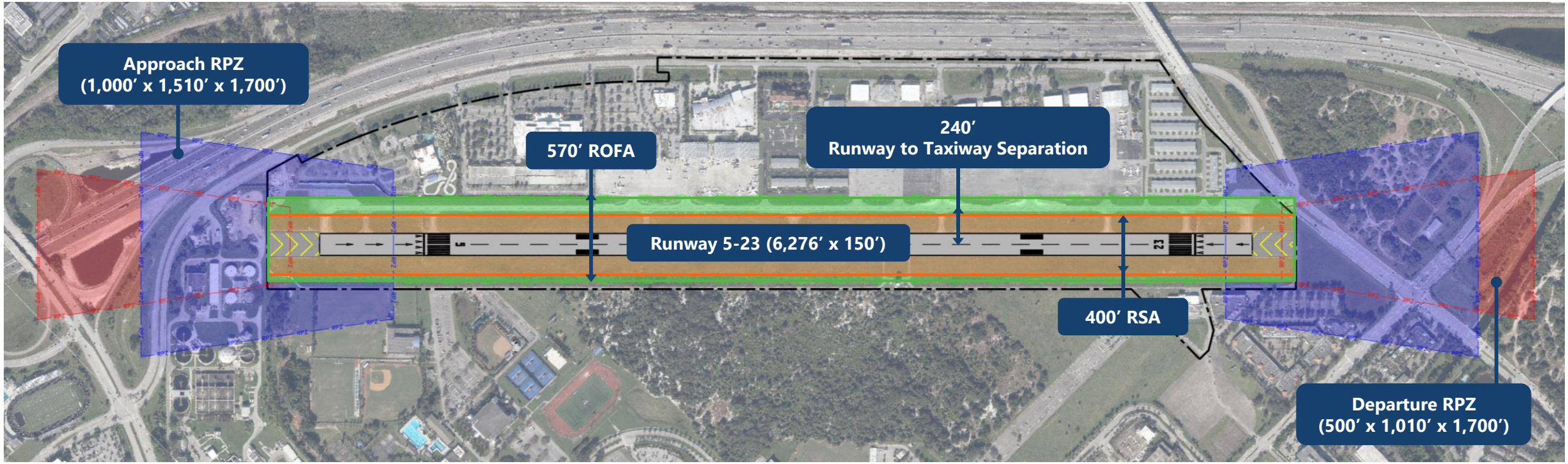
Non-Aeronautical Development

Three (3) acres of Non-Aeronautical Development to be converted to **Airfield.**

Non-Standard Conditions

- Would require approval of Modification of Standards (MOS) by FAA
- Could lead to operational restrictions
- Per FAA Order 5300.1G, a MOS is not applicable for:
  - Non-standard RSA dimensions
  - Non-standard Obstacle Free Zone (OFZ) surfaces
  - Non-standard approach / departure surfaces
  - To match existing equipment owned by the airport
  - Impermissible land use within Runway Protection Zone (RPZ) limits
- All MOS associated with design standards expire no later than 5 years from the approved date. The airport must re-submit the MOS for review and approval if an extension is requested.

FAA Design Compliance Scenarios
ARC C-II - Maintain Existing Conditions



NOTES:
1. Existing conditions based upon approach visibility minimums of not lower than ¾ mile.
2. BCT has approved Modification of Standards (MOS) for the Runway Object Free Area length and width and runway centerline to taxiway centerline separation distance, Engineered Materials Arresting System (EMAS) on both ends, and an Airplane Design Group (ADG) III operational restriction.
3. Maintaining existing conditions would be subject to FAA approval and renewal of MOSs.

SOURCES: U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13A, *Airport Design*, February 2014; Ricondo and Associates, *Airport Layout Plan*, June 2018; Martinez Geospatial, Inc., November 2019 (aerial photo).

- Runway Object Free Area
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- Departure Runway Protection Zone
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Aeronautical Facility Requirements and Land Use Discussion

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Shape the organizational structure to continue responding to a dynamic operating environment and deliver excellence in all we do

Preserve and improve infrastructure assets and the operational integrity of the Airport

SOURCE: Ricondo & Associates, Inc., *Strategic Business Plan*, July 2020.

Additional General Aviation Facility Requirements

General Aviation Facility Description[1/2/]	FY 2025	FY 2030	FY 2040
Hangars			
T-Hangars	30,500	32,500	40,500
Conventional Hangars	99,000	130,000	197,000
Maintenance Hangars	23,000	31,000	47,000
Subtotal Hangars	**152,500**	**193,500**	**284,500**
Apron			
Hangar Access	152,500	193,500	284,500
Based Aircraft	0	3,000	61,000
Itinerant Aircraft	10,000	78,000	246,000
Subtotal Apron	**162,500**	**274,500**	**591,500**
General Aviation / FBO Terminal	0	0	6,000
Vehicle Parking	3,000	14,000	36,000
Landscaping/Drainage	72,000	120,000	229,000
Grand Total	**390,000**	**602,000**	**1,147,000**
Grand Total in Acres	**9.0**	**13.8**	**26.3**

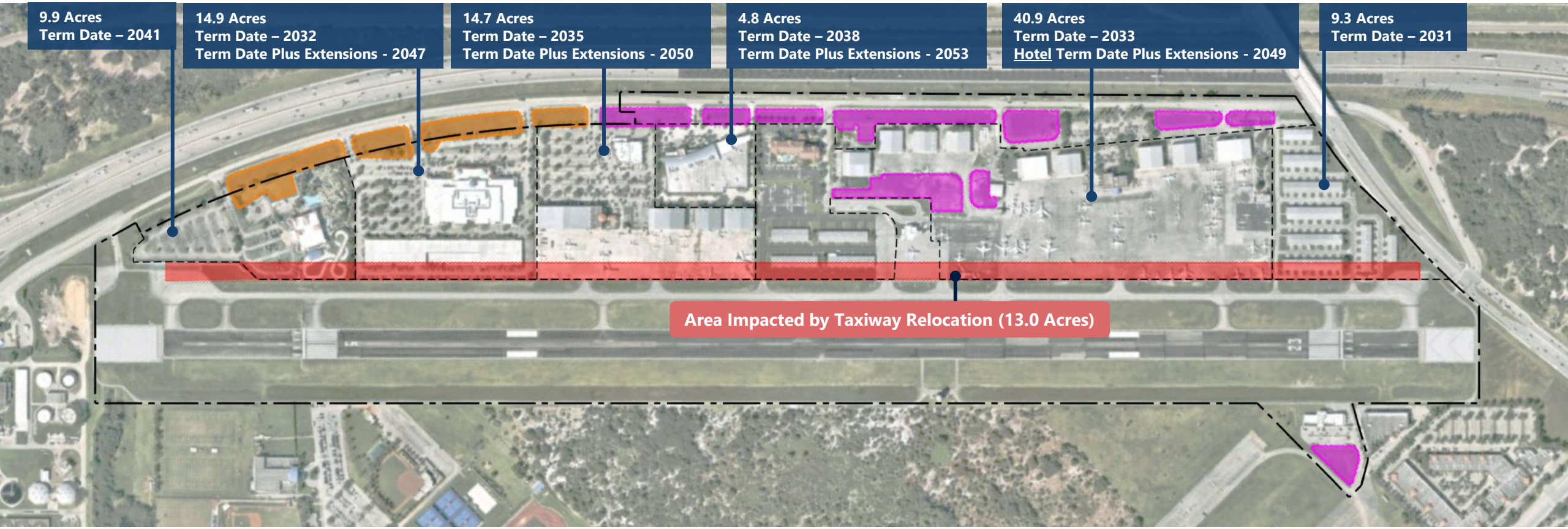
NOTES:

FBO – Fixed Base Operator
FY – Fiscal Year (October 1 – September 30)

1/ Values are presented in square feet unless otherwise noted.
2/ Additional general aviation facilities are needed to accommodate future demand identified in the preliminary aviation activity forecasts. These values are in excess of the current general aviation facilities at BCT.

SOURCE: Ricondo & Associates, Inc., March 2021

Future Development Strategy Discussion



- Maintain financial resiliency (aeronautical vs. non-aeronautical)
- Mitigate development impacted by taxiway relocation (13.0 acres)
- Identify future land areas to meet projected demand (26.3 acres)

Tier 1 Areas (7.6 Acres)

Tier 2 Areas (4.3 Acres)

SOURCES: Boca Raton Airport Authority, January 2020 (leasehold details); Ricondo and Associates, *Airport Layout Plan*, June 2018; Martinez Geospatial, Inc., November 2019 (aerial photo).

Next Steps

Next Steps

- Address FAA comments on the Aviation Activity Forecasts
- Finalize the analysis of future facility requirements
- Refine airport development alternatives and design compliance scenarios
- Continue to collaborate with stakeholders
  - BCT staff
  - FAA and FDOT
  - Board Workshop
  - Technical Advisory Committee meeting

THANK YOU

BOCA RATON AIRPORT

Airport Master Plan Update

Technical Advisory Committee Briefing #2

October 21, 2022

BOCA RATON AIRPORT

Briefing Agenda

Comments:

bctmpu@ricondo.com

- Airport Master Plan Update Status
- Review of Future Demand
- Airfield Capacity and Facility Requirements
- Alternatives and Concepts
- Other Master Planning Elements
- Next Steps

Airport Master Plan Update Status

Project Background

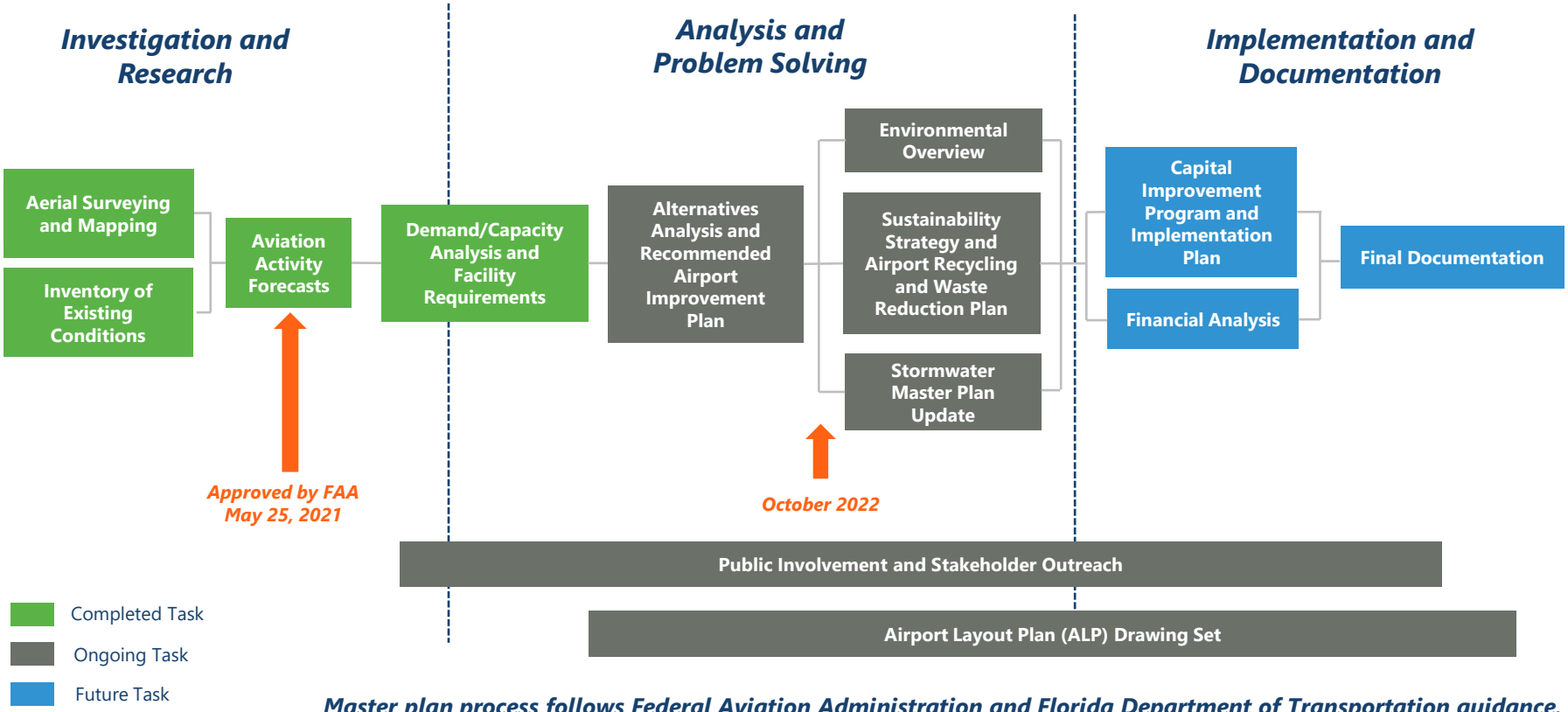
What is an Airport Master Plan?

- Local level planning effort tailored to BCT
- Intended to guide future airport development over a 20-year timeframe that:
  - Satisfies future aviation demand
  - Identifies facility requirements for all Airport users
  - Considers environmental and socioeconomic impacts
  - Enables the Airport to achieve its mission
  - Complies with all applicable FAA requirements

"An airport master plan is a comprehensive study of an airport and usually describes the short-, medium-, and long-term development plans to meet future aviation demand."

- FAA Advisory Circular 150/5070 – 6B – Airport Master Plans

Project Process



Master plan process follows Federal Aviation Administration and Florida Department of Transportation guidance.

Technical Advisory Committee

- Provide feedback and technical guidance on each element of the Master Plan Update:
  - Bring various master local perspectives to the master planning process
  - Provide input and guidance on technical analyses
  - Provide ideas for consideration in the Master Plan
- Help build the Airport's future by sharing what you learn from your participation in the Technical Advisory Committee

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Review of Future Demand

Future Demand Summary *(Approved by FAA May 25, 2021)*

CATEGORY	ACTUALS		PROJECTED		
	FY 2020 (Base Year)	FY 2021	FY 2025	FY 2030	FY 2040
Total Aircraft Operations	**71,756**	**78,136**	**80,800**	**90,000**	**111,200**
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- *Maintenance Requirements*
- *Based Aircraft Parking Apron*

NOTE: FBO – Fixed Base Operator; FY – Fiscal Year (October 1 – September 30)
SOURCE: Ricondo & Associates, Inc., March 2021.

Airfield Capacity and Facility Requirements

Airport Capacity and Facility Requirements

Items evaluated/incorporated in the MPU and discussed throughout the remainder of the TAC Briefing

- **Airfield**
  - FAA design standards for runways and taxiways
  - Lighting and signage
- **General Aviation / Aeronautical Use**
  - Hangar space
  - Apron parking
- **Support Facilities**
  - Navigational aids
  - Fuel facilities and vehicular parking
- **Landside / Other**
  - Potential adjacent land opportunities
  - Underground stormwater containment
  - Advanced Air Mobility (AAM) alternatives

Airfield Capacity

	BASE (FY 2020)	FY 2025	FY 2030	FY 2040
Annual Operations	71,756	80,800	90,000	111,200
Annual Service Volume	136,000	136,000	136,000	136,000
Annual Service Volume Ratio	**53%**	**59%**	**65%**	**82%**

- Airfield capacity is adequate to accommodate forecast demand throughout the planning period
- FAA recommends planning for new runways at 60% of capacity
  - New runway not possible at BCT
  - Capacity enhancement could consist of taxiway improvements (aircraft holding bay capacity), or operational changes (limiting or restricting touch-and-go operations)

Airfield capacity must be balanced with other airport components including hangars, apron areas, and landside facilities. BCT has limited developable space which could impact ASV ratio.

SOURCES: US Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5060-5, *Airport Capacity and Delay*, December 1995; Ricondo & Associates, Inc., *Aviation Activity Forecasts*, January 2021.

Additional General Aviation Facility Requirements

General Aviation Facility Description[1/2/]	FY 2025	FY 2030	FY 2040
Hangars			
T-Hangars	30,000	32,000	40,000
Conventional Hangars	59,000	92,000	163,000
Maintenance Hangars	10,000	16,000	28,000
Subtotal Hangars	**99,000**	**140,000**	**231,000**
Apron			
Hangar Access	99,000	140,000	231,000
Based and Itinerant Apron	11,000	79,000	294,000
Subtotal Apron	**110,000**	**219,000**	**525,000**
Other Support Areas[3/]	**39,000**	**87,000**	**243,000**
Grand Total	**248,000**	**434,000**	**999,000**
Grand Total in Acres	**5.69**	**9.96**	**22.93**

SOURCE: Ricondo & Associates, Inc., March 2021.

NOTES:

FBO – Fixed Base Operator
FY – Fiscal Year (October 1 – September 30)

1/ Values are presented in square feet unless otherwise noted.
2/ Additional general aviation facilities are needed to accommodate future demand identified in the preliminary aviation activity forecasts. These values are in excess of the current general aviation facilities at BCT.
3/ Other support areas include GA/FBO Terminal facilities, vehicular parking, and landscaping/drainage areas.

Requirements do not include planned improvements within the Atlantic Aviation leasehold (2.8 acres)

Alternatives and Concepts

Alternatives and Concepts

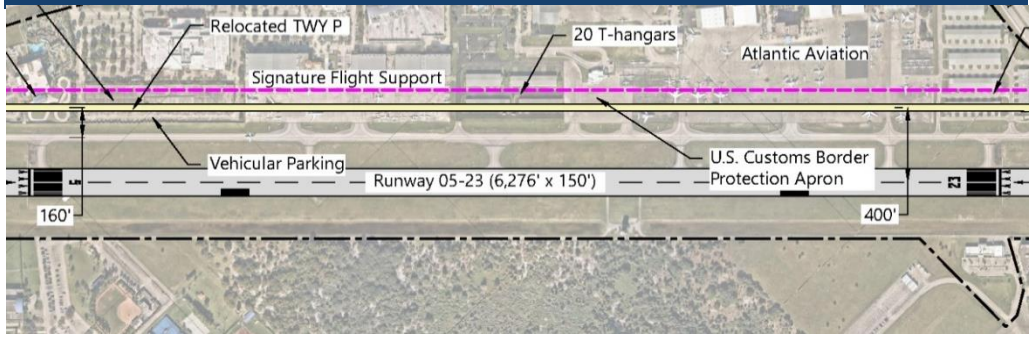
Airfield Alternatives and Concepts

Runway to Taxiway Centerline Separation

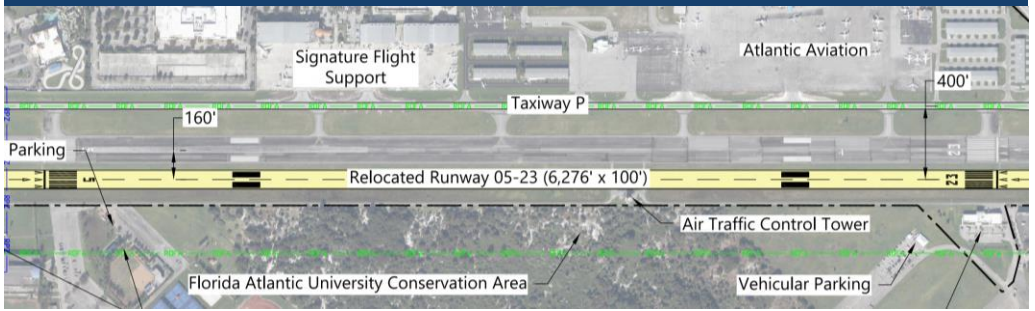
- Existing separation – 240’
- FAA standard separation – 400’
- Modification of Standards (MOS) approved May 5, 2004
- Operational restriction (SOP - January 7, 2016)
- At the FAA’s request, a new MOS was developed and will be considered during the next runway or taxiway rehabilitation or improvement project.

Relocating the runway or taxiway is not practical due to operational, financial, and environmental impacts

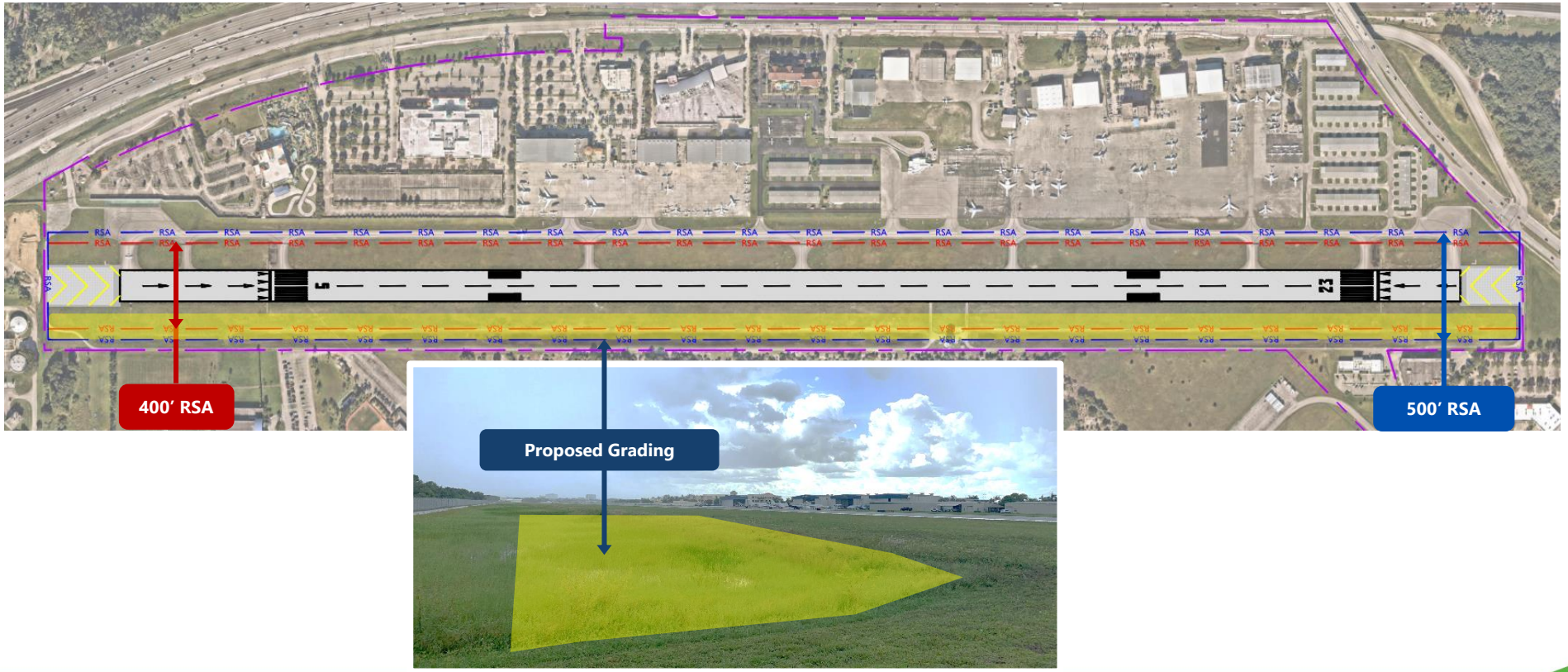
Relocate Parallel Taxiway Alternative



Relocate Runway Alternative

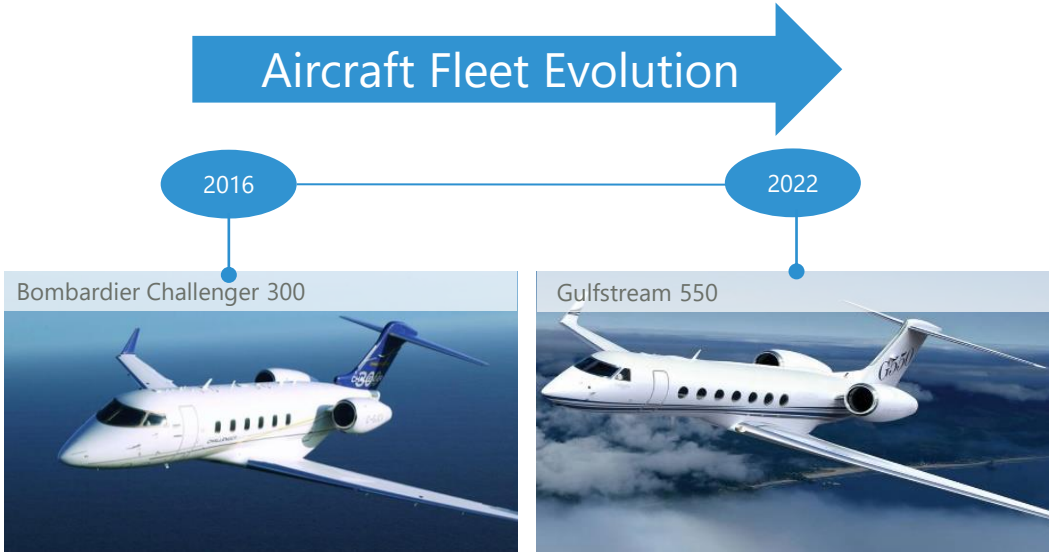


Runway Safety Area Improvements



Engineered Material Arresting System (EMAS)

EMAS installed in 2016 (Runway 23 approach end) and 2017 (Runway 5 approach end)

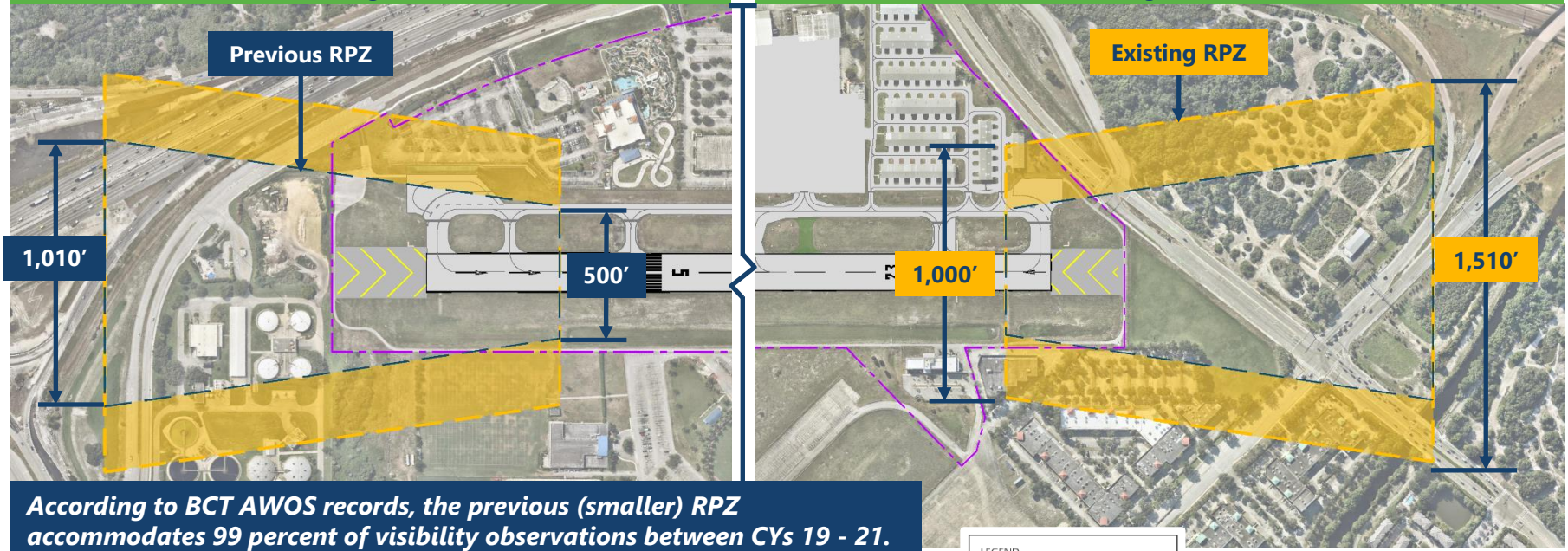


Recommendation: Coordinate with the EMAS manufacturer to study whether the performance of the existing EMAS is sufficient to accommodate the current fleet of aircraft.

Approach Runway Protection Zone

Runway 5 End

Runway 23 End

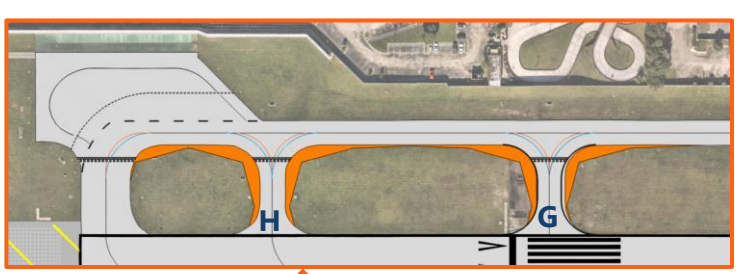


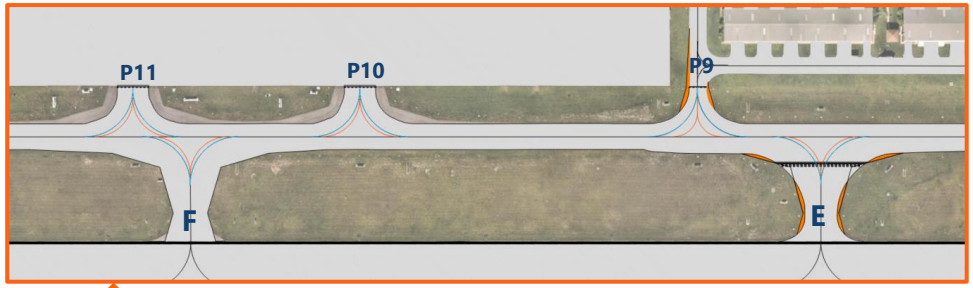
According to BCT AWOS records, the previous (smaller) RPZ accommodates 99 percent of visibility observations between CYs 19 - 21.

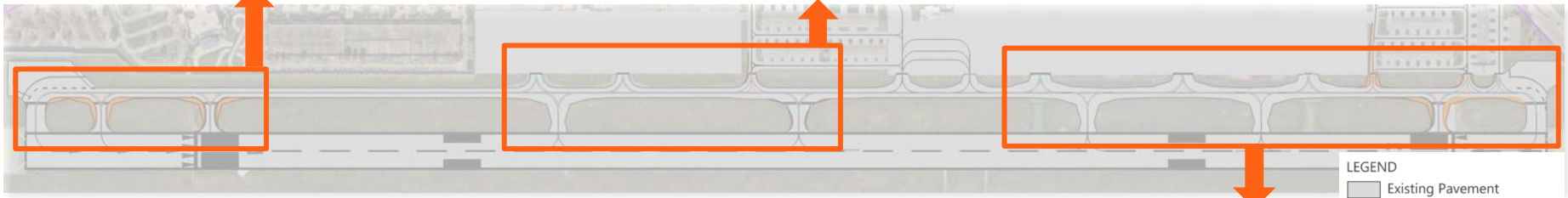
Recommendation: Request FAA increase visibility minimums (back to 1-mile) to correlate to smaller RPZ to reduce incompatible land uses.

Existing RPZ = 49.0 acres
Previous RPZ = 29.5 acres

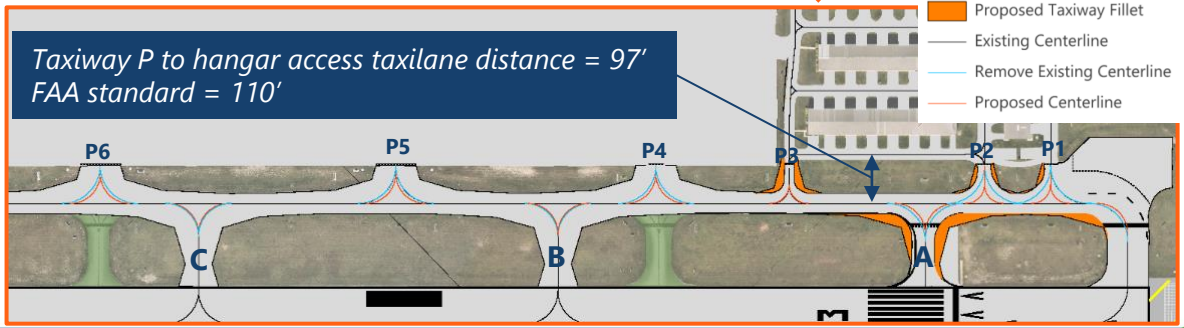
Taxiway Geometry Enhancements







Recommendation: Geometry enhancements at Taxiways H, G, E, A, and P3 to provide standard taxiway edge safety margin in accordance with FAA design standards for the current fleet of aircraft.



Previously Considered Taxiway Geometry Enhancements

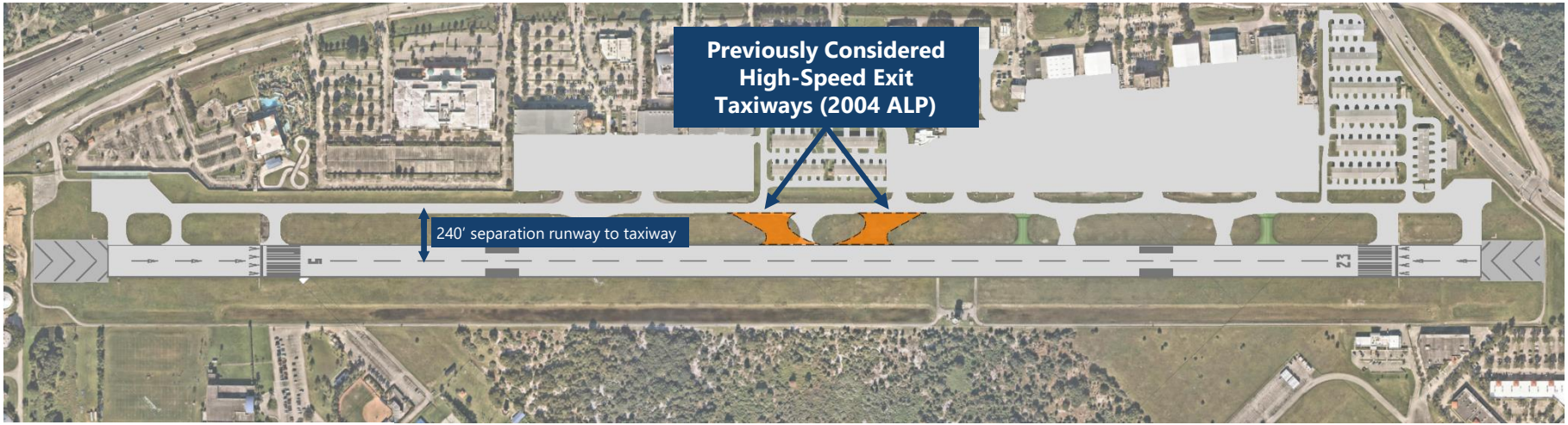


Table 4-5. Runway to Taxiway Separation for Reverse Turns from a High-Speed Exit Based on TDG

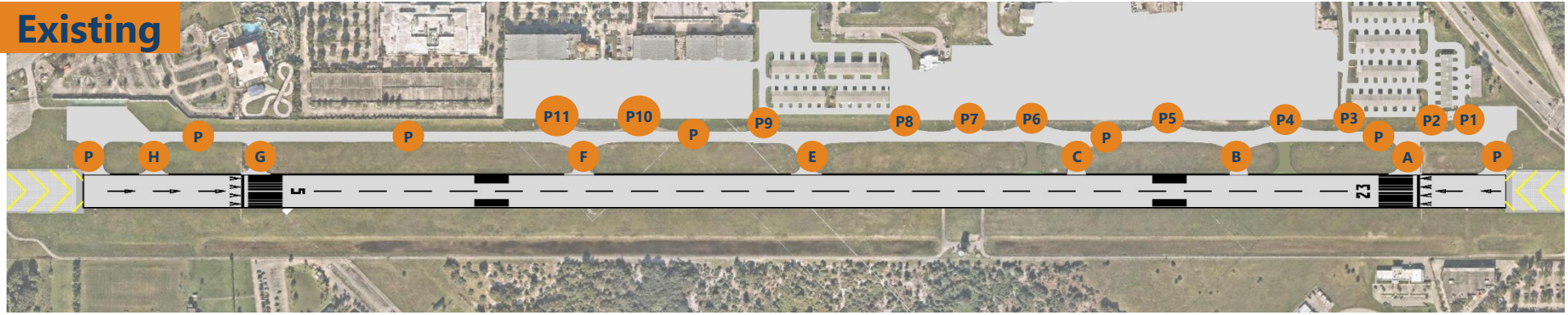
Runway Centerline to Taxiway/ Taxilane Centerline	TDG			
	3	4	5	6
Recommended separation	350 ft (107 m)	450 ft (137 m)	450 ft (137 m)	600 ft (183 m)
Radius for 150-degree turn after 30-degree exit	79 ft (24.1 m)	121 ft (37 m)	121 ft (37 m)	152 ft (46 m)
Minimum separation [1]	348 ft (106 m)	427 ft (130 m)	427 ft (130 m)	485 ft (148 m)

Note 1: Minimum separation distance based on the standard 30-degree high speed exit and maximum 50-degree steering angle for the reverse turn.

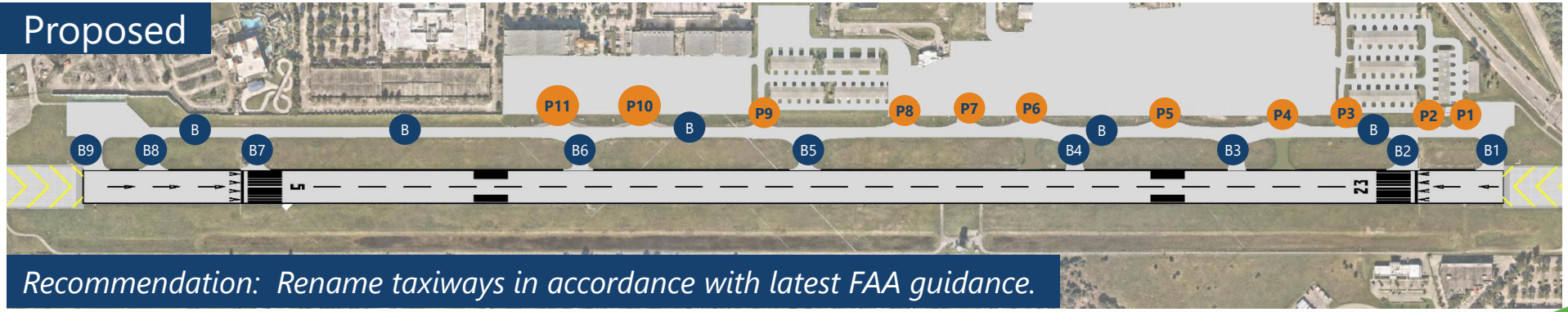
Low probability of approach category C and D aircraft using the high-speed exits due to their distance from the threshold.

Taxiway Nomenclature Changes

Existing



Proposed

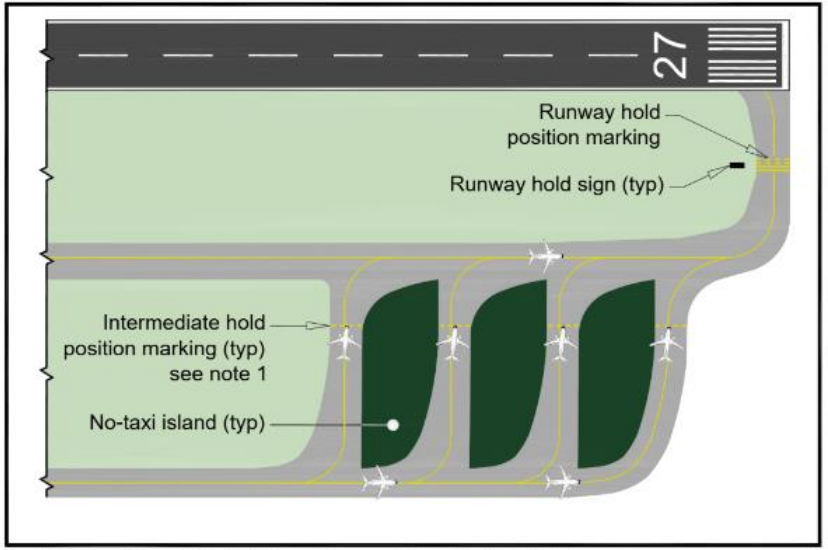


Recommendation: Rename taxiways in accordance with latest FAA guidance.

Aircraft Holding Bays

- Existing holding bays are within the taxiway object free area and are considered a wide expanse of pavement
- Proposed aircraft holding bays provide an aircraft staging area when the parallel taxiway is cleared to accommodate ADG-III (wingspan > 79') aircraft using the runway

FAA Recommended Aircraft Holding Bay Configuration

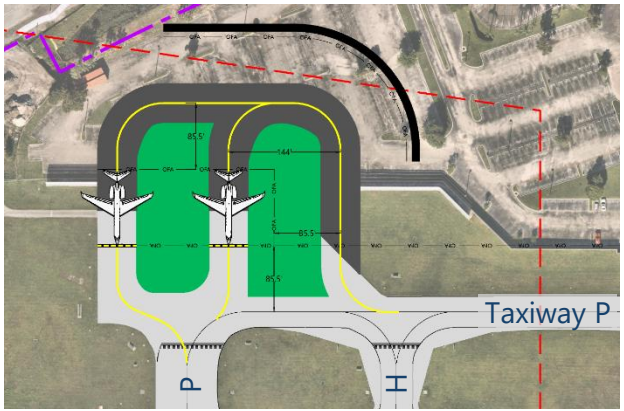


Note 1: Locate intermediate hold lines at the outer limit of the inner TOFA.

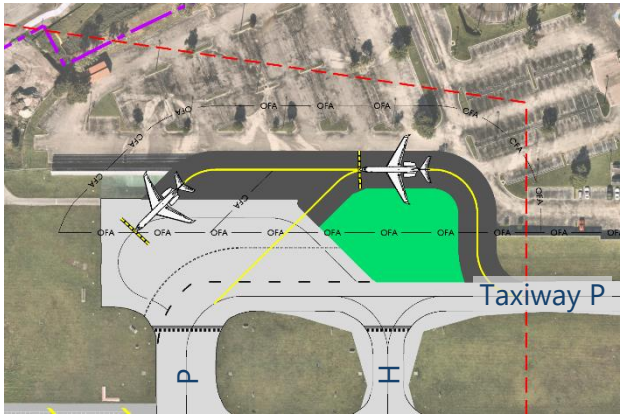
Runway 5 Aircraft Holding Bay Options

Option 1

Aircraft holding bay will accommodate ADG-III aircraft (Gulfstream G-550).

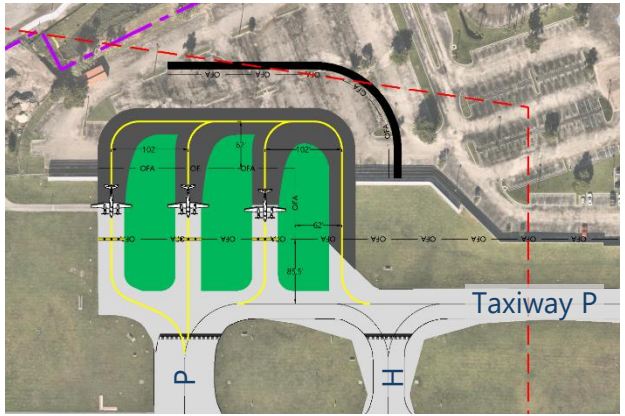


Option 2



Option 3

Aircraft holding bay will accommodate ADG-II aircraft (Gulfstream G-450).



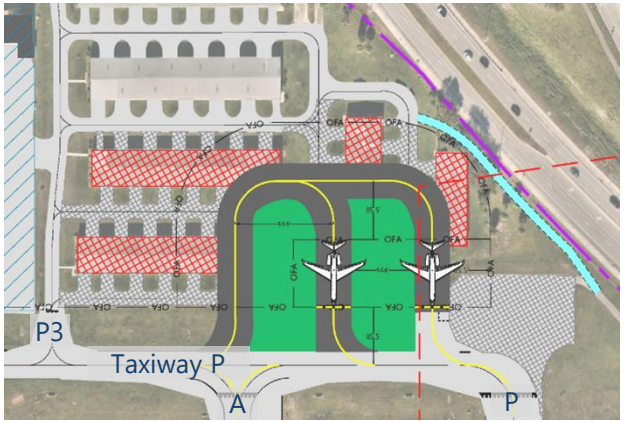
LEGEND
- Proposed Pavement
- Grass Island
- Centerline
- Object Free Area
- Blast Fence
- Runway Protection Zone
- Property Boundary

Recommendation: Construct aircraft holding bay outside of Taxiway P taxiway object free area and in accordance with current FAA design standards.

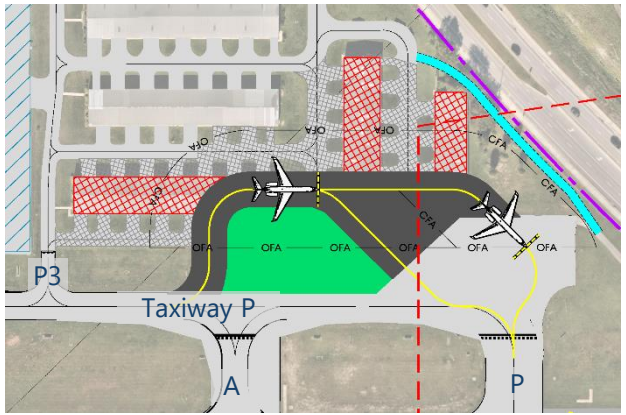
Runway 23 Aircraft Holding Bay Options

Option 1

Aircraft holding bay will accommodate ADG-III aircraft (Gulfstream G-550).

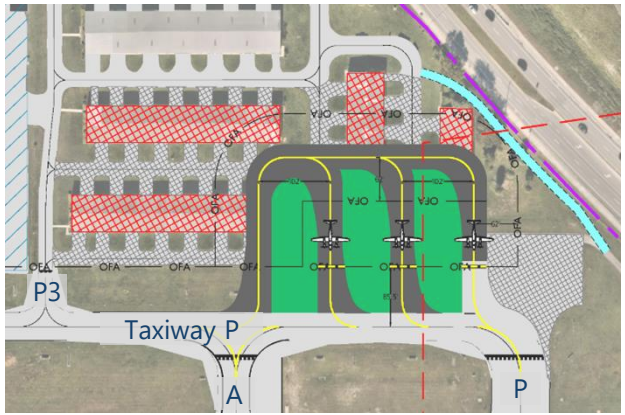


Option 2



Option 3

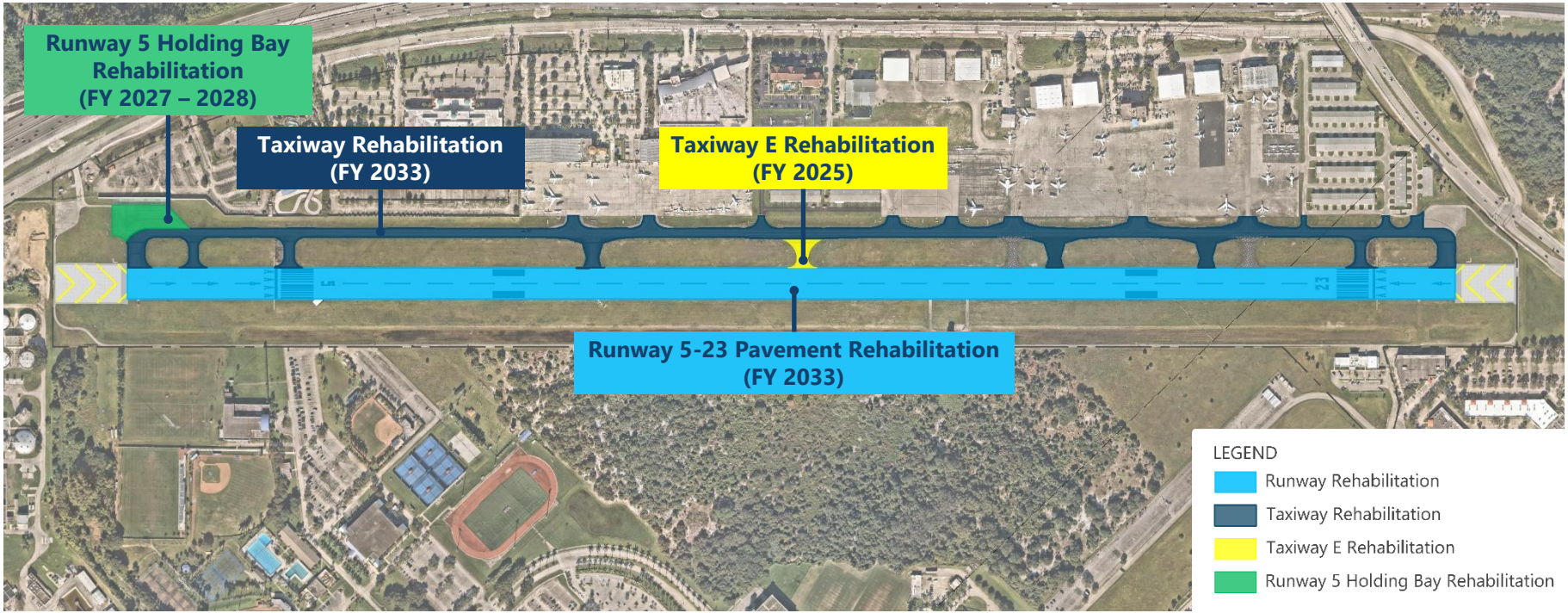
Aircraft holding bay will accommodate ADG-II aircraft (Gulfstream G-450).



LEGEND
- Proposed Pavement
- Grass Island
- Pavement Demolition
- Hangar Demolition
- Centerline
- Object Free Area
- Vehicle Service Road
- Runway Protection Zone
- Property Boundary

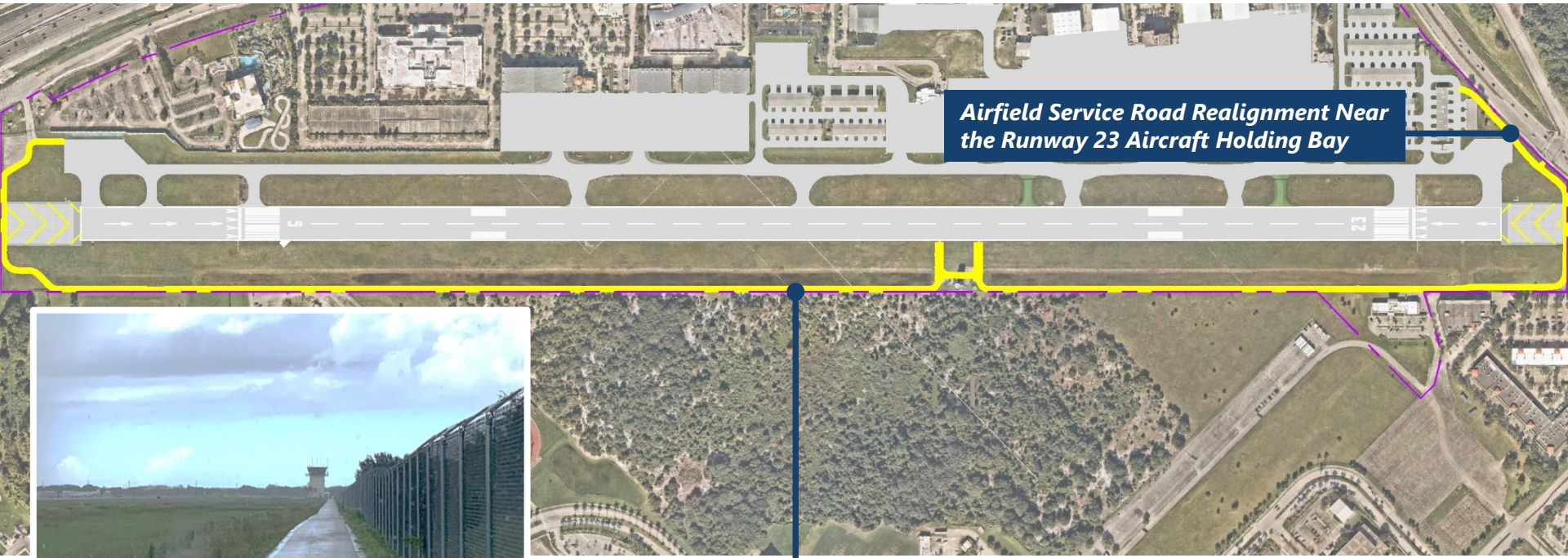
Recommendation: Construct aircraft holding bay outside of Taxiway P taxiway object free area and in accordance with current FAA design standards.

Pavement Rehabilitation
(2019 FDOT *Statewide Airfield Pavement Management Program*)



SOURCE: Florida Department of Transportation, Aviation and Spaceport Office, *Statewide Airfield Pavement Management Program District 4*, November 2019.

Airfield Service Road

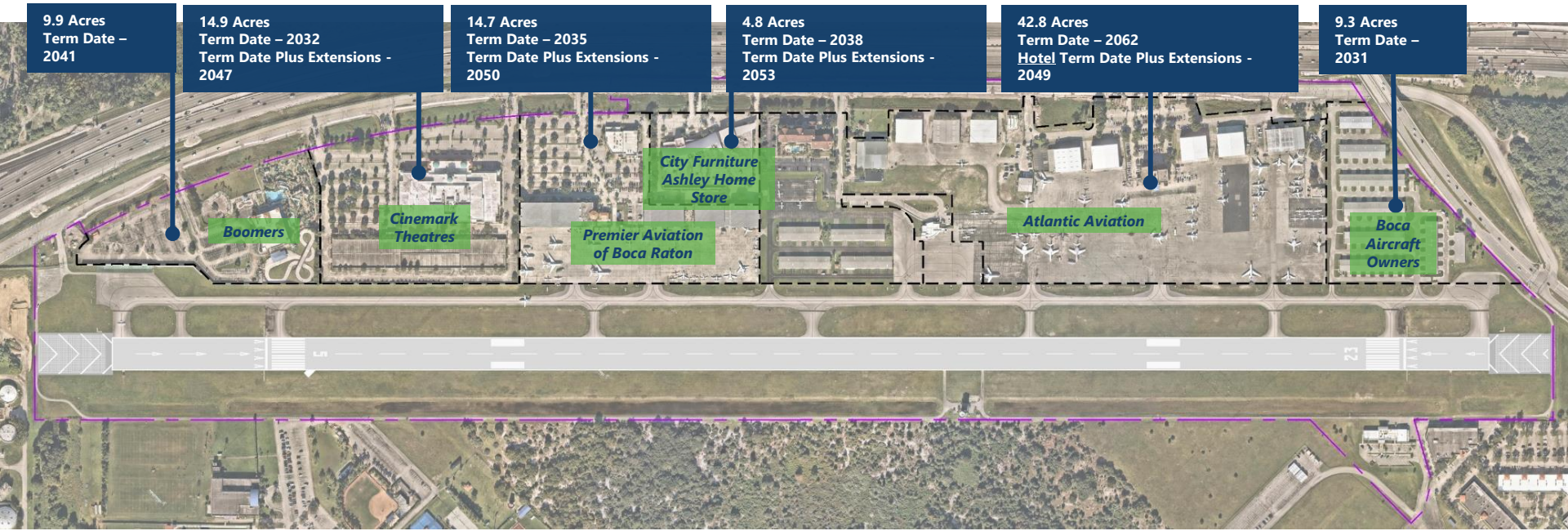


Recommendation: Widen airfield service road by 3′ – 4′ for emergency vehicles (project will consider stormwater implications)

Alternatives and Concepts

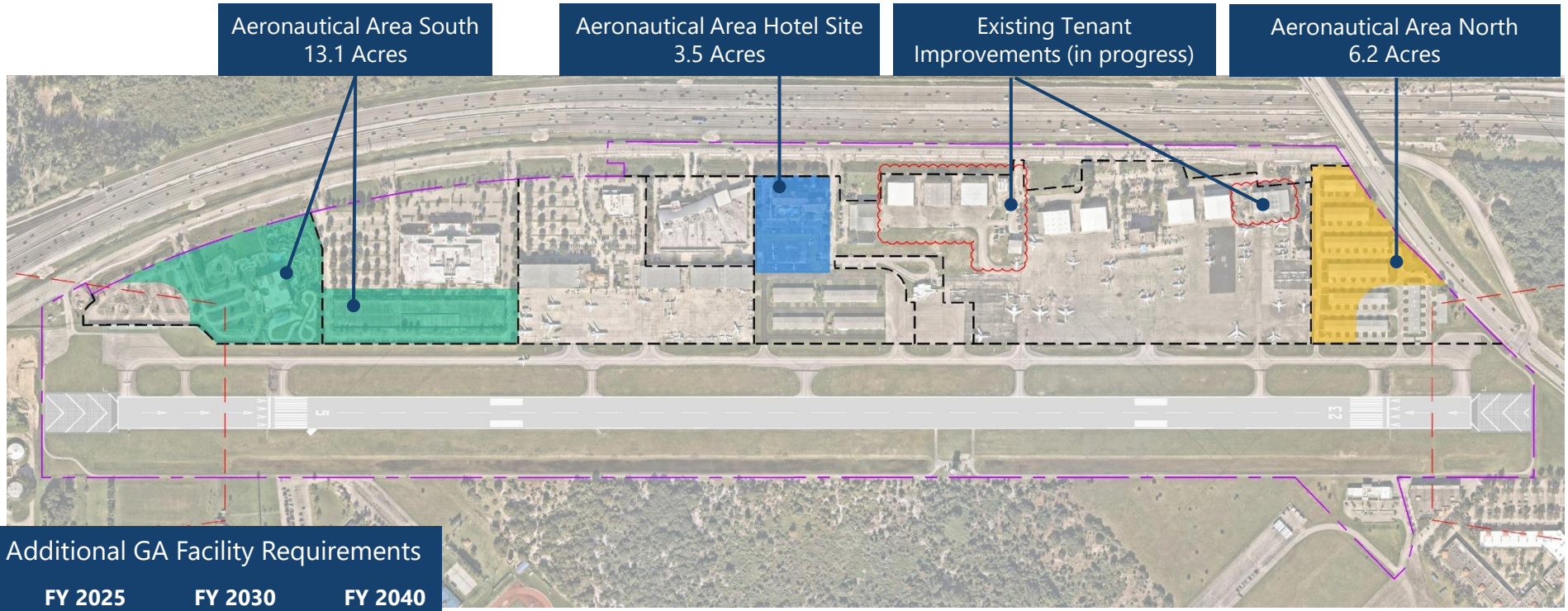
General Aviation / Aeronautical Use Concepts

Existing Property and Leaseholds



SOURCES: Boca Raton Airport Authority, January 2020 (leasehold details); Ricondo and Associates, *Airport Layout Plan*, June 2018; Martinez Geospatial, Inc., November 2019 (aerial photo).

GA/Aeronautical Use – Potential Redevelopment Sites

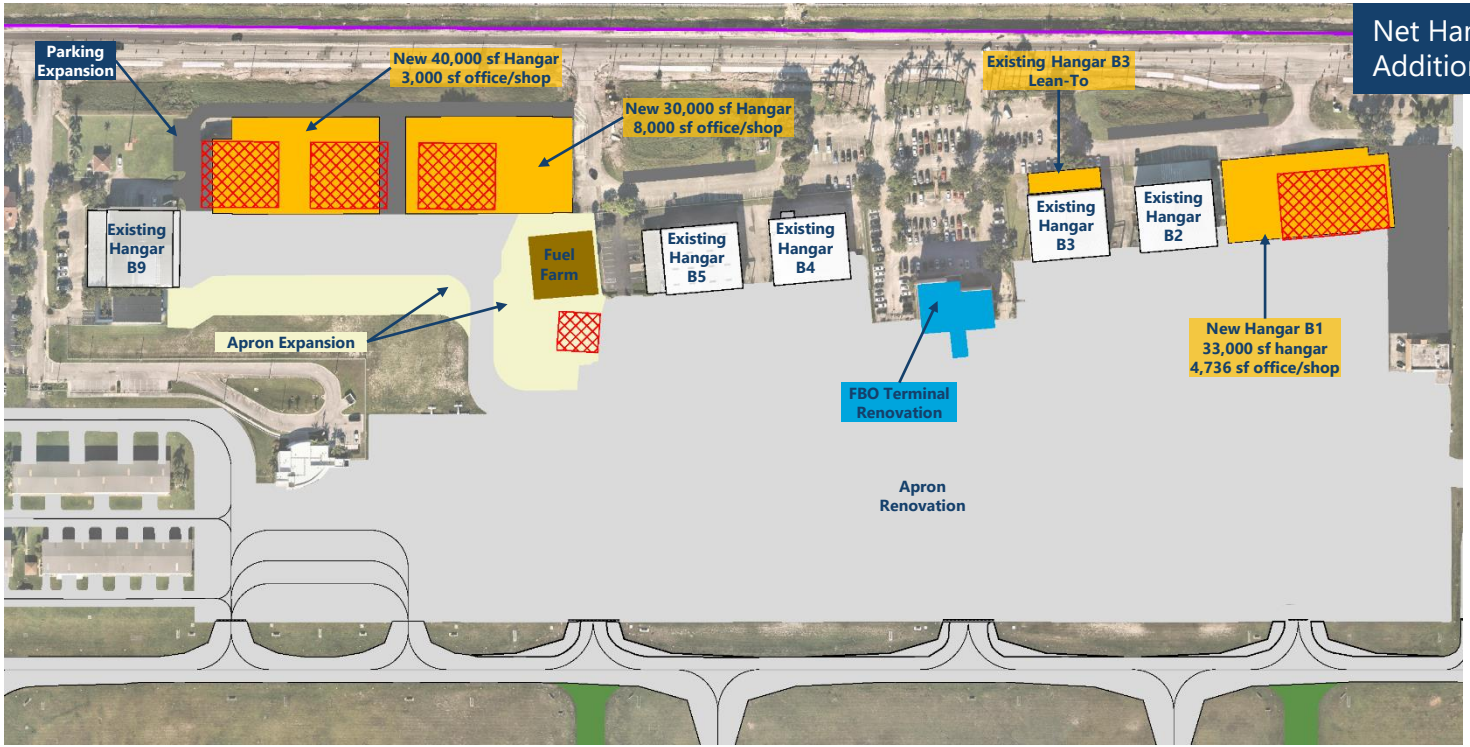


Additional GA Facility Requirements

FY 2025	FY 2030	FY 2040
6 Acres	10 Acres	23 Acres

SOURCES: Boca Raton Airport, Airport Layout Plan, June 2018; Atlantic FBO Facilities and Site Renovation - Boca Raton, Florida, Conceptual Design, May 2022; Ricondo, August 2022.

Atlantic Aviation Proposed Improvements

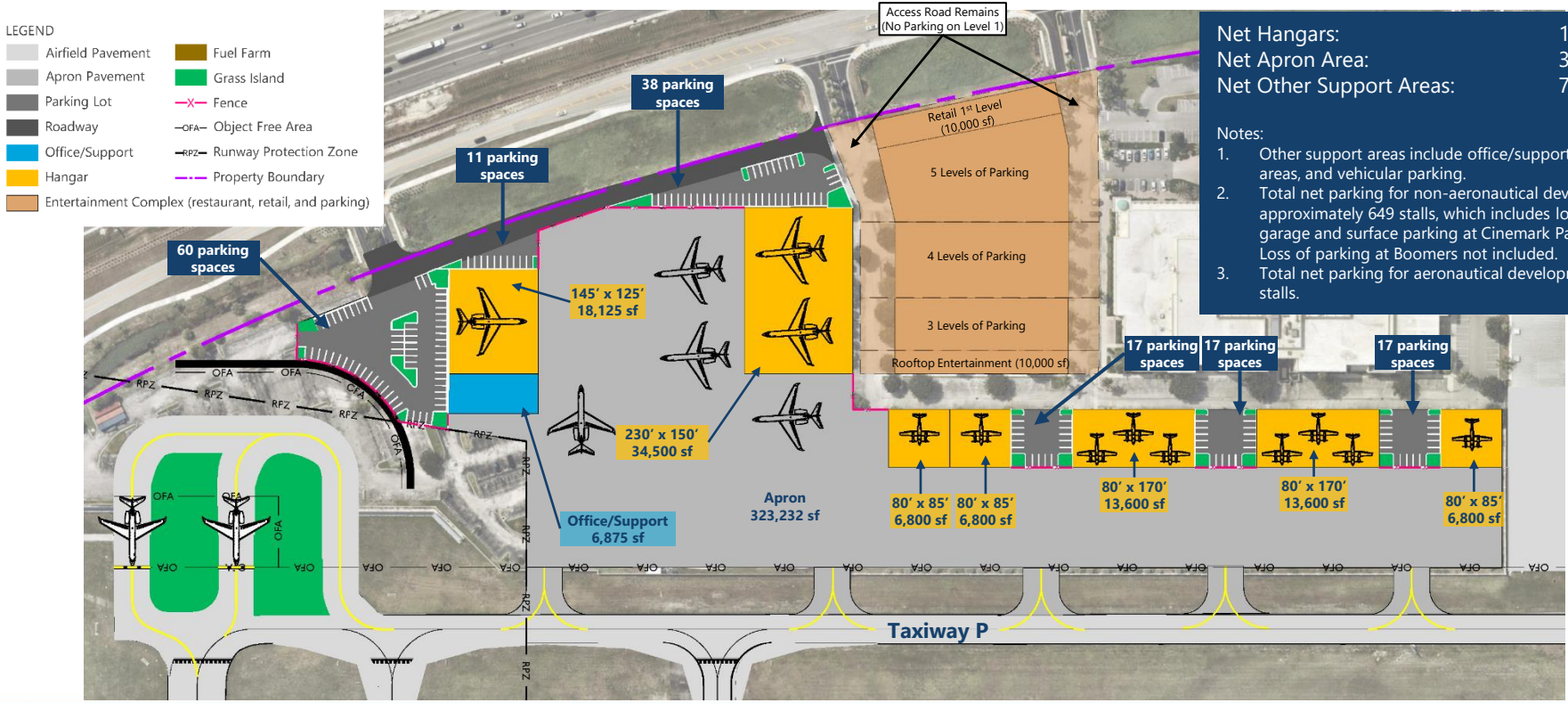


Net Hangar Development: 54,000 sf
Additional Apron Area: 70,000 sf

LEGEND
- Apron Expansion
- Apron Pavement
- Parking Lot
- FBO Terminal
- Fuel Farm
- Existing Hangar
- New Hangar
- Hangar Demolition
- Property Boundary

SOURCE: Atlantic FBO Facilities and Site Renovation - Boca Raton, Florida, Conceptual Design, May 2022.

GA/Aeronautical Use
South Area Alternative 1A

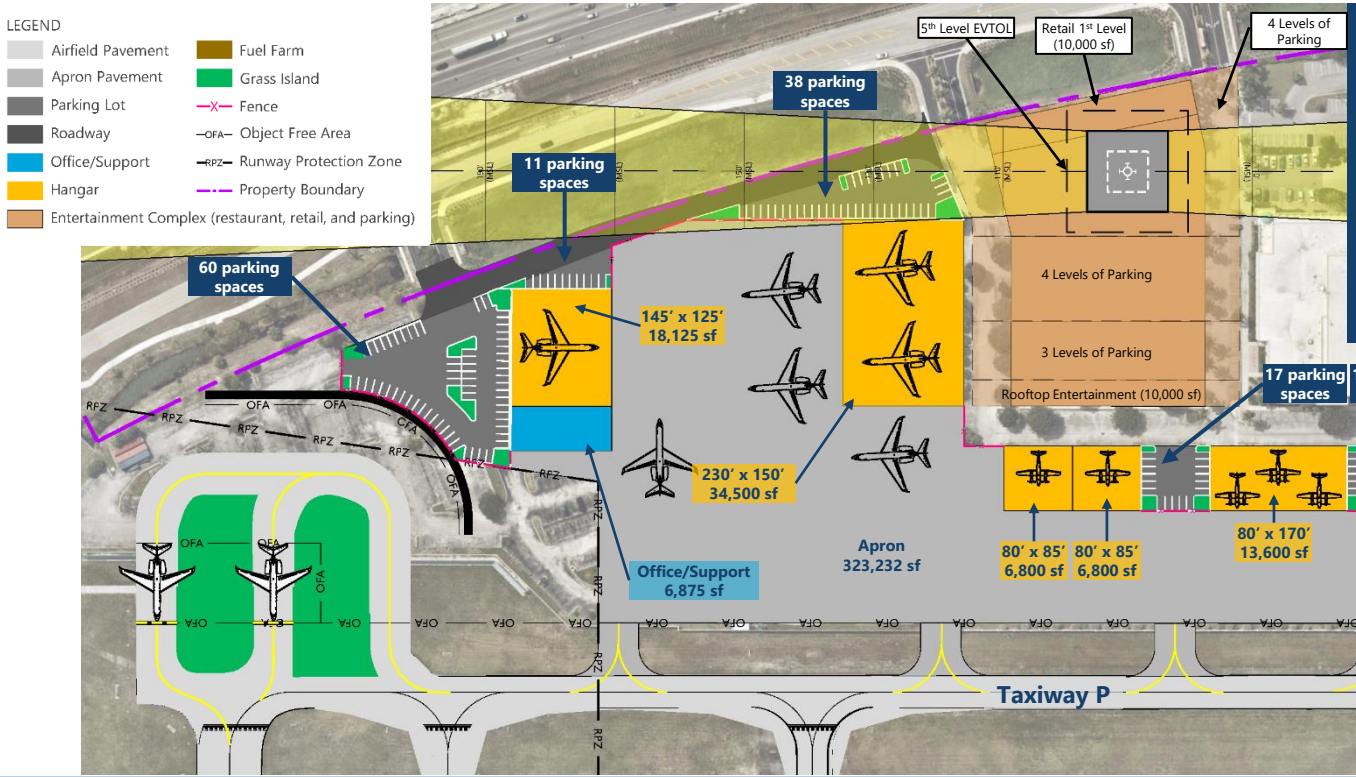


Net Hangars:	100,225 sf
Net Apron Area:	323,232 sf
Net Other Support Areas:	74,500 sf

Notes:

1. Other support areas include office/support areas, drainage areas, and vehicular parking.
2. Total net parking for non-aeronautical development is approximately 649 stalls, which includes loss of parking garage and surface parking at Cinemark Palace (774 stalls). Loss of parking at Boomers not included.
3. Total net parking for aeronautical development is 160 stalls.

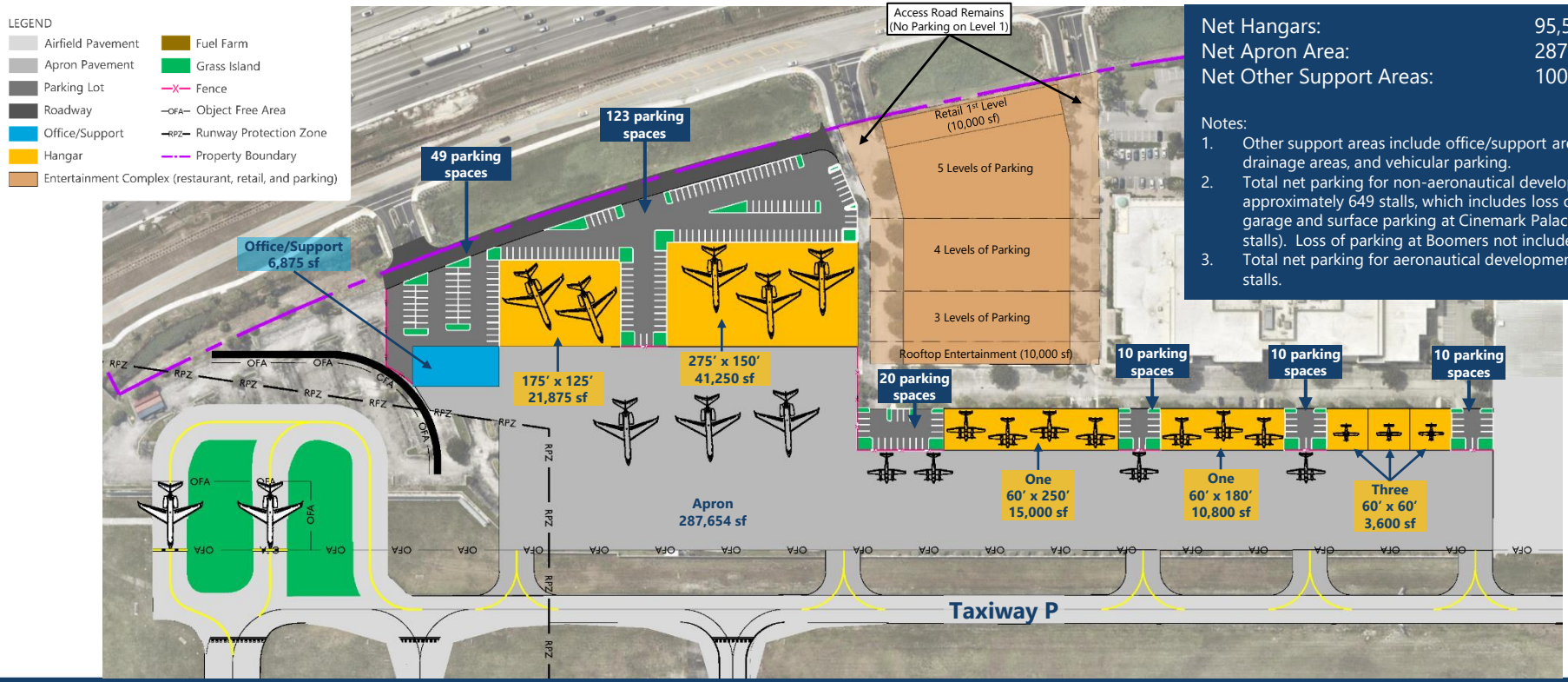
GA/Aeronautical Use
South Area Alternative 1B



Net Hangars:	100,225 sf
Net Apron Area:	323,232 sf
Net Other Support Areas:	74,500 sf

Notes:
1. Other support areas include office/support areas, drainage areas, and vehicular parking.
2. Total net parking for non-aeronautical development is approximately 474 stalls, which includes loss of parking garage and surface parking at Cinemark Palace (774 stalls). Loss of parking at Boomers not included.
3. Total net parking for aeronautical development is 160 stalls.

GA/Aeronautical Use
South Area Alternative 2A



Net Hangars:	95,525 sf
Net Apron Area:	287,654 sf
Net Other Support Areas:	100,150 sf

Notes:
1. Other support areas include office/support areas, drainage areas, and vehicular parking.
2. Total net parking for non-aeronautical development is approximately 649 stalls, which includes loss of parking garage and surface parking at Cinemark Palace (774 stalls). Loss of parking at Boomers not included.
3. Total net parking for aeronautical development is 222 stalls.

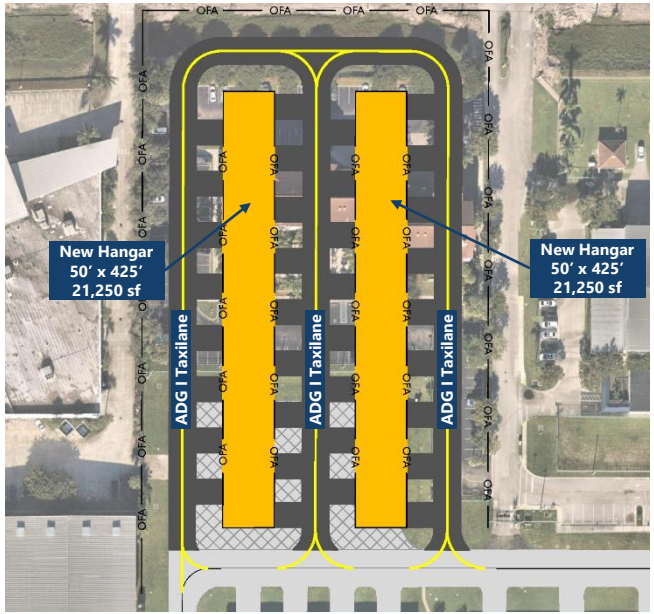
GA/Aeronautical Use
Hotel Site Alternatives

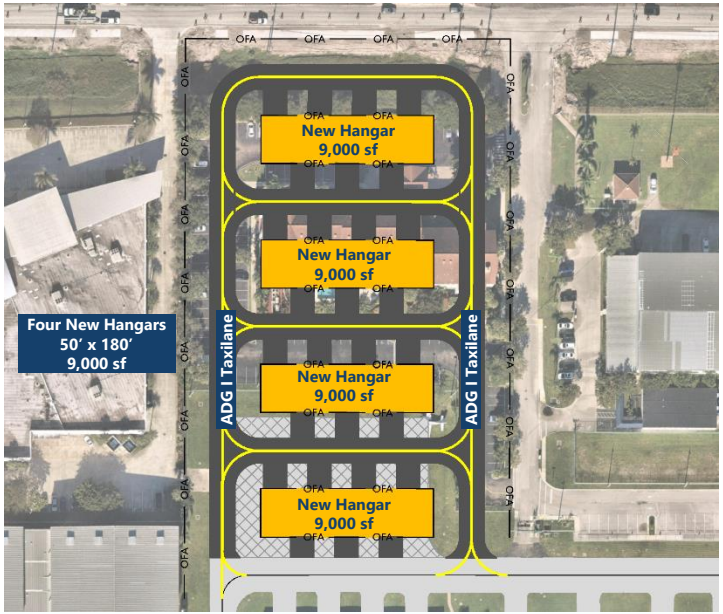
Hotel Site Alternative 1

New T-hangars:	42,500 sf (34 units)
Apron Pavement Loss:	32,900 sf

Hotel Site Alternative 2

New T-hangars:	36,000 sf (28 units)
Apron Pavement Loss:	32,900 sf

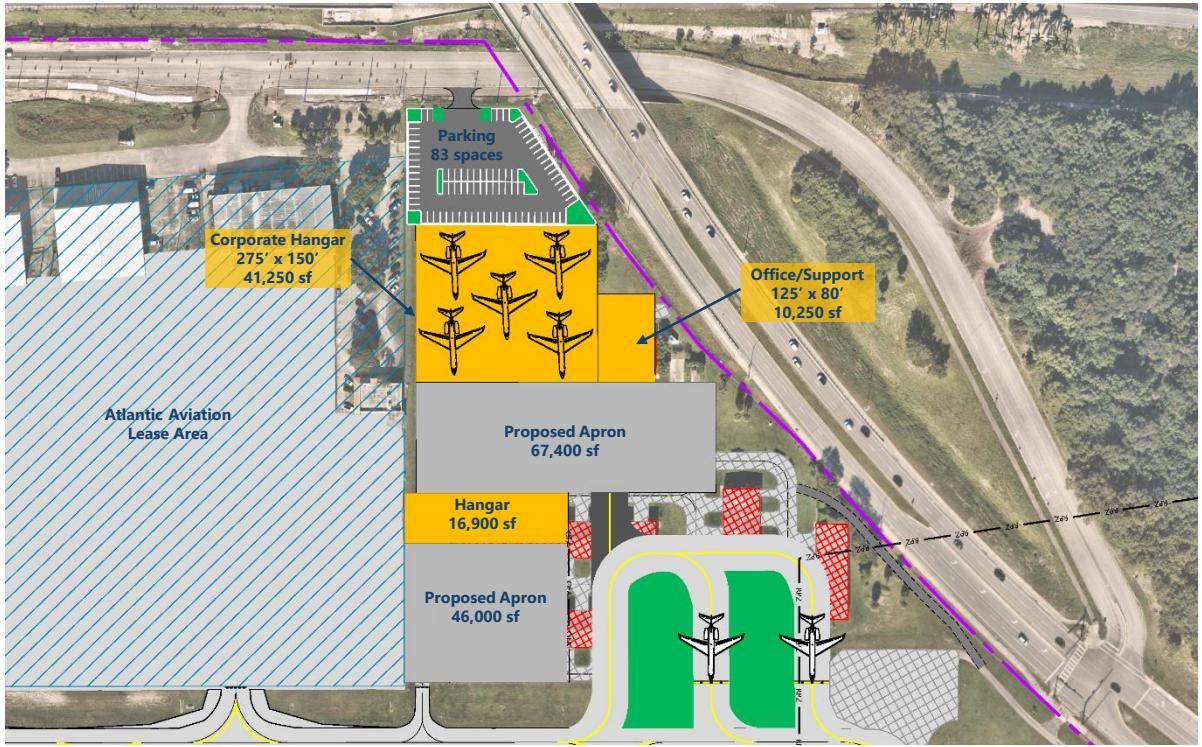




LEGEND
- Apron Demolition
- Taxilane Pavement
- New Hangar
- Centerline
- OFA Taxilane Object Free Area (OFA)

SOURCES: Boca Raton Airport; Airport Layout Plan (ALP), June 2018 (basemap); Nearmap, Florida, November 2021 (aerial image for visual reference only - may not be to scale); Ricondo, July 2022 (proposed alternatives).

GA/Aeronautical Use
North Area Alternative 1



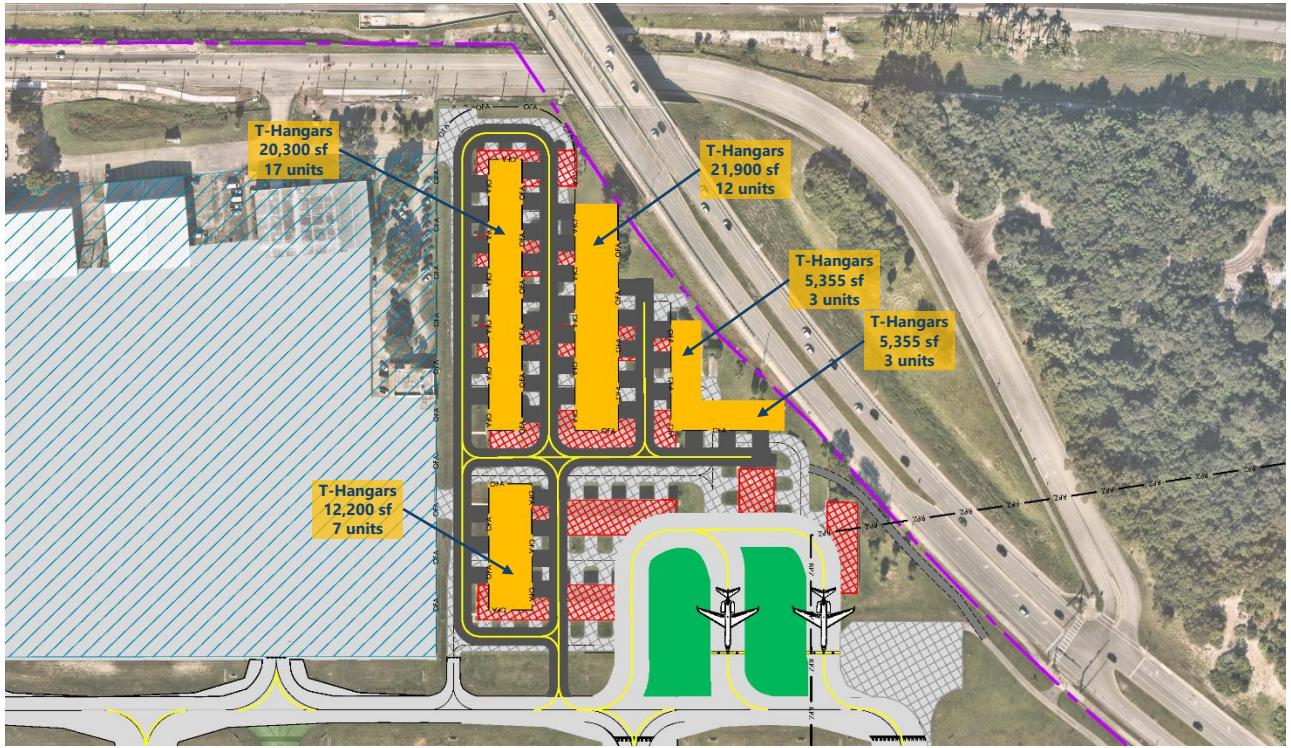
Net Hangars:	(32,480) sf
Net Apron Area:	113,400 sf
Net Other Support Areas[1]:	35,461 sf

Notes:
1. Other support areas include office/support areas, drainage areas, and vehicular parking.

LEGEND
- Airfield Pavement
- Apron Pavement
- Parking Lot
- Pavement Demolition
- Hangar Demolition
- Hangar
- Grass Island
- OFA Object Free Area
- RPZ Runway Protection Zone
- Centerline
- Property Boundary

SOURCES: Boca Raton Airport; Airport Layout Plan (ALP), June 2018 (basemap); Nearmap, Florida, November 2021 (aerial image for visual reference only - may not be to scale); Ricondo, July 2022 (proposed alternatives).

GA/Aeronautical Use
North Area Alternative 2



Net Hangars:	(35,770) sf
Net Other Support Areas:	N/A

Notes:
1. Alternative 2 does not include vehicular parking.

LEGEND
- Airfield Pavement
- Apron Pavement
- Parking Lot
- Pavement Demolition
- Hangar Demolition
- Hangar
- Grass Island
- OFA Object Free Area
- RPZ Runway Protection Zone
- Centerline
- Property Boundary

SOURCES: Boca Raton Airport; Airport Layout Plan (ALP), June 2018 (basemap); Nearmap, Florida, November 2021 (aerial image for visual reference only - may not be to scale); Ricondo, July 2022 (proposed alternatives).

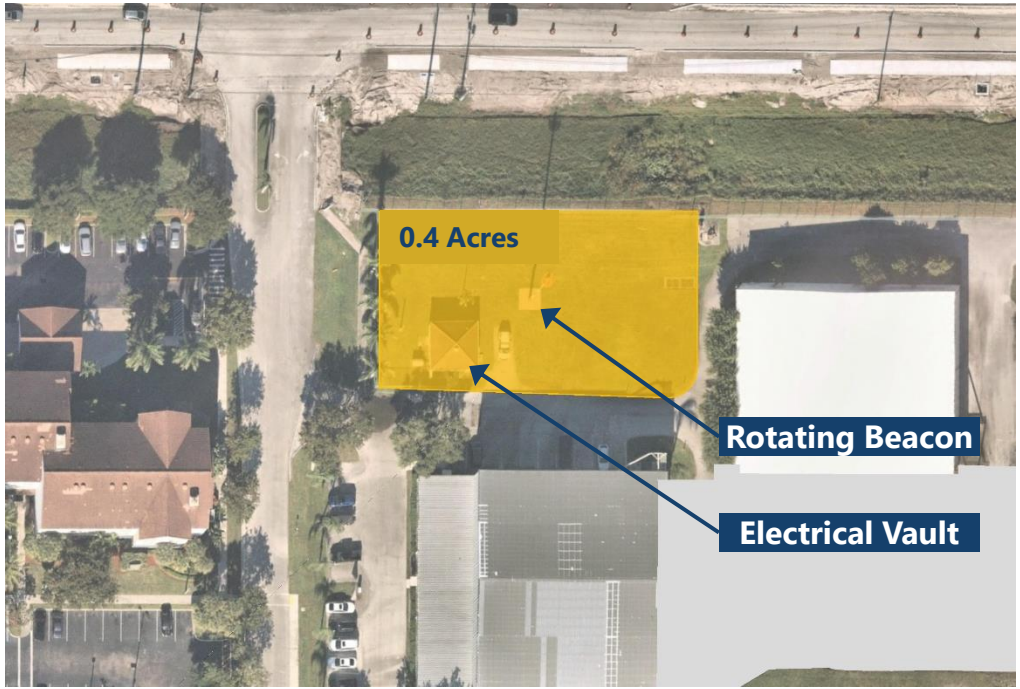
Alternatives and Concepts

Support Facility Concepts

Support Facilities

- **Air Traffic Control Tower**
  - Constructed in 2000
  - *Replacement with new remote or virtual tower*
- **Automated Weather Observing System (AWOS)**
  - Installed in 2013
  - *Replacement with Automated Surface Observing System (ASOS)*

Relocation of Electrical Vault and Rotating Beacon



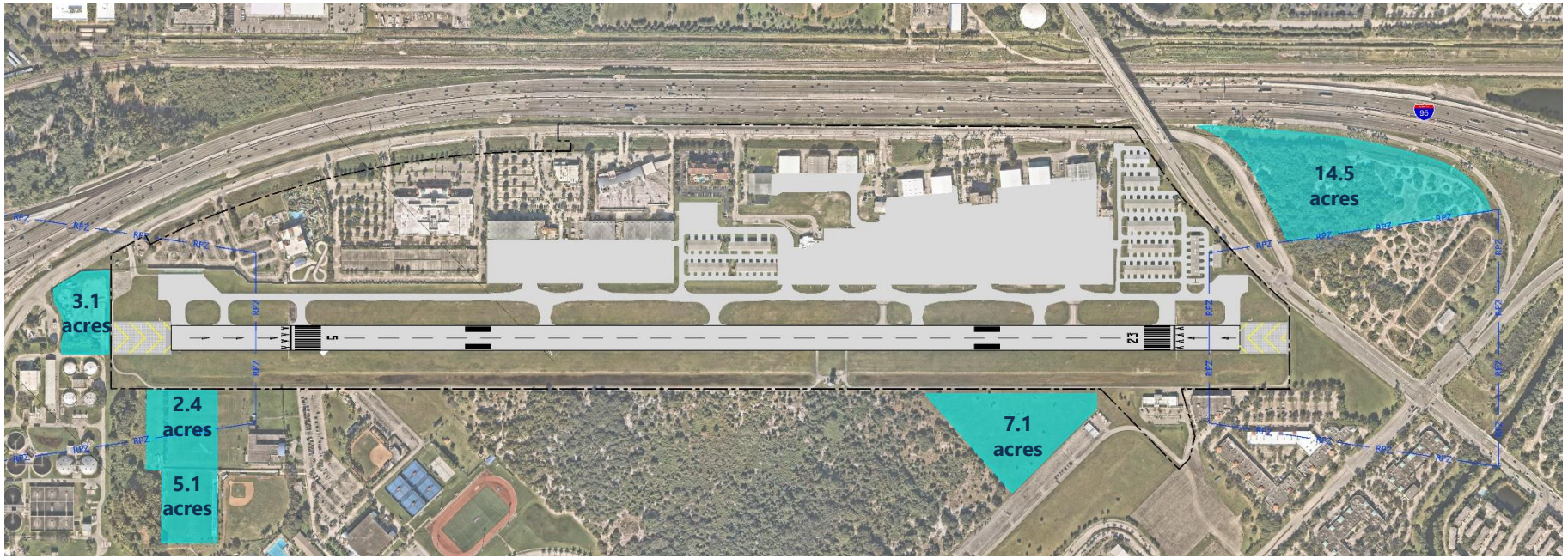
- Beacon to be relocated on top of ATCT[1]
- Electrical equipment to be relocated to the first floor of ATCT
- Approximately 0.4 acres could be used for developable space
  - Vehicular parking
  - Other

NOTE:
1. Installing a rotating beacon on top of an ATCT requires authorization from FAA regional office per FAA AC 150/5340-30, *Design and Installation Details for Airport Visual Aids*.

Alternatives and Concepts

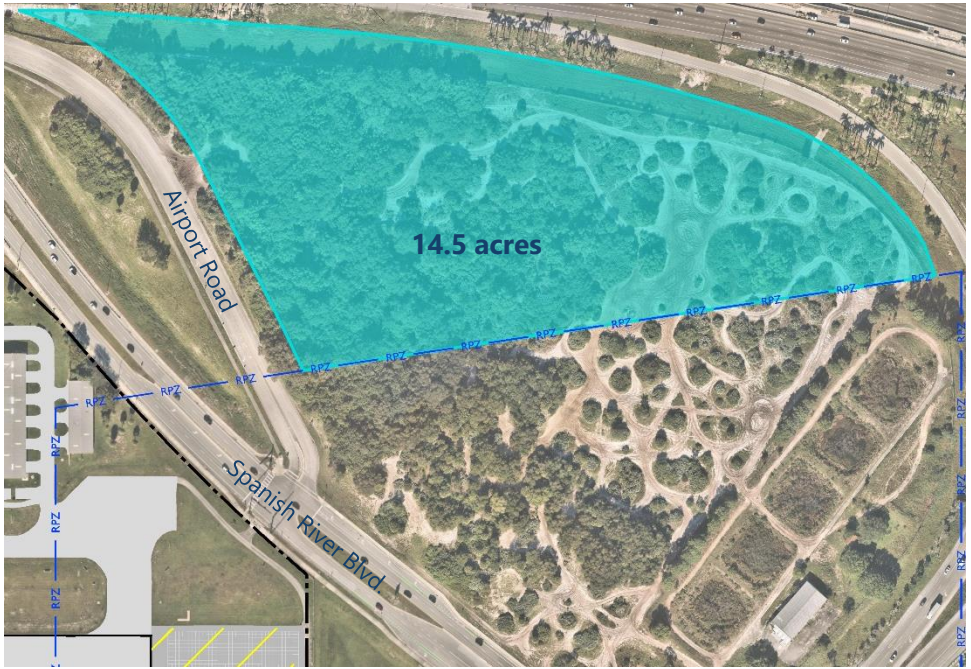
Landside Concepts

Potential Adjacent Land Opportunities



Potential Uses: *Aeronautical Development* | *Non-Aeronautical Development* | *Drainage / Stormwater* | *Advanced Air Mobility*

Potential Adjacent Land Opportunities



- Approximately 14.5 acres located outside of RPZ and road right of ways
- Parcels owned by the Trustees of the Internal Improvement Trust Fund (TIITF)
- Potential uses
  - Airport support facilities
  - Non-aeronautical development
  - Drainage / stormwater
  - Advanced air mobility
  - Aircraft parts storage

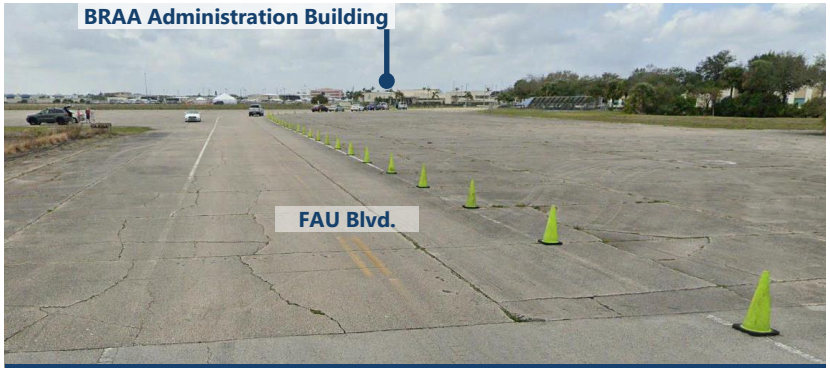
Underground Stormwater Containment

Recommendation: Evaluate capital costs, ongoing maintenance expenses, and return on investment on a case-by-case basis.

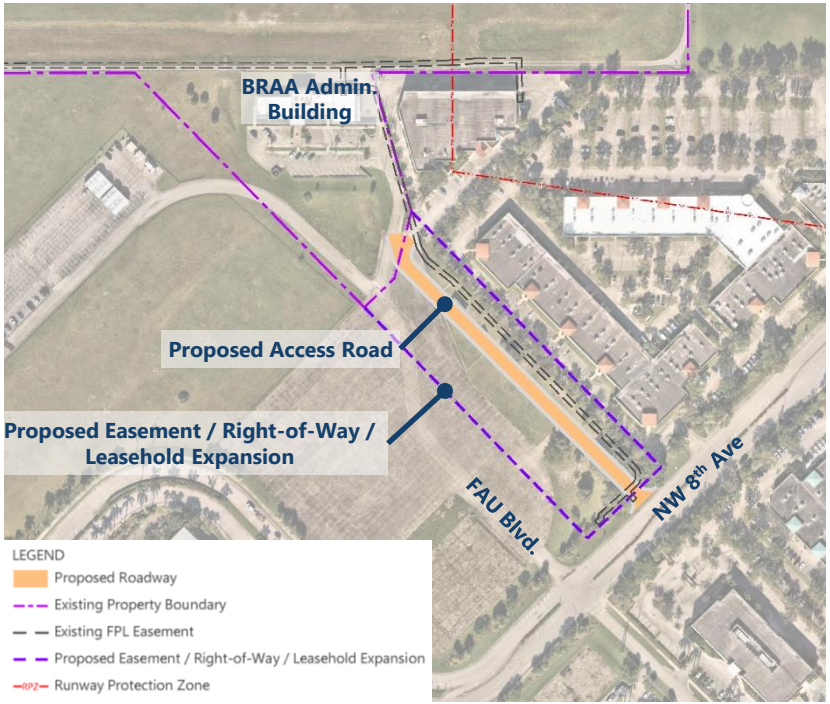
SOURCES: American Infrastructure Development, Inc., *Underground Containment Feasibility Study*, August 2020; ADS Pipe, https://www.adspipe.com/water-management-solutions (accessed October 12, 2022); Contech, https://www.conteches.com/knowledge-center/pdh-articles/introduction-to-designing-corrugated-metal-pipe-cmp-stormwater-detention-systems (accessed October 12, 2022).

BRAA Administration Building Access Road

The BRAA does not own the access road, have a dedicated right of way, or an easement preserving access to the Administration Building.



Recommendation: Obtain a dedicated right-of-way, easement, or expand leasehold to preserve access to existing and future Airport assets (BRAA Administration Building, Air Traffic Control Tower, etc.).



Source: Nearmap, Florida, November 2021 (aerial image for visual reference only – may not be to scale).

Alternatives and Concepts

Advanced Air Mobility Alternatives

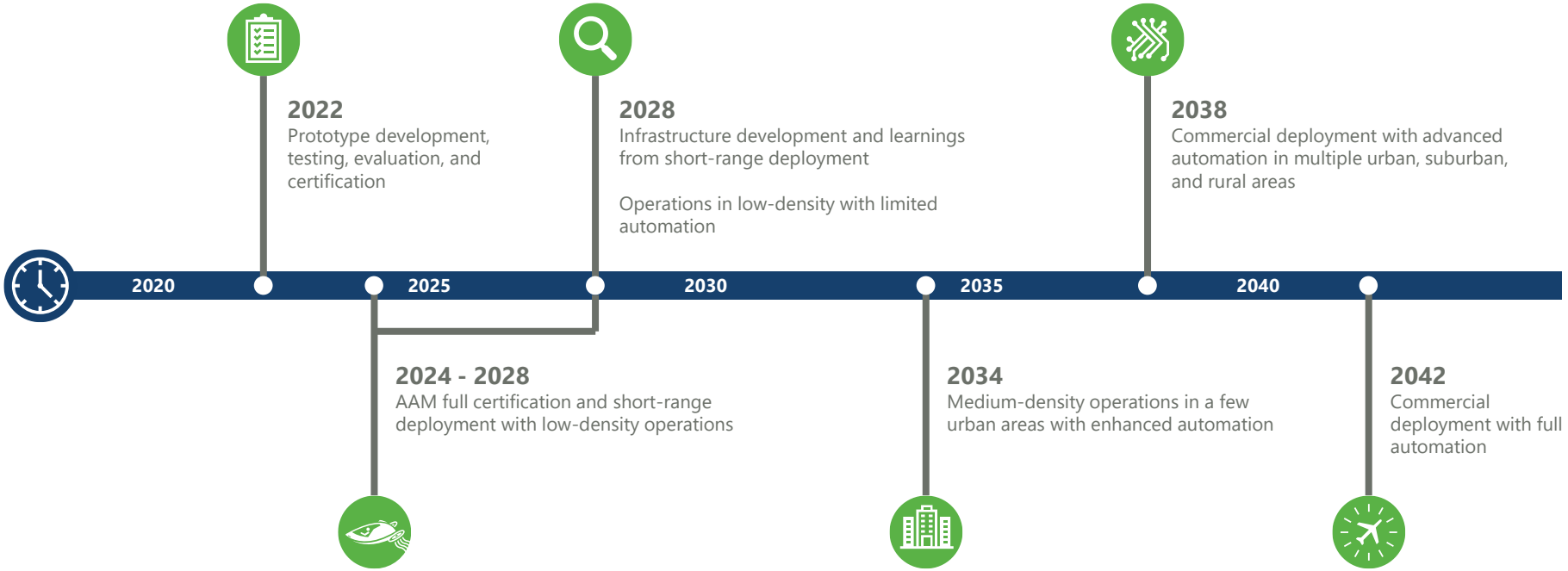
Advanced Air Mobility (AAM)

- AAM is a transportation system that will operate highly automated aircraft to transport passengers and cargo
- Other uses include public services and private/recreational operations
- Electric vertical takeoff and landing (eVTOL) aircraft
- Early stages of AAM will rely on existing transportation infrastructure
- Significant uncertainty surrounding AAM operations
  - Access and integration into airspace
  - Public acceptance
  - Affordability and economies of scale
  - Noise and environmental considerations

***Lilium Jet** (representative AAM aircraft)*

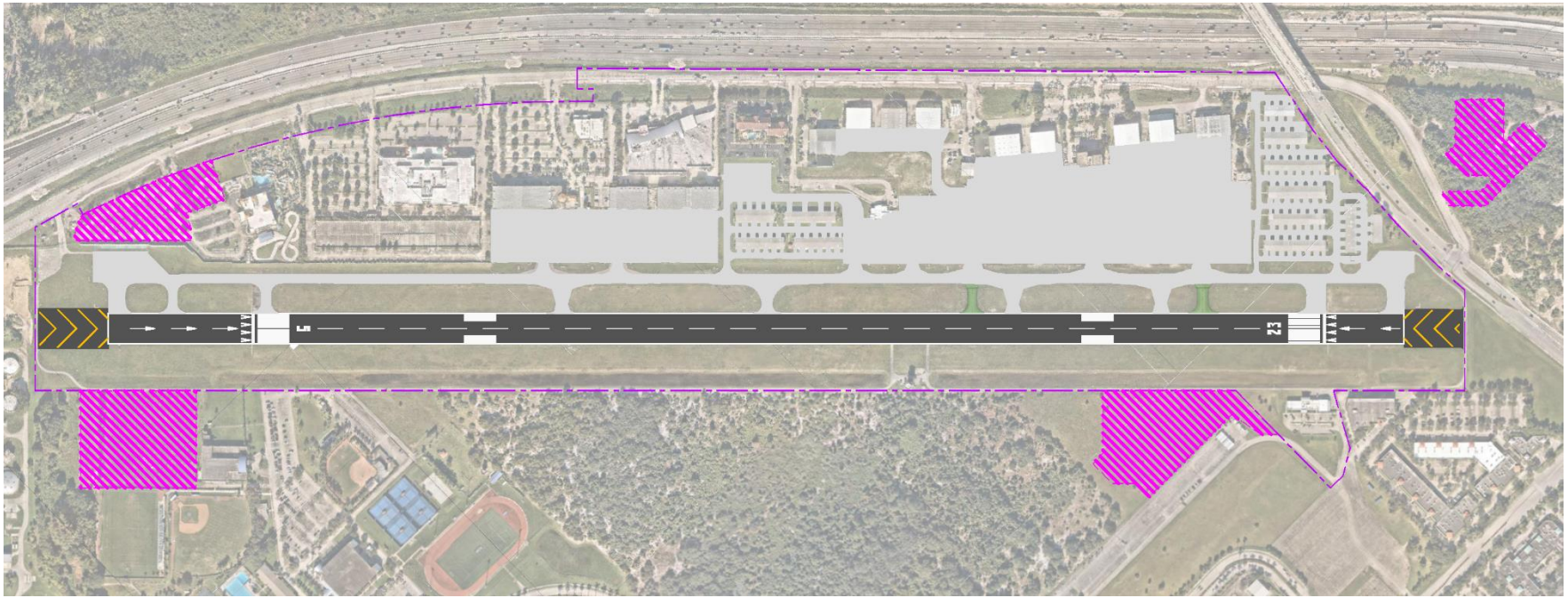
SOURCES: Federal Aviation Administration, https://www.faa.gov/uas/advanced_operations/urban_air_mobility (accessed March 17, 2022); Vertical Flight Society, https://vtol.org/news/press-release-vfs-electric-vtol-directory-hits-600-concepts (accessed March 17, 2022); Lilium, https://lilium.com/news (accessed April 5, 2022).

Advanced Air Mobility Preliminary Timeline



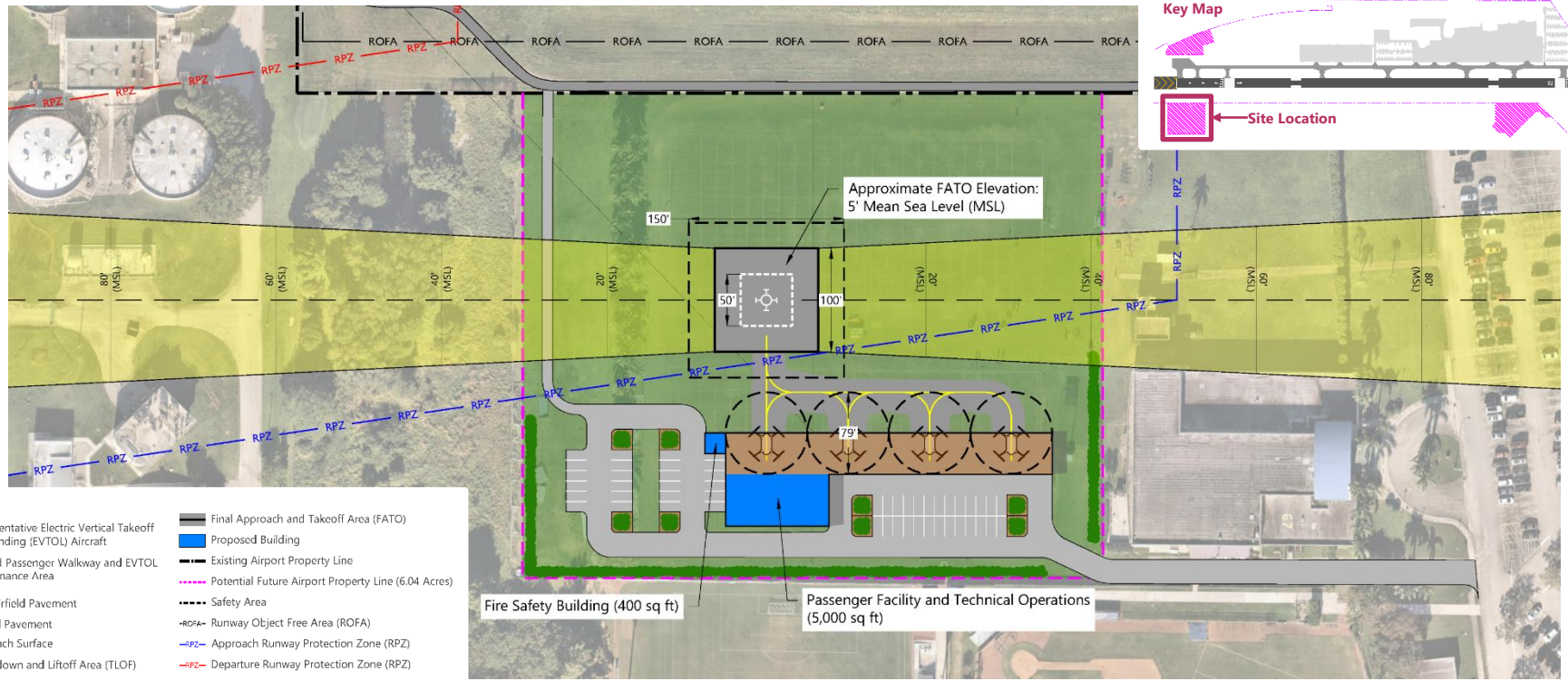
SOURCE: Deloitte, *Advanced Air Mobility - Can the United States Afford to Lose the Race?*, January 26, 2021, https://www2.deloitte.com/us/en/insights/industry/aerospace-defense/advanced-air-mobility.html (accessed June 20, 2022).

Advanced Air Mobility Site Location Options



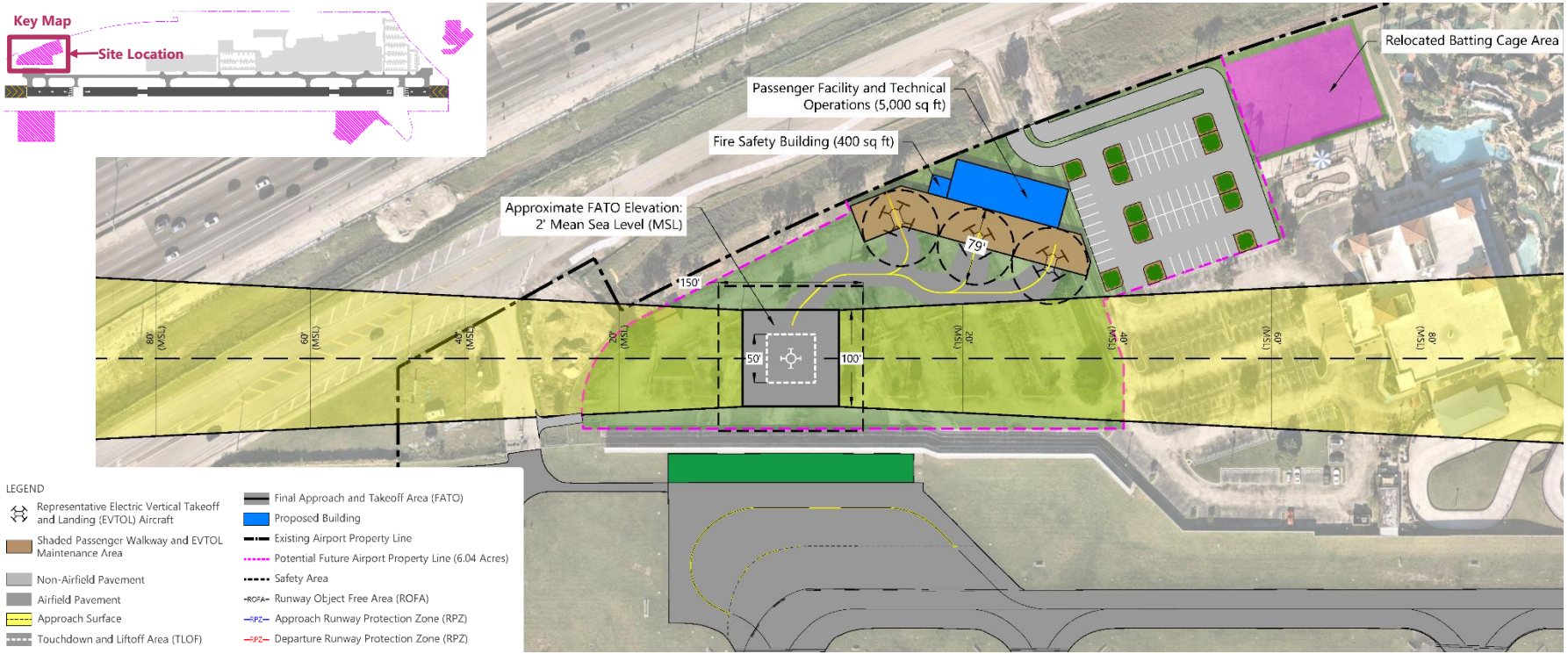
SOURCES: Draft Engineering Brief No. 105, Vertiport Design issued February 28, 2022; Ricondo & Associates Inc., July 2021; Nearmap, Florida, November 2021 (aerial image for visual reference only - may not be to scale).

Advanced Air Mobility – Alternative #1
East of Runway 5 Approach End



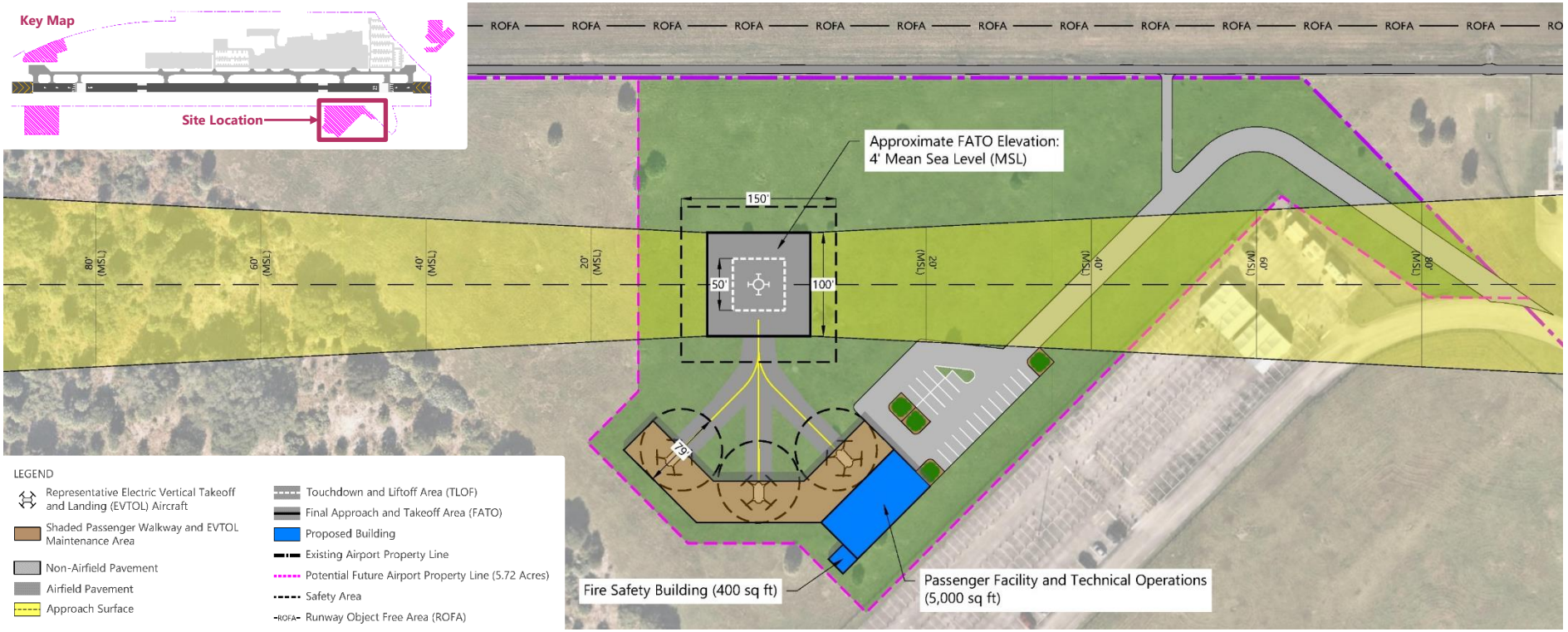
SOURCES: Draft Engineering Brief No. 105, Vertiport Design issued February 28, 2022; Ricondo & Associates Inc., July 2021; Nearmap, Florida, November 2021 (aerial image for visual reference only - may not be to scale).

Advanced Air Mobility – Alternative #2
West of Runway 5 Approach End



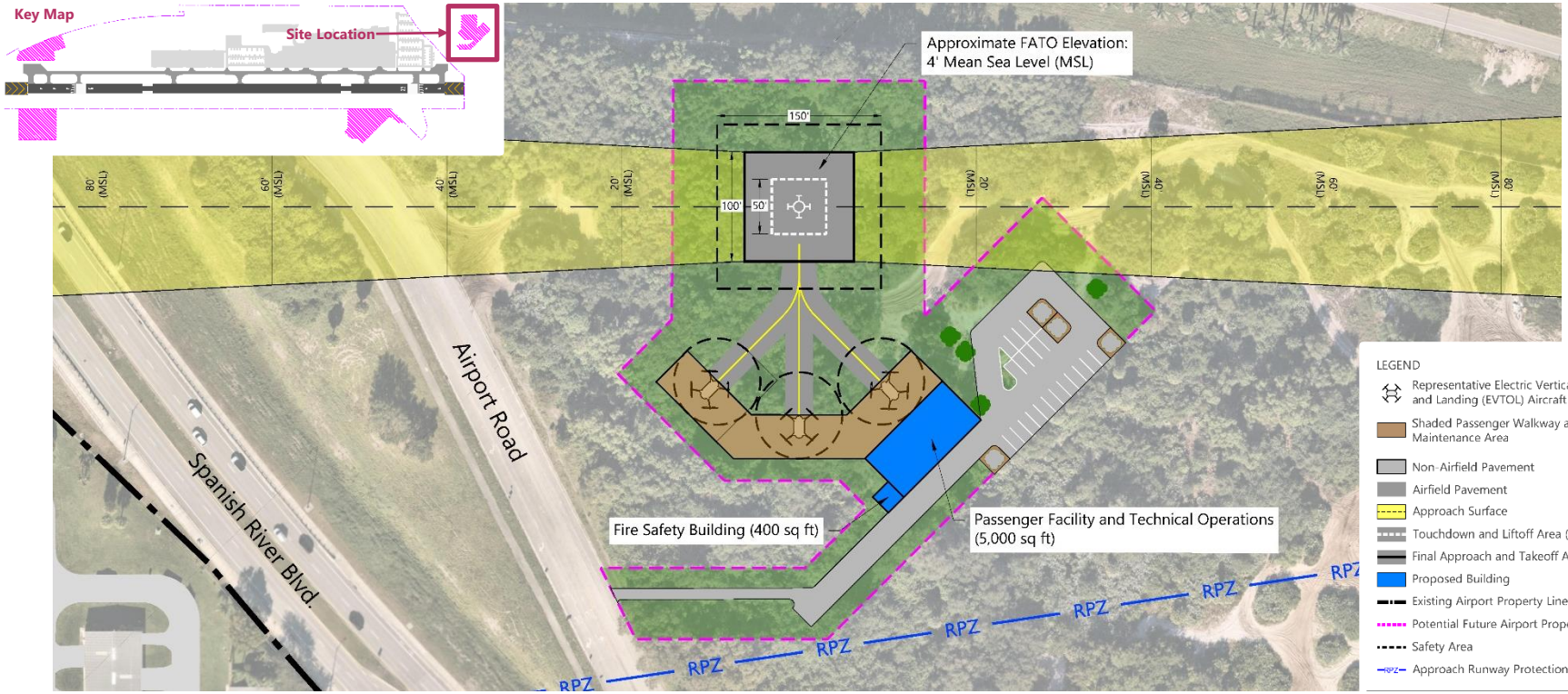
SOURCES: Draft Engineering Brief No. 105, Vertiport Design issued February 28, 2022; Ricondo & Associates Inc., July 2021; Nearmap, Florida, November 2021 (aerial image for visual reference only - may not be to scale).

Advanced Air Mobility – Alternative #3
East of Runway 5 Approach End



SOURCES: Draft Engineering Brief No. 105, Vertiport Design issued February 28, 2022; Ricondo & Associates Inc., July 2021; Nearmap, Florida, November 2021 (aerial image for visual reference only - may not be to scale).

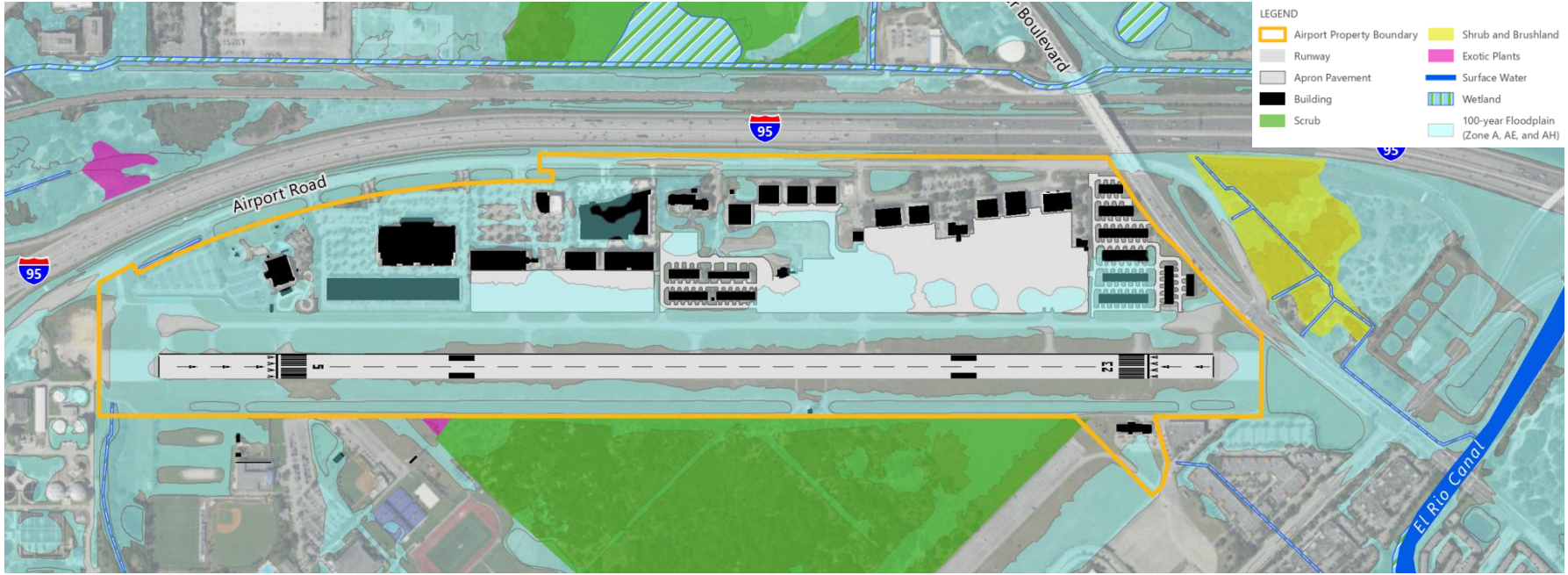
Advanced Air Mobility – Alternative #4
Potential Adjacent Land Opportunity (North of Airport Road)



SOURCES: Draft Engineering Brief No. 105, Vertiport Design issued February 28, 2022; Ricondo & Associates Inc., July 2021; Nearmap, Florida, November 2021 (aerial image for visual reference only - may not be to scale).

Other Master Planning Elements

Environmental Overview



SOURCES: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, January 2019 (basemap); US Fish and Wildlife Service, National Wetland Inventory and Ricondo & Associates, based on aerial imagery, October 2020 (wetlands); Federal Emergency Management Agency, FIRM Panels 12011C, 12099C, 2019 (floodplains); US Census, TIGER/Line Shapefile, 2019 (water); Ricondo & Associates, Inc., Airport Layout Plan, 2012 (Airport property and airfield)

Identify National Environmental Policy Act (NEPA) categories of concern for projects and level of study for projects

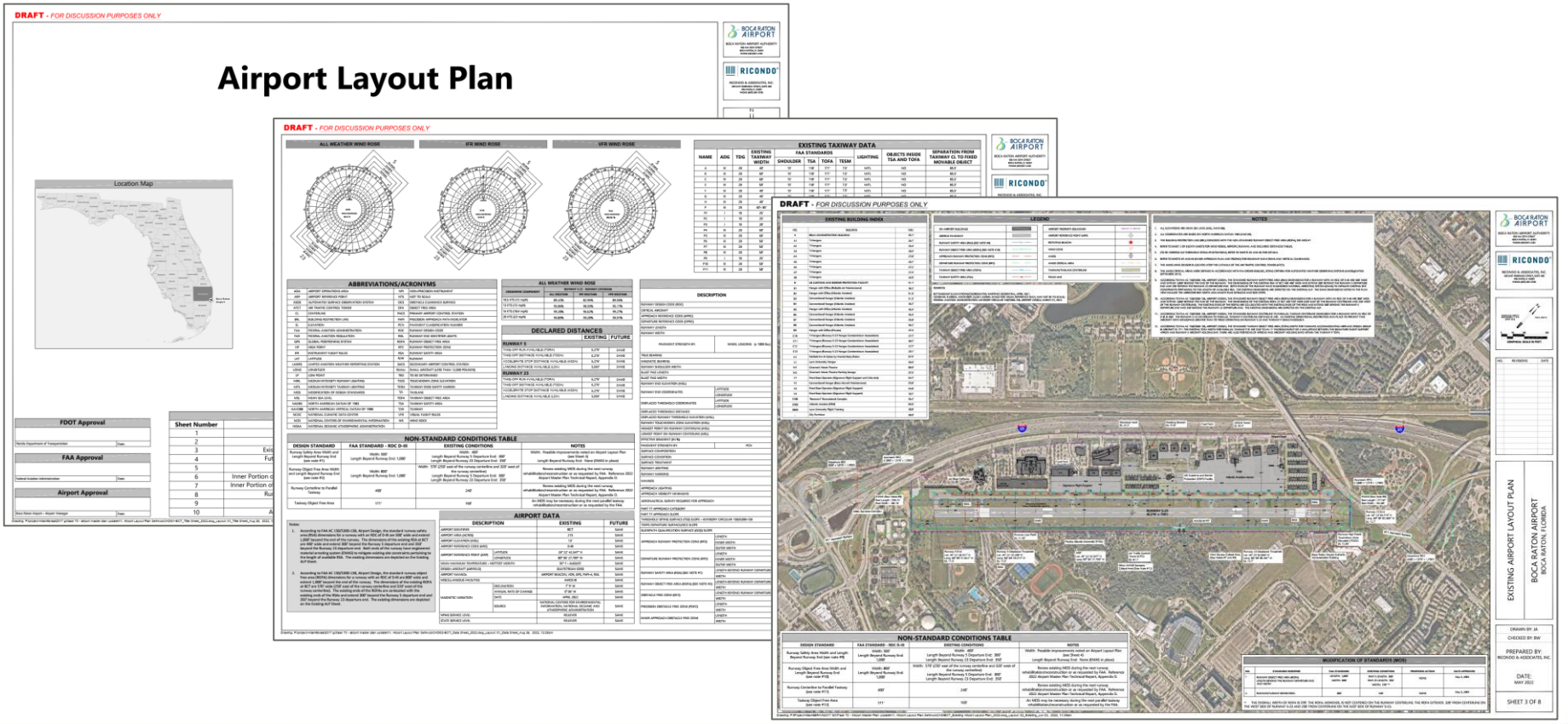
Sustainability Strategy and Airport Recycling, Reuse, and Reduction (ARRWR) Plan

- Identify programmatic level initiatives to integrate sustainability to the proposed master plan development projects
- ARRWR Plan (FAA requirement) to improve waste management performance
- Groundwork for future Sustainability Management Plan

Typical Airport Focus Areas

- Waste
- Water
- Energy
- Emissions
- Sustainable Design
- Financial Resiliency
- Community

Airport Layout Plan Drawing Set



Next Steps

Next Steps

Comments:

bctmpu@ricondo.com

- Develop Remaining Sections of the Master Plan Update
  - Environmental and Sustainability
  - ALP Development
  - Capital Improvement Program and Financial Analysis
- BRAA Board Workshop
- Finalize and Submit Master Plan Update to FAA and FDOT

On behalf of the Boca Raton Airport Authority Staff and project team, thank you for attending the TAC briefings and for providing input into the planning process.

THANK YOU

BOCA RATON AIRPORT

Airport Master Plan Update

Boca Raton Airport Authority
Board Workshop #2

January 18, 2023

BOCA RATON AIRPORT

Workshop Agenda

- Airport Master Plan Update Status
- Review of Future Demand
- Airfield Capacity and Facility Requirements
- Alternatives and Concepts
- Other Master Planning Elements
- Next Steps

Airport Master Plan Update Status

Primary Master Plan Goals

To evaluate the fleet of business jet aircraft that operate at the Airport

To define, evaluate, and recommend safety, capacity, and operational enhancements for BCT

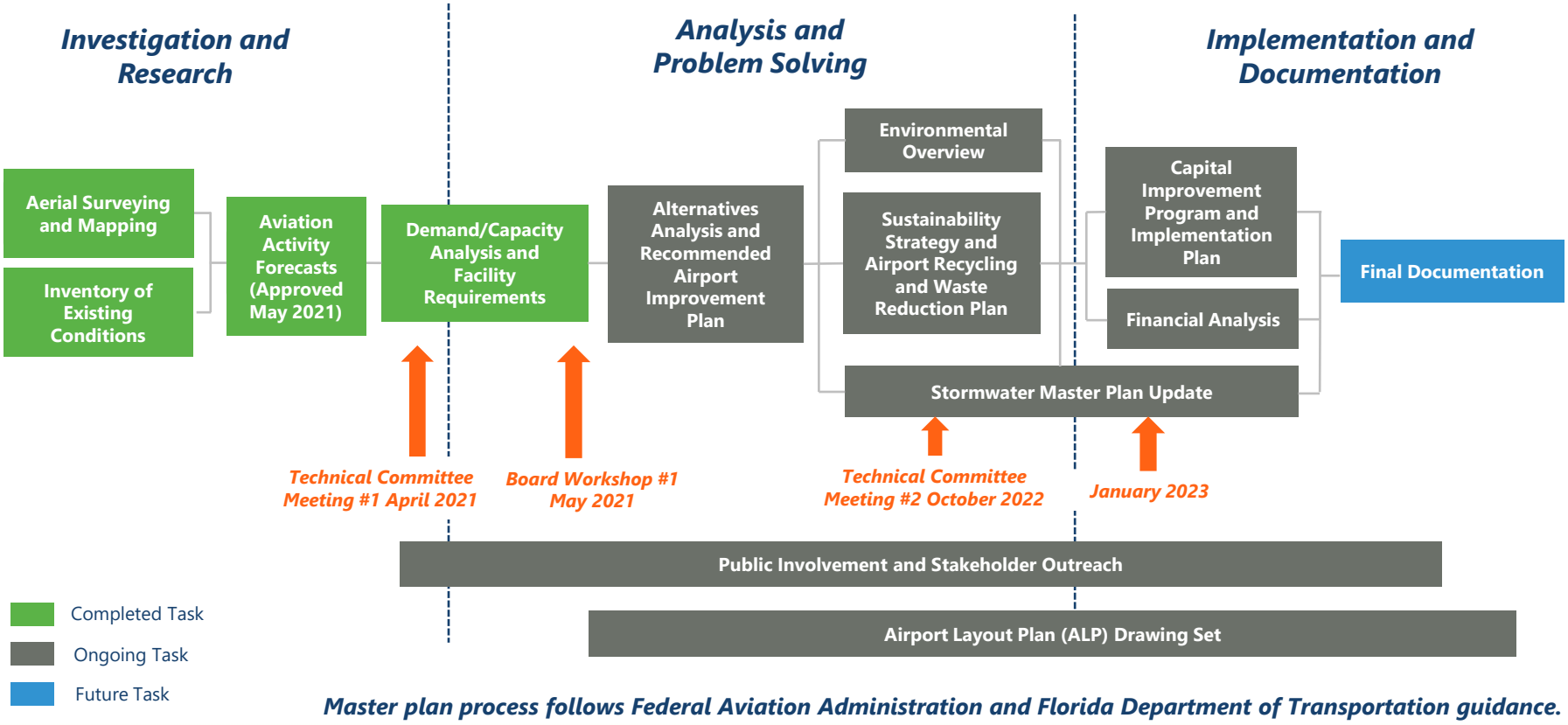
To update the 10-year Capital Improvement Program (CIP) for the Airport

To establish a plan that optimizes the use of BCT's limited land assets

"An airport master plan is a comprehensive study of an airport and usually describes the short-, medium-, and long-term development plans to meet future aviation demand."

- FAA Advisory Circular 150/5070 – 6B – Airport Master Plans

Project Process



Master plan process follows Federal Aviation Administration and Florida Department of Transportation guidance.

Review of Future Demand

Future Demand Summary *(Approved by FAA May 25, 2021)*

CATEGORY	ACTUALS		PROJECTED		
	FY 2020 (Base Year)	FY 2021	FY 2025	FY 2030	FY 2040
Total Aircraft Operations	**71,756**	**78,136**	**80,800**	**90,000**	**111,200**
Itinerant	45,683	52,537	50,600	55,800	67,200
Local	26,073	25,599	30,200	34,200	44,000
Total Based Aircraft	**241**	**208**	**253**	**267**	**298**
Single Engine	130	107	132	133	137
Multi Engine	27	25	28	29	31
Jet	81	68	90	101	125
Helicopter	3	4	3	4	5

Net Increase – 55%
- *Airfield Infrastructure*
- *Itinerant Aircraft Parking Apron*
- *Fuel Farm Requirements*
- *General Aviation/FBO Terminal*
- *Vehicular Parking*

Net Increase – 24%
- *Hangar Requirements*
- *Maintenance Requirements*
- *Based Aircraft Parking Apron*

NOTE: FBO – Fixed Base Operator; FY – Fiscal Year (October 1 – September 30)
SOURCE: Ricondo & Associates, Inc., March 2021.

Airfield Capacity and Facility Requirements

Airport Capacity and Facility Requirements

Items evaluated/incorporated in the MPU and discussed throughout the remainder of the workshop

- **Airfield**
  - FAA design standards for runways and taxiways
  - Lighting and signage
- **General Aviation / Aeronautical Use**
  - Hangar space
  - Apron parking
- **Support Facilities**
  - Navigational aids
  - Fuel facilities and vehicular parking
- **Landside / Other**
  - Potential adjacent land opportunities
  - Advanced Air Mobility (AAM) alternatives

Airfield Capacity

	BASE (FY 2020)	FY 2040
Annual Operations	71,756	111,200
Annual Service Volume	136,000	136,000
Annual Service Volume Ratio	**53%**	**82%**

Airfield capacity is adequate to accommodate forecast demand throughout the planning period.

Airfield capacity must be balanced with other airport components including hangars, apron areas, and landside facilities. BCT has limited developable space which could impact ASV ratio.

SOURCES: US Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5060-5, *Airport Capacity and Delay*, December 1995; Ricondo & Associates, Inc., *Aviation Activity Forecasts*, January 2021.

Additional General Aviation Facility Requirements

General Aviation Facility Description[1/]	FY 2025	FY 2030	FY 2040
Hangars	99,000	140,000	231,000
Apron	110,000	219,000	525,000
Other Support Areas[2/]	39,000	87,000	243,000
Total	**248,000**	**434,000**	**999,000**
Total in Acres	**5.69**	**9.96**	**22.93**

Additional general aviation facilities are needed to accommodate the future demand identified in the aviation activity forecasts.

These values are in excess of the current general aviation facilities at BCT.

NOTES:

FBO – Fixed Base Operator
FY – Fiscal Year (October 1 – September 30)

1/ Values are presented in square feet unless otherwise noted.
2/ Other support areas include GA/FBO Terminal facilities, vehicular parking, and landscaping/drainage areas.

SOURCE: Ricondo & Associates, Inc., March 2021.

Alternatives and Concepts

Airfield Alternatives and Concepts

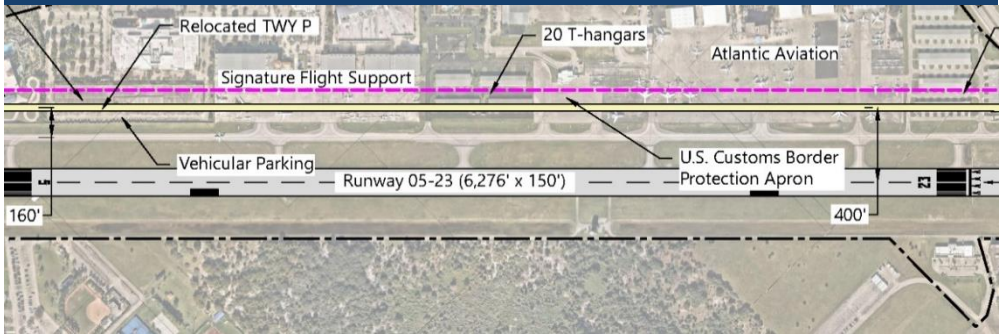
Runway to Taxiway Centerline Separation

- Existing separation – 240’
  - Modification of Standards (MOS) approved by FAA May 5, 2004
  - Operational restriction – Standard Operating Procedure with Air Traffic Control Tower - January 7, 2016
- FAA standard separation – 400’[1]
  - At the FAA’s request, a new MOS was developed and will be considered during the next runway or taxiway rehabilitation or improvement project.

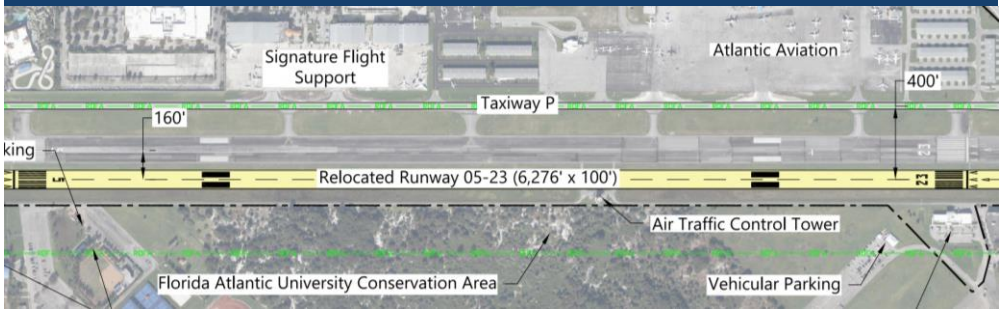
Relocating the runway or taxiway is not practical due to operational, financial, and environmental impacts

Note:
1. According to FAA Advisory Circular, 150/5300-13B, *Airport Design*, Page 2-6, “Site-specific conditions may make it impractical to meet all FAA design standards at an airport. The FAA considers, on a case-by-case basis, modifications to design standards that result in an acceptable level of safety and efficiency. Specific operational controls may be necessary to establish an acceptable level of safety for operation of aircraft at the airport.”

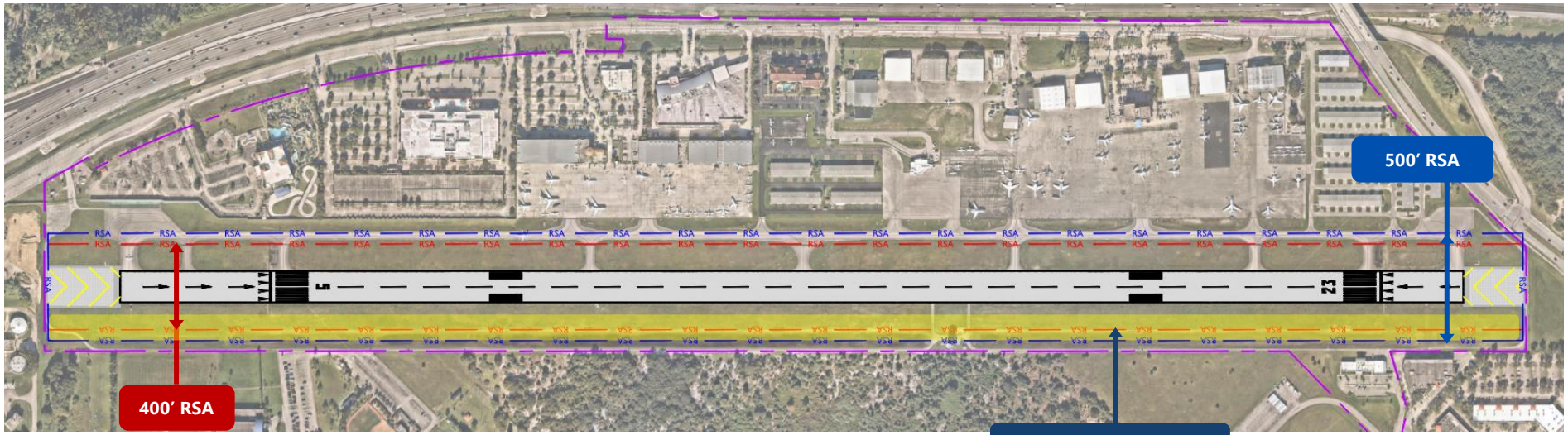
Relocate Parallel Taxiway Alternative



Relocate Runway Alternative



Runway Safety Area Improvements



Total ROM Cost[1,2]
$2.5 M

Notes:
1. Total rough order of magnitude cost estimate includes design (engineering, surveying and geotechnical, and construction administration) and construction.
2. Costs developed using 2022 US dollars.

SOURCES: Ricondo & Associates, Inc., September 2022; American Infrastructure Development, Inc., December 2022 (cost estimate).

Engineered Material Arresting System (EMAS)

EMAS installed in 2016 (Runway 23 approach end) and 2017 (Runway 5 approach end)

Aircraft Fleet Evolution

2016 — 2022

Bombardier Challenger 300

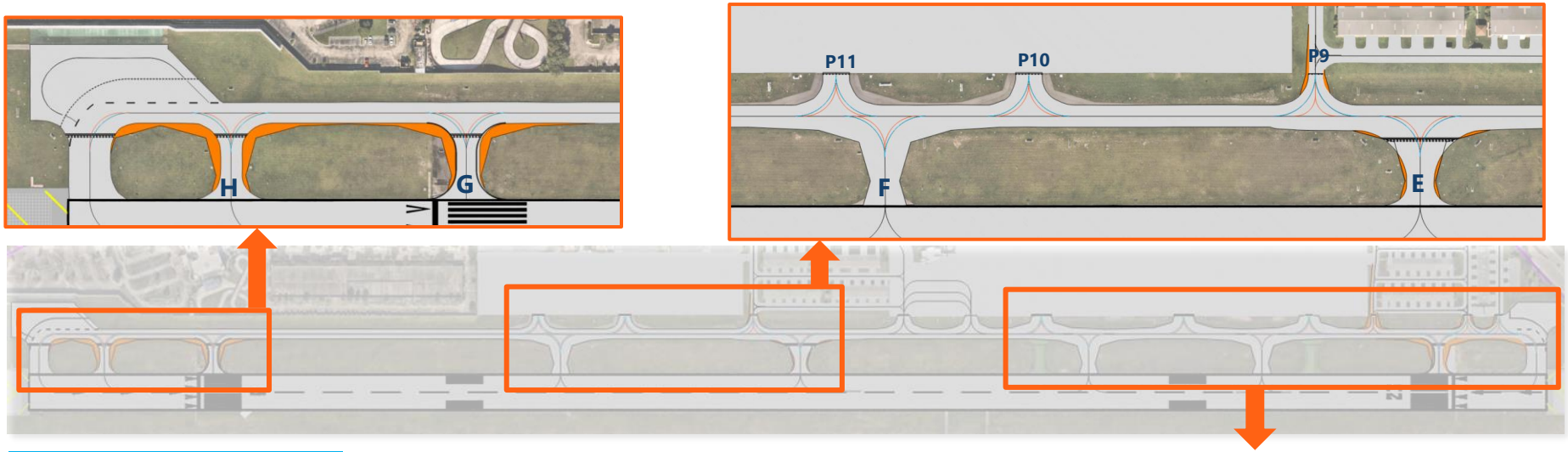
Gulfstream 550

Total ROM Cost[1,2]
$50 K

Recommendation: Coordinate with the EMAS manufacturer to study whether the performance of the existing EMAS is sufficient to accommodate the current fleet of aircraft.

Notes:
1. Total rough order of magnitude cost estimate includes EMAS evaluation.
2. Costs developed using 2022 US dollars.

Taxiway Geometry Enhancements



Total ROM Cost[1,2]
$2.0 M

Recommendation: Geometry enhancements to provide standard taxiway edge safety margin in accordance with FAA design standards.

Notes:
1. Total rough order of magnitude cost estimate includes construction and design (engineering, surveying and geotechnical, and construction administration).
2. Costs developed using 2022 US dollars.

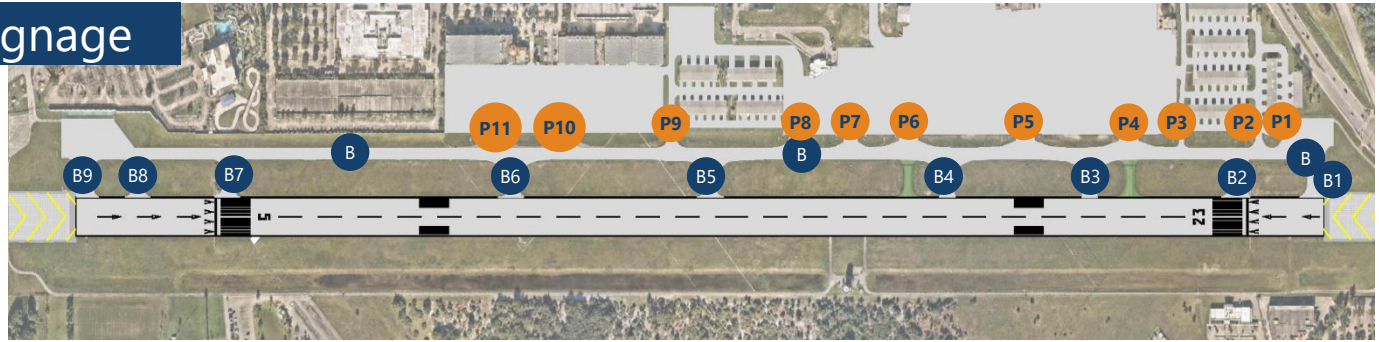
SOURCES: Ricondo & Associates, Inc., September 2022; American Infrastructure Development, Inc., December 2022 (cost estimate).

Airfield Lighting, Signage, and Navigational Aids

Lighting

Navigational Aids

Signage



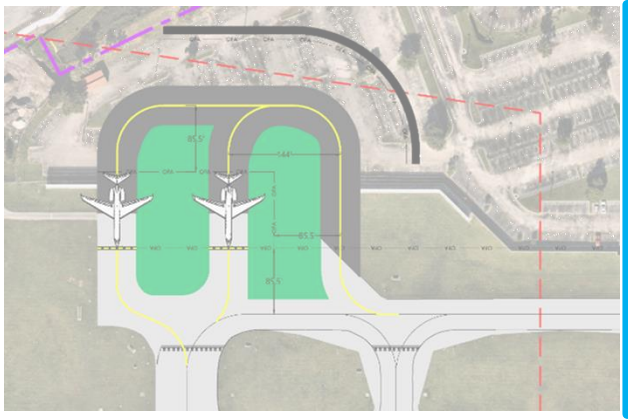
Total ROM Cost[1]
$3.0 M

Recommendation: Replace airfield lighting, signage, and navigational aids that are near the end of their useful life with newer, LED technology. Rename taxiways in accordance with the latest FAA guidance.

Notes:
1. Costs developed using 2022 US dollars.

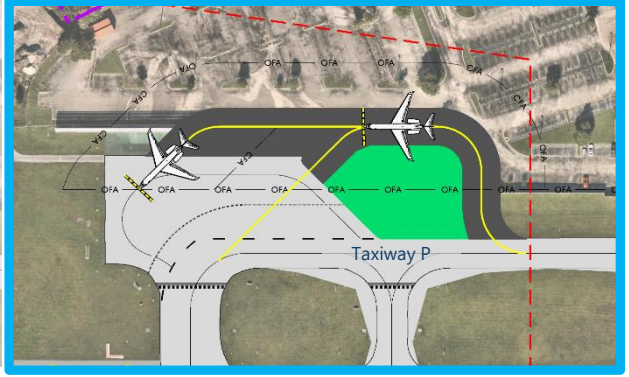
Runway 5 Aircraft Holding Bay Options

Option 1

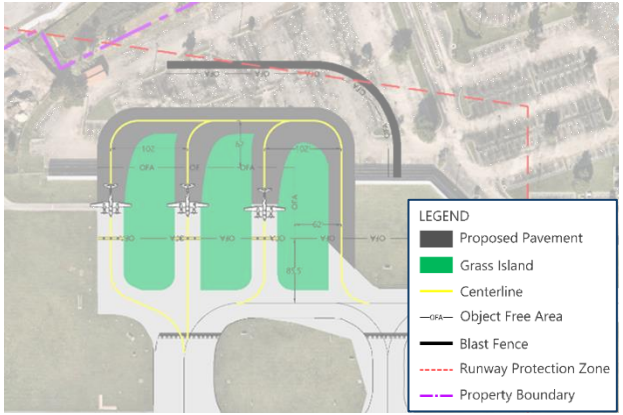


Option 2

Preferred Option Identified by the Technical Advisory Committee



Option 3



Total ROM Cost[1,2]
$1.0 M

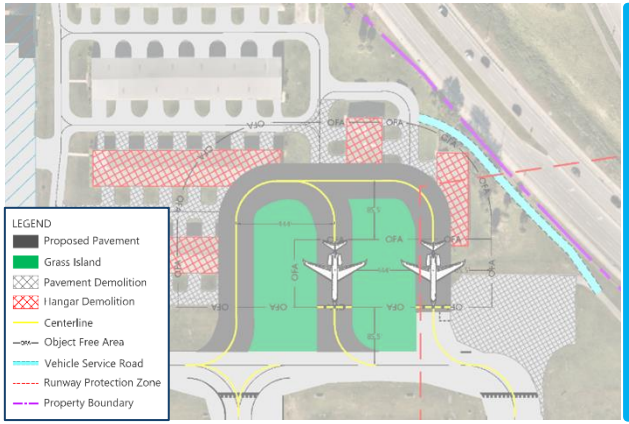
Recommendation: Construct aircraft holding bay outside of Taxiway P taxiway object free area and in accordance with current FAA design standards.

Notes:
1. Total rough order of magnitude cost estimate includes construction and design (engineering, surveying and geotechnical, and construction administration).
2. Costs were developed using 2022 US dollars.

SOURCES: Ricondo & Associates, Inc., September 2022; American Infrastructure Development, Inc., December 2022 (cost estimate).

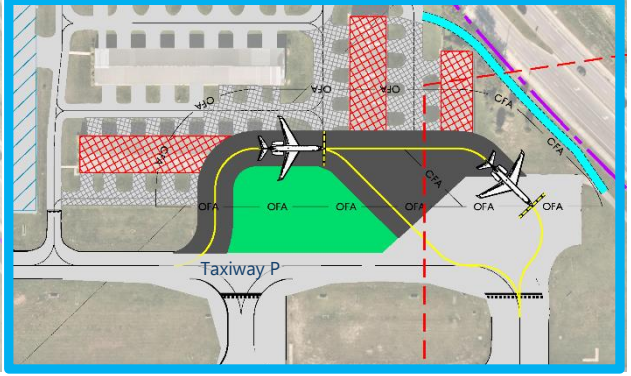
Runway 23 Aircraft Holding Bay Options

Option 1

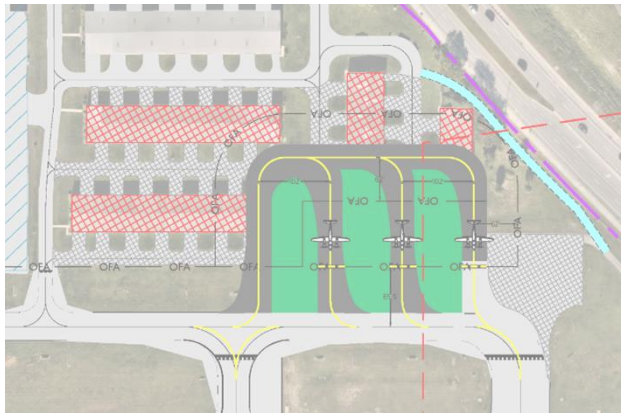


Option 2

Preferred Option Identified by the Technical Advisory Committee



Option 3



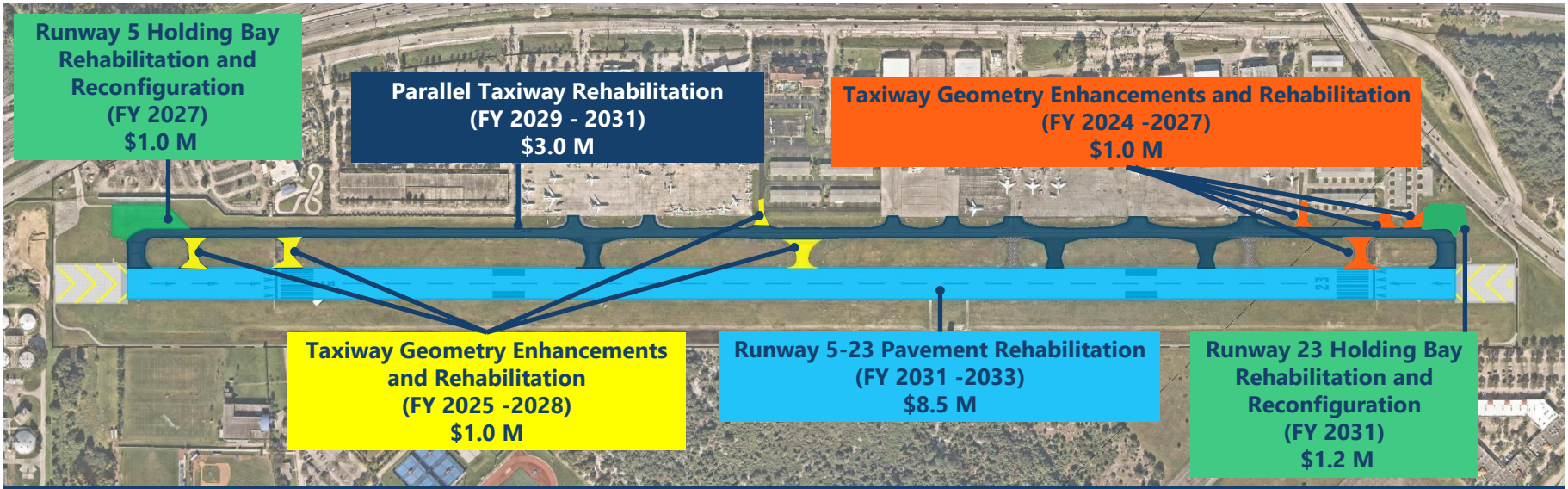
Total ROM Cost[1,2]
$1.2 M

Recommendation: Construct aircraft holding bay outside of Taxiway P taxiway object free area and in accordance with current FAA design standards.

Notes:
1. Total rough order of magnitude cost estimate includes construction and design (engineering, surveying and geotechnical, and construction administration).
2. Costs were developed using 2022 US dollars.

SOURCES: Ricondo & Associates, Inc., September 2022; American Infrastructure Development, Inc., December 2022 (cost estimate).

Pavement Rehabilitation
(2022 FDOT *Statewide Airfield Pavement Management Program*)



Recommendation: Rehabilitate pavement in accordance with FDOT recommendations and incorporate MPU geometry enhancements. Timeframe subject to change pending phasing and identification of funding sources.

Notes:
1. Total rough order of magnitude cost estimate includes construction and design (engineering, surveying and geotechnical, and construction administration).
2. Costs developed using 2022 US dollars.

SOURCES: Florida Department of Transportation, Aviation and Spaceport Office, *Statewide Airfield Pavement Management Program District 4*, November 2019; Ricondo & Associates, Inc, January 2023; American Infrastructure Development, Inc., December 2022.

Airfield Service Road

Total ROM Cost[1,2]
$2.0 M

Recommendation: Widen airfield service road by 3' – 4' for emergency vehicles (project will consider stormwater implications)

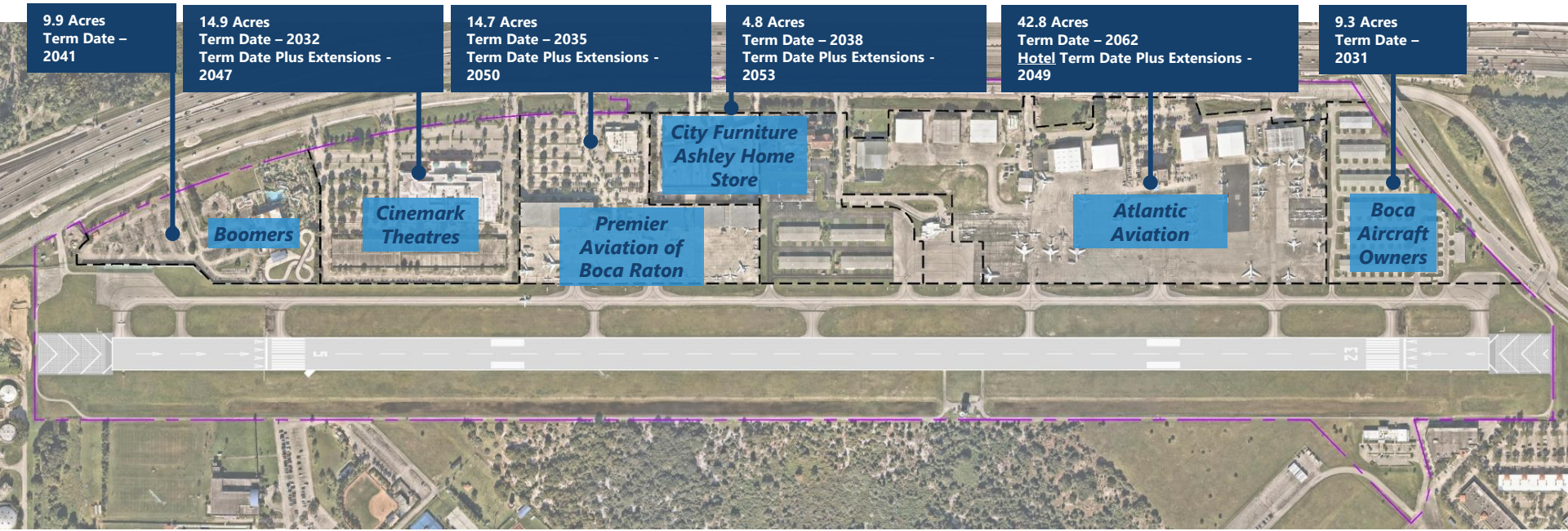
Notes:
1. Total rough order of magnitude cost estimate includes construction and design (engineering, surveying and geotechnical, and construction administration).
2. Costs developed using 2022 US dollars.

SOURCES: Ricondo & Associates, Inc., September 2022; American Infrastructure Development, Inc., December 2022 (cost estimate).

Alternatives and Concepts

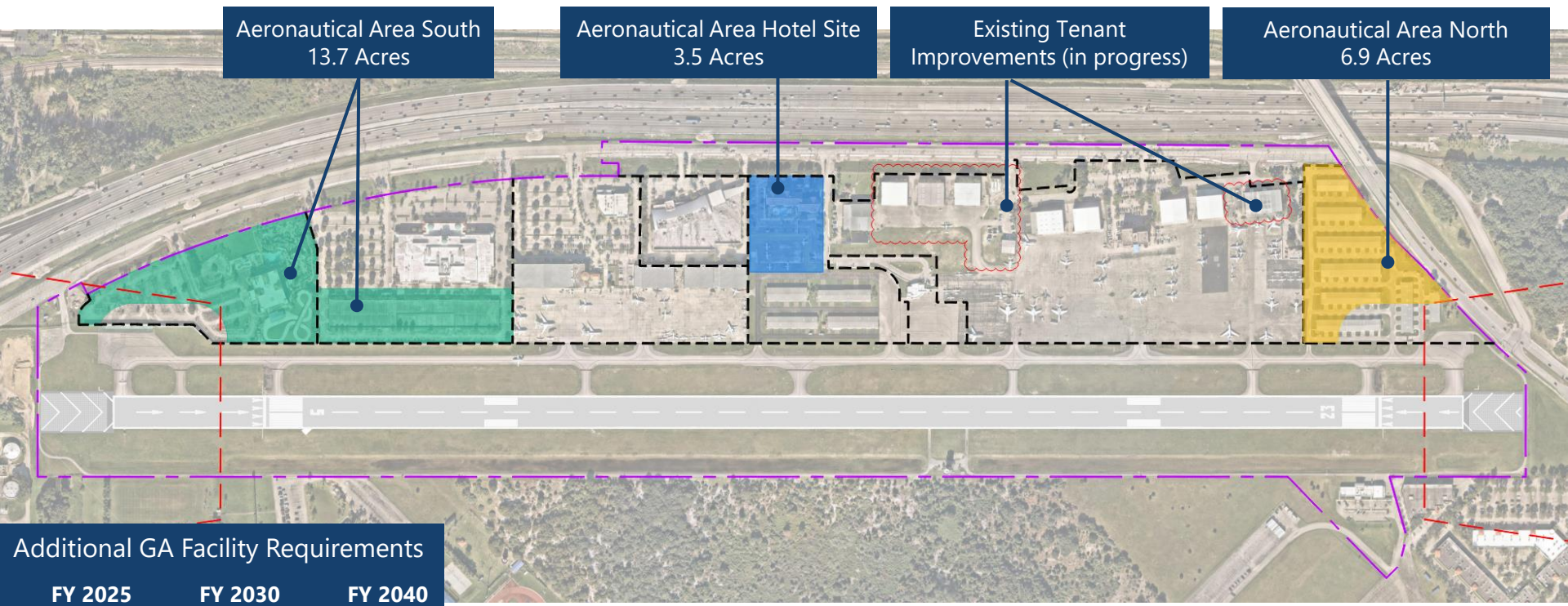
General Aviation / Aeronautical Use Concepts

Existing Property and Leaseholds



SOURCES: Boca Raton Airport Authority, January 2020 (leasehold details); Ricondo and Associates, *Airport Layout Plan*, June 2018; Martinez Geospatial, Inc., November 2019 (aerial photo).

GA/Aeronautical Use – Potential Redevelopment Sites

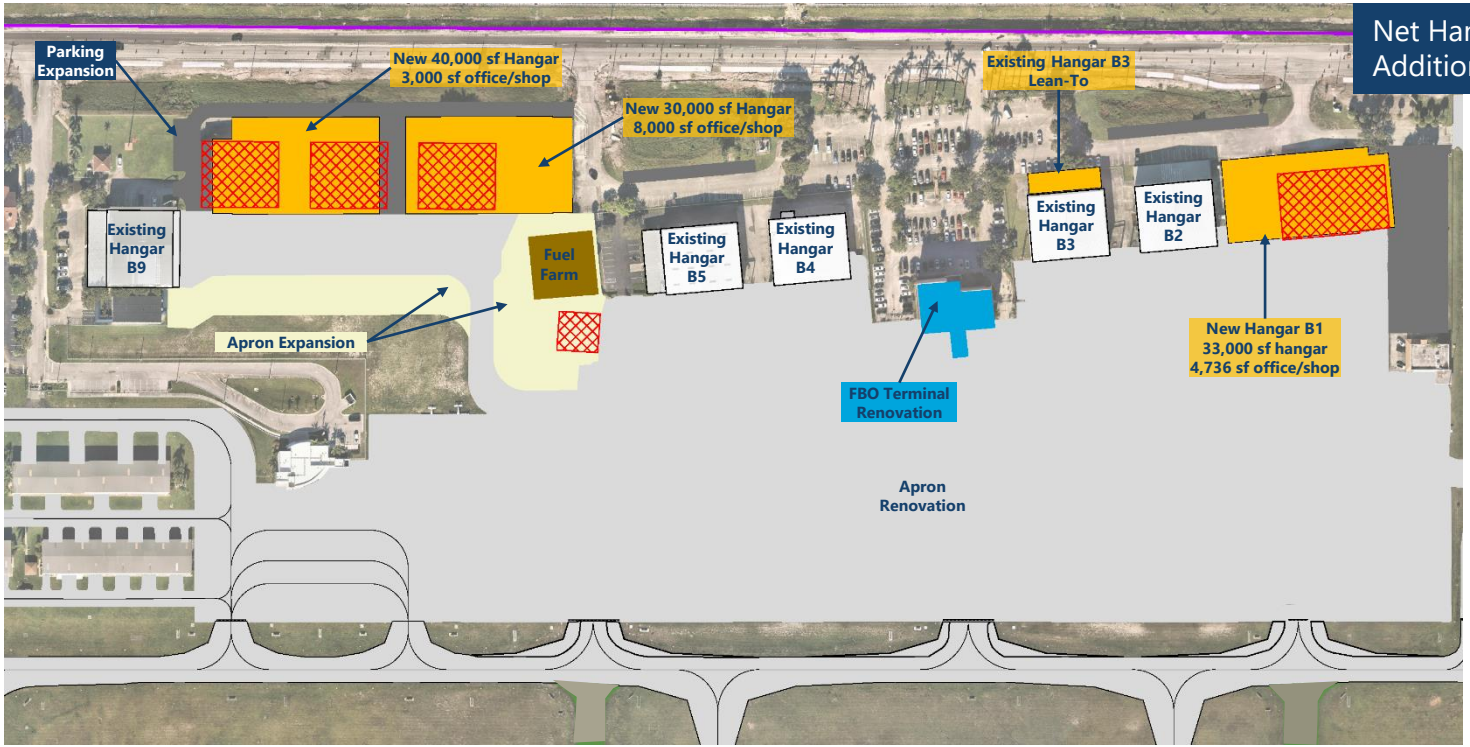


Additional GA Facility Requirements

FY 2025	FY 2030	FY 2040
6 Acres	10 Acres	23 Acres

SOURCES: Boca Raton Airport Authority, January 2020 (leasehold details); Ricondo and Associates, *Airport Layout Plan*, June 2018; Martinez Geospatial, Inc., November 2019 (aerial photo).

Atlantic Aviation Proposed Improvements

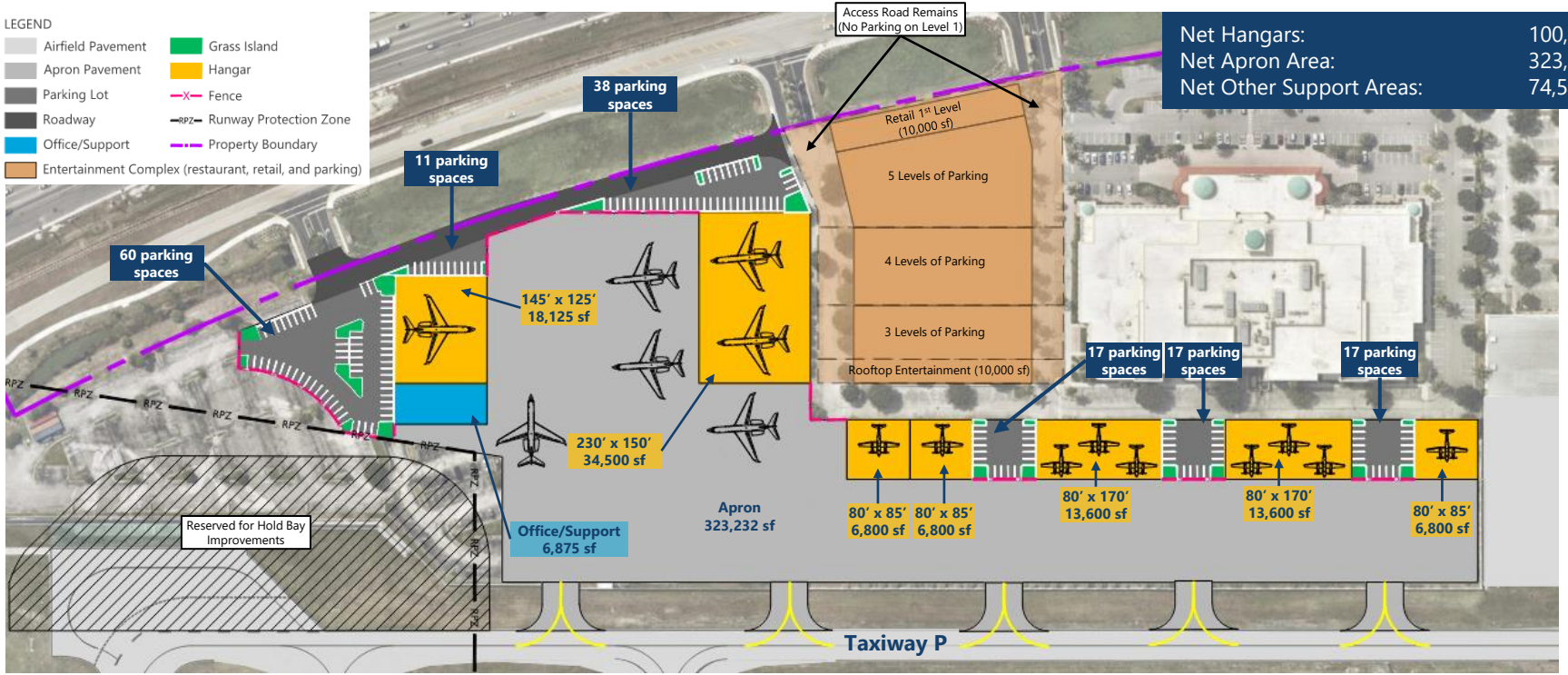


Net Hangar Development: 54,000 sf
Additional Apron Area: 70,000 sf

LEGEND
- Apron Expansion
- Apron Pavement
- Parking Lot
- FBO Terminal
- Fuel Farm
- Existing Hangar
- New Hangar
- Hangar Demolition
- Property Boundary

SOURCE: Atlantic FBO Facilities and Site Renovation - Boca Raton, Florida, Conceptual Design, May 2022.

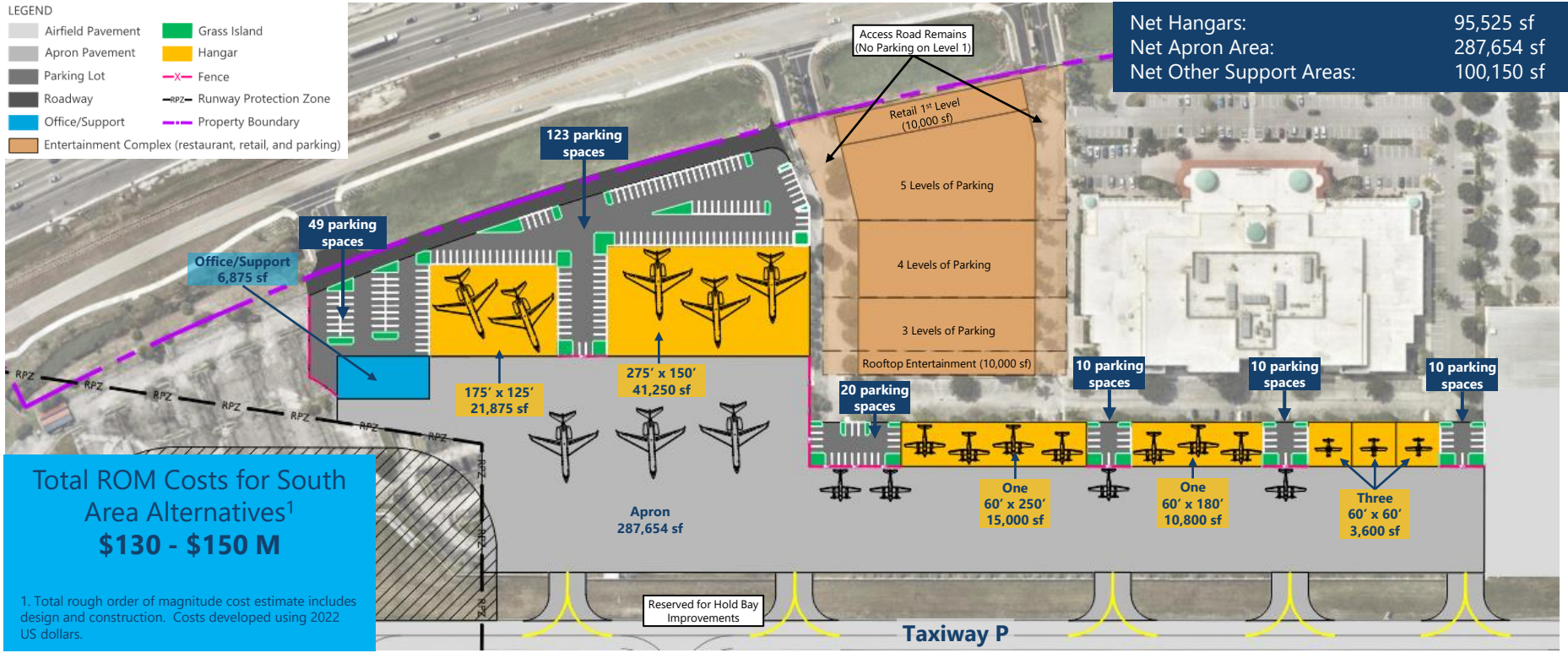
GA/Aeronautical Use
South Area Alternative 1



Net Hangars:	100,225 sf
Net Apron Area:	323,232 sf
Net Other Support Areas:	74,500 sf

SOURCES: Ricondo & Associates Inc., September 2022; American Infrastructure Development, Inc., December 2022 (cost estimate).

GA/Aeronautical Use
South Area Alternative 2



Total ROM Costs for South Area Alternatives[1]

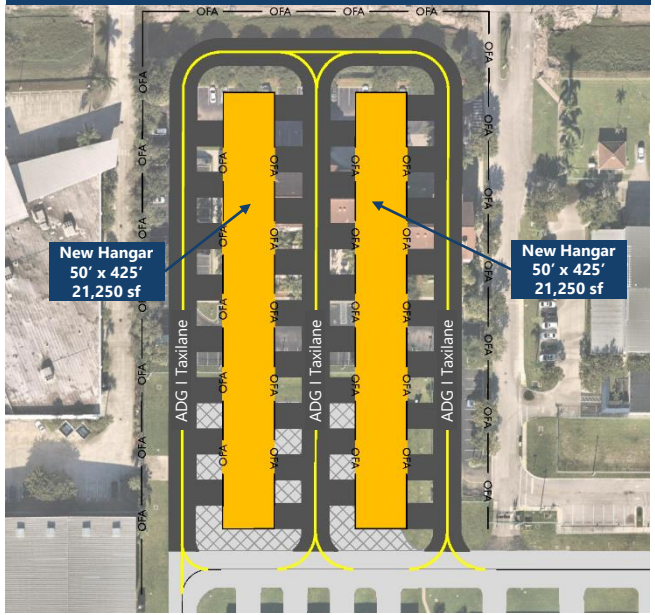
$130 - $150 M

1. Total rough order of magnitude cost estimate includes design and construction. Costs developed using 2022 US dollars.

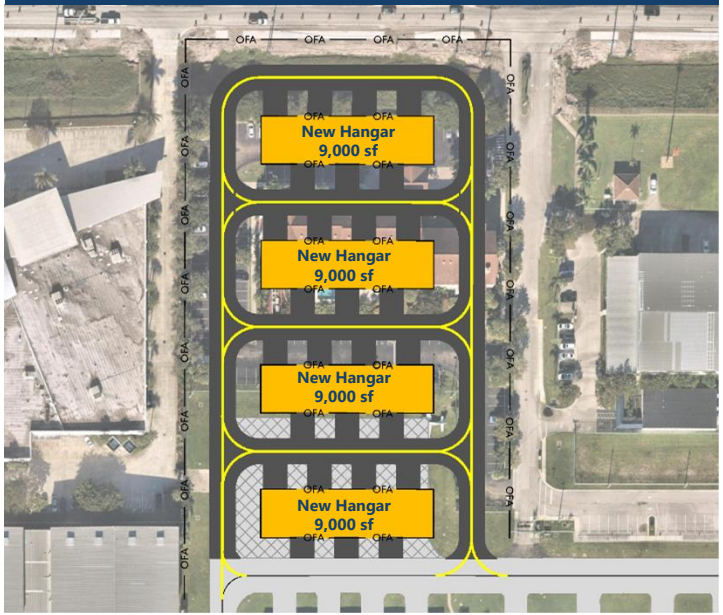
SOURCES: Ricondo & Associates Inc., September 2022; American Infrastructure Development, Inc., December 2022 (cost estimate).

GA/Aeronautical Use
Hotel Site Alternatives

Hotel Site Alternative 1
New T-hangars: 42,500 sf (34 units)
Apron Pavement Loss: 32,900 sf



Hotel Site Alternative 2
New T-hangars: 36,000 sf (28 units)
Apron Pavement Loss: 32,900 sf



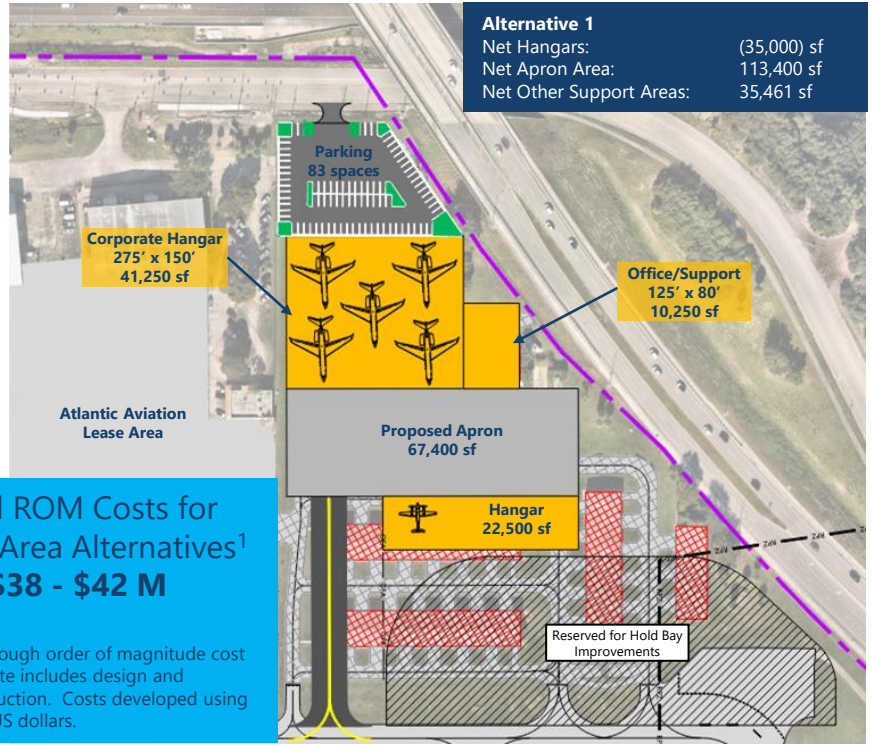
LEGEND
- Apron Demolition
- Taxilane Pavement
- New Hangar
- Centerline
- Taxilane Object Free Area (OFA)

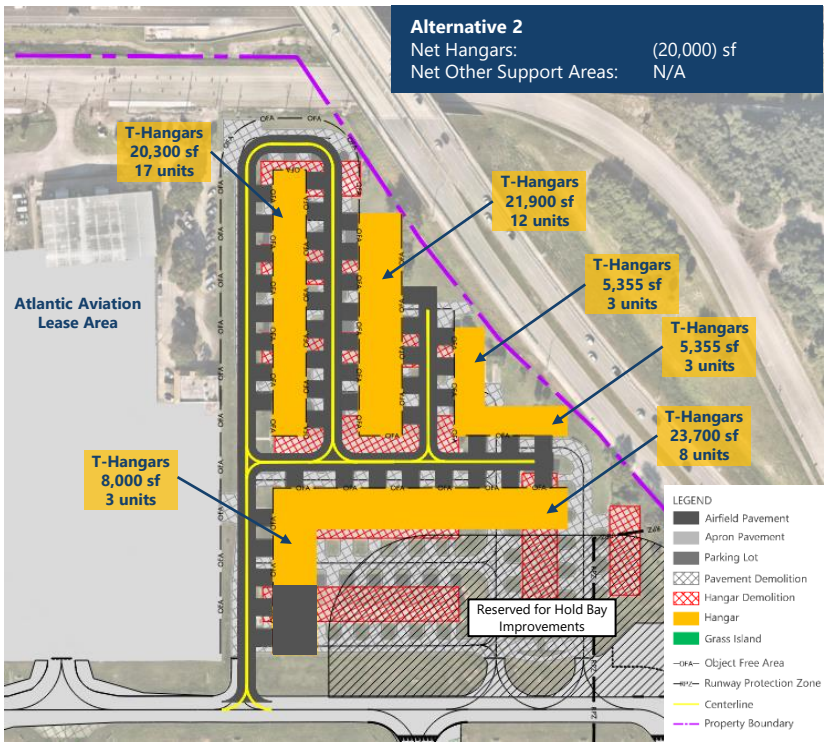
Total ROM Costs for Hotel Site Alternatives[1]
$13 - $15 M

1. Total rough order of magnitude cost estimate includes design and construction. Costs developed using 2022 US dollars.

SOURCES: Ricondo & Associates Inc., September 2022; American Infrastructure Development, Inc., December 2022 (cost estimate).

GA/Aeronautical Use
North Area Alternatives





Total ROM Costs for North Area Alternatives[1]
$38 - $42 M

1. Total rough order of magnitude cost estimate includes design and construction. Costs developed using 2022 US dollars.

SOURCES: Ricondo & Associates Inc., September 2022; American Infrastructure Development, Inc., December 2022 (cost estimate).

Alternatives and Concepts

Support Facility Concepts

Support Facilities

Total ROM Cost[1, 2, 3]
$2.8 M

- **Air Traffic Control Tower**
  - Constructed in 2000
  - *Replacement with new remote tower*

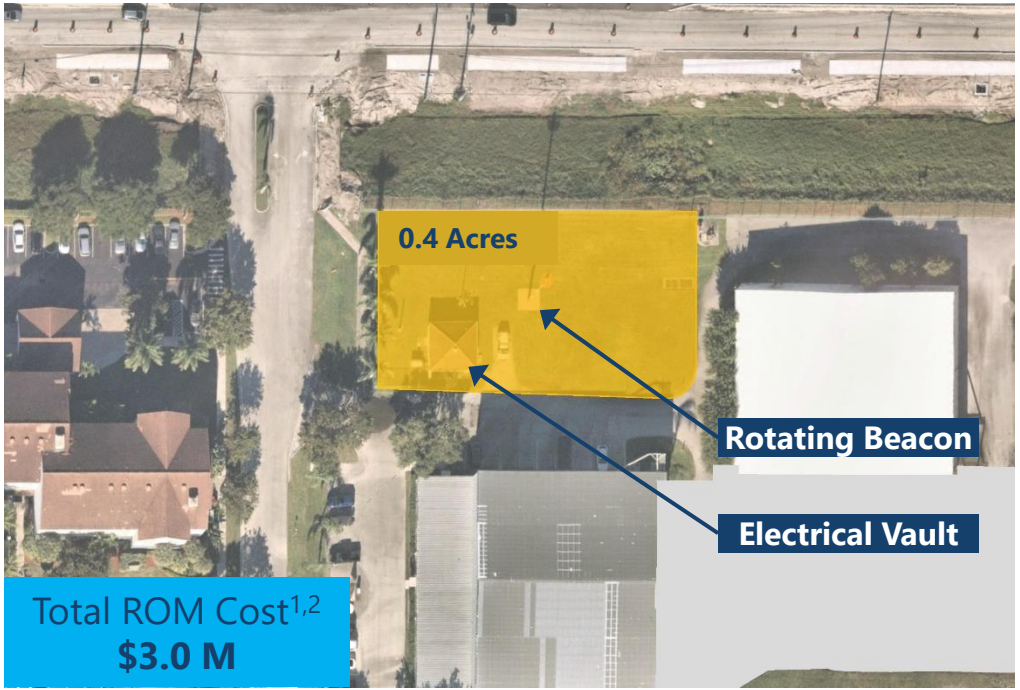
Total ROM Cost[2, 3]
$1.0 M

- **Automated Weather Observing System (AWOS)**
  - Installed in 2013
  - *Replacement with Automated Surface Observing System (ASOS)*

Notes:
1. Rough order of magnitude cost for the air traffic control tower includes the cost of technology and equipment to support a remote or virtual tower, a 2,000-square-foot support building, and up to eleven airfield cameras.
2. Total rough order of magnitude cost estimate includes design services (engineering, surveying and geotechnical, and construction administration) and construction.
3. Costs developed using 2022 US dollars.

SOURCES: Ricondo & Associates Inc., September 2022; American Infrastructure Development, Inc., December 2022 (cost estimate).

Relocation of Electrical Vault and Rotating Beacon



- Beacon to be relocated on top of ATCT
- Electrical equipment to be relocated to the first floor of ATCT

NOTES:
1. Total rough order of magnitude cost estimate includes construction and design (engineering, surveying and geotechnical, and construction administration).
2. Costs developed using 2022 US dollars.

Alternatives and Concepts

Landside Concepts

Potential Adjacent Land Opportunities

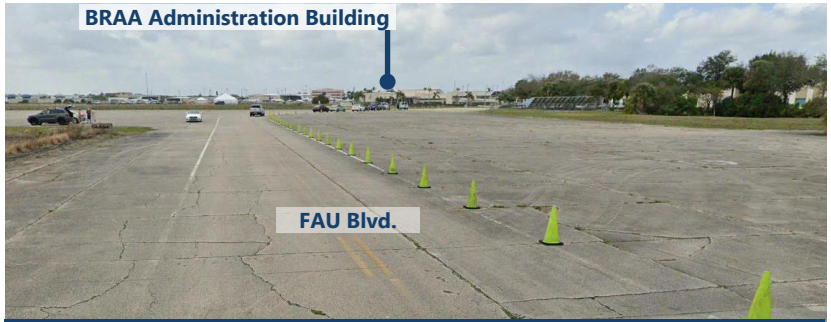
Potential Uses: *Aeronautical Development* | *Non-Aeronautical Development* | *Drainage / Stormwater* | *Advanced Air Mobility* | *Airport Support*

Underground Stormwater Containment

Recommendation: Evaluate capital costs, ongoing maintenance expenses, and return on investment on a case-by-case basis.

SOURCES: American Infrastructure Development, Inc., *Underground Containment Feasibility Study*, August 2020; ADS Pipe, https://www.adspipe.com/water-management-solutions (accessed October 12, 2022); Contech, https://www.conteches.com/knowledge-center/pdh-articles/introduction-to-designing-corrugated-metal-pipe-cmp-stormwater-detention-systems (accessed October 12, 2022).

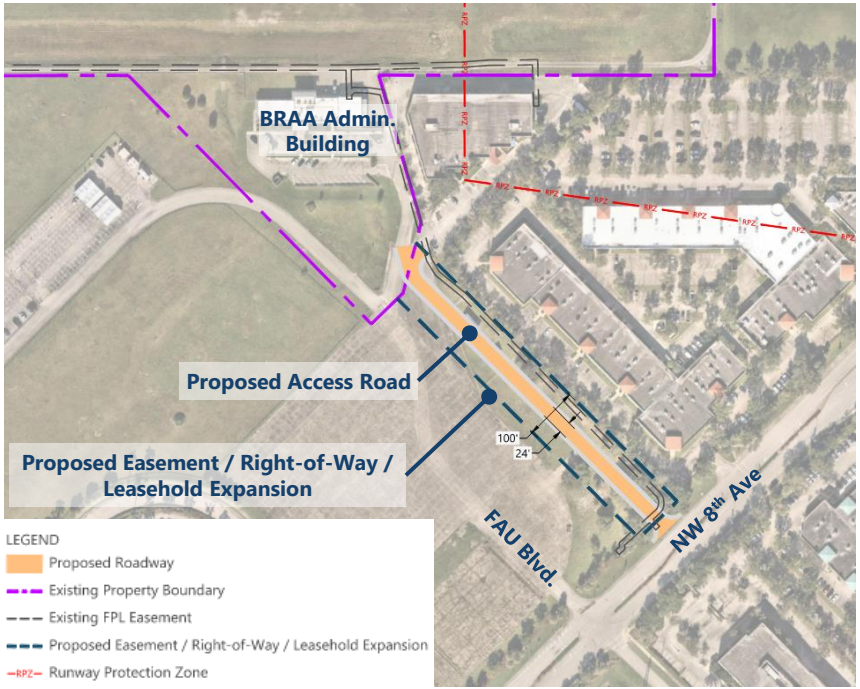
BRAA Administration Building Access Road



Recommendation: Obtain a dedicated right-of-way, easement, or expand leasehold to preserve access to existing and future Airport assets (BRAA Administration Building, Air Traffic Control Tower, etc.).

Total ROM Cost[1,2, 3]
$1.0 M

NOTES:
1. Total rough order of magnitude cost estimate includes construction and design (engineering, surveying and geotechnical, and construction administration).
2. Costs developed using 2022 US dollars.
3. Costs do not include land acquisition or other monetary considerations for the use of the property.



Sources: Ricondo & Associates, Inc., September 2022; American Infrastructure Development, Inc., December 2022 (cost estimate).

Alternatives and Concepts

Advanced Air Mobility Alternatives

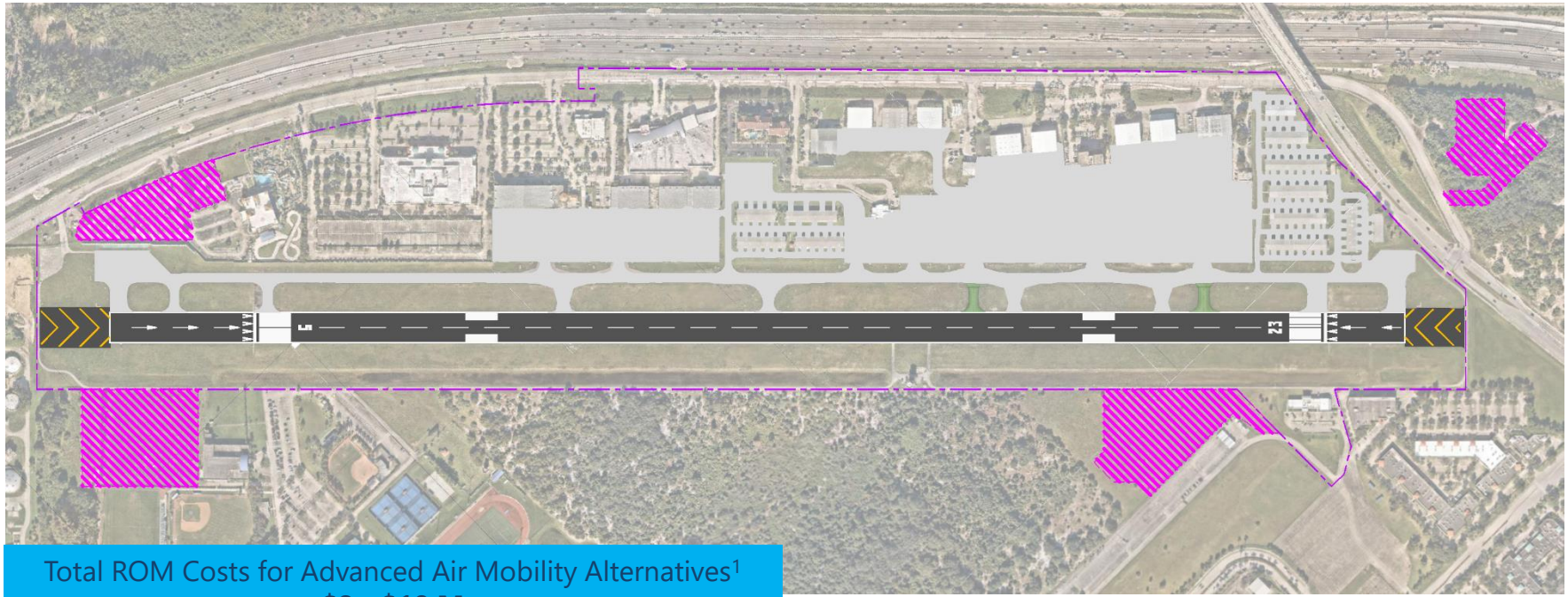
Advanced Air Mobility (AAM)

- AAM is a transportation system that will operate highly automated aircraft to transport passengers and cargo
- Other uses include public services and private/recreational operations
- Electric vertical takeoff and landing (eVTOL) aircraft
- Early stages of AAM will rely on existing transportation infrastructure
- Significant uncertainty surrounding AAM operations
  - Access and integration into airspace
  - Public acceptance
  - Affordability and economies of scale
  - Noise and environmental considerations

***Lilium Jet** (representative AAM aircraft)*

SOURCES: Federal Aviation Administration, https://www.faa.gov/uas/advanced_operations/urban_air_mobility (accessed March 17, 2022); Vertical Flight Society, https://vtol.org/news/press-release-vfs-electric-vtol-directory-hits-600-concepts (accessed March 17, 2022); Lilium, https://lilium.com/news (accessed April 5, 2022).

Advanced Air Mobility Site Location Options



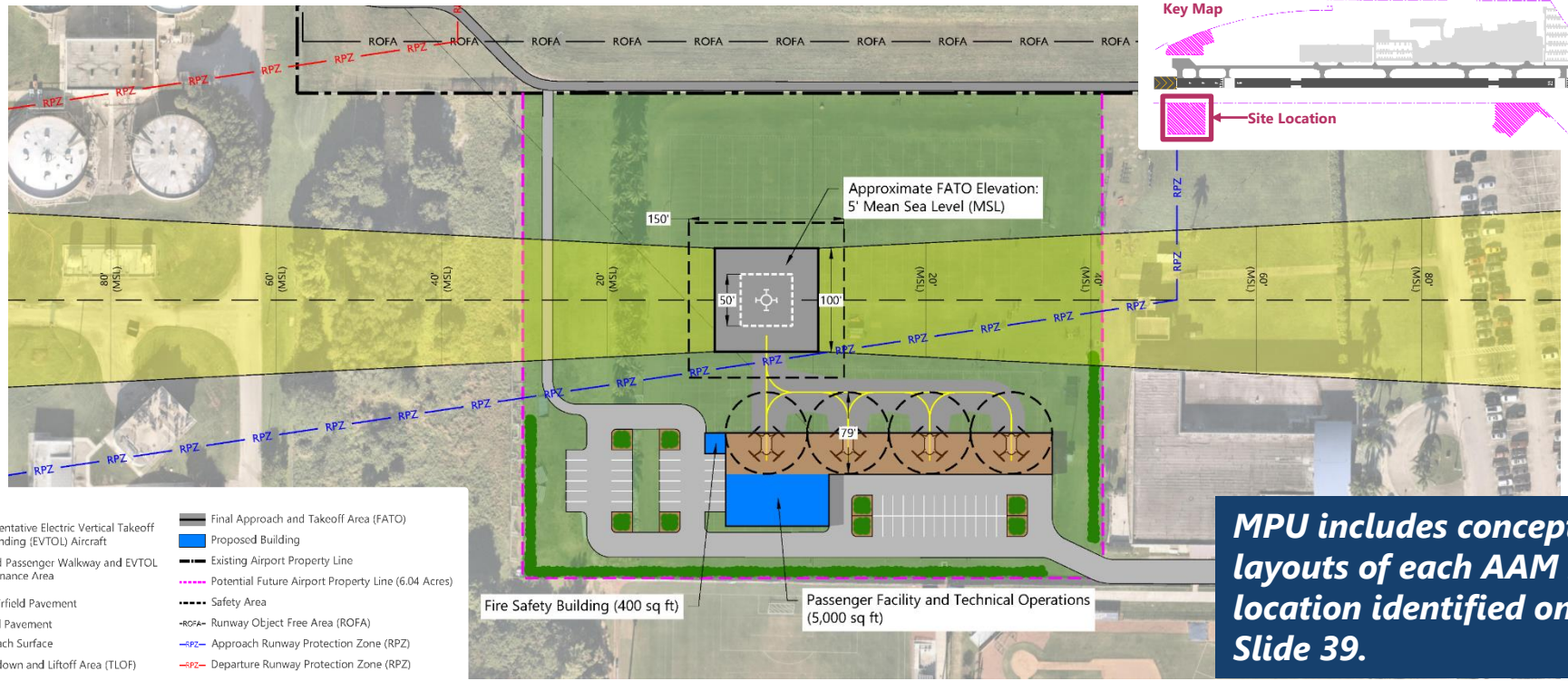
Total ROM Costs for Advanced Air Mobility Alternatives[1]

$8 - $10 M

1. Total rough order of magnitude cost estimate includes design and construction. Costs developed using 2021 US dollars and escalated by 3.5% to 2023 dollars. Costs do not include land acquisition.

SOURCES: Ricondo & Associates, Inc., September 2022; American Infrastructure Development, Inc., December 2021 (cost estimate).

Advanced Air Mobility – Alternative #1
East of Runway 5 Approach End



MPU includes conceptual layouts of each AAM site location identified on Slide 39.

SOURCES: Draft Engineering Brief No. 105, Vertiport Design issued February 28, 2022; Ricondo & Associates Inc., July 2021; Nearmap, Florida, November 2021 (aerial image for visual reference only - may not be to scale).

Other Master Planning Elements

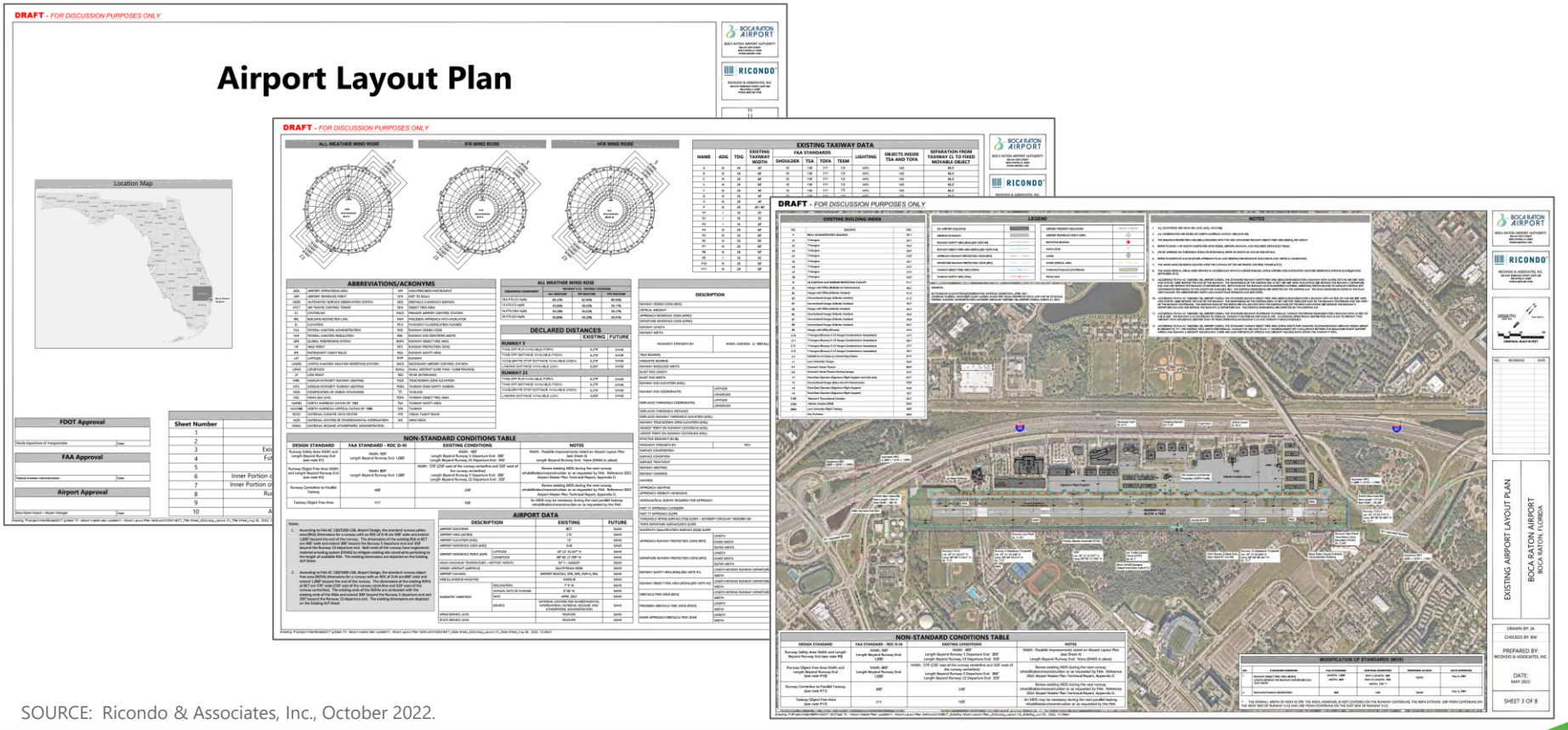
Sustainability Strategy and Airport Recycling, Reuse, and Reduction (ARRWR) Plan

- Identifying programmatic level initiatives to integrate sustainability to the proposed master plan development projects
- Preparing ARRWR Plan (FAA requirement) to improve waste management performance
- Master Plan will provide groundwork for future Sustainability Management Plan

Focus Areas

- Financial Resiliency
- Sustainable Design
- Waste
- Energy
- GHG Emissions
- Water
- Community/Workforce

Airport Layout Plan Drawing Set



SOURCE: Ricondo & Associates, Inc., October 2022.

Next Steps

- Develop Project Phasing and Identify Funding Sources
- Prepare Remaining Sections of the Master Plan Update
  - Environmental Overview and Sustainability Strategy
  - Airport Layout Plan
  - Stormwater Master Plan
  - Financial Analysis
- Brief BRAA Board – Spring/Summer 2023
- Finalize and Submit Master Plan Update to FAA and FDOT

THANK YOU

BOCA RATON AIRPORT

Airport Master Plan Update

Boca Raton Airport Authority
Board Workshop #3

November 15, 2023

BOCA RATON AIRPORT

Workshop Agenda

- Airport Master Plan Update Status
- Review of Future Demand
- Summary of Development Concepts and Recommendations
- Capital Improvement Program Overview
- Airport Layout Plan
- Next Steps

Airport Master Plan Update Status

Primary Master Plan Goals

To evaluate the fleet of business jet aircraft that operate at the Airport

To define, evaluate, and recommend safety, capacity, and operational enhancements for BCT

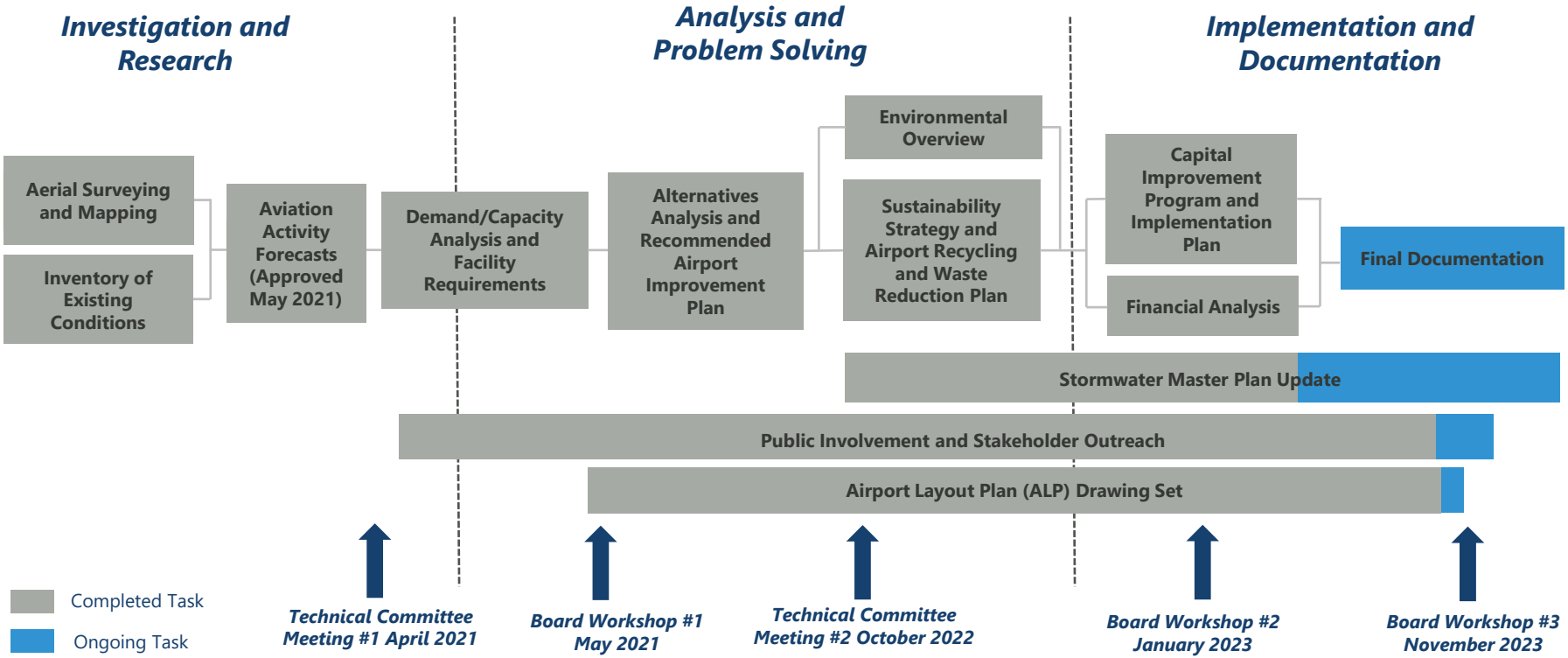
To update the 10-year Capital Improvement Program (CIP) for the Airport

To establish a plan that optimizes the use of BCT's limited land assets

"An airport master plan is a comprehensive study of an airport and usually describes the short-, medium-, and long-term development plans to meet future aviation demand."

- FAA Advisory Circular 150/5070 – 6B – Airport Master Plans

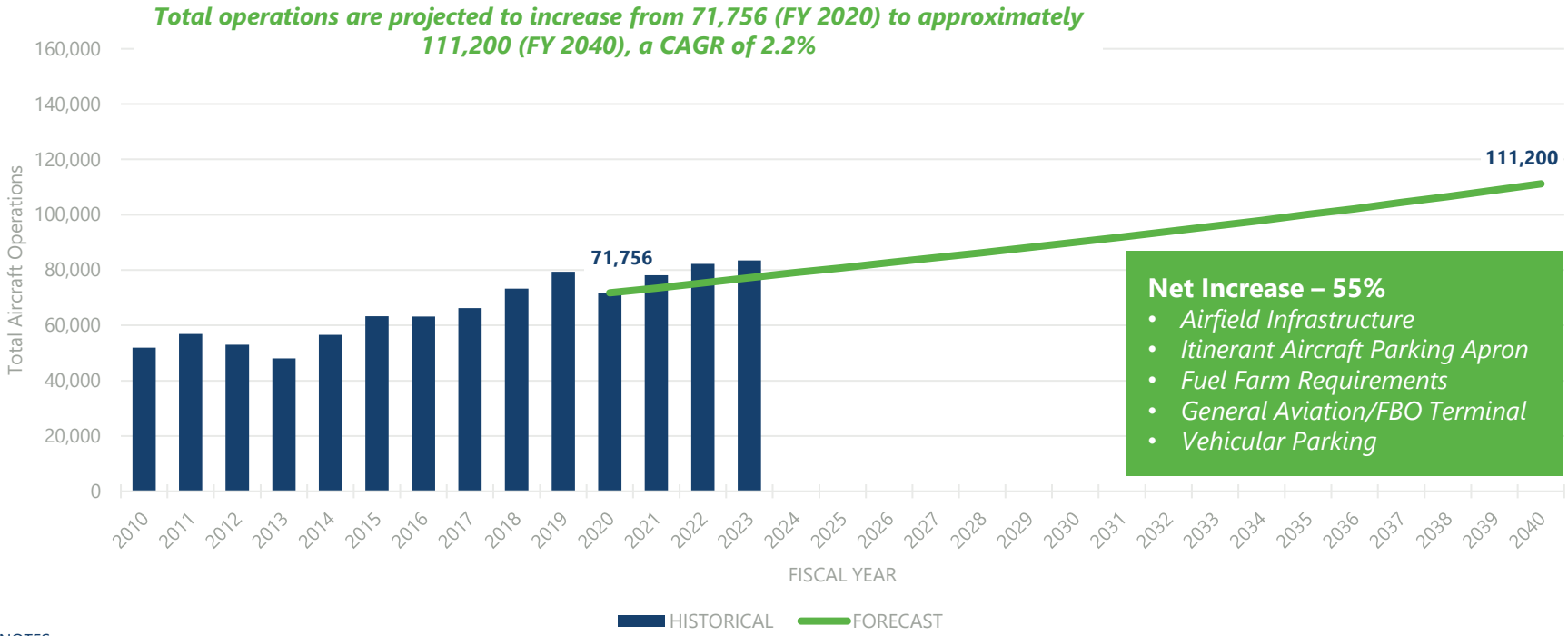
Master Plan Update Process



Master plan process follows Federal Aviation Administration and Florida Department of Transportation guidance.

Review of Future Demand

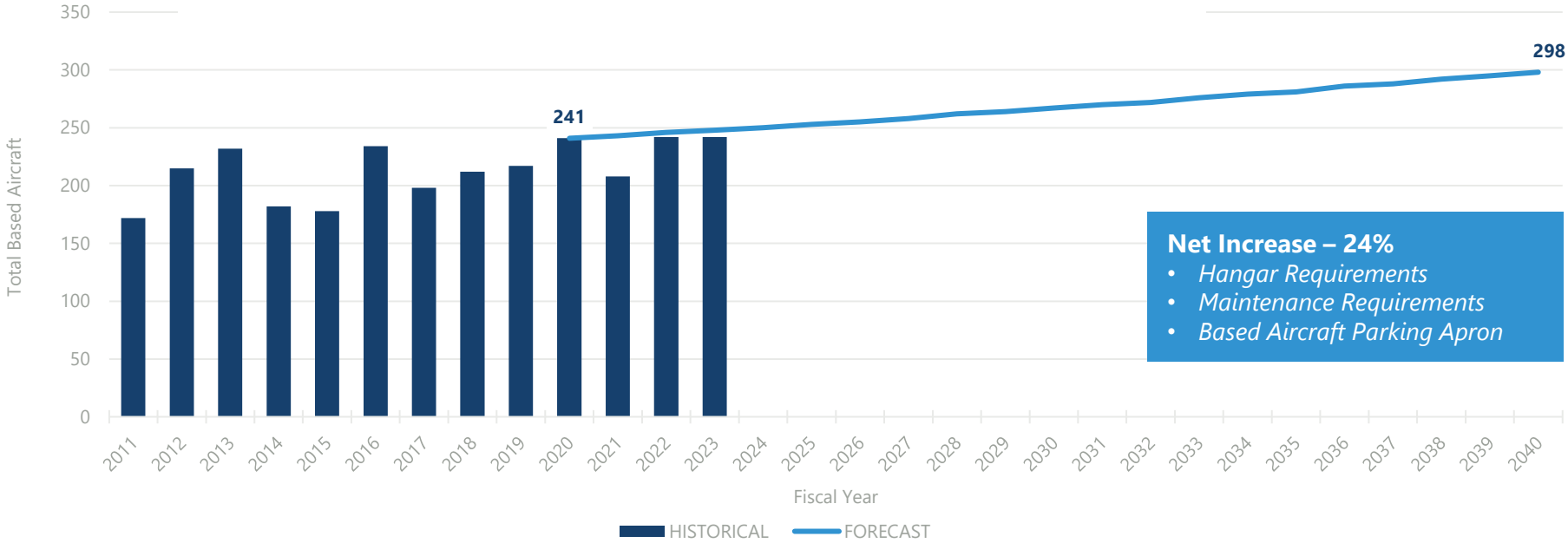
Aviation Activity Forecasts – Operations Forecast



NOTES:
The fiscal year (FY) is October 1 through September 30.
GAGR = Compound Annual Growth Rate
SOURCES: Federal Aviation Administration, Operations Network (OPSNET) (accessed October 2020) (Historical); Ricondo & Associates, Inc. November 2020. (Preliminary Forecast).

Aviation Activity Forecasts – Based Aircraft Forecast

Based aircraft are projected to increase from 241 (FY 2020) to 298 (FY 2040) resulting in 57 additional based aircraft over the forecast period



Net Increase – 24%

- *Hangar Requirements*
- *Maintenance Requirements*
- *Based Aircraft Parking Apron*

NOTE:
The fiscal year (FY) is October 1 through September 30.
SOURCES: Federal Aviation Administration, *Terminal Area Forecast FY 2019 – 2045,* February 2020 (Historical); Ricondo & Associates, Inc., October 2020.

Additional General Aviation Facility Requirements

General Aviation Facility Description[1/]	FY 2025	FY 2030	FY 2040
Hangars	99,000	140,000	231,000
Apron	110,000	219,000	525,000
Other Support Areas[2/]	39,000	87,000	243,000
Total	**248,000**	**434,000**	**999,000**
Total in Acres	**5.69**	**9.96**	**22.93**

Additional general aviation facilities are needed to accommodate the future demand identified in the aviation activity forecasts.

These values are in excess of the current general aviation facilities at BCT.

NOTES:

FBO – Fixed Base Operator
FY – Fiscal Year (October 1 – September 30)

1/ Values are presented in square feet unless otherwise noted.
2/ Other support areas include GA/FBO Terminal facilities, vehicular parking, and landscaping/drainage areas.

SOURCE: Ricondo & Associates, Inc., March 2021.

BOCA RATON AIRPORT

Summary of Development Concepts and Recommendations

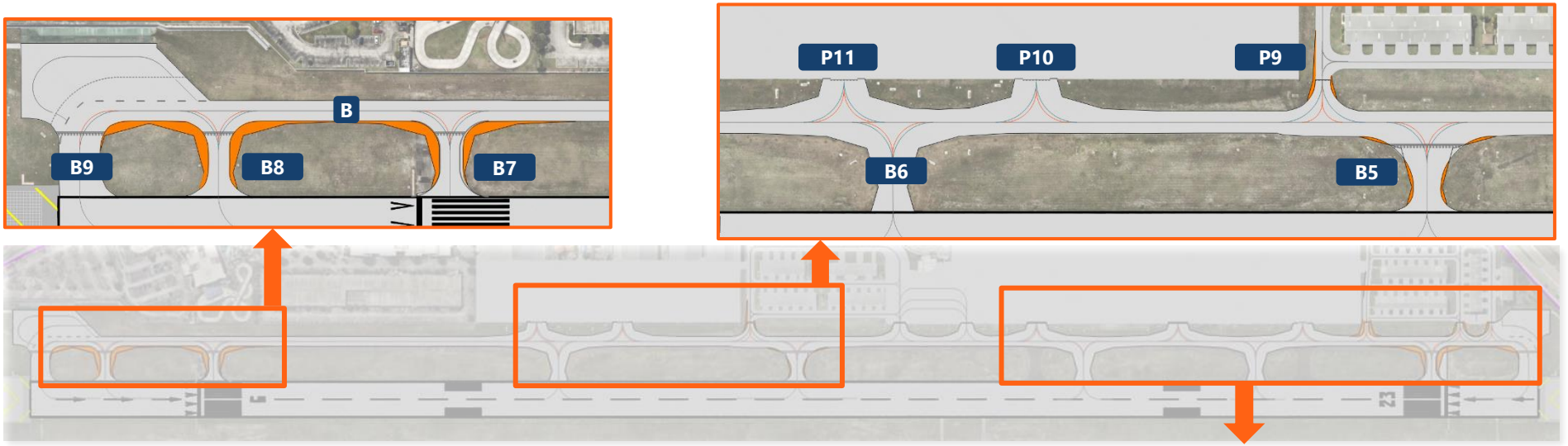
Stormwater Improvements and Wildlife Mitigation (Runway Safety Area Improvements)

Recommendations:

- *Expand Runway Safety Area width*
- *Improve grading and stormwater management*
- *Discourage wildlife between the runway and the service road*

SOURCES: Ricondo & Associates, Inc., September 2022.

Taxiway Geometry Enhancements



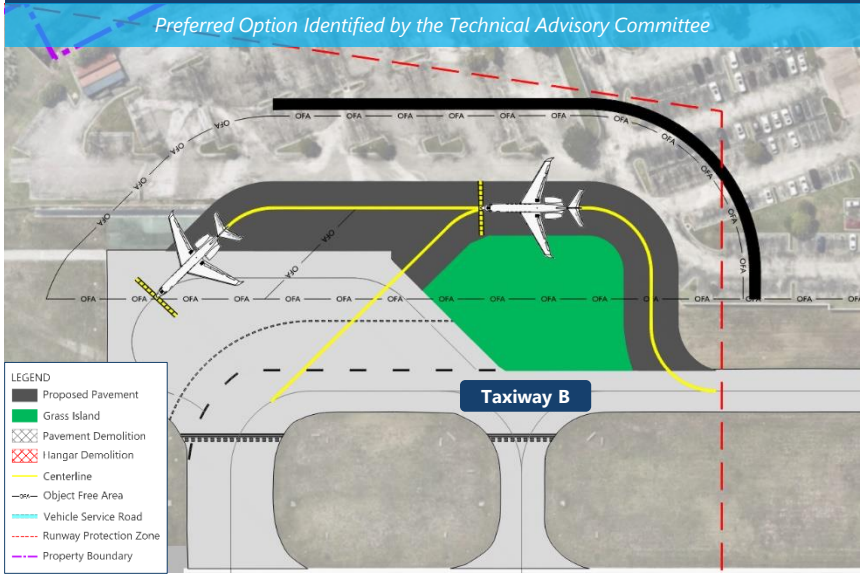
Recommendation:
Enhance geometry to provide standard taxiway edge safety margin in accordance with FAA design standards.

SOURCES: Ricondo & Associates, Inc., September 2022.

Aircraft Holding Bay Preferred Options

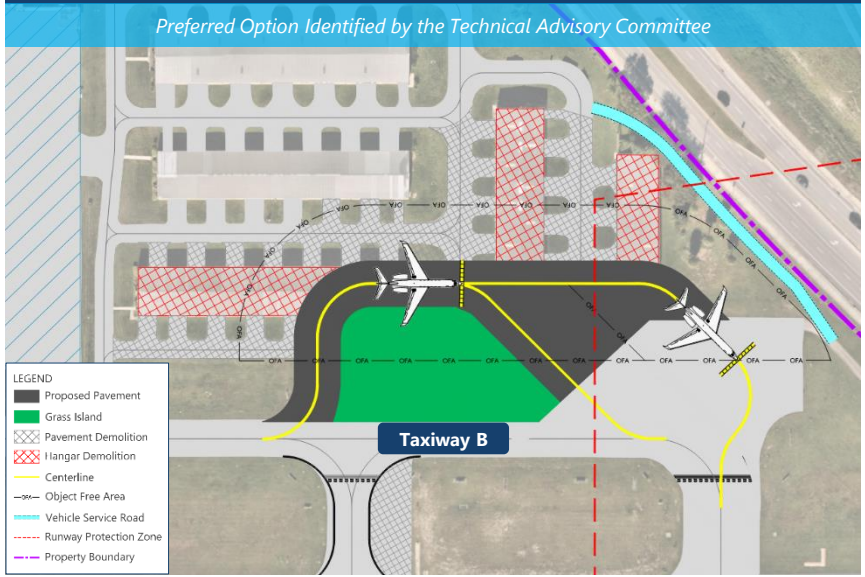
Runway 5

Preferred Option Identified by the Technical Advisory Committee



Runway 23

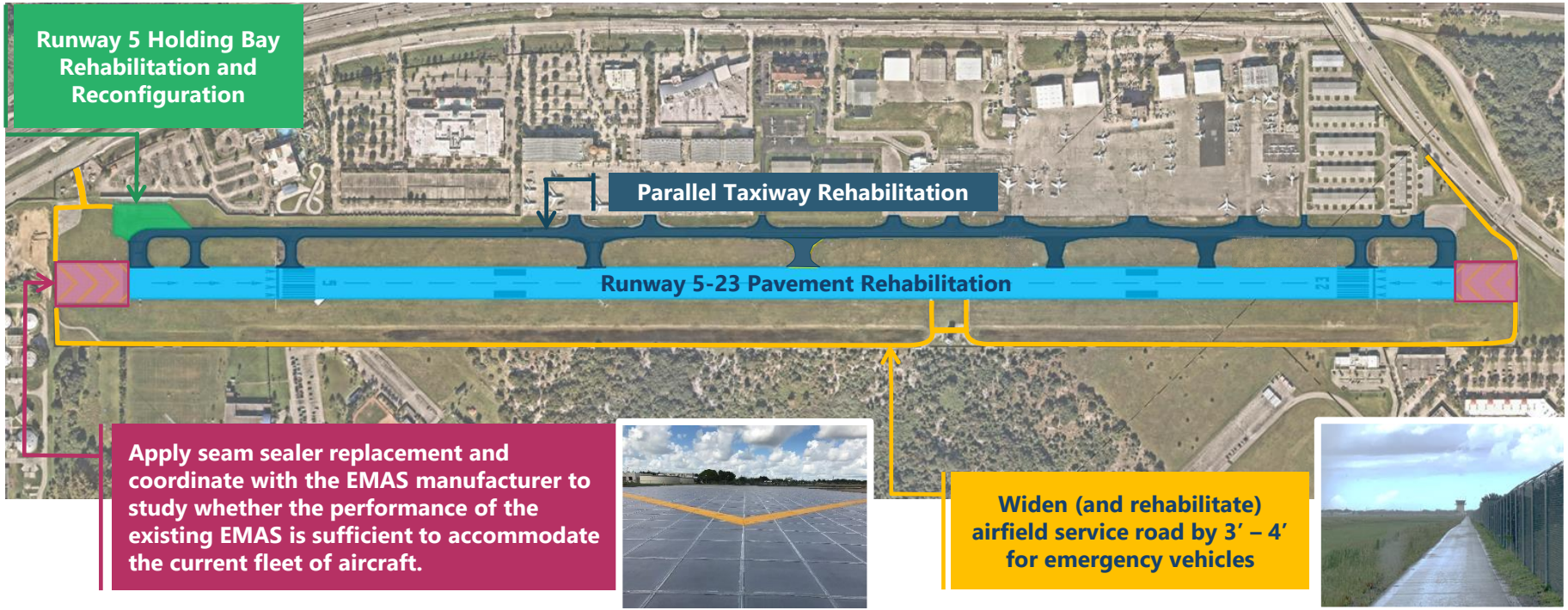
Preferred Option Identified by the Technical Advisory Committee



Recommendation:

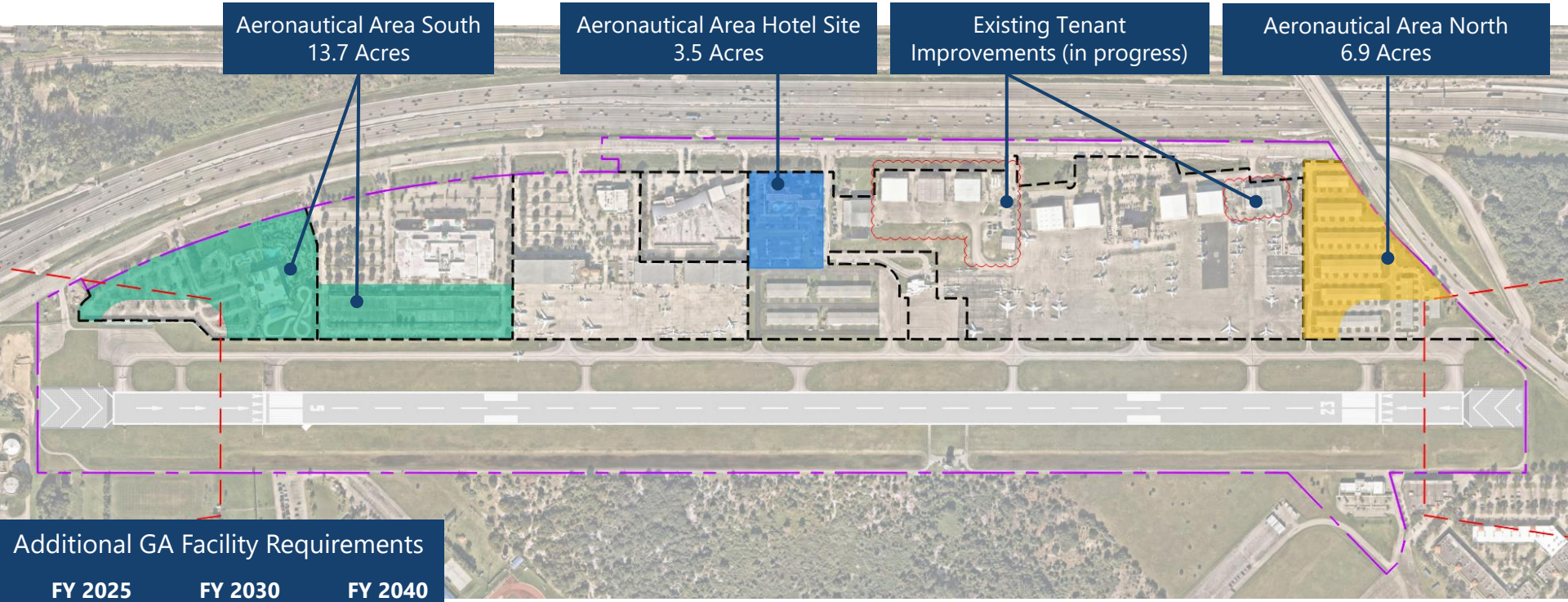
Construct aircraft holding bays outside of the Taxiway B taxiway object free area and in accordance with current FAA design standards.

Pavement Rehabilitation and Asset Preservation



SOURCES: Florida Department of Transportation, Aviation and Spaceport Office, *Statewide Airfield Pavement Management Program District 4*, November 2019; Ricondo & Associates, Inc, January 2023; American Infrastructure Development, Inc., December 2022.

GA/Aeronautical Use – Potential Redevelopment Sites



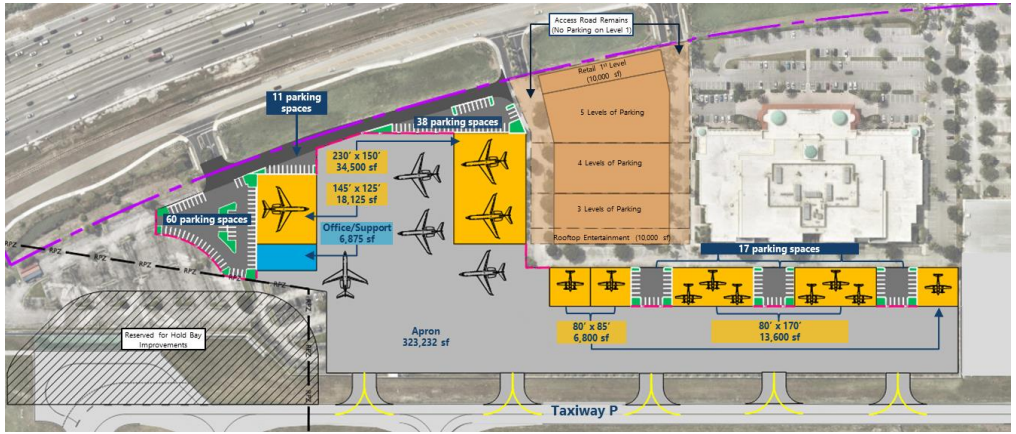
Additional GA Facility Requirements

FY 2025	FY 2030	FY 2040
6 Acres	10 Acres	23 Acres

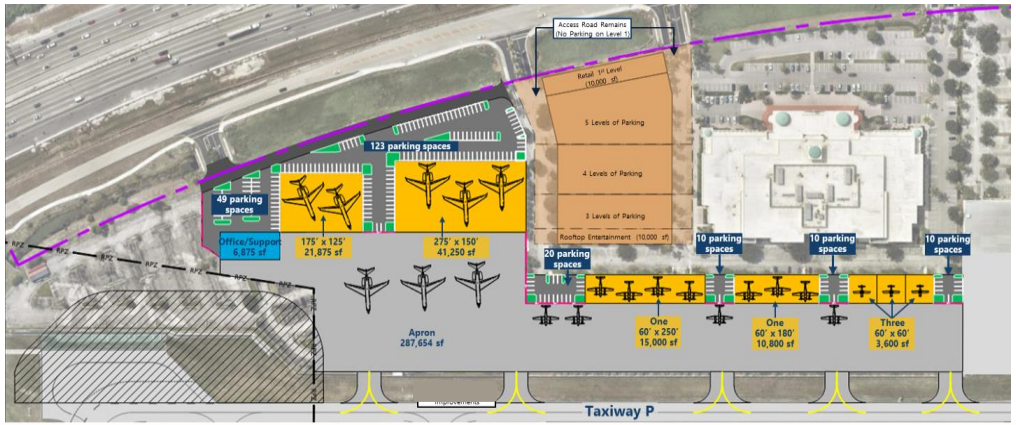
SOURCES: Boca Raton Airport Authority, January 2020 (leasehold details); Ricondo and Associates, *Airport Layout Plan*, June 2018; Martinez Geospatial, Inc., November 2019 (aerial photo).

GA/Aeronautical Use – South Area Alternatives*

South Area Alternative 1



South Area Alternative 2



LEGEND

- Airfield Pavement
- Apron Pavement
- Parking Lot
- Roadway
- Office/Support
- Entertainment Complex (restaurant, retail, and parking)
- Grass Island
- Hangar
- Fence
- Runway Protection Zone
- Property Boundary

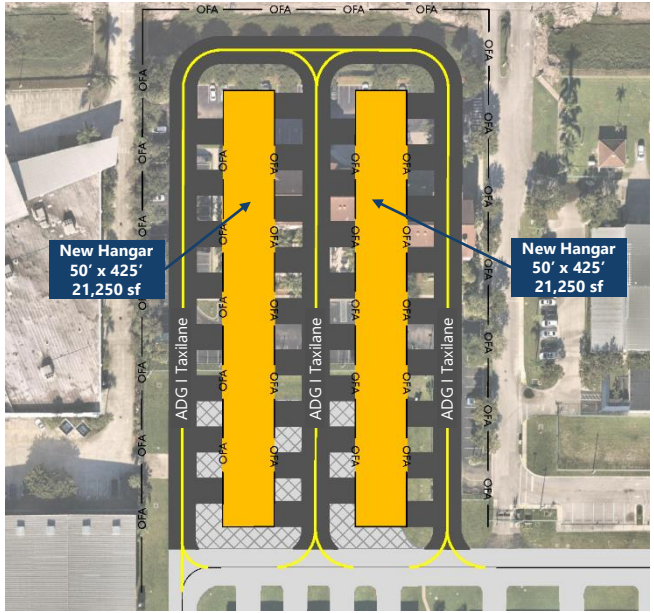
Net Hangars:	100,000 sf
Net Apron Area:	300,000 sf

Potential conversion to aeronautical use pending redevelopment opportunities and amendments to existing leaseholds

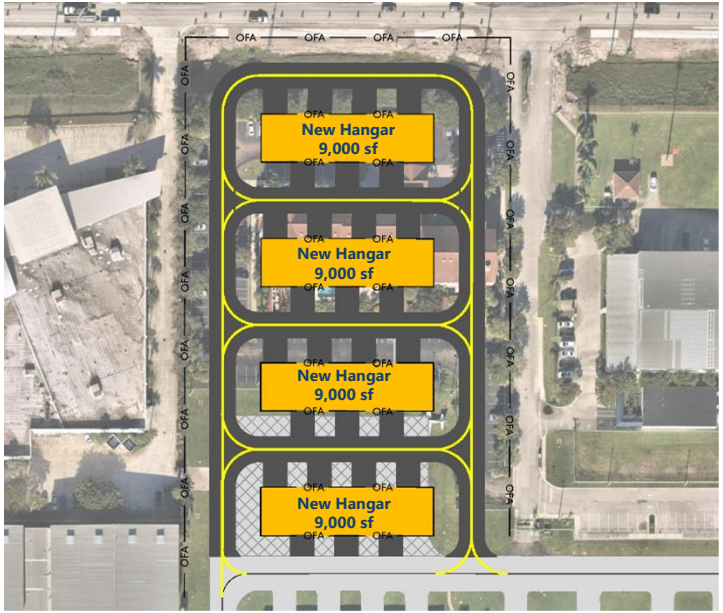
SOURCE: Ricondo & Associates Inc., September 2022.

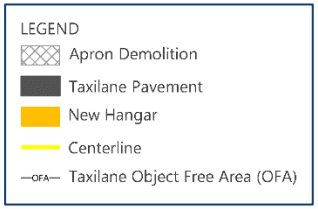
GA/Aeronautical Use - Hotel Site Alternatives*

Hotel Site Alternative 1
New T-hangars: 42,500 sf (34 units)



Hotel Site Alternative 2
New T-hangars: 36,000 sf (28 units)



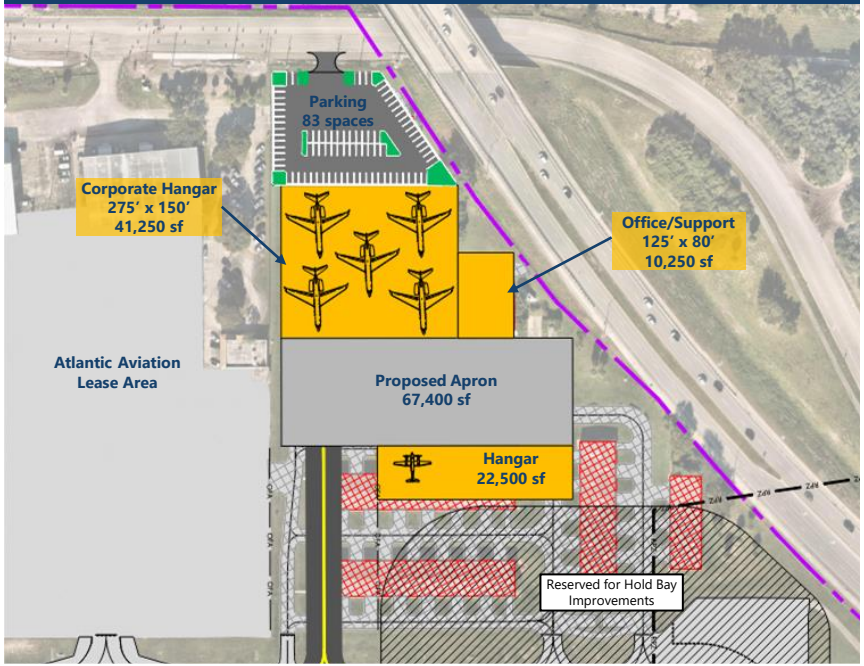


Potential conversion to aeronautical use pending redevelopment opportunity and an amendment to the existing leasehold

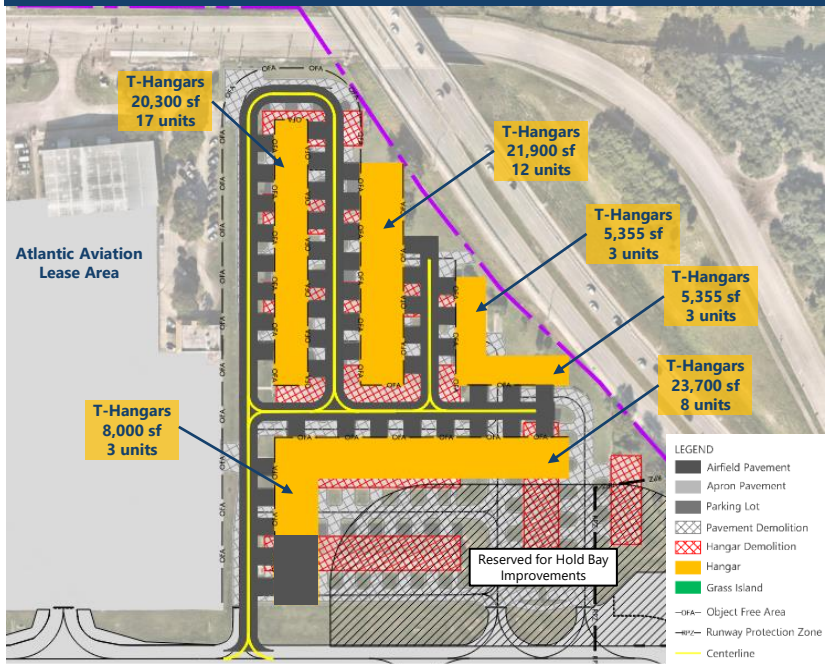
SOURCES: Ricondo & Associates Inc., September 2022; American Infrastructure Development, Inc., December 2022 (cost estimate).

GA/Aeronautical Use - North Area Alternatives*

Alternative 1



Alternative 2



Alternatives are conceptual in nature. Development is dependent upon a demand-driven opportunity and an amendment to the existing leasehold.

NOTE: Alternatives result in a net hangar loss of between 20,000 – 35,000 square feet (inclusive of the area reserved for hold bay improvements).
SOURCE: Ricondo & Associates Inc., September 2022.

Support Facilities

- **Air Traffic Control Tower (constructed in 2000)**

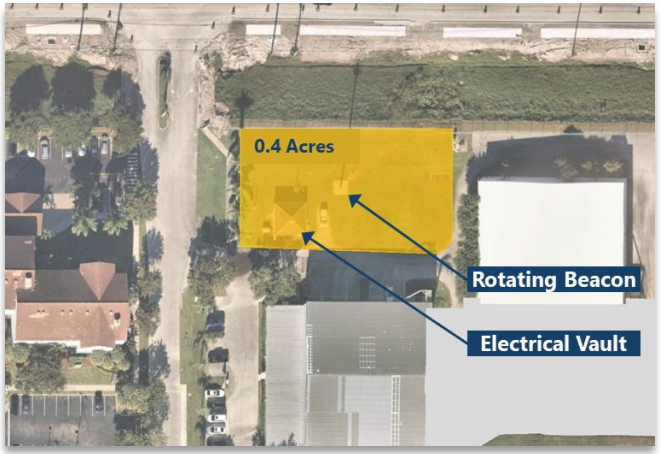
  Recommendation: *Replace ATCT with new remote (virtual) tower pending FAA approval of technology*

- **Automated Weather Observing System (AWOS) (installed in 2013)**

  Recommendations: *Near-Term: replacement in-kind; Long-Term: Replace AWOS with Automated Surface Observing System (ASOS)*

- **Rotating Beacon and Electrical Vault**

  Recommendations: *Relocate beacon on top of ATCT; Relocate electrical equipment to the first floor of ATCT (or adjacent)*



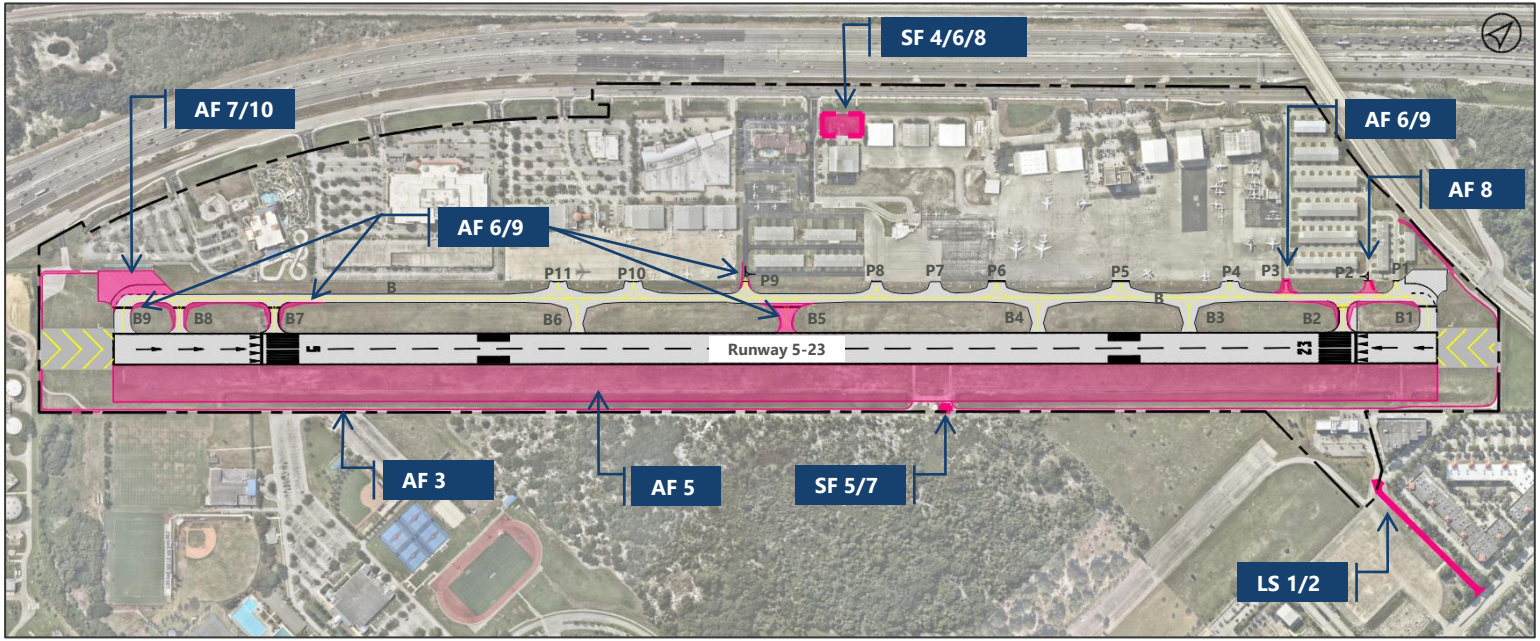
SOURCES: Ricondo & Associates Inc., September 2022; American Infrastructure Development, Inc., December 2022 (cost estimate).

Capital Improvement Program

Capital Improvement Program

- Culmination of the Master Planning process
- Future blueprint or roadmap, intended to be flexible and NOT set in stone
- Includes the following:
  - Project descriptions and sketches
  - Cost estimates and potential funding sources
  - Phasing and sequencing
    - Short-term projects (FY 2023 through FY 2027)
    - Intermediate-term projects (FY 2028 through FY 2032)
    - Long-term projects (FY 2033 through FY 2040)

Short-Term Projects *(FY 2023 - FY 2027)*



LEGEND

- 0-5 Years CIP Project
- Existing Property Boundary

AF – Airfield
CIP – Capital Improvement Program
FY – Fiscal Year
LS – Landside
PS – Planning Study
SF – Support Facility

1. FY 23 projects currently underway not shown for clarity.

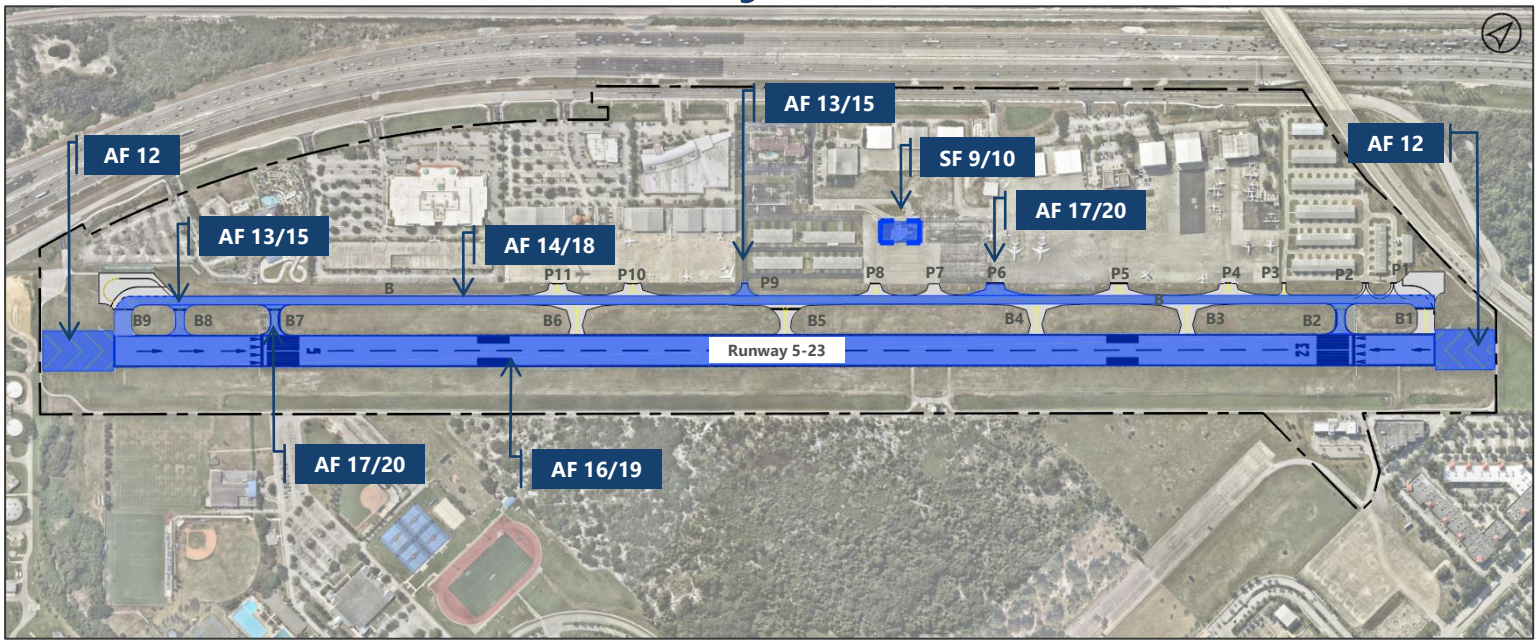
Short-Term Studies (not shown on Exhibit)

- AF 11: Engineered Materials Arresting System (EMAS) – Fleet Mix Evaluation
- PS 2: Noise Exposure Map Update
- PS 3: Sustainability Management Plan
- PS 4: Electrification Master Plan
- PS 5: Underground Utility Mapping

- **AF 3: Airport Service Road Rehabilitation (Phase 1B) – Construction**
- **AF 5: Stormwater Improvements and Wildlife Mitigation (Phase 1B) - Construction**
- **AF 6/9: Taxiways B1, B2, B5, B7, B8, B9, P3, and P9 Geometry Enhancements & Taxiways B5 and P3 Rehabilitation – Design and Construction**
- **AF 7/10: Runway 5 – Aircraft Holding Bay Rehabilitation – Design and Construction**
- **AF 8: Taxiway P2 Rehabilitation – Design and Construction**
- **LS 1/2: BRAA Administration Building Access Road – Design and Construction**
- **SF 4/6/8: Relocation of Electrical Vault and Airport Beacon – Siting Analysis, Preliminary Engineering, Design and Construction**
- **SF 5/7: AWOS Replacement – Siting Analysis, Design, and Construction**

SOURCE: Ricondo and Associates, Inc., July 2023.

Intermediate-Term Projects *(FY 2028 - FY 2032)*



LEGEND

- 6-10 Year CIP Projects
- Existing Property Boundary

AF – Airfield
CIP – Capital Improvement Program
FY – Fiscal Year
LS – Landside
PS – Planning Study
SE – Security Improvements
SF – Support Facility

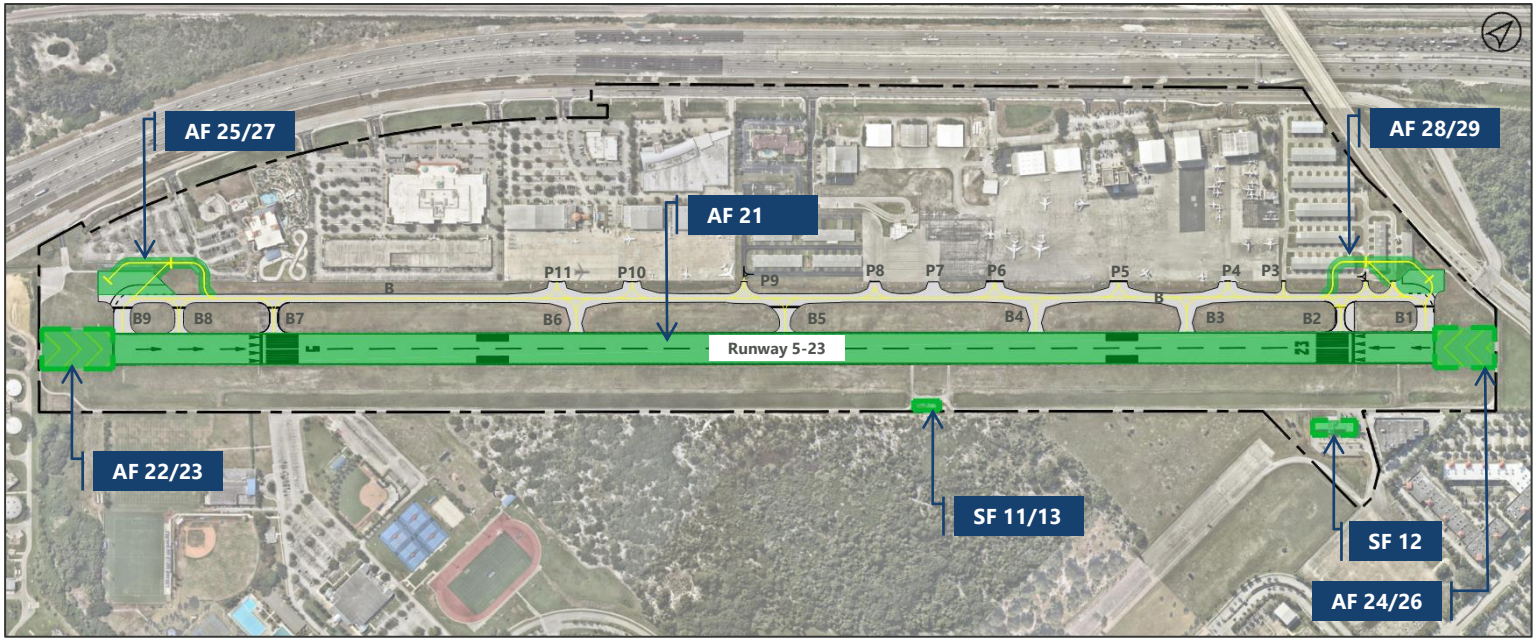
Intermediate -Term Studies (not shown on Exhibit)

- SE 1/3: Airport Security Improvement – CCTV Cameras and Associated Infrastructure – Design and Construction
- SE 2: Airport Security Improvement – Replace Gate Controllers and Keypads
- PS 6: Facilities Management Plan Update

- **AF 12: Engineered Materials Arresting System (EMAS) Rehabilitation (Seam Sealer Replacement)**
- **AF 13/15: Taxiways B2, B8, and P9 Rehabilitation – Design and Construction**
- **AF 14/18: Taxiway B Rehabilitation – Design and Construction**
- **AF 16/19: Runway 5-23 Rehabilitation – Design and Construction**
- **AF 17/20: Taxiways B7 and P6 Rehabilitation – Design and Construction**
- **SF 9/10: US Customs and Border Protection Rehabilitation and Improvements – Design and Construction**

SOURCE: Ricondo and Associates, Inc., July 2023.

Long-Term Projects *(FY 2033 - FY 2040)*



LEGEND

11-20 Year CIP Projects

Existing Property Boundary

AF – Airfield
CIP – Capital Improvement Program
FY – Fiscal Year
PS – Planning Study
SE – Security Improvements
SF – Support Facility

Long-Term Studies (not shown on Exhibit)

- PS 7/8: Facilities Management Plan Update
- SE 4/5: Airport Security Improvements – CCTV Cameras and Associated Infrastructure – Design and Construction
- SE 6: Airport Security Improvements – Replace Gate Controllers and Keypads
- SF 14: AWOS Replacement with ASOS – Siting Analysis and Design

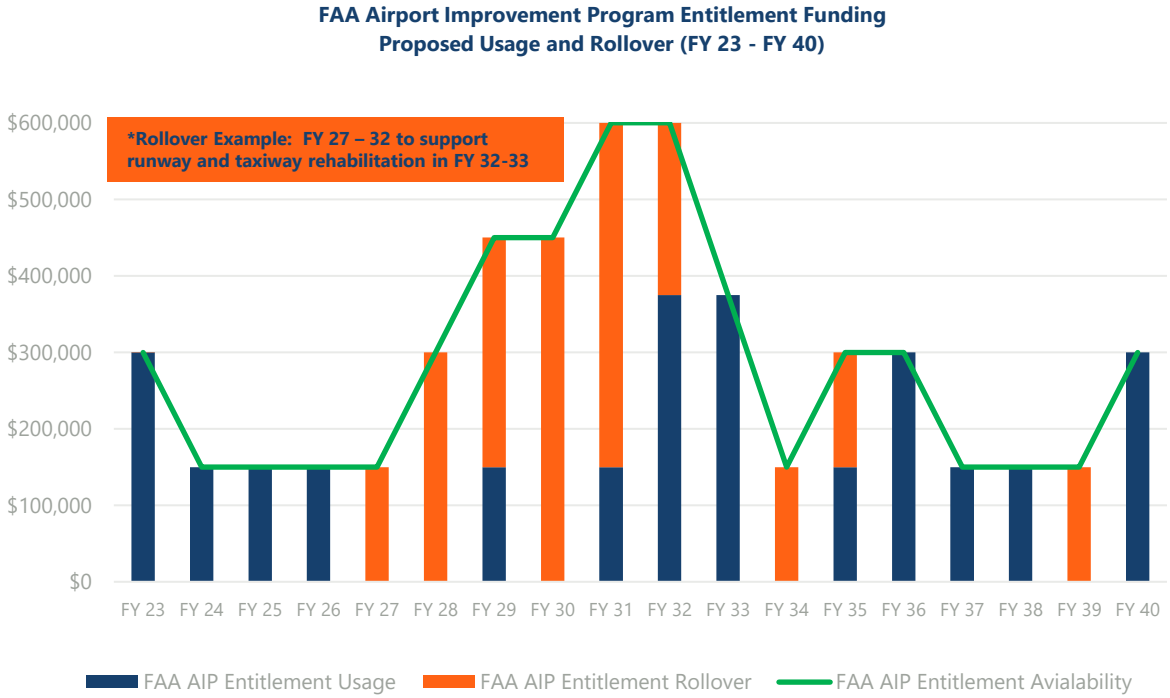
- **AF 21: Runway 5-23 Rehabilitation – Construction – Phase 2**
- **AF 22/23: Improve Runway Safety Area – Install EMAS Runway 5 Departure End – Design and Construction**
- **AF 24/26: Improve Runway Safety Area – Install EMAS Runway 23 Departure End – Design and Construction**
- **SF 11/13: Replace Air Traffic Control Tower with Virtual or Remote Tower – Technology Review, Design, and Construction**
- **SF 12: BRAA Administration Building Rehabilitation and Improvements**
- **AF 25/27: Runway 5 Aircraft Holding Bay – Design and Construction**
- **AF 28/29: Runway 23 Aircraft Holding Bay – Design and Construction**

SOURCE: Ricondo and Associates, Inc., July 2023.

Funding Source Overview
FAA Airport Improvement Program (AIP) Entitlement Funds

- Federal share for eligible projects – **90%**
- AIP entitlement funds allocated based on airport classification
- BCT receives **$150,000 annually** with a maximum rollover of $600,000*

Key Takeaway: BCT is entitled to $150,000 annually for airfield capital projects and airfield rehabilitation.

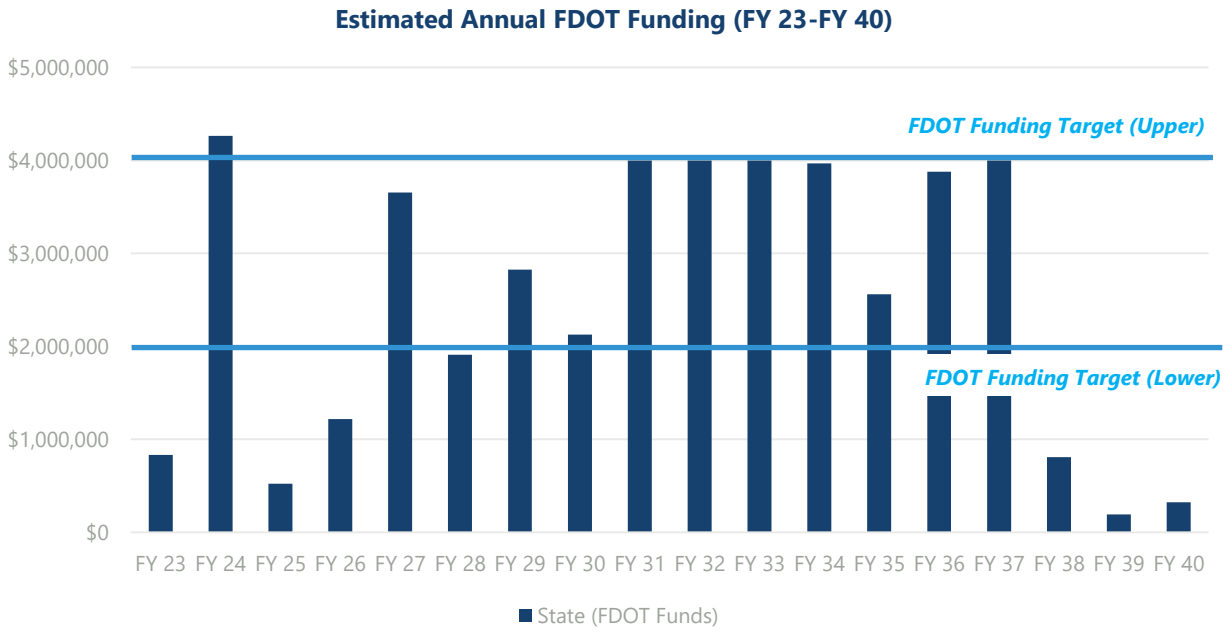


SOURCE: Ricondo & Associates, Inc., July 2023.

Funding Source Overview
FDOT Aviation Grant Program (State Grants)

- FDOT's Aviation Grant Program provides expanded project eligibility (compared to FAA programs)
- State share for eligible projects
  - **8%** for projects receiving **FAA funds**
  - **80%** for projects receiving **NO FAA funds**

Key Takeaway: BCT's CIP is targeting between $200,000 and $4.2 M annually of FDOT funding.



SOURCE: Ricondo & Associates, Inc., July 2023.

Funding Source Overview
Other Funding Sources

FAA Bipartisan Infrastructure Law (BIL) Funds – Airport Infrastructure Grants (AIG)

- The BIL was signed into law on November 15, 2021, and provides funding over 5-years (FY 22 – FY 26)
- **CIP assumes approximately $800,000 annually** for five fiscal years from the AIG program

FAA Airport Improvement Program (AIP) Discretionary Grants

- Competitive grant program distributed by national priorities
- CIP assumes an **annual maximum of $4M** for airfield improvements and rehabilitation

Local Funds (BRAA)

- Matching funds required for FAA and FDOT grants
- **Funding fluctuates annually between $100,000 and $1M** depending on grants received and project eligibility

Private Investment

- Projects undertaken by tenants and/or private entities (e.g. Fixed Based Operators, hangar developers, etc.)
- **CIP does not include assumptions of private investment**

Key Takeaway: ***The development of BCT's Capital Improvement Program is an iterative process that maximizes the use of federal and state funding to create a financially feasible development program.***

SOURCE: Ricondo & Associates, Inc., July 2023.

Estimated Project Funding Sources by Phase

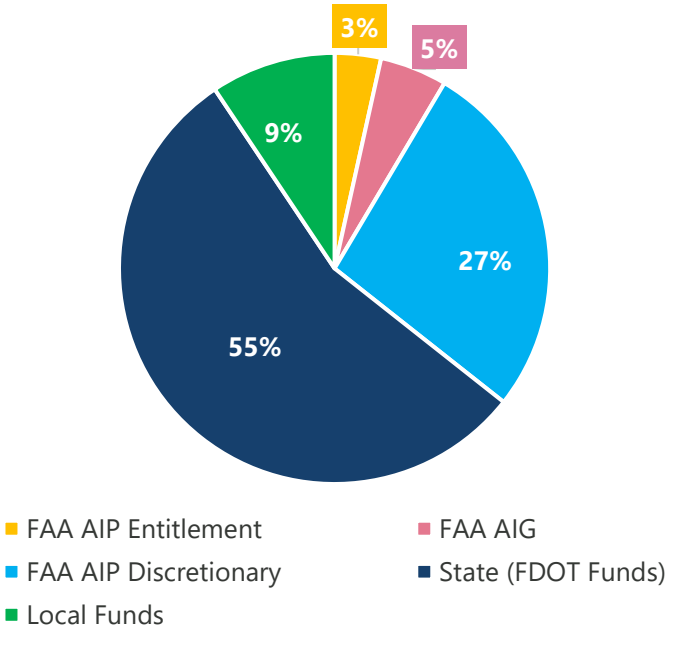
Phase	Total Cost[1]	FAA AIP Entitlement	FAA AIG[2]	FAA AIP Discretionary	State (FDOT Funds)	Local Funds
Short-Term Projects (FY 2023 - FY 2027)	$19,326,666	$750,000	$4,139,000	$1,259,999	$10,495,133	$2,682,533
Intermediate-Term Projects (FY 2028 - FY 2032)	$23,340,000	$675,000	$0	$5,538,400	$14,866,400	$2,260,200
Long-Term Projects (FY 2033 - FY 2040)	$39,350,000	$1,425,000	$0	$15,442,400	$19,733,600	$2,749,000
Grand Total Funding Summary (FY 2023 - FY 2040)	**$82,016,666**	**$2,850,000**	**$4,139,000**	**$22,240,799**	**$45,095,133**	**$7,691,733**

NOTES:
AIP - Airport Improvement Program; AIG - Airport Infrastructure Grant; FAA - Federal Aviation Administration; FDOT - Florida Department of Transportation; FY - Fiscal Year
1. Costs developed in 2022 U.S. dollars and have been escalated by 3.5% annually over the course of the planning period.
2. AIG program provides funding allotments between FY 22 and FY 26.

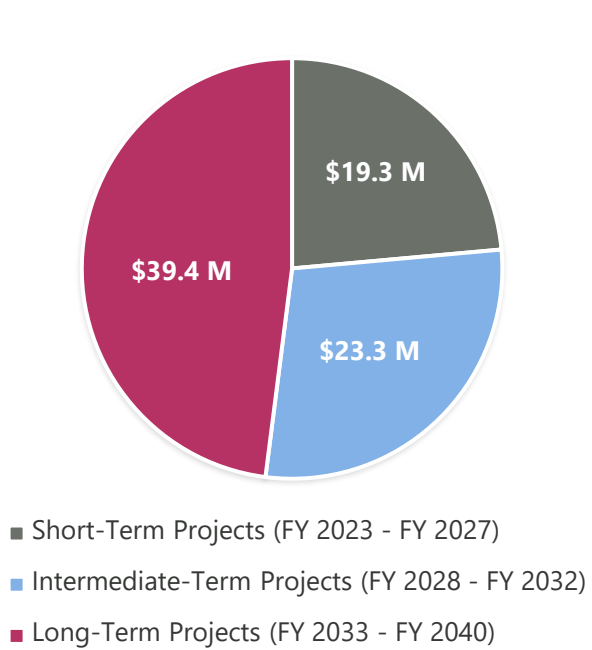
SOURCES: Ricondo & Associates, Inc., January 2022; American Infrastructure Development, Inc., December 2022 (cost estimates); Florida Department of Transportation, *Airport Pavement Evaluation Report Boca Raton Airport*, 2022.

Capital Improvement Program Summary

CIP Breakdown by Funding Type



CIP Breakdown by Planning Horizon

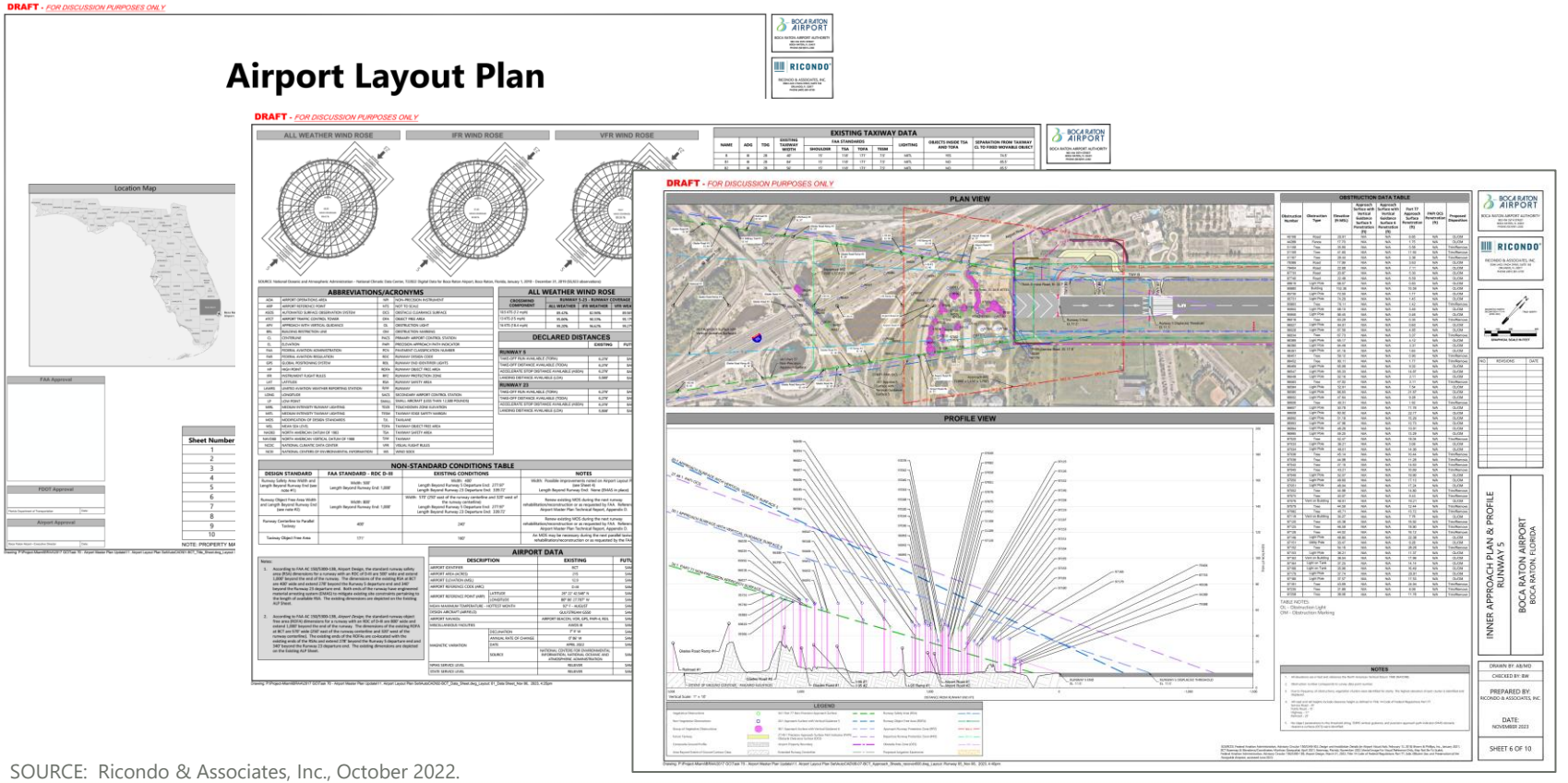


NOTES:
AIG – Airport Infrastructure Grant; AIP – Airport Improvement Program; CIP – Capital Improvement Program
SOURCES: Ricondo & Associates, Inc., January 2022; American Infrastructure Development, Inc., December 2022 (cost estimates).

BOCA RATON AIRPORT

Airport Layout Plan

Airport Layout Plan Drawing Set

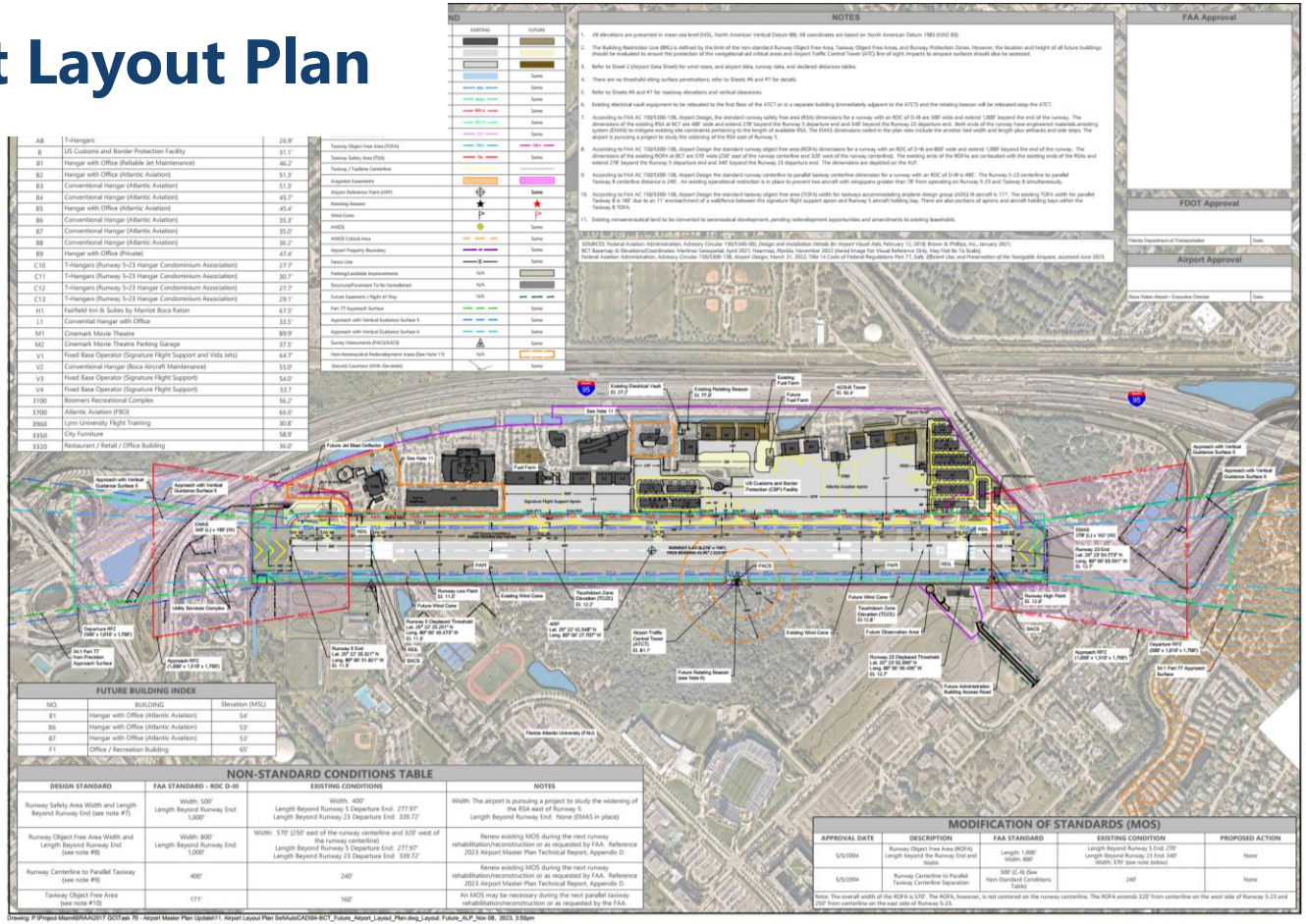


SOURCE: Ricondo & Associates, Inc., October 2022.

Future Airport Layout Plan

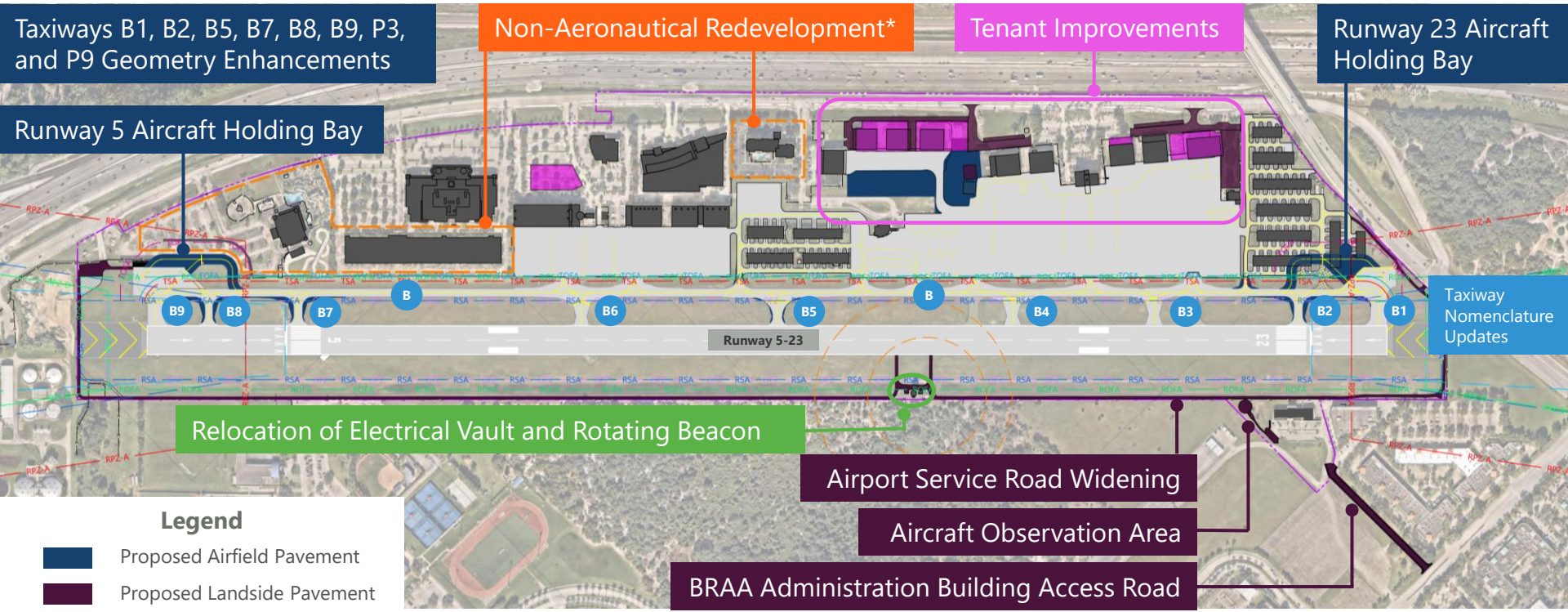
Key Development Items To Be Reviewed on Subsequent Slides:

- Aircraft Observation Area
- Atlantic Aviation Improvements
- Taxiway Nomenclature Updates
- Airport Service Road Widening
- Taxiway Geometry Enhancements
- Relocation of Electrical Vault and Airport Beacon
- BRAA Administration Building Access Road
- Runways 5 and 23 Aircraft Holding Bays
- Non-Aeronautical Redevelopment



SOURCE: Ricondo & Associates, Inc., August 2023.

Future Airport Layout Plan – Key Developments



*Pending redevelopment opportunities and amendments to leaseholds.

SOURCE: Ricondo & Associates, Inc., August 2023.

Next Steps

- Recommend BRAA approval for submission of the Airport Master Plan Update Technical Report and Airport Layout Plan to FAA and FDOT
- Address FAA and FDOT comments
- Finalize Stormwater Master Plan
- Complete Master Plan Update documentation
  - Development of an Executive Summary
  - Master Plan Update Video

THANK YOU

BOCA RATON AIRPORT

APPENDIX B

Airplane Design Group III Operational Procedure Correspondence

RVA

Robinson Aviation (RVA), Inc.

Date: **January 7, 2016**

Subject: **ADG III LOA (Long Wing)**

To: **Clara Bennett, Executive Director & Mark Cervasio Asst. Director**

Copy: **Richard Allen, Area IIE Manager**

From: **Tony Saavedra, ATM**
Boca Raton (BCT) FCT

After our discussion on ADG III (Long Wing) operations, I spoke with the Air Traffic Region and they determined that our current LOA is not valid based on the ADO findings as indicated in the attached emails (already provided) from both of our predecessors, nor is it necessary. To clarify, the ADO had determined that an ADG I and II category aircraft may safely land or depart simultaneously while a ADG III category aircraft lands or departs however, 2 ADG III category aircraft may not operate simultaneously.

From an Air Traffic standpoint, we move to strike the current LOA from our records and will modify a procedure already in place in our Standard Operating Procedures (SOP).

From the date of agreement, we will no longer restrict any aircraft in the ADG I and II category from operating while an ADG III aircraft lands or departs. We will however not allow an ADG III aircraft to land or depart while another ADG III aircraft taxis on the parallel taxiway P.

An amendment to the AFD will need to be submitted to modify the exiting procedure.

Thank you,

Anthony A. Saavedra

Anthony A. Saavedra
Air Traffic Manager
Boca Raton FCT
561-392-8610

APPENDIX C

Summary of Socioeconomic Variables

TABLE C-1 SOCIOECONOMIC VARIABLES FOR PALM BEACH COUNTY

CALENDAR YEAR	POPULATION (000s)	EMPLOYMENT (000s)	EARNINGS (MILLIONS)	INCOME (MILLIONS)	NET EARNINGS (MILLIONS)	PER CAPITA PERSONAL INCOME	GROSS REGIONAL PRODUCT (MILLIONS)
2009	1,307	737	33,345	73,104	30,878	55,916	56,438
2010	1,324	734	34,785	75,452	31,469	57,003	57,757
2011	1,337	758	34,978	78,721	32,767	58,891	57,630
2012	1,355	775	35,659	85,063	34,619	62,774	58,529
2013	1,377	806	36,668	82,718	34,835	60,083	60,447
2014	1,399	846	39,283	89,966	37,160	64,306	63,399
2015	1,425	888	42,820	97,075	40,313	68,138	68,392
2016	1,451	907	44,125	97,940	41,505	67,481	70,805
2017	1,470	937	46,482	104,357	44,160	70,975	73,576
2018	1,486	958	47,403	109,595	45,432	73,755	75,396
2019	1,505	980	50,428	115,056	48,451	76,430	80,182
Projection							
2020	1,525	1,002	52,088	119,168	50,053	78,139	82,863
2021	1,545	1,025	53,845	123,448	51,754	79,886	85,715
2022	1,565	1,049	55,600	127,788	53,450	81,645	88,577
2023	1,585	1,072	57,389	132,229	55,175	83,413	91,480
2024	1,605	1,095	59,216	136,776	56,936	85,192	94,439
2025	1,626	1,118	61,077	141,429	58,729	86,985	97,460
2030	1,729	1,236	71,008	166,412	68,284	96,236	113,583
2035	1,834	1,360	82,115	194,447	78,961	106,051	131,602
2040	1,937	1,492	94,586	225,820	90,942	116,553	151,800
CAGR							
2009 – 2019	1.4%	2.9%	4.2%	4.6%	4.6%	3.2%	3.6%
2020 – 2030	1.3%	2.1%	3.1%	3.4%	3.2%	2.1%	3.2%
2020 – 2040	1.2%	2.0%	3.0%	3.2%	3.0%	2.0%	3.1%

NOTE:
CAGR – Compound Annual Growth Rate
SOURCE: Woods & Poole Economics, Inc., May 2020.

TABLE C-2 SOCIOECONOMIC VARIABLES FOR MIAMI–FORT LAUDERDALE–WEST PALM BEACH METROPOLITAN STATISTICAL AREA

CALENDAR YEAR	POPULATION (000s)	EMPLOYMENT (000s)	EARNINGS (MILLIONS)	INCOME (MILLIONS)	NET EARNINGS (MILLIONS)	PER CAPITA PERSONAL INCOME	GROSS REGIONAL PRODUCT (MILLIONS)
2009	5,505	3,113	144,593	234,911	125,585	42,675	253,048
2010	5,584	3,125	152,515	250,221	133,937	44,814	259,238
2011	5,694	3,232	153,816	256,354	136,805	45,025	257,529
2012	5,772	3,317	155,222	264,462	137,366	45,820	259,071
2013	5,849	3,435	159,012	259,022	138,475	44,282	267,872
2014	5,921	3,586	168,406	277,178	147,024	46,812	278,911
2015	5,998	3,753	178,672	297,326	156,156	49,568	296,700
2016	6,087	3,837	184,026	298,079	160,376	48,970	308,200
2017	6,150	3,969	192,721	315,869	168,397	51,363	318,555
2018	6,199	4,069	197,831	328,034	172,782	52,919	328,029
2019	6,263	4,154	206,685	341,426	180,508	54,516	342,850
Projection							
2020	6,328	4,231	212,755	352,581	185,842	55,720	353,087
2021	6,394	4,317	219,214	364,263	191,546	56,967	363,999
2022	6,459	4,402	225,609	376,030	197,185	58,218	374,826
2023	6,524	4,485	232,061	388,005	202,870	59,472	385,728
2024	6,590	4,565	238,600	400,218	208,630	60,733	396,768
2025	6,656	4,646	245,230	412,678	214,470	62,005	407,971
2030	6,984	5,057	280,026	478,933	245,117	68,576	466,753
2035	7,307	5,475	317,961	552,114	278,536	75,561	530,745
2040	7,619	5,906	359,527	632,730	315,177	83,046	600,705
CAGR							
2009 – 2019	1.3%	2.9%	3.6%	3.8%	3.7%	2.5%	3.1%
2020 – 2030	1.0%	1.8%	2.8%	3.1%	2.8%	2.1%	2.8%
2020 – 2040	0.9%	1.7%	2.7%	3.0%	2.7%	2.0%	2.7%

NOTE:
CAGR – Compound Annual Growth Rate
SOURCE: Woods & Poole Economics, Inc., May 2020.

TABLE C-3 SOCIOECONOMIC VARIABLES FOR STATE OF FLORIDA

CALENDAR YEAR	POPULATION (000s)	EMPLOYMENT (000s)	EARNINGS (MILLIONS)	INCOME (MILLIONS)	NET EARNINGS (MILLIONS)	PER CAPITA PERSONAL INCOME	GROSS REGIONAL PRODUCT (MILLIONS)
2009	18,653	9,842	446,694	725,755	396,407	38,909	770,062
2010	18,846	9,805	458,692	757,614	408,578	40,201	770,901
2011	19,093	10,037	459,082	779,197	414,499	40,810	761,011
2012	19,326	10,249	468,413	793,429	422,616	41,055	769,309
2013	19,563	10,539	476,487	784,861	423,526	40,119	790,070
2014	19,860	10,937	498,280	832,599	443,277	41,923	816,380
2015	20,224	11,367	529,088	888,831	471,258	43,949	868,694
2016	20,630	11,673	545,866	905,420	486,052	43,889	901,878
2017	20,977	12,130	568,236	947,941	506,428	45,190	930,496
2018	21,299	12,462	586,322	986,145	522,277	46,299	960,984
2019	21,548	12,714	606,831	1,021,984	540,618	47,427	994,892
Projection							
2020	21,801	12,944	623,792	1,054,805	555,416	48,384	1,022,845
2021	22,059	13,198	641,798	1,089,177	571,229	49,375	1,052,587
2022	22,314	13,447	659,666	1,123,886	586,829	50,368	1,082,125
2023	22,570	13,690	677,657	1,159,228	602,499	51,361	1,111,812
2024	22,829	13,928	695,875	1,195,301	618,327	52,359	1,141,837
2025	23,090	14,166	714,337	1,232,141	634,330	53,363	1,172,271
2030	24,408	15,368	810,938	1,428,625	717,619	58,531	1,331,345
2035	25,739	16,583	915,682	1,646,672	807,291	63,976	1,503,372
2040	27,067	17,826	1,029,790	1,888,095	904,520	69,756	1,690,169
CAGR							
2009 – 2019	1.5%	2.6%	3.1%	3.5%	3.2%	2.0%	2.6%
2020 – 2030	1.1%	1.7%	2.7%	3.1%	2.6%	1.9%	2.7%
2020 – 2040	1.1%	1.6%	2.5%	3.0%	2.5%	1.8%	2.5%

NOTE:
CAGR – Compound Annual Growth Rate
SOURCE: Woods & Poole Economics, Inc., May 2020.

TABLE C-4 SOCIOECONOMIC VARIABLES FOR UNITED STATES

CALENDAR YEAR	POPULATION (000s)	EMPLOYMENT (000s)	EARNINGS (MILLIONS)	INCOME (MILLIONS)	NET EARNINGS (MILLIONS)	PER CAPITA PERSONAL INCOME	GROSS DOMESTIC PRODUCT (MILLIONS)
2009	306,771	173,637	9,233,794	12,807,732	8,213,742	41,750	15,251,545
2010	309,326	172,902	9,428,136	13,104,848	8,405,225	42,366	15,556,281
2011	311,580	176,092	9,623,389	13,569,084	8,694,161	43,549	15,725,298
2012	313,874	178,980	9,901,882	13,998,383	8,956,340	44,599	16,083,776
2013	316,058	182,325	10,095,591	13,987,235	9,011,376	44,255	16,450,116
2014	318,386	186,234	10,393,314	14,570,373	9,276,656	45,763	16,934,250
2015	320,745	190,316	10,782,803	15,245,031	9,618,770	47,530	17,577,651
2016	323,076	193,372	10,927,269	15,478,414	9,740,862	47,910	17,870,993
2017	325,147	196,825	11,253,908	15,925,862	10,031,526	48,980	18,319,763
2018	327,168	200,746	11,568,622	16,471,741	10,319,161	50,346	18,922,590
2019	329,309	204,075	11,852,106	16,901,182	10,572,375	51,323	19,390,940
Projection							
2020	331,473	206,901	12,113,319	17,315,473	10,806,851	52,238	19,810,736
2021	333,708	209,970	12,390,802	17,749,405	11,057,383	53,188	20,258,720
2022	335,850	212,829	12,663,071	18,181,619	11,302,491	54,136	20,697,443
2023	338,004	215,692	12,935,114	18,617,116	11,547,159	55,080	21,134,756
2024	340,167	218,496	13,208,331	19,057,277	11,792,781	56,023	21,572,791
2025	342,331	221,249	13,483,114	19,502,615	12,039,744	56,970	22,012,809
2030	353,003	234,750	14,890,150	21,813,790	13,304,169	61,795	24,258,042
2035	363,262	247,923	16,364,927	24,268,337	14,630,073	66,807	26,593,876
2040	372,935	260,952	17,923,154	26,874,935	16,032,575	72,063	29,041,991
CAGR							
2009 – 2019	0.7%	1.6%	2.5%	2.8%	2.6%	2.1%	2.4%
2020 – 2030	0.6%	1.3%	2.1%	2.3%	2.1%	1.7%	2.0%
2020 – 2040	0.6%	1.2%	2.0%	2.2%	2.0%	1.6%	1.9%

NOTE:
CAGR – Compound Annual Growth Rate
SOURCE: Woods & Poole Economics, Inc., May 2020.

APPENDIX D

Federal Aviation Administration Forecast Approval Letter

U.S. Department
of Transportation
**Federal Aviation
Administration**

ORLANDO AIRPORTS DISTRICT OFFICE
8427 SouthPark Circle, Suite 524
Orlando, Florida 32819
Phone: (407) 487-7220 Fax: (407) 487-7135

May 25, 2021

Mrs. Clara Bennett
Executive Director
Boca Raton Airport Authority
903 NW 35th Street
Boca Raton, FL 33431

Dear Mrs. Bennett:

RE: Boca Raton Airport (BCT)
Approval of Forecast of Aviation Activity for Master Plan Update

This letter responds to your submittal of Aviation Activity Forecasts for the Master Plan Update for the Boca Raton Airport dated January 2021. The based aircraft shown in Table 3-19 and the operations forecasts shown in Table 3-21 of the report are approved to be used in master planning efforts. Please keep in mind that this forecast was prepared at the same time as the evolving impacts of the COVID-19 public health emergency. Forecast approval is based on the methodology, data, and conclusions at the time the document was prepared. However, consideration of the impacts of the COVID-19 public health emergency on aviation activity is warranted to acknowledge the reduced confidence in growth projections using currently-available data.

Accordingly, FAA approval of this forecast does not constitute justification for future projects. Justification for future projects will be made based on activity levels at the time the project is requested for development. Documentation of actual activity levels meeting planning activity levels will be necessary to justify AIP funding for eligible projects.

If you have any questions, please feel free to contact me at (407) 487-7231.

Sincerely,

Marisol C. Elliott
Community Planner

cc: Laurie McDermott, FDOT/4
Sebastien Carreau, Ricondo & Associates
Brad Weston, Ricondo & Associates

APPENDIX E

Critical Aircraft Analysis

Critical Aircraft Overview

Note: ***This appendix includes slides related to the identification of the critical aircraft. Portions presented to the following stakeholders:***

- Florida Department of Transportation – October 20, 2020
- Federal Aviation Administration – October 26, 2020/November 19, 2020
- Technical Advisory Committee – April 22, 2021

FAA Aircraft Approach Categories and Airplane Design Groups

AIRCRAFT APPROACH CATEGORY	APPROACH SPEED	
A	Less than 91 knots	
B	91 knots to less than 121 knots	
C	121 knots to less than 141 knots	
D	141 knots to less than 166 knots	
E	166 knots or more	
AIRPLANE DESIGN GROUP	**TAIL HEIGHT**	**WINGSPAN**
I	Less than 20 feet	49 feet and less
II	20 feet up to but not including 30 feet	49 feet up to but not including 79 feet
III	30 feet up to but not including 45 feet	79 feet up to but not including 118 feet
IV	45 feet up to but not including 60 feet	118 feet up to but not including 171 feet
V	60 feet up to but not including 66 feet	171 feet up to but not including 214 feet
VI	66 feet up to but not including 80 feet	214 feet up to but not including 262 feet

SOURCE: US Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13A, Change 1, *Airport Design*, February 2014.

Representative Aircraft by Airport Reference Code

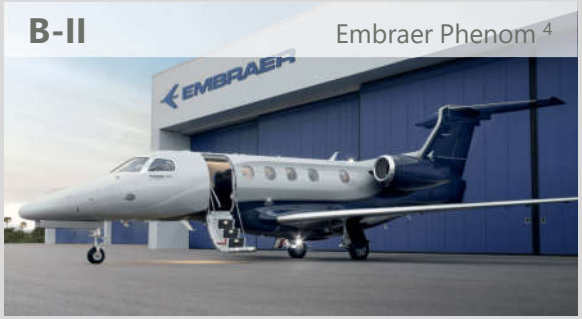
A-I Cessna 172[1]

B-I Hawker Beechjet 400[3]

C-I Learjet 45[5]

A-II Cessna 208[2]

B-II Embraer Phenom [4]



C-II Bombardier Challenger 300[6]

SOURCES: Reference next slide.

Representative Aircraft by Airport Reference Code

D-I Learjet 35[7]

C-III Global Express[9]

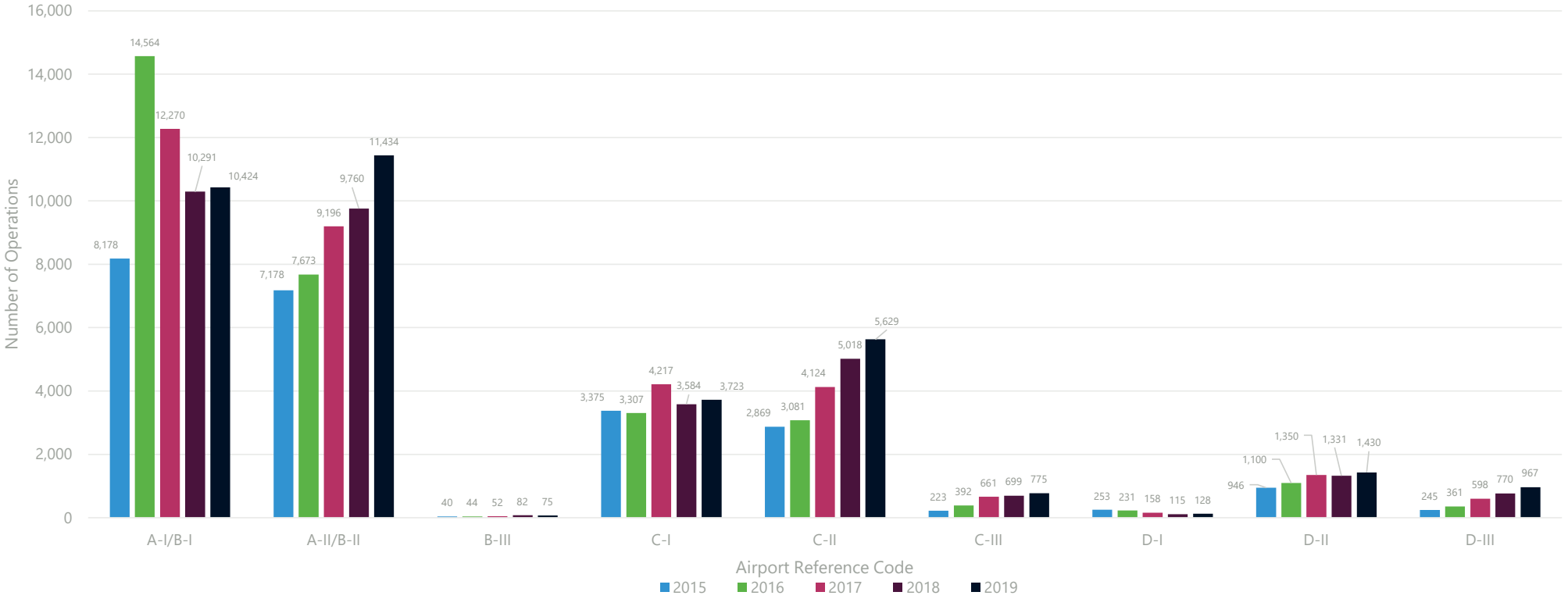
D-II Gulfstream 450[8]

D-III Gulfstream 550[10]

SOURCES:

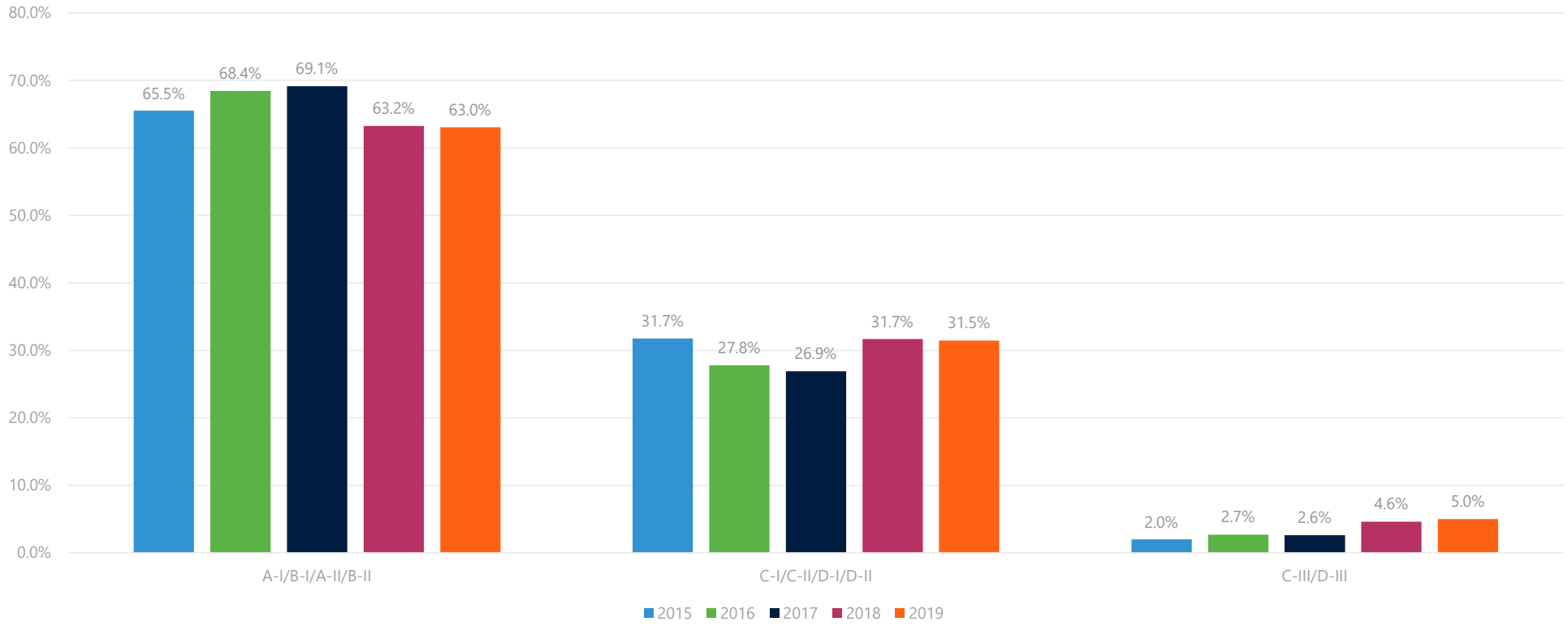
1. BWI Aviation Insurance, November 16, 2019, https://bwifly.com/aircraft-insurance/cessna-172-insurance-cost/
2. Air Vectors, Dec 01, 2020, http://www.airvectors.net/avcvan.html
3. Nextant Aerospace, July 18, 2018, https://www.nextantaerospace.com/faa-awards-nextant-aerospace-true-blue-powertm-lithium-ion-battery-installation-stc-for-beechjet-400a-and-hawker-400xp/
4. Privatejet, https://privatejetcardcomparisons.com/embraer-phenom-300/
5. Business Jet Traveler, https://www.bjtonline.com/aircraft/bombardier-learjet-45
6. Magellan Jets, Bombardier Challenger 300, https://magellanjets.com/travel/bombardier-challenger-300-html/
7. Paramount Business Jets, Learjet 35, https://www.paramountbusinessjets.com/aircraft
8. Pro Aircraft Interiors, Gulfstream IV, https://proaircraftinteriors.com/portfolio_page/gulfstream-iv-sn-1337/
9. Controller, Bombardier Global Express XRS, https://www.controller.com/listings/for-sale/bombardier/global-express-xrs/aircraft
10. Paramount Business Jets, Gulfstream G550, https://www.paramountbusinessjets.com/aircraft/gulfstream-g550.html

CY 2015-2019 Aircraft Operations by Aircraft Based on ANOMS Data



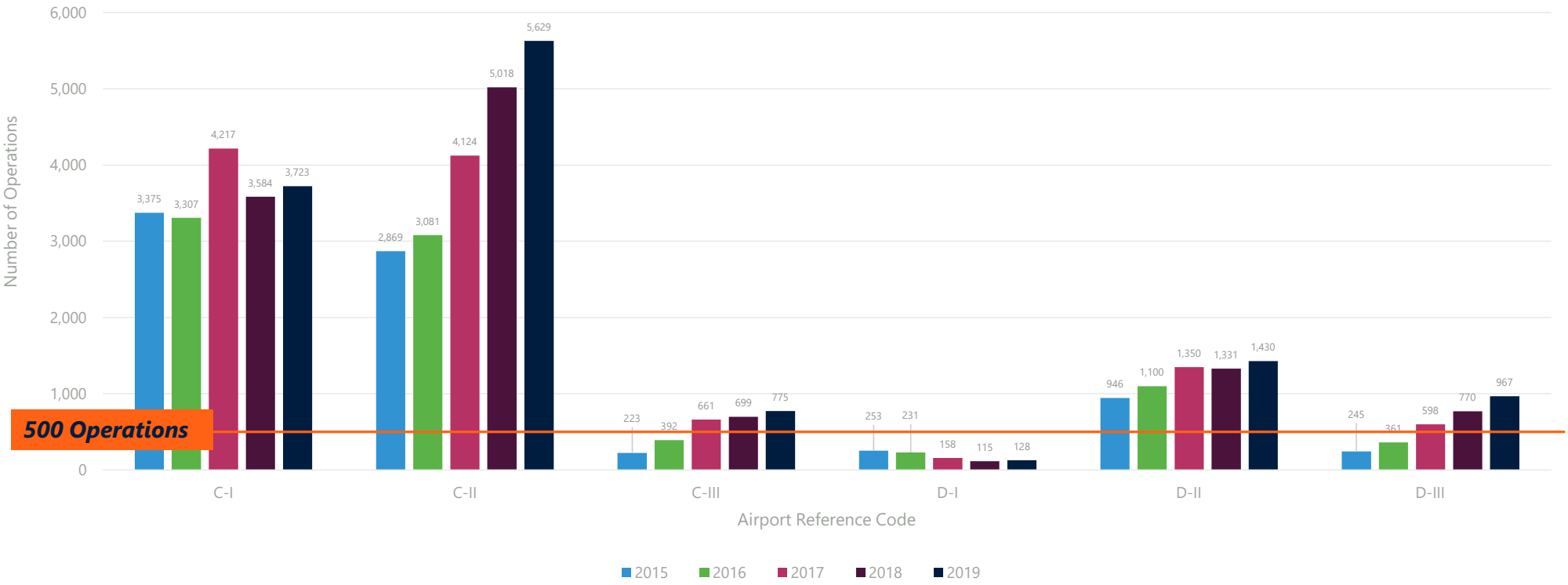
SOURCE: Boca Raton Airport Authority, CY 2015-2019 ANOMS Database (accessed September 2020).

CY 2015-2019 ANOMS Aircraft Operations (In Percentages)



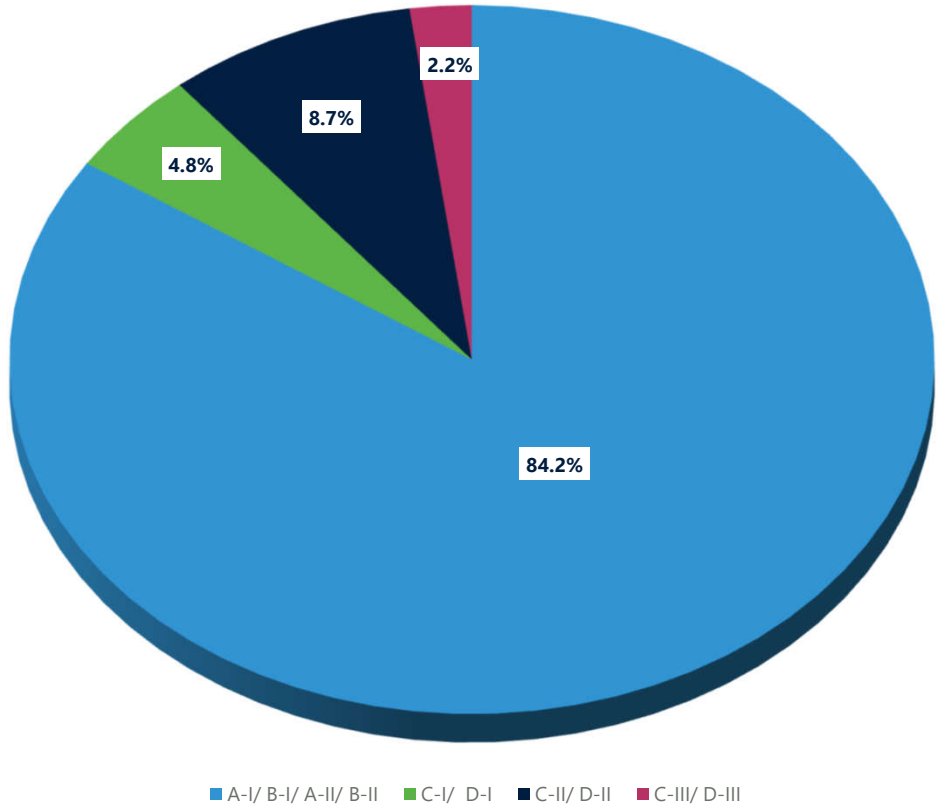
SOURCE: Boca Raton Airport Authority, CY 2015-2019 ANOMS Database (accessed September 2020).

Critical Aircraft Analysis (Approach Category C and D Aircraft)



SOURCE: Boca Raton Airport Authority, CY 2015 and 2019 ANOMS Database, September 2020.

CY 2019 Total Operations by Airport Reference Code



ARC	CY 2019 Operations
A-I/ B-I/ A-II/ B-II	68,109
B-III	75
C-I/ D-I	3,851
C-II/ D-II	7,059
C-III/ D-III	1,742
Helicopters	90
Total Operations (CY 2019)	**80,926**

ARC / family of aircraft exceeding 500 annual operations

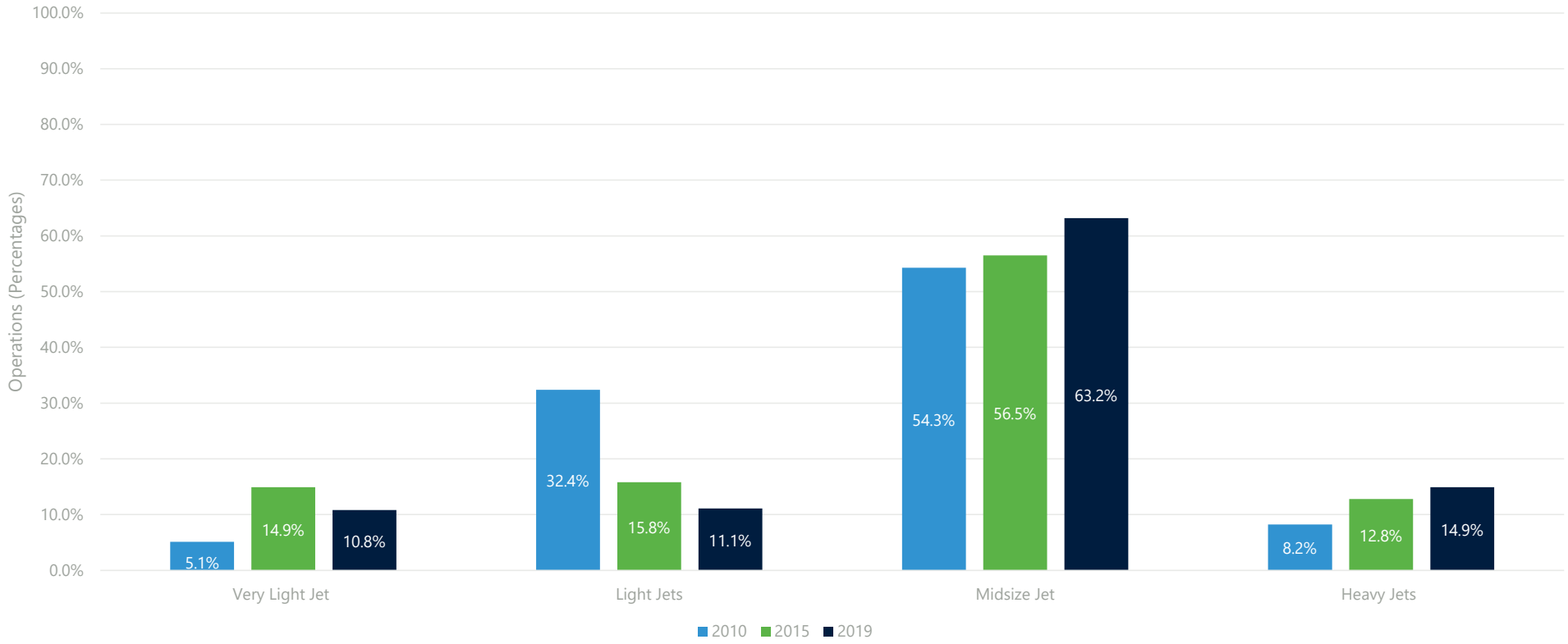
Note: C-V and D-V operations are excluded. Totals may be slightly lower than 100 percent due to rounding.
SOURCE: Boca Raton Airport Authority, CY 2019 ANOMS Database (accessed September 2020).

Business Jet Operations by Type and Percent of Operations

Manufacturer	Light Jets	Midsize Jets		Heavy Jets
Bombardier	Learjet 25 Learjet 35 Learjet 45	Learjet 55 Learjet 60	Challenger 300 Challenger 600	Global Express
Cessna	Citation 525 Citation Mustang	Citation Latitude	Citation Excel	
Gulfstream		Gulfstream I	Gulfstream II	Gulfstream IV/V G650
Hawker Beechcraft	Beechjet 400	Hawker 800		
Embraer	Phenom 100 and 300			
Others	Eclipse 500			Dassault Falcon 7X
Calendar Year				
2010	**37.5%**	**54.3%**		**8.2%**
2015	**30.7%**	**56.5%**		**12.8%**
2019	**21.9%**	**63.2%**		**14.9%**

SOURCE: Boca Raton Airport Authority, CY 2015 and 2019 ANOMS Database, September 2020; Ricondo and Associates, Inc., *Operational Needs Assessment and Runway Safety Area Study*, June 2012.

CY 2010, 2015, and 2019 Business Jet Classifications Operations



SOURCE: Boca Raton Airport Authority, CY 2015 and 2019 ANOMS Database (accessed September 2020); 2010 Operational Needs Assessment and Runway Safety Area Study.

Existing and Future Aircraft Operations by ARC

Airport Reference Code (ARC)	Representative Aircraft (Typical)	Existing Fleet Mix	Forecast Aircraft Operations Fleet Mix		
		FY 2020	**FY 2025**	**FY 2030**	**FY 2040**
A-I/B-I	Cessna 172, Cirrus SR22, Beechjet 400, Cessna 525	50,253	56,587	63,030	77,877
A-II/B-II	Pilatus PC-12, Cessna 208, Cessna 560X, Embraer Phenom 300	10,138	11,416	12,716	15,711
B-III	Dassault Falcon 7X	67	75	83	103
C-I/D-I	Raytheon Hawker 800, Learjet 60, Learjet 45, Learjet 35	3,415	3,845	4,283	5,292
C-II/D-II	Bombardier Challenger 300/350/600, Gulfstream IV	6,259	7,048	7,851	9,700
C-III/D-III	Bombardier Global 5000, Global Express, Gulfstream V/500/550, Gulfstream 650	1,545	1,739	1,937	2,394
N/A	Helicopter	80	90	100	124
	Total	71,756	80,800	90,000	111,200

NOTE:
N/A – Not Applicable

ARC / family of aircraft exceeding 500 annual operations

SOURCE: Boca Raton Airport Authority, CY 2015-2019 ANOMS Database, September 2020.

BCT's Critical Design Aircraft

2004 Airport Enhancement Plan[1]

Gulfstream III – C-II

- Approach Speed – 125 knots
- Wingspan – 77.8 feet

2020 Airport Master Plan

Gulfstream G550 (G500, GV-SP, G-V) - D-III

- Approach Speed – 150 knots
- Wingspan – 93.3 feet

NOTE: 1. The 2004 Airport Enhancement Plan is considered the previous Airport Master Plan.
SOURCES: Boca Raton Airport Authority, CY 2015-2019 ANOMS Database, September 2020; Robb Report, https://robbreport.com/motors/aviation/gulfstreams-g550-business-jet-flew-from-shanghai-to-seattle-in-10-5-hours-2850852/ (accessed November 18, 2020); Liberty Jet, https://www.libertyjet.com/private_jets/G-1159A (accessed January 11, 2021).

APPENDIX F

Modification of Standard Forms

FAA
Airports Division, Southern Region

Modification of Airport Standards Request

General Guidance on Submittals

- Submit using the MOS form with all applicable blocks filled out cleanly, clearly, and precise.
- Submit the MOS request with all pertinent information and data needed. That saves the FAA time and allows a faster response.
- Summarize all requested changes to a specification in one document.
- Use a separate form for each MOS request.
- Clearly indicate “where” and “what” type details on any Drawing or Sketch.
- If the MOS is requesting to use a different material:
    - Include a materials comparison.
    - State the test requirements for the standard and submit tests of the material you are proposing to use.
- Keep it simple and stick to the facts. Avoid personal opinions.
- Avoid justifications without substance.
  Example wordings to avoid:
    - It’s cheaper
    - It’s local
    - It’s green
    - It’s more time efficient
    - It’s easier!
    - It results in a better product based on contractor’s years of experience doing it “this way.”

If you have questions, please call or email a person listed below before sending the MOS request. You can use the FAA Employee Directory link below to find phone and email address data: https://directory.faa.gov/appspub/National/EmployeeDirectory/FAADIR.nsf/?Open).

Ensure that a MOS request is required before submitting one.

- For a **Design** MOS Request: Terry Washington
- For a **Construction & Equipment** MOS Request: Anthony Cochran

Instructions for Using the Modification of Airport Standards Form

The airports sponsor (originator) completes blocks 1-19. The FAA completes all other items.

The originator will transmit the completed form to the applicable ADO.

The ADO will transmit the final FAA determination to the originator.

Requests for modification to airport standards should include sketches or drawings that clearly illustrate the nonstandard condition.

Explanation of form items

1. Legal name of the airport
2. Associated city, state
3. FAA Airport location identifier (LOCID). See the approach plates/airport facility directory.
4. Identify the runway(s), taxiway(s), or other facilities affected by the proposed modification to standards request.
5. Identify the most critical approach for each runway identified in #4. Abbreviations:
   - PIR = Precision Instrument Runway.
   - NPI = Non-Precision Instrument runway
6. Airport reference code. See paragraph 2, page 1 of AC 150/5300-13, e.g. C-II, B-II, A-I (small).
7. Note the design aircraft (arc or specific aircraft) for each facility identified in #4.
   - A design aircraft must make regular use of the facility. Normally, the FAA considers regular use to be 500 or more annual itinerant operations.
   - If the airport serves a whole family of aircraft in a particular group, specify the ARC (e.g. B-II).
   - If, though, the airport is used by only one or two of a family of aircraft (e.g. Beech King Air C90), specify the most demanding aircraft (approach speed, wingspan) instead.
8. Identify the specific name of the standard that the originator proposes to modify for the subject local condition.
9. Describe (words and numbers) the dimensions and requirements of the standard as provided in AC 150/5300-13, AC 150/5370-10, or other applicable ACs.
10. State the proposed modification to the standard.
11. Discuss the local conditions that make it impractical or impossible to meet the standard.
12. Identify alternatives to the subject proposed modification, and explain why these are not viable.
13. Discuss how the proposed modification would affect airport safety. Explain why an acceptable level of safety, economy, durability, and workmanship would still exist.
14. Legal name of the airport
15. Associated city, state
16. Name of the airport authority representative (the request originator)
17. Self-explanatory
18. Self-explanatory
19. Self-explanatory
20. **The FAA completes blocks 20 through 28**.

Modification of Airport Standards Request Form

Airport information

1. AIRPORT NAME:	2. AIRPORT LOCATION (CITY,STATE):	3. LOCID:
Boca Raton Airport	Boca Raton, Florida	BCT

4. AFFECTED RUNWAY/TAXIWAY:	5. APPROACH (EACH RUNWAY):	6. AIRPORT REF. CODE (ARC):
Runway 5-23	☐ PIR ☒ NPI ☐ VISUAL	D-III

7. DESIGN AIRCRAFT (EACH RUNWAY/TAXIWAY):

Gulfstream G550 / G650

Modification of Standards

8. TITLE OF STANDARD BEING MODIFIED (CITE REFERENCE DOCUMENT):

FAA AC 150/5300-13B, Airport Design, Runway Object Free Area (ROFA); Paragraph 3.12.1 (Page 3-52) and Appendix G (Page G-9)

9. STANDARD/REQUIREMENT:

Reference attached supplemental information. The standard ROFA dimensions for a D-III runway are 800 feet wide and extend 1,000' beyond the end of each runway.

10. PROPOSED:

Reference attached supplemental information. The proposed ROFA is 570 feet wide (250 feet east of the runway centerline and 320 feet west of the runway centerline) and extends to the ends of the Runway Safety Areas (consistent with the end of the EMAS).

11. EXPLAIN WHY STANDARD CANNOT BE MET (FAA ORDER 5300.1):

Reference attached supplemental information.

The Airport does not own all the property within the standard ROFA, and land acquisition is not considered feasible due to the presence of existing facilities and major roadways. Further, there is no available land or developable space on existing airport property to relocate buildings and facilities currently located within the standard ROFA.

12. DISCUSS VIABLE ALTERNATIVES (FAA ORDER 5300.1):

Five (5) alternatives have been evaluated as a part of this MOS extension request: 1) Shorten Runway 5-23, 2) Apply Declared Distances to Runway 5-23, 3) Full Conformity, 4) Provide Standard ROFA Width and Maintain EMAS, and 5) Request MOS for Runway 5-23 ROFA.

These are discussed in the attached supplemental information.

13. STATE WHY MODIFICATION WOULD PROVIDE ACCEPTABLE LEVEL OF SAFETY, ECONOMY, DURABILITY, AND WORKMANSHIP (FAA ORDER 5300.1):

Reference attached supplemental information.

There has been an MOS in place for the ROFA since May 5, 2004. An acceptable level of safety has been demonstrated over the past 18 years. According to a review of the Airport's 2019 Airport Noise and Operations Monitoring System (ANOMS) data, only 16 percent of all aircraft operations require an 800-foot wide ROFA. Further, the unique local conditions preclude the Airport from relocating objects (facilities and infrastructure) outside the ROFA. There is limited developable space at the Airport and there is no adjacent land available for acquisition. The EMAS installations on both runway ends mitigate potential runway excursions by an aircraft beyond the end of the runway.

Attach more sheets as needed.

Include sketch or plan.

14. AIRPORT NAME:	15. AIRPORT LOCATION (CITY, STATE):	
Boca Raton Airport	Boca Raton, FL	
16. NAME OF ORIGINATOR:	17. ORIGINATOR'S ORGANIZATION:	18. TELEPHONE:
Clara Bennett, Exectuive Director	Boca Raton Airport Authority	(561) 391-2202
SIGNATURE OF ORIGINATOR Clara Bennett		19. DATE SIGNED: 12/02/2022

For FAA Use Only

20. DATE OF LATEST FAA SIGNED ALP:

21. **ADO RECOMMENDATION**:	SIGNATURE:	22. DATE:

23. **FAA DIVISIONAL REVIEW (AT, AF, FS)**

ROUTING SYMBOL	**SIGNATURE**	**DATE**	**CONCUR OR NON-CONCUR**
			☐ Concur; ☐ Nonconcur
			☐ Concur; ☐ Nonconcur
			☐ Concur; ☐ Nonconcur

24. COMMENTS:

25. **AIRPORTS DIVISION FINAL ACTION:**

☐ Unconditional Approval ☐ Conditional Approval ☐ Disapproval

26. DATE:	SIGNATURE:	27. TITLE:

28. CONDITIONS OF APPROVAL:

Boca Raton Airport

Modification of Airport Standards Request Form

Runway 5-23 Runway Object Free Area

Supplemental Information

9. STANDARD / REQUIREMENT

The standard Runway Object Free Area (ROFA) dimensions for a runway with an airport reference code of D-III are 800 feet wide and extend 1,000 feet beyond the end of the runway. According to FAA AC 150/5300-13B, *Airport Design*, Page 3-52, "the ROFA is symmetrical about the runway centerline". The ROFA clearing standard requires clearing the ROFA of above-ground objects protruding above the nearest point of the runway safety area (RSA). Objects non-essential for air navigation or aircraft ground maneuvering purposes must not be placed in the ROFA. The standard ROFA is illustrated on **Exhibit 1**.

10. PROPOSED

This request is for a renewal/extension of an existing modification of standards (MOS) for the ROFA length and width approved May 5, 2004.

ROFA Width

It is proposed that the ROFA width remains at 570 feet and not be centered about the runway centerline. The ROFA is proposed to extend 250 feet east of the runway centerline and 320 feet west of the runway centerline. The proposed ROFA is depicted on **Exhibit 2**.

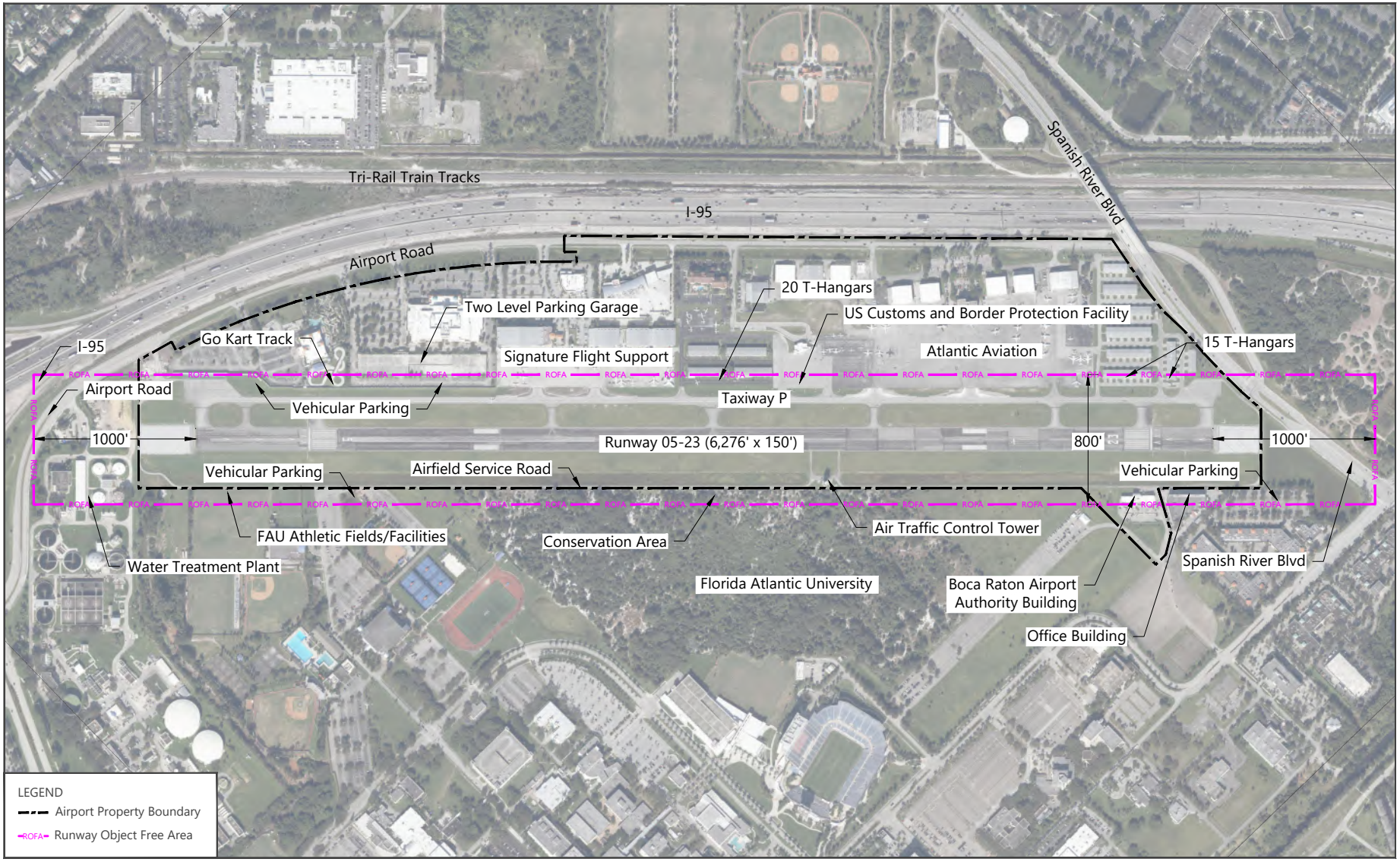
ROFA Length Beyond Runway End

It is proposed that the ROFA length beyond the runway ends for both 5 and 23 remain collocated with the existing lengths of the RSA beyond the runway ends. Both ends of the runway have Engineered Material Arresting System (EMAS) to mitigate existing site constraints pertaining to the length of available RSA. These EMAS were installed in 2016 and 2017.

The ends of the ROFAs will remain collocated with the existing ends of the RSAs as depicted on the latest Airport Layout Plan (ALP), dated May 2022. The ALP and associated Airport Data Sheet can be found in **Appendix A.** The ROFA lengths beyond ends are as follows:

- Runway 5 ROFA Length Beyond Runway End: 300'
- Runway 23 ROFA Length Beyond Runway End: 350'

An airport vehicle service road (at both runway ends) and public roadway (Spanish River Blvd) will remain within the outer corners of the Runway 5-23 ROFA as depicted on **Exhibit 3**. The elevations of the service roads are below the EMAS bed elevations. A construction staging area is located in the ROFA length beyond the Runway 23 end that is utilized occasionally to support airport construction.



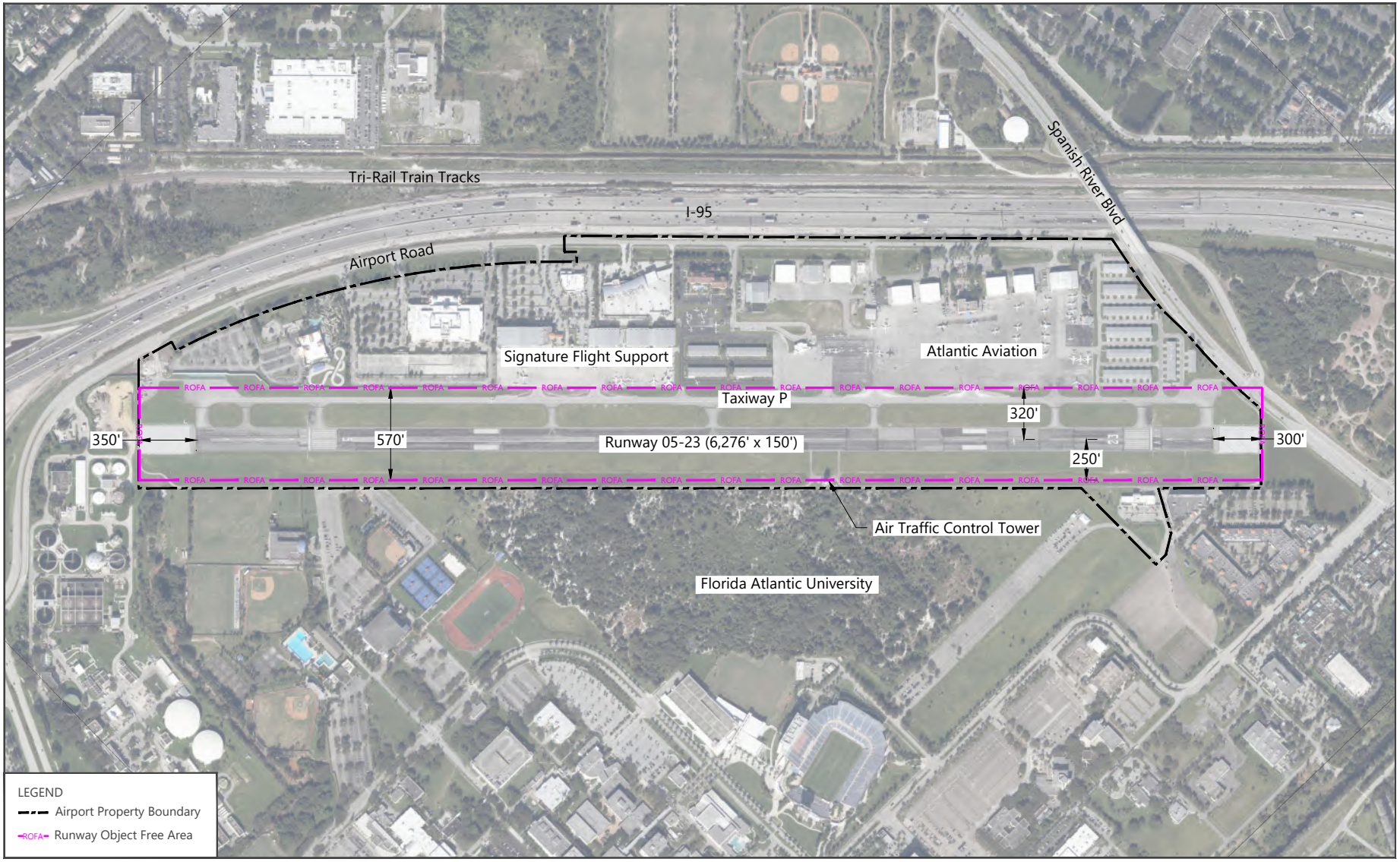
SOURCES: U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13A, *Airport Design*, February 2014; Ricondo and Associates, *Airport Layout Plan*, June 2018; Martinez Geospatial, Inc., April 2021 (aerial photo).

NORTH 0 900 ft.

EXHIBIT 1

RUNWAY 5-23
STANDARD RUNWAY OBJECT FREE AREA

Drawing: P:\Project-Miami\BRAA\2017 GC\Task 70 - Airport Master Plan Update\5. DCA and Airport Requirements\MOS Files\CAD\ROFA MOS\Exhibit 1_BCT_MOS_Standard ROFA Width.dwgLayout: 8.5x11L Plotted: Jul 1, 2021, 11:56AM



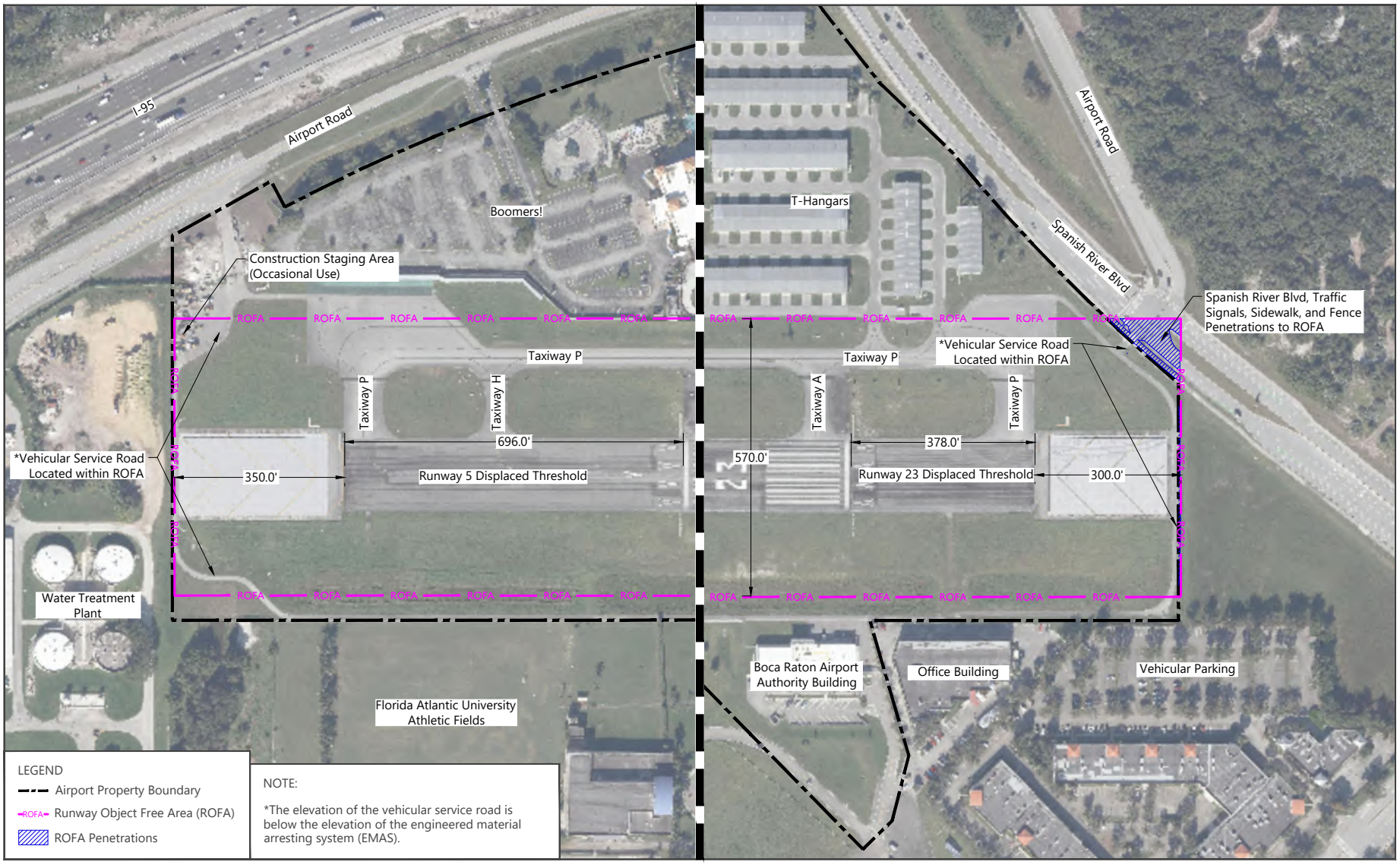
SOURCES: U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13A, *Airport Design*, February 2014; Ricondo and Associates, *Airport Layout Plan*, June 2018; Martinez Geospatial, Inc., April 2021 (aerial photo).

NORTH 0 900 ft.

EXHIBIT 2

RUNWAY 5-23
CURRENTLY APPROVED/PROPOSED RUNWAY OBJECT FREE AREA

Drawing: P:\Project-Miami\BRAA\2017 GC\Task 70 - Airport Master Plan Update\5. DCA and Airport Requirements\MOS Files\CAD\ROFA MOS\Exhibit 2_BCT_MOS_Nonstandard ROFA Width.dwgLayout: 8.5x11L Plotted: Jul 1, 2021, 10:20AM



SOURCES: U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13A, *Airport Design*, February 2014; Ricondo and Associates, *Airport Layout Plan*, June 2018; Martinez Geospatial, Inc., April 2021 (aerial photo).

NORTH 0 300 ft.

EXHIBIT 3

RUNWAY 5-23
CURRENTLY APPROVED/PROPOSED LENGTH BEYOND RUNWAY END

Drawing: P:\Project-Miami\BRAA\2017 GC\Task 70 - Airport Master Plan Update\5. DCA and Airport Requirements\MOS Files\CAD\ROFA MOS\Exhibit 3_BCT_MOS_Proposed Length Beyond Runway End.dwgLayout: 8.5x11L Plotted: Jul 1, 2021, 12:02PM

11. EXPLAIN WHY STANDARD CANNOT BE MET (FAA ORDER 5300.1):

The standard ROFA requirements cannot be met for two primary reasons. First, the Airport does not own all the property within the standard ROFA; approximately 40 acres of land would need to be acquired to own all land within the standard ROFA. Land acquisition is not considered feasible due to the presence of existing facilities and major roadways. The second reason is that the Airport has limited (less than 3 acres) developable space on airport property to relocate buildings and facilities currently located within the standard ROFA.

Opportunities to purchase additional land to relocate buildings, roadways, and facilities outside of the ROFA are non-existent due to the existing land uses surrounding the Airport. Land immediately adjacent to the Airport is described (by direction) below:

- **East** – The property to the east of the Airport is used by Florida Atlantic University (FAU) for recreational purposes, vehicular parking, a business park, and a conservation area.
- **West** – Interstate 95 (I-95) is located west of the Airport. I-95 is a high volume, 10-lane interstate highway that serves as a primary north-south connection for the south Florida region to the northeast corridor.
- **North** – Spanish River Boulevard, an 8-lane arterial thoroughfare runs east-west and connects State Route A1A with South Military Trail, is located north of BCT.
- **South** – The City of Boca Raton's Utility Services Division, including a water treatment plant, is located south of the Airport. Additionally, Airport Road is located between the water treatment plant and I-95.

ROFA Width

The standard ROFA is penetrated on the east side of the runway centerline by the air traffic control tower (ATCT), the Boca Raton Airport Authority (BRAA) Administration Building, an office building located in Research Park, an athletic field, vehicular parking lots, and a portion of the designated conservation area located on the FAU campus. These are depicted on Exhibit 1.

The standard ROFA is penetrated on the west side of the runway centerline by vehicular parking lots, a go kart track, a two-level parking garage, aircraft parking aprons (impacting two Fixed Base Operators and the US Customs and Border Protection facility), 35 T-hangars, and Spanish River Blvd.

ROFA Length Beyond Runway End

The standard ROFA length beyond the Runway 5 departure end is penetrated by Spanish River Blvd., an eight-lane arterial road providing access to Interstate 95 and Airport Road. There are also portions of a vehicular parking lot supporting FAU's Research Park in the standard ROFA length beyond the Runway 5 end.

The standard ROFA length beyond the Runway 23 departure end is penetrated by the City of Boca Raton's Utilities Services Department facility and water treatment plant, Airport Road, and I-95.

The standard ROFA length beyond each runway end is not achievable due to the challenges associated with relocating major roadways and infrastructure, such as a water treatment plant. In addition to being prohibitive, there is no developable space near the airport to relocate these items.

12. DISCUSS VIABLE ALTERNATIVES (FAA ORDER 5300.1):

The following alternatives have been evaluated.

1. **Shorten Runway 5-23**

   Alternative 1 involves shortening Runway 5-23 to achieve a full ROFA length beyond each runway end within the existing property constraints as described above in item 11. To maintain the ROFA length beyond each runway end on existing airport property and provide the standard 1,000-foot ROFA, Runway 5-23 would be reduced by approximately 1,600 feet.

   The shortened Runway 5-23, with full standard ROFA lengths, would be 4,676 feet long. Alternative 1 would not be viable due to the reduction in operational capability resulting from a reduced runway length. A reduction in runway length would be negatively perceived by aircraft operators and necessitate a reduction in payload. Such reductions could result in aircraft operators utilizing other airports and negatively impact business at BCT. Runways less than 5,000 feet could prevent operators from utilizing BCT due to insurance requirements. Further, this would not address the penetrations to the ROFA width. Alternative 1 is illustrated on **Exhibit 4**.

2. **Apply Declared Distances to Runway 5-23**

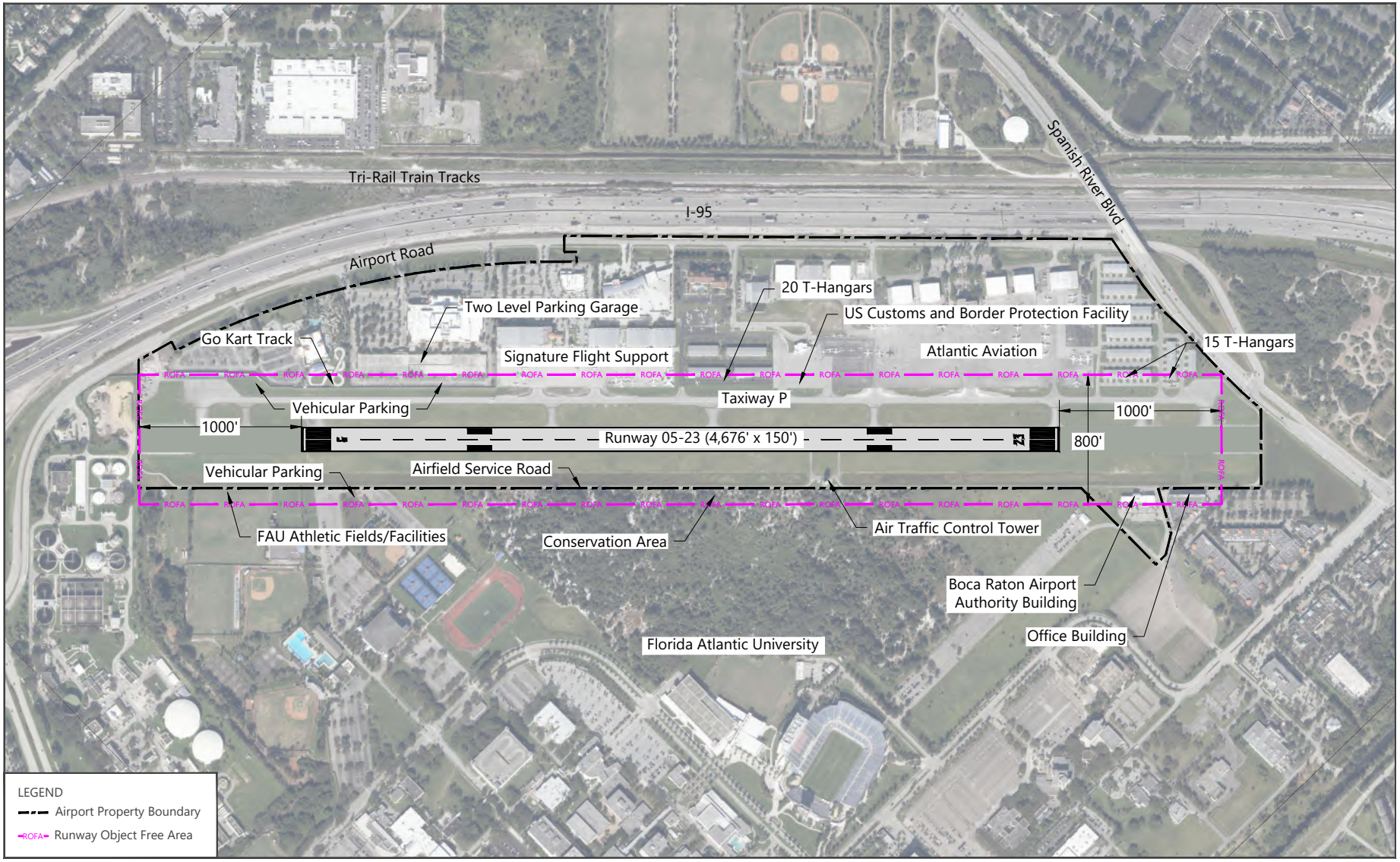
   Alternative 2 is to apply declared distances to Runway 5-23 to mitigate penetrations to the ROFA length beyond each runway end. The two declared distances that would be affected are the Accelerate-Stop Distance Available (ASDA) and the Landing Distance Available (LDA). The Takeoff Run Available (TORA) and Takeoff Distance Available (TODA) are not linked with the requirements of the ROFA, therefore they would not be affected.

   The LDA and ASDA for Runway 5 would be 4,648 feet and 5,344 feet, respectively. The LDA and ASDA for Runway 23 would be 5,248 feet and 5,626 feet, respectively. Similar to Alternative 1, reductions to the declared distances would degrade the operational capability of BCT and include weight penalties being imposed on aircraft. This alternative is not viable due to the negative impact on the aircraft operator's ability to operate at BCT with a reduced runway length. Such reductions could result in aircraft operators utilizing other airports and negatively impact business at BCT. Further, this would not address the penetrations to the ROFA width. Alternative 2 is illustrated on **Exhibit 5.**

3. **Full Conformity**

   Alternative 3 is to achieve full standard conformity by removing the non-compatible objects from the ROFA. This alternative would involve re-routing Spanish River Blvd, Airport Road, and portions of I-95 and access ramp. Additionally, the following would be impacted:

   - 115,000 square feet of non-aeronautical development
   - 260,000 square feet of apron pavement
   - 35 T-hangars
   - 65,000 square feet of vehicular parking
   - 355,000 square feet of conservation and recreation space



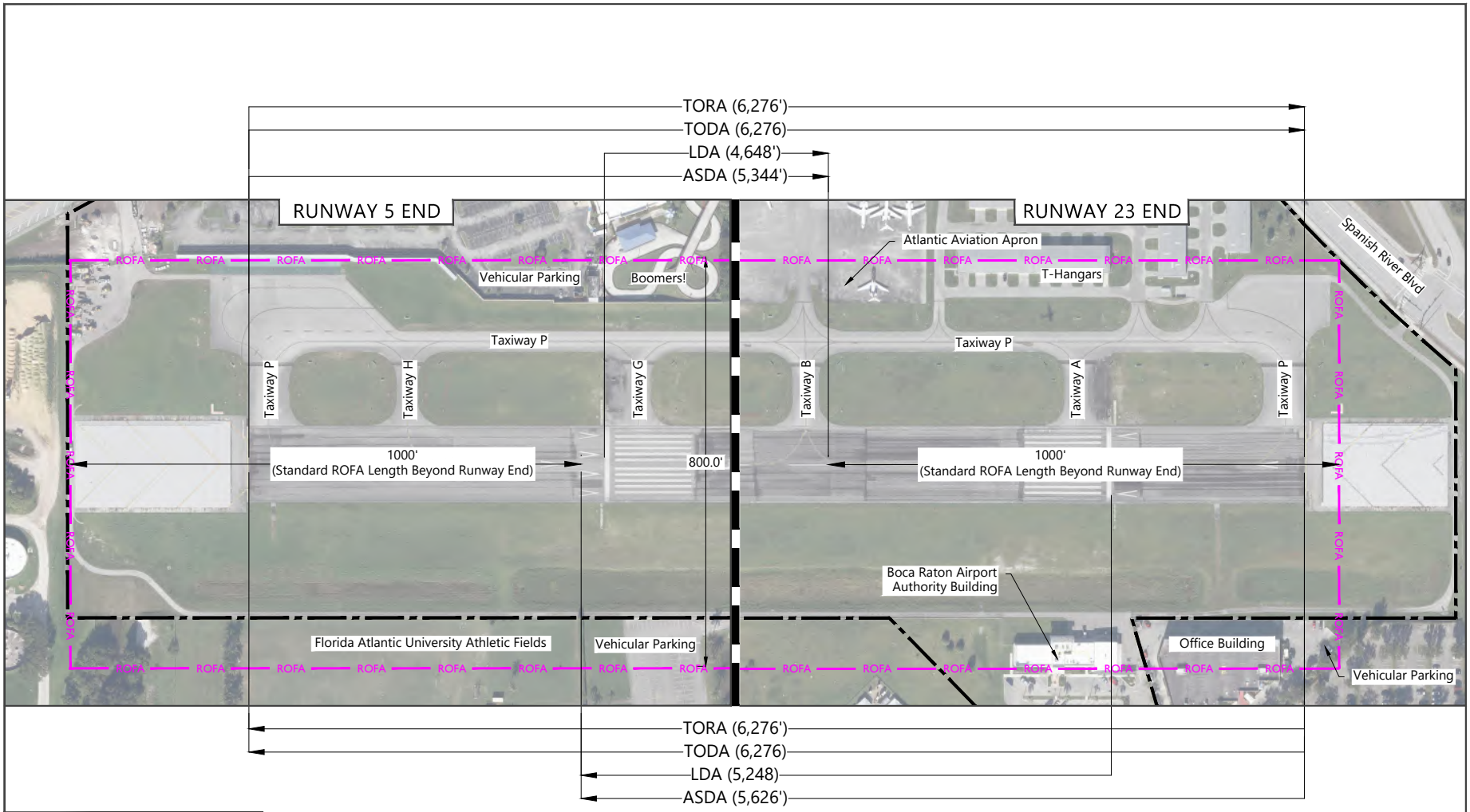
SOURCES: U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13A, *Airport Design*, February 2014; Ricondo and Associates, *Airport Layout Plan*, June 2018; Martinez Geospatial, Inc., April 2021 (aerial photo).

NORTH 0 900 ft.

EXHIBIT 4

ALTERNATIVE 1
SHORTEN RUNWAY 5-23

Drawing: P:\Project-Miami\BRAA\2017 GC\Task 70 - Airport Master Plan Update\5. DCA and Airport Requirements\MOS Files\CAD\ROFA MOS\Exhibit 4_BCT_MOS_Shorten Runway 5-23.dwgLayout: 8.5x11L Plotted: Jul 1, 2021, 10:27AM



LEGEND
- Airport Property Boundary
- ROFA Runway Object Free Area (ROFA)

ACRONYMS:
TORA – Takeoff Run Available | TODA – Takeoff Distance Available | LDA – Landing Distance Available | ASDA – Accelerate Stop Distance Available

SOURCES: U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13A, *Airport Design*, February 2014; Ricondo and Associates, *Airport Layout Plan*, June 2018; Martinez Geospatial, Inc., April 2021 (aerial photo).

NORTH 0 300 ft.

EXHIBIT 5

ALTERNATIVE 2
APPLY DECLARED DISTANCES

Drawing: P:\Project-Miami\BRAA\2017 GC\Task 70 - Airport Master Plan Update\5. DCA and Airport Requirements\MOS Files\CAD\ROFA MOS\Exhibit 5_BCT_MOS_Runway 5-23 Declared Distances.dwgLayout: 8.5x11L Plotted: Jul 1, 2021, 04:20PM

- ATCT
- BRAA Administration Facility
- Research Park Building (office space)
- City of Boca Raton Utilities Services Building
- City of Boca Raton water treatment plant

This alternative is not considerable practicable due to the operational, environmental, and financial impacts. Approximately 40 acres of property would need to be acquired to provide a standard ROFA west of the runway centerline and beyond each end.

Reducing the existing tenant's leasehold (aeronautical and non-aeronautical, west of runway centerline) would have a financial impact to the BRAA and tenants. Reducing the size of the Signature Flight Support apron could degrade the functionality of the leasehold such that their continued operation may not be feasible. An environmental assessment would also be required to study the impacts of the conversation area and recreation space on the FAU campus. Because Alternative 3 is not feasible, it is not illustrated on an exhibit.

4. Provide Standard ROFA Width and Maintain EMAS

Alternative 4 is to achieve a full width ROFA and mitigate the length beyond requirement using the existing EMAS. This would involve purchasing 13 acres of property east of runway. This property is currently used by FAU for recreation and conservation. Additionally, this alternative impacts the following:

- 115,000 square feet of non-aeronautical development
- 260,000 square feet of apron pavement
- 35 T-hangars
- 65,000 square feet of vehicular parking
- 355,000 square feet of conservation and recreation space
- ATCT
- BRAA Administration Facility
- Research Park Building (office space)

This alternative is not considered practicable due to the operational, environmental, and financial impacts. Reducing the existing tenant's leasehold (aeronautical and non-aeronautical, west of runway centerline) would have a financial impact to the BRAA and tenants. Reducing the size of the Signature Flight Support apron could degrade the functionality of the leasehold such that their continued operation may not be feasible. An environmental assessment would also be required to study the impacts of the conversation area and recreation space on the FAU campus. Because Alternative 4 is not feasible, it is not illustrated on an exhibit.

5. Request MOS for Runway 5-23 ROFA

Alternative 4 is a request for an MOS for the Runway 5-23 ROFA (reference #13 below).

<u>This alternative is a renewal of the MOS that was initially approved May 5, 2004.</u>

13. STATE WHY MODIFICATION WOULD PROVIDE ACCEPTABLE LEVEL OF SAFETY, ECONOMY, DURABILITY, AND WORKMANSHIP (FAA ORDER 5300.1):

ROFA Width Reduction

There has been an MOS in place for the ROFA width since May 5, 2004. An acceptable level of safety has been demonstrated over the past 18 years. According to a review of the Airport's 2019 Airport Noise and Operations Monitoring System (ANOMS) data, only 16 percent of all aircraft operations require an 800-foot wide ROFA. The remainder of the aircraft operations require either a 400-foot or 500-foot wide ROFA.

Further, the unique local conditions preclude the Airport from relocating objects (facilities and infrastructure) outside the ROFA. There is limited developable space at the Airport and the land surrounding the Airport is not able to be acquired.

ROFA Length Reduction

The EMAS installations on both runway ends mitigate potential runway excursions by an aircraft beyond the end of the runway.

Appendix A

Airport Layout Plan and Airport Data Sheet

EXISTING BUILDING INDEX

NO.	BUILDING	ELEV.
A	BRAA Administration Building	30.0'
A1	T-Hangars	26.4'
A2	T-Hangars	26.4'
A3	T-Hangars	26.3'
A4	T-Hangars	27.0'
A5	T-Hangars	28.7'
A6	T-Hangars	27.5'
A7	T-Hangars	27.9'
A8	T-Hangars	27.5'
B	US Customs and Border Protection Facility	n/a
B1	Conventional Hangar (Atlantic Aviation)	46.6'
B2	Conventional Hangar (Atlantic Aviation)	51.7'
B3	Conventional Hangar (Atlantic Aviation)	51.5'

NO.	BUILDING	ELEV.
B4	Conventional Hangar (Atlantic Aviation)	46.0'
B5	Conventional Hangar (Atlantic Aviation)	45.7'
B6	Conventional Hangar (Atlantic Aviation)	35.2'
B7	Conventional Hangar (Atlantic Aviation)	35.2'
B8	Conventional Hangar (Atlantic Aviation)	35.0'
B9	Conventional Hangar (Atlantic Aviation)	47.2'
C10	T-Hangars	27.2'
C11	T-Hangars	30.8'
C12	T-Hangars	27.5'
C13	T-Hangars	28.4'
H1	Hotel	61.0'

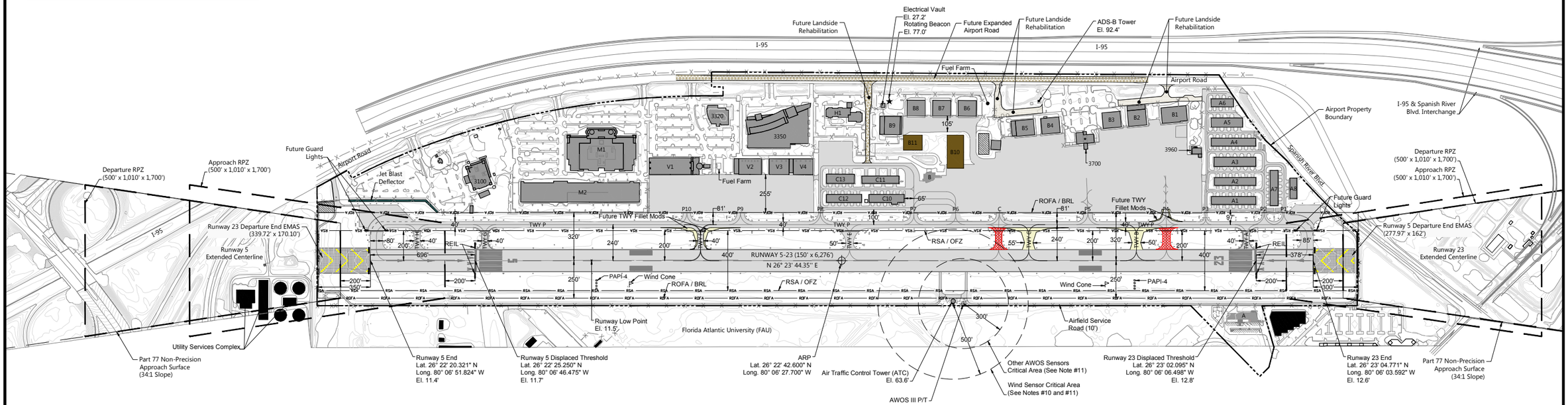
NO.	BUILDING	ELEV.
L1	Lynn University Hangar	33.1'
M1	Cinemark Movie Theatre	88.5'
M2	Cinemark Theatre Parking Garage	38.3'
V1	Conventional Hangar (Signature Flight Support)	58.2'
V2	Conventional Hangar (Signature Flight Support)	52.0'
V3	Conventional Hangar (Signature Flight Support)	50.3'
V4	Conventional Hangar (Signature Flight Support)	50.2'
3100	"Boomers" Recreational Complex	52.6'
3320	Restaurant / Retail / Office Building	n/a
3350	City Furniture	44.0'
3700	Atlantic Aviation (FBO)	66.4'
3960	Lynn University Flight Training	25.0'

FUTURE BUILDING INDEX

NO.	BUILDING	ELEV.
B10	Conventional Hangar (Atlantic Aviation)	55.0'
B11	Conventional Hangar (Atlantic Aviation)	55.0'

CONSTRUCTION NOTICE REQUIREMENT

To protect operational safety and future development, all proposed construction on the airport must be coordinated by the airport owner with the FAA Airports District Office prior to construction. FAA's review takes approximately 60 days.



LEGEND

DESCRIPTION	EXISTING	FUTURE
On-Airport Buildings		
Off-Airport Buildings		Same
Airfield Pavement		
Parking/Landside Improvements	N/A	
Structure/Pavement To Be Demolished	N/A	
Airport Property Boundary		Same
Runway Safety Area (RSA)	RSA	RSA
Runway Object Free Area (ROFA)	ROFA	ROFA
Runway Protection Zone (RPZ)		Same
Fence Line	X	XX

DESCRIPTION	EXISTING	FUTURE
Blast Fence Deflector		Same
Ground Contours (1-foot)	650	Same
Airport Reference Point (ARP)		Same
Rotating Beacon		Same
Wind Cone		Same
AWOS		Same
AWOS Critical Area		Same
Paved Roads		

NOTES:

1. The FAA's approval of this ALP represents general acceptance of the general location of future facilities depicted. During the preliminary design phase, the Airport Owner is required to resubmit for approval, all final locations, heights, and exterior finishes of structures which could adversely effect the safety, efficiency, or utility of the Airport. The FAA's concern is obstructions, impact on electronic aids, or adverse effect on the controller's view of aircraft approaches and ground movement areas.
2. All elevations are Mean Sea Level (MSL, NAVD 88).
3. All coordinates are based on North American Datum 1983 (NAD 83).
4. No Obstacle Free Zone (OFZ) object penetrations were identified. The OFZ coincides with the RSA at a width of 400 feet on the center of Runway 5-23.
5. The Building Restriction Line (BRL) coincides with the non-standard Runway Object Free Area (ROFA), see MOS #2
6. Refer to Sheet 2 of 08 (Data Sheet) for wind roses, airport, runway, and declared distances tables.
7. No threshold siting penetrations, refer to Sheets #5 and #6 for details.
8. Refer to Sheets #5 and #6 (Inner Approach Plan and Profile) for roadway elevations and vertical clearances.
9. Sections of I-95 had to be estimated based on aerial photography taken for the Airport.
10. The AWOS wind sensor is located atop the catwalk of the Air Traffic Control Tower (ATCT).
11. The AWOS critical areas were defined in accordance with FAA Order 6560.20C, *Siting Criteria for Automated Weather Observing Systems (AWOS),(Dated: September 2017)*.

SOURCES:

BCT Basemap & Elevations/Coordinates: Aerial Cartographics of America, Inc., July 2011.
BCT Runway 5-23 Elevations/Coordinates: CH2M Hill, Inc., May 2010 (Airfield Pavement Rehabilitation Program Record Drawings)
FAA, Form 5010-1 (Airport Master Record), Effective October 2011

MODIFICATIONS OF DESIGN STANDARDS (MOS)

NO.	STANDARD MODIFIED	FAA STANDARD	EXISTING CONDITION	PROPOSED ACTION	DATE APPROVED
1.	Runway Safety Area (RSA) Length beyond the Runway End	Length: 1,000'	RWY 5 Length: 350' RWY 23 Length: 300'	None	Pending
2.	Runway Object Free Area (ROFA) Length beyond the Runway End and Width	Length: 1,000' Width: 800'	RWY 5 Length: 350' RWY 23 Length: 300' Width: 570' **	None	May 5, 2004
3.	Runway/Taxiway Separation	300'	240'	None	May 5, 2004

* RSA/ROFA length is measured beyond the physical end of the associated runway.

** The overall width of ROFA is 570'. The ROFA, however, is not centered on the runway centerline. The ROFA extends 320' from centerline on the west side of Runway 5-23 and 250' from centerline on the east side of Runway 5-23. Refer to the Modification of Standards (MOS) table on Sheet #3 for further details.

RICONDO®

Boca Raton Airport

BOCA RATON, FLORIDA

Airport Layout Plan

FAA DISCLAIMER:
The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of this plan by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein nor does it indicate that the proposed development is environmentally acceptable in accordance with appropriate public laws.

APPROVED BY:
Federal Aviation Administration — Date

APPROVED BY AIRPORT SPONSOR:
Signature
Executive Director
Title
06/2018
Date

REVISION HISTORY

NO.	DATE	DESCRIPTION	APPD.
01	09/08/14	Updated Property Boundary	
02	06/26/18	Updated CBP As-Builts and Proposed Taxiway Connectors	

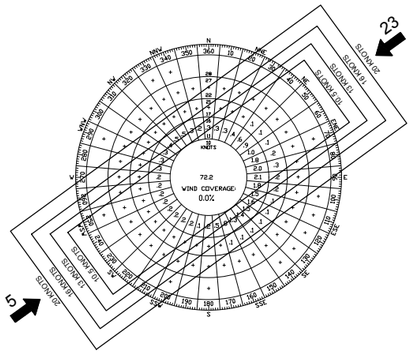
MAGNETIC NORTH DECLINATION = 6° 17' W (JANUARY 2012) — TRUE NORTH

0 150 300 600
GRAPHICAL SCALE IN FEET

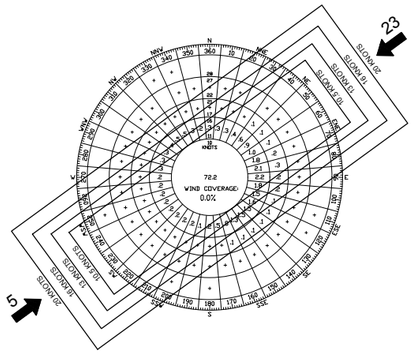
DRAWN BY: JA
CHECKED BY: SC
PREPARED BY: Ricondo & Associates, Inc.
June 2018
Sheet 03 of 10

Drawing: P:\Project-Orlando\BCT\Task 99C.7 - ALP Set Update\CAD\BCTALP30.dwg_Layout: 24x36_Jul 05, 2018, 10:47am

ALL WEATHER WIND ROSE

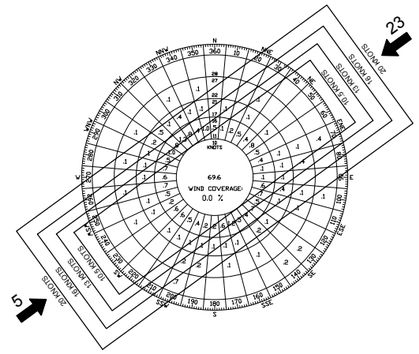


VFR WIND ROSE



Ceiling at or Above 1,000' and Visibility Greater than or Equal to 3 Miles

IFR WIND ROSE



Ceiling Below 1,000' and/or Visibility less than 3 Miles

WIND COVERAGE TABLE

CROSSWIND COMPONENT	RUNWAY COVERAGE (PERCENT)		
	All Weather	VFR	IFR
10.5 KTS (12 mph)	87.6%	87.8%	83.2%
13 KTS (15 mph)	94.3%	94.1%	90.4%
16 KTS (18.4 mph)	99.2%	99.1%	96.1%
20 KTS (23 mph)	99.9%	99.9%	98.7%

Station: 72230, Palm Beach International Airport, West Palm Beach, Florida

Period of Record: 1996 - 2005 (10 Year Annual Averaged Data)

Wind Data Source: National Climatic Data Center
U.S. Department of Commerce
Asheville, North Carolina

No. of Observations: 84,031

RUNWAY DATA TABLE

DESCRIPTION		RUNWAY 5		RUNWAY 23	
		Existing	Future	Existing	Future
% Effective Gradient		0.01%	Same	-0.01%	Same
Runway Length		6,276'	Same	6,276'	Same
Runway Width		150'	Same	150'	Same
Runway End Elevation (MSL)		11.4'	Same	12.6'	Same
Runway Touchdown Zone Elevation (MSL)		11.7'	Same	12.7'	Same
Critical Wingspan Aircraft Design Group		II	Same	II	Same
Critical Aircraft Approach Category		C	Same	C	Same
Critical Aircraft		Gulfstream IV	Same	Gulfstream IV	Same
Runway Surface Type		Asphalt/G	Same	Asphalt/G	Same
Runway Surface Condition		Good	N/A	Good	N/A
Runway Safety Area Width		400' *	Same	400' *	Same
Runway Safety Area Length Beyond Runway End		350'	355'	300'	287'
Runway Object Free Area Width		570' **	Same	570' **	Same
Runway Object Free Area Length Beyond Runway End		350'	355'	300'	287'
Obstacle Free Zone (OFZ)		400'	Same	400'	Same
Pavement Strength (x 1000 lb)		S-60 D-90	Same	S-60 D-90	Same
Part 77 Approach Category		NP	Same	NP	Same
Runway Lighting		MIRL	Same	MIRL	Same
Runway Marking		NP	Same	NP	Same
Approach Lighting		REIL	Same	REIL	Same
Approach Visibility Minimums		1 Mile	Same	1 Mile	Same
Visual and Navigational Aids		PAPI-4 Airport Beacon GPS	Same - 	PAPI-4 Airport Beacon GPS / VOR	Same -
Part 77 Approach Slope		34:1	Same	34:1	Same
Runway End Coordinates	Latitude (N)* Longitude (W)*	26°22'20.32"N 80°06'51.82"W	Same	26°23'04.77"N 80°06'03.59"W	Same
Displaced Threshold Coordinates	Latitude (N)* Longitude (W)*	26°22'25.25"N 80°06'46.47"W	Same	26°23'02.09"N 80°06'06.49"W	Same
Displaced Threshold Elevation (MSL)		11.7'	Same	12.8'	Same

* Per FAA AC 150/5300-13, *Airport Design*, a runway safety area width of 400 feet for Airport Reference Code (ARC) C-II is permissible.

** The overall width of ROFA is 570'. The ROFA, however, is not centered on the runway centerline. The ROFA extends 320' from centerline on the west side of Runway 5-23 and 250' from centerline on the east side of Runway 5-23. Refer to the Modification of Standards (MOS) table on Sheet #3 for further details.

DECLARED DISTANCES

DESCRIPTION	RUNWAY 5		RUNWAY 23	
	Existing*	Future	Existing*	Future
TORA (Take-Off Run Available)	6,276'	Same	6,276'	Same
TODA (Take-Off Distance Available)	6,276'	Same	6,276'	Same
ASDA (Accelerate-Stop Distance Available)	6,276'	Same	6,276'	Same
LDA (Landing Distance Available)	5,580'	Same	5,898'	Same

NOTE:

* Existing declared distances as published in FAA Form 5010 (Airport Master Record). The published declared distances do not reflect existing RSA/ROFA discrepancies.

AIRPORT DATA TABLE

DESCRIPTION	EXISTING	FUTURE
Airport Elevation	13.0'	Same
Airport Property Acreage	215 (Approx.)	Same
Airport Reference Point (NAD 83)	LAT: 26° 22' 42.600" N LONG: 80° 06' 27.700" W	Same
Airport & Terminal NAVAIDS	Airport Beacon, VOR, GPS, PAPI-4, REIL	Same
Weather Aids	AWOS III/LAWRS	Same
Mean Maximum Temperature	90° F	Same
Airport Reference Code (ARC)	C-II	Same
Critical Design Aircraft	Gulfstream IV	Same
Service Level (N.P.I.A.S.)	Reliever	Same
Airport Identifier	BCT	Same

SOURCES:

BCT Basemap & Elevations/Coordinates: Aerial Cartographics of America, Inc., July 2011.
BCT Runway 5-23 Elevations/Coordinates: CH2M Hill, Inc., May 2010 (Airfield Pavement Rehabilitation Program Record Drawings)
FAA, Form 5010-1 (Airport Master Record), Effective June 2018

NOTES:

1. All elevations are Mean Sea Level (MSL).
2. All coordinates are based on North American Datum 1983.
3. Refer to sheet #3 for additional information on existing Modifications of Design Standards

S: Single Wheel
D: Dual Wheel
NP: Non-Precision
MIRL: Medium Intensity Runway Lighting
REIL: Runway End Identifier Lights
PAPI: Precision Approach Path Indicator
GPS: Global Positioning System
VOR: VHF Omnidirectional Range
AWOS: Automated Weather Observing System
LAWRS: Limited Aviation Weather Reporting Station

RICONDO®

Boca Raton Airport

BOCA RATON, FLORIDA

Airport Data Sheet

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APPROVED BY:

Federal Aviation Administration — Date

APPROVED BY AIRPORT SPONSOR:

Clara Bennett
Signature

Executive Director
Title

06/2018
Date

REVISION HISTORY

NO.	DATE	DESCRIPTION	APPD.
01	09/08/14	Updated Property Boundary	
02	06/26/18	Updated CBP As-Builts and	
		Proposed Taxiway Connectors	

DRAWN BY: JA

CHECKED BY: SC

PREPARED BY:
Ricondo & Associates, Inc.

June 2018

Drawing: P:\Project-Orlando\BCT\Task 99C.7 - ALP Set Update\CAD\BCTALP20.dwg_Layout: 24x36_Jul 05, 2018, 10:57am

FAA
Airports Division, Southern Region

Modification of Airport Standards Request

General Guidance on Submittals

- Submit using the MOS form with all applicable blocks filled out cleanly, clearly, and precise.
- Submit the MOS request with all pertinent information and data needed. That saves the FAA time and allows a faster response.
- Summarize all requested changes to a specification in one document.
- Use a separate form for each MOS request.
- Clearly indicate “where” and “what” type details on any Drawing or Sketch.
- If the MOS is requesting to use a different material:
    - Include a materials comparison.
    - State the test requirements for the standard and submit tests of the material you are proposing to use.
- Keep it simple and stick to the facts. Avoid personal opinions.
- Avoid justifications without substance.
  Example wordings to avoid:
    - It’s cheaper
    - It’s local
    - It’s green
    - It’s more time efficient
    - It’s easier!
    - It results in a better product based on contractor’s years of experience doing it “this way.”

If you have questions, please call or email a person listed below before sending the MOS request. You can use the FAA Employee Directory link below to find phone and email address data: https://directory.faa.gov/appspub/National/EmployeeDirectory/FAADIR.nsf/?Open).

Ensure that a MOS request is required before submitting one.

- For a **Design** MOS Request: Terry Washington
- For a **Construction & Equipment** MOS Request: Anthony Cochran

Instructions for Using the Modification of Airport Standards Form

The airports sponsor (originator) completes blocks 1-19. The FAA completes all other items.

The originator will transmit the completed form to the applicable ADO.

The ADO will transmit the final FAA determination to the originator.

Requests for modification to airport standards should include sketches or drawings that clearly illustrate the nonstandard condition.

Explanation of form items

1. Legal name of the airport
2. Associated city, state
3. FAA Airport location identifier (LOCID). See the approach plates/airport facility directory.
4. Identify the runway(s), taxiway(s), or other facilities affected by the proposed modification to standards request.
5. Identify the most critical approach for each runway identified in #4. Abbreviations:
   - PIR = Precision Instrument Runway.
   - NPI = Non-Precision Instrument runway
6. Airport reference code. See paragraph 2, page 1 of AC 150/5300-13, e.g. C-II, B-II, A-I (small).
7. Note the design aircraft (arc or specific aircraft) for each facility identified in #4.
   - A design aircraft must make regular use of the facility. Normally, the FAA considers regular use to be 500 or more annual itinerant operations.
   - If the airport serves a whole family of aircraft in a particular group, specify the ARC (e.g. B-II).
   - If, though, the airport is used by only one or two of a family of aircraft (e.g. Beech King Air C90), specify the most demanding aircraft (approach speed, wingspan) instead.
8. Identify the specific name of the standard that the originator proposes to modify for the subject local condition.
9. Describe (words and numbers) the dimensions and requirements of the standard as provided in AC 150/5300-13, AC 150/5370-10, or other applicable ACs.
10. State the proposed modification to the standard.
11. Discuss the local conditions that make it impractical or impossible to meet the standard.
12. Identify alternatives to the subject proposed modification, and explain why these are not viable.
13. Discuss how the proposed modification would affect airport safety. Explain why an acceptable level of safety, economy, durability, and workmanship would still exist.
14. Legal name of the airport
15. Associated city, state
16. Name of the airport authority representative (the request originator)
17. Self-explanatory
18. Self-explanatory
19. Self-explanatory
20. **The FAA completes blocks 20 through 28**.

Modification of Airport Standards Request Form

Airport information

1. AIRPORT NAME:	2. AIRPORT LOCATION (CITY,STATE):	3. LOCID:
Boca Raton Airport	Boca Raton, Florida	BCT

4. AFFECTED RUNWAY/TAXIWAY:	5. APPROACH (EACH RUNWAY):	6. AIRPORT REF. CODE (ARC):
Runway 5-23	☐ PIR ☒ NPI ☐ VISUAL	D-III

7. DESIGN AIRCRAFT (EACH RUNWAY/TAXIWAY):

Gulfstream G550 / G650

Modification of Standards

8. TITLE OF STANDARD BEING MODIFIED (CITE REFERENCE DOCUMENT):

FAA AC 150/5300-13A, Change 1, Airport Design, Table A7-9, Runway Design Standards Matrix, C/D/E-III, Runway Centerline to Parallel Taxiway/Taxilane Centerline

9. STANDARD/REQUIREMENT:

The standard runway centerline to parallel taxiway centerline separation distance for a runway with an airport reference code of D-III is 400 feet.

10. PROPOSED:

Reference attached supplemental information. This request is for a renewal of an existing modification of standards (MOS) approved May 5, 2004. It is proposed that the existing runway to taxiway separation distance of 240 feet be maintained.

11. EXPLAIN WHY STANDARD CANNOT BE MET (FAA ORDER 5300.1):

Reference attached supplemental information.

Relocating the parallel taxiway or the runway to provide a 400-foot separation distance are not feasible alternatives due to operational, financial, and environmental impacts. These actions would result in devopment costs estimated between $32.0 to $97.0 million. Additionally, the closure of the runway and/or tenant facilities during construction is not considered a viable option due to the economic impacts to airport users, tenants, and the BRAA.

12. DISCUSS VIABLE ALTERNATIVES (FAA ORDER 5300.1):

Three (3) alternatives have been evaluated as a part of this MOS extension request: 1) Relocate Runway 5-23, 2) Relocate Taxiway P, and 3) Request MOS for Runway 5-23 Runway Centerline to Taxiway Centerline Separation Distance and Maintain Existing Operational Restrictions.

These are discussed in the attached supplemental information.

13. STATE WHY MODIFICATION WOULD PROVIDE ACCEPTABLE LEVEL OF SAFETY, ECONOMY, DURABILITY, AND WORKMANSHIP (FAA ORDER 5300.1):

Reference attached supplemental information.

The unique local conditions preclude the Airport from cost effectively relocating the runway and/or taxiway to provide the standard D-III runway to taxiway centerline separation distance. In addition to being cost prohibitive, several factors present implementation challenges such as land acquisition, environmental factors, and operational considerations. An acceptable level of safety has been demonstrated over the past seventeen years that the existing MOS has been in place. An existing operational restriction is currently in place to address occurrences of ADG III operations. The restriction is formalized as a Standard Operating Procedure (SOP) utilized by air traffic control tower staff. A copy of the SOP is included in Appendix B.

Attach more sheets as needed.

Include sketch or plan.

14. AIRPORT NAME:	15. AIRPORT LOCATION (CITY, STATE):	
Boca Raton Airport	Boca Raton, FL	
16. NAME OF ORIGINATOR:	17. ORIGINATOR'S ORGANIZATION:	18. TELEPHONE:
Clara Bennett, Executive Director	Boca Raton Airport Authority	(561) 391-2202
SIGNATURE OF ORIGINATOR		19. DATE SIGNED:

For FAA Use Only

20. DATE OF LATEST FAA SIGNED ALP:

21. **ADO RECOMMENDATION**:	SIGNATURE:	22. DATE:

23. **FAA DIVISIONAL REVIEW (AT, AF, FS)**

ROUTING SYMBOL	**SIGNATURE**	**DATE**	**CONCUR OR NON-CONCUR**
			☐ Concur; ☐ Nonconcur
			☐ Concur; ☐ Nonconcur
			☐ Concur; ☐ Nonconcur

24. COMMENTS:

25. **AIRPORTS DIVISION FINAL ACTION:**

☐ Unconditional Approval ☐ Conditional Approval ☐ Disapproval

26. DATE:	SIGNATURE:	27. TITLE:

28. CONDITIONS OF APPROVAL:

Boca Raton Airport

Modification of Airport Standards Request Form

Runway 5-23 Runway Centerline to Parallel Taxiway Centerline Separation Distance

Supplemental Information

9. STANDARD / REQUIREMENT

The standard runway centerline to parallel taxiway centerline separation distance for a runway with an airport reference code of D-III is 400 feet.

10. PROPOSED

This request is for a renewal of an existing modification of standards (MOS) approved May 5, 2004.

It is proposed that the existing runway to taxiway separation distance of 240 feet be maintained. Based on the unique local conditions, the Boca Raton Airport Authority (BRAA) believes the existing runway to taxiway separation distance is sufficient to safely accommodate the existing and future aircraft fleet mix anticipated at the Airport. The existing Airport Layout Plan and Airport Data Sheet are included in **Appendix A**.

11. EXPLAIN WHY STANDARD CANNOT BE MET (FAA ORDER 5300.1):

Relocating the parallel taxiway (Taxiway P) or the runway to provide a 400-foot separation distance are not feasible alternatives due to operational, financial, and environmental impacts. These actions would result in development costs estimated between $32 to $97 million (2021 US dollars). Additionally, the closure of the runway and/or tenant facilities during construction is not considered a viable option due to the economic impacts to airport users, tenants, and the BRAA.

Relocating the runway to the east would require property acquisition; replacement in-kind of several facilities including the air traffic control tower (ATCT), the BRAA Administration Building, and an office building; introduce new incompatible land uses within the Runway Protection Zones (RPZ); create new aircraft noise impacts; and impact the Florida Atlantic University (FAU) designated conservation area.

Shifting Taxiway P to the west would reduce existing apron areas, significantly impacting two Fixed Base Operator (FBO) aprons and the US Customs and Border Protection apron. Forty-one (41) T-hangars would be impacted by the relocated taxiway, as well as two non-aeronautical tenants. There is limited developable space at the Airport to relocate or replace the existing facilities. This alternative is not considered viable considering the high costs associated with the relocation of Taxiway P and the inability to replicate impacted facilities on-airport property.

In light of the aforementioned, neither the relocation of Runway 5-23 or Taxiway P are considered viable options to meet lateral separation requirements between the runway and parallel taxiway.

12. DISCUSS VIABLE ALTERNATIVES (FAA ORDER 5300.1):

The following alternatives have been evaluated.

1. **Relocate Runway 5-23**

   Alternative 1 includes relocating Runway 5-23 to the east 160 feet to provide the standard 400-foot runway to taxiway separation distance. Taxiway P would remain at its present location, limiting impacts to existing leaseholds. The existing engineered material arresting system (EMAS) beds would be replaced at their current length and width in lieu of full standard RSA lengths beyond each runway end due to the location of Spanish River Blvd and the City of Boca Raton's Utility Services Division facility and water treatment plant.

   This alternative is illustrated on **Exhibit 1.** The cost associated with this alternative is estimated at approximately $97.0 million. This alternative would impact the following:

   - ATCT
   - BRAA Administration Building (9,200 square feet)
   - 2 FAU athletic fields/facilities (6.4 acres)
   - 3 FAU vehicular parking lots (118,000 square feet)
   - Office building in FAU's Research Park (28,000 square feet)
   - 716,000 square feet of conservation area

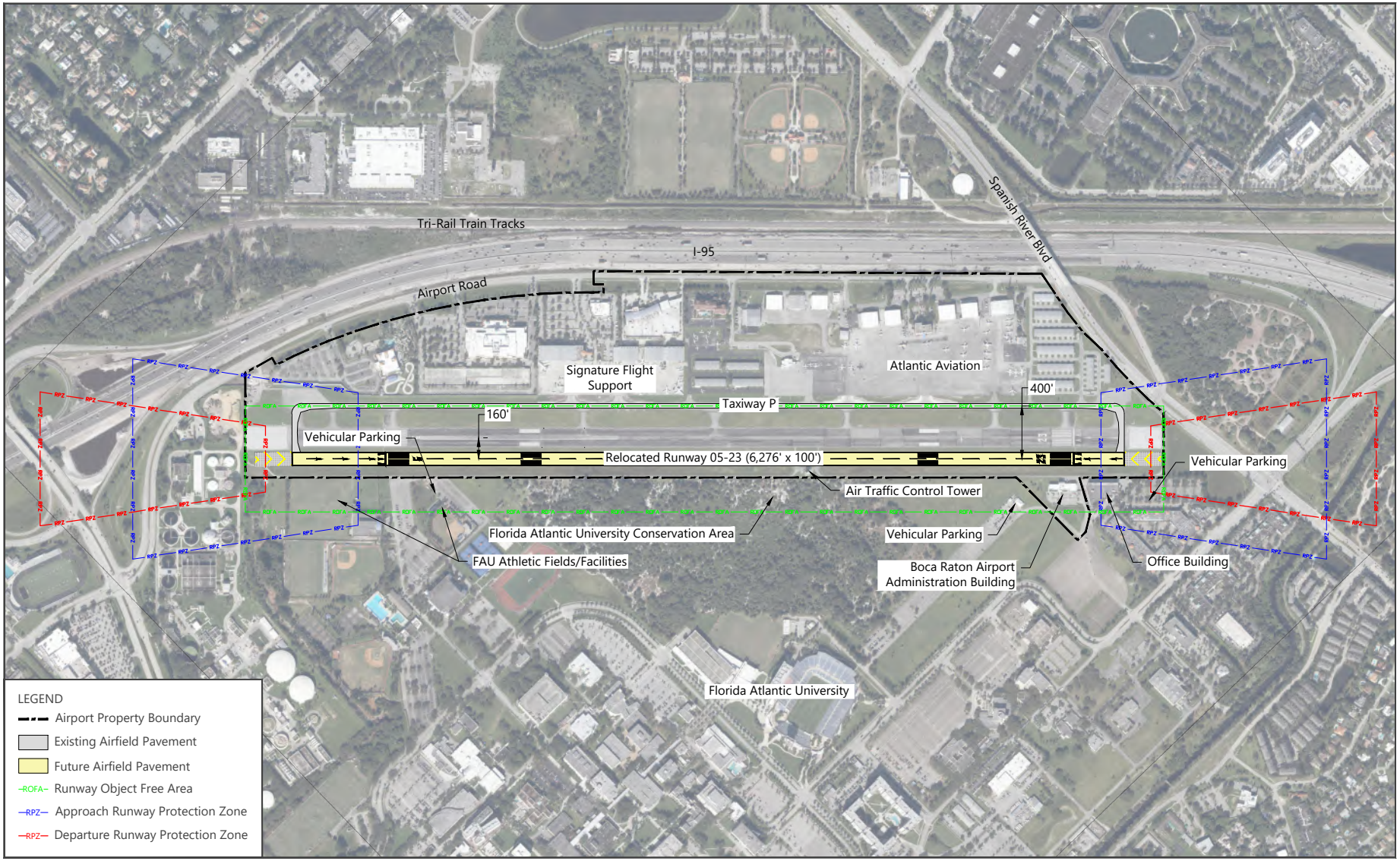
   This rough order of magnitude (ROM) cost estimate does not include costs associated with land acquisition, RPZ mitigation, obstruction removal, and environmental mitigation. Alternative 1 would result in extended runway closures to facilitate the construction of a new runway within the runway safety area (RSA) of the existing runway. The closure would result in a loss of airport revenues, tenant revenues, and other economic impacts to airport users and the surrounding community.

   Finally, an environmental assessment would be required to study the effects of aircraft noise impacts associated with relocating the runway 160 feet (shifting the noise profile) and impacts to the adjacent conservation area on the FAU campus. Alternative 1 is not considered viable due to the financial, operational, and environmental impacts noted above.

2. **Relocate Taxiway P**

   Alternative 2 involves relocating Taxiway P 160 feet to the west to provide the required 400-foot runway to taxiway separation distance. This alternative is illustrated on **Exhibit 2.** The cost associated with Alternative 2 is estimated at $32.0 million. This alternative would impact five existing leaseholds, including the following facilities and infrastructure:

   - 2 aircraft holding bays (59,000 square feet)
   - 2 vehicular parking lots (on two different leaseholds) (147,000 square feet)
   - 2 buildings of a non-aeronautical tenant and a go kart track (51,000 square feet)
   - A two-level parking garage supporting a non-aeronautical tenant (88,000 square feet)
   - 190,000 square feet of the Signature Flight Support aircraft apron
   - 41 T-hangars
   - 60,000 square feet of US Customs and Border Protection apron
   - 26,000 square feet of the Atlantic Aviation apron



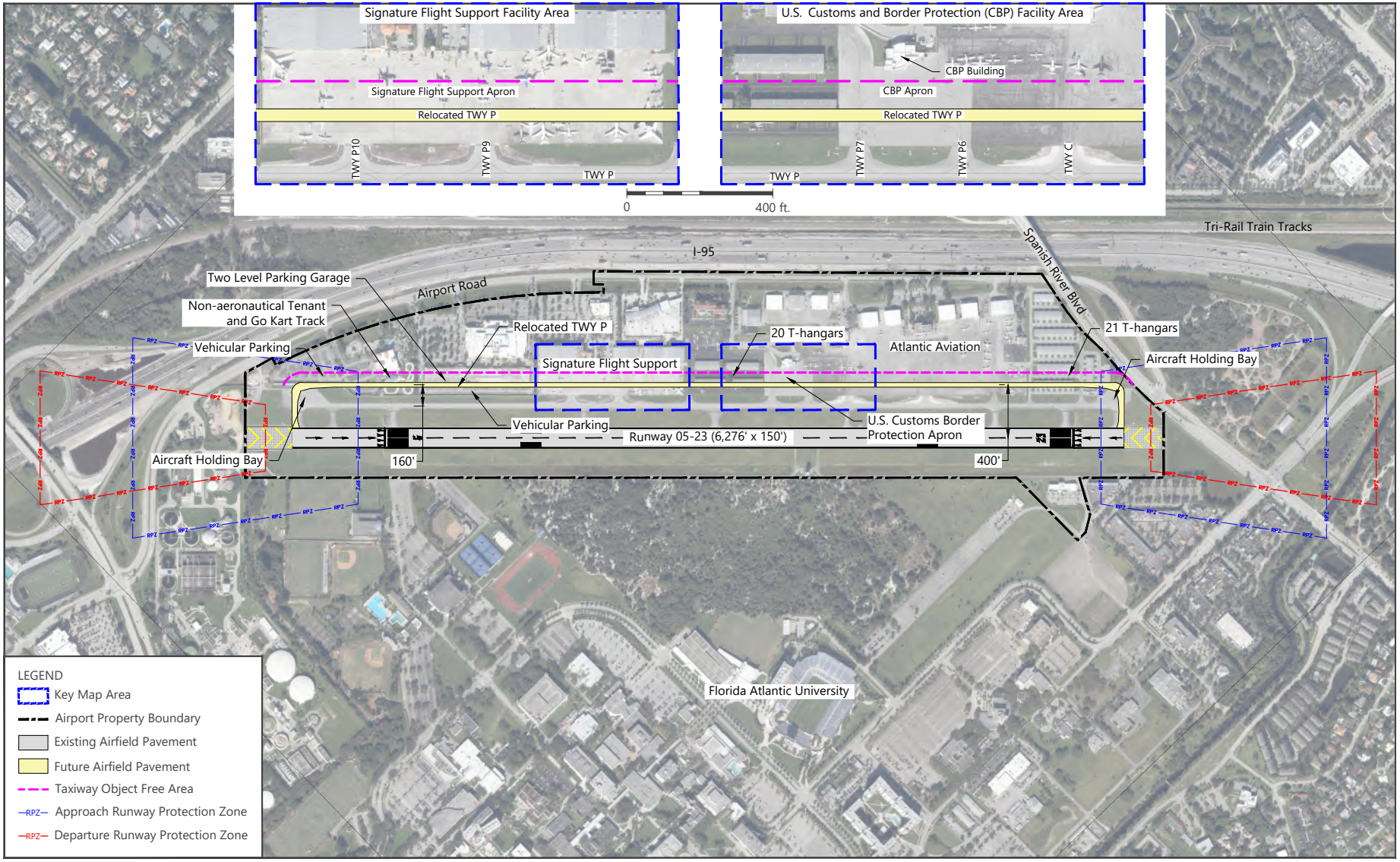
SOURCES: U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13A, *Airport Design*, February 2014; Ricondo and Associates, *Airport Layout Plan*, June 2018; Martinez Geospatial, Inc., April 2021 (aerial photo).

NORTH 0 800 ft.

EXHIBIT 1

ALTERNATIVE 1
RELOCATE RUNWAY 5-23

Drawing: P:\Project-Miami\BRAA\2017 GC\Task 70 - Airport Master Plan Update\5. DCA and Airport Requirements\MOS Files\CAD\RWY to TWY MOS\Exhibit 1_BCT_MOS_Relocate Runway 5-23.dwgLayout: 8.5x11L Plotted: Jul 1, 2021, 01:27PM



SOURCES: U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13A, *Airport Design*, February 2014; Ricondo and Associates, *Airport Layout Plan*, June 2018; Martinez Geospatial, Inc., April 2021 (aerial photo).

NORTH 0 800 ft.

EXHIBIT 2

ALTERNATIVE 2
RELOCATE TAXIWAY P

Drawing: P:\Project-Miami\BRAA\2017 GC\Task 70 - Airport Master Plan Update\5. DCA and Airport Requirements\MOS Files\CAD\RWY to TWY MOS\Exhibit 2_BCT_MOS_Relocate Taxiway P.dwgLayout: 8.5x11L Plotted: Jul 1, 2021, 10:34AM

The ROM cost estimate includes the replacement in-kind of the impacted aeronautical facilities; however, there is limited developable space on airport property to relocate the impacted facilities. Given the land constraints surrounding the BCT airport, the acquisition of additional properties to relocate these facilities is not feasible. Alternative 2 does not include land acquisition or removal of facilities or objects inside the Runway Object Free Area east of the runway centerline.

In addition, the 190,000 square foot reduction of the Signature Flight Support apron would reduce the apron to 89,000 square feet. This reduction would prevent the FBO from adequately serving the type and size of aircraft that utilize the facility and may impact their ability to operate a profitable business. Similarly, the US Customs and Border Protection apron would be reduced to accommodate the future taxiway object free area (TOFA) and prevent the parking of aircraft in front of the facility.

The reduction of two (2) non-aeronautical leaseholds could impact tenant operations in such a manner that continued operation of their business would be cost prohibitive due to loss of facilities and vehicular parking (including a two-level parking deck).

Alternative 2 is not considered practicable due to the high cost associated with implementation and the anticipated loss of revenues to the Airport and tenants due to encroachment of existing leaseholds.

3. Request MOS for Runway 5-23 Runway Centerline to Taxiway Centerline Separation Distance and Maintain Existing Operational Restriction

Alternative 3 includes a request for an MOS to maintain the existing Runway 5-23 runway centerline to taxiway centerline separation distance of 240 feet. This alternative also includes maintaining the existing operational restriction for airplane design group (ADG) III aircraft (Item #13 below provides additional information).

<u>This alternative represents a renewal of an existing MOS that was initially approved May 5, 2004.</u>

13. STATE WHY MODIFICATION WOULD PROVIDE ACCEPTABLE LEVEL OF SAFETY, ECONOMY, DURABILITY, AND WORKMANSHIP (FAA ORDER 5300.1):

The unique local conditions of BCT preclude the Airport from cost effectively relocating the runway and/or taxiway to provide the standard D-III runway to taxiway centerline separation distance. In addition to being cost prohibitive, land acquisition, environmental factors, and operational considerations would preclude the Authority from implementing these options.

An acceptable level of safety has been demonstrated over the past seventeen years that the existing MOS has been in place. An existing operational restriction is currently in place to address occurrences of ADG III operations. The restriction is formalized as a Standard Operating Procedure (SOP) utilized by air traffic control tower staff. A copy of the correspondence detailing the specifics of the SOP is included as **Appendix B.** The SOP states that two ADG III aircraft may not operate simultaneously on the runway and parallel taxiway.

Appendix A

Airport Layout Plan and Airport Data Sheet

EXISTING BUILDING INDEX

NO.	BUILDING	ELEV.
A	BRAA Administration Building	30.0'
A1	T-Hangars	26.4'
A2	T-Hangars	26.4'
A3	T-Hangars	26.3'
A4	T-Hangars	27.0'
A5	T-Hangars	28.7'
A6	T-Hangars	27.5'
A7	T-Hangars	27.9'
A8	T-Hangars	27.5'
B	US Customs and Border Protection Facility	n/a
B1	Conventional Hangar (Atlantic Aviation)	46.6'
B2	Conventional Hangar (Atlantic Aviation)	51.7'
B3	Conventional Hangar (Atlantic Aviation)	51.5'

NO.	BUILDING	ELEV.
B4	Conventional Hangar (Atlantic Aviation)	46.0'
B5	Conventional Hangar (Atlantic Aviation)	45.7'
B6	Conventional Hangar (Atlantic Aviation)	35.2'
B7	Conventional Hangar (Atlantic Aviation)	35.2'
B8	Conventional Hangar (Atlantic Aviation)	35.0'
B9	Conventional Hangar (Atlantic Aviation)	47.2'
C10	T-Hangars	27.2'
C11	T-Hangars	30.8'
C12	T-Hangars	27.5'
C13	T-Hangars	28.4'
H1	Hotel	61.0'

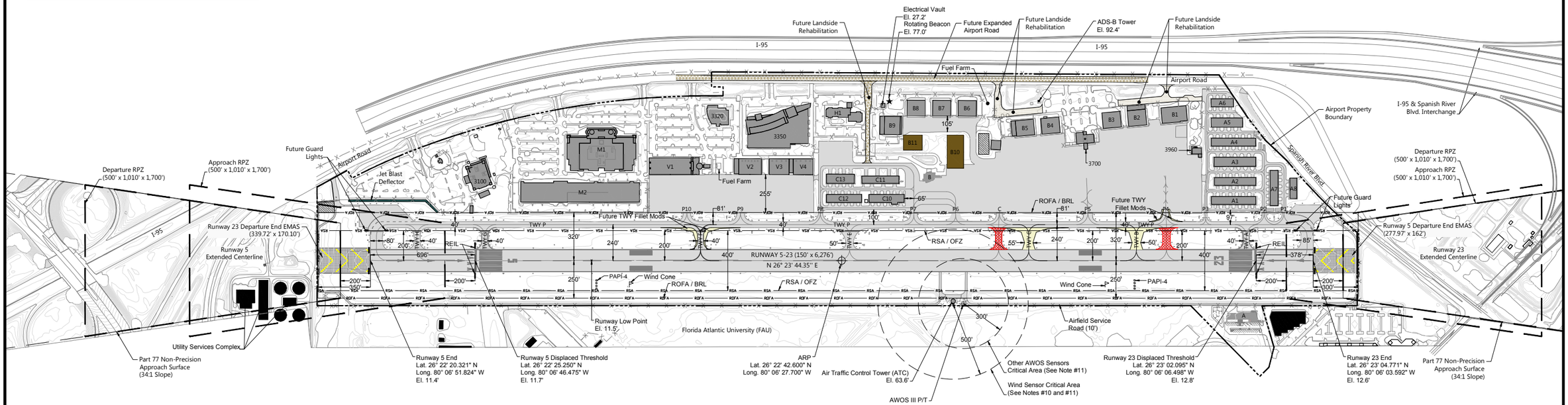
NO.	BUILDING	ELEV.
L1	Lynn University Hangar	33.1'
M1	Cinemark Movie Theatre	88.5'
M2	Cinemark Theatre Parking Garage	38.3'
V1	Conventional Hangar (Signature Flight Support)	58.2'
V2	Conventional Hangar (Signature Flight Support)	52.0'
V3	Conventional Hangar (Signature Flight Support)	50.3'
V4	Conventional Hangar (Signature Flight Support)	50.2'
3100	"Boomers" Recreational Complex	52.6'
3320	Restaurant / Retail / Office Building	n/a
3350	City Furniture	44.0'
3700	Atlantic Aviation (FBO)	66.4'
3960	Lynn University Flight Training	25.0'

FUTURE BUILDING INDEX

NO.	BUILDING	ELEV.
B10	Conventional Hangar (Atlantic Aviation)	55.0'
B11	Conventional Hangar (Atlantic Aviation)	55.0'

CONSTRUCTION NOTICE REQUIREMENT

To protect operational safety and future development, all proposed construction on the airport must be coordinated by the airport owner with the FAA Airports District Office prior to construction. FAA's review takes approximately 60 days.



LEGEND

DESCRIPTION	EXISTING	FUTURE
On-Airport Buildings		
Off-Airport Buildings		Same
Airfield Pavement		
Parking/Landside Improvements	N/A	
Structure/Pavement To Be Demolished	N/A	
Airport Property Boundary		Same
Runway Safety Area (RSA)	RSA	RSA
Runway Object Free Area (ROFA)	ROFA	ROFA
Runway Protection Zone (RPZ)		Same
Fence Line	X	XX

DESCRIPTION	EXISTING	FUTURE
Blast Fence Deflector		Same
Ground Contours (1-foot)	650	Same
Airport Reference Point (ARP)		Same
Rotating Beacon		Same
Wind Cone		Same
AWOS		Same
AWOS Critical Area		Same
Paved Roads		

NOTES:

1. The FAA's approval of this ALP represents general acceptance of the general location of future facilities depicted. During the preliminary design phase, the Airport Owner is required to resubmit for approval, all final locations, heights, and exterior finishes of structures which could adversely effect the safety, efficiency, or utility of the Airport. The FAA's concern is obstructions, impact on electronic aids, or adverse effect on the controller's view of aircraft approaches and ground movement areas.
2. All elevations are Mean Sea Level (MSL, NAVD 88).
3. All coordinates are based on North American Datum 1983 (NAD 83).
4. No Obstacle Free Zone (OFZ) object penetrations were identified. The OFZ coincides with the RSA at a width of 400 feet on the center of Runway 5-23.
5. The Building Restriction Line (BRL) coincides with the non-standard Runway Object Free Area (ROFA), see MOS #2
6. Refer to Sheet 2 of 08 (Data Sheet) for wind roses, airport, runway, and declared distances tables.
7. No threshold siting penetrations, refer to Sheets #5 and #6 for details.
8. Refer to Sheets #5 and #6 (Inner Approach Plan and Profile) for roadway elevations and vertical clearances.
9. Sections of I-95 had to be estimated based on aerial photography taken for the Airport.
10. The AWOS wind sensor is located atop the catwalk of the Air Traffic Control Tower (ATCT).
11. The AWOS critical areas were defined in accordance with FAA Order 6560.20C, *Siting Criteria for Automated Weather Observing Systems (AWOS),(Dated: September 2017)*.

SOURCES:

BCT Basemap & Elevations/Coordinates: Aerial Cartographics of America, Inc., July 2011.
BCT Runway 5-23 Elevations/Coordinates: CH2M Hill, Inc., May 2010 (Airfield Pavement Rehabilitation Program Record Drawings)
FAA, Form 5010-1 (Airport Master Record), Effective October 2011

MODIFICATIONS OF DESIGN STANDARDS (MOS)

NO.	STANDARD MODIFIED	FAA STANDARD	EXISTING CONDITION	PROPOSED ACTION	DATE APPROVED
1.	Runway Safety Area (RSA) Length beyond the Runway End	Length: 1,000'	RWY 5 Length: 350' RWY 23 Length: 300'	None	Pending
2.	Runway Object Free Area (ROFA) Length beyond the Runway End and Width	Length: 1,000' Width: 800'	RWY 5 Length: 350' RWY 23 Length: 300' Width: 570' **	None	May 5, 2004
3.	Runway/Taxiway Separation	300'	240'	None	May 5, 2004

* RSA/ROFA length is measured beyond the physical end of the associated runway.

** The overall width of ROFA is 570'. The ROFA, however, is not centered on the runway centerline. The ROFA extends 320' from centerline on the west side of Runway 5-23 and 250' from centerline on the east side of Runway 5-23. Refer to the Modification of Standards (MOS) table on Sheet #3 for further details.

RICONDO®

Boca Raton Airport

BOCA RATON, FLORIDA

Airport Layout Plan

FAA DISCLAIMER:
The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of this plan by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein nor does it indicate that the proposed development is environmentally acceptable in accordance with appropriate public laws.

APPROVED BY:
Federal Aviation Administration — Date

APPROVED BY AIRPORT SPONSOR:
Signature
Executive Director
Title
06/2018
Date

REVISION HISTORY

NO.	DATE	DESCRIPTION	APPD.
01	09/08/14	Updated Property Boundary	
02	06/26/18	Updated CBP As-Builts and Proposed Taxiway Connectors	

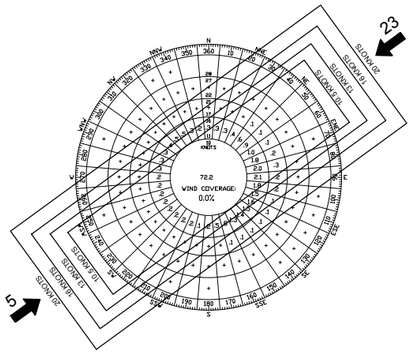
MAGNETIC NORTH DECLINATION = 6° 17' W (JANUARY 2012) — TRUE NORTH

0 150 300 600
GRAPHICAL SCALE IN FEET

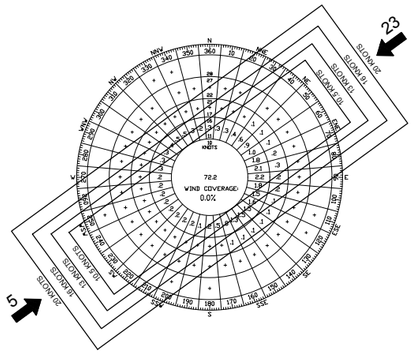
DRAWN BY: JA
CHECKED BY: SC
PREPARED BY: Ricondo & Associates, Inc.
June 2018
Sheet 03 of 10

Drawing: P:\Project-Orlando\BCT\Task 99C.7 - ALP Set Update\CAD\BCTALP30.dwg_Layout: 24x36_Jul 05, 2018, 10:47am

ALL WEATHER WIND ROSE

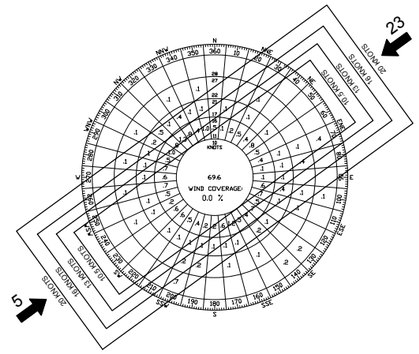


VFR WIND ROSE



Ceiling at or Above 1,000' and Visibility Greater than or Equal to 3 Miles

IFR WIND ROSE



Ceiling Below 1,000' and/or Visibility less than 3 Miles

WIND COVERAGE TABLE

CROSSWIND COMPONENT	RUNWAY COVERAGE (PERCENT)		
	All Weather	VFR	IFR
10.5 KTS (12 mph)	87.6%	87.8%	83.2%
13 KTS (15 mph)	94.3%	94.1%	90.4%
16 KTS (18.4 mph)	99.2%	99.1%	96.1%
20 KTS (23 mph)	99.9%	99.9%	98.7%

Station: 72230, Palm Beach International Airport, West Palm Beach, Florida

Period of Record: 1996 - 2005 (10 Year Annual Averaged Data)

Wind Data Source: National Climatic Data Center
U.S. Department of Commerce
Asheville, North Carolina

No. of Observations: 84,031

RUNWAY DATA TABLE

DESCRIPTION		RUNWAY 5		RUNWAY 23	
		Existing	Future	Existing	Future
% Effective Gradient		0.01%	Same	-0.01%	Same
Runway Length		6,276'	Same	6,276'	Same
Runway Width		150'	Same	150'	Same
Runway End Elevation (MSL)		11.4'	Same	12.6'	Same
Runway Touchdown Zone Elevation (MSL)		11.7'	Same	12.7'	Same
Critical Wingspan Aircraft Design Group		II	Same	II	Same
Critical Aircraft Approach Category		C	Same	C	Same
Critical Aircraft		Gulfstream IV	Same	Gulfstream IV	Same
Runway Surface Type		Asphalt/G	Same	Asphalt/G	Same
Runway Surface Condition		Good	N/A	Good	N/A
Runway Safety Area Width		400' *	Same	400' *	Same
Runway Safety Area Length Beyond Runway End		350'	355'	300'	287'
Runway Object Free Area Width		570' **	Same	570' **	Same
Runway Object Free Area Length Beyond Runway End		350'	355'	300'	287'
Obstacle Free Zone (OFZ)		400'	Same	400'	Same
Pavement Strength (x 1000 lb)		S-60 D-90	Same	S-60 D-90	Same
Part 77 Approach Category		NP	Same	NP	Same
Runway Lighting		MIRL	Same	MIRL	Same
Runway Marking		NP	Same	NP	Same
Approach Lighting		REIL	Same	REIL	Same
Approach Visibility Minimums		1 Mile	Same	1 Mile	Same
Visual and Navigational Aids		PAPI-4 Airport Beacon GPS	Same - 	PAPI-4 Airport Beacon GPS / VOR	Same -
Part 77 Approach Slope		34:1	Same	34:1	Same
Runway End Coordinates	Latitude (N)* Longitude (W)*	26°22'20.32"N 80°06'51.82"W	Same	26°23'04.77"N 80°06'03.59"W	Same
Displaced Threshold Coordinates	Latitude (N)* Longitude (W)*	26°22'25.25"N 80°06'46.47"W	Same	26°23'02.09"N 80°06'06.49"W	Same
Displaced Threshold Elevation (MSL)		11.7'	Same	12.8'	Same

* Per FAA AC 150/5300-13, *Airport Design*, a runway safety area width of 400 feet for Airport Reference Code (ARC) C-II is permissible.

** The overall width of ROFA is 570'. The ROFA, however, is not centered on the runway centerline. The ROFA extends 320' from centerline on the west side of Runway 5-23 and 250' from centerline on the east side of Runway 5-23. Refer to the Modification of Standards (MOS) table on Sheet #3 for further details.

DECLARED DISTANCES

DESCRIPTION	RUNWAY 5		RUNWAY 23	
	Existing*	Future	Existing*	Future
TORA (Take-Off Run Available)	6,276'	Same	6,276'	Same
TODA (Take-Off Distance Available)	6,276'	Same	6,276'	Same
ASDA (Accelerate-Stop Distance Available)	6,276'	Same	6,276'	Same
LDA (Landing Distance Available)	5,580'	Same	5,898'	Same

NOTE:

* Existing declared distances as published in FAA Form 5010 (Airport Master Record). The published declared distances do not reflect existing RSA/ROFA discrepancies.

AIRPORT DATA TABLE

DESCRIPTION	EXISTING	FUTURE
Airport Elevation	13.0'	Same
Airport Property Acreage	215 (Approx.)	Same
Airport Reference Point (NAD 83)	LAT: 26° 22' 42.600" N LONG: 80° 06' 27.700" W	Same
Airport & Terminal NAVAIDS	Airport Beacon, VOR, GPS, PAPI-4, REIL	Same
Weather Aids	AWOS III/LAWRS	Same
Mean Maximum Temperature	90° F	Same
Airport Reference Code (ARC)	C-II	Same
Critical Design Aircraft	Gulfstream IV	Same
Service Level (N.P.I.A.S.)	Reliever	Same
Airport Identifier	BCT	Same

SOURCES:

BCT Basemap & Elevations/Coordinates: Aerial Cartographics of America, Inc., July 2011.
BCT Runway 5-23 Elevations/Coordinates: CH2M Hill, Inc., May 2010 (Airfield Pavement Rehabilitation Program Record Drawings)
FAA, Form 5010-1 (Airport Master Record), Effective June 2018

NOTES:

1. All elevations are Mean Sea Level (MSL).
2. All coordinates are based on North American Datum 1983.
3. Refer to sheet #3 for additional information on existing Modifications of Design Standards

S: Single Wheel
D: Dual Wheel
NP: Non-Precision
MIRL: Medium Intensity Runway Lighting
REIL: Runway End Identifier Lights
PAPI: Precision Approach Path Indicator
GPS: Global Positioning System
VOR: VHF Omnidirectional Range
AWOS: Automated Weather Observing System
LAWRS: Limited Aviation Weather Reporting Station

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Boca Raton Airport

BOCA RATON, FLORIDA

Airport Data Sheet

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APPROVED BY:

Federal Aviation Administration — Date

APPROVED BY AIRPORT SPONSOR:

Clara Bennett
Signature

Executive Director
Title

06/2018
Date

REVISION HISTORY

NO.	DATE	DESCRIPTION	APPD.
01	09/08/14	Updated Property Boundary	
02	06/26/18	Updated CBP As-Builts and	
		Proposed Taxiway Connectors	

DRAWN BY: JA

CHECKED BY: SC

PREPARED BY:
Ricondo & Associates, Inc.

June 2018

Drawing: P:\Project-Orlando\BCT\Task 99C.7 - ALP Set Update\CAD\BCTALP20.dwg_Layout: 24x36_Jul 05, 2018, 10:57am

Appendix B

Air Traffic Control Tower Memorandum Summarizing Airplane Design Group III Standard Operating Procedure

Robinson Aviation (RVA), Inc.

Date: **January 7, 2016**

Subject: **ADG III LOA (Long Wing)**

To: **Clara Bennett, Executive Director & Mark Cervasio Asst. Director**

Copy: **Richard Allen, Area IIE Manager**

From: **Tony Saavedra, ATM**
Boca Raton (BCT) FCT

After our discussion on ADG III (Long Wing) operations, I spoke with the Air Traffic Region and they determined that our current LOA is not valid based on the ADO findings as indicated in the attached emails (already provided) from both of our predecessors, nor is it necessary. To clarify, the ADO had determined that an ADG I and II category aircraft may safely land or depart simultaneously while a ADG III category aircraft lands or departs however, 2 ADG III category aircraft may not operate simultaneously.

From an Air Traffic standpoint, we move to strike the current LOA from our records and will modify a procedure already in place in our Standard Operating Procedures (SOP).

From the date of agreement, we will no longer restrict any aircraft in the ADG I and II category from operating while an ADG III aircraft lands or departs. We will however not allow an ADG III aircraft to land or depart while another ADG III aircraft taxis on the parallel taxiway P.

An amendment to the AFD will need to be submitted to modify the exiting procedure.

Thank you,

Anthony A. Saavedra
Air Traffic Manager
Boca Raton FCT
561-392-8610

APPENDIX G

Airport Road Traffic Counts

Boca Raton Airport Master Plan Update

Data Collection

Prepared For:

RICONDO®

Prepared By:

R.J.Behar & Company, Inc.
Engineers • Planners
6861 SW 196 Avenue, Suite 302 Pembroke Pines, Florida 33332
Tel: 954-680-7771 / Fax: 954-680-7781

March 5th, 2021

TABLE OF CONTENTS

Professional Engineer's Certification……..…….....1

Boca Raton Airport Master Plan Update Data Collection.…….....…..2

APPENDICES

Appendix A- Traffic Data Collection 7 Days Machine Counts

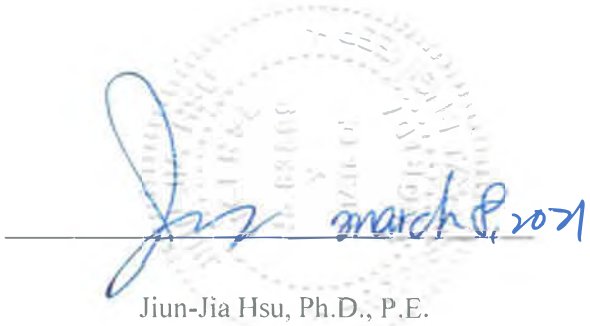
Appendix B- Traffic Data Collection 2-Hour Turning Movement Counts

Appendix C- Roadway Inventory

PROFESSIONAL ENGINEER'S CERTIFICATION

I, Jiun-Jia Hsu, Ph.D., P.E., certify that I currently hold an active Professional Engineer's License in the State of Florida, and I am competent through education and experience to provide engineering services in the civil and traffic engineering disciplines contained in this report. I further certify that this report was prepared by me or under my responsible charge as defined in Chapter 61G15-18.001 F.A.C. and that all statements, conclusions, and recommendations made herein are true and correct to the best of my knowledge and ability.

Project Description: Boca Raton Airport Master Plan Data Collection.



Jiun-Jia Hsu, Ph.D., P.E.
P.E. No.63899
R.J. Behar & Company
6861 SW 196th Avenue, Suite 302
Pembroke Pines, Fl 33332

Boca Raton Airport Master Plan Update Data Collection

This effort consists of obtaining vehicular count data from automatic traffic recorder (ATRs), intersection turning movement counts (TMCs) and a roadway inventory tasks as specified below.

- 7-day ATRs counts

1. Airport Rd. north of Spanish River Blvd.
2. Airport Rd. north of Glades Rd.

- AM & PM peak-hours TMCs

1. Airport Rd. / Spanish River Blvd. intersection.
2. Airport Rd. / Glades Rd. intersection.

- Roadway Inventory

Airport Rd. between Glades Rd. and Spanish River Blvd.

Bi-directional vehicular traffic volume counts were collected via the ATRs. The counters were placed at the above referenced two locations from 2/12/2021 to 2/20/2021, please refer to **Appendix A**.

TMCs were collected at the above referenced two intersections during the two-hour peak period in the AM and two-hour peak period during the PM on a weekday (2/25/2021). Two-hour counts were taken during Saturday's (2/27/2021) peak, please refer to **Appendix B**.

The roadway inventory included Airport Rd. within the above specified limits and the above referenced two intersections. The inventory contained the number of lanes, lane designations; pavement conditions; existing signs / pavement markings and traffic signal items, please refer to **Appendix C**.

Appendix A

Traffic Data Collection

7 Days Machine Counts

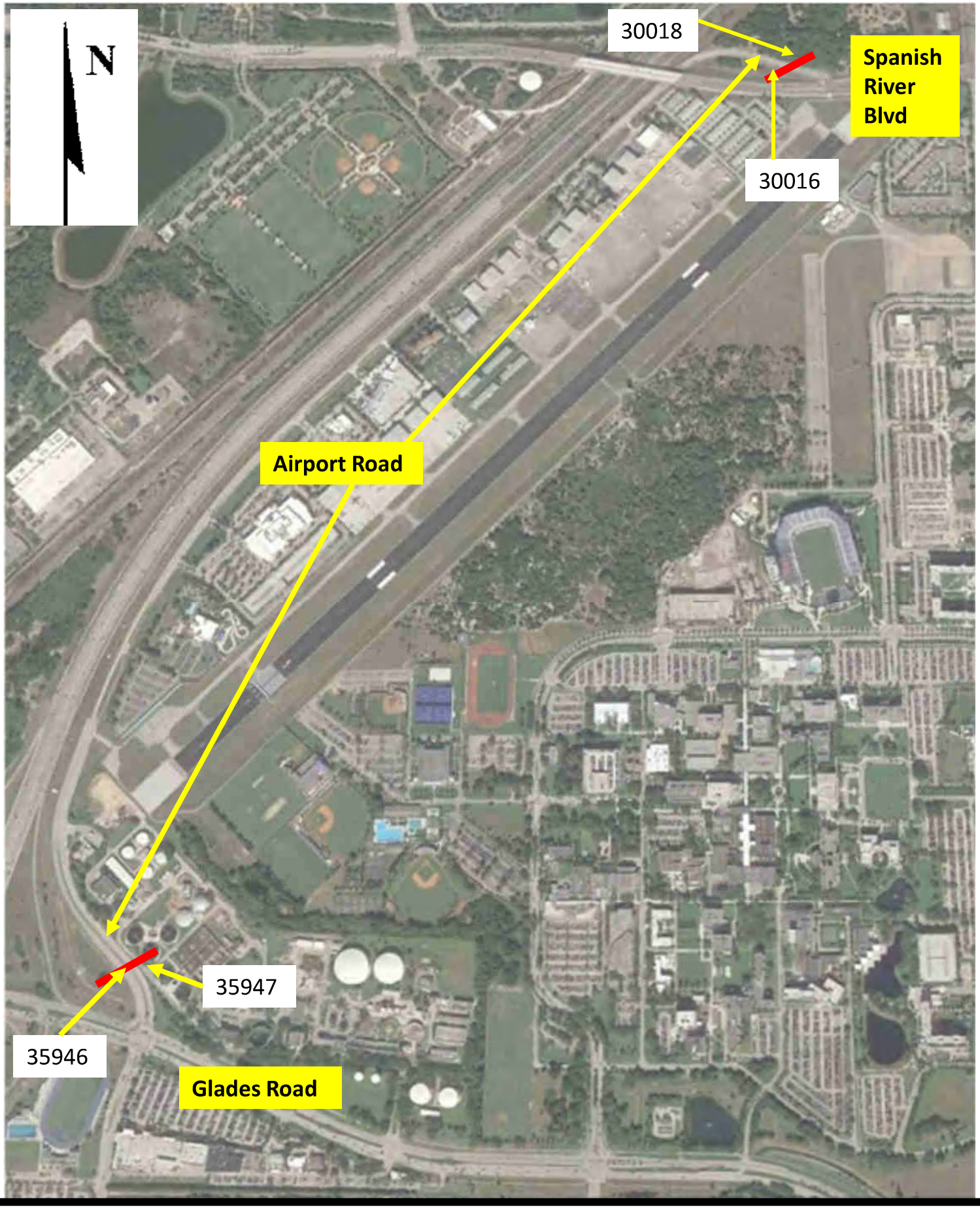
Traffic Data Collection

7 Days Machine Counts

Airport Road

Between Spanish River Boulevard and

Glades Road



31234 : machine counter number

Machine Counts – Airport Rd

Boca Raton Airport Master Plan Update

STARNeXT Bi-Directional Vehicular Volume Counts - Report

Site Code: 30016
Location 1: Airport Road, SB towards N. of Spanish River Blvd.
Boulevard

0.000000
0.000000

2/8/2021	2/8/21	2/9/21	2/10/2021	2/11/2021	2/12/2021	2/13/2021	2/14/2021	Average	
Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon - Fri	Mon - Sun
12:00 AM	*	*	*	*	*	16	26	*	21
1:00	*	*	*	*	*	10	15	*	12
2:00	*	*	*	*	*	3	4	*	4
3:00	*	*	*	*	*	8	5	*	6
4:00	*	*	*	*	*	6	4	*	5
5:00	*	*	*	*	*	5	7	*	6
6:00	*	*	*	*	*	14	16	*	15
7:00	*	*	*	*	*	28	23	*	26
8:00	*	*	*	*	*	50	40	*	45
9:00	*	*	*	*	*	80	72	*	76
10:00	*	*	*	*	*	100	75	*	88
11:00	*	*	*	*	152	148	106	152	135
12:00 PM	*	*	*	*	172	152	126	172	150
1:00	*	*	*	*	154	140	147	154	147
2:00	*	*	*	*	173	181	136	173	163
3:00	*	*	*	*	211	165	170	211	182
4:00	*	*	*	*	246	144	118	246	169
5:00	*	*	*	*	246	128	111	246	162
6:00	*	*	*	*	185	144	132	185	154
7:00	*	*	*	*	117	100	88	117	102
8:00	*	*	*	*	99	76	59	99	78
9:00	*	*	*	*	67	46	46	67	53
10:00	*	*	*	*	39	41	22	39	34
11:00	*	*	*	*	32	33	18	32	28
Total	0	0	0	0	1893	1818	1566	1893	1861
Percent	0.0%	0.0%	0.0%	0.0%	35.9%	34.5%	29.7%		
AM Peak					11:00	11:00	11:00	11:00	11:00
Volume					152	148	106	152	135
PM Peak					4:00	2:00	3:00	4:00	3:00
Volume					246	181	170	246	182

Boca Raton Airport Master Plan Update

STARNeXT Bi-Directional Vehicular Volume Counts - Report

Site Code: 30016
Location 1: Airport Road, SB N. of Spanish River Blvd.
Boulevard

0.000000
0.000000

2/15/2021	2/15/21	2/16/21	2/17/2021	2/18/2021	2/19/2021	2/20/2021	2/21/2021	Average	
Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon - Fri	Mon - Sun
12:00 AM	14	3	8	10	9	21	*	9	11
1:00	2	6	4	4	14	9	*	6	6
2:00	3	4	4	2	2	1	*	3	3
3:00	5	2	3	2	2	6	*	3	3
4:00	4	4	3	4	2	1	*	3	3
5:00	8	7	8	3	3	3	*	6	5
6:00	23	39	36	31	26	15	*	31	28
7:00	86	114	106	94	113	30	*	103	90
8:00	174	202	202	220	204	47	*	200	175
9:00	146	174	154	140	141	78	*	151	139
10:00	108	142	110	138	112	106	*	122	119
11:00	146	154	126	125	155	115	*	141	137
12:00 PM	173	156	148	144	150	143	*	154	152
1:00	164	146	174	147	150	166	*	156	158
2:00	165	168	156	156	189	158	*	167	165
3:00	190	192	210	174	208	149	*	195	187
4:00	240	173	178	174	192	142	*	191	183
5:00	368	233	237	195	216	144	*	250	232
6:00	230	180	189	183	179	75	*	192	173
7:00	112	87	110	96	95	*	*	100	100
8:00	51	51	42	62	78	*	*	57	57
9:00	31	34	40	43	70	*	*	44	44
10:00	22	18	20	21	56	*	*	27	27
11:00	18	14	21	19	25	*	*	19	19
Total	2483	2303	2289	2187	2391	1409	0	2330	2216
Percent	19.0%	17.6%	17.5%	16.7%	18.3%	10.8%	0.0%		
AM Peak	8:00	8:00	8:00	8:00	8:00	11:00		8:00	8:00
Volume	174	202	202	220	204	115		200	175
PM Peak	5:00	5:00	5:00	5:00	5:00	1:00		5:00	5:00
Volume	368	233	237	195	216	166		250	232

Boca Raton Airport Master Plan Update

STARNeXT Bi-Directional Vehicular Volume Counts - Report

Site Code: 30016
Location 1: Airport Road, SB N of Spanish River Blvd.
Boulevard

0.000000
0.000000

2/22/2021	2/22/21	2/23/21	2/24/2021	2/25/2021	2/26/2021	2/27/2021	2/28/2021	Average	
Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon - Fri	Mon - Sun

Boca Raton Airport Master Plan Update

STARNeXT Bi-Directional Vehicular Volume Counts - Report

Site Code: 30018
Location 2: Airport Road, NB North Spanish River Blvd.

0.000000
0.000000

2/8/2021	2/8/21	2/9/21	2/10/2021	2/11/2021	2/12/2021	2/13/2021	2/14/2021	Average	
Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon - Fri	Mon - Sun
12:00 AM	*	*	*	*	*	18	23	*	20
1:00	*	*	*	*	*	10	11	*	10
2:00	*	*	*	*	*	4	3	*	4
3:00	*	*	*	*	*	9	4	*	6
4:00	*	*	*	*	*	2	1	*	2
5:00	*	*	*	*	*	3	4	*	4
6:00	*	*	*	*	*	16	10	*	13
7:00	*	*	*	*	*	28	29	*	28
8:00	*	*	*	*	*	42	26	*	34
9:00	*	*	*	*	*	80	44	*	62
10:00	*	*	*	*	*	86	83	*	84
11:00	*	*	*	*	*	110	107	*	108
12:00 PM	*	*	*	*	161	206	186	161	184
1:00	*	*	*	*	179	211	212	179	201
2:00	*	*	*	*	190	240	204	190	211
3:00	*	*	*	*	200	228	218	200	215
4:00	*	*	*	*	302	220	208	302	243
5:00	*	*	*	*	336	192	166	336	231
6:00	*	*	*	*	350	184	191	350	242
7:00	*	*	*	*	178	153	138	178	156
8:00	*	*	*	*	135	141	101	135	126
9:00	*	*	*	*	126	96	85	126	102
10:00	*	*	*	*	62	84	46	62	64
11:00	*	*	*	*	34	52	33	34	40
Total	0	0	0	0	2253	2415	2133	2253	2390
Percent	0.0%	0.0%	0.0%	0.0%	33.1%	35.5%	31.4%		
AM Peak						11:00	11:00		11:00
Volume						110	107		108
PM Peak					6:00	2:00	3:00	6:00	4:00
Volume					350	240	218	350	243

Boca Raton Airport Master Plan Update

STARNeXT Bi-Directional Vehicular Volume Counts - Report

Site Code: 30018
Location 2: Airport Road, NB North Spanish River Blvd.

0.000000
0.000000

2/15/2021	2/15/21	2/16/21	2/17/2021	2/18/2021	2/19/2021	2/20/2021	2/21/2021	Average	
Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon - Fri	Mon - Sun
12:00 AM	17	28	20	16	13	23	*	19	20
1:00	4	3	12	5	10	15	*	7	8
2:00	9	4	8	4	1	8	*	5	6
3:00	6	2	2	1	1	5	*	2	3
4:00	6	5	2	5	5	2	*	5	4
5:00	7	10	3	10	4	5	*	7	6
6:00	11	23	22	20	21	17	*	19	19
7:00	67	55	56	68	60	32	*	61	56
8:00	108	152	146	130	139	40	*	135	119
9:00	124	149	128	138	133	86	*	134	126
10:00	112	132	124	115	98	80	*	116	110
11:00	142	143	118	138	140	108	*	136	132
12:00 PM	182	148	154	150	174	162	*	162	162
1:00	170	170	181	186	147	203	*	171	176
2:00	184	175	148	166	150	199	*	165	170
3:00	218	216	182	191	236	205	*	209	208
4:00	220	194	222	208	276	214	*	224	222
5:00	205	190	182	176	374	132	*	225	210
6:00	204	172	192	162	320	*	*	210	210
7:00	120	124	116	110	160	*	*	126	126
8:00	88	82	82	76	127	*	*	91	91
9:00	48	46	67	60	125	*	*	69	69
10:00	52	62	36	38	67	*	*	51	51
11:00	42	37	9	21	42	*	*	30	30
Total	2346	2322	2212	2194	2823	1536	0	2379	2334
Percent	17.5%	17.3%	16.5%	16.3%	21.0%	11.4%	0.0%		
AM Peak	11:00	8:00	8:00	9:00	11:00	11:00		11:00	11:00
Volume	142	152	146	138	140	108		136	132
PM Peak	4:00	3:00	4:00	4:00	5:00	4:00		5:00	4:00
Volume	220	216	222	208	374	214		225	222

Boca Raton Airport Master Plan Update

STARNeXT Bi-Directional Vehicular Volume Counts - Report

Site Code: 30018
Location 2: Airport Road, NB North Spanish River Blvd.

0.000000
0.000000

2/22/2021	2/22/21	2/23/21	2/24/2021	2/25/2021	2/26/2021	2/27/2021	2/28/2021	Average	
Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon - Fri	Mon - Sun

Boca Raton Airport Master Plan Update

STARNeXT Bi-Directional Vehicular Volume Counts - Report

Site Code: 35946
Location 3: Airport Road, SB North of Glades Road

0.000000
0.000000

2/8/2021	2/8/21	2/9/21	2/10/2021	2/11/2021	2/12/2021	2/13/2021	2/14/2021	Average	
Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon - Fri	Mon - Sun
12:00 AM	*	*	*	*	*	11	14	*	12
1:00	*	*	*	*	*	8	6	*	7
2:00	*	*	*	*	*	9	6	*	8
3:00	*	*	*	*	*	6	1	*	4
4:00	*	*	*	*	*	8	8	*	8
5:00	*	*	*	*	*	19	15	*	17
6:00	*	*	*	*	*	40	17	*	28
7:00	*	*	*	*	*	38	38	*	38
8:00	*	*	*	*	*	72	42	*	57
9:00	*	*	*	*	*	90	81	*	86
10:00	*	*	*	*	*	150	110	*	130
11:00	*	*	*	*	178	152	158	178	163
12:00 PM	*	*	*	*	168	192	162	168	174
1:00	*	*	*	*	166	247	198	166	204
2:00	*	*	*	*	275	206	236	275	239
3:00	*	*	*	*	270	216	200	270	229
4:00	*	*	*	*	286	252	220	286	253
5:00	*	*	*	*	184	191	213	184	196
6:00	*	*	*	*	136	186	178	136	167
7:00	*	*	*	*	138	132	171	138	147
8:00	*	*	*	*	110	142	74	110	109
9:00	*	*	*	*	106	113	59	106	93
10:00	*	*	*	*	79	127	60	79	89
11:00	*	*	*	*	29	30	24	29	28
Total	0	0	0	0	2125	2637	2291	2125	2486
Percent	0.0%	0.0%	0.0%	0.0%	30.1%	37.4%	32.5%		
AM Peak					11:00	11:00	11:00	11:00	11:00
Volume					178	152	158	178	163
PM Peak					4:00	4:00	2:00	4:00	4:00
Volume					286	252	236	286	253

Boca Raton Airport Master Plan Update

STARNeXT Bi-Directional Vehicular Volume Counts - Report

Site Code: 35946
Location 3: Airport Road, SB North of Glades Road

0.000000
0.000000

2/15/2021	2/15/21	2/16/21	2/17/2021	2/18/2021	2/19/2021	2/20/2021	2/21/2021	Average	
Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon - Fri	Mon - Sun
12:00 AM	5	3	4	6	12	8	*	6	6
1:00	2	5	6	2	6	5	*	4	4
2:00	5	6	4	6	1	7	*	4	5
3:00	5	1	1	4	4	1	*	3	3
4:00	10	14	13	14	10	9	*	12	12
5:00	28	50	50	44	44	16	*	43	39
6:00	82	122	106	104	111	27	*	105	92
7:00	132	152	155	163	160	42	*	152	134
8:00	120	145	108	104	104	62	*	116	107
9:00	105	120	108	127	112	102	*	114	112
10:00	155	156	117	126	157	120	*	142	138
11:00	190	152	154	160	174	127	*	166	160
12:00 PM	196	168	168	172	162	162	*	173	171
1:00	180	188	174	190	215	202	*	189	192
2:00	232	208	187	192	236	220	*	211	212
3:00	377	222	239	220	231	216	*	258	251
4:00	375	246	282	234	256	112	*	279	251
5:00	260	185	187	178	182	*	*	198	198
6:00	128	90	106	124	115	*	*	113	113
7:00	104	66	70	71	118	*	*	86	86
8:00	59	73	62	57	132	*	*	77	77
9:00	38	45	41	36	118	*	*	56	56
10:00	20	16	23	18	80	*	*	31	31
11:00	3	7	10	10	30	*	*	12	12
Total	2811	2440	2375	2362	2770	1438	0	2550	2462
Percent	19.8%	17.2%	16.7%	16.6%	19.5%	10.1%	0.0%		
AM Peak	11:00	10:00	7:00	7:00	11:00	11:00		11:00	11:00
Volume	190	156	155	163	174	127		166	160
PM Peak	3:00	4:00	4:00	4:00	4:00	2:00		4:00	3:00
Volume	377	246	282	234	256	220		279	251

Boca Raton Airport Master Plan Update

STARNeXT Bi-Directional Vehicular Volume Counts - Report

Site Code: 35946
Location 3: Airport Road, SB North of Glades Road

0.000000
0.000000

2/22/2021	2/22/21	2/23/21	2/24/2021	2/25/2021	2/26/2021	2/27/2021	2/28/2021	Average	
Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon - Fri	Mon - Sun

Boca Raton Airport Master Plan Update

STARNeXT Bi-Directional Vehicular Volume Counts - Report

Site Code: 35947
Location 4: Airport Road, NB North of Glades Road
Boulevard

0.000000
0.000000

2/8/2021	2/8/21	2/9/21	2/10/2021	2/11/2021	2/12/2021	2/13/2021	2/14/2021	Average	
Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon - Fri	Mon - Sun
12:00 AM	*	*	*	*	*	11	11	*	11
1:00	*	*	*	*	*	4	3	*	4
2:00	*	*	*	*	*	9	4	*	6
3:00	*	*	*	*	*	2	1	*	2
4:00	*	*	*	*	*	3	3	*	3
5:00	*	*	*	*	*	16	11	*	14
6:00	*	*	*	*	*	28	28	*	28
7:00	*	*	*	*	*	40	26	*	33
8:00	*	*	*	*	*	84	44	*	64
9:00	*	*	*	*	*	86	83	*	84
10:00	*	*	*	*	*	110	99	*	104
11:00	*	*	*	*	155	204	192	155	184
12:00 PM	*	*	*	*	184	210	210	184	201
1:00	*	*	*	*	188	240	199	188	209
2:00	*	*	*	*	200	229	220	200	216
3:00	*	*	*	*	297	217	212	297	242
4:00	*	*	*	*	344	197	168	344	236
5:00	*	*	*	*	342	180	187	342	236
6:00	*	*	*	*	185	154	139	185	159
7:00	*	*	*	*	137	144	105	137	129
8:00	*	*	*	*	126	93	80	126	100
9:00	*	*	*	*	62	87	51	62	67
10:00	*	*	*	*	35	52	31	35	39
11:00	*	*	*	*	17	23	19	17	20
Total	0	0	0	0	2272	2423	2126	2272	2391
Percent	0.0%	0.0%	0.0%	0.0%	33.3%	35.5%	31.2%		
AM Peak					11:00	11:00	11:00	11:00	11:00
Volume					155	204	192	155	184
PM Peak					4:00	1:00	2:00	4:00	3:00
Volume					344	240	220	344	242

Boca Raton Airport Master Plan Update

STARNeXT Bi-Directional Vehicular Volume Counts - Report

Site Code: 35947
Location 4: Airport Road, NB North of Glades Road
Boulevard

0.000000
0.000000

2/15/2021	2/15/21	2/16/21	2/17/2021	2/18/2021	2/19/2021	2/20/2021	2/21/2021	Average	
Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon - Fri	Mon - Sun
12:00 AM	4	2	12	5	10	15	*	7	8
1:00	9	5	8	4	1	8	*	5	6
2:00	6	2	2	2	1	5	*	3	3
3:00	6	5	2	5	5	2	*	5	4
4:00	7	10	3	10	4	5	*	7	6
5:00	11	21	22	20	21	16	*	19	18
6:00	65	56	51	62	52	34	*	57	53
7:00	104	148	142	124	139	38	*	131	116
8:00	131	154	136	146	138	86	*	141	132
9:00	112	128	123	116	101	80	*	116	110
10:00	140	142	118	140	138	108	*	136	131
11:00	180	150	152	148	170	160	*	160	160
12:00 PM	172	173	186	186	152	195	*	174	177
1:00	186	170	147	164	150	203	*	163	170
2:00	216	220	180	195	232	207	*	209	208
3:00	220	194	222	196	282	216	*	223	222
4:00	206	189	181	187	364	128	*	225	209
5:00	202	170	194	163	316	*	*	209	209
6:00	118	128	118	110	174	*	*	130	130
7:00	91	79	82	75	127	*	*	91	91
8:00	51	48	68	61	123	*	*	70	70
9:00	49	64	35	37	69	*	*	51	51
10:00	44	37	10	22	41	*	*	31	31
11:00	30	21	16	13	24	*	*	21	21
Total	2360	2316	2210	2191	2834	1506	0	2384	2336
Percent	17.6%	17.3%	16.5%	16.3%	21.1%	11.2%	0.0%		
AM Peak	11:00	8:00	11:00	11:00	11:00	11:00		11:00	11:00
Volume	180	154	152	148	170	160		160	160
PM Peak	3:00	2:00	3:00	3:00	4:00	3:00		4:00	3:00
Volume	220	220	222	196	364	216		225	222

Boca Raton Airport Master Plan Update

STARNeXT Bi-Directional Vehicular Volume Counts - Report

Site Code: 35947
Location 4: Airport Road, NB North of Glades Road
Boulevard

0.000000
0.000000

2/22/2021	2/22/21	2/23/21	2/24/2021	2/25/2021	2/26/2021	2/27/2021	2/28/2021	Average	
Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon - Fri	Mon - Sun

Appendix B

Traffic Data Collection

2-Hour Turning Movement Counts

Traffic Data Collection

2-Hour Turning Movement Counts

Airport Road

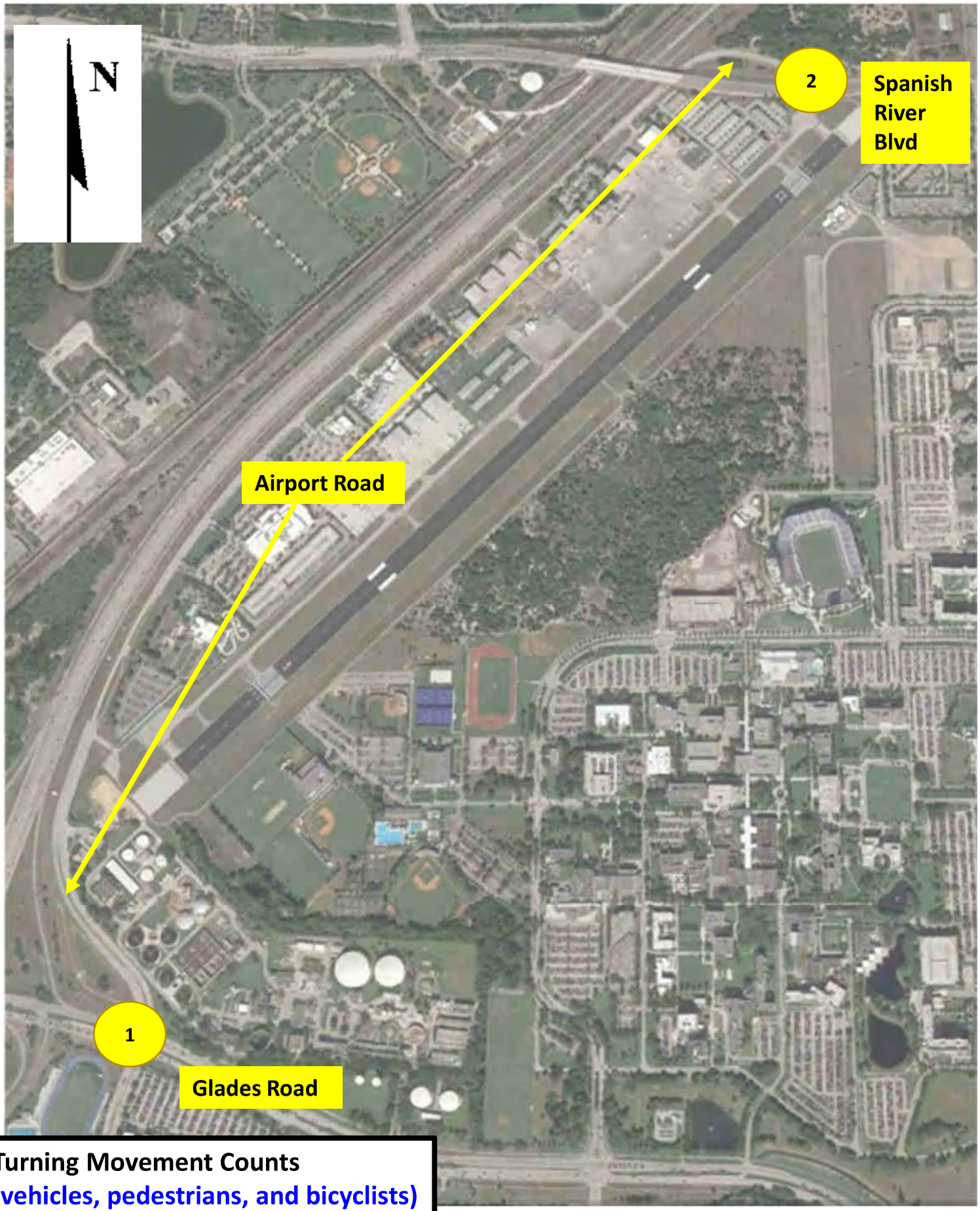
At Spanish River Boulevard and

Glades Road

(Weekday 08:00 – 10:00AM, 11:00 – 01:00PM,

and 04:00 – 06:00PM)

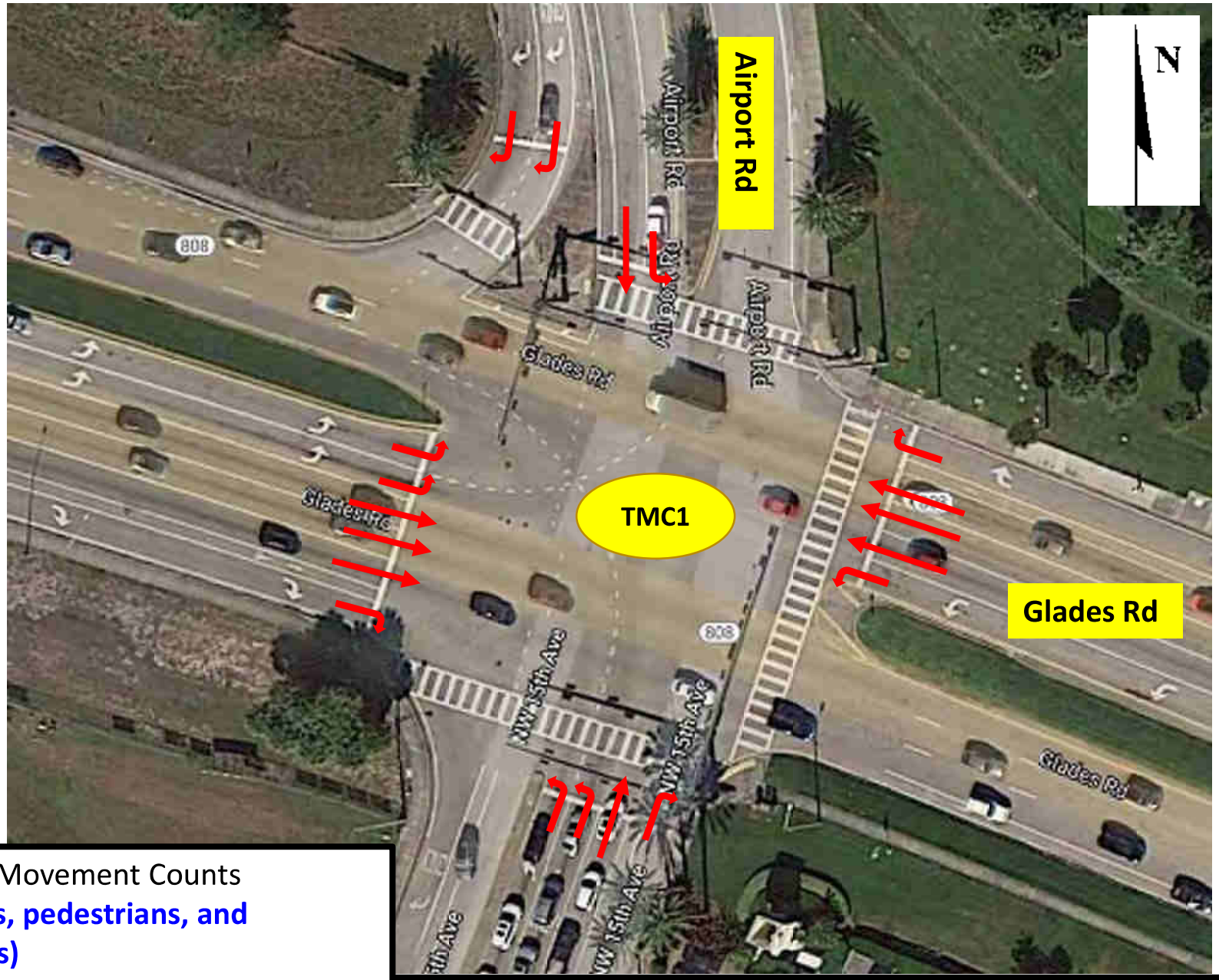
(Saturday 02:00 – 0400PM)



Turning Movement Counts
(vehicles, pedestrians, and bicyclists)

Weekday	Saturday
08:00- 10:00 AM	02:00- 04:00 PM
11:00- 01:00 PM	
04:00- 06:00 PM	

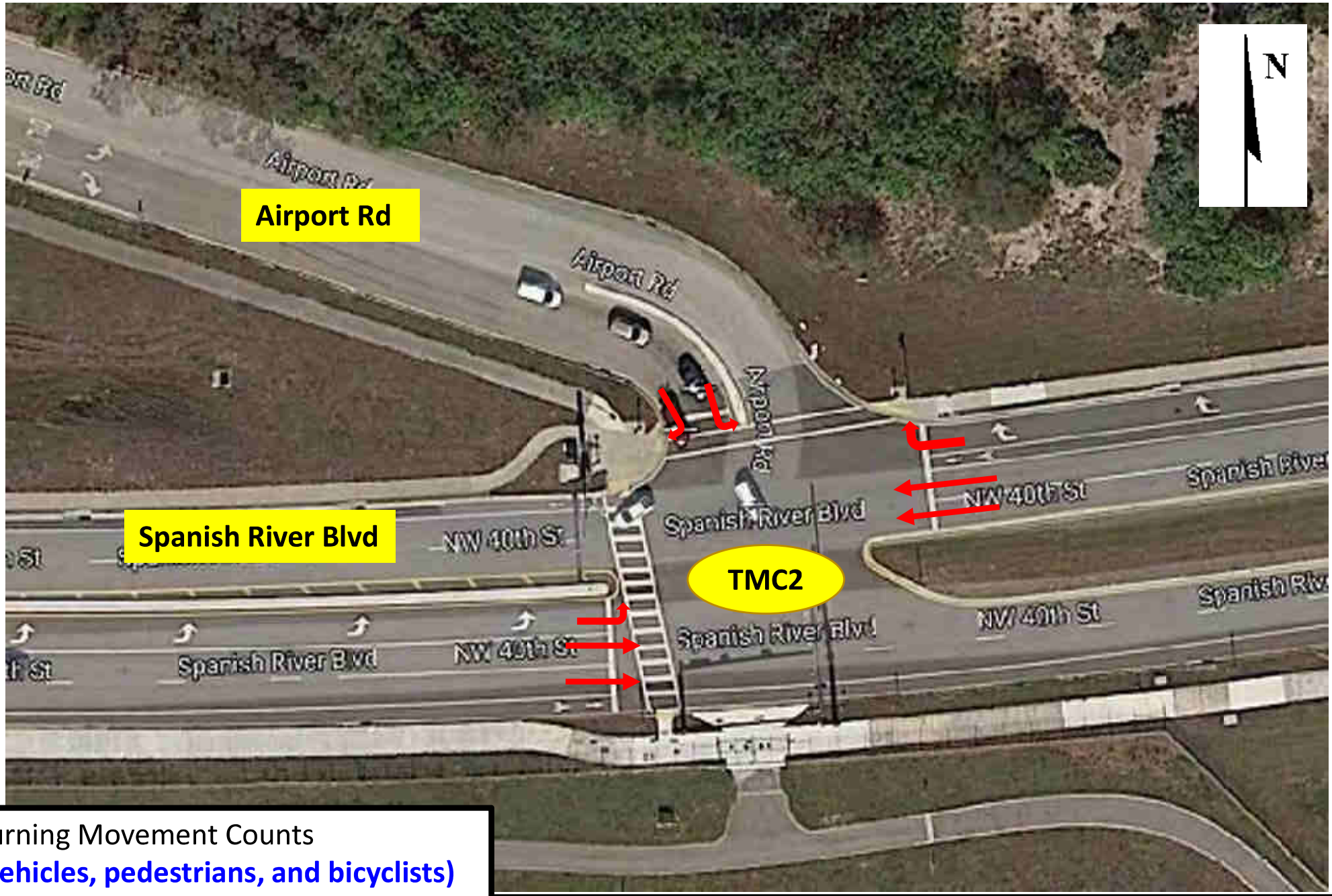
Turning Movement (AM/PM)- Boca Raton Airport Counts



Turning Movement Counts
(vehicles, pedestrians, and bicyclists)

Weekday	**Saturday**
11:00- 01:00 PM	**02:00- 04:00 PM**
04:00- 06:00 PM	

1-Turning Movement Counts (AM/PM)-Airport Rd @ Glades Rd



Turning Movement Counts
(vehicles, pedestrians, and bicyclists)

Weekday	Saturday
08:00- 10:00 AM	02:00- 04:00 PM
04:00- 06:00 PM	

2-Turning Movement Counts (AM/PM)-Airport Rd @ Spanish River Blvd

R.J. Behar & Company, Inc

6861 SW 196 Avenue, Suite 302
Pembroke Pines, FL 33332
Engineers-Planners

Airport Road and Glades Road
Thursday - February 25, 2021
Weather: Sunny

File Name : AirportRoadandGladesRoad_WeekdayAM
Site Code : 444, 777
Start Date : 2/25/2021
Page No : 1

Groups Printed- Cars - Trucks

	Southbound - Airport Road						Westbound - Glades Road						Northbound - Airport Road						Eastbound - Glades Road						
Start Time	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Int. Total
11:00 AM	13	9	7	0	0	29	2	249	7	0	0	258	7	15	2	0	0	24	27	340	40	0	1	408	719
11:15 AM	5	10	17	2	0	34	6	316	21	0	0	343	5	14	12	0	0	31	19	372	70	0	0	461	869
11:30 AM	11	13	18	0	0	42	6	301	13	2	0	322	22	10	8	0	0	40	28	277	56	0	0	361	765
11:45 AM	19	3	23	0	0	45	9	351	14	0	0	374	10	11	21	0	0	42	23	383	53	0	0	459	920
Total	48	35	65	2	0	150	23	1217	55	2	0	1297	44	50	43	0	0	137	97	1372	219	0	1	1689	3273
12:00 PM	10	11	19	0	0	40	2	341	14	0	0	357	12	10	10	0	0	32	25	355	56	0	0	436	865
12:15 PM	11	7	14	0	1	33	4	391	15	0	0	410	13	7	9	0	0	29	19	395	49	0	1	464	936
12:30 PM	8	5	24	0	0	37	4	331	8	0	0	343	15	5	6	0	0	26	18	346	47	0	1	412	818
12:45 PM	13	2	18	0	0	33	6	331	9	0	0	346	9	5	12	0	0	26	22	433	44	2	0	501	906
Total	42	25	75	0	1	143	16	1394	46	0	0	1456	49	27	37	0	0	113	84	1529	196	2	2	1813	3525
01:00 PM	0	1	2	0	0	3	1	70	0	0	0	71	0	0	0	0	0	0	0	0	0	0	0	0	74
Grand Total	90	61	142	2	1	296	40	2681	101	2	0	2824	93	77	80	0	0	250	181	2901	415	2	3	3502	6872
Apprch %	30.4	20.6	48	0.7	0.3		1.4	94.9	3.6	0.1	0		37.2	30.8	32	0	0		5.2	82.8	11.9	0.1	0.1		
Total %	1.3	0.9	2.1	0	0	4.3	0.6	39	1.5	0	0	41.1	1.4	1.1	1.2	0	0	3.6	2.6	42.2	6	0	0	51	
Cars	89	61	142	2	1	295	39	2678	101	2	0	2820	92	77	79	0	0	248	181	2898	414	2	3	3498	6861
% Cars	98.9	100	100	100	100	99.7	97.5	99.9	100	100	0	99.9	98.9	100	98.8	0	0	99.2	100	99.9	99.8	100	100	99.9	99.8
Trucks	1	0	0	0	0	1	1	3	0	0	0	4	1	0	1	0	0	2	0	3	1	0	0	4	11
% Trucks	1.1	0	0	0	0	0.3	2.5	0.1	0	0	0	0.1	1.1	0	1.2	0	0	0.8	0	0.1	0.2	0	0	0.1	0.2

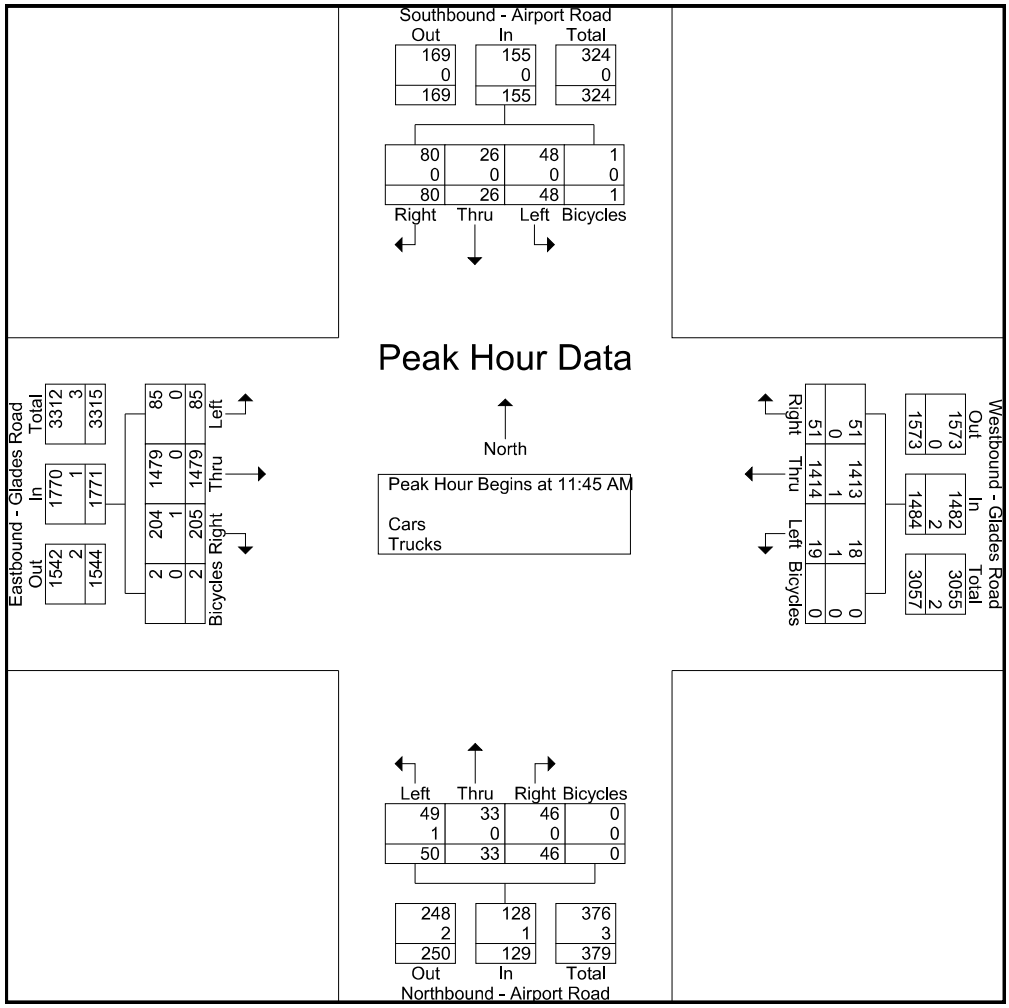
R.J. Behar & Company, Inc

6861 SW 196 Avenue, Suite 302
Pembroke Pines, FL 33332
Engineers-Planners

Airport Road and Glades Road
Thursday - February 25, 2021
Weather: Sunny

File Name : AirportRoadandGladesRoad_WeekdayAM
Site Code : 444, 777
Start Date : 2/25/2021
Page No : 2

	Southbound - Airport Road						Westbound - Glades Road						Northbound - Airport Road						Eastbound - Glades Road						
Start Time	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:00 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 11:45 AM																									
11:45 AM	**19**	3	23	0	0	**45**	**9**	351	14	0	0	374	10	**11**	**21**	0	0	**42**	23	383	53	0	0	459	920
12:00 PM	10	**11**	19	0	0	40	2	341	14	0	0	357	12	10	10	0	0	32	**25**	355	**56**	0	0	436	865
12:15 PM	11	7	14	0	**1**	33	4	**391**	**15**	0	0	**410**	13	7	9	0	0	29	19	**395**	49	0	**1**	**464**	**936**
12:30 PM	8	5	**24**	0	0	37	4	331	8	0	0	343	**15**	5	6	0	0	26	18	346	47	0	1	412	818
Total Volume	48	26	80	0	1	155	19	1414	51	0	0	1484	50	33	46	0	0	129	85	1479	205	0	2	1771	3539
% App. Total	31	16.8	51.6	0	0.6		1.3	95.3	3.4	0	0		38.8	25.6	35.7	0	0		4.8	83.5	11.6	0	0.1		
PHF	.632	.591	.833	.000	.250	.861	.528	.904	.850	.000	.000	.905	.833	.750	.548	.000	.000	.768	.850	.936	.915	.000	.500	.954	.945
Cars	48	26	80	0	1	155	18	1413	51	0	0	1482	49	33	46	0	0	128	85	1479	204	0	2	1770	3535
% Cars	100	100	100	0	100	100	94.7	99.9	100	0	0	99.9	98.0	100	100	0	0	99.2	100	100	99.5	0	100	99.9	99.9
Trucks	0	0	0	0	0	0	1	1	0	0	0	2	1	0	0	0	0	1	0	0	1	0	0	1	4
% Trucks	0	0	0	0	0	0	5.3	0.1	0	0	0	0.1	2.0	0	0	0	0	0.8	0	0	0.5	0	0	0.1	0.1



R.J. Behar & Company, Inc

6861 SW 196 Avenue, Suite 302
Pembroke Pines, FL 33332
Engineers-Planners

Airport Road and Glades Road
Thursday - February 25, 2021
Weather: Sunny

File Name : AirportRoadandGladesRoad_WeekdayPM
Site Code : 444, 777
Start Date : 2/25/2021
Page No : 1

Groups Printed- Cars - Trucks

	Southbound - Airport Road						Westbound - Glades Road						Northbound - Airport Road						Eastbound - Glades Road						
Start Time	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Int. Total
04:00 PM	11	12	46	0	0	69	2	414	5	1	0	422	11	20	27	0	0	58	25	293	78	0	1	397	946
04:15 PM	8	18	22	0	1	49	10	403	11	0	0	424	6	19	15	0	0	40	33	322	87	0	1	443	956
04:30 PM	10	7	28	0	0	45	5	461	9	0	0	475	10	12	23	0	0	45	27	303	61	0	1	392	957
04:45 PM	8	13	24	0	0	45	2	391	19	0	0	412	6	11	17	0	0	34	24	322	59	0	1	406	897
Total	37	50	120	0	1	208	19	1669	44	1	0	1733	33	62	82	0	0	177	109	1240	285	0	4	1638	3756
05:00 PM	11	26	43	0	0	80	6	447	4	0	0	457	11	24	29	0	0	64	43	270	53	1	0	367	968
05:15 PM	14	11	29	0	0	54	4	431	13	0	1	449	16	8	22	0	0	46	21	308	71	2	2	404	953
05:30 PM	9	15	24	0	1	49	3	374	13	0	1	391	7	16	13	2	0	38	28	315	55	0	0	398	876
05:45 PM	12	12	30	0	0	54	8	319	12	0	0	339	11	12	18	0	0	41	18	340	60	0	0	418	852
Total	46	64	126	0	1	237	21	1571	42	0	2	1636	45	60	82	2	0	189	110	1233	239	3	2	1587	3649
*** BREAK ***																									
Grand Total	83	114	246	0	2	445	40	3240	86	1	2	3369	78	122	164	2	0	366	219	2473	524	3	6	3225	7405
Apprch %	18.7	25.6	55.3	0	0.4		1.2	96.2	2.6	0	0.1		21.3	33.3	44.8	0.5	0		6.8	76.7	16.2	0.1	0.2		
Total %	1.1	1.5	3.3	0	0	6	0.5	43.8	1.2	0	0	45.5	1.1	1.6	2.2	0	0	4.9	3	33.4	7.1	0	0.1	43.6	
Cars	83	114	246	0	2	445	39	3238	85	1	2	3365	76	121	162	2	0	361	219	2471	523	3	6	3222	7393
% Cars	100	100	100	0	100	100	97.5	99.9	98.8	100	100	99.9	97.4	99.2	98.8	100	0	98.6	100	99.9	99.8	100	100	99.9	99.8
Trucks	0	0	0	0	0	0	1	2	1	0	0	4	2	1	2	0	0	5	0	2	1	0	0	3	12
% Trucks	0	0	0	0	0	0	2.5	0.1	1.2	0	0	0.1	2.6	0.8	1.2	0	0	1.4	0	0.1	0.2	0	0	0.1	0.2

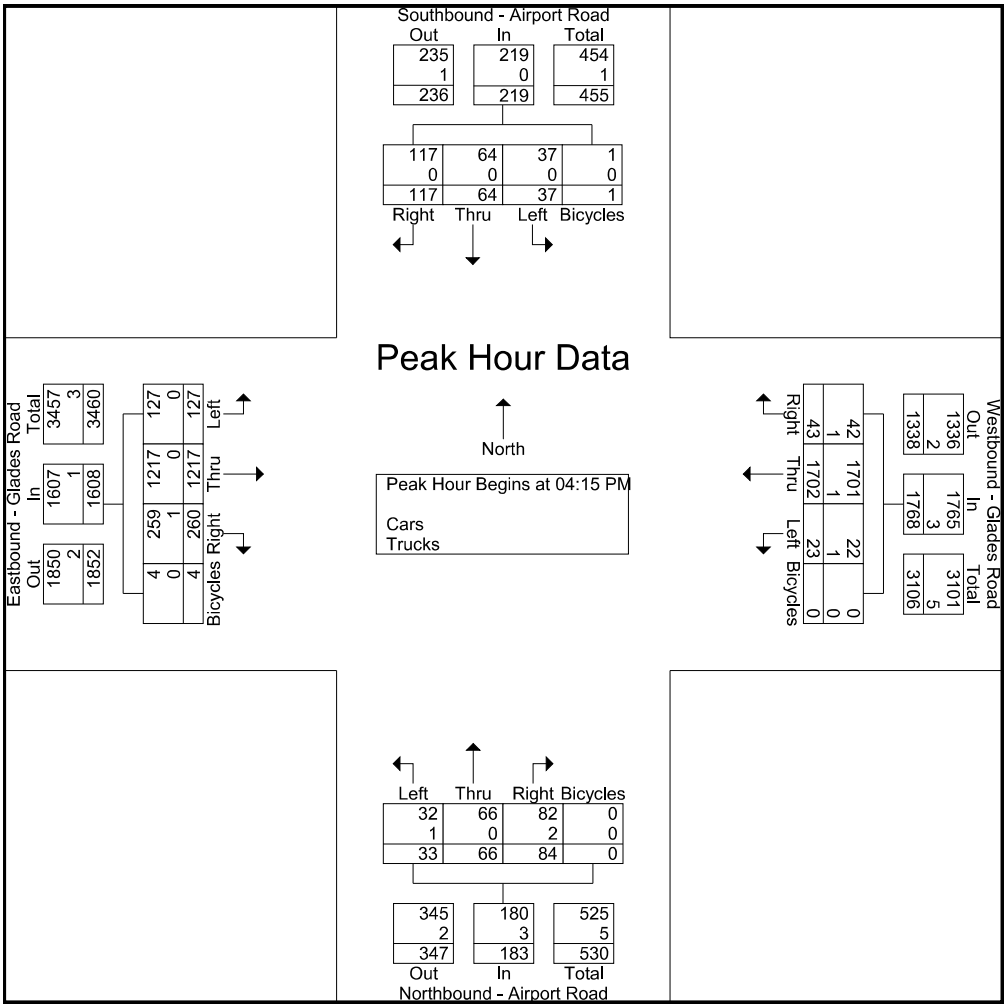
R.J. Behar & Company, Inc

6861 SW 196 Avenue, Suite 302
Pembroke Pines, FL 33332
Engineers-Planners

Airport Road and Glades Road
Thursday - February 25, 2021
Weather: Sunny

File Name : AirportRoadandGladesRoad_WeekdayPM
Site Code : 444, 777
Start Date : 2/25/2021
Page No : 2

	Southbound - Airport Road						Westbound - Glades Road						Northbound - Airport Road						Eastbound - Glades Road						
Start Time	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:00 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 04:15 PM																									
04:15 PM	8	18	22	0	**1**	49	**10**	403	11	0	0	424	6	19	15	0	0	40	33	**322**	**87**	0	**1**	**443**	956
04:30 PM	10	7	28	0	0	45	5	**461**	9	0	0	**475**	10	12	23	0	0	45	27	303	61	0	1	392	957
04:45 PM	8	13	24	0	0	45	2	391	**19**	0	0	412	6	11	17	0	0	34	24	322	59	0	1	406	897
05:00 PM	**11**	**26**	**43**	0	0	**80**	6	447	4	0	0	457	**11**	**24**	**29**	0	0	**64**	**43**	270	53	**1**	0	367	**968**
Total Volume	37	64	117	0	1	219	23	1702	43	0	0	1768	33	66	84	0	0	183	127	1217	260	1	3	1608	3778
% App. Total	16.9	29.2	53.4	0	0.5		1.3	96.3	2.4	0	0		18	36.1	45.9	0	0		7.9	75.7	16.2	0.1	0.2		
PHF	.841	.615	.680	.000	.250	.684	.575	.923	.566	.000	.000	.931	.750	.688	.724	.000	.000	.715	.738	.945	.747	.250	.750	.907	.976
Cars	37	64	117	0	1	219	22	1701	42	0	0	1765	32	66	82	0	0	180	127	1217	259	1	3	1607	3771
% Cars	100	100	100	0	100	100	95.7	99.9	97.7	0	0	99.8	97.0	100	97.6	0	0	98.4	100	100	99.6	100	100	99.9	99.8
Trucks	0	0	0	0	0	0	1	1	1	0	0	3	1	0	2	0	0	3	0	0	1	0	0	1	7
% Trucks	0	0	0	0	0	0	4.3	0.1	2.3	0	0	0.2	3.0	0	2.4	0	0	1.6	0	0	0.4	0	0	0.1	0.2



R.J. Behar & Company, Inc

6861 SW 196 Avenue, Suite 302
Pembroke Pines, FL 33332
Engineers-Planners

Airport Road and Glades Road
Saturday - February 27, 2021
Weather: Sunny

File Name : AirportRoadandGladesRoad_SaturdayPM
Site Code : 444, 777
Start Date : 2/27/2021
Page No : 1

Groups Printed- Cars - Trucks

	Southbound - Airport Road						Westbound - Glades Road						Northbound - Airport Road						Eastbound - Glades Road						
Start Time	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Int. Total
02:00 PM	10	9	30	0	0	49	6	331	8	0	0	345	9	11	20	0	0	40	30	288	56	0	1	375	809
02:15 PM	11	5	23	0	0	39	5	253	11	0	0	269	21	5	19	0	0	45	37	262	48	0	1	348	701
02:30 PM	11	12	29	0	0	52	2	326	9	0	0	337	11	13	24	0	0	48	42	302	56	0	0	400	837
02:45 PM	8	6	28	0	0	42	9	311	18	0	0	338	9	7	20	0	0	36	34	351	57	0	1	443	859
Total	40	32	110	0	0	182	22	1221	46	0	0	1289	50	36	83	0	0	169	143	1203	217	0	3	1566	3206
03:00 PM	9	13	38	0	0	60	4	326	10	0	1	341	10	13	35	2	0	60	23	291	63	2	0	379	840
03:15 PM	8	12	28	0	0	48	5	273	4	0	0	282	9	13	24	0	0	46	27	298	43	1	0	369	745
03:30 PM	11	10	24	0	0	45	2	219	6	0	0	227	11	10	14	0	0	35	30	300	44	0	3	377	684
03:45 PM	11	7	37	0	0	55	2	303	10	0	0	315	14	9	28	0	0	51	40	302	59	0	0	401	822
Total	39	42	127	0	0	208	13	1121	30	0	1	1165	44	45	101	2	0	192	120	1191	209	3	3	1526	3091
*** BREAK ***																									
Grand Total	79	74	237	0	0	390	35	2342	76	0	1	2454	94	81	184	2	0	361	263	2394	426	3	6	3092	6297
Apprch %	20.3	19	60.8	0	0		1.4	95.4	3.1	0	0		26	22.4	51	0.6	0		8.5	77.4	13.8	0.1	0.2		
Total %	1.3	1.2	3.8	0	0	6.2	0.6	37.2	1.2	0	0	39	1.5	1.3	2.9	0	0	5.7	4.2	38	6.8	0	0.1	49.1	
Cars	79	74	236	0	0	389	35	2340	76	0	1	2452	91	81	184	2	0	358	263	2392	426	3	6	3090	6289
% Cars	100	100	99.6	0	0	99.7	100	99.9	100	0	100	99.9	96.8	100	100	100	0	99.2	100	99.9	100	100	100	99.9	99.9
Trucks	0	0	1	0	0	1	0	2	0	0	0	2	3	0	0	0	0	3	0	2	0	0	0	2	8
% Trucks	0	0	0.4	0	0	0.3	0	0.1	0	0	0	0.1	3.2	0	0	0	0	0.8	0	0.1	0	0	0	0.1	0.1

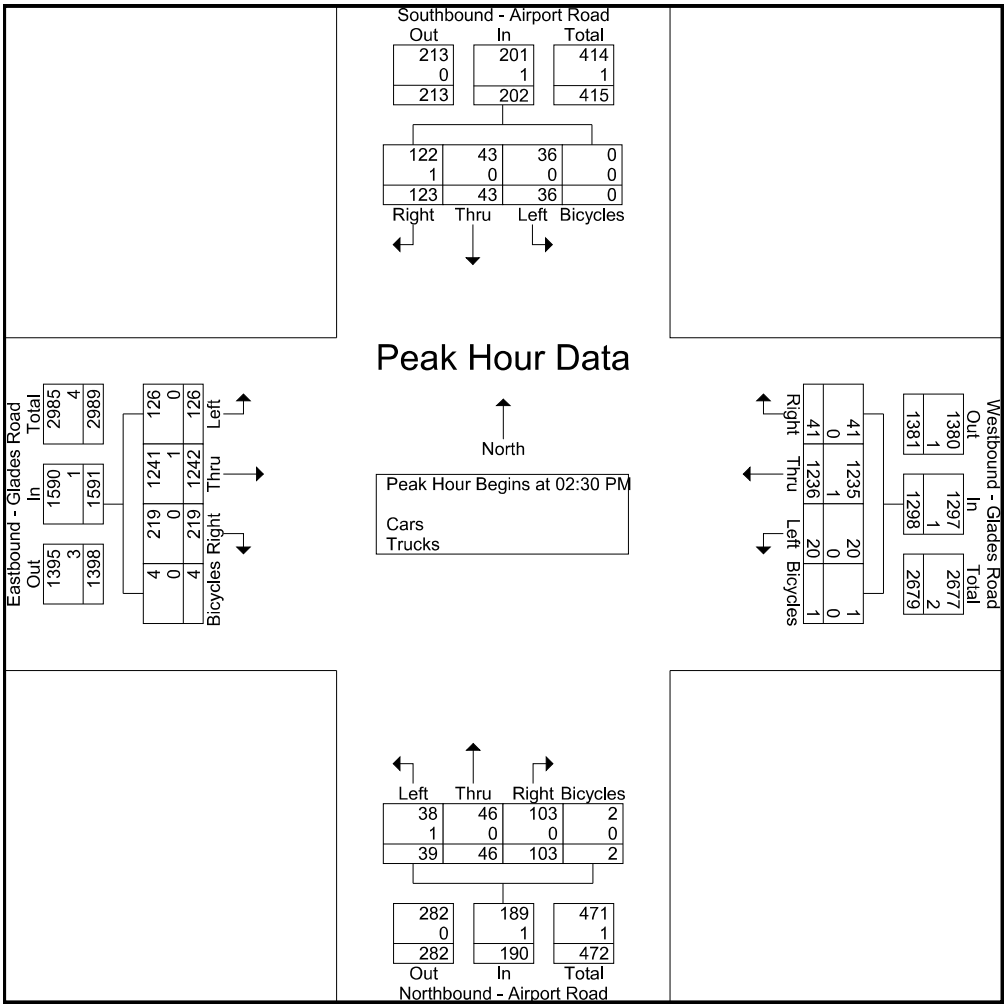
R.J. Behar & Company, Inc

6861 SW 196 Avenue, Suite 302
Pembroke Pines, FL 33332
Engineers-Planners

Airport Road and Glades Road
Saturday - February 27, 2021
Weather: Sunny

File Name : AirportRoadandGladesRoad_SaturdayPM
Site Code : 444, 777
Start Date : 2/27/2021
Page No : 2

	Southbound - Airport Road						Westbound - Glades Road						Northbound - Airport Road						Eastbound - Glades Road						
Start Time	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 04:00 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 02:30 PM																									
02:30 PM	**11**	12	29	0	0	52	2	**326**	9	0	0	337	**11**	**13**	24	0	0	48	**42**	302	56	0	0	400	837
02:45 PM	8	6	28	0	0	42	**9**	311	**18**	0	0	338	9	7	20	0	0	36	34	**351**	57	0	**1**	**443**	**859**
03:00 PM	9	**13**	**38**	0	0	**60**	4	326	10	0	**1**	**341**	10	13	**35**	**2**	0	**60**	23	291	**63**	**2**	0	379	840
03:15 PM	8	12	28	0	0	48	5	273	4	0	0	282	9	13	24	0	0	46	27	298	43	1	0	369	745
Total Volume	36	43	123	0	0	202	20	1236	41	0	1	1298	39	46	103	2	0	190	126	1242	219	3	1	1591	3281
% App. Total	17.8	21.3	60.9	0	0		1.5	95.2	3.2	0	0.1		20.5	24.2	54.2	1.1	0		7.9	78.1	13.8	0.2	0.1		
PHF	.818	.827	.809	.000	.000	.842	.556	.948	.569	.000	.250	.952	.886	.885	.736	.250	.000	.792	.750	.885	.869	.375	.250	.898	.955
Cars	36	43	122	0	0	201	20	1235	41	0	1	1297	38	46	103	2	0	189	126	1241	219	3	1	1590	3277
% Cars	100	100	99.2	0	0	99.5	100	99.9	100	0	100	99.9	97.4	100	100	100	0	99.5	100	99.9	100	100	100	99.9	99.9
Trucks	0	0	1	0	0	1	0	1	0	0	0	1	1	0	0	0	0	1	0	1	0	0	0	1	4
% Trucks	0	0	0.8	0	0	0.5	0	0.1	0	0	0	0.1	2.6	0	0	0	0	0.5	0	0.1	0	0	0	0.1	0.1



R.J. Behar & Company, Inc

6861 SW 196 Avenue, Suite 302
Pembroke Pines, FL 33332
Engineers-Planners

Airport Road and Spanish River Boulevard
Thursday - February 25, 2021
Weather: Sunny

File Name : AirportRdandSpanishRiverBlvd_WeekdayAM
Site Code : 222, 333
Start Date : 2/25/2021
Page No : 1

Groups Printed- Cars - Trucks

	Southbound - Airport Road						Westbound - Spanish River Boulevard						Northbound - Airport Road						Eastbound - Spanish River Boulevard						
Start Time	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Int. Total
08:00 AM	17	0	10	0	0	27	0	188	41	0	0	229	0	0	0	0	0	0	19	194	0	0	0	213	469
08:15 AM	24	0	23	0	0	47	0	211	38	0	0	249	0	0	0	0	0	0	21	184	0	2	0	207	503
08:30 AM	15	0	15	0	1	31	0	210	15	0	4	229	0	0	0	0	0	0	20	142	0	0	4	166	426
08:45 AM	13	0	15	0	0	28	0	219	26	0	0	245	0	0	0	0	0	0	20	148	0	0	0	168	441
Total	69	0	63	0	1	133	0	828	120	0	4	952	0	0	0	0	0	0	80	668	0	2	4	754	1839
09:00 AM	13	0	15	0	0	28	0	169	24	0	0	193	0	0	0	0	0	0	18	174	0	0	1	193	414
09:15 AM	10	0	14	0	0	24	0	202	18	0	0	220	0	0	0	0	0	0	11	159	0	2	0	172	416
09:30 AM	19	0	14	0	0	33	0	127	19	0	0	146	0	0	0	0	0	0	16	124	0	0	1	141	320
09:45 AM	12	0	14	0	0	26	0	130	21	2	0	153	0	0	0	0	0	0	23	132	0	0	1	156	335
Total	54	0	57	0	0	111	0	628	82	2	0	712	0	0	0	0	0	0	68	589	0	2	3	662	1485
*** BREAK ***																									
Grand Total	123	0	120	0	1	244	0	1456	202	2	4	1664	0	0	0	0	0	0	148	1257	0	4	7	1416	3324
Apprch %	50.4	0	49.2	0	0.4		0	87.5	12.1	0.1	0.2		0	0	0	0	0		10.5	88.8	0	0.3	0.5		
Total %	3.7	0	3.6	0	0	7.3	0	43.8	6.1	0.1	0.1	50.1	0	0	0	0	0	0	4.5	37.8	0	0.1	0.2	42.6	
Cars	123	0	120	0	1	244	0	1455	202	2	4	1663	0	0	0	0	0	0	147	1256	0	4	7	1414	3321
% Cars	100	0	100	0	100	100	0	99.9	100	100	100	99.9	0	0	0	0	0	0	99.3	99.9	0	100	100	99.9	99.9
Trucks	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	2	3
% Trucks	0	0	0	0	0	0	0	0.1	0	0	0	0.1	0	0	0	0	0	0	0.7	0.1	0	0	0	0.1	0.1

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Engineers-Planners

Airport Road and Spanish River Boulevard
Thursday - February 25, 2021
Weather: Sunny

File Name : AirportRdandSpanishRiverBlvd_WeekdayAM
Site Code : 222, 333
Start Date : 2/25/2021
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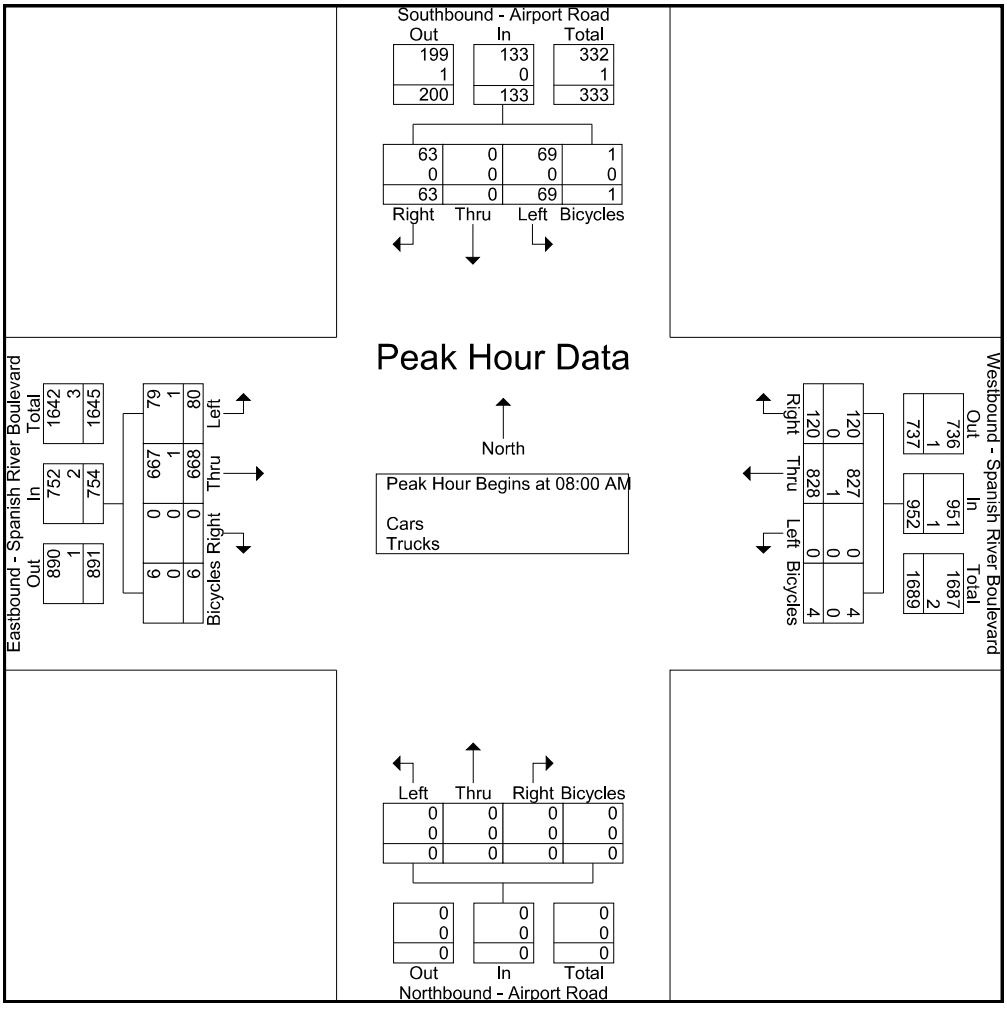
	Southbound - Airport Road						Westbound - Spanish River Boulevard						Northbound - Airport Road						Eastbound - Spanish River Boulevard						
Start Time	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:00 AM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 08:00 AM																									
08:00 AM	17	0	10	0	0	27	0	188	**41**	0	0	229	0	0	0	0	0	0	19	**194**	0	0	0	**213**	469
08:15 AM	**24**	0	**23**	0	0	**47**	0	211	38	0	0	**249**	0	0	0	0	0	0	**21**	184	0	**2**	0	207	**503**
08:30 AM	15	0	15	0	**1**	31	0	210	15	0	**4**	229	0	0	0	0	0	0	20	142	0	0	**4**	166	426
08:45 AM	13	0	15	0	0	28	0	**219**	26	0	0	245	0	0	0	0	0	0	20	148	0	0	0	168	441
Total Volume	69	0	63	0	1	133	0	828	120	0	4	952	0	0	0	0	0	0	80	668	0	2	4	754	1839
% App. Total	51.9	0	47.4	0	0.8		0	87	12.6	0	0.4		0	0	0	0	0		10.6	88.6	0	0.3	0.5		
PHF	.719	.000	.685	.000	.250	.707	.000	.945	.732	.000	.250	.956	.000	.000	.000	.000	.000	.000	.952	.861	.000	.250	.250	.885	.914
Cars	69	0	63	0	1	133	0	827	120	0	4	951	0	0	0	0	0	0	79	667	0	2	4	752	1836
% Cars	100	0	100	0	100	100	0	99.9	100	0	100	99.9	0	0	0	0	0	0	98.8	99.9	0	100	100	99.7	99.8
Trucks	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	2	3
% Trucks	0	0	0	0	0	0	0	0.1	0	0	0	0.1	0	0	0	0	0	0	1.3	0.1	0	0	0	0.3	0.2



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Airport Road and Spanish River Boulevard
Thursday - February 25, 2021
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Groups Printed- Cars - Trucks

	Southbound - Airport Road						Westbound - Spanish River Boulevard						Northbound - Airport Road						Eastbound - Spanish River Boulevard						
Start Time	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Int. Total
04:00 PM	1	0	2	0	0	3	0	210	33	0	0	243	0	0	0	0	0	0	13	176	0	2	0	191	437
04:15 PM	20	0	34	0	0	54	0	193	25	1	0	219	0	0	0	0	0	0	16	196	0	0	0	212	485
04:30 PM	27	0	24	0	0	51	0	214	26	0	0	240	0	0	0	0	0	0	7	134	0	0	1	142	433
04:45 PM	44	0	31	0	1	76	0	190	33	0	0	223	0	0	0	0	0	0	8	153	0	0	3	164	463
Total	92	0	91	0	1	184	0	807	117	1	0	925	0	0	0	0	0	0	44	659	0	2	4	709	1818
05:00 PM	37	0	26	0	0	63	0	257	37	0	1	295	0	0	0	0	0	0	16	168	14	4	2	204	562
05:15 PM	40	0	29	0	0	69	0	257	36	0	1	294	0	0	0	0	0	0	6	189	1	0	2	198	561
05:30 PM	31	0	29	0	1	61	0	206	26	0	0	232	0	0	0	0	0	0	12	217	1	0	0	230	523
05:45 PM	33	0	22	0	1	56	0	215	42	0	0	257	0	0	0	0	0	0	0	0	0	0	0	0	313
Total	141	0	106	0	2	249	0	935	141	0	2	1078	0	0	0	0	0	0	34	574	16	4	4	632	1959
*** BREAK ***																									
Grand Total	233	0	197	0	3	433	0	1742	258	1	2	2003	0	0	0	0	0	0	78	1233	16	6	8	1341	3777
Apprch %	53.8	0	45.5	0	0.7		0	87	12.9	0	0.1		0	0	0	0	0		5.8	91.9	1.2	0.4	0.6		
Total %	6.2	0	5.2	0	0.1	11.5	0	46.1	6.8	0	0.1	53	0	0	0	0	0	0	2.1	32.6	0.4	0.2	0.2	35.5	
Cars	233	0	196	0	3	432	0	1740	258	1	2	2001	0	0	0	0	0	0	78	1231	16	6	8	1339	3772
% Cars	100	0	99.5	0	100	99.8	0	99.9	100	100	100	99.9	0	0	0	0	0	0	100	99.8	100	100	100	99.9	99.9
Trucks	0	0	1	0	0	1	0	2	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0	2	5
% Trucks	0	0	0.5	0	0	0.2	0	0.1	0	0	0	0.1	0	0	0	0	0	0	0	0.2	0	0	0	0.1	0.1

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Site Code : 222, 333
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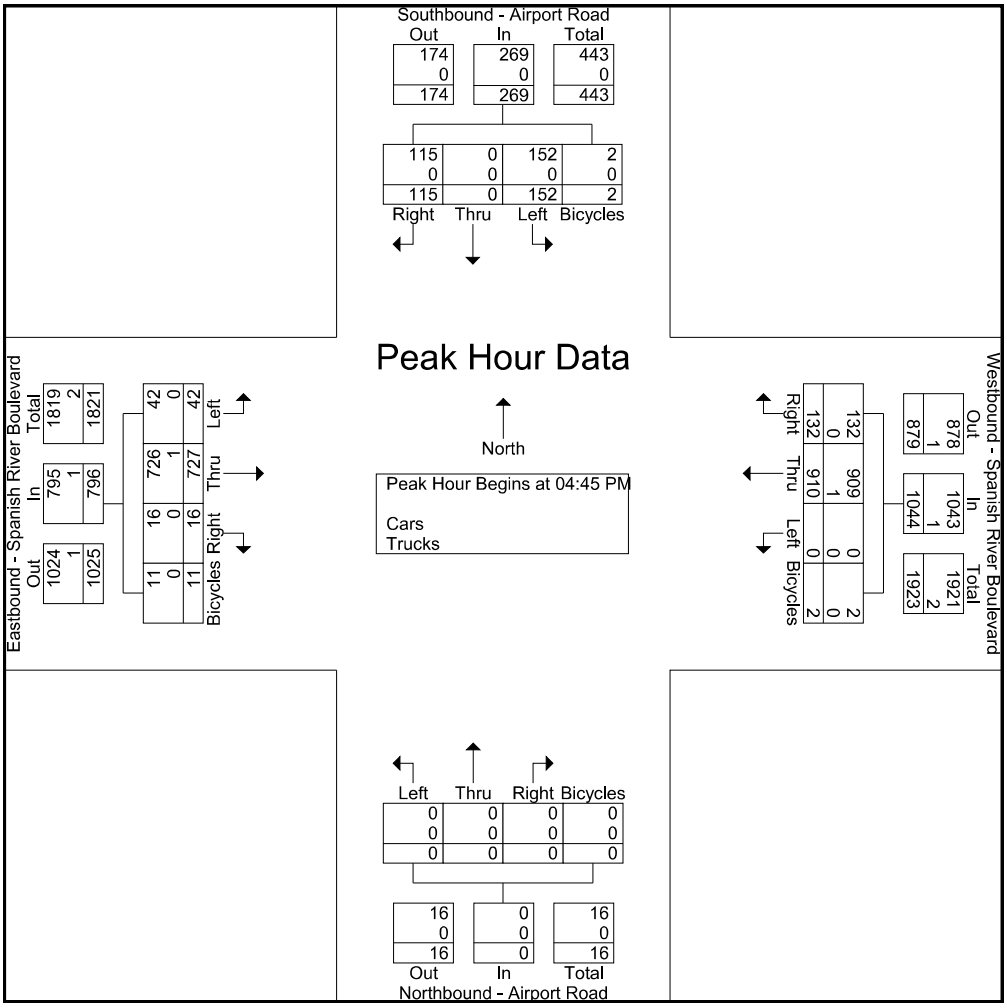
	Southbound - Airport Road						Westbound - Spanish River Boulevard						Northbound - Airport Road						Eastbound - Spanish River Boulevard						
Start Time	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:00 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 04:45 PM																									
04:45 PM	**44**	0	**31**	0	**1**	**76**	0	190	33	0	0	223	0	0	0	0	0	0	8	153	0	0	**3**	164	463
05:00 PM	37	0	26	0	0	63	0	**257**	**37**	0	**1**	**295**	0	0	0	0	0	0	**16**	168	**14**	**4**	2	204	**562**
05:15 PM	40	0	29	0	0	69	0	257	36	0	1	294	0	0	0	0	0	0	6	189	1	0	2	198	561
05:30 PM	31	0	29	0	1	61	0	206	26	0	0	232	0	0	0	0	0	0	12	**217**	1	0	0	**230**	523
Total Volume	152	0	115	0	2	269	0	910	132	0	2	1044	0	0	0	0	0	0	42	727	16	4	7	796	2109
% App. Total	56.5	0	42.8	0	0.7		0	87.2	12.6	0	0.2		0	0	0	0	0		5.3	91.3	2	0.5	0.9		
PHF	.864	.000	.927	.000	.500	.885	.000	.885	.892	.000	.500	.885	.000	.000	.000	.000	.000	.000	.656	.838	.286	.250	.583	.865	.938
Cars	152	0	115	0	2	269	0	909	132	0	2	1043	0	0	0	0	0	0	42	726	16	4	7	795	2107
% Cars	100	0	100	0	100	100	0	99.9	100	0	100	99.9	0	0	0	0	0	0	100	99.9	100	100	100	99.9	99.9
Trucks	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	2
% Trucks	0	0	0	0	0	0	0	0.1	0	0	0	0.1	0	0	0	0	0	0	0	0.1	0	0	0	0.1	0.1



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Airport Road and Spanish River Boulevard
Saturday - February 27, 2021
Weather: Sunny

File Name : AirportRdandSpanishRiverBlvd_SaturdayPM
Site Code : 222, 333
Start Date : 2/27/2021
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Groups Printed- Cars - Trucks

	Southbound - Airport Road						Westbound - Spanish River Boulevard						Northbound - Airport Road						Eastbound - Spanish River Boulevard						
Start Time	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Int. Total
02:00 PM	33	0	17	0	1	51	1	127	21	2	0	151	0	0	0	0	0	0	12	130	0	2	0	144	346
02:15 PM	14	0	17	0	0	31	0	151	28	0	0	179	0	0	0	0	0	0	14	109	0	0	2	125	335
02:30 PM	11	0	16	0	0	27	0	156	25	0	0	181	0	0	0	0	0	0	13	110	0	2	0	125	333
02:45 PM	18	0	17	0	1	36	1	130	19	0	0	150	0	0	0	0	0	0	13	108	0	0	3	124	310
Total	76	0	67	0	2	145	2	564	93	2	0	661	0	0	0	0	0	0	52	457	0	4	5	518	1324
03:00 PM	24	0	18	0	0	42	1	131	20	0	1	153	0	0	0	0	0	0	22	130	0	2	0	154	349
03:15 PM	18	0	9	0	0	27	0	128	26	0	0	154	0	0	0	0	0	0	13	141	0	0	1	155	336
03:30 PM	21	0	17	0	0	38	1	127	29	2	0	159	0	0	0	0	0	0	17	101	0	0	0	118	315
03:45 PM	12	0	15	0	0	27	0	161	25	0	2	188	0	0	0	0	0	0	19	118	0	0	1	138	353
Total	75	0	59	0	0	134	2	547	100	2	3	654	0	0	0	0	0	0	71	490	0	2	2	565	1353
Grand Total	151	0	126	0	2	279	4	1111	193	4	3	1315	0	0	0	0	0	0	123	947	0	6	7	1083	2677
Apprch %	54.1	0	45.2	0	0.7		0.3	84.5	14.7	0.3	0.2		0	0	0	0	0		11.4	87.4	0	0.6	0.6		
Total %	5.6	0	4.7	0	0.1	10.4	0.1	41.5	7.2	0.1	0.1	49.1	0	0	0	0	0	0	4.6	35.4	0	0.2	0.3	40.5	
Cars	151	0	126	0	2	279	4	1111	193	4	3	1315	0	0	0	0	0	0	123	945	0	6	7	1081	2675
% Cars	100	0	100	0	100	100	100	100	100	100	100	100	0	0	0	0	0	0	100	99.8	0	100	100	99.8	99.9
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0	0	0	0.2	0.1

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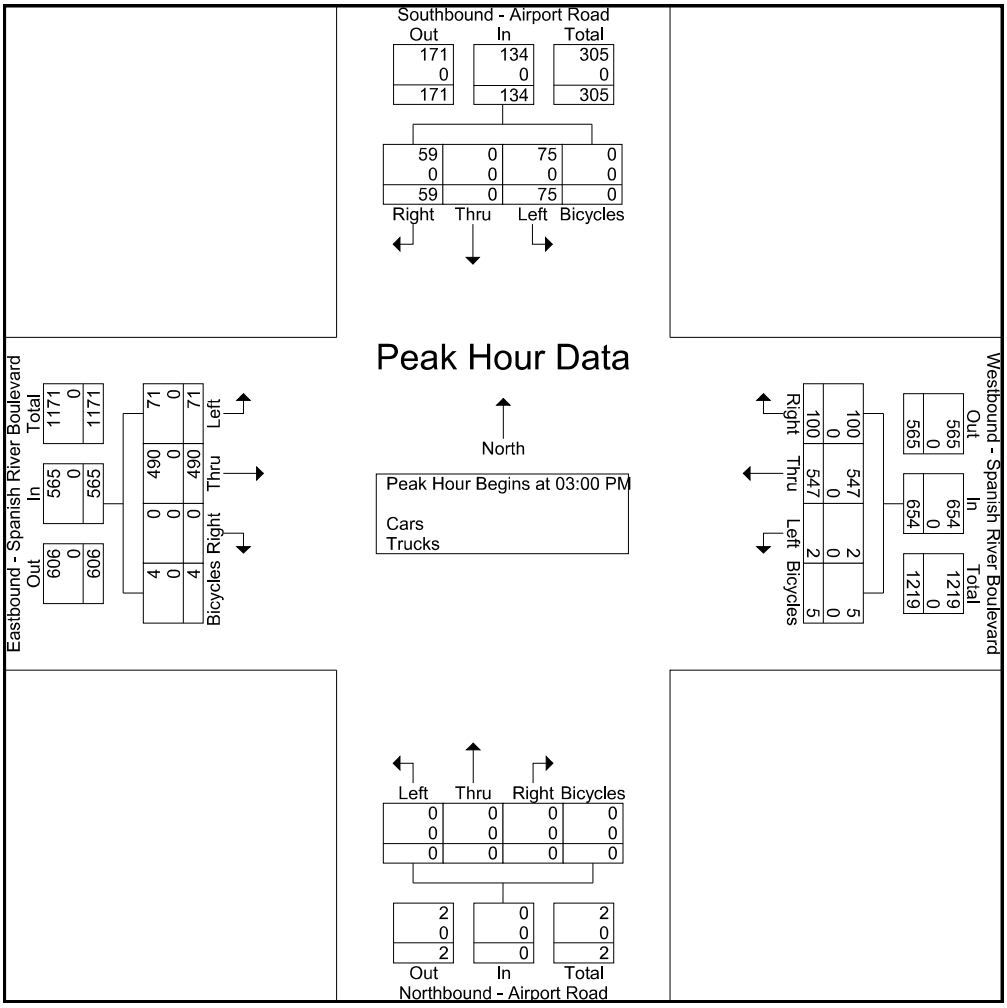
	Southbound - Airport Road						Westbound - Spanish River Boulevard						Northbound - Airport Road						Eastbound - Spanish River Boulevard						
Start Time	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Left	Thru	Right	Peds	Bicycles	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 03:00 PM																									
03:00 PM	**24**	0	**18**	0	0	**42**	**1**	131	20	0	1	153	0	0	0	0	0	0	**22**	130	0	**2**	0	154	349
03:15 PM	18	0	9	0	0	27	0	128	26	0	0	154	0	0	0	0	0	0	13	**141**	0	0	**1**	**155**	336
03:30 PM	21	0	17	0	0	38	1	127	**29**	**2**	0	159	0	0	0	0	0	0	17	101	0	0	0	118	315
03:45 PM	12	0	15	0	0	27	0	**161**	25	0	**2**	**188**	0	0	0	0	0	0	19	118	0	0	1	138	**353**
Total Volume	75	0	59	0	0	134	2	547	100	2	3	654	0	0	0	0	0	0	71	490	0	2	2	565	1353
% App. Total	56	0	44	0	0		0.3	83.6	15.3	0.3	0.5		0	0	0	0	0		12.6	86.7	0	0.4	0.4		
PHF	.781	.000	.819	.000	.000	.798	.500	.849	.862	.250	.375	.870	.000	.000	.000	.000	.000	.000	.807	.869	.000	.250	.500	.911	.958
Cars	75	0	59	0	0	134	2	547	100	2	3	654	0	0	0	0	0	0	71	490	0	2	2	565	1353
% Cars	100	0	100	0	0	100	100	100	100	100	100	100	0	0	0	0	0	0	100	100	0	100	100	100	100
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Appendix C

Roadway Inventory

Roadway Inventory of Airport Road

Between Spanish River Boulevard and

Glades Road

Appendix C:

Roadway Inventory

A field review was conducted on Friday February 26, 2021 along Airport Road between Glades Road and Spanish River Boulevard. Airport Road is an arterial road that consists of two lanes, one per direction. The location of the project is shown in Figure 1.

Figure 1 Project Location

1. Existing Pavement Conditions

Based on a visual inspection of the pavement during our field reviews, the existing pavement condition appears to be fair at the intersection of Glades Road with Airport Road. The pedestrian ramps are in fair condition as well. One pavement settlement issue was identified at the left turning lane of Airport Rd and is shown in Figure 2.

Figure 2 Pavement Defect at Glades Rd Intersection

Along Airport Road we observed the condition of the pavement to be poor with alligator, transverse and longitudinal cracking and some vegetation growing in some of the cracks observed at several locations, shoulder erosion was also observed, see figures 3, 4, 5, 6, and 7; the tactile surface at the pedestrian ramps was observed to be worn out; examples are shown in figures 9 and 10.

Figure 3 Transverse and Longitudinal Cracking Observed at Airport Rd

Figure 4 Pavement Defects Observed at Airport Rd

Figure 5 Pavement Defects Observed at Airport Rd

Figure 6 Transverse Cracking Observed at Airport Rd

Figure 7 Pavement Defects Observed at Airport Rd

At the intersection of Spanish River Boulevard with Airport Road the pavement and the pedestrian ramps are in good condition. See Figure 8.

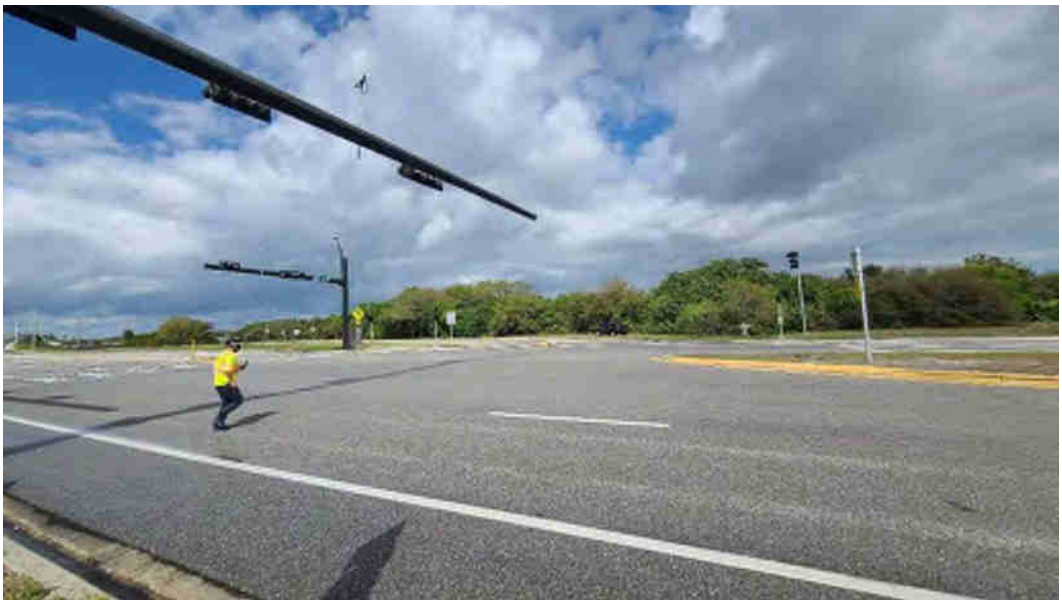


Figure 8 Pavement Condition at Spanish River Blvd

2. Signing and Pavement Markings

Existing signing includes ground-mounted signs within the sidewalk, and/or raised island along the project corridor. There are also signs mounted on overhead mast-arms at signalized intersections. A few faded, broken, or substandard signs were observed within the project limits. Table 1 below contains the signs observed during the field review and the location maps are shown in figures 13, 14, 15 and 16.

Based on field observations, the existing pavement markings are generally in fair condition at Glades Road intersection, with faded striping, as well as, raised reflective pavement markers that are missing or with low reflectivity. At Spanish River Boulevard the existing pavement markings are good condition. However, along Airport Road the existing pavement markings are in poor conditions with faded markings and without reflective pavement markers (RPMs). Figures 11 and 12 illustrate examples of existing signing and pavement markings within the project limits.

Figure 9 Existing Pavement Markings at Glades Rd Intersection

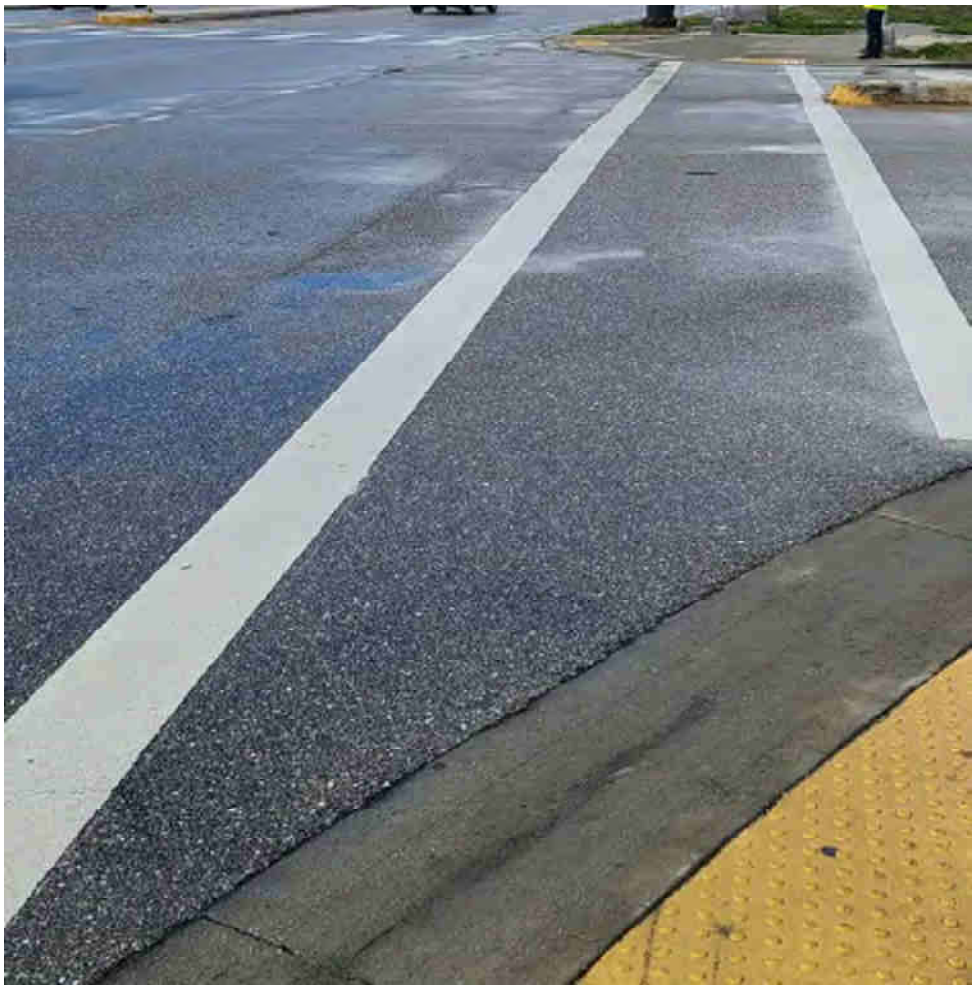


Figure 10 Existing Pavement Markings at Spanish River Blvd Intersection

Figure 11 Partially Faded Pavement Markings along Airport Rd

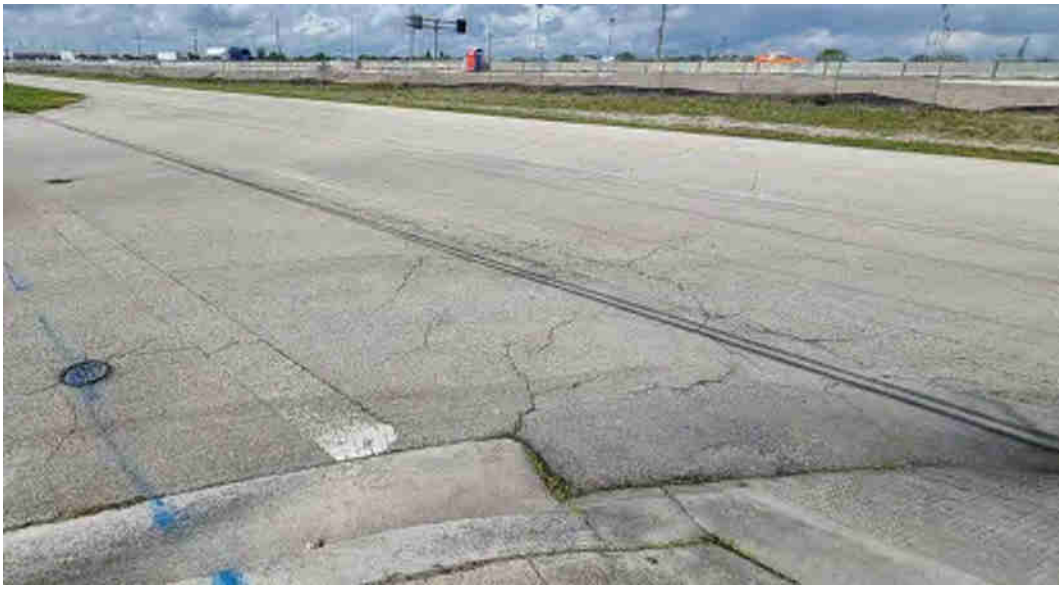


Figure 12 Faded Crosswalk Marking at Airport Rd

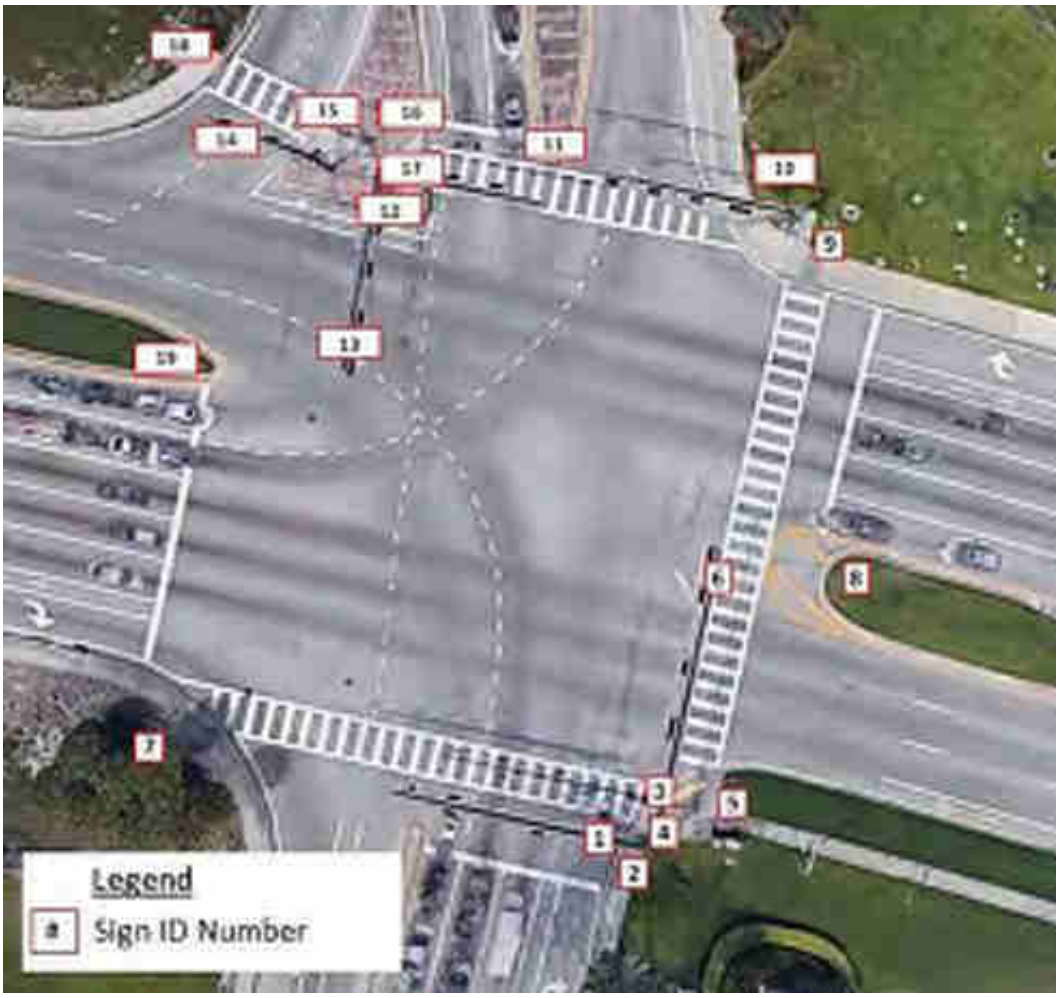


Figure 13 Glades Rd Sign Location Map

Figure 14 Airport Rd Sign Location Map

Figure 15 Airport Rd Sign Location Map

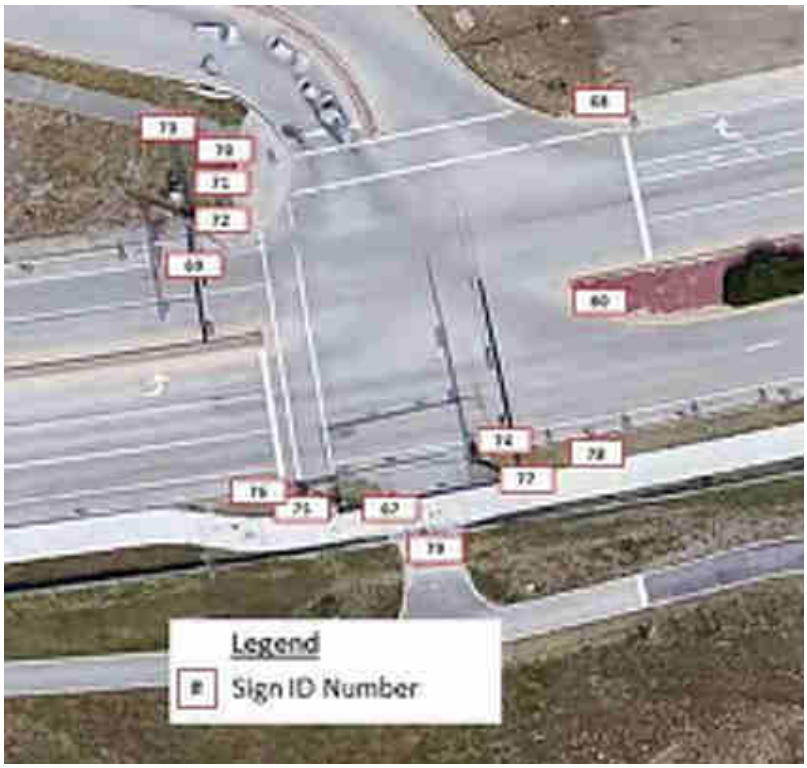
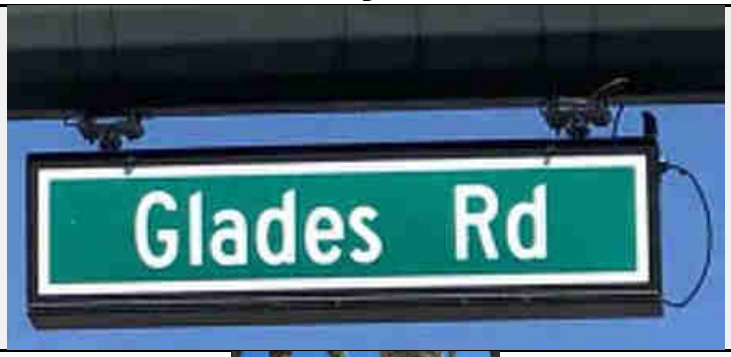


Figure 16 Spanish River Blvd Sign Location Map

Table 1 Sign Inventory

ID#	Sign	Location	Remarks
1		SE Corner of Glades Rd Intersection	Remain
2		SE Corner of Glades Rd Intersection	Remain

3		SE Corner of Glades Rd Intersection	Remain
4		SE Corner of Glades Rd Intersection	Remain
5		SE Corner	Replace
6		SE Corner of Glades Rd Intersection	Remain

ID#	Sign	Location	Remarks
7		SW Corner of Glades Rd Intersection	Remain
8		Median at Glades Rd	Remain

ID#	Sign	Location	Remarks
9		NE Corner of Glades Rd	Replace
10		NE Corner of Glades Rd	Replace
11		Median	Remain
12		NW Corner of Glades Rd	Remain

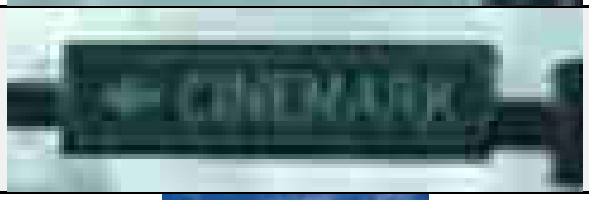
ID#	Sign	Location	Remarks
13		NW Corner of Glades Rd	Remain
14		NW Corner of Glades Rd	Remain
15		NW Corner of Glades Rd	Replace
16		NW Corner of Glades Rd	Replace
17		NW Corner of Glades Rd	Remain

ID#	Sign	Location	Remarks
18		NW Corner of Glades Rd	Replace
19		Median	Remain
20		Airport Rd	Remain
21		Airport Rd	Remain

ID#	Sign	Location	Remarks
22		Airport Rd	Remain
23		Airport Rd	Remain
24		Airport Rd	Remain
25		Airport Rd	Replace
26		Airport Rd	Remain
27		Airport Rd	Remain

ID#	Sign	Location	Remarks
28		Airport Rd	Remain
29		Airport Rd	Replace
30		Airport Rd	Remain
31		Airport Rd	Replace
32		Airport Rd	Remain

ID#	Sign	Location	Remarks
33		Airport Rd	Remain
34		Airport Rd	Remain
35		Airport Rd	Remain
36		Airport Rd	Remain
37		Airport Rd	Remain

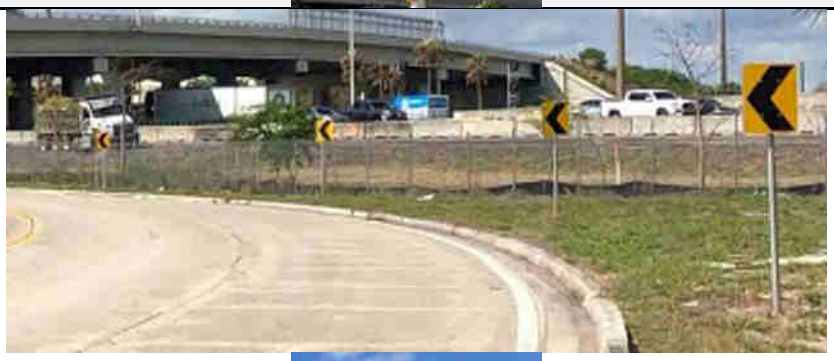
ID#	Sign	Location	Remarks
38		Airport Rd	Remain
39		Airport Rd	Remain
40		Airport Rd	Remain
41		Airport Rd	Remain

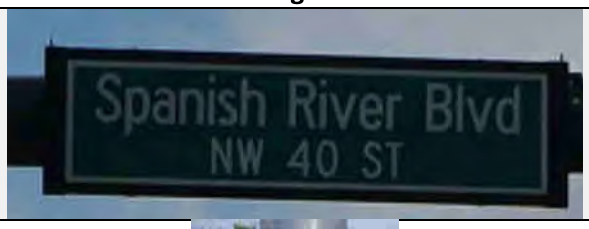
ID#	Sign	Location	Remarks
42		Airport Rd	Remain
43		Airport Rd	Remain
44		Airport Rd	Remain
45		Airport Rd	Remain
46		Airport Rd	Remain

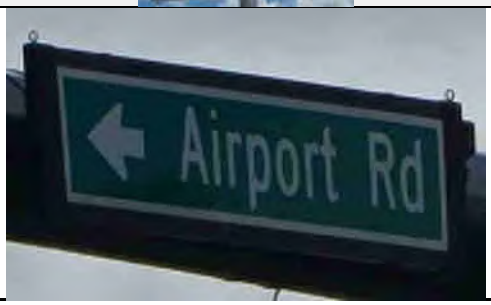
ID#	Sign	Location	Remarks
47		Airport Rd	Remain
48		Airport Rd	Remain
49		Airport Rd	Remain
50		Airport Rd	Remain
51		Airport Rd	Remain
52		Airport Rd	Remain

ID#	Sign	Location	Remarks
53		Airport Rd	Remain
54		Airport Rd	Replace
55		Airport Rd	Remain
56		Airport Rd	Remain
57		Airport Rd	Remain

ID#	Sign	Location	Remarks
58		Airport Rd	Replace
59		Airport Rd	Replace sign
60		Airport Rd	Remain
61		Airport Rd	Remain
62		Airport Rd	Remain

ID#	Sign	Location	Remarks
63		Airport Rd	Remain
64	 	Airport Rd	Remain
65		Airport Rd	Remain
66		Airport Rd	Remain

ID#	Sign	Location	Remarks
67		Spanish River Blvd Intersection	Remain
68		NE Corner of Spanish River Blvd Intersection	Remain
69		Spanish River Blvd Intersection	Remain
70		NW Corner of Spanish River Blvd Intersection	Remain

ID#	Sign	Location	Remarks
71		NW Corner of Spanish River Blvd Intersection	Remain
72		NW Corner of Spanish River Blvd Intersection	Remain
73		NW Corner of Spanish River Blvd Intersection	Remain
74		Spanish River Blvd Intersection	Remain

ID#	Sign	Location	Remarks
75		South Corner of Spanish River Blvd Intersection	Remain
76		South Corner of Spanish River Blvd Intersection	Remain
77		South Corner of Spanish River Blvd Intersection	Remain
78		South Corner of Spanish River Blvd Intersection	Remain
79		South Corner of Spanish River Blvd Intersection	Remain

ID#	Sign	Location	Remarks
80		South Corner of Spanish River Blvd Intersection	Remain

3. Signalization

Three signalized intersections are located within the project limits listed below. The lane configuration at the main intersections is shown in Figure 17.

- Glades Road
    - The existing signalization consists of traffic signals mounted horizontal on mast-arm signal poles.
    - Countdown pedestrian signals are present at the existing crosswalks.
- Cinemark
    - The existing signalization consists of traffic signals mounted horizontal on mast-arm signal poles. The existing traffic signals work as a warning sign with continuous intermittent yellow flashing lights.
    - Countdown pedestrian signals are present at the existing crosswalks.
- Spanish River Boulevard
    - The existing signalization consists of traffic signals mounted horizontal on mast-arm signal poles.
    - Countdown pedestrian signals are present at the existing crosswalks.

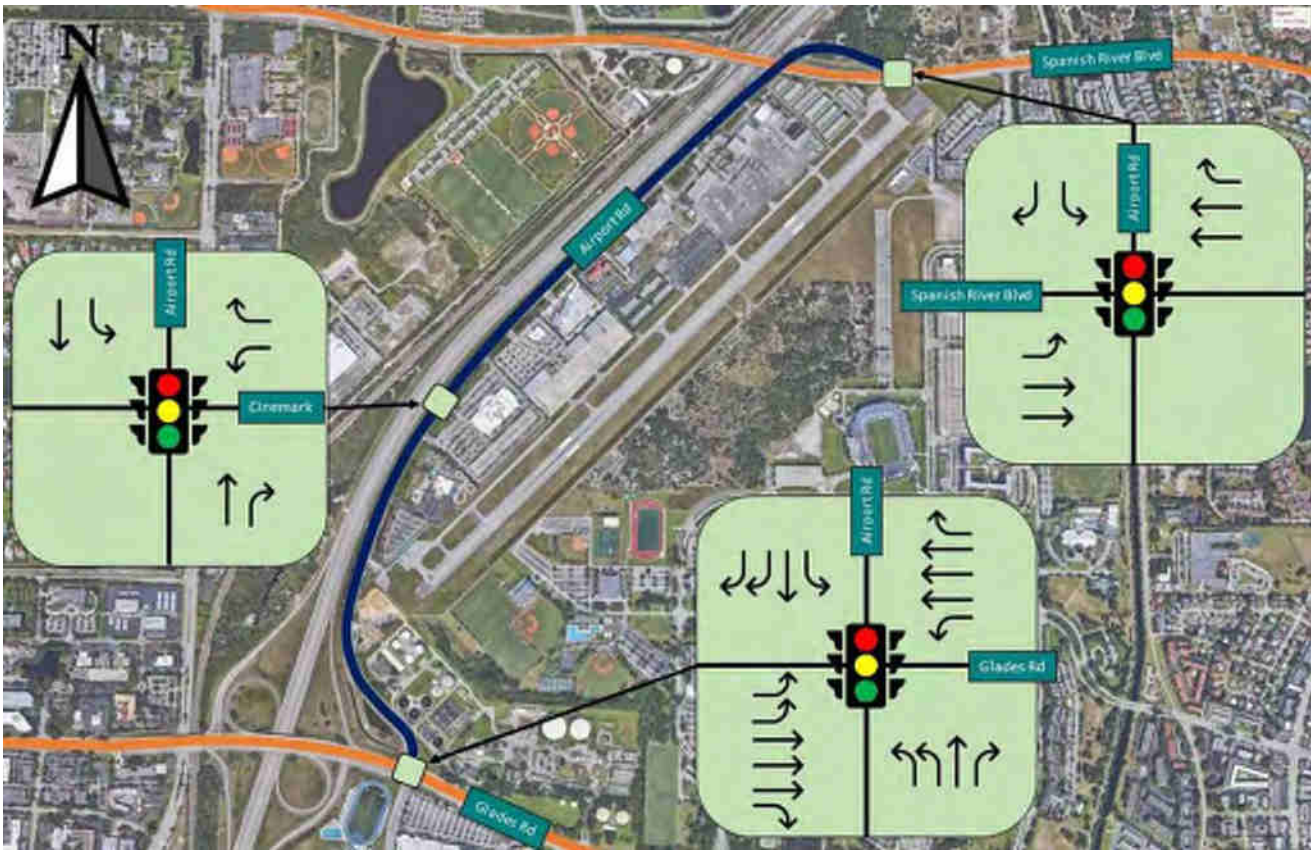


Figure 17 Lane Configuration at Intersections

Figures 18 and 19 show the existing mast arms at Glades Rd intersection and Spanish River Blvd intersection.

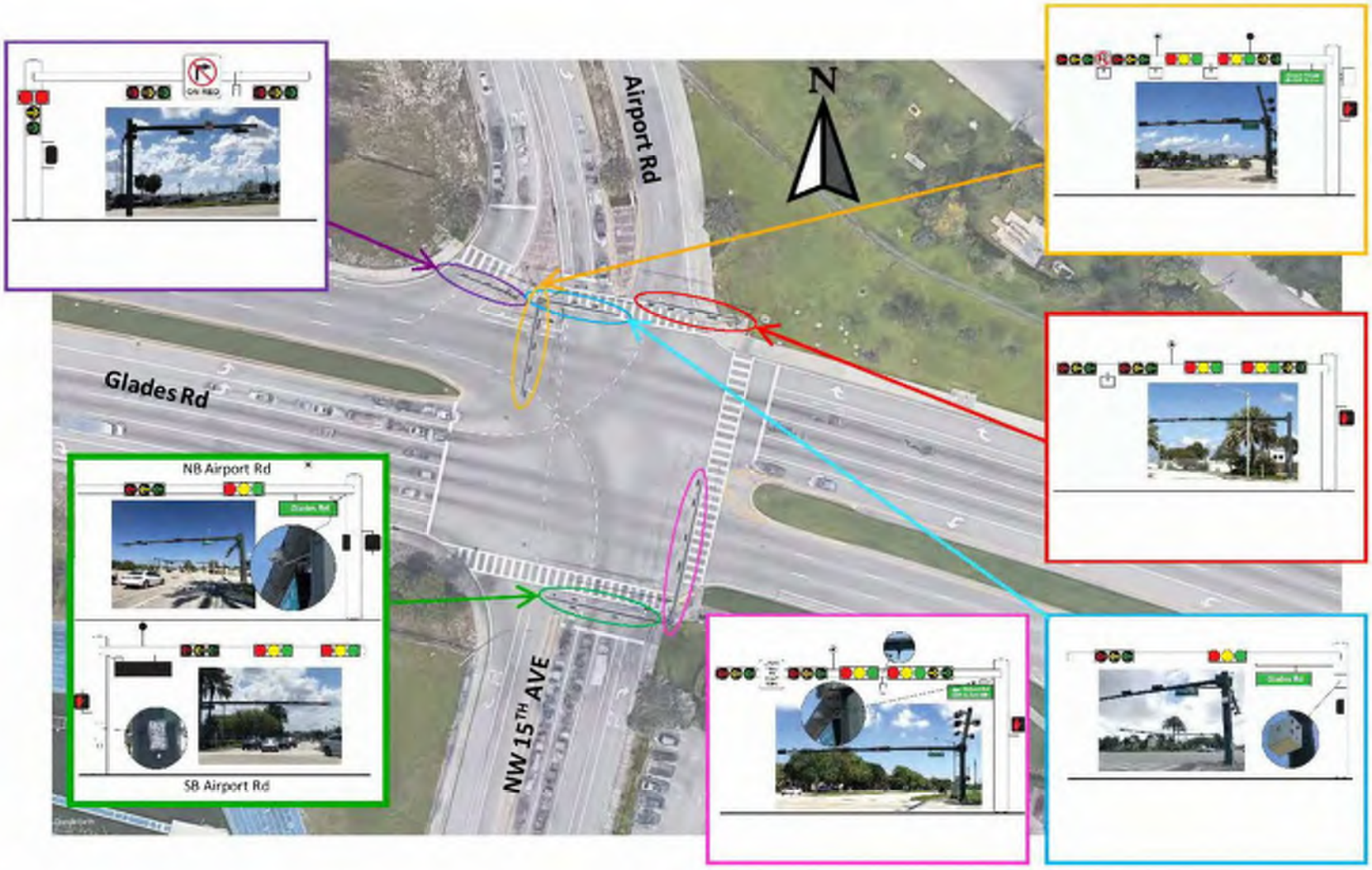


Figure 18 Existing Mast Arms at Glades Rd Intersection

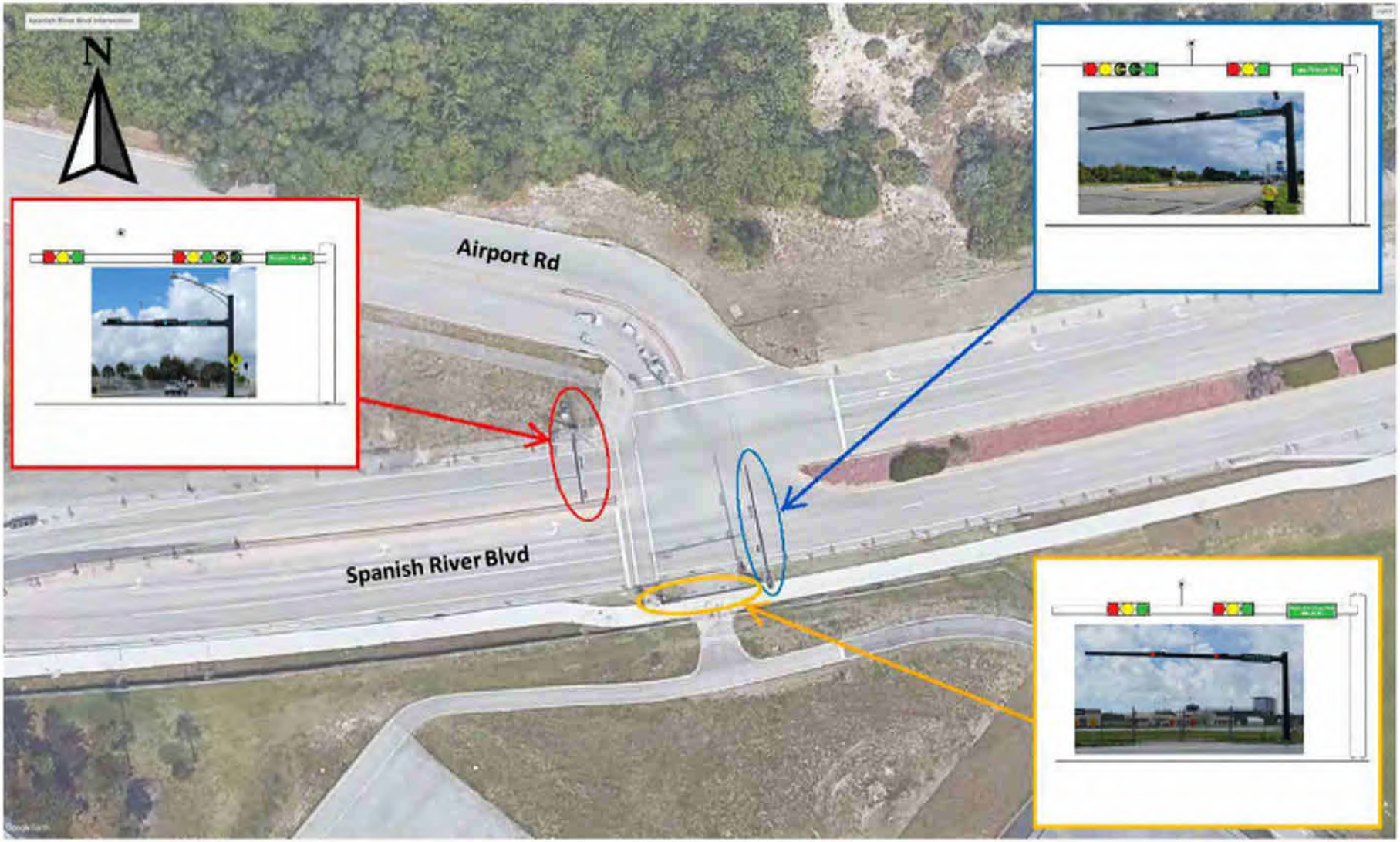


Figure 19 Existing Mast Arms at Spanish River Blvd Intersection

City of Boca Raton Traffic Engineering

Intersection Timing Sheet

Name	GLADES RD & AIRPORT RD	Mod. No.	11	Initial Operation Date	12/26/1997
Intersection	113	Mod. Date	10/31/18		

Part I — Actuated Timing Information

Non-coordinated Operation

Phase	1	2	3	4	5	6	7	8	Sp(A)	Sp(B)
Approach	EBLT	WB	SBLT	NB	WBLT	EB	NBLT	SB		
Initial	7	18	5	12	7	18	5	10		
Passage	1.8	2.0	1.8	2.0	1.8	2.0	1.8	2.0		
Max1	25.0	80.0	35.0	35.0	25.0	80.0	25.0	35.0		
Max2	50.0	70.0	50.0	50.0	50.0	70.0	50.0	50.0		
Yellow	4.8	4.8	4.0	4.0	4.8	4.8	4.0	4.0		
Red	2.5	2.5	3.5	3.5	2.5	2.5	3.5	3.5		
Walk		5.0		5.0		7.0				
Ped Clear		40.0		39.0		34.0				
Recall		Min				Min				
LT Type	Prot		Prot		Prot		Prot			
Detect Type										

Pre-emption

3M Opticom	☑ Active	RailRoad Pre-Emption	☐ Active	Fire Station Pre-emption	☐ Active
Bridge	☐ Active				

Part II — Coordinated Timing Information

Pattern Tables

PHASE	1	2	3	4	5	6	7	8	Cycle	Offset
Split Pat 11	26	49	22	33	18	57	35	20	130	36(1)
Split Pat 12	22	58	15	45	18	62	42	18	140	6(1)
Split Pat 13	28	62	15	45	21	69	42	18	150	108(1)
Split Pat 14	32	58	20	40	18	72	42	18	150	1(1)
Split Pat 15	30	78	17	45	25	83	44	18	170	131(1)
Split Pat 16	30	89	16	45	16	103	43	18	180	90(1)
Split Pat 20	29	79	28	34	22	86	34	28	170	7(1)

** Adaptive Traffic Control System*

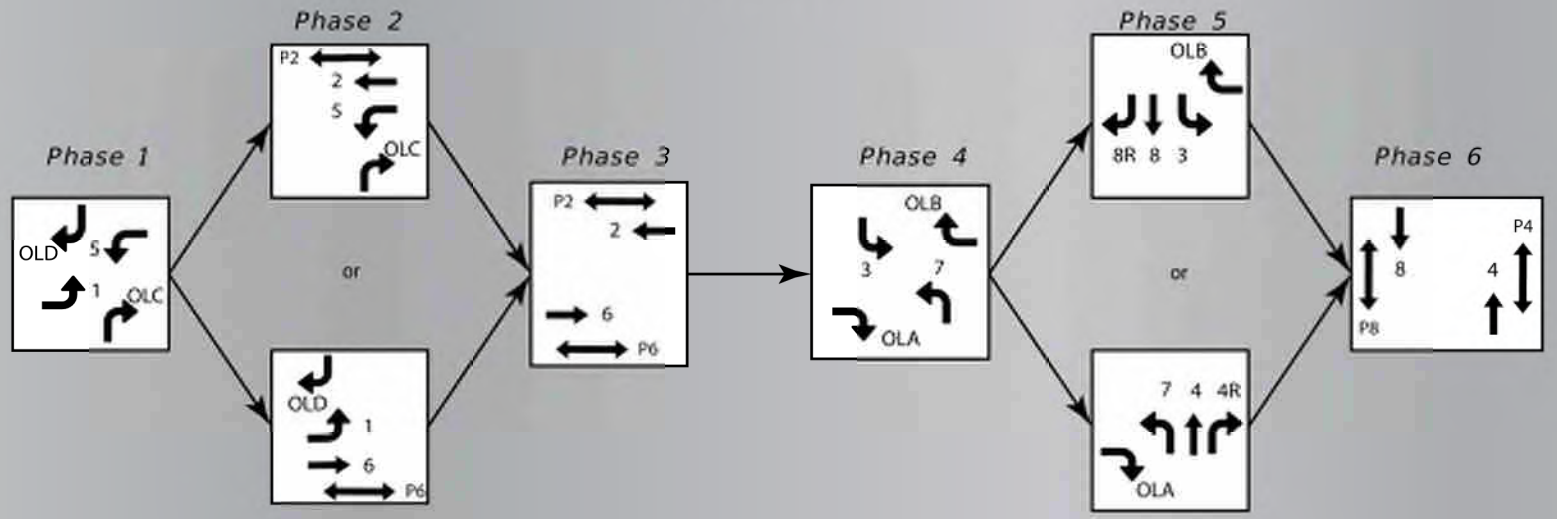
Schedule Implementation

Schedule Notes	Day Plan 1 (WEEKDAYS)			Day Plan 2 (WEEKENDS)			Day Plan 3 (Special)		
	Start	End	Split	Start	End	Split			
	0:00	6:30	50	0:00	7:30	50			
	6:30	7:30	40	7:30	8:00	100			
	7:30	11:00	20	8:00	10:00	12			
	11:00	15:00	13	10:00	18:00	14			
	15:00	18:00	16	18:00	20:00	39			
	18:00	19:00	41	20:00	22:00	36			
	19:30	22:00	36	22:00	0:00	50			
	22:00	0:00	50						

Part III — Notes and Comments

1. Update Timing sheet

SOP 10



Intersection Notes:

WEEKDAY	WEEKEND
07:00 - 22:00 Coordination Mode	08:00 - 22:00 Coordination Mode
09:00 - 20:30 Adaptive Coordination	08:00 - 18:00 Adaptive Coordination
22:00 - 07:00 Free Mode	22:00 - 08:00 = Free Mode

Patterns 1,3,4,5,30 & 31 = Normal Sequence
Patterns 2 & 6 = WB Lead (5) EB Lag (1) Sequence

Legend

- = Permissive Left Turn
- X = Phase Number
- PX = Pedestrian Phase Number
- OLX = Phase Overlap

City of Boca Raton Municipal Services Traffic Engineering	Standard Signal Operating Plan (SOP)	Designed By: TNP Date: 06/2020	113 Glades Road @ Airport Road

City of Boca Raton Traffic Engineering

Intersection Timing Sheet

Name	AIRPORT RD & SPANISH RIVER BLVD	Mod. No.	9	Initial Operation Date	12/26/1997
Intersection	94	Mod. Date	01/08/17		

Part I — Actuated Timing Information

Non-coordinated Operation

Phase	1	2	3	4	5	6	7	8	Sp(A)	Sp(B)
Approach	EBLT	WB				EB		SB		
Initial	5	18				18		6		
Passage	1.8	2.0				2.0		2.0		
Max1	20.0	50.0				50.0		30.0		
Max2										
Yellow	4.0	4.0				4.0		4.0		
Red	2.5	2.5				2.5		2.5		
Walk		7.0						7.0		
Ped Clear		25.0						23.0		
Recall		Min				Min				
LT Type	5-Section									
Detect Type										

Pre-emption

3M Opticom	☐ Active	RailRoad Pre-Emption	☐ Active	Fire Station Pre-emption	☐ Active
Bridge	☐ Active				

Part II — Coordinated Timing Information

Pattern Tables

PHASE	1	2	3	4	5	6	7	8	Cycle	Offset
Split Pat 1	15	52				67*		33	100	78
Split Pat 2	15	92				107*		33	140	16
Split Pat 3	18	97				115*		25	140	120
Split Pat 4										
Split Pat 5										
Split Pat 6										

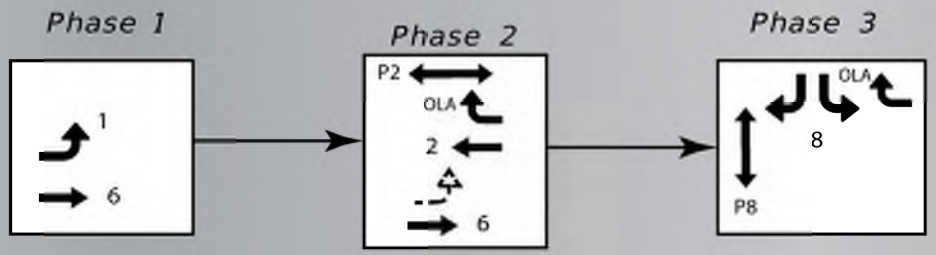
Schedule Implementation

Schedule Notes	Day Plan 1 (WEEKDAYS)			Day Plan 2 (SATURDAY)			Day Plan 2 (SUNDAY)		
	Start	End	Split	Start	End	Split	Start	End	Split
	0:00	7:15	50	0:00	7:30	50	0:00	7:30	50
	7:15	9:30	2	7:30	10:00	100	7:30	11:00	100
	9:30	16:30	2	10:00	18:00	1	11:00	17:00	1
	16:30	18:00	3	18:00	0:00	50	17:00	18:00	100
	18:00	19:30	26				18:00	0:00	50
	19:30	0:00	50						

Part III — Notes and Comments

1. Updated pedestrian signal timings. Phases 2 & 8.

SOP 12



Spanish River Boulevard Airport Boulevard

Intersection Notes:

WEEKDAY
07:15 - 19:30 Normal Coordination Mode
07:00 - 21:00 Adaptive Coordination
21:00 - 07:00 Free Mode

WEEKEND
10:00 - 18:00 Coordination Mode
18:00 - 10:00 = Free Mode

All Patterns = Normal Sequence

Legend

= Permissive Left Turn
X = Phase Number
PX = Pedestrian Phase Number
OLX = Overlap Phase

City of Boca Raton Municipal Services Traffic Engineering	Standard Signal Operating Plan (SOP)	Designed By: TNP Date: 06/2020	094 Spanish River Boulevard @ Airport Boulevard

BOCA RATON AIRPORT - AIRPORT RD.

VEHICULAR VOLUME COUNTS, THRESHOLDS & LEVEL-OF-SERVICE (LOS)

DAILY VEHICULAR VOLUMES - FDOT TRAFFIC COUNTS

ROADWAY	NUMBER OF LANES	LOCATION	FUNCTIONAL CLASSIFICATION	YEAR 2019 SEGMENT AADT	LOS	FDOT VEHICULAR VOLUME THRESHOLDS (4)		
						LOS C	LOS D	LOS E
Airport Rd	2LU (1)	Glades Rd to Spanish River Blvd	Major Collector	11000	D	6570	13320	14040
Spanish River Blvd	4LD (2)	East of I-95	Major Collector	20500	C	34110	35820	N/A
Glades Rd	6LD (3)	East of I-95	Principal Arterial	57000	C	58400	59900	N/A

DAILY VEHICULAR VOLUMES - FEBRUARY 2021 COUNTS

ROADWAY	NUMBER OF LANES	LOCATION	FUNCTIONAL CLASSIFICATION	YEAR 2021 SEGMENT DAILY TRAFFIC	LOS	FDOT VEHICULAR VOLUME THRESHOLDS		
						LOS C	LOS D	LOS E
Airport Rd	2LU	Glades Rd to Spanish River Blvd	Major Collector	5604	C	6570	13320	14040

(1) Class II Non-State Rd 10% reduction in FDOT LOS volumes.
(2) Class I Non-State Rd 10% reduction in FDOT LOS volumes.
(3) Class I State Rd.
(4) FDOT Genaralized Volumes / LOS Tables, Jan 2020

TWO-WAY PEAK HOUR VEHICULAR VOLUMES - FDOT TRAFFIC COUNTS

ROADWAY	NUMBER OF LANES	LOCATION	FUNCTIONAL CLASSIFICATION	YEAR 2019 SEGMENT Volume (4)	LOS	FDOT VEHICULAR VOLUME THRESHOLDS (5)		
						LOS C	LOS D	LOS E
Airport Rd	2LU (1)	Glades Rd to Spanish River Blvd	Major Collector	990	D	594	1197	1269
Spanish River Blvd	4LD (2)	East of I-95	Major Collector	1845	C	3078	3222	N/A
Glades Rd	6LD (3)	East of I-95	Principal Arterial	5130	C	5250	5390	N/A

TWO-WAY PEAK HOUR VEHICULAR VOLUMES - FEB 2021 TRAFFIC COUNTS

ROADWAY	NUMBER OF LANES	LOCATION	FUNCTIONAL CLASSIFICATION	YEAR 2021 SEGMENT Volume	LOS	FDOT VEHICULAR VOLUME THRESHOLDS (5)		
						LOS C	LOS D	LOS E
Airport Rd	2LU	Glades Rd to Spanish River Blvd	Major Collector	620	D	594	1197	1269

(1) Class II Non-State Rd 10% reduction in FDOT LOS volumes.
(2) Class I Non-State Rd 10% reduction in FDOT LOS volumes.
(3) Class I State Rd.
(4) Volume = AADT x K
(5) FDOT Genaralized Volumes / LOS Tables, Jan 2020

PEAK-HOUR / PEAK DIRECTION VEHICULAR VOLUMES - FDOT TRAFFIC COUNTS

ROADWAY	NUMBER OF LANES	LOCATION	FUNCTIONAL CLASSIFICATION	YEAR 2019 SEGMENT Volume (4)	LOS	FDOT VEHICULAR VOLUME THRESHOLDS (5)		
						LOS C	LOS D	LOS E
Airport Rd	2LU (1)	Glades Rd to Spanish River Blvd	Major Collector	544	D	333	675	720
Spanish River Blvd	4LD (2)	East of I-95	Major Collector	1013	C	1719	1800	N/A
Glades Rd	6LD (3)	East of I-95	Principal Arterial	2816	C	2940	3020	N/A

PEAK-HOUR / PEAK DIRECTION VEHICULAR VOLUMES - FEB 2021 TRAFFIC COUNTS

ROADWAY	NUMBER OF LANES	LOCATION	FUNCTIONAL CLASSIFICATION	YEAR 2021 SEGMENT Volume	LOS	FDOT VEHICULAR VOLUME THRESHOLDS (5)		
						LOS C	LOS D	LOS E
Airport Rd	2LU	Glades Rd to Spanish River Blvd	Major Collector	374	D	333	675	720

(1) Class II Non-State Rd 10% reduction in FDOT LOS volumes.
(2) Class I Non-State Rd 10% reduction in FDOT LOS volumes.
(3) Class I State Rd.
(4) Volume = AADT x K X D
(5) FDOT Genaralized Volumes / LOS Tables, Jan 2020

APPENDIX H

Aircraft Noise Analysis

APPENDIX H AIRCRAFT NOISE ANALYSIS

An aircraft noise exposure analysis was prepared as part of MPU to establish the existing aircraft noise exposure conditions and estimate future aircraft noise exposure conditions with the implementation of the proposed alternative projects. The noise exposure analysis is prepared for comparative purposes, to estimate order-of-magnitude changes in noise exposure that would be anticipated with the recommended MPU projects in place. The analysis does not represent a Title 14 Code of Federal Regulations (CFR) Part 150 Study (14 CFR Part 150), but the methodology conducted is consistent with Title 14 CFR Part 150 requirements.

This appendix includes a background discussion of aircraft noise modeling and presents the modeling input and assumptions as well as modeling results for existing noise exposure conditions and conditions during future years associated with alternative development described in the MPU. The model input data includes information on aircraft operations, runway use, and noise model flight tracks for each year analyzed.

The existing noise exposure modeled in this study represents conditions in 2021, which is the most recent year for which full data were available at the time this analysis was prepared. Three forecast operations demand levels associated with proposed alternative development proposed in the MPU Study were assessed to estimate future aircraft noise exposure conditions:

- 2026 Aircraft Noise Analysis—modeled to analyze noise conditions associated with operation of the Airport's increase in demand for the near term.
- 2030 Aircraft Noise Analysis—modeled to analyze noise conditions associated with the increase in future demand in the intermediate term.
- 2040 Aircraft Noise Analysis—modeled to analyze noise conditions associated with the increase in future demand in the long term.

The future year operations and fleet mix used in the noise analysis for 2026, 2030 and 2040 were developed based on the MPU, Aviation Activity Forecast, which was approved by the FAA in May 2021.

H.1 AIRCRAFT NOISE MODELING BACKGROUND

H.1.1 NOISE DESCRIPTORS

The Federal Aviation Administration (FAA) has determined that the cumulative aircraft noise exposure experienced by individuals must be established in terms of the yearly day-night average sound level (DNL) metric (expressed in A-weighted decibels [dBA]).

The decibel is a unit used to describe sound pressure level. The A-weighting de-emphasizes lower frequency sounds below 1,000 Hertz (1 kilohertz [kHz]) and higher frequency sounds above 4 kHz. Without this filtering, calculated and measured sound levels would include events that the human ear cannot hear (e.g., dog whistles or the groaning sounds emanating from large buildings with changes in temperature and wind). Most community noise standards utilize A-weighting, as it provides a high degree of correlation with human annoyance and allows for calculations and sound monitoring equipment to approximate the sensitivity of the human ear to sounds of different frequencies.

The DNL descriptor, formerly referred to as L_{dn}, is expressed in dBA and represents the noise level over a 24- hour period. Because environmental noise fluctuates over time, DNL was devised to relate noise exposure over time to human response, with penalties to account for the increased sensitivity to noise events that occur during the more sensitive nighttime periods. Specifically, DNL penalizes noise by adding 10 dB during the nighttime period (10:00 p.m. to 7:00 a.m.).

H.1.2 AIRCRAFT NOISE CONSIDERATIONS FOR PLANNING

The FAA has a long history of providing guidance regarding aircraft noise and land-use criteria in the vicinity of airports. The noise exposure analyses conducted as part of this MPU were prepared in accordance with guidance defined in Title 14 CFR Part 150 and FAA Order 1050.1F, Environmental Impacts: Policies and Procedures, to provide an indication of noise exposure effects that the Airport Authority may need to address in future environmental reviews (conducted pursuant to the National Environmental Policy Act of 1969 [NEPA]) of the recommended MPU projects.

In accordance with Title 14 CFR Part 150 and FAA Order 1050.1F, DNL 65 dBA is defined by the FAA as the threshold of exterior noise compatibility for residential and other noise-sensitive land uses, such as schools, libraries, hospitals, daycares, and religious facilities; however, special consideration of whether changes in aircraft noise exposure are significant at noise-sensitive properties, such as national parks, national wildlife and waterfowl refuges, and historic properties, may be needed.

H.1.3 AIRCRAFT NOISE MODEL

Aircraft noise modeling is the most effective way to estimate aircraft noise for forecast operations and airfield modifications. In addition, modeling is the best method in assessing changes in aircraft noise for future baseline and alternative scenarios. This aircraft noise analysis was conducted using the Aviation Environmental Design Tool (AEDT), a computer simulation model developed by the FAA as the standard tool for modeling aircraft noise, fuel consumption, and air emissions at civilian airports.[1] The FAA requires use of the latest AEDT version for noise modeling purposes.[2] Specifically, this noise analysis was prepared using AEDT Version 3e, released May 9, 2022 and is the latest version of AEDT.

The AEDT includes sets of algorithms describing sound propagation and attenuation over distance. It also includes an extensive database of noise-thrust-distance relationships for most civil aircraft and many military aircraft operating in the United States. Noise exposure levels are calculated from airport-specific data that are input into the model. As described in this appendix, the input includes runway coordinates, flight tracks, aircraft operations by aircraft type and time-of-day, runway and flight track use, average local temperature, and departure trip length data.

The results of the noise modeling, represented by DNL noise exposure contours, represent the time- weighted noise exposure for an average day during an analysis year. A contour is a line that connects equal DNL values among all the grids that are modeled. It is similar to a terrain elevation contour.

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[1] U.S Department of Transportation, Federal Aviation Administration, Aviation Environmental Design Tool, As announced in the Federal Register on May 29, 2015 (80 FR 27853), AEDT replaces all legacy environmental modeling tools previously required for predicting noise, fuel burn, and emissions of FAA actions. The requirement to use AEDT extends to all applicable environmental modeling conducted for FAA actions under the National Environmental Policy Act (NEPA) as well as other FAA approved studies, such as those under Part 150 or Part 161. (https://aedt.faa.gov/3e_information.aspx).

[2] All FAA actions requiring noise, fuel burn or emissions modeling and for which the environmental analysis process has begun on or after May 9, 2022 are required to use this updated version of AEDT 3e.

H.1.4 EXISTING CONDITIONS NOISE ANALYSIS (2021)

The Airport serves air taxi, general aviation, and military aircraft. The aircraft operating conditions needed as input to the model for existing conditions are described in this section, and include: runway configuration; annual and average annual day aircraft operations; fleet mix; average annual daily aircraft operations by time-of-day; runway use; aircraft flight track locations and use; and aircraft weight and departure trip length.

In addition to describing the model inputs, this section also presents the results of the existing conditions noise analysis, including a graphic depiction of annual average noise exposure contours and a summary of residences and noise-sensitive facilities exposed to levels of aircraft noise relevant to planning purposes.

H.1.5 MODEL INPUT DATA

The data used for much of this analysis were derived from the Airport Layout Plan (ALP) and aircraft operations data from the Aviation Activity Forecast (Section 3); supplemented by other data sources such as, flight header data from the Airport's Airport Noise and Operations Management System (ANOMS) system; FAA Airport Traffic Control Tower (ATCT) counts, and the FAA's Enhanced Traffic Management System Counts (TFMSC) operations data. The based aircraft types were used to complete fleet mix assumptions for Visual Flight Rule (VFR) general aviation aircraft. The most recent comprehensive list of based aircraft at BCT was provided by the Noise Office. The radar data from ANOMS did not contain complete user information by aircraft type, therefore the operations data were supplemented with information from the FAA's TFMSC to generate a representative fleet mix operating at the Airport. Radar tracks from ANOMS were used to assess previous noise model tracks developed for the Aircraft Noise Exposure Contours – 2016-2017 study to confirm the noise model tracks represent existing conditions.

H.1.6 RUNWAY CONFIGURATION

The runway configuration modeled for existing conditions includes Runway 5 – 23 - 6,276 feet in length and 150 feet in width, oriented northeast-southwest, with arrival displaced threshold of 696 feet at Runway 05 end and 378 feet at Runway 23 end.

H.1.7 ANNUAL AND AVERAGE ANNUAL DAY OPERATIONS

Aircraft operations data from January 1, 2021, to December 31, 2021, were used for the analysis of existing noise exposure. The operations counts received from ANOMS are slightly different from the operations counts obtained from the FAA ATCT. At the request of aircraft operators, the FAA will exclude counts associated with certain military, air taxi, and GA flights for security reasons. Further, touch and go operations are reported differently in the ANOMS system vs. the ATCT counts. The ANOMS system will report the touch and go activity as one operation, and the ATCT will report the two operations.

Based on the FAA ATCT traffic counts, 81,800 annual aircraft operations were conducted at the Airport in 2021. The ATCT traffic counts were used to derive annual and average annual day (AAD) activity for itinerant and local operations by user category (i.e., air taxi, general aviation, and military). Total AAD activity is computed by dividing annual aircraft operations by 365. As such, the AAD activity does not reflect activity on one specific day, but rather it represents average conditions over the course of the year. **Table H-1** presents the ATCT traffic counts by month for 2021 by user category for itinerant and local operations as well as the AAD operations.

TABLE H-1 MONTHLY AIRCRAFT OPERATIONS 2021

	ITINERANT				LOCAL			
	AIR TAXI	GENERAL AVIATION	MILITARY	TOTAL	GENERAL AVIATION	MILITARY	TOTAL	TOTAL OPERATIONS
January	1,306	3,562	1	4,869	2,096	0	2,096	6,965
February	1,132	3,186	4	4,322	1,822	0	1,822	6,144
March	1,559	4,003	2	5,564	2,796	0	2,796	8,360
April	1,402	4,032	5	5,439	2,852	2	2,854	8,293
May	1,262	3,296	1	4,559	1,984	6	1,990	6,549
June	890	2,788	6	3,684	1,396	22	1,418	5,102
July	774	2,525	0	3,299	1,388	0	1,388	4,687
August	797	2,731	2	3,530	2,094	6	2,100	5,630
September	810	3,400	4	4,214	3,216	14	3,230	7,444
October	995	3,607	6	4,608	2,586	68	2,654	7,262
November	1,359	3,610	0	4,969	2,394	6	2,400	7,369
December	1,387	3,826	0	5,213	2,782	0	2,782	7,995
Annual	**13,673**	**40,566**	**31**	**54,270**	**27,406**	**124**	**27,530**	**81,800**
Avg. Annual Day	37.5	111.1	0.1	148.7	75.1	0.3	75.4	224.1
Percent	16.7%	49.6%	0.0%	66.3%	33.5%	0.2%	33.7%	100.0%

SOURCE: BCT Airport Traffic Control Tower Operations data from Federal Aviation Administration, Air Traffic Activity Data System data (http://aspm.faa.gov/opsnet/sys), accessed Nov 11, 2022.
PREPARED BY: Ricondo & Associates, Inc., December 2022.

H.1.8 FLEET MIX

Each aircraft type generates a unique noise footprint; understanding the fleet mix operating at an airport is a key factor in an aircraft noise analysis. Radar data from the ANOMS and FAA's TFMSC data for the entire year of 2021 served as the basis for determining the aircraft fleet mix operating at the Airport. Radar data, such as that obtained from ANOMS, are often subject to excluded flight information. Flight information is not available for VFR operations and military operations. For this reason, radar-derived operations data have been supplemented with FAA's TFMSC and based aircraft data to develop a representative set of aircraft types that typically operate at the Airport on an annual average day.

Each operation aircraft type was assigned a representative AEDT aircraft type. AEDT contains a database of aircraft types that includes most, but not all, of the aircraft operating at BCT in 2021. For aircraft types not listed in the AEDT database, substitutions have been identified from the FAA's list of pre-approved aircraft substitutions. The FAA identifies these substitutions based on common noise profiles, engine performance criteria, and other performance characteristics. For BCT aircraft not contained in the AEDT database or not on the pre-approved aircraft substitution list, the FAA's criteria for identifying aircraft substitutions were used in this noise analysis based on the FAA-approved aircraft-type substitutions included in AEDT developed on the basis of similar engine types, numbers of engines, weight, performance characteristics, and noise characteristics.

H.1.9 AVERAGE ANNUAL DAY OPERATIONS BY TIME-OF-DAY

Data from the Airport's ANOMS and the FAA's radar data summary for the 12-month period as reported in the TFMSC, distributive hourly operational data from January 1, 2021, to December 31, 2021, were used to determine the percent of daytime and nighttime operations by user category. **Table H-2** summarizes the calculated annual itinerant and local operations by time of day for each aircraft category. **Table H-3** presents the time-of-day allocation (i.e., the percentage split between daytime and nighttime) of itinerant and local operations by operation type. **Table H-4** presents the AAD arrival and departure operations for AEDT aircraft types by time of day for itinerant and local operations.

TABLE H-2 2021 ANNUAL ARRIVALS AND DEPARTURES BY AIRCRAFT CATEGORY

ITINERANT OPERATIONS	ARRIVALS			DEPARTURES			ANNUAL
AIRCRAFT CATEGORY	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL	TOTAL
Jet	13,225.3	621.6	13,846.9	13,278.9	568.0	13,846.9	27,693.9
Turboprop	594.0	29.6	623.6	600.0	23.6	623.6	1,247.1
Prop	12,037.2	620.2	12,657.4	12,202.0	455.4	12,657.4	25,314.8
Helicopter	6.8	0.3	7.1	6.8	0.3	7.1	14.2
Itinerant Total	**25,863.2**	**1,271.8**	**27,135.0**	**26,087.7**	**1,047.4**	**27,135.0**	**54,270.0**
LOCAL OPERATIONS	ARRIVALS			DEPARTURES			ANNUAL
AIRCRAFT CATEGORY	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL	TOTAL
Jet	702.9	31.2	734.1	702.9	31.2	734.1	1,468.1
Turboprop	922.2	40.9	963.1	922.2	40.9	963.1	1,926.2
Prop	11,529.2	511.2	12,040.4	11,529.2	511.2	12,040.4	24,080.8
Helicopter	26.2	1.2	27.4	26.2	1.2	27.4	54.8
Local Total	**13,180.6**	**584.4**	**13,765.0**	**13,180.6**	**584.4**	**13,765.0**	**27,530.0**
Grand Total	**39,043.8**	**1,856.2**	**40,900.0**	**39,268.2**	**1,631.8**	**40,900.0**	**81,800.0**

NOTES:
Columns and rows may not add to totals due to rounding.
1 DAY = 7:00 A.M. TO 10:00 P.M.
2 NIGHT = 10:00 P.M. TO 7:00 A.M.
SOURCE: Ricondo & Associates, Inc., December 2022; Boca Raton Airport Authority, Aircraft Noise Monitoring System, Aircraft Radar and Flight Header Data; BCT Airport Traffic Control Tower Operations Log; Federal Aviation Administration, Air Traffic Activity Data System data and Traffic Flow Management System Counts (TFMSC), http://aspm.faa.gov/ (date accessed November 2022).
PREPARED BY: Ricondo & Associates, Inc., December 2022.

TABLE H-3 OPERATIONS BY DAYTIME AND NIGHTTIME – PERCENTAGE

ITINERANT OPERATIONS	ARRIVALS			DEPARTURES		
AIRCRAFT CATEGORY	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL
Jet	95.5%	4.5%	100.0%	95.9%	4.1%	100%
Turboprop	95.2%	4.8%	100.0%	96.2%	3.8%	100%
Prop	95.1%	4.9%	100.0%	96.4%	3.6%	100%
Helicopter	95.1%	4.9%	100.0%	95.1%	4.9%	100%
Itinerant Total	**95.3%**	**4.7%**	**100.0%**	**96.1%**	**3.9%**	**100%**
LOCAL OPERATIONS	ARRIVALS			DEPARTURES		
AIRCRAFT CATEGORY	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL
Jet	95.8%	4.2%	100.0%	95.8%	4.2%	100%
Turboprop	95.8%	4.2%	100.0%	95.8%	4.2%	100%
Prop	95.8%	4.2%	100.0%	95.8%	4.2%	100%
Helicopter	95.8%	4.2%	100.0%	95.8%	4.2%	100%
Local Total	**95.8%**	**4.2%**	**100.0%**	**95.8%**	**4.2%**	**100%**
Grand Total	**95.46%**	**4.54%**	**100.00%**	**96.01%**	**3.99%**	**100.00%**

NOTES:
Columns and rows may not add to totals due to rounding.
1 DAY = 7:00 A.M. TO 10:00 P.M.
2 NIGHT = 10:00 P.M. TO 7:00 A.M.
SOURCE: Ricondo & Associates, Inc., December 2022; Boca Raton Airport Authority, Aircraft Noise Monitoring System, Aircraft Radar and Flight Header Data; BCT Airport Traffic Control Tower Operations Log; Federal Aviation Administration, Air Traffic Activity Data System data and Traffic Flow Management System Counts (TFMSC), http://aspm.faa.gov/ (date accessed November 2022).
PREPARED BY: Ricondo & Associates, Inc., December 2022.

TABLE H-4 (1 OF 2) AVERAGE ANNUAL DAILY AIRCRAFT OPERATIONS (2021)

ITINERANT OPERATIONS		ARRIVALS			DEPARTURES			
AIRCRAFT CATEGORY	AEDT TYPE	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL	TOTAL
Jets	BD-700-1A10	0.986	0.045	1.031	0.987	0.044	1.031	2.063
	CIT3	0.226	0.012	0.237	0.229	0.009	0.237	0.475
	CL600	5.426	0.252	5.678	5.442	0.237	5.678	11.357
	CL601	0.349	0.017	0.366	0.352	0.014	0.366	0.732
	CNA500	0.059	0.003	0.062	0.060	0.002	0.062	0.124
	CNA510	0.619	0.027	0.647	0.618	0.028	0.647	1.293
	CNA525C	1.832	0.089	1.921	1.846	0.075	1.921	3.843
	CNA55B	3.167	0.149	3.316	3.181	0.135	3.316	6.632
	CNA560U	0.934	0.043	0.977	0.936	0.041	0.977	1.954
	CNA560XL	2.337	0.108	2.445	2.342	0.102	2.445	4.889
	CNA680	2.895	0.127	3.022	2.888	0.135	3.023	6.045
	CNA750	6.013	0.285	6.298	6.042	0.256	6.298	12.596
	ECLIPSE500	0.759	0.039	0.798	0.769	0.029	0.798	1.596
	EMB145	0.065	0.003	0.068	0.065	0.003	0.068	0.136
	FAL900EX	1.155	0.057	1.212	1.166	0.047	1.212	2.424
	G650ER	0.117	0.006	0.123	0.118	0.005	0.123	0.246
	GIV	2.467	0.114	2.581	2.473	0.108	2.581	5.162
	GV	0.803	0.039	0.842	0.808	0.033	0.842	1.683
	IA1125	0.146	0.007	0.153	0.147	0.006	0.153	0.305
	LEAR35	4.249	0.204	4.452	4.275	0.178	4.452	8.905
	MU3001	1.629	0.077	1.706	1.637	0.070	1.706	3.413
Props/Turboprops	BEC58P	6.358	0.328	6.686	6.446	0.241	6.686	13.372
	CNA172	3.346	0.172	3.518	3.391	0.127	3.518	7.036
	CNA182	1.191	0.061	1.253	1.208	0.045	1.253	2.505
	CNA20T	0.151	0.007	0.158	0.152	0.006	0.158	0.317
	GASEPF	0.786	0.040	0.826	0.796	0.030	0.826	1.652
	GASEPV	21.147	1.090	22.237	21.437	0.800	22.237	44.473
	CNA208	0.660	0.032	0.692	0.665	0.027	0.692	1.384
	CNA441	0.145	0.007	0.152	0.146	0.006	0.152	0.304
	DHC6	0.823	0.042	0.865	0.832	0.032	0.865	1.729
Helicopter	HELO	0.019	0.001	0.019	0.019	0.001	0.019	0.039
	Itinerant Total	**70.858**	**3.484**	**74.342**	**71.473**	**2.869**	**74.342**	**148.685**

TABLE H-4 (2 OF 2) AVERAGE ANNUAL DAILY AIRCRAFT OPERATIONS (2021)

LOCAL OPERATIONS		ARRIVALS			DEPARTURES			
AIRCRAFT CATEGORY	AEDT TYPE	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL	TOTAL
Jets	CL600	0.008	0.000	0.009	0.008	0.000	0.009	0.017
	CL601	0.976	0.043	1.019	0.976	0.043	1.019	2.038
	CNA525C	0.018	0.001	0.019	0.018	0.001	0.019	0.038
	CNA55B	0.306	0.014	0.320	0.306	0.014	0.320	0.640
	CNA560XL	0.004	0.000	0.004	0.004	0.000	0.004	0.009
	CNA680	0.023	0.001	0.024	0.023	0.001	0.024	0.049
	CNA750	0.268	0.012	0.280	0.268	0.012	0.280	0.560
	GIV	0.232	0.010	0.243	0.232	0.010	0.243	0.485
	GV	0.075	0.003	0.078	0.075	0.003	0.078	0.157
	LEAR35	0.014	0.001	0.015	0.014	0.001	0.015	0.030
Props/Turboprops	BEC58P	1.652	0.073	1.725	1.652	0.073	1.725	3.451
	CNA172	17.401	0.772	18.173	17.401	0.772	18.173	36.346
	GASEPF	1.146	0.051	1.197	1.146	0.051	1.197	2.393
	GASEPV	11.388	0.505	11.892	11.388	0.505	11.892	23.785
	CNA441	2.506	0.111	2.617	2.506	0.111	2.617	5.234
	DHC6	0.021	0.001	0.022	0.021	0.001	0.022	0.044
Helicopters		0.072	0.003	0.075	0.072	0.003	0.075	0.150
	Local Total	**36.111**	**1.601**	**37.712**	**36.111**	**1.601**	**37.712**	**75.425**
	Total AAD	**106.969**	**5.086**	**112.055**	**107.584**	**4.470**	**112.055**	**224.110**

NOTES:
1 DAY = 7:00 A.M. TO 10:00 P.M.
2 NIGHT = 10:00 P.M. TO 7:00 A.M.
SOURCE: Ricondo & Associates, Inc., December 2022; Boca Raton Airport Authority, Aircraft Noise Monitoring System, Aircraft Radar and Flight Header Data; BCT Airport Traffic Control Tower Operations Log; Federal Aviation Administration, Air Traffic Activity Data System data and Traffic Flow Management System Counts (TFMSC), http://aspm.faa.gov/ (date accessed November 2022).
PREPARED BY: Ricondo & Associates, Inc., December 2022.

H.1.10 RUNWAY USE

The use of the runways and flight tracks to and from an airport indicate where aircraft fly and, consequently, are important in determining the pattern of noise levels in the vicinity of an airport. Runway use at an airport is typically a function of prevailing wind and weather conditions, the lengths and widths of the runways, runway instrumentation, and the effects of other airports or air facilities in the area. To a certain extent, runway use is also determined based on the destination of a departing aircraft or origin of an arriving aircraft and the location of the aircraft parking position on the airfield. All these factors, to varying degrees, affect runway use. Furthermore, because of the extra 10 dB weight assigned to nighttime operations, the analysis included consideration of runway usage during daytime versus nighttime periods.

Runway use data for existing conditions were derived from the flight header data from the Airport's ANOMS. The analysis of the flight header data provided the numbers of operations by each type of aircraft, operation type, runway used, and the time of operation. The runway use data were parsed into aircraft categories (i.e., jets,

props/turboprops, and military aircraft) and adjusted to be equal to the AAD count based on the FAA ATCT traffic counts.

Average runway use percentages for aircraft categories by time of day for arrivals and departures for each aircraft category are summarized in **Table H-5**.

TABLE H-5 RUNWAY USE BY AIRCRAFT CATEGORY

	DAY[1]			NIGHT[2]		
CATEGORY	RUNWAY 5	RUNWAY 23	TOTAL	RUNWAY 5	RUNWAY 23	TOTAL
Arrivals						
Jet	73.9%	26.1%	100.0%	71.1%	28.9%	100.0%
Turboprop	75.6%	24.4%	100.0%	79.5%	20.5%	100.0%
Prop	76.7%	23.3%	100.0%	75.3%	24.7%	100.0%
Arrivals Total	**75.2%**	**24.8%**	**100.0%**	**73.4%**	**26.6%**	**100.0%**
Departures						
Jet	74.1%	25.9%	100.0%	78.5%	21.5%	100.0%
Turboprop	72.5%	27.5%	100.0%	70.3%	29.7%	100.0%
Prop	77.7%	22.3%	100.0%	82.4%	17.6%	100.0%
Departures Total	**75.8%**	**24.2%**	**100.0%**	**80.0%**	**20.0%**	**100.0%**
Total	**75.5%**	**24.5%**	**100.0%**	**76.4%**	**23.6%**	**100.0%**
Local Operations						
Jet	53.4%	46.6%	100.0%	58.7%	41.3%	100.0%
Turboprop	53.4%	46.6%	100.0%	58.7%	41.3%	100.0%
Prop	53.4%	46.6%	100.0%	58.7%	41.3%	100.0%
Local Total	**53.4%**	**46.6%**	**100.0%**	**58.7%**	**41.3%**	**100.0%**
Grand Total	**68.1%**	**31.9%**	**100.0%**	**70.4%**	**29.6%**	**100.0%**

NOTES:
Columns and rows may not add to totals due to rounding.
1 DAY = 7:00 A.M. TO 10:00 P.M.
2 NIGHT = 10:00 P.M. TO 7:00 A.M.
SOURCE: Ricondo & Associates, Inc, December 2022; Boca Raton Airport Authority, Aircraft Noise Monitoring System, Aircraft Radar and Flight Header Data from January to December 2021).
PREPARED BY: Ricondo & Associates, Inc., December 2022.

H.1.11 AIRCRAFT FLIGHT TRACKS

Flight track information is one of the key elements of AEDT input data. Flight tracks to and from an airport are generally a function of the geometry of the runways, FAA standard flight procedures, FAA air traffic control procedures and the surrounding airspace requirements. In AEDT, generalized noise model flight tracks define two-dimensional lateral pathways representing the typical trajectory and dispersion characteristics of actual aircraft flights throughout the period of interest. ANOMS radar flight track data were analyzed to develop the AEDT noise model flight tracks. To model existing conditions, the following dates in 2021 were selected as representative of annual flight route characteristics, including considerations such as seasonal variation: January 1-7, March 18, April 1-7, April 17, July 1-7, October 1-7, and November 17. The radar data were parsed into groups by operation type

(arrival or departure) and by runway. The noise model fight tracks developed for the Aircraft Noise Exposure Contours at BCT in 2017 were compared with the sample radar data from 2021 and adjusted where necessary to reflect 2021 flight track patterns. The FAA's software tool Terminal Area Route Generation, Evaluation, and Traffic Simulation (TARGETS) was used to develop and adjust the flight tracks. **Exhibits H-1** and **H-2** depict AEDT noise model flight tracks representative of 2021 arrival and departure operations for each runway, and the modeled helicopter flight tracks are also depicted in Exhibit H-2. The modeled noise model flight tracks are depicted over the actual sample radar data to indicate that the noise model tracks represent 2021 conditions.

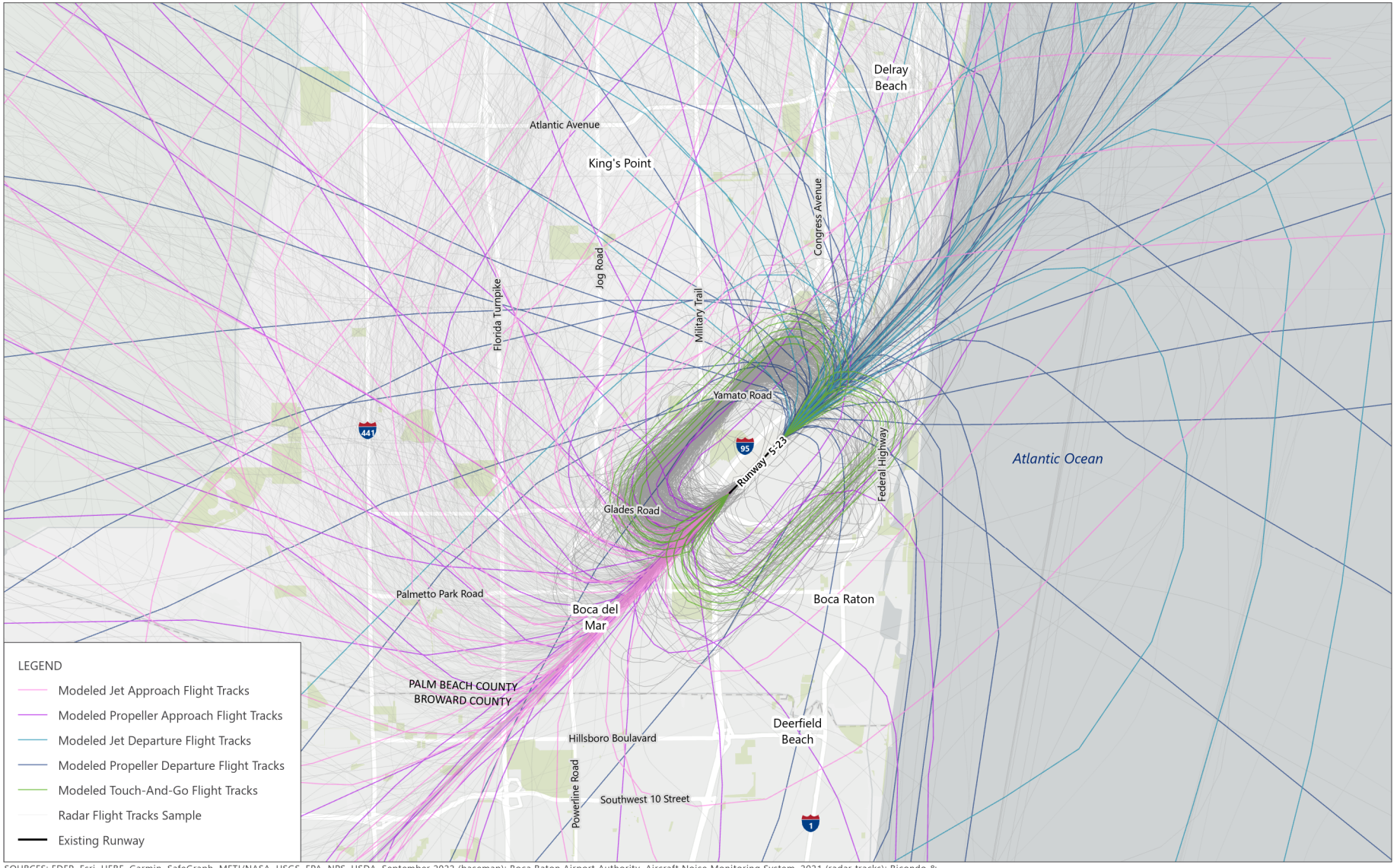
H.1.12 AIRCRAFT WEIGHT AND DEPARTURE TRIP LENGTH

Aircraft departure weight is a factor in calculating aircraft noise because it affects the rate at which an aircraft can climb. The heavier the aircraft, the slower the climb rate, and the higher the noise level on the ground due to the lower distance in the air for the noise to attenuate. Because actual aircraft weights for each operation vary substantially, the AEDT uses the distance flown to the first stop as a surrogate for aircraft weight. This assumes the weight has a direct relationship to the fuel load necessary to reach the first destination. The AEDT groups trip lengths into several stage length categories based on aircraft weights and departure profiles for each aircraft type. All the aircraft operating at BCT are comprised of small corporate and general aviation jets which have only one stage length departure profile in the AEDT. All departing aircraft were modeled using the standard Stage Length 1 departure profile (a departure distance of up to 500 nautical miles). All helicopters were modeled using the single standard departure profile for each type of helicopter.

H.1.13 NOISE ANALYSIS RESULTS AND NOISE EXPOSURE PATTERNS

The existing noise exposure modeled in this analysis represents noise generated by Airport-related aircraft arrival and departure operations. The 2021 existing conditions noise exposure contours for DNL 60, 65, 70, and 75 dBA are depicted on **Exhibit H-3**. The noise exposure contours do not represent the noise levels present on any specific day, but, rather, represent the AAD energy-average of all 365 days of operation in 2021. The DNL noise exposure extends from each runway end at BCT, reflecting the aircraft flight tracks. The relative distance of the contours from the Airport along each route is a function of the frequency of the use of each runway for arrivals and departures, as well as the runway use at night, and the type of aircraft assigned to the route. The shape of the noise contours is primarily a function of the combination of flight tracks, types of aircraft, time of operations, and runway use at BCT. The noise contours northeast and southwest of the Airport reflect the predominant east flow runway operating configuration and use of Runway 5 for the majority of departures and arrivals.

The DNL 65 dBA contour, which represents FAA's threshold for compatibility, is primarily confined to Airport property with approximately 31 percent of the contour area extending off-Airport. The DNL 65 dBA contour extends approximately 680 feet beyond the Airport property line to the northeast and approximately 350 feet beyond the Airport property line to the southwest. The DNL 60 dBA contour is for informational purposes only and according to FAA Land Use Compatibility Guidelines in 14 CFR Part 150, all noise-sensitive uses like residential are compatible. **Table H-6** depicts the contour area exposed to aircraft noise above DNL 60 dBA, in DNL 5 dBA band increments, respectively. Population and dwelling unit associated with 2020 US Decennial Census block centroids that fall within each noise DNL 5 dBA band were also analyzed to determine the total population exposed to each noise contour range. Under existing conditions, no residents or dwelling units are located within the DNL 60 dBA and higher noise exposure contour.



SOURCES: FDEP, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, September 2022 (basemap); Boca Raton Airport Authority, Aircraft Noise Monitoring System, 2021 (radar tracks); Ricondo & Associates, Inc., Aviation Environmental Design Tool, April 2023 (modeled tracks); US Census Bureau, 2021 (roads, parks).

NORTH 0 3 mi

EXHIBIT H-1

RUNWAY 5
ARRIVAL, DEPARTURE, AND TOUCH-AND-GO FLIGHT TRACKS

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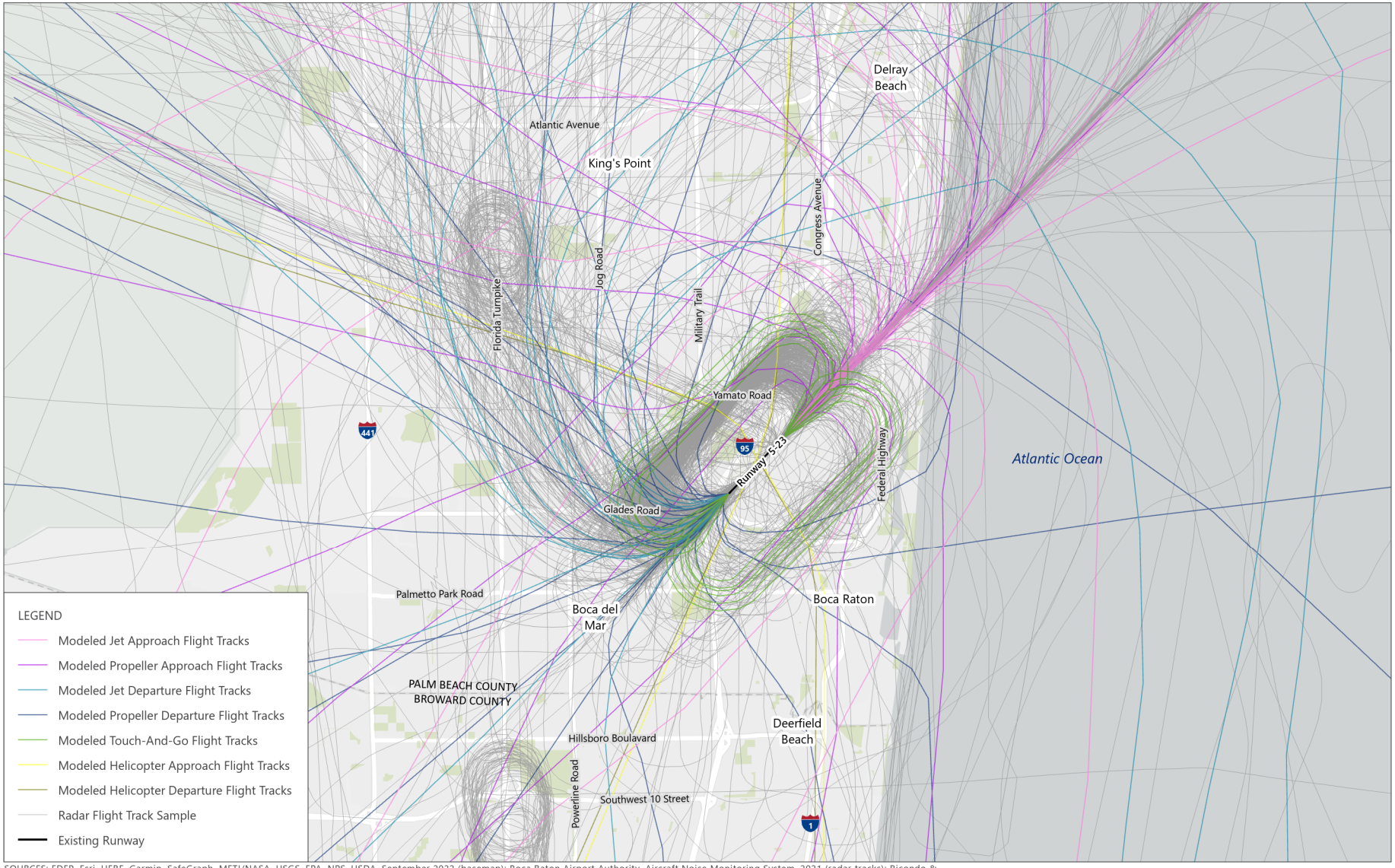

SOURCES: FDEP, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, September 2022 (basemap); Boca Raton Airport Authority, Aircraft Noise Monitoring System, 2021 (radar tracks); Ricondo & Associates, Inc., Aviation Environmental Design Tool, April 2023 (modeled tracks); US Census Bureau, 2021 (roads, parks).

NORTH 0 3 mi

EXHIBIT H-2

RUNWAY 23
ARRIVAL, DEPARTURE, HELICOPTER, AND TOUCH-AND-GO FLIGHT TRACKS

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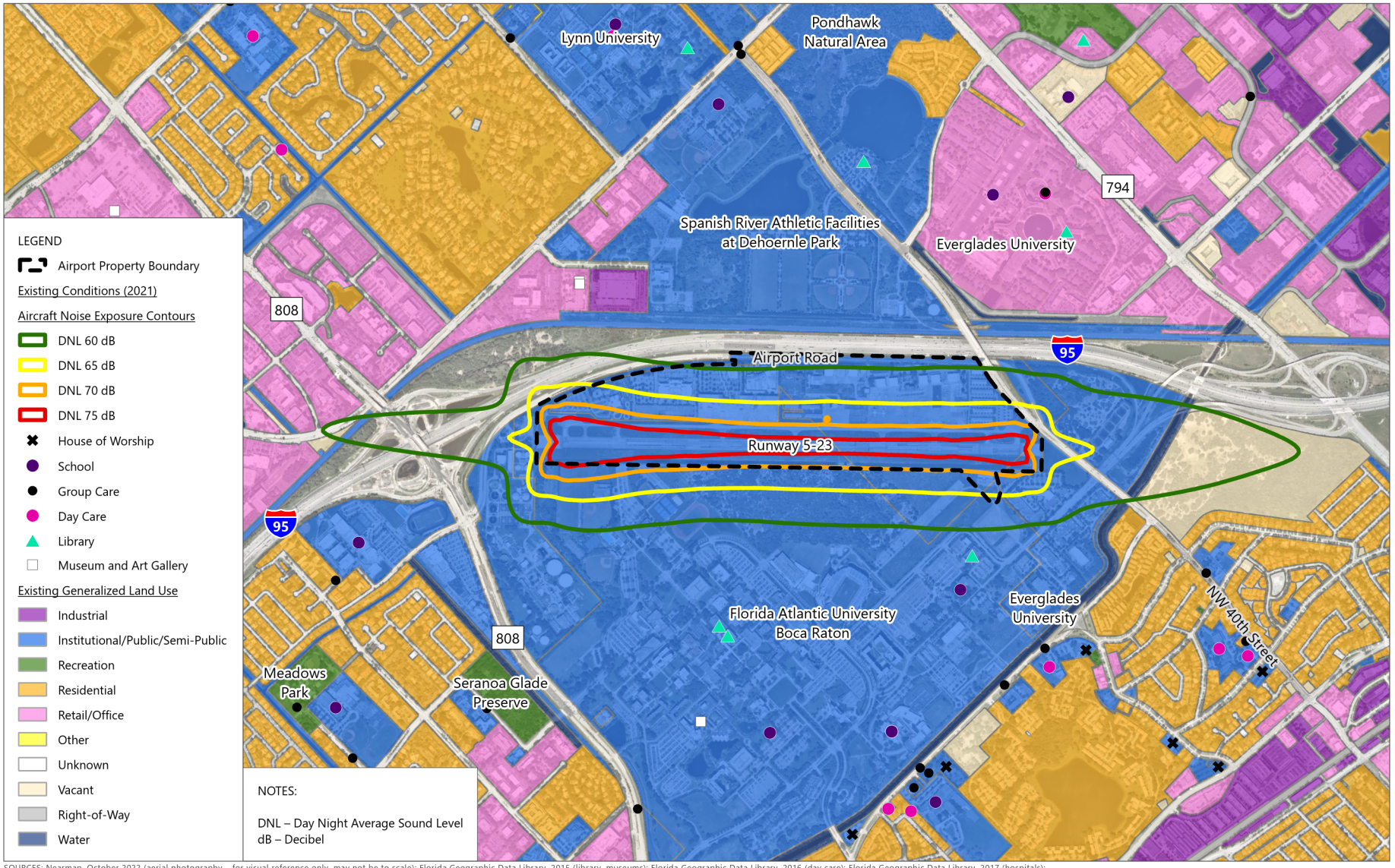

SOURCES: Nearmap, October 2022 (aerial photography – for visual reference only, may not be to scale); Florida Geographic Data Library, 2015 (library, museums); Florida Geographic Data Library, 2016 (day care); Florida Geographic Data Library, 2017 (hospitals); Florida Geographic Data Library, 2018 (group care); Florida Geographic Data Library, 2021 (schools, existing land use); Florida Geographic Data Library, 2022 (house of worship); Ricondo & Associates, Inc., January 2023 (noise exposure contours).

NORTH 0 2,000 ft

EXHIBIT H-3

EXISTING CONDITIONS (2021)
AIRCRAFT NOISE EXPOSURE CONTOURS

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TABLE H-6 AREA WITHIN AIRCRAFT DNL EXPOSURE AREAS – 2021

NOISE EXPOSURE RANGE	AREA WITHIN AIRPORT PROPERTY (SQUARE MILES)	AREA OUTSIDE AIRPORT PROPERTY (SQUARE MILES)	TOTAL AREA (SQUARE MILES)
DNL 60 - 65	0.084	0.354	0.438
DNL 65 - 70	0.076	0.093	0.170
DNL 70 - 75	0.081	0.011	0.092
DNL 75+	0.074	0.000	0.074
Total DNL 60+	**0.314**	**0.459**	**0.774**

SOURCE: Ricondo & Associates, Inc. January 2023. Calculated using the Aviation Environmental Design Tool (AEDT) using the assumptions described herein.
PREPARED BY: Ricondo & Associates, Inc., January 2023.

H.2 FUTURE CONDITIONS NOISE ANALYSIS – NEAR-TERM (2026)

The data required to develop future noise conditions associated with operation of the Airport's increase in demand for the near-term in 2026 are the same as that required to develop the 2021 noise exposure. The input data for the 2026 aircraft noise analysis are described in this section along with the analysis results.

H.2.1 MODEL INPUT DATA

Model input data for future years are derived from the input data used for the existing conditions analysis. See Section F.1.4 for more details on model input data. The operation levels are based on the FAA-approved forecast for the MPU. Refer to Section 5.1 of the MPU for more details on the Recommended Airport Improvement Plan. Runway configuration, aircraft operations, fleet mix and runway use specific to the 2026 analysis are provided in the following sections.

H.2.2 RUNWAY CONFIGURATION

The runway configuration modeled for 2026 conditions includes Runway 5 – 23 - 6,276 feet in length and 150 feet in width, oriented northeast-southwest, with a displaced threshold of 696 feet at Runway 05 end and 378 feet at Runway 23 end.

H.2.3 ANNUAL AND AVERAGE ANNUAL DAY OPERATIONS

The future 2026 operations and fleet mix used in the noise analysis were developed based on the Aviation Activity Forecast, which was approved by the FAA in May 2021 (see Section 3). As part of the Aviation Activity Forecast, fleet mix data were also created which include aircraft fleet mix by engine category. **Table H-7** summarizes the annual counts by aircraft category for 2026.

H.2.4 FLEET MIX

Detailed flight operations by engine category created as part of the Aviation Activity Forecast were the basis for the 2026 aircraft fleet mix used in the noise analysis.

H.2.5 AVERAGE ANNUAL DAY OPERATIONS BY AIRCRAFT CATEGORY

The existing operational scenario time of day distribution was held constant for 2026 operation level. **Table H-8** presents the time-of-day allocation (i.e., the percentage split between daytime and nighttime) of itinerant and local operations by operation type. **Table H-9** presents the AAD arrival and departure operations for AEDT aircraft types by time of day for itinerant and local operations, respectively.

TABLE H-7 2026 ANNUAL ARRIVALS AND DEPARTURES BY AIRCRAFT CATEGORY

ITINERANT OPERATIONS	ARRIVALS			DEPARTURES			ANNUAL
AIRCRAFT CATEGORY	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL	TOTAL
Jet	12,517.1	591.9	13,109.0	12,575.4	533.6	13,109.0	26,218.0
Turboprop	806.5	38.4	844.8	810.7	34.1	844.8	1,689.6
Prop	11,485.6	591.2	12,076.8	11,641.7	435.1	12,076.8	24,153.6
Helicopter	18.9	1.0	19.9	19.2	0.7	19.9	39.8
Itinerant Total	**24,828.1**	**1,222.4**	**26,050.5**	**25,046.9**	**1,003.6**	**26,050.5**	**52,101.0**
LOCAL OPERATIONS	ARRIVALS			DEPARTURES			ANNUAL
AIRCRAFT CATEGORY	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL	TOTAL
Jet	757.4	33.6	791.0	757.4	33.6	791.0	1,582.0
Turboprop	362.1	16.1	378.1	362.1	16.1	378.1	756.2
Prop	13,515.6	599.3	14,114.9	13,515.6	599.3	14,114.9	28,229.7
Helicopter	14.8	0.7	15.5	14.8	0.7	15.5	31.0
Local Total	**14,649.9**	**649.6**	**15,299.5**	**14,649.9**	**649.6**	**15,299.5**	**30,599.0**
Grand Total	**39,478.0**	**1,872.0**	**41,350.0**	**39,696.8**	**1,653.2**	**41,350.0**	**82,700.0**

NOTES:
Columns and rows may not add to totals due to rounding.
1 DAY = 7:00 A.M. TO 10:00 P.M.
2 NIGHT = 10:00 P.M. TO 7:00 A.M.
SOURCE: Ricondo & Associates, Inc., December 2022.
PREPARED BY: Ricondo & Associates, Inc., December 2022.

TABLE H-8 OPERATIONS BY DAYTIME AND NIGHTTIME – PERCENTAGE

ITINERANT OPERATIONS	ARRIVALS			DEPARTURES		
AIRCRAFT CATEGORY	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL
Jet	95.5%	4.5%	100.0%	95.9%	4.1%	100%
Turboprop	95.5%	4.5%	100.0%	96.0%	4.0%	100%
Prop	95.1%	4.9%	100.0%	96.4%	3.6%	100%
Helicopter	95.1%	4.9%	100.0%	96.4%	3.6%	100%
Itinerant Total	**95.3%**	**4.7%**	**100.0%**	**96.1%**	**3.9%**	**100%**
LOCAL OPERATIONS	ARRIVALS			DEPARTURES		
AIRCRAFT CATEGORY	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL
Jet	95.8%	4.2%	100.0%	95.8%	4.2%	100%
Turboprop	95.8%	4.2%	100.0%	95.8%	4.2%	100%
Prop	95.8%	4.2%	100.0%	95.8%	4.2%	100%
Helicopter	95.8%	4.2%	100.0%	95.8%	4.2%	100%
Local Total	**95.8%**	**4.2%**	**100.0%**	**95.8%**	**4.2%**	**100%**
Grand Total	**95.5%**	**4.5%**	**100.0%**	**96.0%**	**4.0%**	**100.0%**

NOTES:
Columns and rows may not add to totals due to rounding.
1 DAY = 7:00 A.M. TO 10:00 P.M.
2 NIGHT = 10:00 P.M. TO 7:00 A.M.
SOURCE: Ricondo & Associates, Inc., December 2022
PREPARED BY: Ricondo & Associates, Inc., December 2022.

TABLE H-9 (1 OF 2) AVERAGE ANNUAL DAILY AIRCRAFT OPERATIONS (2026)

ITINERANT OPERATIONS		ARRIVALS			DEPARTURES			
AIRCRAFT CATEGORY	AEDT TYPE	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL	TOTAL
Jets	BD-700-1A10	0.914	0.042	0.956	0.916	0.041	0.956	1.912
	CIT3	0.225	0.012	0.237	0.229	0.009	0.237	0.474
	CL600	5.092	0.238	5.330	5.110	0.220	5.330	10.660
	CL601	0.340	0.017	0.356	0.343	0.014	0.356	0.713
	CNA500	0.059	0.003	0.062	0.060	0.002	0.062	0.124
	CNA510	0.566	0.025	0.591	0.565	0.026	0.591	1.182
	CNA525C	1.775	0.087	1.861	1.789	0.073	1.861	3.723
	CNA55B	3.001	0.142	3.143	3.016	0.127	3.143	6.287
	CNA560U	0.876	0.041	0.917	0.879	0.038	0.917	1.834
	CNA560XL	2.188	0.102	2.290	2.195	0.095	2.290	4.579
	CNA680	2.638	0.116	2.754	2.632	0.122	2.754	5.508
	CNA750	5.730	0.273	6.003	5.761	0.242	6.003	12.006
	ECLIPSE500	0.756	0.039	0.795	0.766	0.029	0.795	1.590
	EMB145	0.059	0.003	0.061	0.059	0.003	0.061	0.123
	FAL900EX	1.122	0.055	1.178	1.133	0.045	1.178	2.356
	G650ER	0.112	0.005	0.117	0.113	0.005	0.117	0.235
	GIV	2.315	0.108	2.423	2.323	0.100	2.423	4.846
	GV	0.771	0.037	0.808	0.776	0.032	0.808	1.616
	IA1125	0.140	0.007	0.147	0.141	0.006	0.147	0.294
	LEAR35	4.070	0.196	4.266	4.097	0.169	4.266	8.532
	MU3001	1.544	0.073	1.618	1.552	0.065	1.618	3.235
Props/Turboprops	BEC58P	6.063	0.312	6.375	6.145	0.230	6.375	12.750
	CNA172	3.175	0.164	3.339	3.219	0.120	3.339	6.678
	CNA182	1.131	0.058	1.189	1.146	0.043	1.189	2.378
	CNA20T	0.253	0.012	0.265	0.254	0.011	0.265	0.530
	GASEPF	0.746	0.038	0.784	0.756	0.028	0.784	1.568
	GASEPV	20.099	1.035	21.135	20.374	0.760	21.135	42.270
	CNA208	1.069	0.049	1.118	1.071	0.047	1.118	2.237
	CNA441	0.147	0.007	0.154	0.149	0.006	0.154	0.309
	DHC6	0.993	0.048	1.042	1.001	0.041	1.042	2.084
Helicopter	HELO	0.052	0.003	0.055	0.053	0.002	0.055	0.109
	Itinerant Total	**68.022**	**3.349**	**71.371**	**68.622**	**2.750**	**71.371**	**142.742**

TABLE H-9 (2 OF 2) AVERAGE ANNUAL DAILY AIRCRAFT FLEET MIX

LOCAL OPERATIONS		ARRIVALS			DEPARTURES			
AIRCRAFT CATEGORY	AEDT TYPE	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL	TOTAL
Jets	CL600	0.005	0.000	0.005	0.005	0.000	0.005	0.010
	CL601	1.085	0.048	1.133	1.085	0.048	1.133	2.265
	CNA525C	0.011	0.000	0.011	0.011	0.000	0.011	0.022
	CNA55B	0.337	0.015	0.352	0.337	0.015	0.352	0.704
	CNA560XL	0.002	0.000	0.002	0.002	0.000	0.002	0.005
	CNA680	0.014	0.001	0.014	0.014	0.001	0.014	0.029
	CNA750	0.275	0.012	0.288	0.275	0.012	0.288	0.575
	GIV	0.254	0.011	0.266	0.254	0.011	0.266	0.532
	GV	0.083	0.004	0.087	0.083	0.004	0.087	0.174
	LEAR35	0.008	0.000	0.009	0.008	0.000	0.009	0.017
	BEC58P	1.934	0.086	2.020	1.934	0.086	2.020	4.040
	CNA172	20.401	0.905	21.306	20.401	0.905	21.306	42.612
	GASEPF	1.343	0.060	1.403	1.343	0.060	1.403	2.806
	GASEPV	13.350	0.592	13.942	13.350	0.592	13.942	27.884
	CNA441	0.981	0.043	1.024	0.981	0.043	1.024	2.049
	DHC6	0.011	0.000	0.011	0.011	0.000	0.011	0.023
Helicopters		0.041	0.002	0.042	0.041	0.002	0.042	0.085
	Local Total	**40.137**	**1.780**	**41.916**	**40.137**	**1.780**	**41.916**	**83.833**
	Total AAD	**108.159**	**5.129**	**113.288**	**108.758**	**4.529**	**113.288**	**226.575**

NOTES:
1 DAY = 7:00 A.M. TO 10:00 P.M.
2 NIGHT = 10:00 P.M. TO 7:00 A.M.
SOURCE: Ricondo & Associates, Inc., December 2022.
PREPARED BY: Ricondo & Associates, Inc., December 2022.

H.2.6 RUNWAY USE

It is assumed that in the future years the runways will continue to be used in the same way as they are used today, thus the 2026 runway use percentages by aircraft category and time of day for the preferred alternative will be the same as the existing scenario.

H.2.7 AIRCRAFT FLIGHT TRACKS

It is assumed that in the flight tracks for 2026 under the preferred alternative condition will continue to be the same as they are in the existing conditions scenario, thus the noise model track locations and use from the existing conditions scenario are used in the AEDT model for the 2026 scenario.

H.2.8 AIRCRAFT WEIGHT AND DEPARTURE TRIP LENGTH

All the aircraft forecast to operate at BCT are comprised of small corporate and general aviation jets which have only one stage length departure profile in the AEDT. All departing aircraft were modeled using the standard Stage

Length 1 departure profile (a departure distance of up to 500 nautical miles). All helicopters were modeled using the single standard departure profile for each type of helicopter.

H.2.9 NOISE ANALYSIS RESULTS AND NOISE EXPOSURE PATTERNS

Exhibit H-4 depicts the AAD DNL noise exposure patterns in the Airport environs for the preferred alternative operating conditions with 2026 forecast demand level. The noise contours extend northeast and southwest of the Airport reflect the predominant east flow runway operating configuration and use of Runway 5 for the majority of departures and arrivals. The DNL 65 dBA contour, which represents FAA's threshold for compatibility, is primarily confined to Airport property with approximately 31 percent of the contour area extending off-Airport. The DNL 65 dBA contour extends approximately 650 feet beyond the Airport property line to the northeast and approximately 340 feet beyond the Airport property line to the southwest.

Table H-10 depicts the contour area of the aircraft noise above DNL 60 dB, in DNL 5 dB band increments. Population and dwelling unit associated with 2020 US Decennial Census block centroids that fall within each noise DNL 5 dB band were also analyzed to determine the total population exposed to each noise contour range with the 2026 conditions. However, no residents or dwelling units are located within the DNL 60 dB and greater noise exposure contour.

TABLE H-10 AREA WITHIN AIRCRAFT DNL EXPOSURE AREAS – NEAR TERM (2026)

NOISE EXPOSURE RANGE	AREA WITHIN AIRPORT PROPERTY (SQUARE MILES)	AREA OUTSIDE AIRPORT PROPERTY (SQUARE MILES)	TOTAL AREA (SQUARE MILES)
DNL 60 - 65	0.086	0.347	0.433
DNL 65 - 70	0.078	0.092	0.170
DNL 70 - 75	0.081	0.011	0.092
DNL 75+	0.072	0.000	0.073
Total DNL 60+	**0.318**	**0.450**	**0.768**

SOURCE: Ricondo & Associates, Inc. January 2023. Calculated using the Aviation Environmental Design Tool (AEDT) using the assumptions described herein.
PREPARED BY: Ricondo & Associates, Inc., January 2023.

H.3 FUTURE CONDITIONS NOISE ANALYSIS – INTERMEDIATE-TERM (2030)

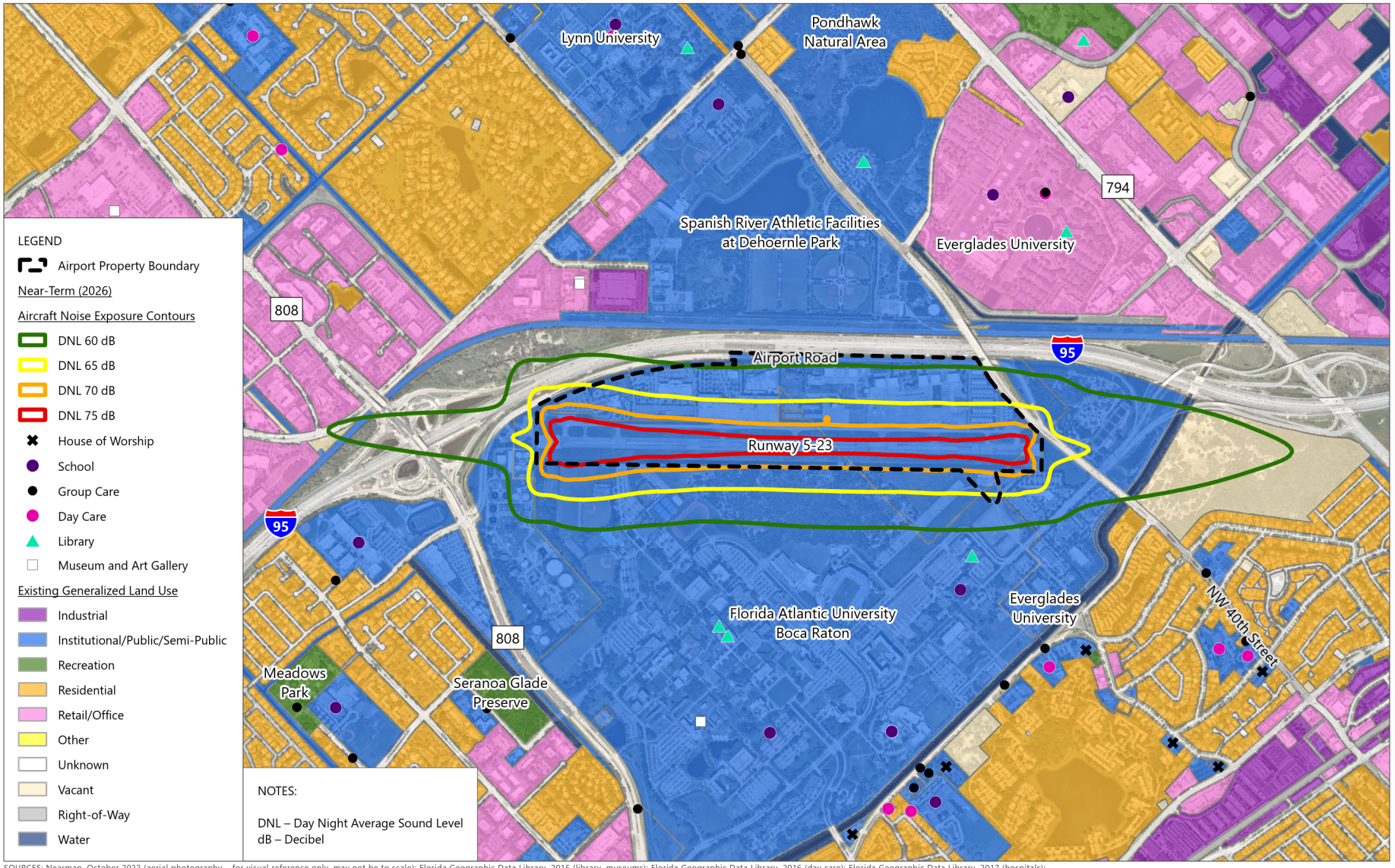
The data required to develop future noise contours of the preferred alternatives for 2030 are the same as that required to develop the 2021 noise exposure. The input data for the 2030 aircraft noise analysis are described in this section along with the analysis results.

H.3.1 MODEL INPUT DATA

Model input data for future years are derived from the input data used for the existing conditions analysis. See Section F.1.4 for more details on model input data. Runway configuration, aircraft operations, fleet mix and runway use specific to the 2030 analysis are provided below.

H.3.2 RUNWAY CONFIGURATION

The runway configuration modeled for existing conditions includes Runway 5 – 23 - 6,276 feet in length and 150 feet in width, oriented northeast-southwest, with arrival displaced threshold of 696 feet at Runway 05 end and 378 feet at Runway 23 end.



SOURCES: Nearmap, October 2022 (aerial photography – for visual reference only, may not be to scale); Florida Geographic Data Library, 2015 (library, museums); Florida Geographic Data Library, 2016 (day care); Florida Geographic Data Library, 2017 (hospitals); Florida Geographic Data Library, 2018 (group care); Florida Geographic Data Library, 2021 (schools, existing land use); Florida Geographic Data Library, 2022 (house of worship); Ricondo & Associates, Inc., January 2023 (noise exposure contours).

NORTH 0 2,000 ft

EXHIBIT H-4

NEAR-TERM (2026)
AIRCRAFT NOISE EXPOSURE CONTOURS

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H.3.3 ANNUAL AND AVERAGE ANNUAL DAY AIRCRAFT OPERATIONS

The future 2030 operations and fleet mix used in the noise analysis were developed based on the Aviation Activity Forecast, which was approved by the FAA in May 2021 (see Section 3). As part of the Aviation Activity Forecast, fleet mix data were also created which include aircraft fleet mix by engine category.

H.3.4 FLEET MIX

Detailed flight operations by engine category created as part of the Aviation Activity Forecast were the basis for the 2030 aircraft fleet mix used in the noise analysis.

H.3.5 AVERAGE ANNUAL DAY OPERATIONS BY AIRCRAFT CATEGORY

The Aviation Activity Forecast for 2030 and the and the existing operational scenario were the basis for the average annual day operations by time of day for operations. The following tables summarize the operations data:

Table H-11 summarizes annual itinerant and local operations by time of day for each aircraft category for 2030.

Table H-12 presents the time-of-day allocation (i.e., the percentage split between daytime and nighttime) of itinerant and local operations by operation type.

Table H-13 presents the AAD arrival and departure operations for AEDT aircraft types by time of day for itinerant and local operations.

H.3.6 RUNWAY USE

It is assumed that in future years the runways will continue to be used in the same way as they are used today, thus the runway use percentages from the existing scenario are used in the analysis of the future preferred alternative.

H.3.7 AIRCRAFT FLIGHT TRACKS

It is assumed that in future years the flight tracks will continue to be used in the same way as they are used today, thus the runway use percentages from the existing scenario are used in the analysis of the future preferred alternative.

H.3.8 AIRCRAFT WEIGHT AND DEPARTURE TRIP LENGTH

All the aircraft operating at BCT are comprised of small corporate and general aviation jets which have only one stage length departure profile in the AEDT. All departing aircraft were modeled using the standard Stage Length 1 departure profile (a departure distance of up to 500 nautical miles). All helicopters were modeled using the single standard departure profile for each type of helicopter.

H.3.9 NOISE ANALYSIS RESULTS AND NOISE EXPOSURE PATTERNS

Exhibit H-5 depicts the AAD DNL noise exposure patterns in the Airport environs for the preferred alternative operating conditions with 2030 forecast demand level. The noise contours extend northeast and southwest of the Airport reflecting the predominant east flow runway operating configuration and use of Runway 5 for the majority of departures and arrivals. The DNL 65 dBA contour, which represents FAA's threshold for compatibility, is primarily confined to Airport property with approximately 34 percent of the contour area extending off-Airport. The DNL 65 dBA contour extends approximately 840 feet beyond the Airport property line to the northeast and approximately 450 feet beyond the Airport property line to the southwest.

TABLE H-11 2030 ANNUAL ARRIVALS AND DEPARTURES BY AIRCRAFT CATEGORY

ITINERANT OPERATIONS	ARRIVALS			DEPARTURES			ANNUAL
AIRCRAFT CATEGORY	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL	TOTAL
Jet	14,243.7	674.0	14,917.7	14,311.0	606.7	14,917.7	29,835.4
Turboprop	818.3	38.9	857.2	822.5	34.7	857.2	1,714.4
Prop	11,510.6	592.4	12,103.1	11,667.0	436.1	12,103.1	24,206.2
Helicopter	20.9	1.1	22.0	21.2	0.8	22.0	44.0
Itinerant Total	**26,593.6**	**1,306.4**	**27,900.0**	**26,821.7**	**1,078.2**	**27,900.0**	**55,800.0**
LOCAL OPERATIONS	ARRIVALS			DEPARTURES			ANNUAL
AIRCRAFT CATEGORY	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL	TOTAL
Jet	844.8	37.5	882.3	844.8	37.5	882.3	1,764.6
Turboprop	386.4	17.1	403.5	386.4	17.1	403.5	807.0
Prop	15,125.4	670.7	15,796.1	15,125.4	670.7	15,796.1	31,592.1
Helicopter	17.4	0.8	18.2	17.4	0.8	18.2	36.3
Local Total	**16,374.0**	**726.0**	**17,100.0**	**16,374.0**	**726.0**	**17,100.0**	**34,200.0**
Grand Total	**42,967.5**	**2,032.5**	**45,000.0**	**43,195.7**	**1,804.3**	**45,000.0**	**90,000.0**

NOTES:
Columns and rows may not add to totals due to rounding.
1 DAY = 7:00 A.M. TO 10:00 P.M.
2 NIGHT = 10:00 P.M. TO 7:00 A.M.
SOURCE: Ricondo & Associates, Inc., December 2022.
PREPARED BY: Ricondo & Associates, Inc., December 2022.

TABLE H-12 OPERATIONS BY DAYTIME AND NIGHTTIME – PERCENTAGE

ITINERANT OPERATIONS	ARRIVALS			DEPARTURES		
AIRCRAFT CATEGORY	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL
Jet	95.5%	4.5%	100.0%	95.9%	4.1%	100%
Turboprop	95.5%	4.5%	100.0%	96.0%	4.0%	100%
Prop	95.1%	4.9%	100.0%	96.4%	3.6%	100%
Helicopter	95.1%	4.9%	100.0%	96.4%	3.6%	100%
Itinerant Total	**95.3%**	**4.7%**	**100.0%**	**96.1%**	**3.9%**	**100%**
LOCAL OPERATIONS	ARRIVALS			DEPARTURES		
AIRCRAFT CATEGORY	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL
Jet	95.8%	4.2%	100.0%	95.8%	4.2%	100%
Turboprop	95.8%	4.2%	100.0%	95.8%	4.2%	100%
Prop	95.8%	4.2%	100.0%	95.8%	4.2%	100%
Helicopter	95.8%	4.2%	100.0%	95.8%	4.2%	100%
Local Total	**95.8%**	**4.2%**	**100.0%**	**95.8%**	**4.2%**	**100%**
Grand Total	**95.5%**	**4.5%**	**100.0%**	**96.0%**	**4.0%**	**100.0%**

NOTES: Columns and rows may not add to totals due to rounding.
1 DAY = 7:00 A.M. TO 10:00 P.M.
2 NIGHT = 10:00 P.M. TO 7:00 A.M.
SOURCE: Ricondo & Associates, Inc., December 2022.
PREPARED BY: Ricondo & Associates, Inc., December 2022.

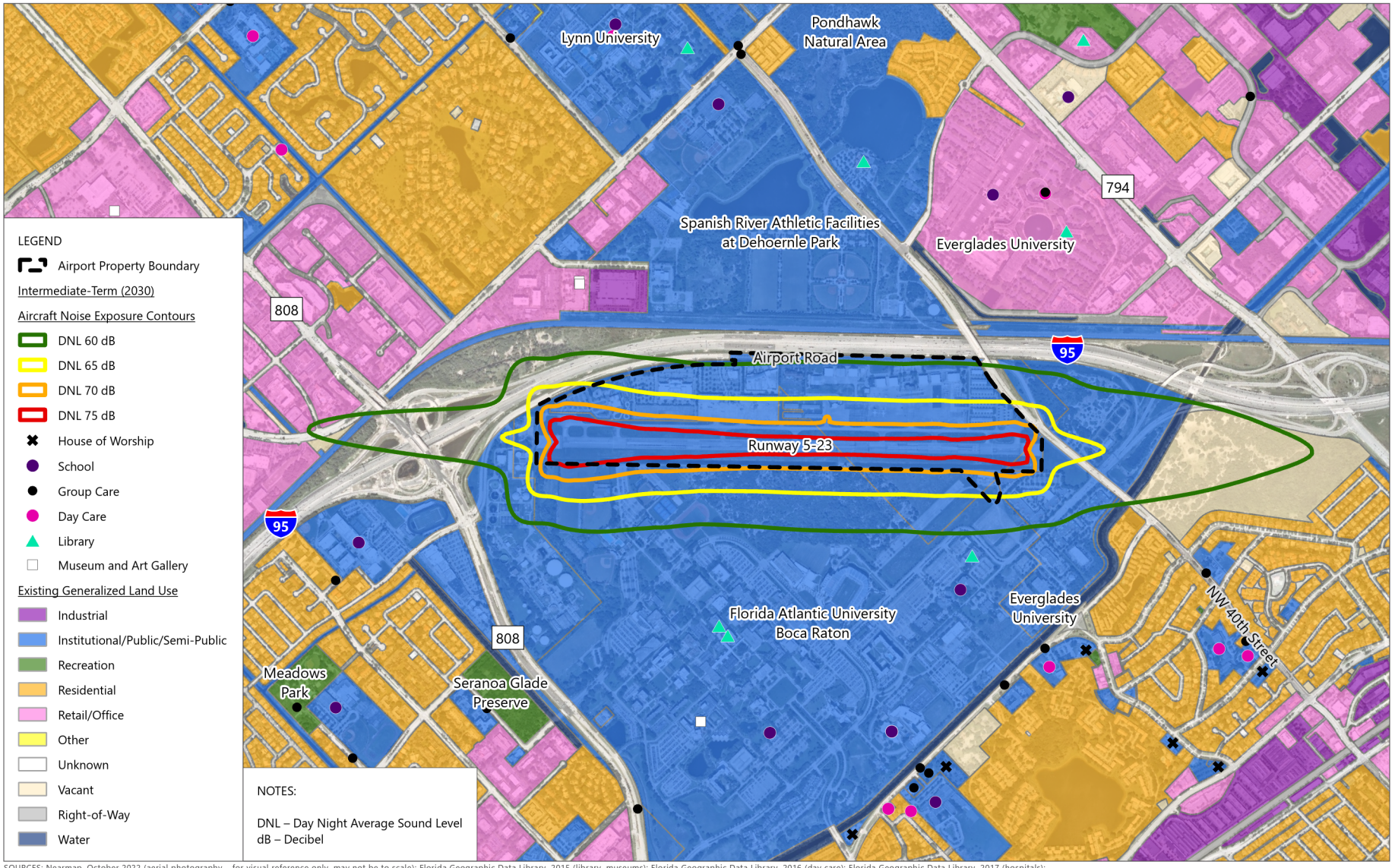
TABLE H-13 (1 OF 2) AVERAGE ANNUAL DAILY AIRCRAFT OPERATIONS (2030)

ITINERANT OPERATIONS		ARRIVALS			DEPARTURES			
AIRCRAFT CATEGORY	AEDT TYPE	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL	TOTAL
Jets	BD-700-1A10	1.038	0.048	1.086	1.040	0.046	1.086	2.172
	CIT3	0.258	0.013	0.272	0.262	0.010	0.272	0.544
	CL600	5.791	0.271	6.062	5.811	0.250	6.062	12.123
	CL601	0.388	0.019	0.407	0.392	0.016	0.407	0.815
	CNA500	0.068	0.003	0.071	0.069	0.003	0.071	0.142
	CNA510	0.641	0.029	0.670	0.640	0.029	0.670	1.339
	CNA525C	2.023	0.099	2.122	2.039	0.083	2.122	4.244
	CNA55B	3.416	0.162	3.579	3.434	0.145	3.579	7.157
	CNA560U	0.996	0.047	1.043	1.000	0.043	1.043	2.086
	CNA560XL	2.487	0.116	2.603	2.495	0.108	2.603	5.205
	CNA680	2.984	0.132	3.116	2.978	0.138	3.116	6.231
	CNA750	6.522	0.311	6.833	6.558	0.275	6.833	13.666
	ECLIPSE500	0.866	0.044	0.911	0.878	0.033	0.911	1.821
	EMB145	0.066	0.003	0.069	0.066	0.003	0.069	0.139
	FAL900EX	1.282	0.063	1.346	1.294	0.052	1.346	2.692
	G650ER	0.128	0.006	0.134	0.128	0.005	0.134	0.267
	GIV	2.632	0.123	2.755	2.641	0.114	2.755	5.510
	GV	0.879	0.043	0.922	0.886	0.036	0.922	1.844
	IA1125	0.160	0.008	0.168	0.161	0.007	0.168	0.336
	LEAR35	4.639	0.224	4.863	4.670	0.193	4.863	9.725
	MU3001	1.759	0.084	1.842	1.768	0.074	1.842	3.684
Props/Turboprops	BEC58P	6.075	0.313	6.388	6.158	0.230	6.388	12.776
	CNA172	3.181	0.164	3.345	3.225	0.120	3.345	6.690
	CNA182	1.133	0.058	1.191	1.148	0.043	1.191	2.383
	CNA20T	0.262	0.012	0.274	0.262	0.012	0.274	0.548
	GASEPF	0.747	0.039	0.786	0.757	0.028	0.786	1.571
	GASEPV	20.138	1.037	21.175	20.413	0.762	21.175	42.350
	CNA208	1.089	0.050	1.139	1.091	0.048	1.139	2.278
	CNA441	0.148	0.007	0.156	0.150	0.006	0.156	0.312
	DHC6	1.005	0.049	1.054	1.013	0.041	1.054	2.108
Helicopter	HELO	0.057	0.003	0.060	0.058	0.002	0.060	0.121
	Itinerant Total	**72.859**	**3.579**	**76.438**	**73.484**	**2.954**	**76.438**	**152.877**

TABLE H-13 (2 OF 2) AVERAGE ANNUAL DAILY AIRCRAFT FLEET MIX

LOCAL OPERATIONS		ARRIVALS			DEPARTURES			
AIRCRAFT CATEGORY	AEDT TYPE	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL	TOTAL
Jets	CL600	0.005	0.000	0.005	0.005	0.000	0.005	0.010
	CL601	1.212	0.054	1.266	1.212	0.054	1.266	2.532
	CNA525C	0.011	0.001	0.012	0.011	0.001	0.012	0.024
	CNA55B	0.377	0.017	0.394	0.377	0.017	0.394	0.787
	CNA560XL	0.003	0.000	0.003	0.003	0.000	0.003	0.005
	CNA680	0.014	0.001	0.015	0.014	0.001	0.015	0.030
	CNA750	0.306	0.014	0.320	0.306	0.014	0.320	0.639
	GIV	0.284	0.013	0.297	0.284	0.013	0.297	0.594
	GV	0.093	0.004	0.097	0.093	0.004	0.097	0.195
	LEAR35	0.009	0.000	0.009	0.009	0.000	0.009	0.018
Props/Turboprops	BEC58P	2.164	0.096	2.260	2.164	0.096	2.260	4.521
	CNA172	22.832	1.012	23.844	22.832	1.012	23.844	47.688
	GASEPF	1.503	0.067	1.570	1.503	0.067	1.570	3.140
	GASEPV	14.940	0.662	15.603	14.940	0.662	15.603	31.205
	CNA441	1.048	0.046	1.095	1.048	0.046	1.095	2.189
	DHC6	0.010	0.000	0.011	0.010	0.000	0.011	0.022
Helicopters		0.048	0.002	0.050	0.048	0.002	0.050	0.099
	Local Total	**44.860**	**1.989**	**46.849**	**44.860**	**1.989**	**46.849**	**93.699**
	Total AAD	**117.719**	**5.568**	**123.288**	**118.344**	**4.943**	**123.288**	**246.575**

NOTES:
1 DAY = 7:00 A.M. TO 10:00 P.M.
2 NIGHT = 10:00 P.M. TO 7:00 A.M.
SOURCE: Ricondo & Associates, Inc., December 2022.
PREPARED BY: Ricondo & Associates, Inc., December 2022.



SOURCES: Nearmap, October 2022 (aerial photography – for visual reference only, may not be to scale); Florida Geographic Data Library, 2015 (library, museums); Florida Geographic Data Library, 2016 (day care); Florida Geographic Data Library, 2017 (hospitals); Florida Geographic Data Library, 2018 (group care); Florida Geographic Data Library, 2021 (schools, existing land use); Florida Geographic Data Library, 2022 (house of worship); Ricondo & Associates, Inc., January 2023 (noise exposure contours).

NORTH 0 2,000 ft

EXHIBIT H-5

INTERMEDIATE-TERM (2030)
AIRCRAFT NOISE EXPOSURE CONTOURS

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Table H-14 depicts the contour area of the aircraft noise above DNL 60 dB, in DNL 5 dB band increments. Population and dwelling unit associated with 2020 US Decennial Census block centroids that fall within each noise DNL 5 dB band were also analyzed to determine the total population exposed to each noise contour range with the 2030 conditions. However, no residents or dwelling units are located within the DNL 60 dB and greater noise exposure contour.

TABLE H-14 AREA WITHIN AIRCRAFT DNL EXPOSURE AREAS – INTERMEDIATE-TERM (2030)

NOISE EXPOSURE RANGE	AREA WITHIN AIRPORT PROPERTY (SQUARE MILES)	AREA OUTSIDE AIRPORT PROPERTY (SQUARE MILES)	TOTAL AREA (SQUARE MILES)
DNL 60 - 65	0.086	0.381	0.467
DNL 65 - 70	0.078	0.101	0.180
DNL 70 - 75	0.071	0.014	0.086
DNL 75+	0.078	0.000	0.078
Total DNL 60+	**0.314**	**0.497**	**0.811**

SOURCE: Ricondo & Associates, Inc. January 2023. Calculated using the Aviation Environmental Design Tool (AEDT) using the assumptions described herein.
PREPARED BY: Ricondo & Associates, Inc., January 2023.

H.4 FUTURE CONDITIONS NOISE ANALYSIS - LONG-TERM (2040)

The data required to develop future noise contours of the preferred alternatives for 2040 are the same as that required to develop the 2030 noise exposure. The input data for the 2040 aircraft noise analysis are described in this section along with the analysis results.

H.4.1 MODEL INPUT DATA

Model input data for future years are derived from the input data used for the existing conditions analysis. See Section F.1.4 for more details on model input data. Runway configuration, aircraft operations, fleet mix and runway use specific to the 2040 analysis are provided below.

H.4.2 RUNWAY CONFIGURATION

The runway configuration modeled for existing conditions includes Runway 5 – 23 - 6,276 feet in length and 150 feet in width, oriented northeast-southwest, with arrival displaced threshold of 696 feet at Runway 05 end and 378 feet at Runway 23 end.

H.4.3 ANNUAL AND AVERAGE ANNUAL DAY AIRCRAFT OPERATIONS

The future 2040 operations and fleet mix used in the noise analysis were developed based on the Aviation Activity Forecast, which was approved by the FAA in May 2021 (see Section 3). As part of the Aviation Activity Forecast, fleet mix data were also created which include aircraft fleet mix by engine category.

H.4.4 FLEET MIX

Detailed flight operations by engine category created as part of the Aviation Activity Forecast were the basis for the 2040 aircraft fleet mix used in the noise analysis.

H.4.5 AVERAGE ANNUAL DAY OPERATIONS BY AIRCRAFT CATEGORY

The Aviation Activity Forecast for 2040 and the and the existing operational scenario were the basis for the average annual day operations by time of day for operations. The calculation of DNL includes a 10-decibel weighting for nighttime operations.

Table H-15 summarizes annual itinerant and local operations by time of day for each aircraft category for 2040.

Table H-16 presents the time-of-day allocation (i.e., the percentage split between daytime and nighttime) of itinerant and local operations by operation type.

Table H-17 presents the AAD arrival and departure operations for AEDT aircraft types by time of day for itinerant and local operations,

H.4.6 RUNWAY USE

It is assumed that in the future years the runways will continue to be used in the same way as they are used today, thus the runway use percentages from the existing scenario are used in the analysis of the future preferred alternative.

H.4.7 AIRCRAFT FLIGHT TRACKS

It is assumed that in the future years the flight tracks will continue to be used in the same way as they are used today, thus the runway use percentages from the existing scenario are used in the analysis of the future preferred alternative.

H.4.8 AIRCRAFT WEIGHT AND DEPARTURE TRIP LENGTH

All the aircraft operating at BCT are comprised of small corporate and general aviation jets which have only one stage length departure profile in the AEDT. All departing aircraft were modeled using the standard Stage Length 1 departure profile (a departure distance of up to 500 nautical miles). All helicopters were modeled using the single standard departure profile for each type of helicopter.

H.4.9 NOISE ANALYSIS RESULTS AND NOISE EXPOSURE PATTERNS

Exhibit H-6 depicts the AAD DNL noise exposure patterns in the Airport environs for the preferred alternative operating conditions with 2040 forecast demand level. The noise contours extend northeast and southwest of the Airport reflecting the predominant east flow runway operating configuration and use of Runway 5 for the majority of departures and arrivals. The DNL 65 dBA contour, which represents FAA's threshold for compatibility, is primarily confined to Airport property with approximately 39 percent of the contour area extending off-Airport. The DNL 65 dBA contour extends approximately 1450 feet beyond the Airport property line to the northeast and approximately 950 feet beyond the Airport property line to the southwest.

Table H-18 depicts the contour area of the aircraft noise above DNL 60 dB, in DNL 5 dB band increments. Population and dwelling unit associated with 2020 US Decennial Census block centroids that fall within each noise DNL 5 dB band were also analyzed to determine the total population exposed to each noise contour range with the 2040 conditions. However, no residents or dwelling units are located within the DNL 60 dB and greater noise exposure contour.

TABLE H-15 2040 ANNUAL ARRIVALS AND DEPARTURES BY AIRCRAFT CATEGORY

ITINERANT OPERATIONS	ARRIVALS			DEPARTURES			ANNUAL
AIRCRAFT CATEGORY	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL	TOTAL
Jet	19,674.6	933.0	20,607.6	19,771.9	835.7	20,607.6	41,215.2
Turboprop	848.3	40.2	888.5	852.5	36.0	888.5	1,777.1
Prop	11,261.3	579.5	11,840.8	11,414.0	426.8	11,840.8	23,681.6
Helicopter	21.9	1.1	23.0	22.2	0.8	23.0	46.0
Itinerant Total	**31,806.1**	**1,553.9**	**33,360.0**	**32,060.6**	**1,299.4**	**33,360.0**	**66,720.0**
LOCAL OPERATIONS	ARRIVALS			DEPARTURES			ANNUAL
AIRCRAFT CATEGORY	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL	TOTAL
Jet	1,093.9	48.5	1,142.4	1,093.9	48.5	1,142.4	2,284.8
Turboprop	446.7	19.8	466.5	446.7	19.8	466.5	933.0
Prop	19,734.6	875.1	20,609.6	19,734.6	875.1	20,609.6	41,219.2
Helicopter	20.6	0.9	21.5	20.6	0.9	21.5	43.0
Local Total	**21,295.7**	**944.3**	**22,240.0**	**21,295.7**	**944.3**	**22,240.0**	**44,480.0**
Grand Total	**53,101.8**	**2,498.2**	**55,600.0**	**53,356.4**	**2,243.7**	**55,600.0**	**111,200.0**

NOTES:
Columns and rows may not add to totals due to rounding.
1 DAY = 7:00 A.M. TO 10:00 P.M.
2 NIGHT = 10:00 P.M. TO 7:00 A.M.
SOURCE: Ricondo & Associates, Inc., December 2022
PREPARED BY: Ricondo & Associates, Inc., December 2022.

TABLE H-16 OPERATIONS BY DAYTIME AND NIGHTTIME – PERCENTAGE

ITINERANT OPERATIONS	ARRIVALS			DEPARTURES		
AIRCRAFT CATEGORY	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL
Jet	95.5%	4.5%	100.0%	95.9%	4.1%	100%
Turboprop	95.5%	4.5%	100.0%	95.9%	4.1%	100%
Prop	95.1%	4.9%	100.0%	96.4%	3.6%	100%
Helicopter	95.1%	4.9%	100.0%	96.4%	3.6%	100%
Itinerant Total	**95.3%**	**4.7%**	**100.0%**	**96.1%**	**3.9%**	**100%**
LOCAL OPERATIONS	ARRIVALS			DEPARTURES		
AIRCRAFT CATEGORY	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL
Jet	95.8%	4.2%	100.0%	95.8%	4.2%	100%
Turboprop	95.8%	4.2%	100.0%	95.8%	4.2%	100%
Prop	95.8%	4.2%	100.0%	95.8%	4.2%	100%
Helicopter	95.8%	4.2%	100.0%	95.8%	4.2%	100%
Local Total	**95.8%**	**4.2%**	**100.0%**	**95.8%**	**4.2%**	**100%**
Grand Total	**95.51%**	**4.49%**	**100.00%**	**95.96%**	**4.04%**	**100.00%**

NOTES:
Columns and rows may not add to totals due to rounding.
1 DAY = 7:00 A.M. TO 10:00 P.M.
2 NIGHT = 10:00 P.M. TO 7:00 A.M.
SOURCE: Ricondo & Associates, Inc., December 2022
PREPARED BY: Ricondo & Associates, Inc., December 2022.

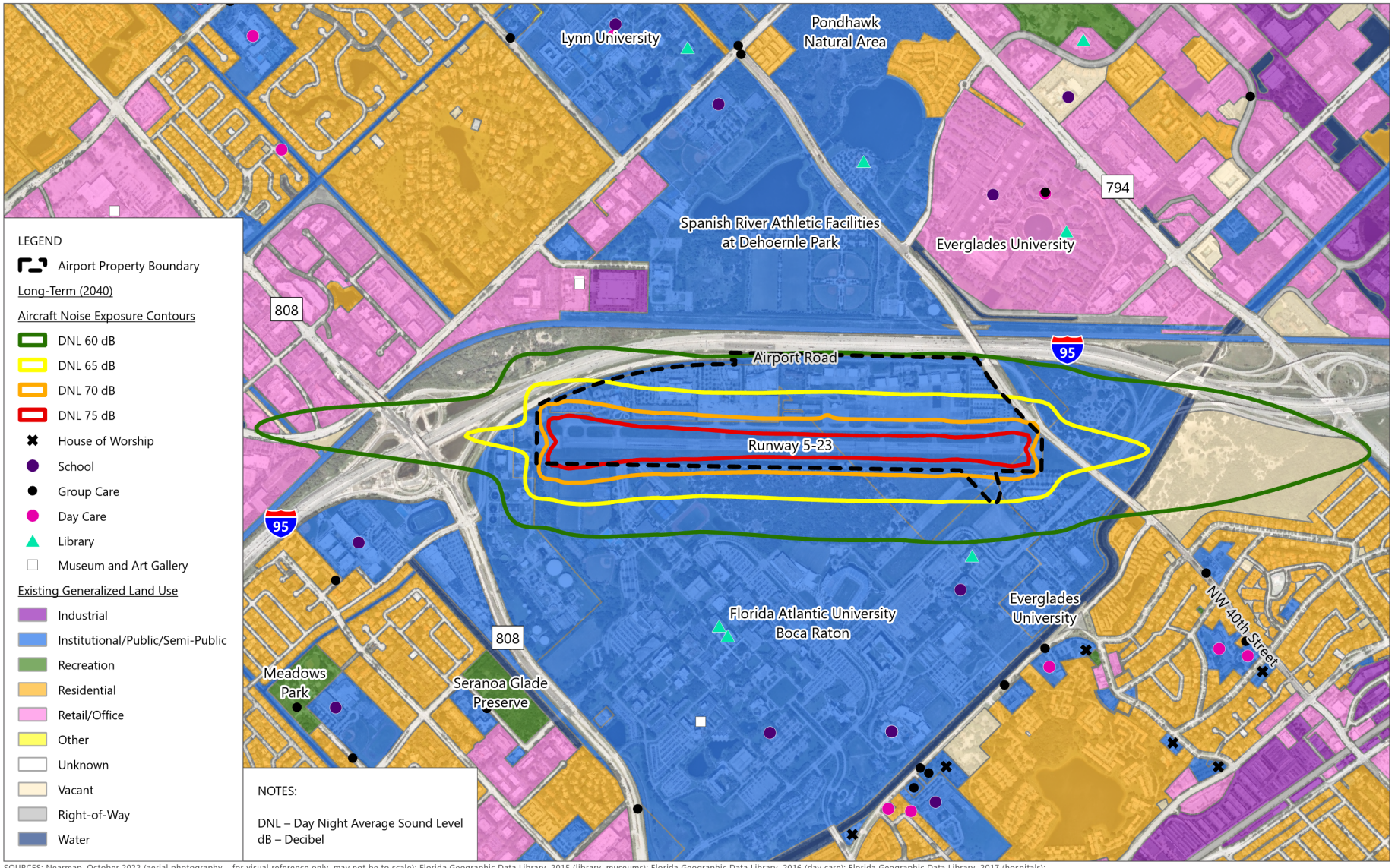
TABLE H-17 (1 OF 2) AVERAGE ANNUAL DAILY AIRCRAFT OPERATIONS (2040)

ITINERANT OPERATIONS		ARRIVALS			DEPARTURES			
AIRCRAFT CATEGORY	AEDT TYPE	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL	TOTAL
Jets	BD-700-1A10	1.425	0.065	1.490	1.427	0.063	1.490	2.980
	CIT3	0.365	0.019	0.383	0.370	0.014	0.383	0.767
	CL600	7.981	0.374	8.355	8.011	0.344	8.355	16.710
	CL601	0.542	0.027	0.569	0.548	0.022	0.569	1.139
	CNA500	0.095	0.005	0.100	0.097	0.004	0.100	0.201
	CNA510	0.875	0.039	0.914	0.874	0.040	0.914	1.827
	CNA525C	2.812	0.138	2.949	2.834	0.115	2.949	5.898
	CNA55B	4.724	0.225	4.949	4.749	0.200	4.949	9.898
	CNA560U	1.373	0.064	1.438	1.379	0.059	1.438	2.876
	CNA560XL	3.423	0.160	3.583	3.435	0.148	3.583	7.166
	CNA680	4.052	0.179	4.231	4.044	0.187	4.231	8.462
	CNA750	9.018	0.431	9.449	9.070	0.379	9.449	18.898
	ECLIPSE500	1.219	0.062	1.281	1.235	0.047	1.281	2.563
	EMB145	0.090	0.004	0.094	0.090	0.004	0.094	0.188
	FAL900EX	1.791	0.089	1.880	1.808	0.072	1.880	3.760
	G650ER	0.177	0.009	0.185	0.178	0.007	0.185	0.371
	GIV	3.625	0.170	3.794	3.638	0.157	3.794	7.588
	GV	1.223	0.059	1.282	1.232	0.050	1.282	2.564
	IA1125	0.223	0.011	0.234	0.225	0.009	0.234	0.468
	LEAR35	6.437	0.311	6.748	6.481	0.267	6.748	13.496
	MU3001	2.434	0.116	2.550	2.447	0.103	2.550	5.099
Props/turboprops	BEC58P	5.942	0.306	6.248	6.023	0.225	6.248	12.495
	CNA172	3.109	0.160	3.269	3.151	0.118	3.269	6.538
	CNA182	1.107	0.057	1.164	1.122	0.042	1.164	2.328
	CNA20T	0.280	0.013	0.293	0.281	0.012	0.293	0.587
	GASEPF	0.730	0.038	0.768	0.740	0.028	0.768	1.535
	GASEPV	19.685	1.014	20.699	19.954	0.745	20.699	41.398
	CNA208	1.136	0.052	1.188	1.138	0.050	1.188	2.376
	CNA441	0.152	0.008	0.160	0.154	0.006	0.160	0.320
	DHC6	1.036	0.050	1.086	1.044	0.043	1.086	2.172
Helicopter	HELO	0.060	0.003	0.063	0.061	0.002	0.063	0.126
	Itinerant Total	**87.140**	**4.257**	**91.397**	**87.837**	**3.560**	**91.397**	**182.795**

TABLE H-17 (2 OF 2) AVERAGE ANNUAL DAILY AIRCRAFT FLEET MIX

LOCAL OPERATIONS		ARRIVALS			DEPARTURES			
AIRCRAFT CATEGORY	AEDT TYPE	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL	TOTAL
Jets	CL600	0.006	0.000	0.006	0.006	0.000	0.006	0.012
	CL601	1.577	0.070	1.647	1.577	0.070	1.647	3.295
	CNA525C	0.013	0.001	0.013	0.013	0.001	0.013	0.026
	CNA55B	0.490	0.022	0.511	0.490	0.022	0.511	1.022
	CNA560XL	0.003	0.000	0.003	0.003	0.000	0.003	0.006
	CNA680	0.016	0.001	0.017	0.016	0.001	0.017	0.033
	CNA750	0.393	0.017	0.411	0.393	0.017	0.411	0.821
	GIV	0.369	0.016	0.385	0.369	0.016	0.385	0.770
	GV	0.121	0.005	0.127	0.121	0.005	0.127	0.253
	LEAR35	0.010	0.000	0.010	0.010	0.000	0.010	0.020
	BEC58P	2.823	0.125	2.948	2.823	0.125	2.948	5.896
	CNA172	29.790	1.321	31.111	29.790	1.321	31.111	62.222
	GASEPF	1.961	0.087	2.048	1.961	0.087	2.048	4.097
	GASEPV	19.493	0.864	20.357	19.493	0.864	20.357	40.715
	CNA441	1.215	0.054	1.269	1.215	0.054	1.269	2.537
	DHC6	0.009	0.000	0.009	0.009	0.000	0.009	0.019
Helicopters		0.056	0.003	0.059	0.056	0.003	0.059	0.118
	Local Total	**58.344**	**2.587**	**60.931**	**58.344**	**2.587**	**60.931**	**121.863**
	Total AAD	**145.484**	**6.844**	**152.329**	**146.182**	**6.147**	**152.329**	**304.658**

NOTES:
1 DAY = 7:00 A.M. TO 10:00 P.M.
2 NIGHT = 10:00 P.M. TO 7:00 A.M.
SOURCE: Ricondo & Associates, Inc., December 2022
PREPARED BY: Ricondo & Associates, Inc., December 2022.



SOURCES: Nearmap, October 2022 (aerial photography – for visual reference only, may not be to scale); Florida Geographic Data Library, 2015 (library, museums); Florida Geographic Data Library, 2016 (day care); Florida Geographic Data Library, 2017 (hospitals); Florida Geographic Data Library, 2018 (group care); Florida Geographic Data Library, 2021 (schools, existing land use); Florida Geographic Data Library, 2022 (house of worship); Ricondo & Associates, Inc., January 2023 (noise exposure contours).

NORTH 0 2,000 ft

EXHIBIT H-6

LONG-TERM (2040)
AIRCRAFT NOISE EXPOSURE CONTOURS

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TABLE H-18 AREA WITHIN AIRCRAFT DNL EXPOSURE AREAS – 2040

NOISE EXPOSURE RANGE	AREA WITHIN AIRPORT PROPERTY (SQUARE MILES)	AREA OUTSIDE AIRPORT PROPERTY (SQUARE MILES)	TOTAL AREA (SQUARE MILES)
DNL 60 - 65	0.082	0.483	0.565
DNL 65 - 70	0.081	0.133	0.214
DNL 70 - 75	0.080	0.025	0.105
DNL 75+	0.094	0.001	0.095
Total DNL 55+	**0.336**	**0.643**	**0.978**

SOURCE: Ricondo & Associates, Inc. January 2023. Calculated using the Aviation Environmental Design Tool (AEDT) using the assumptions described herein.
PREPARED BY: Ricondo & Associates, Inc., January 2023

APPENDIX I

Airport Layout Plan Review Checklist

APPENDIX A. ALP REVIEW CHECKLIST

The following checklist shall be used in lieu of FAA AC 150/5070-6B, Appendix F, Airport Layout Plan Drawing set. This checklist is intended for use when submitting a new or updated ALP to the FAA for review and approval. Consultants and/or sponsors should indicate "Yes," "No" or "N/A" (not applicable) for every item on the checklist. The same checklist shall be provided to FAA for review and verification. For all reviewers: It is important that each item listed be shown on the respective plan.

Airport Identification (to be completed by Sponsor or Consultant)			
Airport	Boca Raton Airport		
City and State	Boca Raton, Florida	Location Identifier	BCT
Airport Owner	Boca Raton Airport Authority		

ALP Submission Information (to be completed by Sponsor or Consultant)		
ALP Prepared by	Ricondo & Associates, Inc. Name of Consulting Firm	
	Amaury Blanco, Marc Garcia Name of Individual	07/14/2023 Date
	407-381-5730 Telephone	
	Ablanco@ricondo.com Email address	
Consulting QA/QC Review	Calvin Foo Pham, Managing Consultant Name and Title of Individual	07/14/2023 Date
Sponsor Review	 Name and Title of Individual	 Date

FAA Review (to be completed by FAA)	
Name and Title of Individual	Date

Critical Design Aircraft or Family of Aircraft:

	Make	Model	Annual Itinerant Operations
Existing	Gulfstream	G550	1,545 (C-III/D-III family)
Future	Gulfstream	G550	2,394 (C-III/D-III family)

Forecasted Year: 2040

Airport Reference Code (ARC): D-III

Runway Design Code (RDC) & Runway Reference (RRC):

Runway	RDC	RRC
5	D-III-4000	D-III
23	D-III-4000	D-III

Approach Minimums:

Rwy End	Minimum	Rwy End	Minimum
5	7/8 mile		
23	7/8 mile		

Runways (Existing and Future):

Runway	Existing		Future		Departure Surface (Y or N/A)
	Length (ft)	Width (ft)	Length (ft)	Width (ft)	
5	6,276	150	6,276	150	Y
23	6,276	150	6,276	150	Y

For the balance of the checklist, enter a mark (✔ or X) to confirm inclusion.

A.1. Narrative Report

Narrative Report					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
A. Executive Summary – A concise summary of the findings/ recommendations of the master planning effort or changes to the ALP. This should include a description of planned projects, an implementation plan/timeline, and identification of benchmarks or actions that will be conducted to either verify the original planning assumptions or proceed with project implementation.	From AC 150/5070-6, Section 202: An accompanying ALP Narrative Report should explain and document those changes and contain at least the following elements: – Basic aeronautical forecasts. – Basis for the proposed items of development. – Rationale for unusual design features and/or modifications to FAA Airport Design Standards. – Summary of the various stages of airport development and layout sketches of the major items of development in each stage. – An environmental overview to document environmental conditions that should be considered in the identification and analysis of airport development alternatives and proposed projects.				
1. Identify Projects along with description				×	
2. Create a Timeline for each Project				×	
3. Identify and List:				×	
a. Proposed Projects (e.g., Hangar development)				×	
b. Milestones/ Triggering Events (e.g., 1. All hangars are full, 2. There is a waiting list long enough to fill a new development, 3. Hangars have reached their useful life, etc.)				×	
c. Action items/Next Steps (e.g., 1. Maintain log and gather data, 2. Discuss plan with ADO, 3. Coordinate with ADO regarding potential for inclusion in FAA ACIP (Airports Capital Improvement Program), 4. Identify funding sources.)				×	
d. Funding Plan	Capital Improvement Plan for the forecast horizons. See AC 150/5070-6, Chapter 11. Only a rough, order-of-magnitude report is needed in the executive summary.			×	

Narrative Report					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
B. Basic aeronautical forecasts (0-5, 6-10, 11-20 years): Basic aeronautical forecasts (0-5, 6-10, 11-20 years):	Forecasts of future levels of aviation activity as approved by the FAA. These projections are used to determine the need for new or expanded facilities. See AC 150/5070-6, Chapter 7.			×	
1. Total annual operations	Total local and itinerant aircraft operations at the airport.			×	
2. Annual itinerant operations by all aircraft	Itinerant operations by aircraft that leaves the local airspace, generally 25 miles or more from the airport. See AC 150/5070-6, Chapter 7, Section 702.a. and Figure 7-2.			×	
3. Annual itinerant operations by current critical aircraft				×	
4. Annual itinerant operations by future critical aircraft				×	
5. Number of based aircraft	Aircraft that use the subject airport as a home base, i.e., have hangar or tie-down space agreements. See AC 150/5070-6, Chapter 7, Section 702.a. and Figure 7-2.			×	
6. Annual instrument approaches	Number of instrument approaches expected to be executed during a 12-month period. See AC 150/5070-6, Chapter 7, Section 702.a. and Figure 7-2.			×	
7. Number of enplanements	See AC 150/5070-6, Chapter 7, Section 702.a. and Figure 7-2.			×	

Narrative Report					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
8. Critical Aircraft (also referred as “design aircraft” or “critical design aircraft)	The critical aircraft is the most demanding aircraft identified in the forecast that will use the airport. Federally funded projects require that the critical aircraft will make substantial use of the airport in the planning period. Substantial use means either 500 or more annual itinerant operations or scheduled service. The critical aircraft may be a single aircraft or a composite of the most demanding characteristics of several aircraft. Provide the aircraft, AAC, and ADG. (e.g. Boeing 737-400, C-III) See AC 150/5300-13A, Paragraph 105(b) and FAA Order 5090.3C, 3-4.			×	
9. Runway Design Code (RDC)	Describe the RDC for each runway. For the purpose of airport geometric design, each runway will contain a RDC which signifies the design standards to which the runway is to be built. The RDC consists of three parameters: Aircraft Approach Category (AAC), Airplane Design Group (ADG) and the approach visibility minimums. These parameters represent the aircraft that are intended to be accommodated by the airport, regardless of substantial use. See AC 150/5300-13A, Paragraph 105(c).			×	
10. Runway Reference Code (RRC)	Describe the RRC for each runway. The RRC describes the current operational capabilities of a runway where no special operating procedures are necessary. The RRC consists of the same three components as the RDC, but is based on planned development and has no operational application. See AC 150/5300-13A, Paragraph 318.			×	
C. Alternatives/Proposed Development				×	

Narrative Report					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
11. Explanation of proposed development items	Specific projects can be described as project listings on a master table, on individual project data sheets, or in projects booklets.			×	
12. Discuss near-term and future Approach Procedure Requirements or effects (e.g., LPV, Circling, etc.)	Based on existing or forecast usage. See FAA Order 7400.2, Figures 6-6-3 and 6-3-9.			×	
13. Navigational Aids or Other Equipment Needs (e.g., Approach Lights, Wind Cones, AWOS, etc.)	The need for new or additional navigational aids is a function of the fleet mix, the percentage of time that poor weather conditions are present, and the cost to the users of not being able to use the airport while it is not accessible.			×	
14. Wind coverage. Is it adequate for existing and future runway layouts? Has wind data been updated?	This analysis determines if additional runways are needed to provide the necessary wind coverage. Reference AC 150/5300-13A, Appendix 2 for guidance on wind coverage analysis techniques.			×	
D. Modification to Standards.	Any approved nonconformance to FAA standards, other than dimensional standards for RSAs and OFZs, require FAA approval. A description of all approved modification to standards shall be provided. See AC 150/5300-13A, Paragraph 106(b) and FAA Order 5300.1.			×	
E. Obstruction Surfaces (14 CFR Part 77 and Threshold Siting Surface)	Reference 14 CFR Part 77 and AC 150/5300-13A, Paragraph 303.			×	
F. Runway Protection Zone	A description of any incompatible land uses inside the RPZ shall be provided. Prior to including new or modified land use in the RPZ, the Regional and ADO staff must consult with the National Airport Planning and Environmental Division, APP-400. This policy is exempt from existing land uses in the RPZ. See AC 150/5300-13A, Paragraph 310 and FAA memorandum dated September 27, 2012.			×	

Narrative Report					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
G. Development summary (including sketches, schedules, and cost estimates) for stages of construction for: Development summary (including sketches, schedules, and cost estimates) for stages of construction for:	Documentation provided should include any electronic spreadsheets and files to facilitate in modifying the financial plan on an as-needed basis.			×	
15. Development Projects Completed Since Last ALP				×	
16. 0-5 years				×	
17. 6-10 years				×	
18. 11-20 years				×	
H. Shadow or line-of-sight study for towered airports (negative or positive statements are required).	Reference FAA Order 6480.4. This can be from the Airway Facilities Tower Integration Laboratory (AFTIL) or simpler GIS-generated studies.			×	
I. Letters of coordination with all levels of government, as needed.	Affected private and/or governmental groups, agencies, commissions, etc., that may have input on the plans. See AC 150/5070-6, Chapter 3.			×	
J. Wildlife Hazard Management Issues Review (in narrative).	Reference AC 150/5200-33.			×	
K. Preliminary Identification of Environmental Features	Potential or known features only. Further environmental analysis will be necessary. Reference FAA Order 5050.4B. Begin framework for NEPA analysis.			×	
19. Major airport drainage ditches				×	
20. Wetlands				×	
21. Flood Zones				×	
22. Historic or Cultural features				×	
23. Section 4(f) features				×	
24. Flora/Fauna				×	

Narrative Report					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
25. Natural Resources				×	
26. Etc. (other features identified in Order 5050.4B)				×	
L. Note Action Items from Runway Safety Program Office	List and note status of items from Runway Safety Program Office or Runway Safety Action Plan.			×	
M. Declared Distance (DD)	The narrative on declared distances is used to aid in understanding the maximum distances available and suitable for meeting takeoff, rejected takeoff, and landing distances performance requirements for turbine powered aircraft. The narrative shall also provide clarification on why declared distances have been implemented. Declared distances data must be listed for all runway ends. The TORA, TODA, ASDA, and LDA will be equal to the runway length in cases where a runway does not have displaced thresholds, stopways, or clearway, and have standard RSAs, ROFAs, RPZs, and TSS. Reference AC 150/5300-13A, Paragraph 323.			×	
Remarks					
The master plan report replaces the Airport Layout Plan Narrative Report.					

A.2. Title Sheet

- The scale of the Title Sheet should be developed to include the items listed below.
- The minimum size for the final drawing set is 22" X 34" (ANSI D) and 24" X 36" (ARCH D). Coordinate use of 34" x 44" (ANSI E) and 26" X 48" (ARCH E) with FAA. Color drawings may be acceptable if they are still usable if reproduced in grey scale.

Title Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
A. Title and revision blocks	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.	×			
B. Airport sponsor approval block	Provide an approval block for the sponsoring authority's representative to sign. Include space for name, title, and date.	×			
C. Date of ALP (date the airport sponsor signs the ALP)	The month and year of signature prominently shown near the title.	×			
D. Index of sheets (including revision date column)	Airport Layout Drawing, Airport Airspace Drawing, Inner Portion of the Approach Surface Drawing, Terminal Area Drawing, Land Use Drawing, Airport Property Map, Airport Departure Surface, etc.	×			
E. State Aeronautics Agency Approval Block (as needed)	Provide an approval block for the sponsoring authority's representative to sign. Include space for name, title, and date.	×			
F. State outline with county boundaries. County in which airport is located should be highlighted.	Provide as needed.	×			
G. Location map (general area)		×			
H. Vicinity map (specific airport area)		×			
Remarks					

A.3. Airport Data Sheet

- For smaller airports, some of the ALP sheets may be combined if practical and approved FAA.

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
A. Title and Revision Blocks	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.	×			
B. Wind Rose (all weather and IFR) with appropriate airport reference code and runway orientation depicted, crosswind coverage, and combined coverage, source of wind information and time period covered (for IFR runways applicable minimums should be included):	Assembly and analysis of wind data to determine ultimate runway orientation and also provides the operational impact of winds on existing runways. If instrument procedures are present or will be requested then both all-weather and instrument meteorological condition wind roses are required. See AC 150/5300-13A, Appendix 2.	×			
1. 10.5, 13, 16, 20 knots wind rose (based on appropriate airport reference code)	When a runway orientation provides less than 95 percent wind coverage for any aircraft forecasted to use the airport on a regular basis, a crosswind runway is recommended. The 95 percent wind coverage is computed on the basis of the crosswind not exceeding 10.5 knots for Airport Reference Codes A-I and B-I, 13 knots for Airport Reference Codes A-II and B-II, 16 knots for Airport Reference Codes A-III, B-III, and C-I through D-III, and 20 knots for Airport Reference Codes A-IV through D-VI. See also AC 150/5300-13A, Paragraph 302(c)(3) and AC 150/5300-13A, Appendix 2.	×			
2. Percentage of wind coverage/crosswind		×			
3. Source of data	Wind data may be obtained from NOAA at http://www.ncdc.noaa.gov/ Reference AC 150/5300-13A, Appendix 2, Paragraph A2-5 and A2-6.		×		

Airport Data Sheet					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
4. Age of data (last 10 consecutive years of data with most current data no older than 10 years)	Data must be from the latest 10-year period from the reporting station closest to the airport. Reference AC 150/5300-13A, Appendix 2, Paragraph A2-5.	×			
C. Airport Data Table		×			
1. ARC for Airport	List the Airport Reference Code (ARC) for airport. 5300-13AARC is an airport designation that signifies the airport's highest Runway Design Code (RDC), minus the third (visibility) component of the RDC. Reference AC 150/5300-13A.	×			
2. Mean maximum temperature of hottest month	List the mean maximum temperature and the hottest month for the airport location as listed in "Monthly Station Normals of Temperature, Precipitation, and Heating and Cooling Degree-Days" (Climatography of the United States No. 81). See AC 150/5325-4, 506.b.	×			
3. Airport elevation (highest point of the landing areas, nearest 0.1 foot) – using North American Vertical Datum of 1988 (NAVD88)	List the Airport Elevation, the highest point on an airport's usable runway expressed in feet above mean sea level (MSL). Use NAVD88. Reference AC 150/5300-13A, Paragraph 102(g) All elevations shall be in NAVD88. A note shall be put on the Airport Layout Drawing that denotes that the NAVD88 vertical control datum was used.	×			
4. Airport Navigational Aids, including ownership (NDB, TVOR, ASR, Beacon, etc.)	List the electronic aids available at the airport.	×			

Airport Data Sheet					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
5. Airport reference point coordinates, nearest second (existing, future if appropriate, and ultimate) - NAD83	List the Airport Reference Point, the latitude and longitude of the approximate center of the airport. Use the North American Datum of 1983 (NAD83) coordinate system. See AC 150/5300-13A, Paragraph 207. All latitude/longitude coordinates shall be in NAD83. A note shall be put on the Airport Layout Drawing that denotes that the NAD83 coordinate system was used.	×			
6. Miscellaneous facilities (taxiway lighting, lighted wind cone(s), AWOS, etc.) [Including type/model and any facility critical areas]	List any other facilities available at the airport.	×			
7. Airport Reference Code and Critical Aircraft (existing & future)	List the existing and ultimate Airport Reference Code and Critical Aircraft, the most demanding aircraft identified in the forecast that will use the airport. Federally funded projects require that critical design airplanes have at least 500 or more annual itinerant operations at the airport (landings and takeoffs are considered as separate operations) for an individual airplane or a family grouping of airplanes. See AC 150/5325-4, 102.a.(8) and AC 150/5070-6, 702.a. Indicated dimensions for wingspan and undercarriage, along with approach speed.	×			
8. Airport magnetic variation, date and source	Magnetic declination may be calculated at http://www.ngdc.noaa.gov/geomag-web/#declination. This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, "Flight Procedures and Airspace." Chapter 2, Section 5, for further information.	×			
9. NPIAS service level (GA, RL, P, CS, etc.)	See FAA Order 5090.3C.	×			

Airport Data Sheet					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
10. State equivalent service role	As applicable pursuant to State Aviation Department System Plan.	✕			
D. Runway Data Table	The Runway Data Table should show information for both existing and ultimate runways.	✕			
1. Runway identification (Include identifying runways that are “utility”)	A column for each runway end should be present. List the runway end number and if pavement strength is less than 12,500 pounds (single-wheel), then note as utility.	✕			
2. Runway Design Code (RDC)	5300-13AThe first component, depicted by a letter, is the AAC and relates to aircraft approach speed (operational characteristics). The second component, depicted by a Roman numeral, is the ADG and relates to either the aircraft wingspan or tail height (physical characteristics); whichever is more restrictive. The third component relates to the visibility minimums expressed by RVR values in feet of 1200, 1600, 2400, and 4000. List the RDC for each runway. See AC 150/5300-13A, Paragraph 105(c).	✕			
3. Runway Reference Code (RRC)	The RRC describes the current operational capabilities of a runway where no special operating procedures are necessary. Like the RDC, it is composed of three components: AAC, ADG, and visibility minimums. List the RRC for each Runway. See AC 150/5300-13A, Paragraph 318.			✕	
4. Pavement Strength & Material Type	Indicate the runway surface material type, e.g., turf, asphalt, concrete, water, etc.	✕			
a. Strength by wheel loading	List the existing and ultimate design strength of the landing surface. See AC 150/5320-6, Chapter 3.	✕			
b. Strength by PCN	See AC 150/5335-5.	✕			

Airport Data Sheet					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
c. Surface treatment	Note any surface treatment: grooved, PFC, etc.	×			
5. Effective Runway Gradient (%) Author to note maximum grade within runway length. Note to included statement that the runway meets line of sight requirements	List the maximum longitudinal grade of each runway centerline. See AC 150/5300-13A, Paragraph 313.	×			
6. Percent (%) Wind Coverage (each runway)	List the percent wind coverage for each runway for each Aircraft Approach Category. See AC 150/5300-13A, Appendix 2.	×			
7. Runway dimensions (length and width)	Dimensions determined for the Critical Design Aircraft by using graphical information in AC 150/5325-4.	×			
8. Displaced Threshold	Provide the pavement elevation of the runway pavement at any displaced threshold. See AC 150/5300-13A, Paragraph 303(2).	×			
9. Runway safety area dimensions (actual existing and design standard)	List the existing and ultimate dimensions of the Runway Safety Area (RSA). See AC 150/5300-13A, Paragraph 307.	×			
10. Runway end coordinates (NAD83) (include displaced threshold coordinates, if applicable) to the nearest 0.01 second and 0.1 foot of elevation.	Show the latitude and longitude of the threshold center and end of pavement (if different) to the nearest .01 of a second and 0.1 foot of elevation.	×			
11. Runway lighting type (LIRL, MIRL, HIRL)	List the existing and ultimate type of runway lighting system for each runway, e.g., Reflectors, Low Intensity Runway Lighting (LIRL), Medium Intensity Runway Lighting (MIRL), or High Intensity Runway Lighting (HIRL). LIRLs will typically not be shown for new systems. See AC 150/5340-30, Ch. 2.	×			

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
12. Runway Protection Zone (RPZ) Dimensions	List the existing and ultimate Runway Protection Zone (RPZ) dimensions. See AC 150/5300-13A, Paragraph 310. Prior to including new or modified land use in the RPZ, the Regional and ADO staff must consult with the National Airport Planning and Environmental Division, APP-400. This policy is exempt from existing land uses in the RPZ. See AC 150/5300-13A, Paragraph 310 and FAA memorandum dated September 27, 2012.	×			
13. Runway marking type (visual or basic, non-precision, precision)	Indicate the existing and ultimate pavement markings for each runway. See AC 150/5340-1, Section 2.	×			
14. 14 CFR Part 77 approach category (50:1; 34:1; 20:1) Existing and Future	List the existing and ultimate approach surface slope. See FAA Order 7400.2, Figures 6-6-3 and 6-3-9.	×			
15. Approach Type (precision, non-precision, visual)	List the existing and ultimate Part 77 Approach Use Types. See FAA Order 7400.2, Figures 6-6-3 and 6-3-9.	×			
16. Visibility minimums (existing and future)	List the existing and ultimate visibility minimums for each runway. See AC 150/5300-13A, Table 1-3.	×			
17. Type of Aeronautical Survey Required for Approach (Vertically Guided, not Vert. Guided)	List the type of aeronautical survey required for the visibility minimums given. See AC 150/5300-18, Section 2.7 and AC 150/5300-13A, Table 3-4 and Table 3-5.	×			
18. Runway Departure Surface (Yes or N/A)"	Determine applicability of 40:1 Departure Obstacle Clearance Surface (OCS) as defined in Paragraph 303(c) of AC 150/5300-13A.	×			

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
19. Runway Object Free Area	List the existing and ultimate dimensions of the Runway Object Free Area (OFA). See AC 150/5300-13A, Paragraph 309. Objects non-essential for air navigation or aircraft ground maneuvering purposes must not be placed in the ROFA, unless a modification to standard has been approved.	×			
20. Obstacle Free Zone	The OFZ clearing standard precludes aircraft and other object penetrations, except for frangible NAVAIDs that need to be located in the OFZ because of their function. Modification to standards does not apply to the OFZ.	×			
	List the Runway OFZ, Inner-approach OFZ, Inner-transitional OFZ, and Precision OFZ if applicable.				
21. Threshold siting surface (TSS)	List the existing and ultimate threshold siting surface (i.e. approach and departure surfaces). Identify any objects penetrating the surface. If none, state “No TSS Penetrations”. Reference AC 150/5300-13A, Paragraph 303.	×			
22. Visual and instrument NAVAIDs (Localizer, GS, PAPI, etc.)	List the existing and ultimate visual navigational aids serving each runway.	×			
23. Touchdown Zone Elevation	List the highest runway centerline elevation in the existing and ultimate first 3000 feet from landing threshold. See FAA Order 8260.3, Appendix 1.	×			
23. Taxiway and Taxilane width	List the existing and ultimate width of the taxiways and taxilane. Reference AC 150/5300-13A, Paragraph 403 and Table 4-2.	×			
24. Taxiway and Taxilane Safety Area dimensions	List the existing and ultimate taxiway and taxilane safety area dimensions. Reference AC 150/5300-13A, Paragraph 404(c) and Table 4-1.	×			

Airport Data Sheet					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
25. Taxiway and Taxilane Object Free Area	List the existing and ultimate taxiway and taxilane object free area dimensions. Reference AC 150/5300-13A, Paragraph 404(b) and Table 4-1.	×			
26. Taxiway and Taxilane Separation	List any objects located inside the Taxiway/Taxilane Safety Area and Taxiway/Taxilane Object Free Area. Also provide the distance from the taxiway/taxilane centerline to the fixed or movable object. Reference Paragraph 404(a) and Table 4-1.	×			
27. Taxiway/Taxilane lighting	List the existing and ultimate type of taxiway lighting system, e.g., Reflectors, Low Intensity Taxiway Lighting (LITL), Medium Intensity Taxiway Lighting (MITL), or High Intensity Taxiway Lighting (HITL). LITLs will typically not be shown for new systems. See AC 150/5340-30, Chapter 4.	×			
28. Identify the vertical and horizontal datum	All latitude/longitude coordinates shall be in North American Datum of 1983 (NAD 83). A note shall be put on the Airport Layout Drawing that denotes that the NAD 83 coordinate system was used. All elevations shall be NAVD88. A note shall be put on the Airport Layout Drawing that denotes that the NAVD88 vertical control datum was used.	×			
E. Modification to Standards Approval Table (if applicable, a separate written request, including justification, should accompany the modification to standards). Show: Approval Date/ Airspace Case No. / Standard to be Modified / Description	Provide a table to list all FAA approved Modifications to Standards. See AC 150/5300-13A, Paragraph 106(b), and FAA Order 5300.1. List "None Required" on the table if no Modifications have yet been proposed or approved.	×			

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
F. Declared Distances Table	Required even if Declared Distances are not in effect. Declared distances are only to be used for runways with turbine-powered aircraft. The TORA, TODA, ASDA, and LDA will be equal to the runway length in cases where a runway does not have displaced thresholds, stopways, or clearways, and have standard RSAs, ROFAs, RPZs, and TSS. Reference AC 150/5300-13A, Paragraph 323.	×			
1. Take Off Run Available (TORA)	List the runway length declared available and suitable for the ground run of an airplane taking off, i.e., Take Off Run Available (TORA). The TORA may be reduced such that it ends prior to the runway to resolve incompatible land uses in the departure RPZ, and/or to mitigate environmental effects. Reference AC 150/5300-13A, Paragraph 323(d)(1).	×			
2. Take Off Distance Available (TODA)	List the length of remaining runway or clearway (CWY) beyond the far end of the TORA ADDED TO the TORA. The resulting sum is the Take Off Distance Available (TODA) for the runway. The TODA may be reduced to mitigate penetrations to the 40:1 instrument departure surface, if applicable. The TODA may also extend beyond the runway end through the use of a clearway Reference AC 150/5300-13A, Paragraph 323(d)(2).	×			
3. Accelerate Stop Distance Available (ASDA)	5300-13A List the length the length of runway plus stopway (if any) declared available and suitable for satisfying accelerate-stop distance requirements for a rejected takeoff. Additional RSA and ROFA can be obtained by reducing the ASDA. Reference AC 150/5300-13A, Paragraph 323(d)(3).	×			

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
4. Landing Distance Available (LDA)	5300-13A List the length of runway declared available and suitable for satisfying landing distance requirements. The LDA may be reduced to satisfy the approach RPZ, RSA, and ROFA requirements. Reference AC 150/5300-13A, Paragraph 323(e).	×			
G. Legend	Provide a Legend that identifies all symbols and line types used on the drawing. Lines must be clear and readable with sufficient scale and quality to discern details.			×	
Remarks					

A.4. Airport Layout Plan Drawing

- For smaller airports, some of the ALP sheets may be combined if practical and approved by FAA.
- Two, or more, sheets may be necessary for clarity, existing and proposed. The reviewer should be able to differentiate between existing, future, and ultimate development. If clarity is an issue, some features of this drawing may be placed in tabular format. North should be pointed towards the top of the page or to the left. (scale 1"=200' to 1"=600')

Airport Layout Plan Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
A. Title and Revision Blocks	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.	×			
B. Space for the FAA approval stamp	Leave a blank four-inch by four-inch area for the FAA approval stamp.	×			
C. Layout of existing and proposed facilities and features:	To assure full consideration of future airport development in 14 CFR Part 77 studies, airport owners must have their plans on file with the FAA. The necessary plan data includes, as a minimum, planned runway end coordinates, elevation, and type of approach for any new runway or runway extension. See AC 150/5300-13A, Paragraph 106.	×			
1. True and magnetic North arrow with year of magnetic declination	Magnetic declination may be calculated at http://www.ngdc.noaa.gov/geomag-web/#declination. This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, "Flight Procedures and Airspace." Chapter 2, Section 5, for further information.	×			
2. Airport reference point – locate by symbol a Lat./Long. To nearest second (existing, future, and ultimate) NAD 83	List the Airport Reference Point, the latitude and longitude of the approximate center of the airport. Use the NAD 83 coordinate system. See AC 150/5300-13A, Paragraph 207.	×			
3. Wind cones, segmented circle, beacon, AWOS, etc.	Show as applicable pursuant to AC 150/5300-13A, Chapter 6.	×			

Airport Layout Plan Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
4. Contours (showing only significant terrain differences)	Topography, budget, and future uses of the base mapping, will dictate what intervals of topographical contours to use on the maps. Topographic issues may be important in the alternatives analysis, which may require that reduced contour intervals be used. See AC 150/5070-6, 1005.	×			
5. Elevations: All NAVD88	All latitude/longitude coordinates shall be in NAD83/NAVD88.	×			
a. Runway – existing, future, and ultimate ends (nearest 0.1 ft.)	Show the latitude and longitude of the threshold center and end of pavement.	×			
b. Touchdown Zone Elevation (highest point in first 3,000 ft. of runway)	List the highest runway centerline elevation in the existing and ultimate first 3000 feet from landing threshold. See FAA Order 8260.3, Appendix 1.				
c. Runway high/low points (existing and future)	For all runways identify high and low points (centerline) and provide elevation information.	×			
d. Label runway/runway intersection elevations	Label the pavement elevation of runway intersections where the centerlines cross.			×	
e. Displaced Thresholds (if any)	Label the pavement elevation and coordinates of the runway pavement at any displaced threshold. See AC 150/5300-13A, Paragraph 303(a)(2).	×			
f. Roadways & Railroads (where they intersect Approach surfaces, the extended runway centerline, and at the most critical points)	Provide elevation information for the traverse ways' centerline elevation where they intersect the Part 77 Approach surfaces (existing and ultimate). Note whether this elevation is the actual elevation or the traverseway elevation plus the traverseway adjustment (23' for railways, 17' for interstate highways, 15' for other public roads, or 10' for private roads). See also 14 CFR Part 77.	×			

Airport Layout Plan Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
g. Structures, Buildings, and Facilities	All buildings on the Airport Layout Drawing should be identified by an alphanumeric character. List these identifiers in a table and give a description of the building. If no Terminal Area drawing is done, also include the top of structure elevation in MSL. If any of the structures violate any airport or approach surfaces give an ultimate disposition to remedy the violation. Don't forget navigation aid shelters, AWOS/ASOS, RVRs, PAPIs, Fueling systems, REILs, etc. Also identify the structure use (hangar, FBO, crew quarters, etc.), as needed. Some lesser objects may be identified by symbols in the legend.	×			
h. Define features to include: trees streams, water bodies, etc.	Provide information and delineate trees, streams, water bodies, etc., on or near airport property and approach surfaces.				
6. Runway Details		×			
a. Runway Design – runway length, runway width, shoulder width, blast pad width, blast pad length, and cross wind component.	AC 150/5325-4 describes procedures for establishing the appropriate runway length. AC 150/5300-13A, Table 3-4 and Table 3-5 provides the minimum runway length.				
(existing, future, and ultimate)	AC 150/5300-13A, Table 3-8 provides the standard dimensions of the runway width, shoulder width, blast pad width, blast pad length, and crosswind component based on RDC. Clearly denote the runway numbers at the thresholds. Show location of existing and future threshold lights.	×			
b. Orientation – true bearing to nearest 0.01 second (and runway numbers)	Show the true bearing to the nearest .01 of a degree of the runway centerline.				

Airport Layout Plan Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
c. End Coordinates – existing, future, and ultimate degrees, minutes, seconds (to the nearest 0.01 second)	Show the latitude and longitude of the threshold center and end of pavement (if different) to the nearest .01 of a second.	×			
d. Runway Safety Areas (RSA) – actual, existing, future, and ultimate (including dimensions)	Show the extents of the existing and ultimate RSA 5300-13A. Reference AC 150/5300-13A, Paragraph 307.	×			
e. Runway Object Free Areas (ROFA)	Show the extents of the existing and ultimate ROFA. Reference AC 150/5300-13A, Paragraph 309.	×			
f. Precision Obstacle Free Zone (POFZ)	Show the extents of the existing and ultimate POFZ. Reference AC 150/5300-13A, Paragraph 308(d).			×	
g. Obstacle Free Zone (OFZ)	Show the extents of the existing and ultimate OFZ. Reference AC 150/5300-13A, Paragraph 308.	×			
h. Clearways and Stopways	Show any/all clearways and stopways/overruns and the markings used to denote these areas. See AC 150/5300-13A, Paragraph 311 and 312; and AC 150/5340-1, Section 2, Paragraph 14.			×	
i. Runway Protection Zone (RPZ) - Dimensions (existing, future, and ultimate)	Show existing and ultimate RPZ. See AC 150/5300-13A, Paragraph 310. Show the existing and ultimate protective area/zone type of ownership. Identify any incompatible objects and activities inside the RPZ. Prior to including new or modified land use in the RPZ, the Regional and ADO staff must consult with the National Airport Planning and Environmental Division, APP-400. This policy is exempt from existing land uses in the RPZ. See AC 150/5300-13A, Paragraph 310 and FAA memorandum dated September 27, 2012.	×			

Airport Layout Plan Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
j. 14 CFR Part 77 Approach Surfaces	Show the portion of the existing and ultimate approach surfaces that are over airport and adjacent property and identify the approach surface dimensions and slope. See FAA Order 7400.2, Figure 6-3-9.	×			
k. Threshold Siting Criteria: Approach/Departure Surface (existing, future, and ultimate) 5300-13A	Determine and identify pursuant to AC 150/5300-13A, Paragraph 303(b) and 303(c).		×		
l. Terminal Instrument Procedures (TERPS)surface and TERPS GQS, if applicable.	Determine and identify pursuant to AC 150/5300-13A, Paragraph 303(a)(4)(a), Table 3-4, and Table 3-5. Reference FAA Order 8260.3.		×		
m. Navigation Aids (NAVAIDS) – PAPI, ILS, GS, LOC, ALS, MALSR, REIL, etc., (plus facility critical area's)	Show all NAVAIDS and provide clearance distances from runways, taxiways, etc. Reference AC 150/5300-13A, Chapter 6.	×			
n. Marking – thresholds, hold lines, etc.	Show on the runway the type and location of markings, existing and ultimate. See AC 150/5340-1, Section 2.	×			
o. Displaced threshold coordinates and elevation	Show the latitude, longitude, and the pavement elevation of the runway pavement at any displaced threshold. See AC 150/5300-13A, Paragraph 303(a)(2).5300-13A.	×			
p. Runway centerline separation distances	Show the runway centerline separation distances to parallel runway centerline, holding position, parallel taxiway/taxilane centerline, aircraft parking area, and helicopter touchdown pad, if applicable. Reference AC 150/5300-13A, Paragraph 321 and Table 3-8.	×			
7. Taxiway Details	Show the taxiway centerline separation distances to parallel taxiway/taxilane centerlines, fixed or movable objects.	×			

Airport Layout Plan Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
a. Dimensions – width (existing & ultimate)	Taxiway width based on Taxiway Design Group (TDG). See AC 150/5300-13A, Table 4-2.	×			
b. Taxiway Edge Safety Margin (TESM)	TESM dimension based on TDG. See AC 150/5300-13A, Table 4-2.		×		
c. Taxiway Shoulder Width	Taxiway shoulder width based on TDG. See AC 150/5300-13A, Table 4-2.		×		
b. Taxiway/Taxilane Object Free Area (TOFA)	TOFA width based on Taxiway Design Group (TDG). TOFA extend the entire length of taxiway. See AC 150/5300-13A, Table 4-1.	×			
c. Taxiway/Taxilane Safety Area (TSA)	TSA width based on TDG. TSA extend the entire length of taxiway. See AC 150/5300-13A, Table 4-1.	×			
d. Taxiway/Taxilane Centerline Separation from:		×			
i. Runway centerline	Show the distance from centerline of runway to centerline of taxiway. See AC 150/5300-13A, Table 4-1.	×			
ii. Parallel taxiway	Show the distance from centerline of taxiway to centerline of parallel taxiway. See AC 150/5300-13A, Table 4-1.	×			
iii. Aircraft parking	Show the distance from centerline of taxiway to marked aircraft parking/tie downs. See AC 150/5300-13A, Table 4-1.			×	
iv. Fixed or Movable Objects	Show the distance from centerline of taxiway to airport objects such as buildings, facilities, poles, etc. See AC 150/5300-13A, Table 4-1.				
8. Fences (identify height)	Show the location of existing and ultimate fences and identify height.				

Airport Layout Plan Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
9. Aprons					
a. Dimensions (square footage, dimension, or length and width)	Include dimensions of apron and distance from runway and taxiway centerlines. Apron should be sized using activity forecast and the apron design spreadsheet. See AC 150/5300-13A, Chapter 5 and FAA Engineering Brief No. 75.	×			
b. Identify aircraft tie-down layout	Show proposed tie-down layout on the apron area. See AC 150/5300-13A, Figure A5-1, AC 20-35, and AC 150/5340-1.				
c. Identify Special Use Areas (e.g., deicing or aerial application areas on or near apron)	Show as applicable and pursuant to representative ACs.			×	
10. Roads	Label all roads.	×			
11. Legend	Provide a Legend that identifies all symbols and line types used on the drawing. Lines must be clear and readable with sufficient scale and quality to discern details.	×			
12. Items to be identified with distinct line types	Use distinct line types to identify different items and differentiate between existing and ultimate.	×			
a. NAVAID Critical Areas (Glide Slope, Localizer, AWOS, ASOS, VOR, RVR, etc.)	Show the critical area outline for all Instrument Landing System and other electronic Navigational Aids located on the airport. See AC 150/5300-13A, Chapter 6 for general guidance and FAA Order 5750.16 for critical area dimensions.				
b. Building Restriction Lines 5300-13A(BRL)	The BRL is the line indicating where airport buildings must not be located, limiting building proximity to aircraft movement areas. See AC 150/5300-13A, Paragraph 213(a).				
c. Runway Visibility Zone (RVZ)	Show the RVZ for the existing and ultimate airport configurations. See AC 150/5300-13A, 305(c).			×	

Airport Layout Plan Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
d. Airport Property Lines and Easements (existing, future, and ultimate)	Show the airport property boundaries, including easements, for the existing and ultimate airport configurations.	×			
13. Survey Documentation					
a. Survey Monuments (PACS/SACS, see AC 150/5300-16)	Show the location of all established survey monuments located on or near the airport property. Identify Primary and Secondary Airport Control Stations (PACS/SACS) if they exist. See AC 150/5300-16.				
	Show the location of all section corners on or near the airport property.				
b. Offsets, stations, etc.	Show as applicable.			×	
14. Any Air Traffic Control Tower (ATCT) line of sight/shadow study areas (use separate sheet if necessary)	Reference FAA Order 6480.4.			×	
15. General Aviation development area (e.g., fuel facilities, FBO, hangars, etc.) – greater detail can be shown on the terminal area drawing	Show as applicable.	×			
16. Facilities and movement areas that are to be phased out, if any, are described	Show as applicable.	×			

Remarks

6.k. Threshold Siting Criteria: Replaced the approach/departure surface with surfaces described in Advisory Circular 150/5300-13B. Surfaces 5 and 6 are depicted.

6.l. Terminal Instrument Procedures (TERPS) Surface and TERPS GQS, if applicable: Replaced the approach/departure surface with surfaces described in Advisory Circular 150/5300-13B.

7.b. Taxiway Edge Safety Margin (TESM): Included on Airport Data Sheet.

7.c. Taxiway Shoulder Width: Included on Airport Data Sheet.

A.5. Airport Airspace Drawing

- A required drawing.
- Scale 1" = 2000' plan view, 1" = 1000' approach profiles, 1"=100' (vertical) for approach profiles.
- 14 CFR Part 77, Objects Affecting Navigable Airspace, defines this as a drawing depicting obstacle identification surfaces for the full extent of all airport development. It should also depict airspace obstructions for the portions of the surfaces excluded from the Inner Portion of the Approach Surface Drawing.

Airport Airspace Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
A. Title and Revision Block	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.	×			
B. Plan view (based on ultimate runway lengths) Include location of water or sewage facilities if inside horizontal surface.		×			
1. U.S. Geological Survey (USGS) Quad Sheet for base map	Use the most current USGS Quadrangle(s) as a base map for the airspace drawing.	×			
2. Runway end numbers	Show the ultimate runways and runway numbers. Contact the FAA before renumbering existing runways.	×			
3. Part 77 Surfaces (Horizontal, Conical, Transition, based on ultimate). Including elevations at the point where surfaces change.	Show the extents of the Part 77 imaginary surfaces. For airports that have precision approach runways show balance of the 40,000' approach on a second sheet, if necessary. See 14 CFR Part 77.19.	×			
4. 50' elevation contours on sloping surfaces (NAVD88)	Show contour lines on all sloping Part 77 imaginary surfaces. See 14 CFR Part 77.19.	×			
5. Top elevations of penetrating objects for the inner portion of the approach surface drawing	Identify by unique alphanumeric symbol all objects beyond the Runway Protection Zones that penetrate any of the Part 77 surfaces. See 14 CFR Part 77.		×		
6. Note specifying height restriction (ordinances/statutes)	List any local zoning restrictions that are in place to protect the airport and surrounding airspace. See AC 150/5190-4.	×			

Airport Airspace Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
7. North Arrow with magnetic declination and year	Magnetic declination may be calculated at http://www.ngdc.noaa.gov/geomag-web/#declination. This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, "Flight Procedures and Airspace." Chapter 2, Section 5, for further information.	X			
C. Profile view		X			
1. Airport Elevation	List the Airport Elevation, the highest point on an airport's usable runway expressed in feet above mean sea level (MSL). Use NAVD88 datum. See AC 150/5300-13A, Chapter 1, Paragraph 102(g).	X			
2. Composite Ground Profile along extended Runway Centerline (Representing the composite profile, based on the highest terrain across the width and along the length of the approach surface)	Depict the ground profile along the extended runway centerline representing the composite profile, based on the highest terrain across the width and along the length of the approach surface.	X			
3. Significant objects (bluffs, rivers, roads, schools, towers, etc.) and elevations	Identify all significant objects (roads, rivers, railroads, towers, poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions. Use the objects' same alphanumeric identifier that was used on the plan view. Identify the top elevations of all significant objects (roads, rivers, railroads, towers, poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions.		X		
4. Existing, future, and ultimate runway ends and approach slopes	Show existing and ultimate runway ends and FAR Part 77 approach surface slopes. See 14 CFR Part 77.19.	X			

Airport Airspace Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
D. Obstruction Data Tables (identify obstacles not depicted on the Inner Portion of the Approach Surface Drawing)		✕			
1. Object identification number	Identify all significant objects (roads, rivers, railroads, towers, poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions. Use the objects alphanumeric identifier that was used on the plan view.	✕			
	Identify the top elevations of all significant objects (roads, rivers, railroads, towers, poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions.				
2. Description	Provide a brief description of the object, e.g., Power Pole, Cell Tower, Natural Gas Flare, etc.	✕			
3. Date of Obstruction Survey	Provide the date of latest obstruction survey.	✕			
4. Ground Surface Elevation	Provide the ground surface elevation (MSL) at the base of each object.				
5. Object Elevation	List the above ground level (AGL) height and the top of object elevation (above mean sea level / AMSL / MSL) for each object.	✕			
6. Amount of surface penetration	List the surface that is penetrated and the amount the object protrudes above the surface. See 14 CFR Part 77.	✕			
7. Proposed or existing disposition of the obstruction	Provide a proposed or existing disposition of the object to remedy the penetration. See AC 70/7460-1.	✕			
a. Proposed Disposition (existing)			✕		
b. Proposed Disposition (future)		✕			

Airport Airspace Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
Remarks B.5. Top elevations of penetrating objects for the inner portion of the approach surface drawing: Listed on the Inner Approach Plan & Profile Runway 5 (Sheet 6) and Inner Approach Plan & Profile Runway 23 (Sheet 7). C.3. Significant objects (bluffs, rivers, roads, schools, towers, etc.) and elevations: Listed on the Inner Approach Plan & Profile Runway 5 (Sheet 6) and Inner Approach Plan & Profile Runway 23 (Sheet 7). D.7.a. Proposed Disposition (existing): All dispositions listed are future.					

A.6. Inner Portion of the Approach Surface Drawing

- A required drawing.
- Scale 1"=200' Horizontal, 1"=20' Vertical, two sheets may be necessary for clarity. Typically, the plan view is on the top half of the drawing and the profile view is on the bottom half. Views should be drawn from the runway threshold to a point on the approach slope 100 feet above the runway threshold elevation, at a minimum, or the limits of the RPZ, whichever is further.
- Drawings containing the plan and profile view of the inner portion of the approach surface to the runway and a tabular listing of all surface penetrations. The drawing will depict the obstacle identification approach surfaces contained in 14 CFR Part 77, Objects Affecting Navigable Airspace. The drawing may also depict other surfaces, including the threshold-siting surface, Glideslope Qualification Surface (GQS), those surfaces associated with United States Standards for Instrument Procedures (TERPS), or those required by the local FAA office or state agency. The extent of the approach surface and the number of airspace obstructions shown may restrict each sheet to only one runway end or approach.

Inner Portion of the Approach Surface Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
A. Title and Revision Block	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.	×			
B. Plan View (existing, future, and ultimate)		×			
1. Inner portion of approach surface	Show the area from the runway threshold out to where the ultimate approach surface slope is 100 feet above the threshold elevation.	×			
2. Aerial photo for base map	Use an aerial photograph for the base map.	×			
3. Objects (identified by numbers)	Identify all significant objects (roads, rivers, railroads, towers, poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions using an alphanumeric character.	×			
4. Property line within approaches	Show the property lines that are within the area/portion of airport shown.	×			

Inner Portion of the Approach Surface Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
5. Road & railroad elevations, plus movable object heights	Provide elevation information for the traverse ways' centerline elevation where they intersect the Part 77 Approach surfaces (existing and ultimate). Note whether this elevation is the actual elevation or the traverse way elevation plus the traverse way adjustment (23' for railways, 17' for interstate highways, 15' for other public roads, or 10' for private roads). See also 14 CFR Part 77.	×			
6. Part 77 Approach Surface clearance over Roads and Railroads at the most critical points, the Centerline and Edge of the surface.	Provide elevation information for the traverse ways where they intersect the edges and centerline of the Part 77 Approach surfaces (existing and ultimate). Note whether this elevation is the actual elevation or the traverseway elevation plus the traverseway adjustment (23' for railways, 17' for interstate highways, 15' for other public roads, or 10' for private roads). See also 14 CFR Part 77.	×			
7. Physical end of runway, end number, elevation (NAVD88) Nearest 0.1 foot	Show the existing and ultimate runway end, runway number, and the elevation of the threshold center.	×			
8. Airport Design Surfaces					
a. Runway Safety Area	Show the extents of the existing and ultimate Runway Safety Area (RSA). See AC 150/5300-13A, Paragraph 307 and Table 3-8.	×			
b. Runway Object Free Area	Show the extents of the existing and ultimate Object Free Area (OFA). See AC 150/5300-13A, Paragraph 309 and Table 3-8.	×			
c. Runway Obstacle Free Zone (OFZ)	Show the extents of the existing and ultimate OFZ which includes the inner-approach OFZ, inner-transitional OFZ, and the Precision OFZ (POFZ), if applicable. See AC 150/5300-13A, Paragraph 308.	×			

Inner Portion of the Approach Surface Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
d. Runway Protection Zone (RPZ)	Show the extents of the existing and ultimate RPZ. Prior to including new or modified land use in the RPZ, the Regional and ADO staff must consult with the National Airport Planning and Environmental Division, APP-400. This policy is exempt from existing land uses in the RPZ. See AC 150/5300-13A, Paragraph 310, Table 3-5 and FAA memorandum dated September 27, 2012.	×			
e. NAVAID critical area	Show the critical area outline for all Instrument Landing System and other electronic Navigational Aids located on the airport. See AC 150/5300-13A, Chapter 6 for general guidance and FAA Order 5750.16 for critical area dimensions.	×			
9. Ground contours	Show ground contour lines in 2', 5', or 10' intervals. Topographic issues may be important in the alternatives analysis, which may require that reduced contour intervals be used. See AC 150/5070-6, Paragraph 1005.		×		
10. North arrow with magnetic declination and year	Magnetic declination may be calculated at http://www.ngdc.noaa.gov/geomag-web/#declination. This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, Chapter 2, Section 5, for further information.	×			
C. Profile view		×			
1. Existing and proposed runway centerline ground profile (list elevations at runway ends & at all points of grade changes) (representing the composite profile based on the highest terrain across the width and along the length of the approach surface)	Depict the ground profile along the extended runway centerline representing the composite profile, based on the highest terrain across the width and along the length of the approach surface to where the ultimate approach surface slope is 100 feet above the threshold elevation. A more effective presentation may be a rendering of a composite critical profile.	×			

Inner Portion of the Approach Surface Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
2. Future development from plan view	Identify future development using same alphanumeric identifier that was used on the plan view.			×	
3. Part 77 Approach/transition surface; existing and future VASI/PAPI siting surface	Show the boundaries of the existing and ultimate Part 77 Approach Surface. See FAA Order 7400.2, Figure 6-3-9, See also 14 CFR Part 77.	×			
4. Threshold Siting Surface	Depict any applicable siting requirements pursuant to Table 3-2 of FAA AC 150/5300-13A.	×			
5. Terrain in approach area (fences, streams, etc.)	Show all significant terrain(fences, streams, mountains, etc.) within the approach surfaces, regardless of whether or not they are obstructions	×			
6. Objects – identify the controlling object (same numbers as plan view)	Show all significant objects (roads, rivers, railroads, towers, sign and power poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions.	×			
	Identify the objects using same alphanumeric identifier that was used on the plan view.				
7. Cross section of road & railroad	Show the cross-section of any roads and/or railroads that cross the area shown. Indicate cross section elevations of roads and railroads at edges and extended centerlines that cross the area shown.	×			
8. Existing and proposed property and easement lines	Show the airport property boundaries, including easements, for the existing and ultimate airport configurations. AC 5300-13A Note easements for pipelines and residential through the fence gateways.	×			
D. Obstruction tables for each approach surface (surface should be identified)	A separate table for each runway end must be used to enhance information clarity.	×			
1. Object identification number	List each object by the same alphanumeric symbol used in the plan view.	×			

Inner Portion of the Approach Surface Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
2. Description	Provide a brief description of the object, e.g., Power Pole, Cell Tower, Natural Gas Flare, etc.	×			
3. Date of Obstruction Survey and Survey Accuracy	Provide the date of latest obstruction survey.	×			
4. Surface Penetrations	5300-13A For any object that penetrates the Part 77 surface, the approach surface, or the obstacle free zone, describe the vertical length the object protrudes.	×			
5. Proposed disposition of surface penetrations	Provide a proposed disposition of the object to remedy the penetration as described in item 4 above. See AC 70/7460-1 for Part 77 violations. "Removal" and/or "Lower" should be listed for any Airports safety area/zone violations. See AC 150/5300-13A, Paragraph 303 and 308.	×			
6. Object elevation	List the Above Ground Level (AGL) height and the top of object elevation in MSL for each object.	×			
7. Triggering Event (e.g., a runway extension) – Timeframe/expected date for removal	List the surface that is penetrated and the amount the object protrudes above the surface. See 14 CFR Part 77 and AC 150/5300-13A, Paragraphs 303 and 308.	×			
8. Allowable approach surface elevation (if applicable)				×	
9. Amount of approach surface penetration (if applicable)		×			
10. Proposed disposition of approach surface obstruction (if applicable)	Provide a proposed disposition of the object to remedy the penetration. See AC 70/7460-1 for Part 77 violations. "Removal" and/or "Lower" should be listed for any Airports safety area/zone violations. See AC 150/5300-13A, Paragraph 303.	×			

Inner Portion of the Approach Surface Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
11. Obstacle Free Zone (OFZ)	Determine and depict the applicable OFZ surfaces, see AC 150/5300-13A, Paragraph 308. Provide a proposed disposition of the object to remedy the penetration. Note: Modification to the OFZ standard is not permitted.	×			
E. Runway Centerline Profile	This may be shown on the Inner Portion of the Approach Surface drawing if there is space to show the runway and Runway Safety Area in sufficient detail otherwise a separate sheet may be necessary. At a minimum this drawing is to show the full length of the runway and Runway Safety Area including: runway elevations, runway and Runway Safety Area gradients, all vertical curves, and a line representing the 5' line-of-sight. See AC 150/5300-13A, Paragraph 305.		×		
1. Scale	The vertical scale of this drawing must be able to show the separation of the runway surface and the 5' Line-of-Sight line. See AC 150/5300-13A, Paragraph 305.	×			
2. Elevation	Show runway elevations, runway and Runway Safety Area gradients, and all vertical curve data. See AC 150/5300-13A, Paragraph 318.	×			
3. Line of Sight	The vertical scale of this drawing must be able to show the separation of the runway surface and the 5' Line-of-Sight line. See AC 150/5300-13A, Section 305.	×			
Remarks					
B.9. Ground contours: Depicted on the Existing Airport Layout Plan (Sheet 3) and Future Airport Layout Plan (Sheet 4).					
E. Runway Centerline Profile: Depicted on the Airport Airspace Drawing.					

A.7. Runway Departure Surface Drawing

- Required where applicable. For each runway that is designated for instrument departures.
- This drawing depicts the applicable departure surfaces as defined in Paragraph 303 of FAA AC 150/5300-13A. The surfaces are shown for runway end(s) designated for instrument departures.
- 40:1 for Instrument Procedure Runways (Scale, 1" = 1000' Horizontal, 1" = 100' Vertical, Out to 10,200' beyond Runway threshold) 62.5:1 for Commercial Service Runways (Scale, 1" = 2000' Horizontal, 1" = 100' Vertical, Out to 50,000' beyond Runway threshold).
- Contact the FAA if the scale does not allow the entire area to fit on a single sheet. The depiction of the One Engine Inoperative (OEI) surface is optional; it is not currently required.

Runway Departure Surface Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
A. Title and Revision Blocks	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.	×			
B. Plan view (existing & future)	See AC 150/5300-13A, Paragraph 303(c).	×			
1. Aerial Photo for base map	Use an aerial photograph for the base map. A USGS 7.5 minute series map is also acceptable.	×			
2. Runway end numbers and elevations (nearest 1/10 of a foot)	Show the existing and ultimate runway end, runway number, and the elevation of the threshold center. For runways that have a clearway, depict this surface and the relocated departure surface. Reference AC 150/5300-13A, Paragraph 303(c)(1).	×			
3. 50' elevation contours on sloping surfaces (NAVD88)	Show contour lines on the Part 77 imaginary surfaces. See 14 CFR Part 77.19.		×		
4. Depict property line, including easements	Show the property line(s) that are within the area/portion of airport shown.	×			
5. Identify, by numbers, all traverse ways with elevations and computed vertical clearance in the departure surface	Identify all significant objects (roads, rivers, railroads, towers, poles, etc.) within the departure surfaces, regardless of whether or not they are obstructions using unique alphanumeric characters.		×		

Runway Departure Surface Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
6. Ground contours	Show ground contour lines in 2', 5', or 10' intervals. Topographic issues may be important in the alternatives analysis, which may require that reduced contour intervals be used.		×		
C. Profile view (existing & future)		×			
1. Ground profile	Depict the ground profile along the extended runway centerline representing the composite profile, based on the highest terrain across the width and along the length of the departure surface to extents of the surface dimensions.	×			
2. Significant objects (bluffs, rivers, roads, buildings, fences, structures, etc.)	Show all significant objects (roads, rivers, railroads, towers, poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions using an alphanumeric character.	×			
3. Identify obstructions with numbers on the plan view	Identify the objects using same alphanumeric identifier that was used on the plan view.	×			
4. Show roads and railroads with dashed lines at edge of the departure surface	Show the cross-section of any roads and/or railroads that cross the area shown.	×			
D. Obstruction Data Tables		×			
1. Object identification number	Identify all significant objects (roads, rivers, railroads, towers, poles, etc.) within the departure surfaces, regardless of whether or not they are obstructions using unique alphanumeric characters. List each object by the same alphanumeric symbol used in the plan view.	×			
2. Description	Provide a brief description of the object, e.g., Power Pole, Cell Tower, Tree, Natural Gas Flare, etc.	×			
3. Object Elevation	List the Above Ground Level (AGL) height and the top of object elevation in MSL for each object.	×			

Runway Departure Surface Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
4. Amount of surface penetration	List the object protrudes above the departure surface. See AC 150/5300-13A, Paragraph 303(c).	✕			
5. Proposed or existing disposition of the obstruction	Provide a proposed disposition of the object to remedy the penetration. See AC 150/5300-13A, Paragraph 303(c).	✕			
6. Separate table for each departure surface	A separate table for each runway end must be used to enhance information clarity.	✕			

Remarks

A.3. 50’ elevation contours on sloping surfaces (NAVD88): 14 Code of Federal Regulations Part 77 civil imaginary airspace surfaces are depicted on the Airport Airspace Drawing (Sheet 5).

A.5. Identify, by numbers, all traverse ways with elevations and computed vertical clearance in the departure surface: Identified on the Inner Approach Plan & Profile Runway 5 (Sheet 6) and Runway 23 (Sheet 7).

A.6. Ground contours: Depicted on the Existing Airport Layout Plan (Sheet 3) and Future Airport Layout Plan (Sheet 4).

A.8. Terminal Area Drawing

- Scale 1"=50' or 1"=100'. Plan view of aprons, buildings, hangars, parking lots, roads.
- This plan consists of one or more drawings that present a large-scale depiction of areas with significant terminal facility development. Such a drawing is typically an enlargement of a portion of the ALP. At a commercial service airport, the drawing would include the passenger terminal area, but might also include general aviation facilities and cargo facilities. See AC 150/5300-13A, Appendix 5.
- Use scale that allows the extent of the terminal/FBO apron area to best fit the chosen sheet size, e.g., typical GA airports may be able to use 1"=50' scale on a 22" X 34" sheet, but a complex hub airport with multiple terminal areas may require a 1"=100' scale on a 36" X 48" sheet. Contact FAA if an airport layout requires scaling or sheet sizing other than what is listed.
- This drawing is not needed at every airport type and is therefore optional.

Terminal Area Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
A. Title and Revision Blocks	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.		×		
B. Building data table	All buildings on the Airport Layout Drawing should be identified by an alphanumeric character. List these identifiers in a table and give a description of the building. If no Terminal Area drawing is done, also include the top of structure elevation in MSL.		×		
1. Structure identification number			×		
2. Top elevation of structures (AMSL)			×		
3. Obstruction marking/lighting (existing/future)	Show the location of existing and ultimate hangars. Include dimensions of apron and distance from runway and taxiway centerlines. See AC 150/5300-13A, Appendix 5. Show the elevation of the highest point of each structure.		×		
C. Buildings to be removed or relocated noted	If any of the structures violate any airport or approach surfaces give an ultimate disposition to remedy the violation.		×		
D. Fueling facilities, existing and future	Show the location of existing and ultimate fueling facilities. Include dimensions of apron and distance from runway and taxiway centerlines.		×		

Terminal Area Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
E. Air carrier gates positions shown (existing/future)	Show the existing and ultimate air carrier gate positions. See AC 150/5300-13A, Chapter 5.		×		
F. Existing and future security fencing with gates	Show the existing and ultimate security fencing and gates. See AC 150/5300-13A, Paragraph 606.		×		
G. Building restriction line (BRL)	Show the Building Restriction Line (BRL) that is within the area/portion of airport shown. The BRL identifies suitable building area locations on airports. This should be located where the Part 77 surfaces are at 35' above the airport elevation unless a different height is coordinated with the FAA. See AC 150/5300-13A, Paragraph 213(a).		×		
H. Taxiway or Taxilane centerlines designated	Show centerlines of all taxiway and taxilanes within the area/portion of airport shown.		×		
I. Dimensions			×		
1. Clearance Dimensions between runway, taxiway, and taxilane centerlines and hangars, buildings, aircraft parking, and other objects. 2. Dimensions of aprons, taxiways, etc.	Show the location of existing and ultimate apron. Include dimensions of apron and distance from runway and taxiway centerlines. Apron should be sized using activity forecast and the apron design spreadsheet. See AC 150/5300-13A, Chapter 5 and FAA Engineering Brief No. 75.		×		
Apron/Hangar areas that do not meet dimensional standards of the critical aircraft should be identified and the wingspan/design group of the aircraft that can use that area depicted. Include tie down location with clearances	Show the dimensions between existing and ultimate runway, taxiway, and taxilane centerlines and existing and ultimate hangars, buildings, aircraft parking, and other fixed or movable objects. See AC 150/5300-13A, Chapter 3 and Chapter 4. Show proposed tie-down layout on the apron area as well as taxilane marking plan. See AC 150/5300-13A, Appendix 5, AC 20-35, and AC 150/5340-1.		×		
J. Property Line	Show the property line(s) that are within the area/portion of airport shown.		×		

Terminal Area Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
K. Auto parking (existing & ultimate)	Show the existing and ultimate auto parking areas. See AC 150/5300-13A, Appendix 5.		×		
L. Major airport drainage ditches or storm sewers	Show any significant airport drainage ditches or storm sewers within the area/portion of airport shown.		×		
M. Special Use Area (e.g., Agricultural spraying support, Deicing, or Containment)	Show any special use areas within the area/portion of airport shown.		×		
N. North Arrow with magnetic declination and year	Magnetic declination may be calculated at http://www.ngdc.noaa.gov/geomag-web/#declination. This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, "Flight Procedures and Airspace." Chapter 2, Section 5, for further information.		×		
O. Fence	Show the existing and ultimate perimeter fencing or general area fencing.		×		
P. Entrance Road	Show the existing and ultimate entrance road. See 5300-13AFAA Order 5100.38, Chapter 6, Section 2.		×		
Remarks					
Terminal Area Drawing not included; see Existing Airport Layout Plan Drawing and Future Airport Layout Plan Drawing.					

A.9. Land Use Drawing

- Scale 1"=200' to 1"=600'.
- A drawing depicting on- and off-airport land uses and zoning in the area around the airport. At a minimum, the drawing must contain land within the 65 DNL noise contour. For medium or high activity commercial service airports, on-airport land use and off-airport land use may be on separate drawings. The Airport Layout Drawing should be used as a base map.
- Drawing optional. Need based on scope of work.

Land Use Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
A. Title and Revision Blocks	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.	×			
B. Airport boundaries/property, existing & future (fee and easement)	Show the existing and ultimate property lines. If known, show property lines for parcels surrounding the airport.	×			
C. Plan view of land uses by category (Agricultural, Aeronautical, Commercial, Residential, etc.). Use local land use categories.		×			
1. On-Airport (existing & future)	Label existing and ultimate on-airport property by usage, e.g., Terminal Area, Air Cargo, Public Ramp, Airfield - Movement, Airfield - Non-movement, etc. Include existing and future airport features (e.g., runways, taxiways, aprons, safety areas/zones, terminal buildings and navigational aids).	×			
2. Off-Airport (existing & future) [to the 65 DNL Contour at a minimum, if contour known]	Label existing and ultimate off-airport property by usage and zoning, e.g., Agricultural, Industrial, Residential, Commercial, etc.	×			
D. Boundaries of local government	List any local zoning restrictions that are in place to protect the airport and surrounding airspace. See AC 150/5190-4.	×			
E. Land use legend	Provide a legend that identifies all symbols and line types used on the drawing. Lines must be clear and readable with sufficient scale and quality to discern details.	×			

Land Use Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
F. Public facilities (schools, hospitals, parks, churches etc.)	Identify public facilities, e.g., schools, parks, etc.	×			
G. Runway visibility zone for intersecting runways	Show the Runway Visibility Zone(s) for the existing and ultimate airport configurations. See AC 150/5300-13A, Section 305.			×	
H. Show off-airport property out to 65 DNL if available	Label existing and ultimate off-airport property by usage and zoning, e.g., Agricultural, Industrial, Residential, Commercial, etc.	×			
I. Airport Overlay Zoning or Zoning Restrictions	List any local zoning restrictions that are in place to protect the airport and surrounding airspace. See AC 150/5190-4.	×			
J. North arrow with magnetic declination and year	Magnetic declination may be calculated at http://www.ngdc.noaa.gov/geomag-web/#declination. This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, "Flight Procedures and Airspace." Chapter 2, Section 5, for further information.	×			
K. Drawing details to include runways, taxiways, aprons, RPZ, terminal buildings and NAVAIDS	Show existing and future airport features (e.g., runways, taxiways, aprons, safety areas/zones, terminal buildings and navigational aids, etc.). See AC 150/5300-13A.	×			
L. Crop Restrictions	Show the Crop Restriction Line (CRL). See AC 150/5300-13A, Paragraph 322 and AC 150/5200-33.			×	
Remarks					

A.10. Airport Property Map / Exhibit A

- Scale 1"=200' to 1"=600'.

Airport Property Map / Exhibit A						
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
A. Will Property Map serve as Exhibit A? – **If YES,** follow the directions to the right. – **If NO,** go to item B below.	If prepared in accordance with AC 150/5100-17, Land Acquisition and Relocation Assistance for Airport Improvement Program Assisted Projects, use ARP SOP no. 3.00 Exhibit A guidance instead of below checklist.	×			
If Property Map *will not* serve as Exhibit A:					
B. Title and Revision Blocks					
C. Plan view showing parcels of land (existing, future, and ultimate)					
1. Fee land interests (existing and future)					
2. Easement interests (existing and future)					
a. Part 77 protection					
b. Compatible Land Use					
c. RPZ protection					
3. Airport Property Line					
D. Legend – shading/cross hatching, survey monuments, etc.					
E. Data Table					
1. Depiction of various tracts of land acquired to develop airport	If any obligations were incurred as a result of obtaining property, or an interest therein, they should be noted. Obligations that stem from Federal grant or an FAA-administered land transfer program, such as surplus property programs, should also be noted. The drawing should also depict easements beyond the airport boundary.				

Airport Property Map / Exhibit A					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
2. Method of acquisition or property status (fee simple, easement, etc.)					
3. Type of Acquisition Indicated	(e.g., AIP-noise, AIP-entitlement, PFC, surplus property, local purchase, local donation, condemnation, other)				
4. Acreage					
F. Access point(s) for through-the-fence arrangements including residential					
Remarks					

APPENDIX J

Exhibit 'A' **Airport** Property Inventory Map

APPENDIX B. EXHIBIT 'A' REVIEW CHECKLIST

Checklist	Sponsor/Consultant			FAA
Review Item	**Yes**	**No**	**N/A**	**Agree**
1. Existing Dedicated Airport Property Boundary Line identified. This can consist of a combination of fee interest, easements and/or leases. It may include lands that are not contiguous with the airport boundary. Identify source of base map data.	✕			
Airports Specialist Comments:				
2. All the airport property parcels are shown and have a unique designation. Parcels with designations from previous Exhibit 'A's should not be changed. However, a new system of designations may be used for new and future property acquisitions. Parcel designations must be consistent with grant descriptions.	✕			
Airports Specialist Comments:				
3. Each segment of a parcel's boundary is described in some manner. Metes and bounds, township/range/section, lot and block, plat or other appropriate property description (may be an attachment to the Exhibit 'A' plan sheet or checklist). Points of reference may also be included to further describe the parcel.	✕			
Airports Specialist Comments:				
4. Parcels that were once airport property are shown. The date they were released from federal obligations by the FAA and the date of disposal must be included.	✕			
Airports Specialist Comments:				
5. Parcel information includes: (often in table format)				
a. Grantor (selling owner)	✕			
b. Type of interest acquired (fee simple, easement, etc.)	✕			
c. Acreage	✕			
d. Type of conveyance instrument				
e. Liber/book and page of recording	✕			
Airports Specialist Comments:				
6. Each airport property parcel shows: (often in table format)				
a. FAA grant number, including year if acquired under a grant	✕			
b. PFC Project Number if acquired with Passenger Facility Charge funds (recommended)			✕	
c. Surplus Property Transfer, Government Land Transfer or other statutory federal agreements/conditions. See FAA Order 5010.4 and form 5010-1 Data Element #25 for additional information.	✕			
d. Type of easement (clearing, avigation, utility, right of way, expiration date, easement held by others, subordination agreement, etc.)	✕			

Checklist	Sponsor/Consultant			FAA
Review Item	**Yes**	**No**	**N/A**	**Agree**
e. Date and type of release/land use change approval (aeronautical use, interim use, concurrent use, etc.). This can also include any release from federal obligations such as a release from the National Emergency Use Provision (NEUP), mineral rights, liens, residential through-the-fence access agreements, etc.	✕			
f. Date of property disposal	✕			
g. Public land references, if applicable (PIN #/Assessors #, date of recording, book and page, etc.)	✕			
h. Any known encumbrances on the property			✕	
Airports Specialist Comments:	[redacted]			
7. Purpose of acquisition (current/future development, concurrent use, noise, revenue production, etc.), often in table format. Interim use can be identified with an attached reference.	✕			
Airports Specialist Comments:	[redacted]			
8. The plan shows the following for both existing and future configurations based upon the approved Airport Layout Plan:	[redacted]			
a. Runway Protection Zones (RPZ)	✕			
b. Runways	✕			
c. Runway Safety Areas (RSA)	✕			
d. Runway Object Free Areas (OFA)	✕			
e. Taxiways	✕			
f. Other airport design surfaces (as necessary, must maintain a legible map)	✕			
g. Road/railroad right-of-ways	✕			
h. Bearing and distance of airport property lines	✕			
Airports Specialist Comments:	[redacted]			
9. North arrow, legend and graphic/numerical scale is shown	✕			
Airports Specialist Comments:	[redacted]			
10. If the Exhibit 'A' is being submitted as part of a land acquisition project, the parcels being acquired are shown	✕			
Airports Specialist Comments:	[redacted]			
11. Title block clearly labeled as Exhibit "A" Airport Property Inventory Maps and dated	✕			
Airports Specialist Comments:	[redacted]			
12. Revision block/table, Sponsor approval block, Preparer's block, dated	✕			

Checklist	Sponsor/Consultant			FAA
Review Item	**Yes**	**No**	**N/A**	**Agree**
Airports Specialist Comments:				
13. Understandable and legible legend, including all linetypes and symbols used	✕			
Airports Specialist Comments:				
14. Parcel table is legible	✕			
Airports Specialist Comments:				
Provide an explanation for any checklist item marked 'No'.				

Accepted By: _____ Date: Click here to enter a date.

Airports Specialist

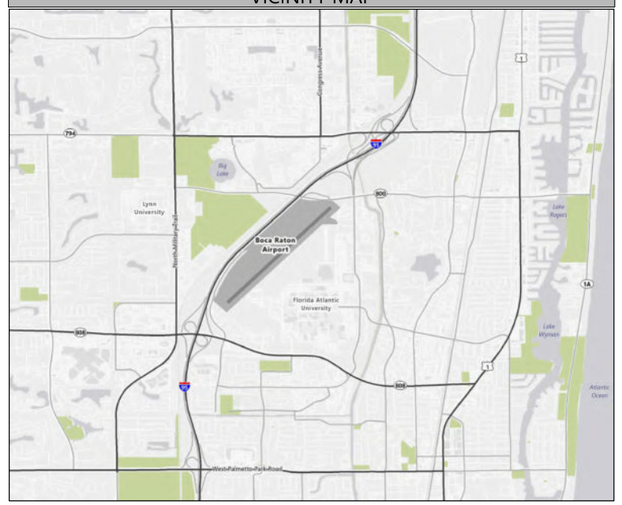
EXHIBIT 'A' AIRPORT PROPERTY INVENTORY MAP

BOCA RATON AIRPORT (BCT)
BOCA RATON, FLORIDA

PREPARED FOR:
BOCA RATON AIRPORT AUTHORITY
JULY 2023

LOCATION MAP

VICINITY MAP



EXECUTIVE DIRECTOR

CLARA BENNETT

DEPUTY DIRECTOR

SCOTT KOHUT

BOCA RATON AIRPORT AUTHORITY

BOB TUCKER	CHAIRMAN
RANDY NOBLES	VICE - CHAIRMAN
CHERYL BUDD	SECRETARY & TREASURER
MITCH FOGEL	BOARD MEMEBER
MELVIN POLLACK	BOARD MEMBER
GENE FOLDEN	BOARD MEMBER
JAMES R. NAU	BOARD MEMBER

SHEET INDEX

SHEET NUMBER	TITLE	REVISION	DATE
1	TITLE SHEET		
2	AIRPORT PROPERTY MAP - OVERVIEW		
3	AVIGATION EASEMENTS		
4	AIRPORT PROPERTY MAP - KEY MAP & LEGAL DESCRIPTION		
5	AIRPORT PROPERTY MAP - DETAIL 1		
6	AIRPORT PROPERTY MAP - DETAIL 2		
7	AIRPORT PROPERTY MAP - DETAIL 3		
8	AIRPORT PROPERTY MAP - DETAIL 4		
9	AIRPORT PROPERTY MAP - DETAIL 5		
10	AIRPORT PROPERTY MAP - DETAIL 6		
11	AIRPORT PROPERTY MAP - DETAIL 7		
12	AIRPORT PROPERTY MAP - DETAIL 8		
13	AIRPORT PROPERTY MAP - DETAIL 9		

NOTE

NOTE: APPENDED TO THIS EXHIBIT 'A' AIRPORT PROPERTY INVENTORY MAP SET ARE A SERIES OF DRAWINGS (7A THROUGH 7E) DEPICTING THE HISTORICAL AIRPORT PROPERTY EVOLUTION, WHICH INCLUDES DETAILS ON THE INITIAL PROPERTY CONVEYANCE FROM THE UNITED STATES OF AMERICA (UNDER THE PROVISIONS OF THE SURPLUS PROPERTY ACT OF 1944) TO THE TOWN OF BOCA RATON.

SOURCES : BROWN & PHILLIPS, INC., *AIRPORT PROPERTY MAP (PROJECT #20-085)*, NOVEMBER 2022; STONER & ASSOCIATES, INC., *LEGAL DESCRIPTION AND SKETCH OF THE BOCA RATON AIRPORT*, MARCH 16, 2005; RICONDO & ASSOCIATES, INC., *EXHIBIT 'A' PROPERTY MAP*, MARCH 2023.

BOCA RATON AIRPORT AUTHORITY
903 NW 35TH STREET
BOCA RATON, FL 33431
PHONE (561) 931-2202

RICONDO & ASSOCIATES, INC.
3504 LAKE LYNDA DRIVE, SUITE 165
ORLANDO, FL 32817
PHONE (407) 381-5730

BROWN & PHILLIPS, INC.
1860 OLD OKEECHOBEE ROAD, SUITE 509
WEST PALM BEACH, FL 33409
PHONE (561) 615-3988

N

MAGNETIC NORTH DECLINATION = 7° 9' W (APRIL 2022)

TRUE NORTH

0 NTS

GRAPHICAL SCALE IN FEET

NO.	REVISIONS	DATE

TITLE SHEET

BOCA RATON AIRPORT
BOCA RATON, FLORIDA

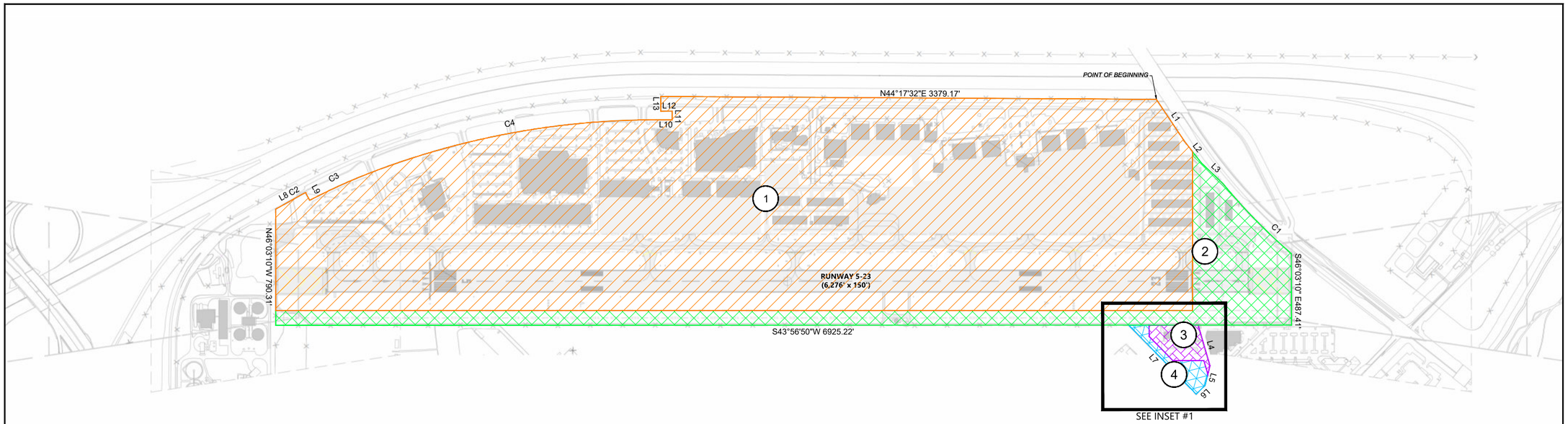
DRAWN BY: HK

CHECKED BY: BW

PREPARED BY:
RICONDO & ASSOCIATES, INC.

DATE:
JULY 2023

Drawing: P:\Project-Miami\BRAA\2017 GC\Task 70 - Airport Master Plan Update\11. Airport Layout Plan Set\Exhibit A\01-BCT_Title Sheet_2023.dwg_Layout: 01_Title Sheet_Nov 06, 2023, 11:34am



PROPERTY ACQUISITION

		FROM	TO	DOCUMENT/DATE	RECORDING INFO.	DATE FILED	FAA GRANT #	FDOT GRANT #	PURPOSE	ACREAGE
1		THE BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA	BOCA RATON AIRPORT AUTHORITY	LEASE AGREEMENT 12-27-84	O.R. BOOK: 4433 PAGE: 876	01-02-1985	NONE	NONE	AIRPORT PROPERTY	185 (Approx.)
2		THE BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA	BOCA RATON AIRPORT AUTHORITY	AMENDMENT TO LEASE 03-11-93	O.R. BOOK: 10899 PAGE: 1510	01-28-1999	NONE	NONE	AIRPORT PROPERTY	27 (Approx.)
3		FLORIDA ATLANTIC UNIVERSITY RESEARCH PARK (FARDA)	BOCA RATON AIRPORT AUTHORITY	LEASE AGREEMENT 05-16-12	O.R. BOOK: 25211 PAGES: 1334-1337	05-18-2012	NONE	NONE	AIRPORT PROPERTY	1.79
4		FLORIDA ATLANTIC UNIVERSITY RESEARCH PARK (FARDA)	BOCA RATON AIRPORT AUTHORITY	AMENDMENT TO LEASE 09-11-2014	O.R. BOOK: 27034 PAGES: 652-659	09-04-2014	NONE	NONE	AIRPORT PROPERTY	1.32
									TOTAL:	215.1 (Approx.)

LINE TABLE

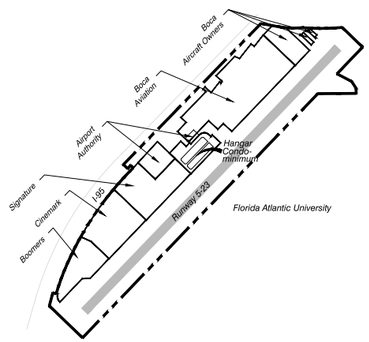
LINE	LENGTH	BEARING
L1	339.10	S79°44'47"E
L2	189.77	S84°05'25"E
L3	205.53	N87°44'12"E
L4	289.21	N82°05'40"W
L5	137.86	S31°42'27"E
L6	84.26	S00°22'32"E
L7	657.50	S89°37'28"W
L8	222.13	N14°56'16"E
L9	60.00	S73°45'19"E
L10	76.85	N44°17'32"E
L11	60.00	N45°42'28"W
L12	76.85	S44°17'32"W
L13	99.74	N45°42'28"W

CURVE TABLE

CURVE	LENGTH	RADIUS	DELTA ANGLE
C1	667.14	3869.72	9°52'40"
C2	10.61	4007.28	0°09'06"
C3	424.28	3947.28	6°09'31"
C4	2055.11	5419.58	21°43'36"

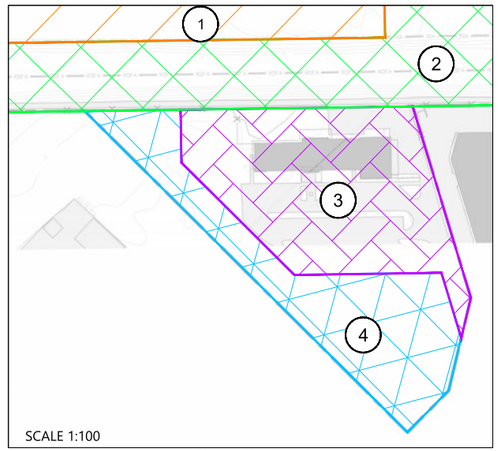
LEGEND

ON-AIRPORT BUILDINGS		DEPARTURE RUNWAY PROTECTION ZONE (RPZ)	
AIRFIELD PAVEMENT		AIRPORT PROPERTY BOUNDARY	
RUNWAY SAFETY AREA (RSA) (SEE NOTE #9)	RSA	AIRPORT REFERENCE POINT (ARP)	
RUNWAY OBJECT FREE AREA (ROFA) (SEE NOTE #10)	ROFA	TAXIWAY/TAXILANE CENTERLINE	
APPROACH RUNWAY PROTECTION ZONE (RPZ)		FENCE LINE	X



LEASEHOLD BOUNDARIES

NOT TO SCALE



SCALE 1:100

DRAWING INSET #1
BRAA ADMINISTRATION BUILDING DETAILS

NOTES

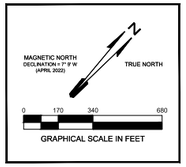
1. LEGAL DESCRIPTION AND SKETCH OF THE BOCA RATON AIRPORT PROVIDED BY STONER & ASSOCIATES, INC., DATED MARCH 16,2005. TO MEET FEDERAL AVIATION ADMINISTRATION (FAA) REQUIREMENT IN STANDARD OPERATING PROCEDURE (SOP) 3.00, THE TABLE HAS BEEN ADDED BY RICONDO & ASSOCIATES, INC., MARCH 2023.
2. ACREAGE FOR AVIGATION EASEMENTS CALCULATED ELECTRONICALLY IN CAD.
3. MEETS AND BOUNDS FOR PARCEL 3 AND 4 PROVIDED BY BROWN & PHILLIPS, INC., NOVEMBER 2022.

SOURCES : STONER & ASSOCIATES, INC., *LEGAL DESCRIPTION AND SKETCH OF THE BOCA RATON AIRPORT*, MARCH 16, 2005; BCT BASEMAP & ELEVATIONS/COORDINATES: MARTINEZ GEOSPATIAL, APRIL 2021; RICONDO & ASSOCIATES, INC., *EXHIBIT 'A' PROPERTY MAP*, MARCH 2023.

Drawing: P:\Project-Miami\BRAA\2017 GC\Task 70 - Airport Master Plan Update\11. Airport Layout Plan Set\Exhibit A\03.dwg_Layout: 02_Existing_Nov 06, 2023, 12:19pm

BOCA RATON AIRPORT AUTHORITY
903 NW 35TH STREET
BOCA RATON, FL 33431
PHONE (561)931-2202

RICONDO & ASSOCIATES, INC.
3504 LAKE LYNDA DRIVE, SUITE 165
ORLANDO, FL 32817
PHONE (407) 381-5730



NO.	REVISIONS	DATE

AIRPORT PROPERTY MAP - OVERVIEW

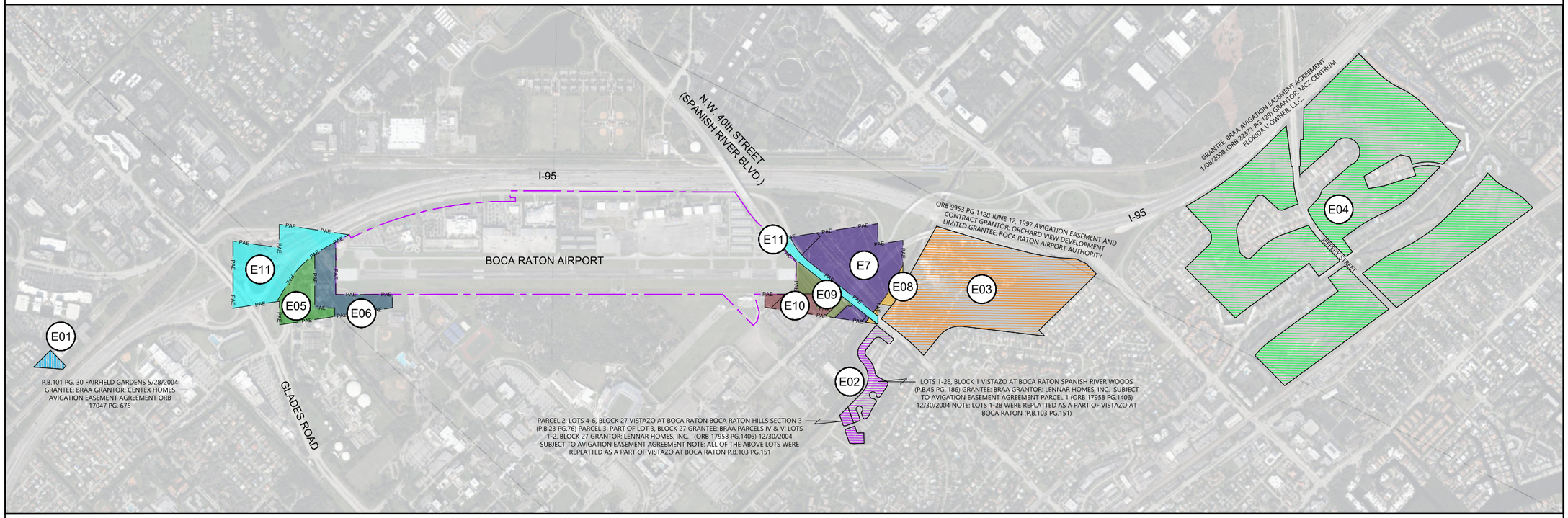
BOCA RATON AIRPORT
BOCA RATON, FLORIDA

DRAWN BY: HK

CHECKED BY: BW

PREPARED BY:
RICONDO & ASSOCIATES, INC.

DATE:
JULY 2023



EXISTING EASEMENTS

		FROM	TO	DOCUMENT	RECORDING INFO.	DATE FILED	FAA GRANT #	FDOT GRANT #	PURPOSE	ACREAGE
E01		CENTEX HOMES	BOCA RATON AIRPORT AUTHORITY	AVIGATION EASEMENT AGREEMENT	O.R. BOOK: 17047 PAGE: 675	05-28-2004			AVIGATION EASEMENT	1.63 (Approx.)
E02		LENNAR HOMES, INC.	BOCA RATON AIRPORT AUTHORITY	AVIGATION EASEMENT AGREEMENT	O.R. BOOK: 17958 PAGE: 1406	12-30-2004			AVIGATION EASEMENT	8.85 (Approx.)
E03		ORCHARD VIEW DEVELOPMENT LIMITED	BOCA RATON AIRPORT AUTHORITY	AVIGATION EASEMENT AGREEMENT	O.R. BOOK: 9953 PAGE: 1128	06-12-1997			AVIGATION EASEMENT	78.38 (Approx.)
E04		MCZ CENTRUM FLORIDA V OWNER, LLC.	BOCA RATON AIRPORT AUTHORITY	AVIGATION EASEMENT AGREEMENT	O.R. BOOK: 22371 PAGE: 129	01-08-2008			AVIGATION EASEMENT	212.76 (Approx.)

PROPOSED EASEMENTS

		FROM	TO	DOCUMENT	RECORDING INFO.	DATE FILED	FAA GRANT #	FDOT GRANT #	PURPOSE	ACREAGE
E05	PAE	CITY OF BOCA RATON	BOCA RATON AIRPORT AUTHORITY	AVIGATION EASEMENT AGREEMENT					AVIGATION EASEMENT	10.25 (Approx.)
E06	PAE	FLORIDA BOARD OF TRUSTEES OF THE INTERNATIONAL IMPROVEMENT TRUST FUND (TIITF)	BOCA RATON AIRPORT AUTHORITY	AVIGATION EASEMENT AGREEMENT					AVIGATION EASEMENT	11.75 (Approx.)
E07	PAE	FLORIDA BOARD OF TRUSTEES OF THE INTERNATIONAL IMPROVEMENT TRUST FUND (TIITF)	BOCA RATON AIRPORT AUTHORITY	AVIGATION EASEMENT AGREEMENT					AVIGATION EASEMENT	30.41 (Approx.)
E08	PAE	CITY OF BOCA RATON	BOCA RATON AIRPORT AUTHORITY	AVIGATION EASEMENT AGREEMENT					AVIGATION EASEMENT	2.06 (Approx.)
E09	PAE	FLORIDA BOARD OF TRUSTEES OF THE INTERNATIONAL IMPROVEMENT TRUST FUND (TIITF)	BOCA RATON AIRPORT AUTHORITY	AVIGATION EASEMENT AGREEMENT					AVIGATION EASEMENT	6.3 (Approx.)
E10	PAE	FLORIDA BOARD OF TRUSTEES OF THE INTERNATIONAL IMPROVEMENT TRUST FUND (TIITF)	BOCA RATON AIRPORT AUTHORITY	AVIGATION EASEMENT AGREEMENT					AVIGATION EASEMENT	5.11 (Approx.)
E11	PAE	FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT)	BOCA RATON AIRPORT AUTHORITY	AVIGATION EASEMENT AGREEMENT					AVIGATION EASEMENT	29.8 (Approx.)

SOURCES : BROWN & PHILLIPS, INC., *AIRPORT PROPERTY MAP (PROJECT #20-085)*, NOVEMBER 2022; NEARMAP, FLORIDA, NOVEMBER 23,2021 (AERIAL IMAGE FOR VISUAL REFERENCE ONLY, MAY NOT BE TO SCALE); RICONDO & ASSOCIATES, INC., *EXHIBIT 'A' PROPERTY MAP*, MARCH 2023.

LEGEND

AIRPORT PROPERTY BOUNDARY	
EXISTING EASEMENT BOUNDARY	
PROPOSED EASEMENT BOUNDARY	PAE

NOTES

1. DRAWING PREPARED BY BROWN & PHILLIPS, INC., NOVEMBER 2022. TO MEET FEDERAL AVIATION ADMINISTRATION (FAA) REQUIREMENT IN STANDARD OPERATING PROCEDURE (SOP) 3.00, THE TABLE HAS BEEN ADDED BY RICONDO & ASSOCIATES, INC., MARCH 2023.
2. ACREAGE FOR AVIGATION EASEMENTS CALCULATED ELECTRONICALLY IN CAD.

BOCA RATON AIRPORT AUTHORITY
903 NW 35TH STREET
BOCA RATON, FL 33431
PHONE (561) 931-2202

RICONDO & ASSOCIATES, INC.
3504 LAKE LYNDA DRIVE, SUITE 165
ORLANDO, FL 32817
PHONE (407) 381-5730

BROWN & PHILLIPS, INC.
1860 OLD OKEECHOBEE ROAD, SUITE 509
WEST PALM BEACH, FL 33409
PHONE (561) 615-3988

MAGNETIC NORTH DECLINATION = 7° 9' W (APRIL 2022)
TRUE NORTH
0 750 1,500
GRAPHICAL SCALE IN FEET

NO.	REVISIONS	DATE

AVIGATION EASEMENTS

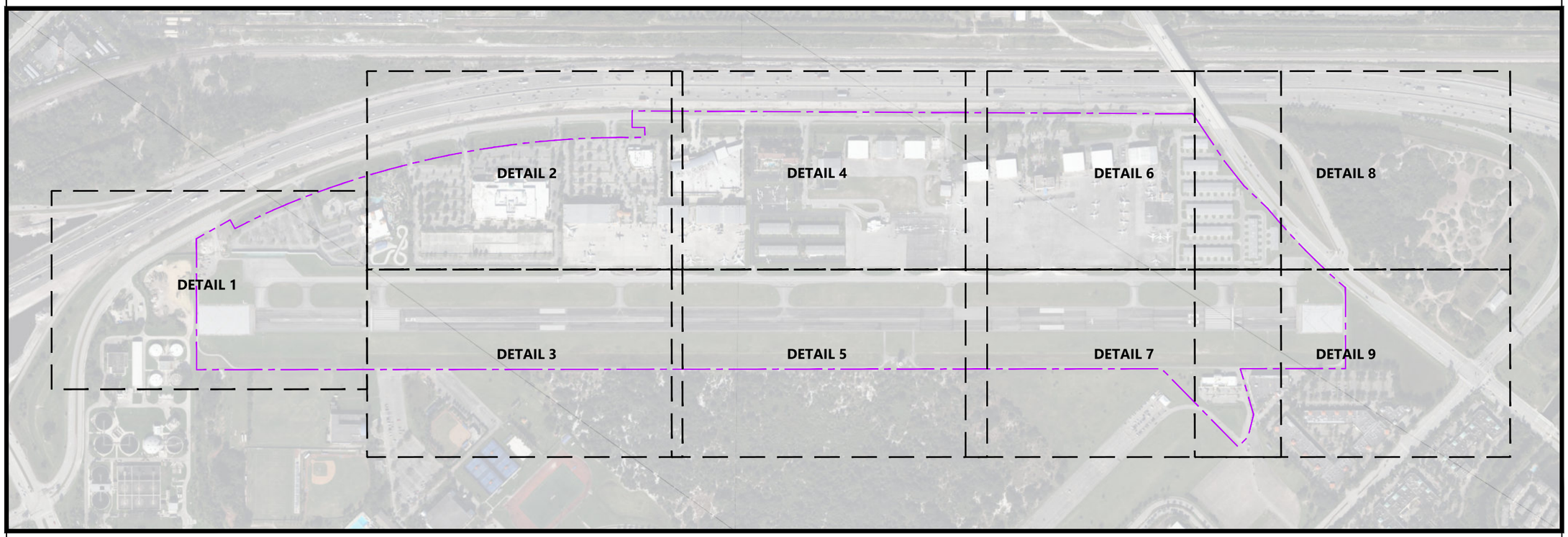
BOCA RATON AIRPORT
BOCA RATON, FLORIDA

DRAWN BY: MB
CHECKED BY: JEP

PREPARED BY:
BROWN & PHILLIPS, INC.

DATE:
JULY 2023

Drawing: P:\Project-Miami\BRAA\2017 GC\Task 70 - Airport Master Plan Update\11. Airport Layout Plan Set\Exhibit A\02 04-14.dwg_Layout: 02_Dec 01, 2023, 9:22am



KEY SHEET

LEGEND	
AIRPORT PROPERTY BOUNDARY	

LEGAL DESCRIPTION: (furnished per Boca Raton Airport Existing Property Map, Sheet 7E of 7E, dated June 2004)

A PARCEL OF LAND LYING IN A PORTION OF THE SOUTHWEST ONE-QUARTER (S.W. ¼) OF SECTION 7, TOWNSHIP 47 SOUTH, RANGE 43 EAST, AND A PORTION OF THE SOUTHEAST ONE-QUARTER (S.E. ¼) OF SECTION 12, TOWNSHIP 47 SOUTH,
RANGE 42 EAST, AND A PORTION OF THE NORTHEAST, NORTHWEST AND SOUTHWEST ONE-QUARTERS OF SECTION 13, TOWNSHIP 47 SOUTH, RANGE 42 EAST, OF PALM BEACH COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS
FOLLOWS:

BEGINNING AT THE POINT OF INTERSECTION OF THE NORTHEAST LIMITED ACCESS RIGHT-OF-WAY LINE OF I-95 AS SHOWN ON STATE ROAD DEPARTMENT RIGHT-OF-WAY MAP, (JOB NO. 93220-2411, SHEET 12a, DATED 2/15/71, REVISED LAST, 8/7/72) AND THE SOUTHERLY RIGHT-OF-WAY LINE NORTHWEST 40TH STREET (AS SHOWN ON THE AFORMENTIONED MAP) WITH
THE WEST LINE OF SAID SECTION 7;

THENCE SOUTH 79°44'47" EAST, ALONG SAID SOUTHERLY RIGHT-OF-WAY LINE OF NORTHWEST 40TH STREET, A DISTANCE OF 339.10 FEET;

THENCE SOUTH 84°05'25" EAST, CONTINUING ALONG AFOREMENTIONED RIGHT-OF-WAY LINE, A DISTANCE OF

189.77 FEET;

THENCE NORTH 87°44'12" EAST, ALONG SAID RIGHT-OF-WAY LINE, A DISTANCE OF 205.53 FEET TO A POINT ON THE ARC OF
A CIRCULAR CURVE TO THE LEFT, WHOSE RADIUS POINT BEARS NORTH 04°31'04" EAST, FROM THE LAST

DESCRIBED POINT;

THENCE EASTERLY, ALONG SAID RIGHT-OF-WAY LINE AND THE ARC OF SAID CURVE, HAVING A RADIUS OF 3869.72 FEET,
A CENTRAL ANGLE OF 09°52'40" FOR AN ARC DISTANCE OF 667.14 FEET;

THENCE SOUTH 46°03'10" EAST, ALONG A LINE PERPENDICULAR TO THE NORTHEAST SOUTHWEST RUNWAY PAVEMENT OF
THE BOCA RATON AIRPORT, A DISTANCE OF 487.41 FEET;

THENCE SOUTH 43°56'50" WEST, ALONG A LINE PARALLEL WITH AND 300.00 FEET SOUTHEASTERLY OF, AS MEASURED AT
RIGHT ANGLES TO, SAID NORTHEAST SOUTHWEST RUNWAY, A DISTANCE OF 6925.22 FEET;

THENCE NORTH 46°03'10" WEST, A DISTANCE OF 790.31 FEET TO A POINT ON THE EASTERLY RIGHT-OF-WAY LINE OF
AIRPORT ROAD AS SHOWN ON PLAT BOOK 6, PAGES 76 & 77 OF THE PUBLIC RECORDS OF PALM BEACH

COUNTY, FLORIDA;

THENCE ALONG THE AFORMENTIONED LINE, NORTH 14°56'16" EAST, A DISTANCE OF 222.13 FEET TO A POINT ON THE ARC OF A NON-TANGENT CURVE CONCAVE TO THE SOUTHEAST. A RADIAL LINE OF SAID CURVE THROUGH SAID POINT HAVING
A BEARING OF NORTH 73°44'37" WEST;

THENCE NORTHERLY ALONG THE ARC OF SAID CURVE (AND SAID AIRPORT ROAD RIGHT-OF-WAY), TO THE RIGHT, HAVING
A CENTRAL ANGLE OF 00°09'06" AND A RADIUS OF 4007.28 FEET FOR AN ARC DISTANCE OF 10.61 FEET TO A POINT ON A
NON-TANGENT LINE;

THENCE SOUTH 73°45'19" EAST, (ALONG THE EASTERLY LINE OF A 60 FOOT CANAL RIGHT-OF-WAY AS SHOWN ON SAID
PLAT BOOK 6, PAGES 76 & 77) A DISTANCE OF 60.00 FEET TO A POINT ON THE ARC OF A NON-TANGENT CURVE CONCAVE
TO THE SOUTHEAST. A RADIAL LINE OF SAID CURVE THROUGH SAID POINT HAVING A BEARING OF NORTH

73°45'19" WEST;

THENCE NORTHERLY ALONG THE ARC OF SAID CURVE (AND SAID CANAL RIGHT-OF-WAY LINE), TO THE RIGHT, HAVING A CENTRAL ANGLE OF 06°09'31" AND A RADIUS OF 3947.28 FEET FOR AN ARC DISTANCE OF 424.28 FEET TO A POINT OF A
COMPOUND CURVE OF A TANGENT CURVE CONCAVE TO THE SOUTHEAST;

THENCE NORTHEASTERLY ALONG THE ARC OF SAID CURVE (AND SAID CANAL RIGHT-OF-WAY LINE) TO THE RIGHT, AN
ARC DISTANCE OF 2055.11 FEET (SAID CURVE HAVING A RADIUS OF 5419.58 FEET AND A CENTRAL ANGLE OF 21°43'36")
TO A POINT OF TANGENCY;

THENCE NORTH 44°17'32" EAST, (ALONG SAID CANAL RIGHT-OF-WAY LINE) A DISTANCE OF 76.85 FEET;

THENCE NORTH 45°42'28" WEST, A DISTANCE OF 60.00 FEET;

THENCE SOUTH 44°17'32" WEST, A DISTANCE OF 76.85 FEET;

THENCE NORTH 45°42'28" WEST, A DISTANCE OF 99.74 FEET TO A POINT ON SAID I-95 RIGHT-OF-WAY LINE;

THENCE NORTH 44°17'32" EAST, ALONG SAID I-95 RIGHT-OF-WAY LINE, A DISTANCE OF 3379.17 FEET TO THE POINT OF BEGINNING.

SAID LANDS SITUATE WITHIN THE CITY OF BOCA RATON, PALM BEACH COUNTY, FLORIDA AND CONTAINING 212.14 ACRES (9,240,799 SQUARE FEET), MORE OR LESS.

ABBREVIATIONS:
P.O.C. - POINT OF COMMENCEMENT
P.O.B. - POINT OF BEGINNING
P.B. - PLAT BOOK
RPB - ROAD PLAT BOOK
ORB - OFFICIAL RECORD BOOK
D.B. - DEED BOOK
PG. - PAGE
R/W - RIGHT-OF-WAY
℄ - CENTERLINE
R - RADIUS
Δ - CENTRAL ANGLE
A - ARC LENGTH
B-P - BROWN & PHILLIPS, INC.
FDOT - FLORIDA DEPARTMENT OF TRANSPORTATION
PBC - PALM BEACH COUNTY
CBP - CUSTOMS BORDER PROTECTION
BRAA - BOCA RATON AIRPORT AUTHORITY
U.E. - UTILITY EASEMENT
D.E. - DRAINAGE EASEMENT
A.E. - ACCESS EASEMENT
FPLE - FLORIDA POWER & LIGHT EASEMENT
IEE - INGRESS-EGRESS EASEMENT
S.B.E. - SOUTHERN BELL EASEMENT
BRWE - CITY OF BOCA RATON WATER EASEMENT
BRSSE - CITY OF BOCA RATON SANITARY SEWER EASEMENT
BRWME - CITY OF BOCA RATON WATER MAIN EASEMENT
BRUE - CITY OF BOCA RATON UTILITY EASEMENT
BRWLE - CITY OF BOCA RATON WATER LINE EASEMENT
B.S.L. - BELL SOUTH LICENSE
W.L.A. - WATERLINE LICENSE AGREEMENT
(D) - DEED DIMENSION
NAD - NORTH AMERICAN DATUM
LB - LICENSED BUSINESS
PCN - PROPERTY CONTROL NUMBER

SURVEYOR'S REPORT:

1. THIS PROPERTY MAP IS NOT SURVEY.
2. BEARINGS ARE BASED ON S79°44'47"E (assumed) ALONG THE SOUTH RIGHT-OF-WAY OF NORTHWEST 40th STREET.
3. THE LEGAL DESCRIPTION WAS FURNISHED AS NOTED.
4. AREA = 212.14 ACRES, MORE OR LESS (AIRPORT PROPERTY FURNISHED TO BROWN & PHILLIPS, INC.)
5. RECORD INFORMATION SHOWN IS PER AN OWNERSHIP AND ENCUMBRANCE REPORT PREPARED BY SOUTHEAST GUARANTY & TITLE, INC., FILE NO.: 202206004, DATED: JULY 6, 2002.

   ADDITIONAL INFORMATION WAS FURNISHED BY BOCA RATON AIRPORT AUTHORITY.

   BROWN & PHILLIPS, INC. PERFORMED A CURSORY REVIEW OF THE PUBLIC RECORDS FOR READILY AVAILABLE INFORMATION.

   IT SHOULD BE CLEARLY UNDERSTOOD BY ANY USERS OF THIS MAP THAT THERE MAY BE ADDITIONAL DEEDS/LEASES/EASEMENTS/RESTRICTIONS, OR OTHER RECORD INFORMATION NOT SHOWN ON THIS PROPERTY MAP THAT MAY BE FOUND IN THE PUBLIC RECORDS OF PALM BEACH COUNTY.
6. THIS PROPERTY MAP WAS PREPARED FOR BOCA RATON AIRPORT AUTHORITY.

   THIS MAP IS NOT VALID FOR ANY OTHER USE.
7. THIS MAP IS INTENDED TO BE DISPLAYED AT A SCALE OF 1"=60', ON 24"x 36" SHEETS (sheets 3-11).
8. THE UNDERLYING 2022 PALM BEACH COUNTY AERIAL PHOTO IS SHOWN FOR INFORMATION ONLY AND IS NOT A PART OF THE SURVEY.
9. © COPYRIGHT 2022 BY BROWN & PHILLIPS, INC. REPRODUCTIONS OF THIS PROPERTY MAP ARE NOT VALID WITHOUT THE ORIGINAL SIGNATURE AND STAMP, OR A DIGITALLY VERIFIED ELECTRONIC SIGNATURE AND SEAL, OF A FLORIDA LICENSED SURVEYOR AND MAPPER EMPLOYED BY BROWN & PHILLIPS, INC.

SOURCES : BROWN & PHILLIPS, INC., *AIRPORT PROPERTY MAP (PROJECT #20-085)*, NOVEMBER 2022; NEARMAP, FLORIDA, NOVEMBER 23,2021 (AERIAL IMAGE FOR VISUAL REFERENCE ONLY, MAY NOT BE TO SCALE).

BOCA RATON AIRPORT AUTHORITY
903 NW 35TH STREET
BOCA RATON, FL 33431
PHONE (561) 931-2202

RICONDO & ASSOCIATES, INC.
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ORLANDO, FL 32817
PHONE (407) 381-5730

BROWN & PHILLIPS, INC.
1860 OLD OKEECHOBEE ROAD, SUITE 509
WEST PALM BEACH, FL 33409
PHONE (561) 615-3988

MAGNETIC NORTH DECLINATION = 7° 9' W (APRIL 2022)
TRUE NORTH
0 300 600
GRAPHICAL SCALE IN FEET

NO.	REVISIONS	DATE

AIRPORT PROPERTY MAP – KEY MAP & LEGAL DESCRIPTION

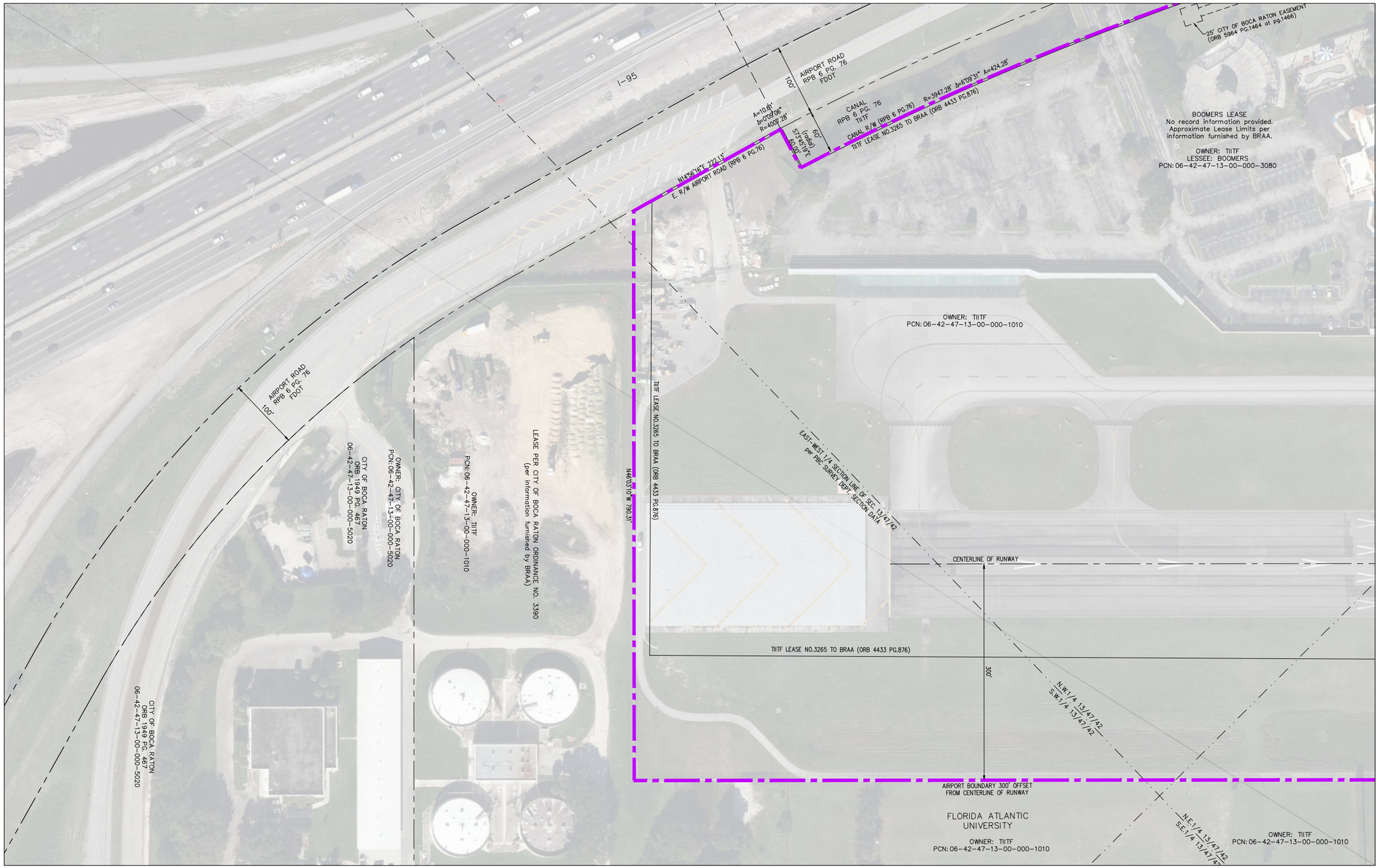
BOCA RATON AIRPORT
BOCA RATON, FLORIDA

DRAWN BY: MB
CHECKED BY: JEP

PREPARED BY:
BROWN & PHILLIPS, INC.

DATE:
JULY 2023

Drawing: P:\Project-Miami\BRAA\2017 GC\Task 70 - Airport Master Plan Update\11. Airport Layout Plan Set\Exhibit A\02 04-14.dwg_Layout: 04_Nov 06, 2023, 11:54am



SEE DETAIL 2

SEE DETAIL 3

SOURCES : BROWN & PHILLIPS, INC., *AIRPORT PROPERTY MAP (PROJECT #20-085)*, NOVEMBER 2022; NEARMAP, FLORIDA, NOVEMBER 23,2021 (AERIAL IMAGE FOR VISUAL REFERENCE ONLY, MAY NOT BE TO SCALE).

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MAGNETIC NORTH
DECLINATION = 7° 9' W
(APRIL 2022)

TRUE NORTH

0 65 130

GRAPHICAL SCALE IN FEET

NO.	REVISIONS	DATE

AIRPORT PROPERTY MAP - DETAIL 1

BOCA RATON AIRPORT
BOCA RATON, FLORIDA

DRAWN BY: MB

CHECKED BY: JEP

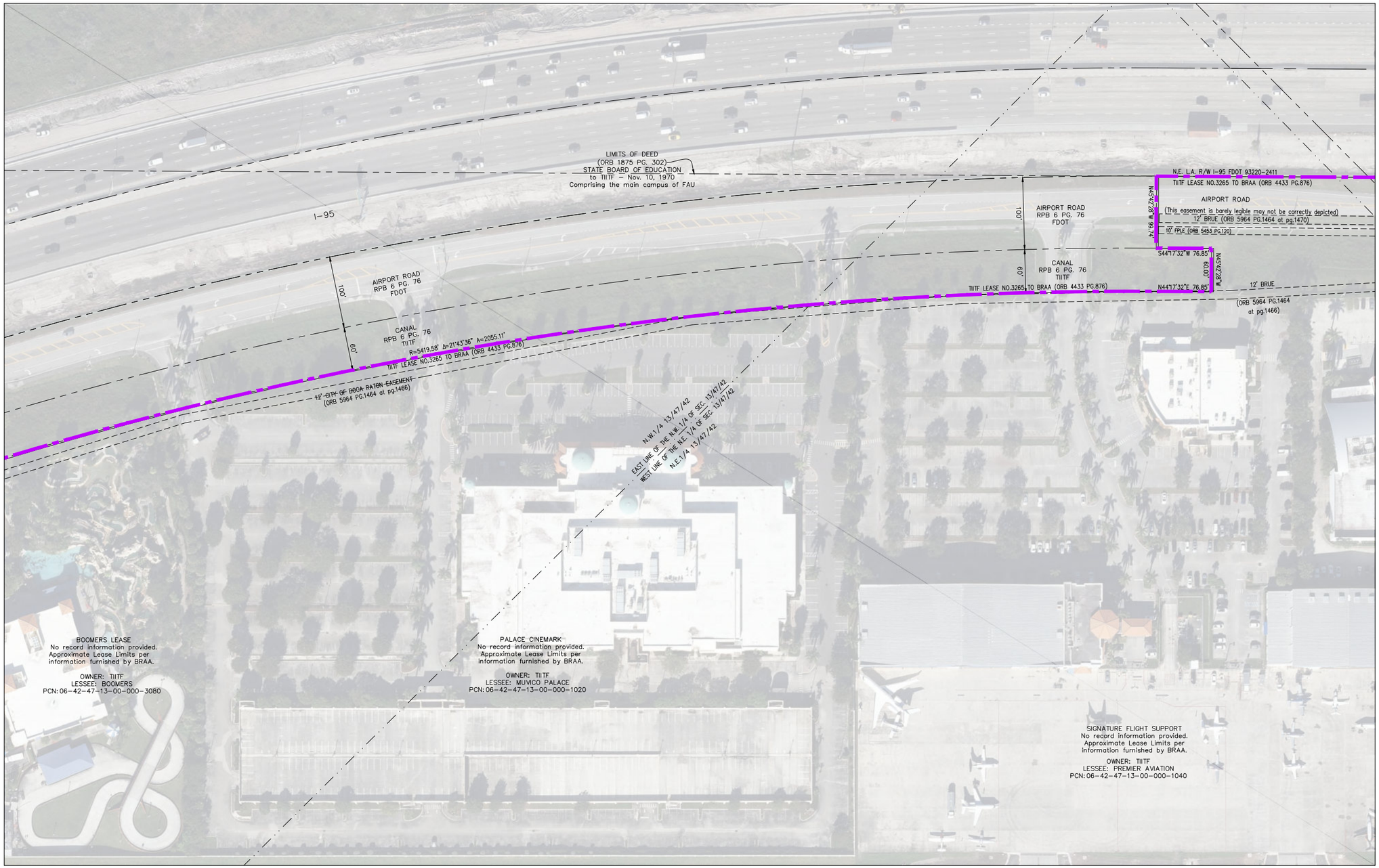
PREPARED BY:
BROWN & PHILLIPS, INC.

DATE:
JULY 2023

Drawing: P:\Project-Miami\BRAA\2017 GC\Task 70 - Airport Master Plan Update\11. Airport Layout Plan Set\Exhibit A\02 04-14.dwg_Layout: 05_Nov 06, 2023, 11:56am

SEE DETAIL 1

SEE DETAIL 4



SEE DETAIL 3

SOURCES : BROWN & PHILLIPS, INC., *AIRPORT PROPERTY MAP (PROJECT #20-085)*, NOVEMBER 2022; NEARMAP, FLORIDA, NOVEMBER 23,2021 (AERIAL IMAGE FOR VISUAL REFERENCE ONLY, MAY NOT BE TO SCALE).

Drawing: P:\Project-Miami\BRAA\2017 GC\Task 70 - Airport Master Plan Update\11. Airport Layout Plan Set\Exhibit A\02 04-14.dwg_Layout: 06_Nov 06, 2023, 11:57am

BOCA RATON AIRPORT

BOCA RATON AIRPORT AUTHORITY
903 NW 35TH STREET
BOCA RATON, FL 33431
PHONE (561) 931-2202

RICONDO®

RICONDO & ASSOCIATES, INC.
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BROWN & PHILLIPS, INC.

BROWN & PHILLIPS, INC.
1860 OLD OKEECHOBEE ROAD, SUITE 509
WEST PALM BEACH, FL 33409
PHONE (561) 615-3988

MAGNETIC NORTH
DECLINATION = 7° 9' W
(APRIL 2022)

TRUE NORTH

0 65 130

GRAPHICAL SCALE IN FEET

NO.	REVISIONS	DATE

AIRPORT PROPERTY MAP - DETAIL 2

BOCA RATON AIRPORT
BOCA RATON, FLORIDA

DRAWN BY: MB

CHECKED BY: JEP

PREPARED BY:
BROWN & PHILLIPS, INC.

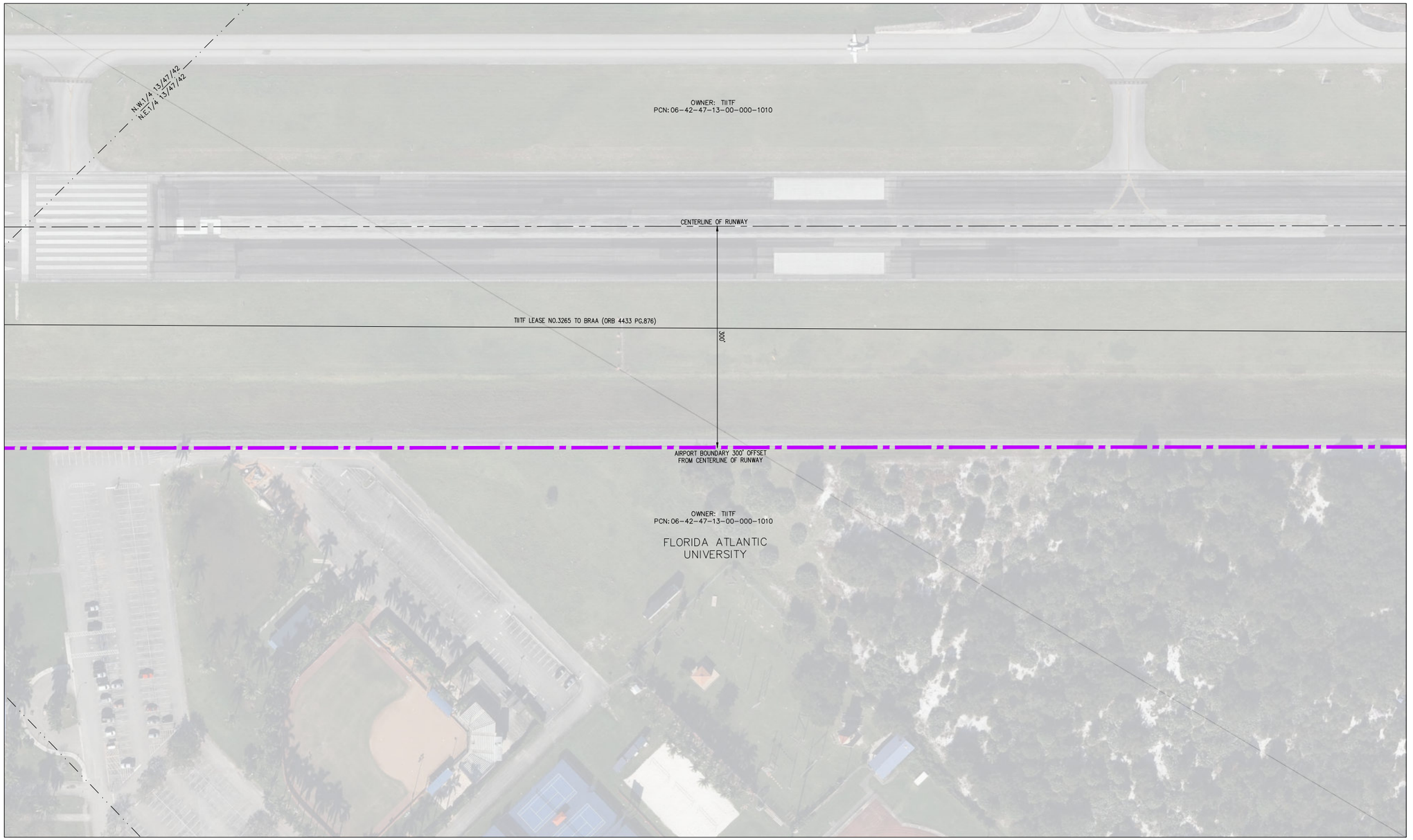
DATE:
JULY 2023

SHEET 6 OF 13

SEE DETAIL 2

SEE DETAIL 1

SEE DETAIL 5



SOURCES : BROWN & PHILLIPS, INC., *AIRPORT PROPERTY MAP (PROJECT #20-085)*, NOVEMBER 2022; NEARMAP, FLORIDA, NOVEMBER 23,2021 (AERIAL IMAGE FOR VISUAL REFERENCE ONLY, MAY NOT BE TO SCALE).

BOCA RATON AIRPORT

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PHONE (561) 615-3988

MAGNETIC NORTH
DECLINATION = 7° 9' W
(APRIL 2022)

TRUE NORTH

0 65 130

GRAPHICAL SCALE IN FEET

NO.	REVISIONS	DATE

AIRPORT PROPERTY MAP - DETAIL 3

BOCA RATON AIRPORT
BOCA RATON, FLORIDA

DRAWN BY: MB

CHECKED BY: JEP

PREPARED BY:
BROWN & PHILLIPS, INC.

DATE:
JULY 2023

Drawing: P:\Project-Miami\BRAA\2017 GC\Task 70 - Airport Master Plan Update\11. Airport Layout Plan Set\Exhibit A\02 04-14.dwg_Layout: 07_Nov 06, 2023, 11:58am

SEE DETAIL 2

SEE DETAIL 6

BASELINE SURVEY S.R.9 (I-95) FDOT 93220-2550 Sheet 2 of 9

I-95

N.E. L.A. R/W I-95 FDOT 93220-2411 R/W S.R.9 (I-95)

TIITF LEASE NO.3265 TO BRAA (ORB 4433 PG.876)

N44°17'32"E 3379.17'

AIRPORT ROAD

(This easement is barely legible may not be correctly depicted)

12' BRUE (ORB 5964 PG.1464 at pg.1470)

10' FPLE (ORB 5453 PG.120)

Note: Easement is barely legible. This is only a best guess of the easement location.

12' BRWE (ORB 9661 PG.1029)

12' BRUE (ORB 5964 PG.1464 at pg.1466)

(ORB 5273 PG.848)

10' FPLE

24' IEE (ORB 10739 PG.203)

HOTEL SITE A.E. (ORB 11437 PG.469)

N45°18'41"W(D) 38.00' N45°42'28"W

S44°17'32"W 93.00' S44°41'19"W(D)

N44°41'19"E(D) N44°17'32"E 138.00'

N45°18'41"W(D) N45°42'28"W 87.00'

NON-DISTURBANCE, RECOGNITION AND DIRECT LEASING AGREEMENT
COMPOSITE EXHIBIT "A" HOTEL PARCEL
BRAA (Senior Landlord), BOCA AIRPORT, INC. (Senior Lessee), and BOCA AIRPORT HOTEL PARTNERS LIMITED, L.L.P. (Secondary Lessee)
July 9, 1999
(ORB 11437 PG.553)

FAIRFIELD INN

Hotel Property Excepted from Lease No.3265 per ORB 26473 pg.1691

OWNER: TIITF
LESSEE: FAIRFIELD INN
PCN: 06-42-47-12-00-000-5030

FAA SITE

12' BRSSE (ORB 9661 PG.1029)
Note: The easement is barely legible. This is only a best guess of the easement location.

12' BRWE (ORB 9661 PG.1029)
Note: Easement is barely legible. This is only a best guess of the easement location.

N45°34'31"W(D) N45°58'18"W 286.03'

N44°17'48"E(D) N43°54'01"E 281.49'

P.O.B. - ORB 11437 PG.553 & Less Hotel Exhibit "B" (ORB 26473 pg.1691) 280.25'

1.24°

BRUE (ORB 12112 PG.1764)

S44°19'42"W(D) S43°55'55"W 7.00'

N45°40'18"W(D) N46°04'05"W 2.00' R=16.00' Δ=90° A=25.13'

S45°40'18"E(D) S46°04'05"E 73.00' 1.18'

83.46' N44°05'06"E N44°28'53"E(D)

10' W.L.A. (ORB 29358 pg.418)

W.L.A. (ORB 29358 pg.418)

N43°55'55"E 219.50' N44°19'42"E(D)

S43°55'55"W 479.50' S44°19'42"W(D)

CBP FACILITY

CBP FACILITY ORB 30927 pg 1449 at pg.1613

ATLANTIC AVIATION
Overall Lease Property
Modified Jan. 31, 2022
Described by Brown & Phillips, Inc.
Project no. 21-152

ATLANTIC AVIATION
Overall Lease Property
Modified Jan. 31, 2022
Described by Brown & Phillips, Inc.
Project no. 21-152

CITY FURNITURE/ASHLEY FURNITURE
MATTRESS FIRM/RESTAURANT
No record information provided.
Approximate Lease Limits per information furnished by BRAA.

OWNER: TIITF
LESSEE: CITY FURNITURE
PCN: 06-42-47-12-00-000-5060

SIGNATURE FLIGHT SUPPORT
No record information provided.
Approximate Lease Limits per information furnished by BRAA.

OWNER: TIITF
LESSEE: PREMIER AVIATION
PCN: 06-42-47-13-00-000-1040

OWNER: TIITF
PCN: 06-42-47-12-00-000-5010

HANGAR No.7
ORB 30927 pg 1449
(at pgs 1610-1632)

HANGAR No.6
ORB 30927 pg 1449
(at pgs 1610-1632)

22nd Amendment to the November 24, 1984 Lease BRAA and Atlantic Aviation
Nov. 18, 2015
ORB 30927 pg 1449
(at pgs 1610-1632)

N44°17'32"E 122.00' 105.50' S45°42'28"E S44°17'32"W 122.00'

N44°17'32"E 121.50' 105.00' S45°42'28"E S44°17'32"W 121.50'

N44°41'19"E(D) N44°17'32"E 781.04'

12' BRUE (ORB 5964 PG.1464 at pg.1475)

12' BRUE (ORB 5964 PG.1464 at pg.1466)

12' BRWE (ORB 5964 PG.1464 at pg.1475)

25' BRUE (ORB 5964 PG.1464 at pg.1466)

N44°41'19"E(D) N44°17'32"E 50.00'

10' FPLE (ORB 5355 PG.241)

S45°42'28"E 140.00'

S45°18'41"E(D)

N45°42'28"W 50.00' (N45°18'41"W(D))

N39°18'24"E(D) N38°54'37"E 235.00'

BRSSE (ORB 5964 PG.1464 at pg.1470)

N47°30'00"E 64.00' BLUE HANGAR ORB 30927 pg 1449 (at pgs 1610-1632) 62.00'

S47°30'00"W 64.00'

N42°30'00"W 62.00'

THE REMAINDER OF THE BRWE (ORB 5964 PG.1464 at PG.1472) IS NOT LEGIBLE

Hangar Condominium
ORB 10413 pg.751
May 20, 1998

Hangar Condominium
ORB 10413 pg.751
May 20, 1998

12' BRWE (ORB 9661 PG.1029)
Note: Easement is barely legible. This is only a best guess of the easement location.

12' BRSSE (ORB 9661 PG.1029)
Note: The easement is barely legible. This is only a best guess of the easement location.

10' FPLE (ORB 10360 PG.1795) & (ORB 10413 Pg.751)

35' IEE (ORB 10739 PG.203)

28' IEE (ORB 10739 PG.203)

24' IEE (ORB 10739 PG.203)

S43°57'07"E 494.39'

S43°57'07"W 524.80'

S43°57'14"E 524.93'

S43°57'14"W 530.35'

S43°55'55"W 735.35'

S44°19'42"W(D)

OWNER: TIITF
PCN: 06-42-47-12-04-multiple nos.
Hangar Condominium
ORB 10413 pg.751
May 20, 1998

DESCRIPTIONS OVERLAP 4.25'

POB No.2 (ORB 10413 pg 751)

28.02' POINT "A" (ORB 10413 pg 751)

POB No.1 (ORB 10413 pg 751)

49.36'

S46°17'34"E 33.73'

S46°17'34"E 98.00'

S46°04'05"E 73.00'

S45°40'18"E(D) S46°04'05"E 73.00'

N46°04'05"W 214.50'

N45°40'18"W(D)

N46°04'05"W 199.00'

S43°55'55"W 140.00' S44°19'42"W(D)

CBP FACILITY ORB 30927 pg 1449 at pg.1613
22nd Amendment to the November 24, 1984 Lease BRAA and Atlantic Aviation
Nov. 18, 2015
ORB 30927 pg 1449
(at pgs 1610-1632)

273.00' S44°19'42"W

S44°19'42"W(D) S43°55'55"W 1570.87'

A=39.27' Δ=89°59'44" R=25'

A=39.27' Δ=89°59'50" R=25'

Δ=90°00'16" A=39.27' R=25'

Δ=90°00'10" A=31.42' R=20'

R=11.00' A=17.27' Δ=90°

A=47.00' Δ=89°45'19" R=30.00'

N46°04'05"W 509.05'

N46°04'05"W 533.00'

SE1/4 12/47/42

NE1/4 13/47/42

SEE DETAIL 5

SOURCES : BROWN & PHILLIPS, INC., *AIRPORT PROPERTY MAP (PROJECT #20-085)*, NOVEMBER 2022; NEARMAP, FLORIDA, NOVEMBER 23,2021 (AERIAL IMAGE FOR VISUAL REFERENCE ONLY, MAY NOT BE TO SCALE).

Drawing: P:\Project-Miami\BRAA\2017 GC\Task 70 - Airport Master Plan Update\11. Airport Layout Plan Set\Exhibit A\02 04-14.dwg_Layout: 08_Nov 06, 2023, 11:59am

BOCA RATON AIRPORT

BOCA RATON AIRPORT AUTHORITY
903 NW 35TH STREET
BOCA RATON, FL 33431
PHONE (561) 931-2202

RICONDO®

RICONDO & ASSOCIATES, INC.
3504 LAKE LYNDA DRIVE, SUITE 165
ORLANDO, FL 32817
PHONE (407) 381-5730

BROWN & PHILLIPS, INC.

BROWN & PHILLIPS, INC.
1860 OLD OKEECHOBEE ROAD, SUITE 509
WEST PALM BEACH, FL 33409
PHONE (561) 615-3988

MAGNETIC NORTH DECLINATION = 7° 9' W (APRIL 2022)

TRUE NORTH

0 65 130

GRAPHICAL SCALE IN FEET

NO.	REVISIONS	DATE

AIRPORT PROPERTY MAP - DETAIL 4

BOCA RATON AIRPORT
BOCA RATON, FLORIDA

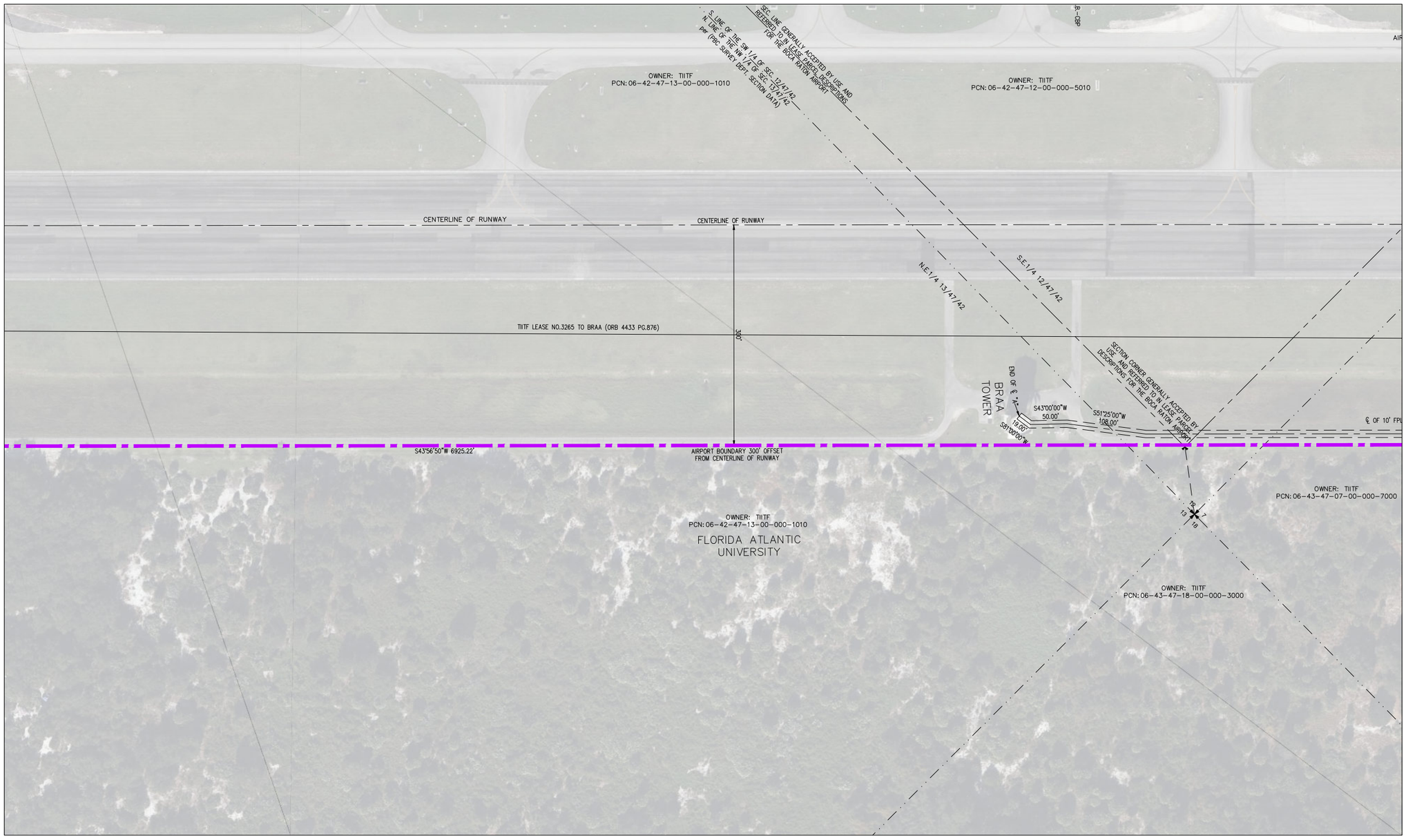
DRAWN BY: MB

CHECKED BY: JEP

PREPARED BY:
BROWN & PHILLIPS, INC.

DATE:
JULY 2023

SEE DETAIL 4



SEE DETAIL 3

SEE DETAIL 7

SOURCES : BROWN & PHILLIPS, INC., *AIRPORT PROPERTY MAP (PROJECT #20-085)*, NOVEMBER 2022; NEARMAP, FLORIDA, NOVEMBER 23,2021 (AERIAL IMAGE FOR VISUAL REFERENCE ONLY, MAY NOT BE TO SCALE).

BOCA RATON AIRPORT AUTHORITY
903 NW 35TH STREET
BOCA RATON, FL 33431
PHONE (561) 931-2202

RICONDO & ASSOCIATES, INC.
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PHONE (407) 381-5730

BROWN & PHILLIPS, INC.
1860 OLD OKEECHOBEE ROAD, SUITE 509
WEST PALM BEACH, FL 33409
PHONE (561) 615-3988

MAGNETIC NORTH DECLINATION = 7° 9' W (APRIL 2022)

TRUE NORTH

0 65 130

GRAPHICAL SCALE IN FEET

NO.	REVISIONS	DATE

AIRPORT PROPERTY MAP - DETAIL 5

BOCA RATON AIRPORT
BOCA RATON, FLORIDA

DRAWN BY: MB

CHECKED BY: JEP

PREPARED BY:
BROWN & PHILLIPS, INC.

DATE:
JULY 2023

Drawing: P:\Project-Miami\BRAA\2017 GC\Task 70 - Airport Master Plan Update\11. Airport Layout Plan Set\Exhibit A\02 04-14.dwg_Layout: 09_Nov 06, 2023, 12:00pm

SEE DETAIL 4

SEE DETAIL 8

I-95

N.E. L.A. R/W I-95 FDOT 93220-2411
TIITF LEASE NO.3265 TO BRAA (ORB 4433 PG.876)

AIRPORT ROAD

(This easement is barely legible & may not be correctly depicted)
12' BRUE (ORB 5964 PG.1464 at pg.1470)

10' FPLE (ORB 5453 PG.120)

N44°17'32"E 462.00' N44°41'19"E(D)

N45°18'41"W(D)
N45°42'28"W 125.40'

S64°39'08"E(D)
S65°03'55"E 85.00'

N39°18'24"E(D)
N38°54'37"E 235.00'

S50°41'36"E(D)
S51°05'23"E 28.82'

R=20.00'
Δ=84°37'05"
14.23'
N38°54'37"E
N39°18'24"E(D)
A=29.54'

10' FPLE
(ORB 5355 PG.241)

12' BRUE (ORB 5964 PG.1464 at pg.1466)

ATLANTIC AVIATION

N38°54'37"E 122.00'
HANGAR No.4
ORB 30927 pg 1449
(at pgs 1610-1632)
122.00' S38°54'37"W
N51°05'23"W 101.00'
S51°05'23"E 101.00'

12' BRUE (ORB 5964 PG.1464 at PG.1473)

12' BRUE (ORB 5964 PG.1464 at pg.1472)

N38°54'37"E 122.00'
HANGAR No.3
ORB 30927 pg 1449
(at pgs 1610-1632)
N51°05'23"W 108.00'
S51°05'23"E 108.00'
S38°54'37"W 122.00'

12' BRUE (ORB 5964 PG.1464 at PG.1473)

N38°54'37"E 121.00'
HANGAR No.2
ORB 30927 pg 1449
(at pgs 1610-1632)
N51°05'23"W 132.00'
S51°05'23"E 132.00'
S38°54'37"W 121.00'

22nd Amendment to the Second Amended and Restated Lease Dated May 14, 1984, Lessee Boca Raton Atlantic Aviation Nov. 18, 2015 ORB 30927 pg 1449 (at pgs 1610-1632)

N38°54'37"E 170.00'
HANGAR No.1A
ORB 30927 pg 1449
(at pgs 1610-1632)
N51°05'23"W 100.00'
S51°05'23"E 100.00'
S38°54'37"W 170.00'

12' BRUE (ORB 5964 PG.1464 at PG.1473)

N38°54'37"E
49.00'
3700 BLDG
ORB 30927 pg 1449
(at pgs 1610-1632)
69.00'
76.00'
57.00'
N51°05'23"W
S51°05'23"E
47.00'
46.00'
S38°54'37"W
N51°05'23"W 100.00'
S51°05'23"E 100.00'
25.00'
S38°54'37"W

12' BRUE (ORB 5964 PG.1464 at PG.1468)

OWNER: TIITF
PCN:06-42-47-12-00-000-5010

SECTION LINE GENERALLY ACCEPTED BY USE AND REFERRED TO IN LEASE PARCEL DESCRIPTIONS FOR THE BOCA RATON AIRPORT

SEC.12 TOWNSHIP 47 SOUTH RANGE 42 EAST
SEC.7 TOWNSHIP 47 SOUTH RANGE 43 EAST
PALM BEACH COUNTY SEC. LINE NAD 83/90

OWNER: TIITF
PCN:06-43-47-07-00-000-7000

ATLANTIC AVIATION
Overall Lease Property
Modified Jan. 31, 2022
Described by Brown & Phillips, Inc.
Project no. 21-152

10' FPLE (ORB 5273 PG.845)

BELL SOUTH LICENSE
(ORB 12014 PG.373)

(This easement is barely legible & may not be correctly depicted)
12' BRUE (ORB 5964 PG.1464 at pg.1470)

10' FPLE (ORB 5453 PG.120)

N39°18'24"E(D)
N38°54'37"E 392.00'
N39°18'24"E(D)

S50°41'36"E(D)
S51°05'23"E 89.49'

12' BRUE (ORB 5964 PG.1464 at pg.1466)

N39°18'24"E(D)
N38°54'37"E 252.68'

25' I.E.E. per BOCA AIRCRAFT OWNERS, INC.
LEGAL DESCRIPTION/LEASE PARCEL
(furnished by BRAA 9/18/18)
(record information, if any, is not known)

S44°19'42"W(D)
S43°55'55"W 221.55'

ATLANTIC AVIATION

FDOT (ATLANTIC AVENUE)

12' BRUE (ORB 5964 PG.1464 at PG.1473)

12' BRUE (ORB 5964 PG.1464 at PG.1473)

S43°55'55"W
40.50'
28.00'
7.00'
48.00'
S46°04'05"E
N43°55'55"E
48.50'
19.00'
N46°04'05"W
20.00'
N43°55'55"E

LYNN BLDG
ORB 30927 pg 1449
(at pgs 1610-1632)

S46°04'05"E 256.19'

12' BRUE (ORB 5964 PG.1464 at pg.1471)

S44°19'42"W(D)
S43°55'55"W 1570.87'

ATLANTIC AVIATION
Overall Lease Property
Modified Jan. 31, 2022
Described by Brown & Phillips, Inc.
Project no. 21-152

BOCA AIRCRAFT OWNERS, INC.
LEGAL DESCRIPTION/LEASE PARCEL
(furnished by BRAA 9/18/18; record information, if any, is not known)

TIITF LEASE NO.3265 TO BRAA (ORB 4433 PG.876)

BOCA AIRCRAFT OWNERS, INC.
LEGAL DESCRIPTION/LEASE PARCEL
(furnished by BRAA 9/18/18; record information, if any, is not known)

3325.00

℄ OF SURVEY OF STATE ROAD 9 (I-95)

3300.00

327,487.38' (I-95)
62,454.28' (40th ST.)

S.E.1/4 12/47/42
S.W.1/4 7/47/43

I-95

FDOT PARCEL No.802 DESCRIPTION 1 of 4
(ORB 25614 PG.1197)

LIMITED ACCESS R/W LINE

FDOT PARCEL No.802 DESCRIPTION
2 of 4 (ORB 25614 PG.1197)

LIMITED ACCESS R/W LINE

199.28'

S.W. R/W N.W. 40th ST. FDOT 93220-2411
TIITF LEASE NO.3265 TO BRAA (ORB 4433 PG.876)

N.W. 40th STREET
(SPANISH RIVER BLVD.)

S89°05'24"E 189.77'

N87°44'12"E 205.33'

FDOT PARCEL No.802 DESCRIPTION
(ORB 25614 PG.1197)

MAGNETIC NORTH
DECLINATION = 7° 9' W
(APRIL 2022)

TRUE NORTH

0 65 130

GRAPHICAL SCALE IN FEET

SEE DETAIL 7

SOURCES : BROWN & PHILLIPS, INC., *AIRPORT PROPERTY MAP (PROJECT #20-085)*, NOVEMBER 2022; NEARMAP, FLORIDA, NOVEMBER 23,2021 (AERIAL IMAGE FOR VISUAL REFERENCE ONLY, MAY NOT BE TO SCALE).

Drawing: P:\Project-Miami\BRAA\2017 GC\Task 70 - Airport Master Plan Update\11. Airport Layout Plan Set\Exhibit A\02 04-14.dwg_Layout: 10_Nov 06, 2023, 12:01pm

BOCA RATON AIRPORT

BOCA RATON AIRPORT AUTHORITY
903 NW 35TH STREET
BOCA RATON, FL 33431
PHONE (561) 931-2202

RICONDO®

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BROWN & PHILLIPS, INC.

BROWN & PHILLIPS, INC.
1860 OLD OKEECHOBEE ROAD, SUITE 509
WEST PALM BEACH, FL 33409
PHONE (561) 615-3988

NO.	REVISIONS	DATE

AIRPORT PROPERTY MAP - DETAIL 6

BOCA RATON AIRPORT
BOCA RATON, FLORIDA

DRAWN BY: MB

CHECKED BY: JEP

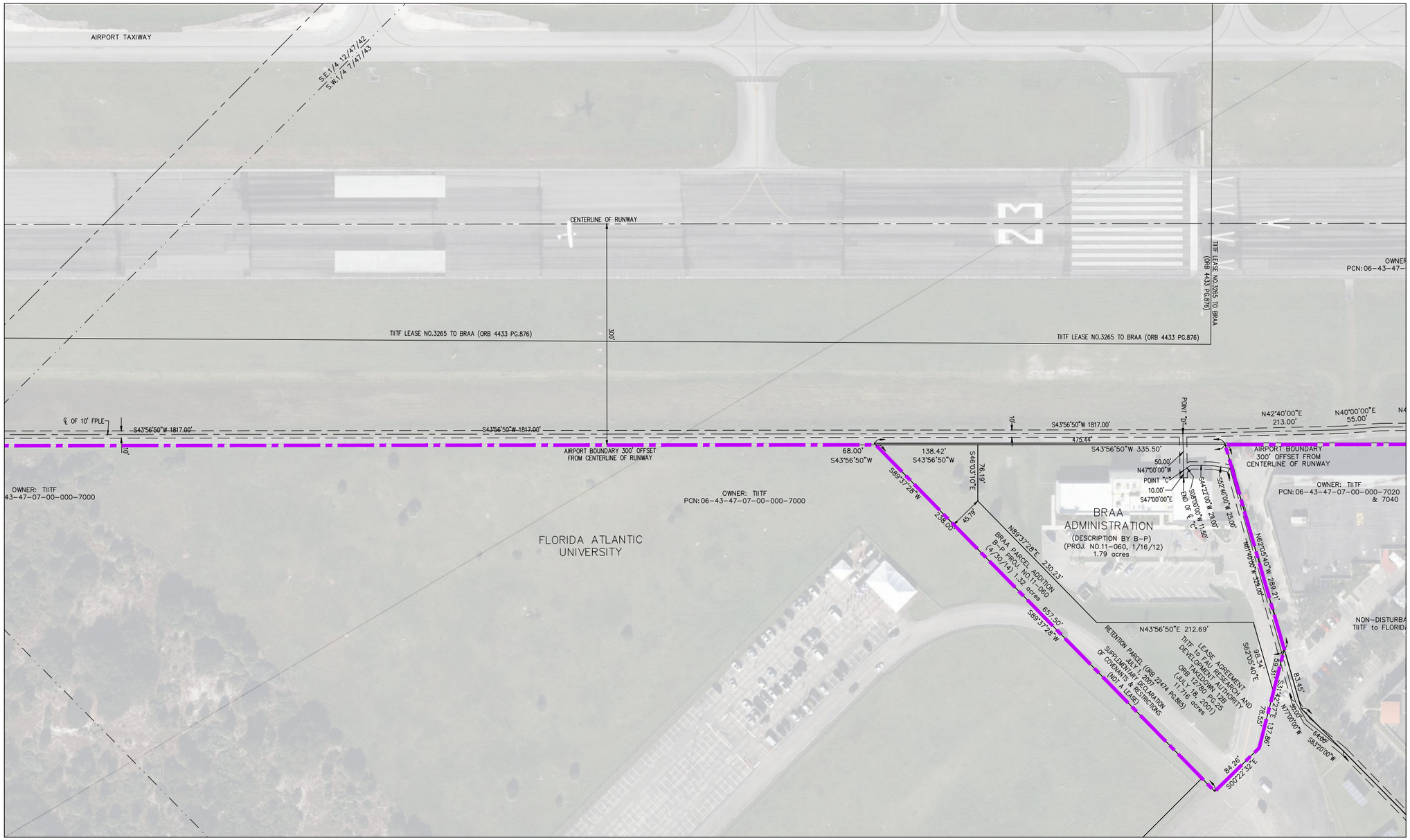
PREPARED BY:
BROWN & PHILLIPS, INC.

DATE:
JULY 2023

SEE DETAIL 6

SEE DETAIL 5

SEE DETAIL 9



SOURCES : BROWN & PHILLIPS, INC., *AIRPORT PROPERTY MAP (PROJECT #20-085)*, NOVEMBER 2022; NEARMAP, FLORIDA, NOVEMBER 23,2021 (AERIAL IMAGE FOR VISUAL REFERENCE ONLY, MAY NOT BE TO SCALE).

BOCA RATON AIRPORT

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PHONE (561) 615-3988

MAGNETIC NORTH DECLINATION = 7° 9' W (APRIL 2022)

TRUE NORTH

0 65 130

GRAPHICAL SCALE IN FEET

NO.	REVISIONS	DATE

AIRPORT PROPERTY MAP - DETAIL 7

BOCA RATON AIRPORT
BOCA RATON, FLORIDA

DRAWN BY: MB

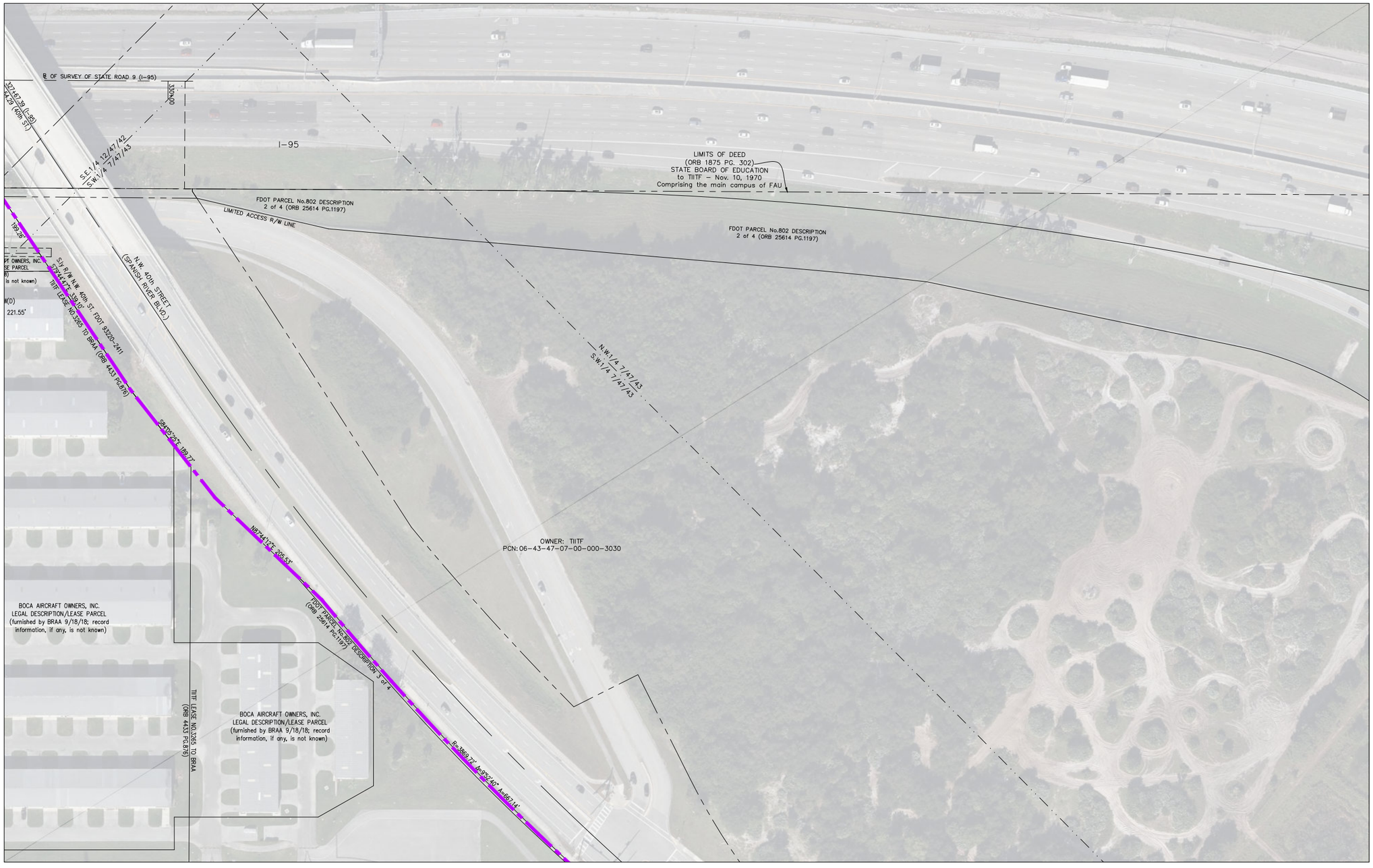
CHECKED BY: JEP

PREPARED BY:
BROWN & PHILLIPS, INC.

DATE:
JULY 2023

Drawing: P:\Project-Miami\BRAA\2017 GC\Task 70 - Airport Master Plan Update\11. Airport Layout Plan Set\Exhibit A\02 04-14.dwg_Layout: 11_Nov 06, 2023, 12:02pm

SEE DETAIL 6



SEE DETAIL 9

SOURCES : BROWN & PHILLIPS, INC., *AIRPORT PROPERTY MAP (PROJECT #20-085)*, NOVEMBER 2022; NEARMAP, FLORIDA, NOVEMBER 23,2021 (AERIAL IMAGE FOR VISUAL REFERENCE ONLY, MAY NOT BE TO SCALE).

BOCA RATON AIRPORT

BOCA RATON AIRPORT AUTHORITY
903 NW 35TH STREET
BOCA RATON, FL 33431
PHONE (561) 931-2202

RICONDO®

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3504 LAKE LYNDA DRIVE, SUITE 165
ORLANDO, FL 32817
PHONE (407) 381-5730

BROWN & PHILLIPS, INC.

BROWN & PHILLIPS, INC.
1860 OLD OKEECHOBEE ROAD, SUITE 509
WEST PALM BEACH, FL 33409
PHONE (561) 615-3988

MAGNETIC NORTH
DECLINATION = 7° 9' W
(APRIL 2022)

TRUE NORTH

0 65 130

GRAPHICAL SCALE IN FEET

NO.	REVISIONS	DATE

AIRPORT PROPERTY MAP - DETAIL 8

BOCA RATON AIRPORT
BOCA RATON, FLORIDA

DRAWN BY: MB

CHECKED BY: JEP

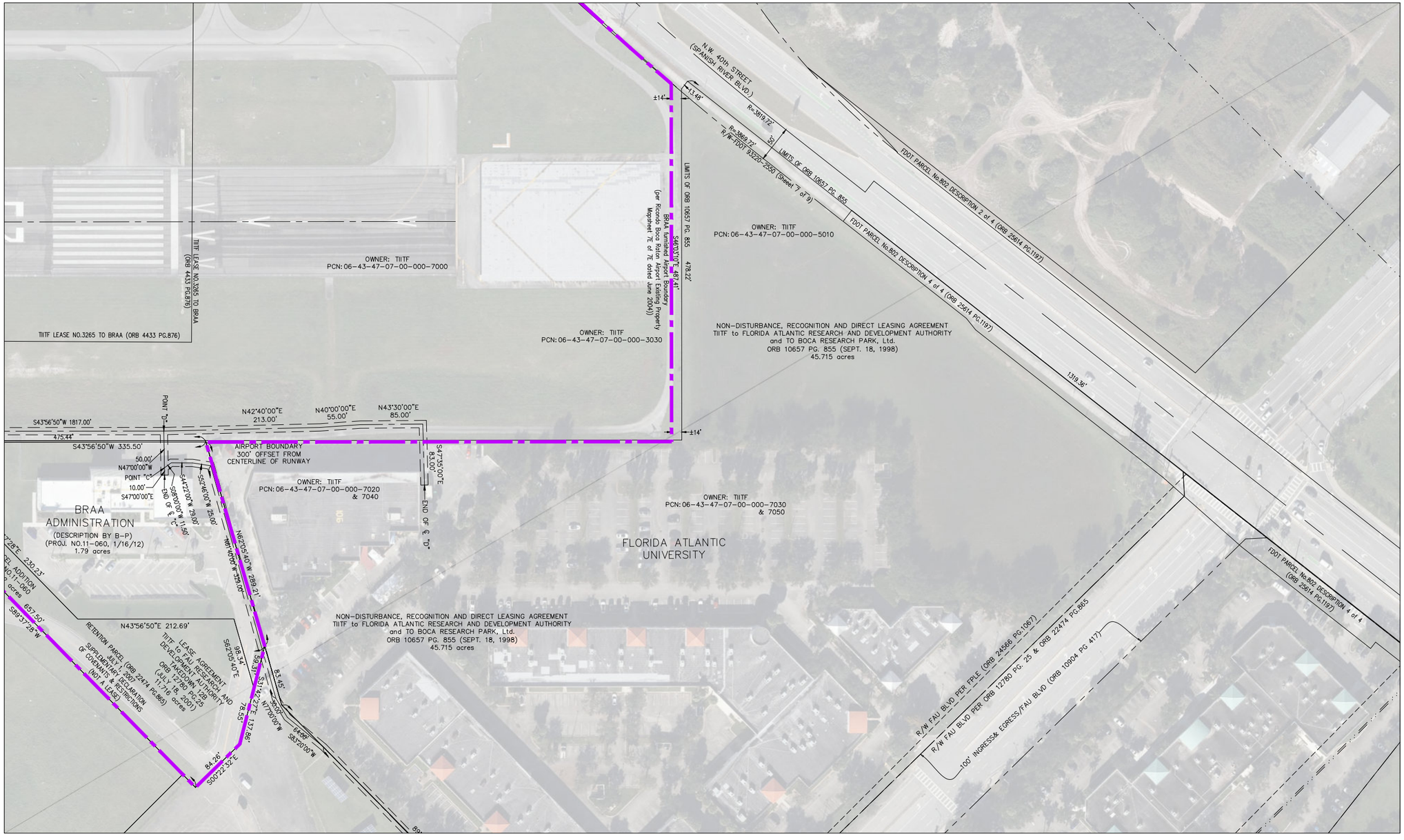
PREPARED BY:
BROWN & PHILLIPS, INC.

DATE:
JULY 2023

Drawing: P:\Project-Miami\BRAA\2017 GC\Task 70 - Airport Master Plan Update\11. Airport Layout Plan Set\Exhibit A\02 04-14.dwg_Layout: 12_Nov 06, 2023, 12:03pm

SEE DETAIL 8

SEE DETAIL 7



SOURCES : BROWN & PHILLIPS, INC., *AIRPORT PROPERTY MAP (PROJECT #20-085)*, NOVEMBER 2022; NEARMAP, FLORIDA, NOVEMBER 23,2021 (AERIAL IMAGE FOR VISUAL REFERENCE ONLY, MAY NOT BE TO SCALE).

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BROWN & PHILLIPS, INC.
1860 OLD OKEECHOBEE ROAD, SUITE 509
WEST PALM BEACH, FL 33409
PHONE (561) 615-3988

MAGNETIC NORTH DECLINATION = 7° 9' W (APRIL 2022)
TRUE NORTH
N
0 65 130
GRAPHICAL SCALE IN FEET

NO.	REVISIONS	DATE

AIRPORT PROPERTY MAP - DETAIL 9

BOCA RATON AIRPORT
BOCA RATON, FLORIDA

DRAWN BY: MB

CHECKED BY: JEP

PREPARED BY:
BROWN & PHILLIPS, INC.

DATE:
JULY 2023

SHEET 13 OF 13

Drawing: P:\Project-Miami\BRAA\2017 GC\Task 70 - Airport Master Plan Update\11. Airport Layout Plan Set\Exhibit A\02 04-14.dwg_Layout: 13_Nov 06, 2023, 12:05pm

PROPERTY CONVEYANCE DATA

	FROM	TO	DOCUMENT / DATE	RECORDING INFORMATION O.R. Book	Page	DATE FILED	LAND ACREAGE
	The United States of America (Under the provisions of the Surplus Property Act of 1944)	Town of Boca Raton	Quit Claim Deed 12-29-47	865	83	01-13-49	1,189
	The United States of America (Under the provisions of the Surplus Property Act of 1944)	Town of Boca Raton	* Supplemental Quit Claim Deed 02-01-50	899	428	02-01-50	4.9

* Property referenced within this Supplemental Quit Claim Deed lies within the boundaries for the initial property conveyance (depicted on this sheet).

Those certain tracts or parcels of land situate, lying and being in Palm Beach County, Florida, and comprising a part of the Boca Raton Army Air Field and more particularly described as follows:

Beginning at the Southwest corner of Section 18, Range 43 East, Township 47 South, and run thence with the Southern boundary line of Section 18 Eastwardly to a point where the same intersects a line parallel to and 400 feet southwestwardly at right angles from the center line and its Southeast extension of the NW/SE runway of the Boca Raton Army Airfield; thence Southeasterly with the said intersected line which lies Southwesterly from Glades Avenue to a point where the said line intersects a line parallel to and 100 feet West of the Center Line of the existing Lake Worth Drainage District Equalizing Canal #4 (El Rio or Jap Canal); thence with said line Southerly to the South boundary of the Boca Raton Army Airfield, which lies near the Southern line of Section 19, Range 43 East, Township 47 South; thence with Southern boundary line Eastwardly 200 feet to a line parallel to and 100 feet of the center line of aforesaid canal; thence with said line Northerly to the Southeast right-of-way line of the Seaboard Air Line Railroad; thence with the said right-of-way line Southwesterly and Southerly to a point 100 feet South of where the same intersects the Southern boundary line of Section 13, Range 42 East, Township 47 South; thence with a line 100 feet South of the Southern boundary line of said Section 13 and of a rim canal to a point 100 feet South of the point of beginning of the herein described tract; thence North 100 feet to the point of beginning.

Beginning at a point which is the intersection of the Northwest right-of-way line of the Seaboard Air Line Railroad with a line parallel to and 100 feet East of the center line of the existing Lake Worth Drainage District Equalizing Canal #4 (El Rio or Jap Canal) and runs thence Northerly with the said line to the North boundary line of Boca Raton Army Airfield on the Northern boundary line of Section 6, Range 43 East, Township 47 South; thence with said line West 200 feet to a line parallel to and 100 feet West of the center line of the existing aforesaid canal; thence with said line Southerly to its intersection with the Northwest right of way line of aforesaid railroad; thence with the said Northwest right of way line Northeasterly, crossing said drainage canal to the point of beginning.

Also the right of ways described as follows: Starting at the intersection of Dixie Highway and 4th Avenue proceed in a Westerly direction along said 4th Avenue to the Reservation boundary, said point being the point of beginning; thence the right of way of 4th Avenue to the intersection of 4th Avenue and Spanish Street; thence in a Northerly direction the right of way of Spanish Street to the intersection of said Spanish Street and 5th Avenue; thence in a Northwesterly direction the right of 5th Avenue to a point 100 feet from the center line of the drainage canal. Also an easement for the right of way for glades Avenue from Palmetto Street to the Sewerage disposal plant. All rights of ways are fifty (50) feet in width measured twenty-five (25) feet on each side of the center line of said streets.

NOTE ABOUT ELECTRONIC COPIES OF THIS SURVEY:

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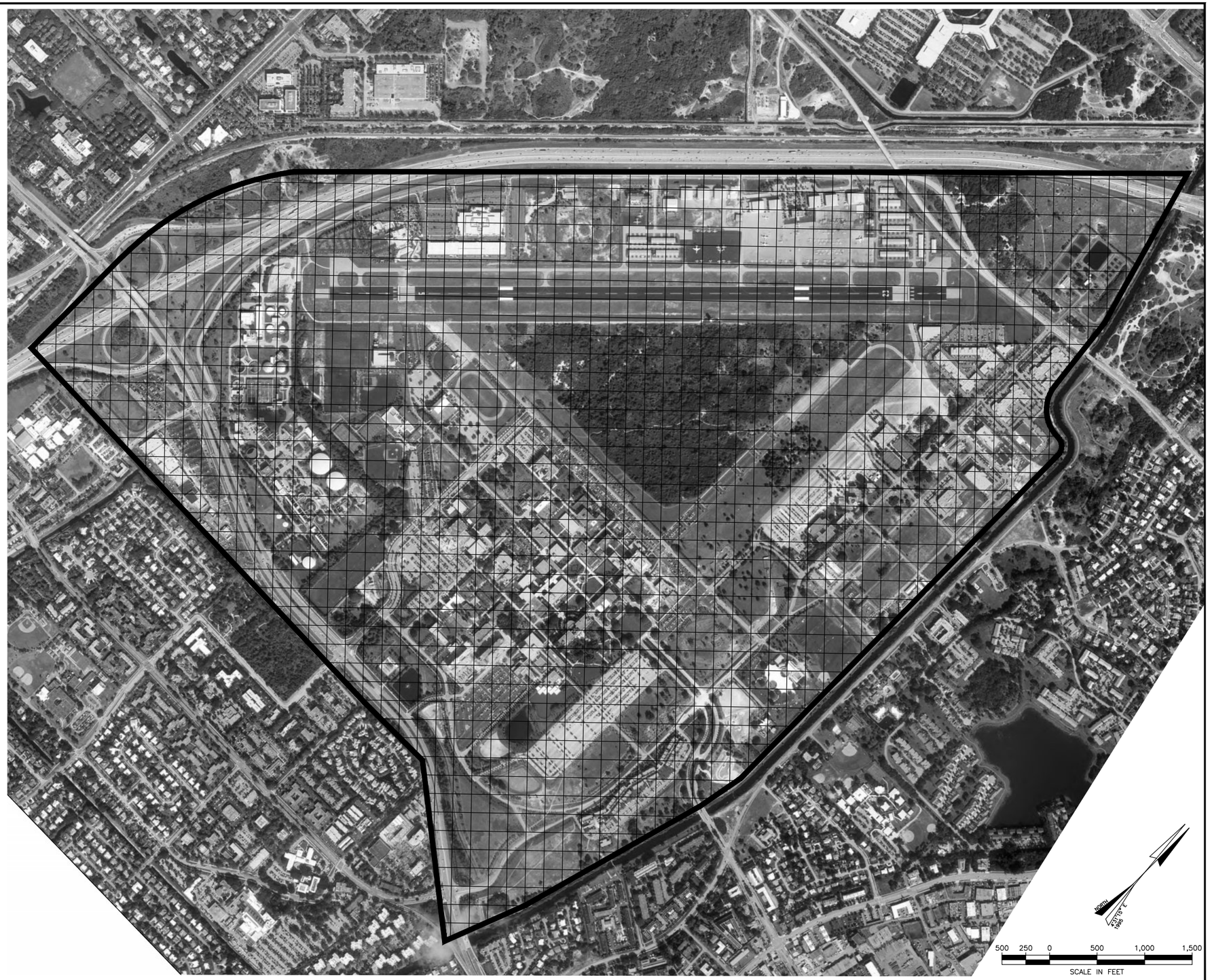

RICONDO & ASSOCIATES

FINAL

REVISIONS					
NO.	DATE	BY	DESCRIPTION	APP'D	NO.

APPROVED BY: _____ Federal Aviation Administration Date

APPROVED BY: _____ State of Florida Dept. of Transportation Date

APPROVED BY: Boca Raton Airport Authority _____ Airport Manager Date

BOCA RATON AIRPORT AUTHORITY

Boca Raton, Florida

PROJECT MGR: P. RICONDO
PLANNER: D. RAMACORTI
DRAWN BY: A. RIAZ
SCALE: AS SHOWN
DATE: NOVEMBER, 2002
CHECKED BY: P. RICONDO

BOCA RATON AIRPORT

AIRPORT PROPERTY EVOLUTION INITIAL CONVEYANCE

REVISION DATE

PRINT DATE June 2004

DEPT. OF AIRPORTS NO.

SHEET NO. 7A of 7E

PROPERTY RELEASE DATA							
	FROM	TO	DOCUMENT / DATE	RECORDING INFORMATION O.R. Book Page		DATE FILED	LAND ACREAGE
	City of Boca Raton	State Board of Education of Florida	Quit Claim Deed 04-16-59	354	635	05-29-59	1,010

All that tract of land lying and being in the City of Boca Raton, Palm Beach County, State of Florida, comprising a part of the Boca Raton Airport and more particularly described as follows:

Beginning at a point at the southwest corner of Section 18, Township 47 South, Range 45 East and run thence with the southern boundary line of section 18 easterly to a point where the same intersects a line parallel to and 400 feet southwesterly at right angles from the centerline and its southwesterly extension of the Northwest/Southeast runway of the Boca Raton Airport; thence Southeasterly with the said intersected line which lies Southwesterly from Glades Avenue to a point where the said line intersects a line parallel to and 100 feet West of the centerline of the existing Lake Worth Drainage District Equalizing Canal No. 4 (El Rio or Jap Canal); Thence Northerly with said line parallel and 100 feet west of centerline of aforesaid canal to the Southwesterly right of way line of State Road No. 9, being a strip of land 300 feet wide measured at right angles from and parallel to the Seaboard Air Line Railroad; Thence southwesterly and southerly along the east boundary of said State Road No. 9 right of way to the southern boundary of Section 15, Township 47 South, Range 42 East; Thence easterly along the southern boundary of section 15 to the point of beginning, Less that tract of land upon which the sewage disposal is located, more particularly described as follows:

All that certain piece, paroel or tract of land situate, lying and being in the South Half of the Southeast Quarter (9 ½ of S 10 ½) of Section 13, Township 47 South, Range 42 East, City of Boca Raton, County of Palm Beach and State of Florida, more particularly described as follows: to-wit:

To locate a point of beginning commence at a concrete monument marking the Southeast corner of said section 13, Township 47 South, Range 47 East; Thence run North along and coincide with the East line of said Section 13, making an angle of 88 degrees 04 minutes 30 seconds with the North line of said Section 13, measured from the West to the North, a distance of 168.28 feet, and per plat of Independence Acres Addition No. 1 as the same is recorded in Plat book 23 at page 117 of the public records of Palm Beach County, Florida, to an aluminum plate and boat spike marking the approximate centerline of the existing paving of Glades Avenue, as said avenue is shown on Sheet 25 of 46 sheet of Boca Raton Army Airfield, Layout map, Sanitary Sewer System, US Engineer office, Jacksonville Florida, May 1944, file5-36 2-10721; Thence from said point of intersection on the east line of Section 13, run Northwesterly along the approximate centerline of the paving of said Glades Avenue and on a course making an angle of 96 degrees 57 minutes with the said East line of section 13, measured from South to West, a distance of Eight Hundred feet (800.00') to the point of beginning of the Sewer Disposable Plat Tract hereinafter described thusly,

From said point of beginning run Northeasterly on a course making an angle of 90 degrees with the last described course, a distance of 500 feet to a point; Thence run Northwesterly on a course making an angle of 90 degrees with the last above described course, and parallel with the centerline of said Glades Avenue, a distance of 850 feet to a point; Thence run Southwesterly on a course making an angle of 90 degrees with the last above described course, a distance of 500 feet to a point in the approximate center of existing paving of said Glades Avenue; Thence run Southwesterly on a course making an angle of 90 degrees with a last above described course, and along the approximate centerline of the existing paving of said Glades Avenue a distance of 850 feet to the point of the beginning, containing 9.75 Acres, more or less, reserving to the City of Boca Raton the necessary perpetual assessments in, upon and over the lands whereon the foregoing described portions of the sewerage and sewage disposal system is located, together with the main water lines, sewer lines and appurtenances located on the property herein conveyed, with the ingress and egress thereto, for the purpose of using, maintaining, operating, repairing, replacing or removing said portions of the sewerage and sewage disposal system;

PROPERTY CONVEYANCE DATA							
	FROM	TO	DOCUMENT / DATE	RECORDING INFORMATION O.R. Book Page		DATE FILED	LAND ACREAGE
	City of Boca Raton	State Board of Education of Florida	Quit Claim Deed 04-24-59	354	631	05-29-59	200
	City of Boca Raton	State Board of Education of Florida	* Supplemental Quit Claim Deed 06-30-60	542	407	08-24-60	200

* Property referenced within the Supplemental Quit Claim Deed lies within the boundaries of land contained within the Quit Claim Deed (ORB BK354, Page 631) dated 04-24-59 depicted on this sheet.

Starting as the intersection of the centerline of the NE/SW runway and the Northeast end of the NE/SW runway pavement, which is the point of beginning, go thence northwesterly at the right angle to the runway centerline a distance of 1,200', more or less, to a point 300' southeast of the southeast right of way line of the Seaboard Airline Railroad; thence southwesterly along a line parallel to the 300' southeast of said southeast right of way line a distance of 6,250' to a point; thence southwesterly at right angle to the centerline of the NE/SW runway extended a distance of 1,400', more or less, to a point 200' southeast of the extended centerline of the NE/SW runway, thence northeasterly along a line parallel to and 200' southeast of the centerline of the NE/SW runway a distance of 6,250', more or less, to a point 200' southeast of the point of beginning; thence northwesterly a distance of 200' to the point of beginning. Said tract contains 200 acres more or less.

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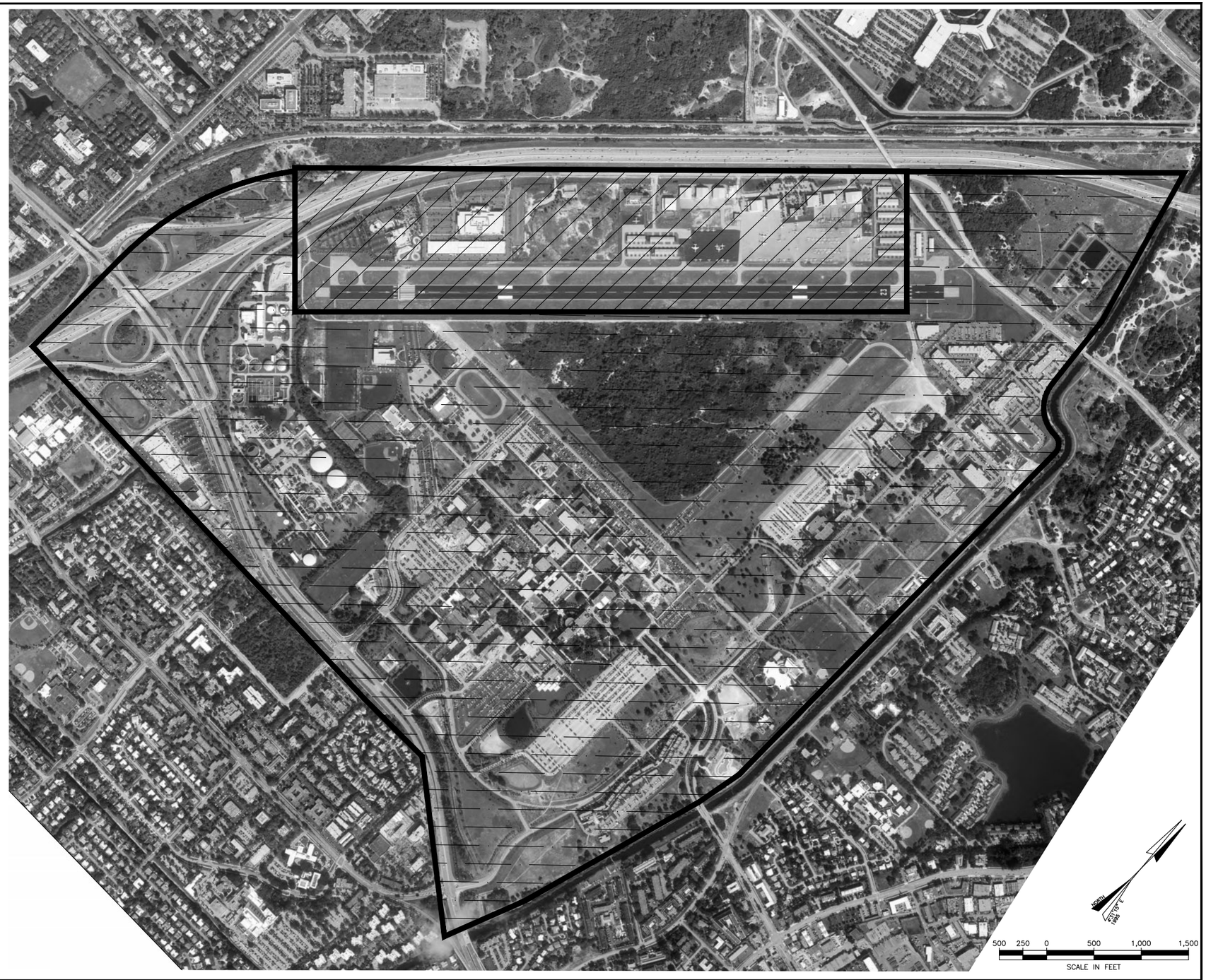

RICONDO & ASSOCIATES

FINAL

REVISIONS					
NO.	DATE	BY	DESCRIPTION	APP'D	NO.

APPROVED BY: _____ Federal Aviation Administration Date

APPROVED BY: _____ State of Florida Dept. of Transportation Date

APPROVED BY: Boca Raton Airport Authority _____ Airport Manager Date

BOCA RATON AIRPORT AUTHORITY

Boca Raton, Florida

PROJECT MGR:	P. RICONDO
PLANNER:	D. RAMACORTI
DRAWN BY:	A. RIAZ
SCALE:	AS SHOWN
DATE:	NOVEMBER, 2002
CHECKED BY:	P. RICONDO

BOCA RATON AIRPORT

AIRPORT PROPERTY EVOLUTION CHANGE OF OWNERSHIP/PROPERTY BOUNDARY - NO.1

REVISION DATE	
PRINT DATE	June 2004
DEPT. OF AIRPORTS NO.	
SHEET NO.	7B of 7E

PROPERTY CONVEYANCE DATA (NON-AIRPORT)

	FROM	TO	DOCUMENT / DATE	RECORDING INFORMATION O.R. Book	Page	DATE FILED	LAND ACREAGE
[ ]	State Board of Education of the State of Florida	The Board of Trustees of the Internal Improvement Trust Fund of the State of Florida	* Deed 11-10-70	1875	302	02-18-71	1,191

* The referenced Deed included the transfer of ownership of the airport and non-airport parcels shown here from The State Board of Education of the State of Florida to the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida. Both Parcels (i.e., the airport and non-airport properties) have been depicted for reference purposes and to illustrate the entire land mass included in the subject deed.

BEGINNING at the Southeast corner of Section 13, Township 47 South, Range 42 East; thence N. 88°53'33"W., 4,944.96 feet to a point on the South line of Section 13, thence N. 00°46'32"W., 1,281.54 feet to a point of curvature; thence with a curve to the right having a radius of 3,105.65 feet a central angle of 45°26'42", an arc length of 2,463.29 feet to a point; thence N. 44°40'10"E., 8,645.60 feet to a point; thence S. 16°33'51" E., 1,740.95 feet; thence S. 7°18'24" E., 364.75 feet to a point; thence S 7°18'20" E., 450.37 feet to a point of curvature; thence with a curve to the left having a radius of 390.83 feet, a central angle of 83°47'09", an arc length of 571.53 feet to a point of reserve curvature, having a tangent bearing of N. 88°51'38" E., thence with a curve to the right, having a radius of 129.01 feet, a central angle of 89°59'48", an arc distance of 202.64 feet to a point; thence S. 1°08'34" E., 4,615.94 feet to a point; thence S. 9°56'07" W., 499.38 feet to a point; thence S. 14°47'26" W., 2,039.80 feet to a point; thence S. 20°29'40" W., 896.89 feet to a point; thence N. 52°38'48" W., 1,852.82 feet to a point; thence S. 89°13'19" W., 839.26 feet more or less to the point of beginning.

Containing 1,210.812 Acres more or less and subject to easements and rights-of-way of record.

LESS

"PARCEL A" - COMMENCING at the Southwest corner of Section 13; thence N. 2°42'11" W., 168.28 feet to a point on the approximate centerline of Glades Road; thence along the approximate centerline N. 83°03'00" W., 800.00 feet to the point of Beginning; thence continue along the same course, 850 feet to a point; thence N. 6°57'00" E., 500.00 feet to a point; thence S. 83°03'00" E., 850.00 feet to a point; thence S. 6°57'00" W., 500.00 feet more or less to the Point of beginning.

Containing 9.75 Acres.

ALSO LESS

"PARCEL B" - All that certain piece, parcel, or tract of land situate lying and being in the South half of the Southeast quarter (S. ½ of S.E. ¼) of Section 13, Township 47 South, Range 42 East, City of Boca Raton, County of Palm Beach and State of Florida, more particularly described as follows:

"To locate the Point of Beginning commence at a concrete monument marking the Southeast corner of Said Section 13, Township 47 South, Range 42 East; thence run North along and coincident with the East line of said Section 13, making an angle of 88°04'30", with the South line of said Section 13, measured from West to North, a distance of 168.28 feet, as per Plat of Independence Acres Addition No. 1 as the same is recorded in Plat Book 23 at page 117 of the Public Records of Palm Beach County, Florida, to an iron rod marking the approximate centerline of the existing paving of Glades Avenue, as said Avenue is shown on sheet 25 of 46 sheets of Boca Raton Army Airfield layout, Map of Sanitary Sewer System U.S. Engineer's Office, Jacksonville, Florida, May 1944, File 5-36.2-10721; thence from said point of intersection on the East line of Section 13, run northwesterly along the approximate centerline of the paving of said Glades Avenue and on a course making an angle of 96°57'00" with the said East line of Section 13, measured from South to West, a distance of 934.09 feet to the point of beginning".

"From said Point of Beginning, run westerly and parallel to and 250 feet North of measured at right angles to the South line of Section 13, township 47 South, Range 42 East, a distance of 1,492.69 feet to a point of curve; thence in a northeasterly direction along the arc of a curve, concave to the Southeast and having a radius of 702.75 feet, a distance of 724.50 feet to a point of intersection with the westerly extension of the North line of the existing sewer disposal plant tract as said tract is recorded in Record Book354 at page 635, said arc containing a central angle of 58°59'26"; thence easterly along the aforesaid westerly extension of said North boundary, a distance of 484.00 feet more or less to the Northwest corner of said sewer disposal plant tract; thence in a southerly direction at right angles to the preceding course along the West line of said existing sewer disposal plant tract, a distance of 500 feet to the Southwest corner of said existing sewer disposal plant tract; thence in an easterly direction at right angles to the preceding course along the South line of said existing sewer disposal plant tract, a distance of 715.91 feet more or less to the Point of Beginning, said tract containing 9.98 Acres more or less".

Subject to certain reservations, restrictions and conditions, easements and leases set out in that certain Quit Claim Deed dated April 16, 1959, between the City of Boca Raton, a municipal corporation of the State of Florida, and the State Board of Education, as recorded in Official Record Book 354, Page 635, of Palm Beach County, Florida, and that certain Supplemental Quit Claim Deed dated June 30, 1960, by and between the City of Boca Raton and the State Board of Education, recorded in Official Record Book 542, page 407, of the official Records of Palm Beach County, Florida.

PROPERTY CONVEYANCE DATA (AIRPORT)

	FROM	TO	DOCUMENT / DATE	RECORDING INFORMATION O.R. Book	Page	DATE FILED	LAND ACREAGE
[X]	The Board of Trustees of the Internal Improvement Trust Fund of the State of Florida	Boca Raton Airport Authority	Lease Agreement 10-27-83	4433	876	01-02-85	177

A parcel of land lying in a portion of the Southwest one-quarter (S.W. ¼) of Section 7, Township 47 South, Range 43 East, and a portion of the Southeast one-quarter (S.E. ¼) of Section 12, Township 47 South, Range 42 East, and a portion of the Northeast, Northwest and Southwest one-quarters of Section 13, Township 47 South, Range 42 East, of Palm Beach County, Florida, being more particularly described as follows:

BEGINNING at the point of intersection of the Northeast limited access right-of-way line of I-95 as shown on State Road Department right-of-way map, (Job No. 93220-2411, Sheet 12a, dated 2/15/71, revised last, 8/7/72) and the Southerly right-of-way line of Northwest 40th Street (as shown on the aforementioned map) with the West line of said Section 7; thence South 79°21'00" East, along the said southerly right-of-way line of Northwest 40th Street, a distance of 340.31 feet; thence continuing along aforementioned right-of-way line South 83°45'24" East, a distance of 134.31 feet; thence South 45°18'41" East, a distance of 1012.81 feet; thence South 44°41'19" West, a distance of 6250.00 feet; thence North 45°18'41" West, a distance of 628.74 feet to a point on the Easterly right-of-way line of Airport Road as shown on Plat Book 6, Pages 76 & 77 of the Public Records of Palm Beach County, Florida; thence along the aforementioned line, North 15°20'30" East, a distance of 196.65 feet to a point on the arc of a non-tangent curve, concave to the Southeast; thence Northerly along the arc of said curve (and said Airport Road right-of-way) and arc distance of 10.61 feet (said curve having a radius of 4007.28 feet and a central angle of 00°09'06") to a point on a radially extended line; thence South 73°11'44" E, (along the Easterly line of a canal as shown on said Plat Book 6, Pages 76 & 77) a distance of 60.00 feet to a point on the arc of a concentric curve, concave to the Southeast; thence Northeasterly along the arc of said curve (and said canal right-of-way line) an arc distance of 424.02 feet (said curve having a radius of 3947.28 feet and a central angle of 06d09'17") to a point on the arc of a compound curve, concave to the Southeast; thence Northeasterly along the arc of said curve (and said canal right-of-way line) an arc distance of 2055.38 feet (said curve having a radius of 5419.58 feet and a central angle of 21°43'46") to a point of tangency; thence North 44°41'19" East, (along said canal right-of-way line) a distance of 76.85 feet; thence North 45°18'41" West, a distance of 60.00 feet; thence south 44°41'19" West, a distance of 76.85 feet; thence North 45°18'41" West, a distance of 100.00 feet to a point on said I-95 right-of-way line; thence North 44°41'19" East, along said I-95 right-of-way line, a distance of 3376.00 feet to the point of beginning.

Said land lying in the City of Boca Raton, Palm Beach County, Florida, and containing 177.3120 acres, more or less.

The above-described land is SUBJECT to outstanding easements, leases, reservations and other interests appearing of record.

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RICONDO & ASSOCIATES

FINAL

REVISIONS					
NO.	DATE	BY	DESCRIPTION	APP'D	NO.

APPROVED BY:

Federal Aviation Administration Date

APPROVED BY:

State of Florida Dept. of Transportation Date

APPROVED BY:

Boca Raton Airport Authority

Airport Manager Date

BOCA RATON AIRPORT AUTHORITY

Boca Raton, Florida

PROJECT MGR:	P. RICONDO
PLANNER:	D. RAMACORTI
DRAWN BY:	A. RIAZ
SCALE:	AS SHOWN
DATE:	NOVEMBER, 2002
CHECKED BY:	P. RICONDO

BOCA RATON AIRPORT

AIRPORT PROPERTY EVOLUTION CHANGE OF OWNERSHIP/PROPERTY BOUNDARIES - NO. 2

REVISION DATE	
PRINT DATE	June 2004
DEPT. OF AIRPORTS NO.	
SHEET NO.	7C of 7E

PROPERTY CONVEYANCE DATA

	FROM	TO	DOCUMENT / DATE	RECORDING INFORMATION O.R. Book	Page	DATE FILED	LAND ACREAGE
⊠	The Board of Trustees of the Internal Improvement Trust Fund of the State of Florida	Boca Raton Airport Authority	Amendment to Lease 3265 03-11-93	10899	1510	01-28-99	27.01

A portion of the Southwest one-quarter of Section 7, Township 47 South, Range 43 East, and a portion of the Southeast one-quarter of Section 12, Township 47 south, Range 42 East, and a portion of the Northeast, Northwest and Southwest one-quarters of Section 13, Township 47 South, Range 42 East, Palm Beach County, Florida, being more particularly described as follows:

Commencing at the point of Intersection of a line parallel with and 300.00 feet Southeast of, as measured at right angles to, the Southeast right-of-way line of the Seaboard Airline Railroad with the west line of said Section 7, said point bears North 00°50'39" West, a distance of 2171.45 feet from the Southwest corner of said Section 7, said point being further described as the point of intersection of the Southeasterly limited access Right-of-way line of I-95, as shown on State Road Department Right-of-Way Map, (Job No. 93220-2411, Sheet 12a, dated 2/15/71, revised last, 8/7/72) and the Southerly Right-of-Way line of Northwest 40th Street (as shown on the aforementioned map) with the West line of said Section 7; thence South 79°21'00" East, along said Southerly Right-of-Way line of Northwest 40th street, a distance of 340.31 feet; thence South 83°45'24" East, continuing along aforementioned Right-of-Way line, a distance of 95.61 feet to the Point of Beginning of this description; thence continue South83d45'24" East, along said Right-of-Way line, a distance of 94.56 feet; thence North 87°58'30" East, along said Right-of-Way line, a distance of 205.58 feet to a point on the arc of a circular curve to the left, whose radius point bears North 04°51'47" East, from the last described point; thence Easterly and Northerly, along said Right-of-Way line and the arc of said curve, having a radius of 3869.72 feet, and arc distance of 666.71 feet; thence South 45°40'18" East, along a line perpendicular to the Northeast Southwest runway of the Boca Raton Airport, a distance of 486.48 feet; thence South 44d19'42" West; along a line parallel with and 300.00 feet Southeasterly of, as measured at right angles to, said Northeast runway, a distance of 6922.88 feet; thence North 45°40'18" East, along a line perpendicular to said Northeast Southwest runway, a distance of 100.00 feet; thence North 44°19'42" East, along a line parallel with, and 200.00 feet Southerly of, as measured at right angles to, said Northeast Southwest runway, a distance of 6249.88 feet to the intersection with a line perpendicular with the Northeast end of said Northeast Southwest runway; thence North 45°40'18" west, along a line perpendicular to said Northeast Southwest runway, a distance of 1078.56 feet to the point of Beginning.

Said land situate, lying and being in Palm Beach County, Florida.

Subject to all easements, reservations and Rights-of-Way of record.

Containing 27.01 acres, more or less.

Note: Bearings are based on an instrument meridian of North 00°50'39" West, along the West line of Section 7, Township 47 South, Range 43 East, Palm Beach County, Florida.

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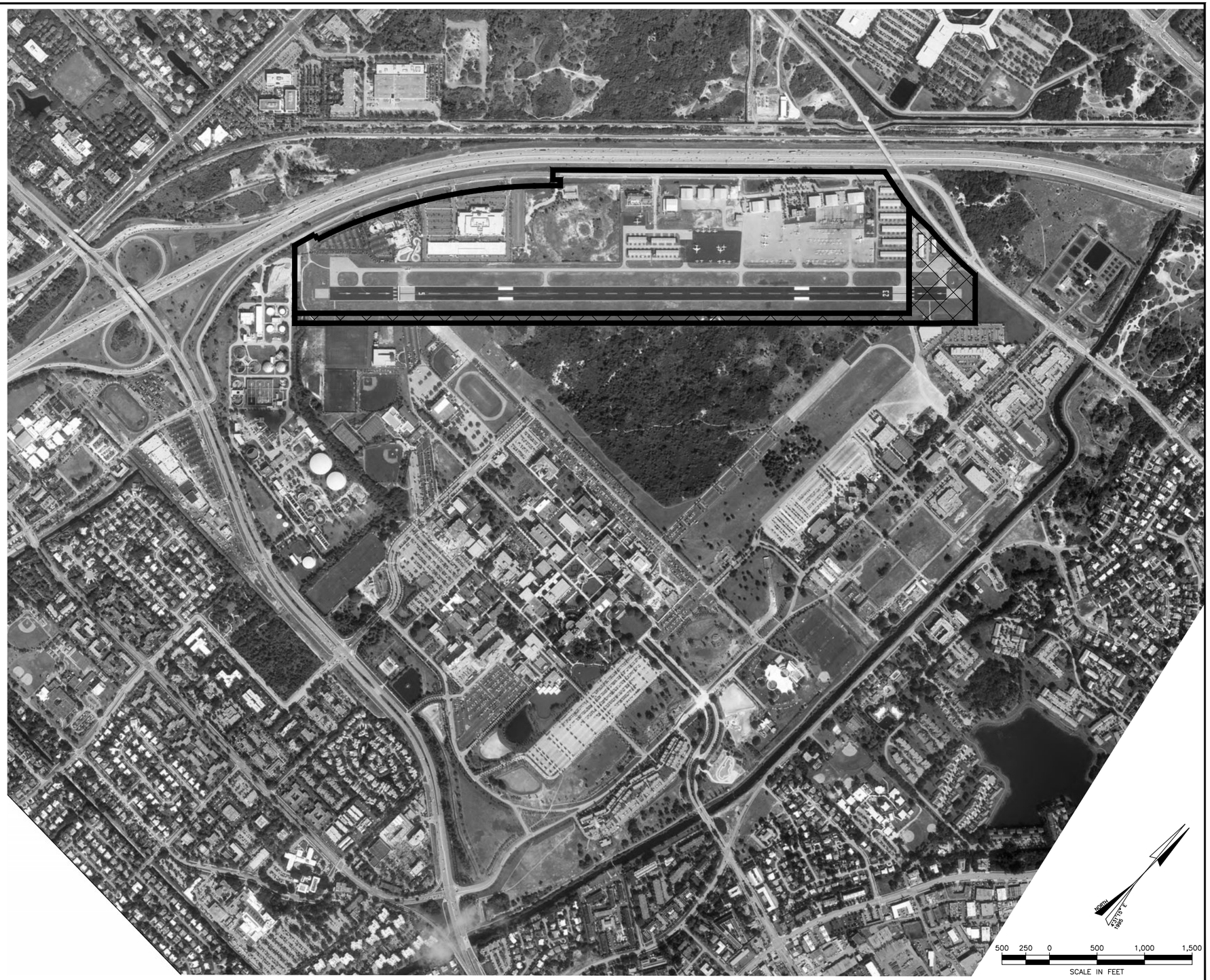

FINAL

RICONDO & ASSOCIATES

REVISIONS					
NO.	DATE	BY	DESCRIPTION	APP'D	NO.

APPROVED BY: _____ Federal Aviation Administration Date

APPROVED BY: _____ State of Florida Dept. of Transportation Date

APPROVED BY: Boca Raton Airport Authority _____ Airport Manager Date

BOCA RATON AIRPORT AUTHORITY

Boca Raton, Florida

PROJECT MGR: P. RICONDO
PLANNER: D. RAMACORTI
DRAWN BY: A. RIAZ
SCALE: AS SHOWN
DATE: NOVEMBER, 2002
CHECKED BY: P. RICONDO

BOCA RATON AIRPORT

AIRPORT PROPERTY EVOLUTION CHANGE OF OWNERSHIP/PROPERTY BOUNDARIES - NO. 3

REVISION DATE
PRINT DATE June 2004
DEPT. OF AIRPORTS NO.
SHEET NO. 7D of 7E

LEGAL DESCRIPTION:

A PARCEL OF LAND LYING IN A PORTION OF THE SOUTHWEST ONE-QUARTER (S.W. ¼) OF SECTION 7, TOWNSHIP 47 SOUTH, RANGE 43 EAST, AND A PORTION OF THE SOUTHEAST ONE-QUARTER (S.E. ¼) OF SECTION 12, TOWNSHIP 47 SOUTH, RANGE 42 EAST, AND A PORTION OF THE NORTHEAST, NORTHWEST AND SOUTHWEST ONE-QUARTERS OF SECTION 13, TOWNSHIP 47 SOUTH, RANGE 42 EAST, OF PALM BEACH COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE POINT OF INTERSECTION OF THE NORTHEAST LIMITED ACCESS RIGHT-OF-WAY LINE OF I-95 AS SHOWN ON STATE ROAD DEPARTMENT RIGHT-OF-WAY MAP, (JOB NO. 93220-2411, SHEET 12a, DATED 2/15/71, REVISED LAST, 8/7/72) AND THE SOUTHERLY RIGHT-OF-WAY LINE NORTHWEST 40TH STREET (AS SHOWN ON THE AFORMENTIONED MAP) WITH THE WEST LINE OF SAID SECTION 7;

THENCE SOUTH 79°44'47" EAST, ALONG SAID SOUTHERLY RIGHT-OF-WAY LINE OF NORTHWEST 40TH STREET, A DISTANCE OF 339.10 FEET;

THENCE SOUTH 84°05'25" EAST, CONTINUING ALONG AFOREMENTIONED RIGHT-OF-WAY LINE, A DISTANCE OF 189.77 FEET;

THENCE NORTH 87°44'12" EAST, ALONG SAID RIGHT-OF-WAY LINE, A DISTANCE OF 205.53 FEET TO A POINT ON THE ARC OF A CIRCULAR CURVE TO THE LEFT, WHOSE RADIUS POINT BEARS NORTH 04°31'04" EAST, FROM THE LAST DESCRIBED POINT;

THENCE EASTERLY, ALONG SAID RIGHT-OF-WAY LINE AND THE ARC OF SAID CURVE, HAVING A RADIUS OF 3869.72 FEET, A CENTRAL ANGLE OF 09°52'40" FOR AN ARC DISTANCE OF 667.14 FEET;

THENCE SOUTH 46°03'10" EAST, ALONG A LINE PERPENDICULAR TO THE NORTHEAST SOUTHWEST RUNWAY PAVEMENT OF THE BOCA RATON AIRPORT, A DISTANCE OF 487.41 FEET;

THENCE SOUTH 43°56'50" WEST, ALONG A LINE PARALLEL WITH AND 300.00 FEET SOUTHEASTERLY OF, AS MEASURED AT RIGHT ANGLES TO, SAID NORTHEAST SOUTHWEST RUNWAY, A DISTANCE OF 6925.22 FEET;

THENCE NORTH 46°03'10" WEST, A DISTANCE OF 790.31 FEET TO A POINT ON THE EASTERLY RIGHT-OF-WAY LINE OF AIRPORT ROAD AS SHOWN ON PLAT BOOK 6, PAGES 76 & 77 OF THE PUBLIC RECORDS OF PALM BEACH COUNTY, FLORIDA;

THENCE ALONG THE AFORMENTIONED LINE, NORTH 14°56'16" EAST, A DISTANCE OF 222.13 FEET TO A POINT ON THE ARC OF A NON-TANGENT CURVE CONCAVE TO THE SOUTHEAST. A RADIAL LINE OF SAID CURVE THROUGH SAID POINT HAVING A BEARING OF NORTH 73°44'37" WEST;

THENCE NORTHERLY ALONG THE ARC OF SAID CURVE (AND SAID AIRPORT ROAD RIGHT-OF-WAY), TO THE RIGHT, HAVING A CENTRAL ANGLE OF 00°09'06" AND A RADIUS OF 4007.28 FEET FOR AN ARC DISTANCE OF 10.61 FEET TO A POINT ON A NON-TANGENT LINE;

THENCE SOUTH 73°45'19" EAST, (ALONG THE EASTERLY LINE OF A 60 FOOT CANAL RIGHT-OF-WAY AS SHOWN ON SAID PLAT BOOK 6, PAGES 76 & 77) A DISTANCE OF 60.00 FEET TO A POINT ON THE ARC OF A NON-TANGENT CURVE CONCAVE TO THE SOUTHEAST. A RADIAL LINE OF SAID CURVE THROUGH SAID POINT HAVING A BEARING OF NORTH 73°45'19" WEST;

THENCE NORHTERLY ALONG THE ARC OF SAID CURVE (AND SAID CANAL RIGHT-OF-WAY LINE), TO THE RIGHT, HAVING A CENTRAL ANGLE OF 06°09'31" AND A RADIUS OF 3947.28 FEET FOR AN ARC DISTANCE OF 424.28 FEET TO A POINT OF A COMPOUND CURVE OF A TANGENT CURVE CONCAVE TO THE SOUTHEAST;

THENCE NORTHEASTERLY ALONG THE ARC OF SAID CURVE (AND SAID CANAL RIGHT-OF-WAY LINE) TO THE RIGHT, AN ARC DISTANCE OF 2055.11 FEET (SAID CURVE HAVING A RADIUS OF 5419.58 FEET AND A CENTRAL ANGLE OF 21°43'36") TO A POINT OF TANGENCY;

THENCE NORTH 44°17'32" EAST, (ALONG SAID CANAL RIGHT-OF-WAY LINE) A DISTANCE OF 76.85 FEET;

THENCE NORTH 45°42'28" WEST, A DISTANCE OF 60.00 FEET;

THENCE SOUTH 44°17'32" WEST, A DISTANCE OF 76.85 FEET;

THENCE NORTH 45°42'28" WEST, A DISTANCE OF 99.74 FEET TO A POINT ON SAID I-95 RIGHT-OF-WAY LINE;

THENCE NORTH 44°17'32" EAST, ALONG SAID I-95 RIGHT-OF-WAY LINE, A DISTANCE OF 3379.17 FEET TO THE POINT OF BEGINNING.

SAID LANDS SITUATE WITHIN THE CITY OF BOCA RATON, PALM BEACH COUNTY, FLORIDA AND CONTAINING 212.14 ACRES (9,240,799 SQUARE FEET), MORE OR LESS.

SAID LANDS SITUATE WITHIN THE CITY OF BOCA RATON, PALM BEACH COUNTY, FLORIDA AND CONTAINING 212.14 ACRES (9,240,799 SQUARE FEET), MORE OR LESS.

NOTE ABOUT ELECTRONIC COPIES OF THIS SURVEY:

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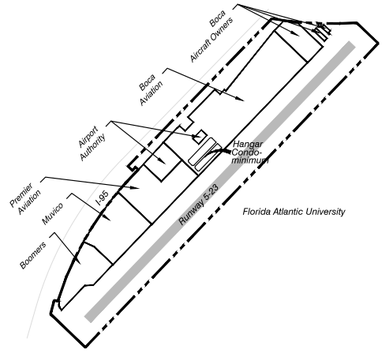

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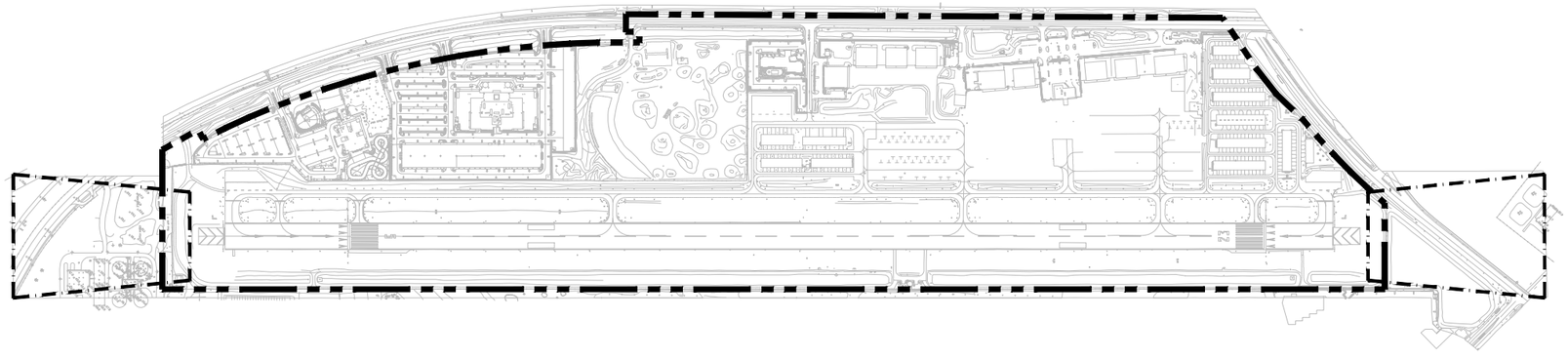

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APPROVED BY:

Federal Aviation Administration Date

APPROVED BY:

State of Florida Dept. of Transportation Date

APPROVED BY:

Boca Raton Airport Authority

Airport Manager Date

BOCA RATON AIRPORT AUTHORITY

Boca Raton, Florida

PROJECT MGR: P. RICONDO

PLANNER: D. RAMACORTI

DRAWN BY: A. RIAZ

SCALE: AS SHOWN

DATE: NOVEMBER, 2002

CHECKED BY: P. RICONDO

BOCA RATON AIRPORT

EXISTING PROPERTY MAP

REVISION DATE

PRINT DATE June 2004

DEPT. OF AIRPORTS NO.

SHEET NO. 7E of 7E

APPENDIX K

Stormwater Master Plan

NOTE: The Stormwater Master Plan is currently under development. The existing conditions report was finalized on October 31, 2023. The future stormwater model will be finalized in early 2024.

Boca Raton Airport Stormwater Master Plan (Existing Conditions Report)

Prepared for:

The Boca Raton Airport Authority

Prepared by:

RICONDO

In association with:

Nova Consulting, Inc.

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1. EXECUTIVE SUMMARY

The purpose of the Drainage Master Plan (DMP) for the Boca Raton Airport (BCT or the Airport) is to develop a "digital twin"[1] of the Airport's stormwater system for the Existing Conditions.

The DMP for BCT will be ultimately subdivided into two parts, which will be based on the updated Airport Layout Plan for the airport: (1) the Existing Conditions and (2) the Future Conditions. This Drainage Report focuses on the Existing Conditions. The Future Conditions analysis will be developed later.

The development of the BCT DMP incorporated the best available data and information of the existing drainage system. Drainage information for the Existing Conditions was obtained from previous site-civil plans, reports, as-builts, the Airport's Geographic Information System (GIS) database, and light detection and ranging (LiDAR) remote sensing laser technology data, as provided by the Airport. However, upon review of the available information, it was determined that some of the data provided was incomplete or suspect. A subsequent survey verification was performed as part of the DMP effort which yielded most of the missing information.

The BCT drainage basin comprises approximately 367 acres, including the airport property (217 acres), a section of the adjacent Florida Atlantic University (FAU) campus (32.5 acres), and portions of Interstate 95 (I-95) (117.5 acres). The BCT property is located within the boundary of the South Florida Water Management District's (SFWMD) Coral Reef Watershed. The Airport's drainage system receives overland and runoff flows from a portion of the FAU property and the I-95 drainage system which are conveyed to the Airport's Outfall Canal. The drainage areas off-Airport property, I-95, and FAU campus were subdivided into smaller sub-catchment areas for modeling purposes. Water drains through a single discharge point at the airport's outfall canal (OF-01) and into the local LWDD L-46 canal, which subsequently drains to the South Florida Water Management District's (SFWMD) E-4 canal. The Airport's stormwater system consists of interconnected pipes, culverts, inlet and manhole structures, open ditches, swales, and one (1) control structure, which drain via a single point of discharge at OF-01.

The Airport's drainage system is regulated by federal, state, and local permits. Currently, the Airport operates under the South Florida Water Management District (SFWMD) Environmental Resource Permit (ERP) No. 50-01365-S. In addition, all airport construction operations must adhere to the National Pollutant Discharge Elimination System (NPDES) permit is administered by Palm Beach County Environmental Resource Management (ERM) Department.

The Airport's drainage system was evaluated for two main considerations: water quantity and water quality. Three (3) storm events (the 5-year/24-hour, the 25-year/72-hour, and the 100-year/72-hour) were analyzed for water quantity using PCSWMM (computer model), which supported the hydrological analysis of single rainfall-runoff event simulations. For the Existing Conditions, the water stages at each drainage network node and the peak discharge for each storm event at the Airport discharge point were computed. These parameters will be the point of reference for future pre-versus post-condition analyses.

An inundation evaluation was performed based on the results for the storm events modeled to determine the level of service for the Existing Conditions. The model was calibrated using a documented storm event that occurred during June 3rd and 4th, 2022. The results of this analysis showed evidence of localized ponding in the airfield, whose extent and duration depended on the location.

Water quality was also analyzed for each sub-catchment for the area within the Airport property. It was estimated that the actual volume of stormwater treatment is greater than the required treated volume.

Based on the evaluation of the existing drainage system at the Airport, preliminary recommendations were developed to improve the operations of the stormwater management system.

[1] A digital twin is a software replica of the physical stormwater management system.

2. EXISTING CONDITIONS

2.1 INTRODUCTION

The Boca Raton Airport (BCT or the Airport) is located in Boca Raton, Florida, Palm Beach County, adjacent to Florida Atlantic University (FAU) and to Interstate 95 (I-95) (refer to **Exhibit A**). BCT commenced operations in 1936; the airport is publicly owned by the State of Florida and operated by the Boca Raton Airport Authority (BRAA). The Airport property occupies a fenced area of approximately 217 acres, which are limited to the north by NW 40th St., to the east by the FAU Campus, to the south by Airport Rd., and to the west by I-95 (refer to **Exhibit B**).

The Airport averages approximately 83,000 operations per year and operates with a single surface runway (Runway 5/23) that is 6,276 feet in length and 150 feet in width (refer to **Exhibit C**). This runway is complemented by a full-length parallel taxiway (Taxiway Papa) 40 feet in width, various connectors, and aircraft apron areas. The airport serves primarily general aviation operators, including two (2) Fixed Base Operators (FBOs), T-hangars, aircraft aprons, and US Customs and Border Protection facility.

2.2 AREA HYDROLOGY AND SOILS

2.2.1 AREA HYDROLOGY

The Airport's experiences a tropical climate with distinct wet and dry seasons. The wet season, from May to October, is characterized by hot and humid conditions with temperatures ranging from 75°F (24°C) to 91°F (33°C), and heavy rainfall, with June being the wettest month. Conversely, the dry season, from November to April, experiences mild and dry conditions with temperatures ranging from 56°F (13°C) to 77°F (25°C). Throughout the year, humidity levels remain relatively high, ranging from 60% to 90%. Additionally, South Florida is susceptible to hurricanes, particularly between June and November, with peak activity in August and September.

The BCT area is located within the SFWMD's Coral Reef watershed (Refer to **Exhibit D-1**). The geology of the Airport property consists primarily of limestone and flat terrain. **Exhibit D-2** shows the various canals surrounding the BCT property.

The Airport is located within the boundary of the Biscayne Aquifer (refer to **Exhibit D-3**). The Biscayne Aquifer is a shallow, permeable, unconfined aquifer located beneath the surface of southeastern Florida, stretching from the Miami area up to Palm Beach County. It is composed mainly of porous limestone and is the primary source of drinking water for the residents of Miami-Dade, Broward, and Palm Beach counties.

The groundwater table fluctuates during the year, according to elevations at the nearest US Geologic Survey (USGS) groundwater monitoring station, between approximately 4 and 10 feet above NGVD 29, as shown on **Exhibits D-4A** and **D-4B**.

2.2.2 AREA SOILS

Soil data were collected from the US Department of Agriculture (USDA) Natural Resources Conservation Service. Soil types are also identified in the USDA Web Soil Survey, which categorizes several types of soils at BCT. Refer to **Exhibit E-1** for additional information. [Web Soil Survey - Home (usda.gov)][2]

[2] https://websoilsurvey.nrcs.usda.gov/app/

Soils with known properties are assigned to one of the four hydrologic groups (A, B, C, and D) or three dual classes (A/D, B/D, and C/D). The hydrologic soil groups are based on estimates of runoff potential.

Approximately 57 percent of soils at BCT are classified as Group A/D soils. Group A/D soils have the properties of Group A soils in drained areas and the properties of Group D soils in undrained areas. Group A soils consist of well-drained sands or gravels with a high infiltration rate and high rate of water transmission. Group D soils chiefly consist of clay soils that have a high swelling potential, soils that have a permanent high-water table, soils that have a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. Group D soils have a slow infiltration rate when thoroughly wetted and a slow rate of water transmission. The types of soil classified as Group A/D within the airport include Basinger fine sand, Basinger and Myakka sand, and Pompano fine sand.

Approximately 32 percent of soils are classified as Group B/D soils. Group B/D soils have the properties of Group B soils in drained areas and the properties of Group D soils in undrained areas. Group B soils primarily consist of deep, well-drained soils that have a moderately fine to moderately coarse textures. The type of soil classified as Group B/D within the airport include Immokalee fine sand.

Additionally, approximately 11 percent of the property is classified as urban land, which is not defined by the hydrologic soil groups and may require further investigation.

2.3 EXISTING DRAINAGE SYSTEM

The BCT stormwater system consists of a series of interconnected drainage structures, including inlets, manholes, and storm pipes, that drain landside areas (including roadways and parking lots) and airside areas (including aircraft aprons, taxiways, and the runway) via a network of interconnected swales, ditches, and dry ponds, which direct the stormwater runoff toward the Airport's southern discharge point and Outfall Canal (OF-1). A site visit was performed to verify the existence of certain drainage elements. Photographic documentation of this visit is provided in **Exhibit O**.

The Airport drainage system was modeled to estimate the level of service (LOS) for the Existing Conditions to identify any deficiencies.

2.3.1 WATERSHEDS

The Airport's land use consists of a paved apron, runway and taxiway, roadways, surface parking lots, and other buildings and facilities related to the operation of the Airport, as well as landscaped buffer zones, grassy infield areas, swales, and dry ponds. BCT is within the boundaries of the SFWMD's Coral Reef watershed (refer to **Exhibit D-1**).

The BCT property and off-Airport areas draining through the Airport's drainage system include pervious and impervious contributing areas:

- Pervious Area 52.6 percent
- Impervious Area 47.4 percent

The topography of the Airport site is generally flat at an average elevation of approximately 6.5 feet NAVD (averaging from 2.50 feet to 8.50 feet NAVD) above mean sea level. The Airport property occupies a fenced area of approximately 217 acres, while the modeled portion of the FAU campus and I-95 occupy 32.5 and 117.5 acres, respectively.

2.3.2 BASINS AND SUB-CATCHMENT AREAS

LiDAR data were used to delineate the main watersheds within the Airport. Sub-catchment areas external to the Airport were delineated using Geographic Information System (GIS) maps. Internally, the Airport was subdivided into sub-catchment areas draining into the Airport's drainage system. The Airport drainage basin further collects water from a portion of the adjacent FAU property and the I-95 drainage system.

The FAU off-Airport contributing areas drain through the Airport drainage system, which then drains (up-stream of and) through a control structure at Node CS-1 (refer to **Exhibit G**). The I-95 off-Airport contributing areas also drain through the Airport drainage system, which then drains down-stream of the control structure at Node CS-1 (refer to **Exhibit G**).

The combined airport drainage system, including the contributing areas from the FAU parcel and the I-95 drainage system, drains via the Airport's Outfall canal and then to the LWDD L-46 Canal which discharges into the SFWMD E-4 Canal. The Airport and applicable adjacent areas are subdivided into several sub-catchment areas, as shown on **Exhibit F**, which are summarized in **Table 1**.

2.3.3 STORM SYSTEM CONVEYANCE ELEMENTS

The Airport's stormwater system consists of interconnected pipes, culverts, a control structure, and (dry) stormwater management ponds and swales, and one Airport discharge point (at OF-1). Impervious areas from runways and taxiways generally sheet flow to grated inlets that convey the runoff to the piping system. Runoff from aprons will typically be collected in inlets and conveyed to the storm pipes. The airfield piping system interconnects the airfield ditches, which ultimately drain toward the Airport discharge point and Outfall canal near the southeast corner of the airport. Gravity Stormwater System

The gravity stormwater system includes a network of pipes and culverts. Existing GIS databases and computer-aided design (CAD) files, along with information from a database for structures, as-builts, and survey results, were used to obtain the information required to complete the input parameters for the computer model. Information obtained includes geometric data for each drainage element (shape, flow area dimension, length, number of barrels, structure tops, and invert elevations) and other relevant non-geometric information (material and entry and exit loss coefficients). There are approximately 20,860 feet of pipes and culverts at BCT. Refer to **Exhibit G** and **Table 2** for additional node network information. Refer to **Exhibit N** for the Document Control Tracking Form, which details all information provided by the Airport.

2.3.3.1 SWALES AND DITCHES

The swales and ditches connecting to pipes and culverts that convey stormwater runoff to the Airport discharge point were delineated based on digital elevation models, which were developed for the Airport based on LiDAR data. They comprise open channels connecting to pipes or culverts. The total length of streams and ditches is approximately 4,080 feet. Refer to **Exhibit G, Exhibit H, and Table 2** for additional information.

2.3.3.2 STORMWATER MANAGEMENT PONDS AND BEST MANAGEMENT PRACTICES

At BCT there exists a series of interconnected stormwater management dry ponds and swales that drain via a system of pipes and culverts. One series of dry ponds lie Landside west of the airport and along Airport Road. The other lies Airside east of the airport and parallel to Runway 5/23. These ponds attenuate the water quantity discharge and

provide water quality (WQ) treatment. WQ treatment requirements are met by detaining and/or retaining an amount of stormwater required by the SFWMD. District regulations specify the greater of either (i) the first inch of runoff from the developed property or (ii) the total runoff of 2.5 inches times the percentage of imperviousness. Refer to **Exhibit H-1** for additional information.

2.3.3.3 CONTROL STRUCTURE(S)

A control structure is a permanent structure placed in a canal, ditch, or drainage pond, which provides control of the stage or discharge of the surface drainage. There exists a single control structure located near the southwest corner of the airport. The control structure comprises a 1 to 4 feet wide crested weir, with its crest elevation set at 6.75 ft NGVD. Additionally, it features a 70-degree V-notch with its invert positioned at an elevation of 4.95 feet NGVD. This information was obtained from as-built drawings, existing plans, and SFWMD ERP permit. Refer to **Exhibit H-2** for additional information.

2.3.3.4 AIRPORT DISCHARGE POINT

Stormwater runoff from the BCT site drains at Outfall No. 1 (OF-01) into the Airport's Outfall canal which subsequently discharges into the LWDD L-46 Canal. The LWDD L-46 Canal then merges with the SFWMD E-4 Canal. The principal Airport discharge point (OF-01) serving the airport is located at the southwest corner of BCT. Refer to **Exhibit H-1** for additional information.

2.4 FLOOD INSURANCE RATE MAPS

Flood Insurance Rate Maps (FIRMs) were obtained from the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program, as shown on **Exhibit K**. Special flood hazard areas are located within most of the airport property. This includes the swales, ditches, and surrounding area that contain the airport's single discharge point. The runway and several apron facilities on the west and northwest side of the airport are outside the special flood hazard areas.

3. WATER QUANTITY

3.1 RAINFALL DATA

Four storm events were used as hydrologic input data for the rainfall-runoff simulations. **Table 2-1** lists the total precipitation for each storm event. The total precipitation was distributed over the 24 hours using the Soil Conservation Service Type 2 distribution with a time step of 15 minutes.

The following storm events were modeled as part of the analysis for the Existing Condition: 5-year/24-hour, 25-year/72-hour, and 100-year/72-hour. The rainfall data is presented below:

TABLE 2-1 RAINFALL DATA

STORM EVENT	PRECIPITATION (INCHES)
5-year/24-hour	7.38
25-year/72-hour	13.5
100-year/72-hour	18.6

SOURCE: US Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, (accessed January 2023).

- ***5-year / 24-hour:*** The FAA recommends that the 5-year/24-hour storm event be evaluated with no encroachment of runoff on the taxiway and runway pavements.
- ***25-year / 72-hour:*** This represents the maximum 72-hour precipitation event with a probable recurrence of once in 25 years.
- ***100-year / 72-hour:*** The 100-year/72-hour storm event is used to evaluate and set building finished floor elevations, plus (12 inches of) freeboard.

Refer to **Exhibit I** for the rainfall data and additional information.

3.2 STORMWATER MODELING PARAMETERS

3.2.1 MODELING SOFTWARE

The computer model PCSWMM, Version 7.6, was used for the hydrological analysis for single-event simulation. PCSWMM accounts for various hydrological processes that produce runoff from rural and urban areas. The spatial variability in these processes is captured by dividing the study area into smaller, homogeneous sub-catchments. Overland flow can be routed between sub-catchments, or between entry points of a drainage system, which includes ditches, culverts, pipes, storage areas, and natural streams. Model parameters for each catchment were defined, including size, imperviousness ratios, and infiltration characteristics. Characteristics of stormwater storage facilities were incorporated to assess the system for the Existing Conditions.

PCSWMM uses a nonlinear reservoir method to compute sub-catchment runoff, in which surface water is lumped into a "reservoir" and drained through a "valve" controlled by Manning's equation, according to specific assigned roughness, width, and slope parameters.

3.2.2 SOIL CHARACTERISTICS

For modeling purposes, one single soil type was used for the study area (i.e., fine sands). The Green-Ampt Method[3] was used for the simulation. The soil parameters are presented in Table 2-3. The value for hydraulic conductivity was calibrated based on simulation for a historic storm event (June 3-4, 2022).

Imperviousness is an important parameter for the rainfall/runoff simulation, as it is related to watershed land use. The imperviousness of a watershed is the total amount of impervious surface over the total area of the watershed. In PCSWMM, imperviousness is calculated as a percentage. Available maps for paved areas (roads and buildings) were converted to GIS format. The imperviousness percentage for each sub-catchment was obtained using automatic procedures in PCSWMM that combine land use maps and sub-catchment boundaries.

TABLE 2-2 SOIL CHARACTERISTICS

SOIL TYPE	HYDRAULIC CONDUCTIVITY (FEET/SEC)	INITIAL MOISTURE DEFICIT (FEET/FEET)	WETTING FRONT SUCTION (FEET)
Fine Sands	1.55	0.25	1.9

NOTE: The hydraulic conductivity was determined during the model calibration process and is within range of conductivities for fine sands.

3 The Green-Ampt Method: Method for computing infiltration that assumes a saturated wetting front moves downwards. The model assumes a homogeneous soil with constant hydraulic conductivity and initial water content. The infiltration is also a function of the "soil suction head" at the wetting front which is a function of the type of soil.

3.2.3 SUB-CATCHMENT GEOMETRIC CHARACTERISTICS

The model also requires sub-catchment geometric parameters, including flow length and slope. Flow lengths and slopes were defined using automatic GIS routines based on topographic information from LiDAR data.

3.2.4 TIME OF CONCENTRATION

PCSWMM incorporates the USEPA Stormwater Management Model (SWMM) platform. SWMM does not calculate the time of concentration for each sub-catchment, but it computes the hydrograph generated by the sub-catchment using the unit hydrograph method. Therefore, the unit hydrograph time to peak and the catchment parameters were used, including flow length, slope, and roughness coefficients of pervious and impervious surfaces.

3.2.5 INFILTRATION

The selected method to compute infiltration in PCSWMM was the Green-Ampt Method. **Section 3.2.2** presents the relevant Green-Ampt parameters for the soils in the area. The Green-Ampt Method assumes the soil is at an initial water content deficit and, once rain starts to infiltrate, a wetting front moves downwards. The movement is controlled by the hydraulic conductivity of the soil and by the wetting front suction, which are dependent on the soil type.

3.2.6 MANNING'S ROUGHNESS COEFFICIENTS

Manning's roughness coefficients are provided for the conveyance elements of the system and for the surfaces of the watershed. Regarding the conveyance elements, **Table 2-3** includes the Manning's roughness coefficients associated with each material found in the GIS database.

For the grassed open channels, a value of 0.04 was used, and for overland flow on sub-catchment surfaces, the impervious areas were assumed to have a Manning's roughness coefficient of 0.014. For pervious areas, a value of 0.10 was used.

TABLE 2-3 MANNING'S ROUGHNESS COEFFICIENTS

MATERIAL	MANNING'S ROUGHNESS COEFFICIENT (N)
Reinforced Concrete Pipe	0.014
Corrugated Metal Pipe	0.024

SOURCE: Open Channel Hydraulics - Ven Te Chow - 1985. Table 5-6

3.2.7 ENTRANCE AND EXIT LOSS COEFFICIENTS

For pipes and culverts, entry and exit loss coefficients of 0.3 and 0.5, respectively, were assumed.

3.2.8 BOUNDARY CONDITIONS

The boundary condition for the simulation of the June 3rd to 4th, 2022, storm event (calibration event) was provided as a timeseries of water levels for the canal downstream of the airport at a location 100 m feet away from the BCT boundary. This time series was generated under the assumption of uniform flow conditions, using an energy gradient that produces a peak water level of 7.5 feet NAVD at the BCT boundary. The peak value of 7.5 feet NAVD was determined based on the analysis of documentation provided by the airport authority at the BCT boundary during the June 2022 storm event.

For the simulation of the design storms (5-year/24-hour, 25-year/72-hour, and 100-year/72-hour), uniform flow conditions with the same energy gradient that was applied for the calibration event were assumed. In the case of the 100-year/72-hour storm, the peak water level was verified by referencing the values found in the FEMA FIRM maps available for the area.

3.2.9 MODELING CALIBRATION

Once the model was assembled using the topographic data, survey data, previous reports, existing databases, and local stormwater management reports, the model was calibrated using the June 3rd to 4th, 2022, storm and the timeseries for water levels at the downstream boundary of the model. To validate the model results, site pictures taken on June 4, 2022, were used. One of the pictures, taken upstream of the control structure, was instrumental in estimating the water level at that location. The associated water elevation was used as the target for model results.

The predominant soil type in the area consists of fine sands. Hydraulic conductivity for the sands was modified within typical values for fine sands until the water level prediction upstream of the control structure matched the water level estimated from the site picture. Site pictures for other flood-affected locations were used to verify the model predictions. A very good match was achieved by using a hydraulic conductivity of 1.55 mm/h for the soils.

3.3 EXISTING DRAINAGE SYSTEM

3.3.1 DRAINAGE SYSTEM NETWORK

The BCT drainage network is depicted on **Exhibit G** and summarized in **Table 2**. The BCT model includes conveyance drainage elements (pipes, culverts, streams, canals, ditches), junctions, drainage ponds, and control structures.

3.3.2 MODELING RESULTS

3.3.2.1 5-YEAR / 24-HOUR STORM EVENT

The stormwater model for the 5-year/24-hour storm event predicts that approximately 26% of structures will experience overtopping (i.e., high water elevation above a rim elevation). Overtopping is caused by insufficient capacity of the pipes downstream of structures to handle the flows produced during this storm event. As a result, certain locations will experience limited ponding of water at inlet structures. The ponding is simulated to last for up to 24 hours (subject to location). Refer to **Table 3.1** and **4** for additional information.

3.3.2.2 25-YEAR / 72-HOUR STORM EVENT

The stormwater model for the 25-year/24-hour storm event predicts that approximately 42% of structures will experience overtopping. The ponding is simulated to last for up to 30 hours (subject to location). Refer to **Tables 3.2** and **4** for additional information.

3.3.2.3 100-YEAR / 72-HOUR STORM EVENT

The stormwater model for the 100-year/72-hour storm event predicts that approximately 43% of structures will experience overtopping. The ponding is simulated to last for up to 40 hours (subject to location). Refer to **Tables 3.3,** and **4** for additional information.

3.3.3 LEVEL OF SERVICE

The Level of Service (LOS) of the existing drainage system varies, subject to its location within the Airport's property. Some areas have drainage systems that can handle the runoff generated by a 25-year/72-hour storm event, but

some areas experience ponding during the 5-year/24-hour storm event. Additionally, inundation areas were also generated for the 25-year/72-hour and 100-year/72-hour storm events. Refer to **Exhibits M-1, M-2, and M-3** for additional information.

3.4 CONCLUSIONS

Three storm events (5-year/24-hour, 25-year/72-hour, and 100-year/72-hour) were analyzed for water quantity using PCSWMM for the hydrological analysis of single rainfall-runoff event simulations. For the Existing Conditions, the peak discharges for each of the three storm events were computed at the Airport discharge point (refer to **Section 3.3.2**). **Table 4** summarizes the water quantity results for each modeled storm event at the Airport outfall. These parameters will be the point of reference for future pre- versus post-condition analysis.

An inundation evaluation was also performed based on the modeling results for the 5-year/24-hour, the 25-year/72-hour, and the 100-year/72-hour storm events to determine the LOS for the Existing Conditions. The results of this analysis showed evidence of temporary ponding in the airfield lasting up to 24 to 40 hours, depending on the location and storm event. Refer to **Exhibits M-1, M-2, and M-3** for additional information.

4. WATER QUALITY

4.1 WATER QUALITY PARAMETERS

Off-site stormwater discharges are required to meet State water quality standards, including the surface water standards in Chapters 62-4 and 62-302, F.A.C., and the groundwater standards in Chapters 62-520 and 62-550 F.A.C. To meet applicable effluent limitations and water quality standards, runoff from impervious surfaces shall be subjected to some type of Best Management Practice (BMP) prior to discharge from the project site. Water quality and quantity design and performance criteria for stormwater management systems are specified in the SFWMD Environmental Resource Permit (ERP) Applicant's Handbook Volume II (Applicants Handbook). If the stormwater system is permitted, constructed, operated, and maintained in accordance with the Applicant's Handbook and Chapter 62-330, F.A.C., it is presumed that quality of stormwater discharged to receiving waters meets the State surface water standards.

The volume of water to be treated from a site is determined by the treatment system. The SFWMD-ERP Applicants Handbook requires that the water quality treatment volume shall be provided for one of the three following criteria, or equivalent combinations thereof:

1) Wet detention volume shall be provided for the first inch of runoff from the developed project, or the total runoff of 2.5 inches times the percentage of imperviousness, whichever is greater.

2) Dry detention volume shall be provided equal to 75 percent of the above amounts computed for wet detention.

3) Retention volume shall be provided equal to 50 percent of the above amounts computed for wet detention. Retention volume included in flood protection calculations requires a guarantee of long-term operation and maintenance of system bleed-down ability.

The required treatment volume for water quality was calculated based on the portion of the sub-catchment areas within the BCT property limits minus the building roofs and permanent water bodies. Refer to **Exhibit J** as well as **Tables 5** and **6** for additional information.

4.2 STORMWATER MANAGEMENT / WATER QUALITY FACILITIES

The Florida Department of Transportation's Statewide Airport Stormwater Best Management Practices Manual (BMP Manual) lists various BMPs which satisfy both water quality and quantity management and aviation safety criteria. BMP selection is determined by site conditions, including the contributing drainage area to the facility. A combination of different structural BMPs as well as procedural BMPs can be utilized for optimal results. The following structural BMPs are listed as approved for post-construction use to meet the water quality requirements of the state regulation:

- Overland flow
- Dry Retention basin
- Swales, Drainage Ditches, Channels, and Canals
- Other Retention Treatment Methods
- Compensating Stormwater Treatment

At the Airport, the stormwater management master system meets water quality requirements by detaining and/or retaining the required amount of runoff in dry detention ponds and swales upstream of Control Structure CS-1-US. Dry ponds and swales are located in two main areas: one west of the airport (Landside) along Airport Road, and one east of the airport (Airside), parallel to the runway. Refer to **Exhibit H-1** for the location of BMPs throughout the BCT property.

4.3 CONCLUSIONS

Water quality criteria were analyzed for each sub-catchment area within the Airport property. Refer to **Exhibit J** for additional information. Based on the volume generated by a 5-Year / 24-Hour storm event, the actual volume of water quality treated (25.6 acre-ft) is greater than the required treatment volume (24.5 acre-ft). Existing water quality BMPs provide adequate WQV. Refer to **Table 6** for additional information.

5. RECOMMENDATIONS

Based on the evaluation of the existing drainage system at the Airport, the following interim recommendations were developed for BCT:

- Label and field identify (i.e., number) all drainage structures (manholes, inlets, headwalls, etc.) to assist in recognizing drainage structures in the field and in tracking/monitoring/documenting maintenance operations.
- Ensure all future pipe diameter required for all new drainage facilities (primary or secondary stormwater system) is 15 inches minimum.
- Install a gauge at the outfall canal at the Airport's discharge point.
- Remove of grown vegetation and accumulated sediment along ditches and along the airports' outfall /discharge canal. In addition, remove debris, repair structures, and clean-up clogged pipes.

- Simulation results show that the airfield area near the northeast corner of the airport overtops and spills to an area outside of the airport property. We recommend elevating the perimeter under the fenced area to prevent this overtopping.
- Sample and test for water quality in the discharge at the outfall in addition to directly upstream of the control structure. Such testing would enhance the Airport's ability to perform source identification activities, given that the I-95 system drains through the Airport's system.
- Clean and dredge the outfall canal to ensure uninhibited drainage and prevent backflow.
- Establish a routine maintenance schedule that outlines frequency, areas of focus, and responsible parties. Regular inspections can identify potential drainage problems before they become significant.
- Formulate an emergency response plan to address significant flooding or blockages, especially during extreme weather events. This plan should detail immediate actions, responsible entities, and resources available.

6. PERMITTING

The Airport's drainage system is regulated by federal, state, and local permits. Currently, the Airport operates under an Environmental Resource Permit (ERP) Number 50-01365-S, administered by the South Florida Water Management District (SFWMD). Refer to **Exhibit L** for additional information.

6.1 FEDERAL

6.1.1 UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into waters of the United States, as well as regulating quality standards for surface waters. The USEPA has implemented pollution control programs and developed national water quality criteria recommendations for pollutants in surface waters. It is unlawful to discharge any pollutant from a point source into navigable waters unless a permit is obtained through the National Pollutant Discharge Elimination System (NPDES) program.

The CWA enables states to implement certain USEPA responsibilities. USEPA has authorized the Florida Department of Environmental Protection (FDEP) to issue NPDES permits under the NPDES program. These permits carry the weight of federal and state laws and regulations and are enforceable under state and federal authority.

6.1.2 FEDERAL AVIATION ADMINISTRATION

The Federal Aviation Administration (FAA) is the agency responsible for regulating civil aviation in the United States of America. FAA AC 150/5320-5D, *Airport Drainage Design*, provides guidance to engineers, Airport managers, and the public about the design and construction of Airport surface stormwater drainage systems for paved runways, taxiways, and aprons. AC 150/5200-33C, *Hazardous Wildlife Attractants on or near Airports*, provides guidance on certain land uses that have the potential to attract hazardous wildlife on or near public-use airports. It also discusses Airport development projects (including Airport construction, expansion, and renovation) affecting aircraft movement near hazardous wildlife attractants.

6.2 STATE

6.2.1 FLORIDA DEPARTMENT OF ENVIROMENTAL PROTECTION

The Clean Water Act (CWA) established the NPDES program to limit pollutants entering streams, rivers, and bays. The NPDES Program is administered in the state of Florida by the Florida Department of Environmental Protection (FDEP). FDEP regulates point source discharges from municipal separate storm sewer systems (MS4s), construction activities, and general activities.

The Airport is located in Palm Beach County, which holds MS4 NPDES Permit No. FLS00018. The MS4 NPDES permit is held jointly by most MS4 owners within the geographic area of the county. Under this permit, the lead permittee, Northern Palm Beach County, has entered into an inter-local agreement with the City of Boca Raton to oversee joint activities.

The permit authorizes all existing stormwater point source discharges to waters of the State from those portions of the MS4 owned or operated by the permittees. New stormwater discharges are authorized provided they meet all applicable requirements of the South Florida Water Management District (SFWMD) Environmental Resource Permitting (ERP) Program authorized pursuant to Part IV of Chapter 373, F.S.

6.2.2 FLORIDA DEPARTMENT OF TRANSPORTATION

The Florida Department of Transportation (FDOT) published the Statewide Airport Stormwater Best Management Practices Manual which is intended for use by consultants, regulators, and airport sponsors charged with design, permitting, and operation of airport stormwater management facilities. Information included in the manual is intended for design of individual airside facilities or for master planning and designing airport-wide stormwater management systems.

6.2.3 SOUTH FLORIDA WATER MANAGEMENT DISTRICT (SFWMD)

The South Florida Water Management District (SFWMD) regulates stormwater management systems through the ERP program authorized under Part IV of Chapter 373, F.S. The SFWMD Environmental Resource Permit (ERP) Applicant's Handbook Volume II provides water quality and quantity design and performance criteria for stormwater management systems that require a permit under Chapter 62-330, F.A.C., or a general permit as provided under Section 403. 814(12), F.S. BCT currently operates under the SFWMD-ERP No. 50-01365-S.

6.3 LOCAL

6.3.1 PALM BEACH COUNTY

Palm Beach County has implemented a Stormwater Pollution Prevention Ordinance which is administered by their Environmental Resources Management (ERM) Department. The Ordinance prevents illicit discharges (other than storm water) from entering "waters of the United States". The ERM is also responsible for collecting water samples from surface waters to monitor the amount of pollutants. This information is then used by the EPA and FDEP to identify impaired Water Bodies and set the Total Maximum Daily Load. The water quality sampling stations closest to the airport are Station 32 owned by ERM and Station 28010537 owned by FDEP. The stations are located at the E4 Canal at NW Spanish River Drive.

6.3.2 BOCA RATON AIRPORT AUTHORITY

The airport is owned by the State of Florida and operated by the Boca Raton Airport Authority (BRAA). The Airport Authority is organized under Chapter 2004-468, Laws of Florida. The BRAA provides Rules and Regulations (2017) which govern all users, customers, vendors and visitors of the Airport and Airport Authority. The Rules and

Regulations require that all tenants are to be a co-permittee with the Airport Authority under an NPDES permit for storm water discharge.

6.3.3 LAKE WORTH DRAINAGE DISTRICT

The Boca Raton Airport drainage basin is located in the Hillsboro Basin of the Lake Worth Drainage District (LWDD), a sub-district of the SFWMD. Permit modifications to the ERP are submitted to LWDD, however, the LWDD defers to the SFWMD for permitting criteria.

Additionally, the Airport drains water through a single discharge point into the LWDD L-46 Canal. The LWDD Operating Policies (2020) provides engineering and permitting requirements for drainage outfall connections to its right-of-way. The Operating Policies also state that all waters discharged into LWDD's canal systems shall meet water quality standards in accordance with the laws of the State of Florida and the Federal Government.

7. REFERENCES

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Stormwater Master Plan (Existing Conditions) - Exhibits

Exhibit A	Boca Raton Airport (BCT) – Airport Location
Exhibit B	Boca Raton Airport – Airport Map
Exhibit C	Boca Raton Airport – Federal Aviation Administration Airport Diagram
Exhibit D	Area Hydrology
Exhibit E	Area Soils
Exhibit F	Basins and Sub-Catchment Areas
Exhibit G	Existing Drainage System (Node Network)
Exhibit H	Stormwater Management Facilities
Exhibit I	Rainfall Data
Exhibit J	Water Quality
Exhibit K	FEMA FIRM Maps
Exhibit L	Permitting Matrix
Exhibit M	Existing Condition Inundation Areas
Exhibit N	Document Control Tracking Form
Exhibit O	Airport Site Visit Pictures (2023)

Exhibit A

Boca Raton Airport – Airport Location

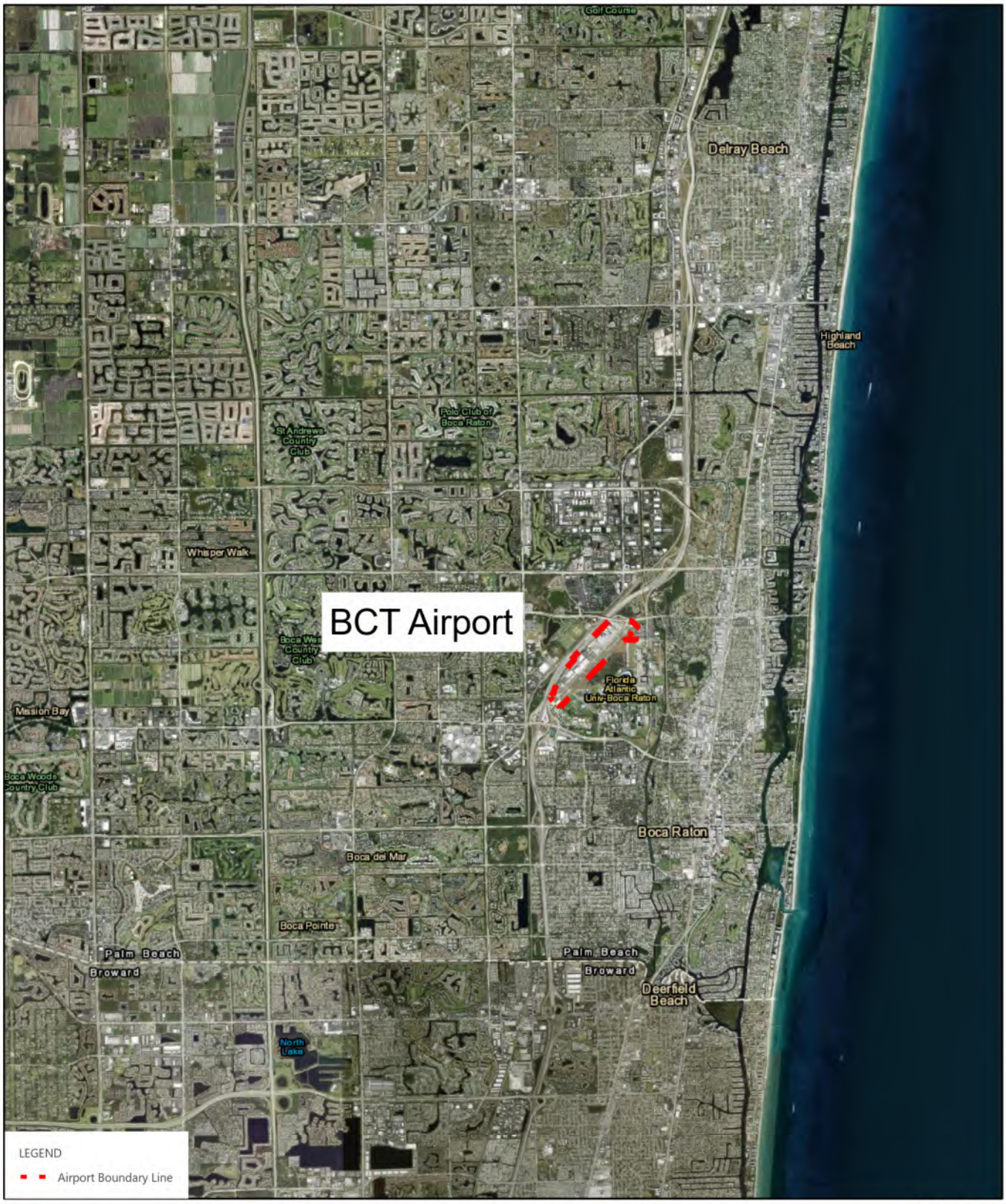


EXHIBIT A

AIRPORT LOCATION MAP

Exhibit B

Boca Raton Airport – Airport Map

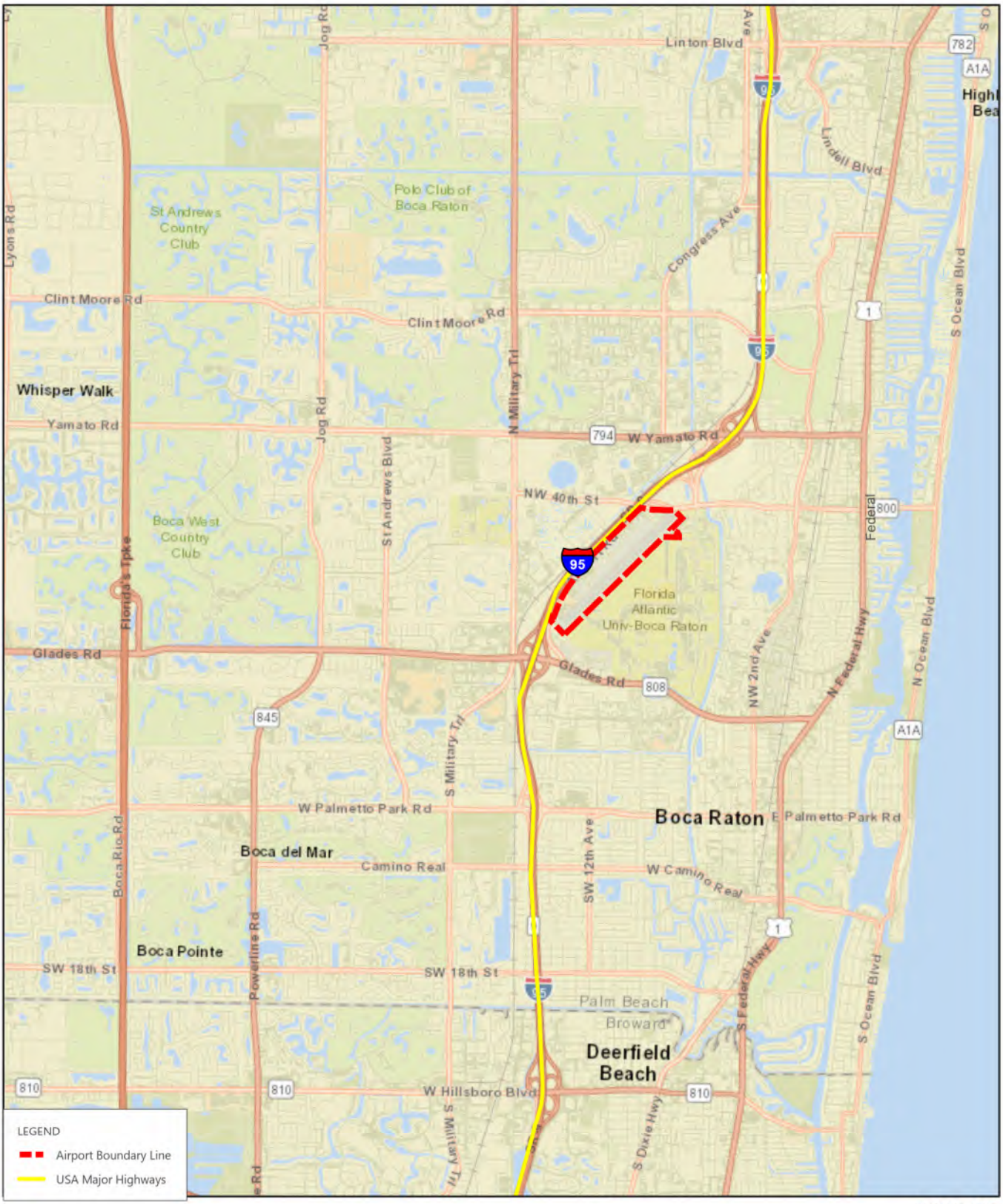
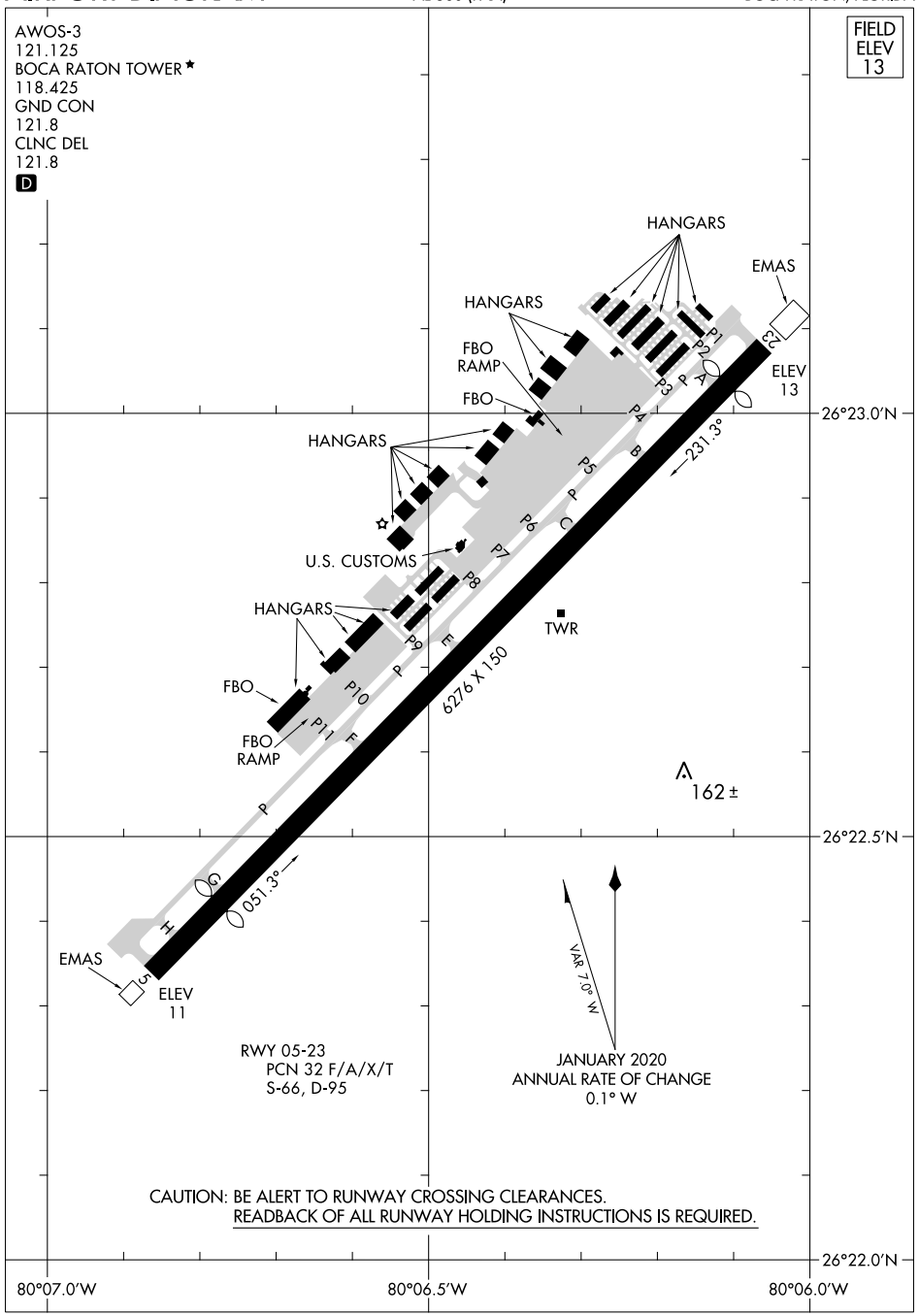


EXHIBIT B

AIRPORT MAP

Exhibit C

Boca Raton Airport – Federal Aviation Administration Airport Diagram



SE-3, 26 JAN 2023 to 23 FEB 2023

SE-3, 26 JAN 2023 to 23 FEB 2023

Exhibit D

Area Hydrology

Exhibit D-1 Area Hydrology: Area Watersheds
Exhibit D-2 Area Hydrology: BCT Canals
Exhibit D-3 Area Hydrology: BCT Aquifers
Exhibit D-4A Area Hydrology: Groundwater Monitoring Stations
Exhibit D-4B BCT GroundwaterElevations

Exhibit D-1

Area Hydrology: Area Watersheds

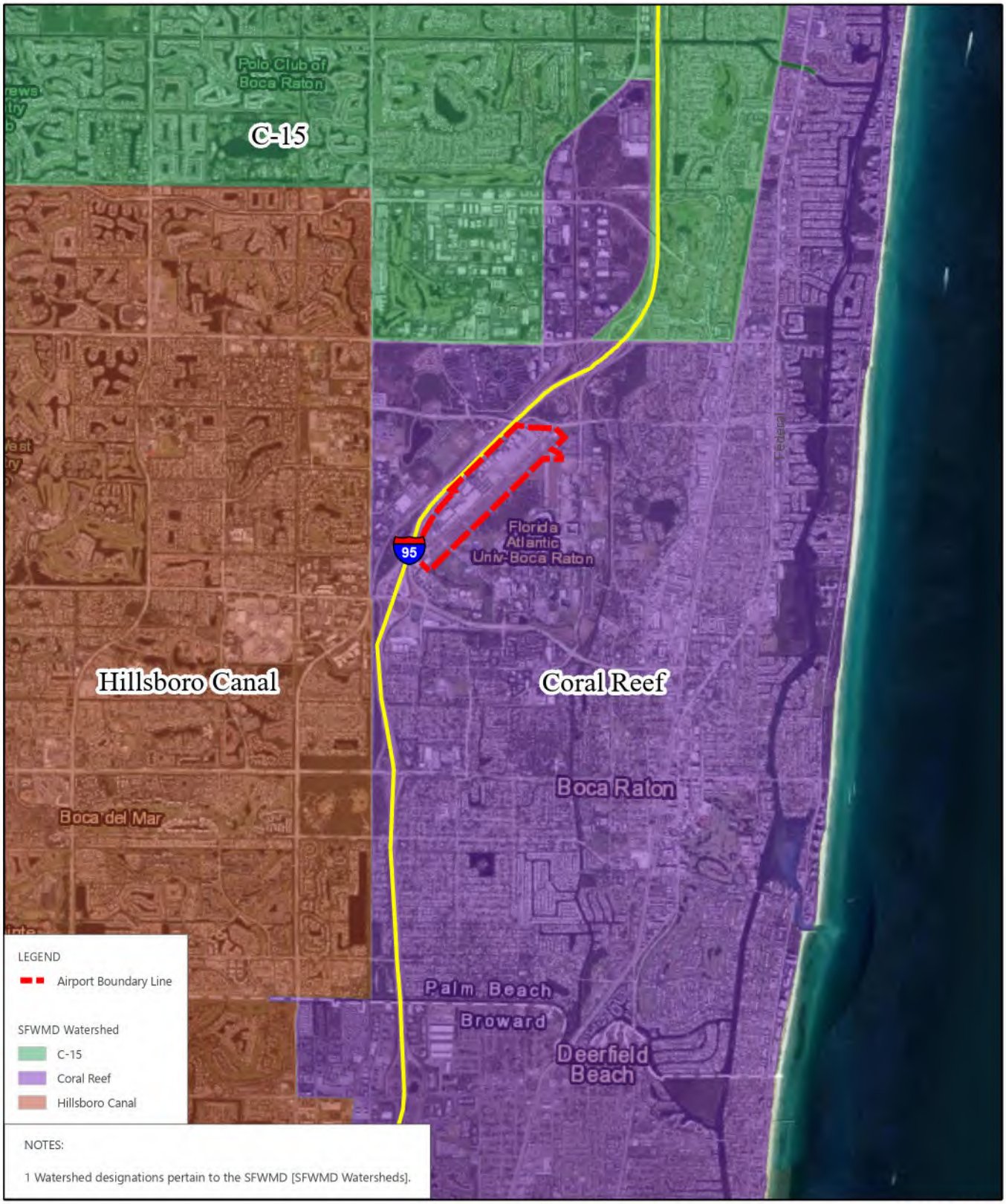


EXHIBIT D-1
WATERSHED AREAS

Exhibit D-2

Area Hydrology: BCT Canals

EXHIBIT D-2

AREA HYDROLOGY
BCT CANALS

Exhibit D-3

Area Hydrology: BCT Aquifers

EXHIBIT D-3

AREA HYDROLOGY
BCT AQUIFERS

Exhibit D-4A

Area Hydrology: Groundwater Monitoring Stations

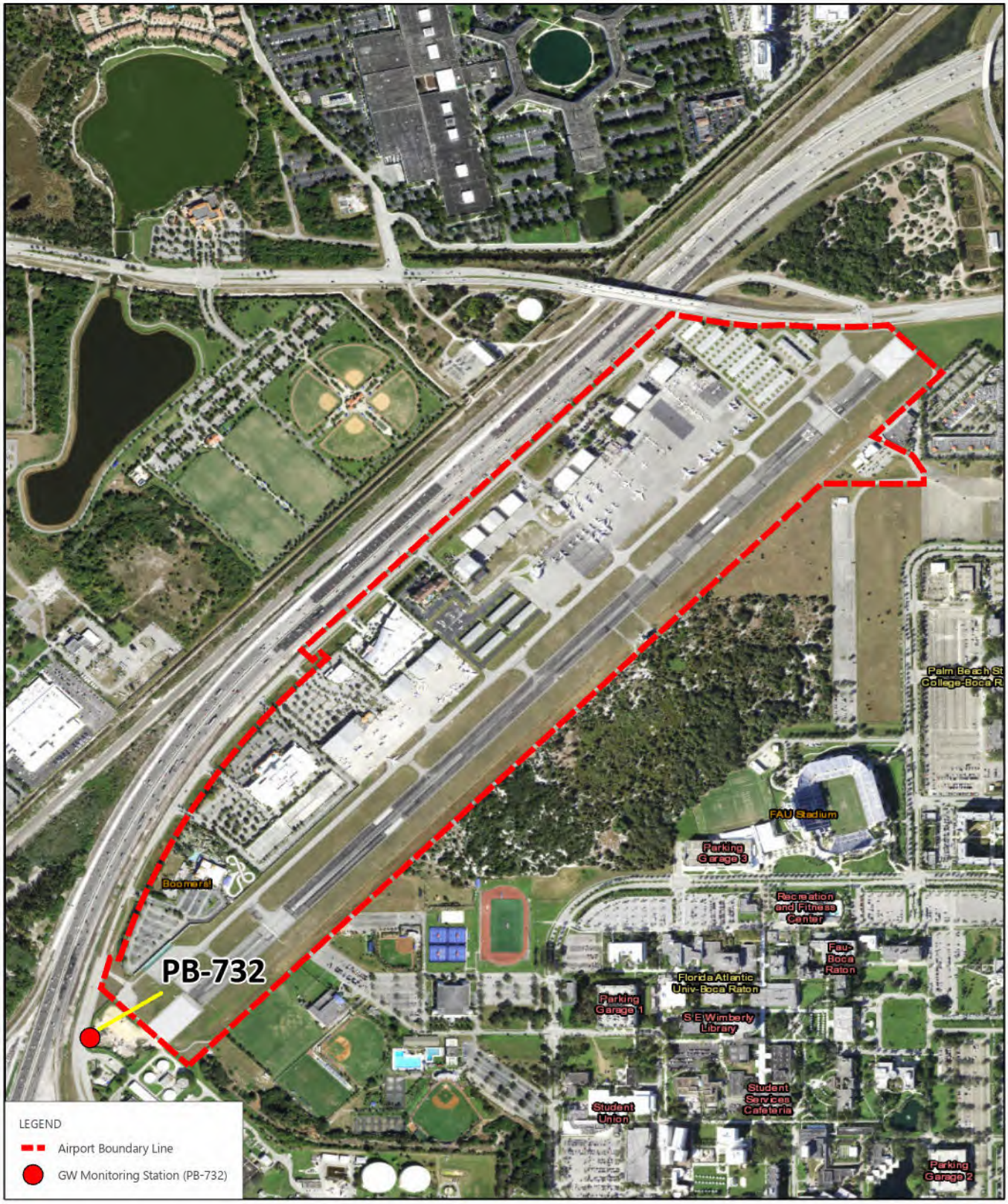


EXHIBIT D-4A

AREA HYDROLOGY
GROUNDWATER MONITORING STATIONS

Exhibit D-4B

Area Hydrology: BCT Groundwater Elevations

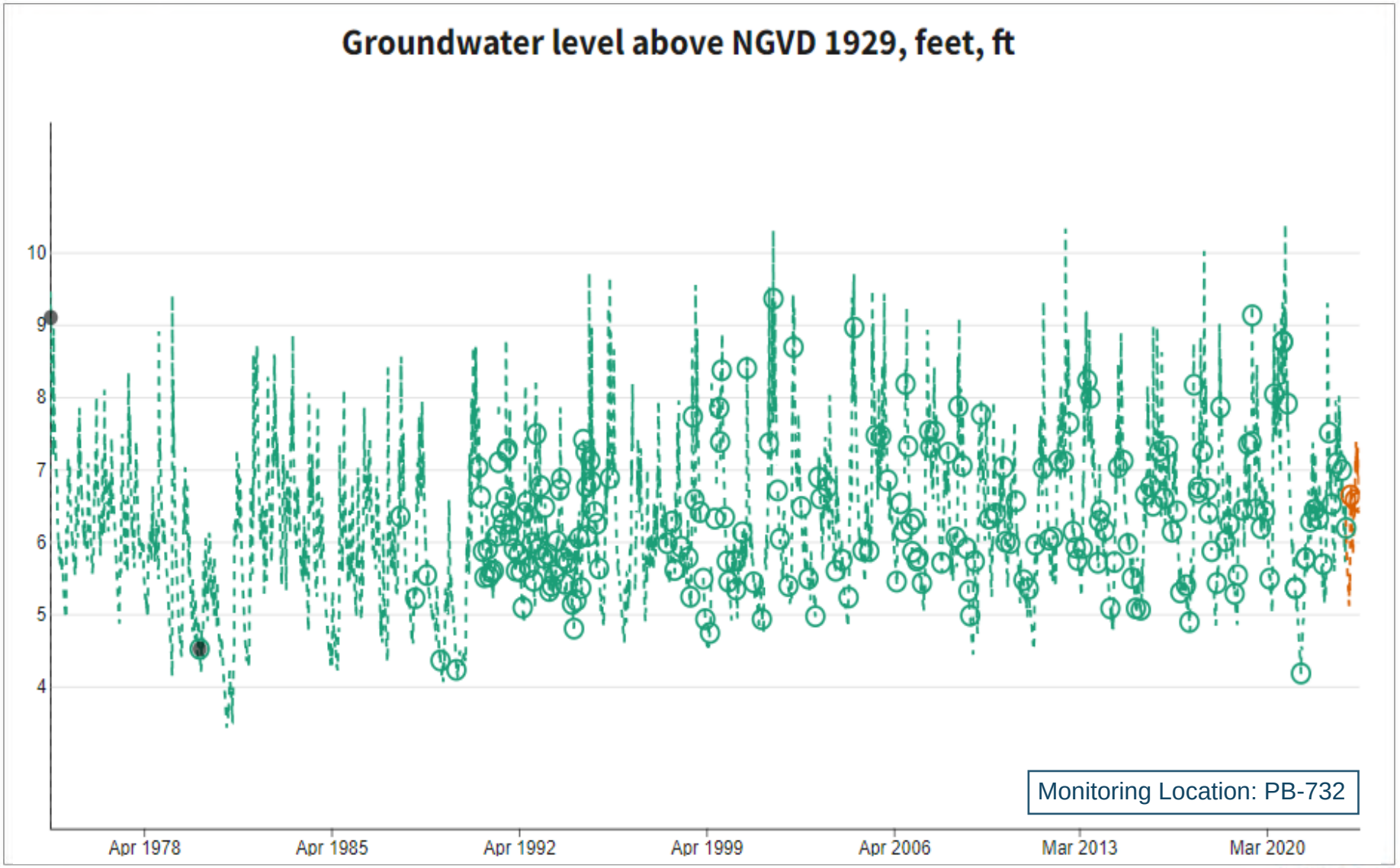


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EXHIBIT D-4B

AREA HYDROLOGY
BCT GROUNDWATER ELEVATIONS

Exhibit E

BCT Soils

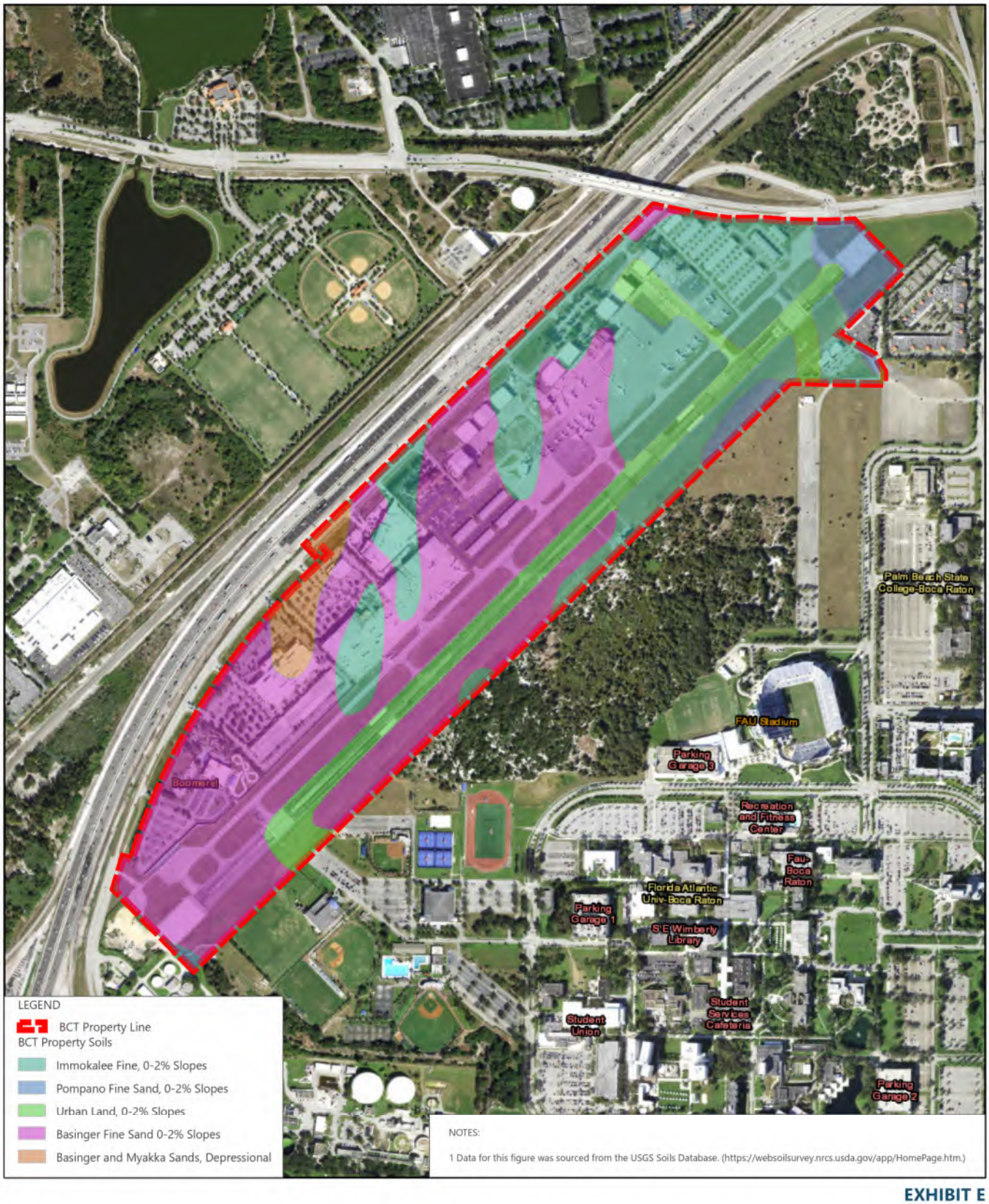
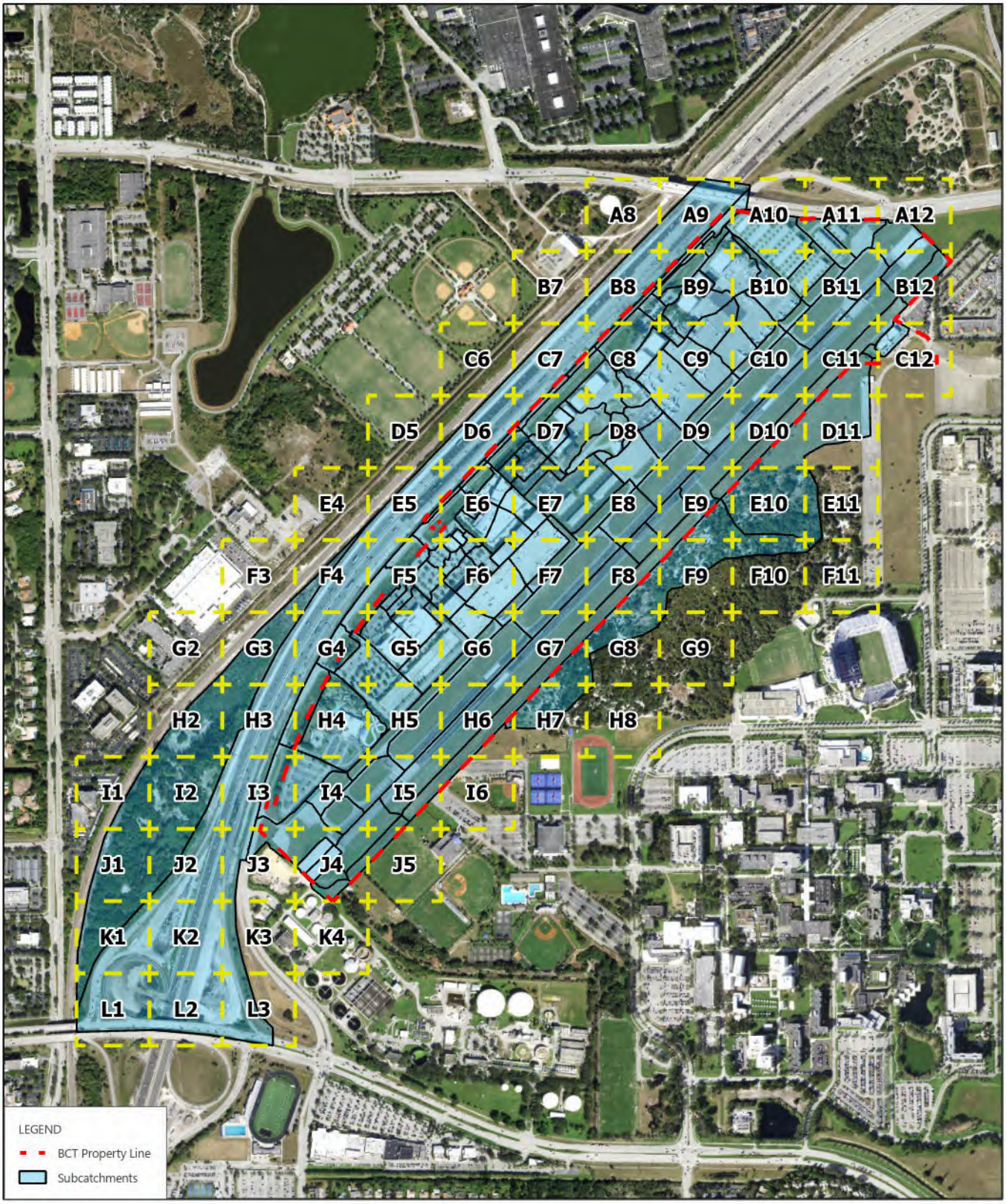


EXHIBIT E
BCT SOILS

NORTH

Exhibit F

BCT Sub-Catchments



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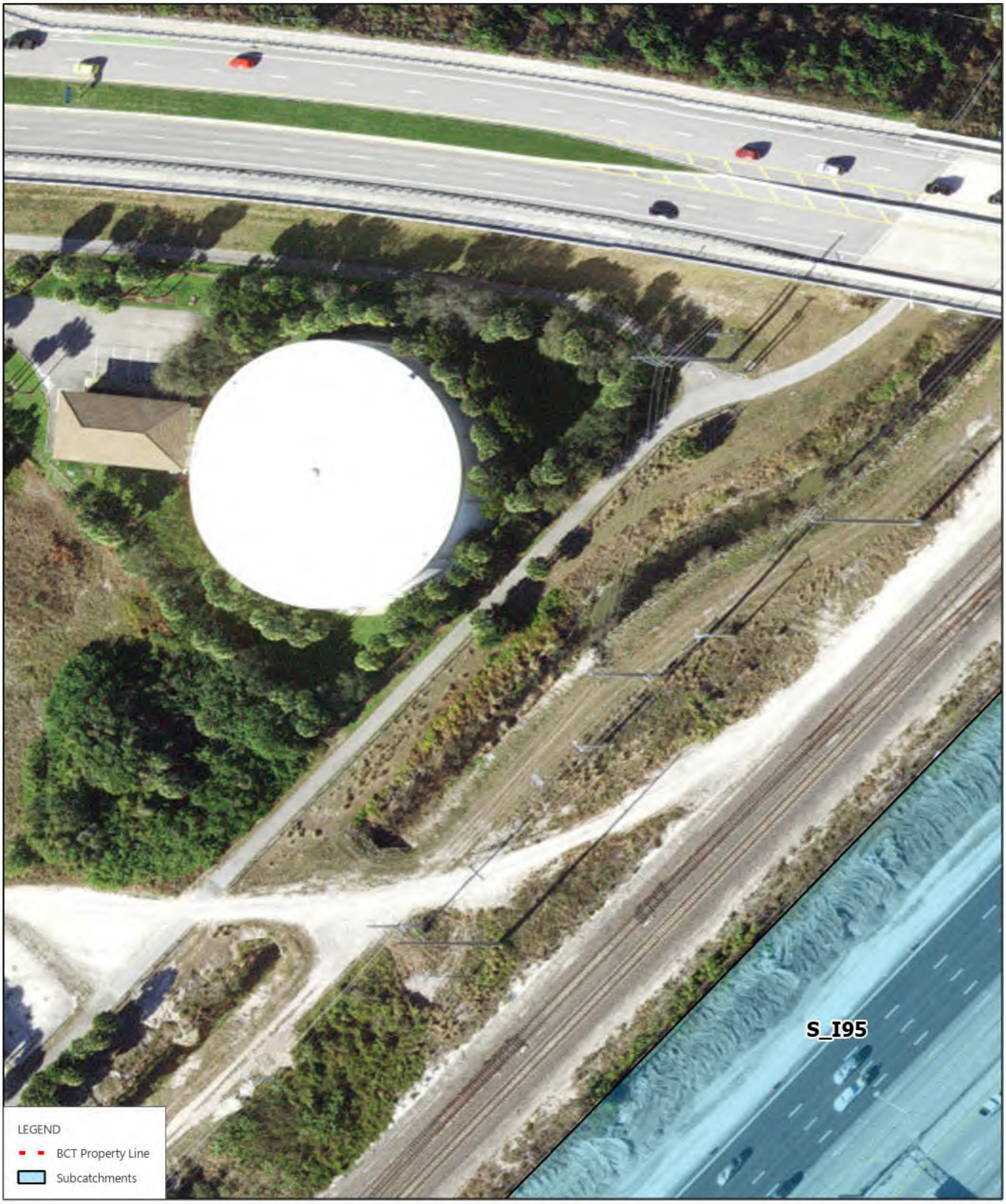
KEY SHEET



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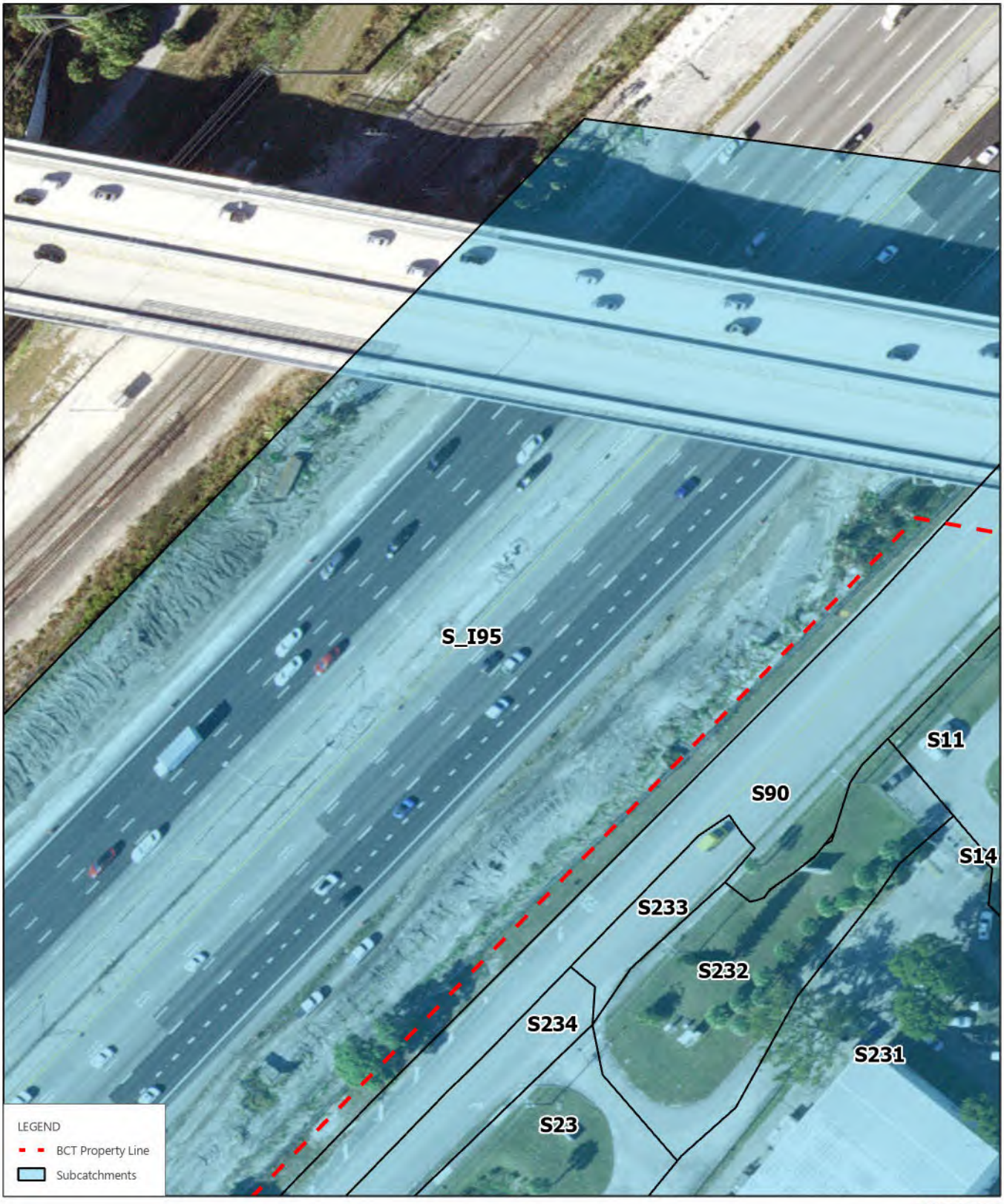

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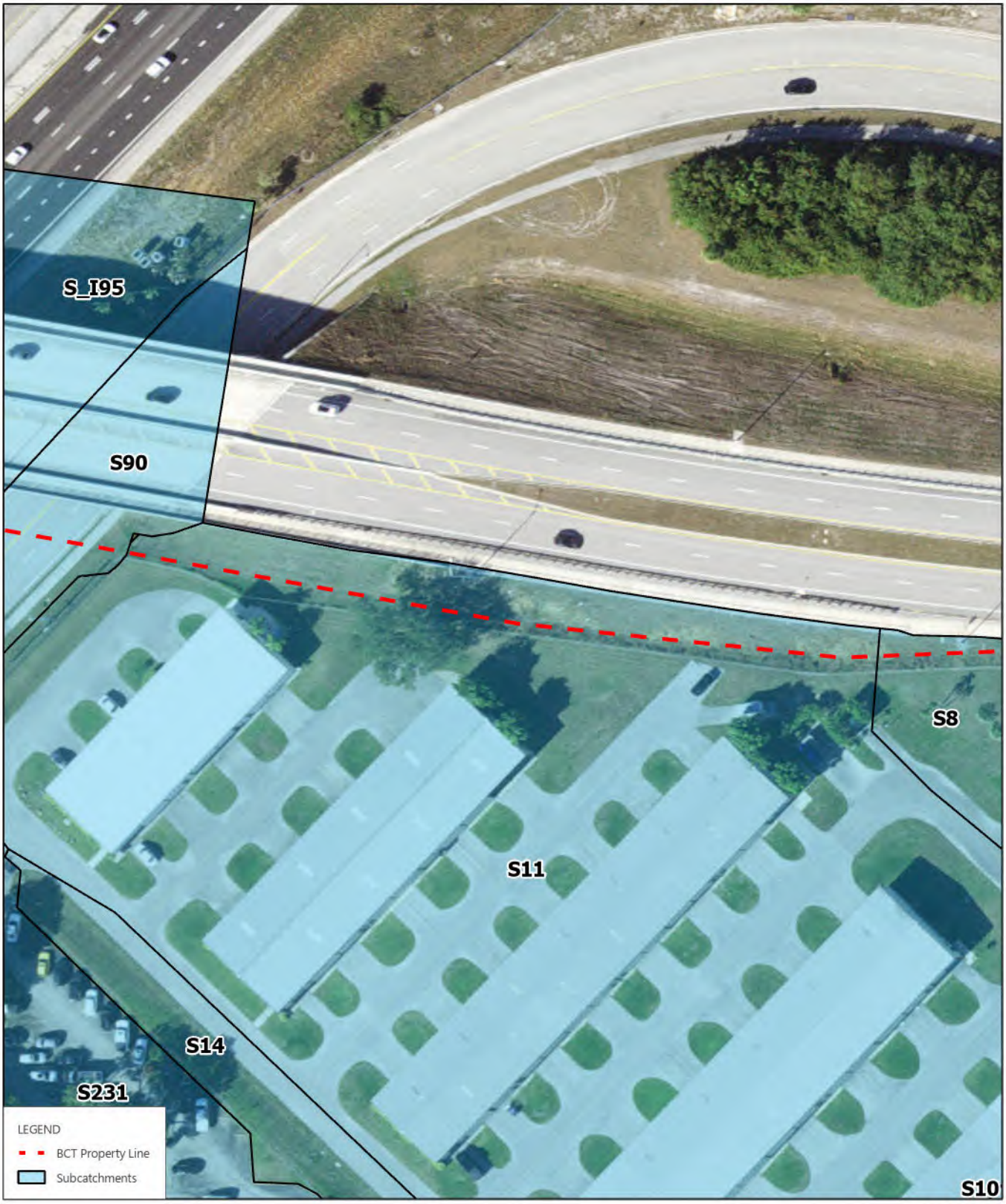

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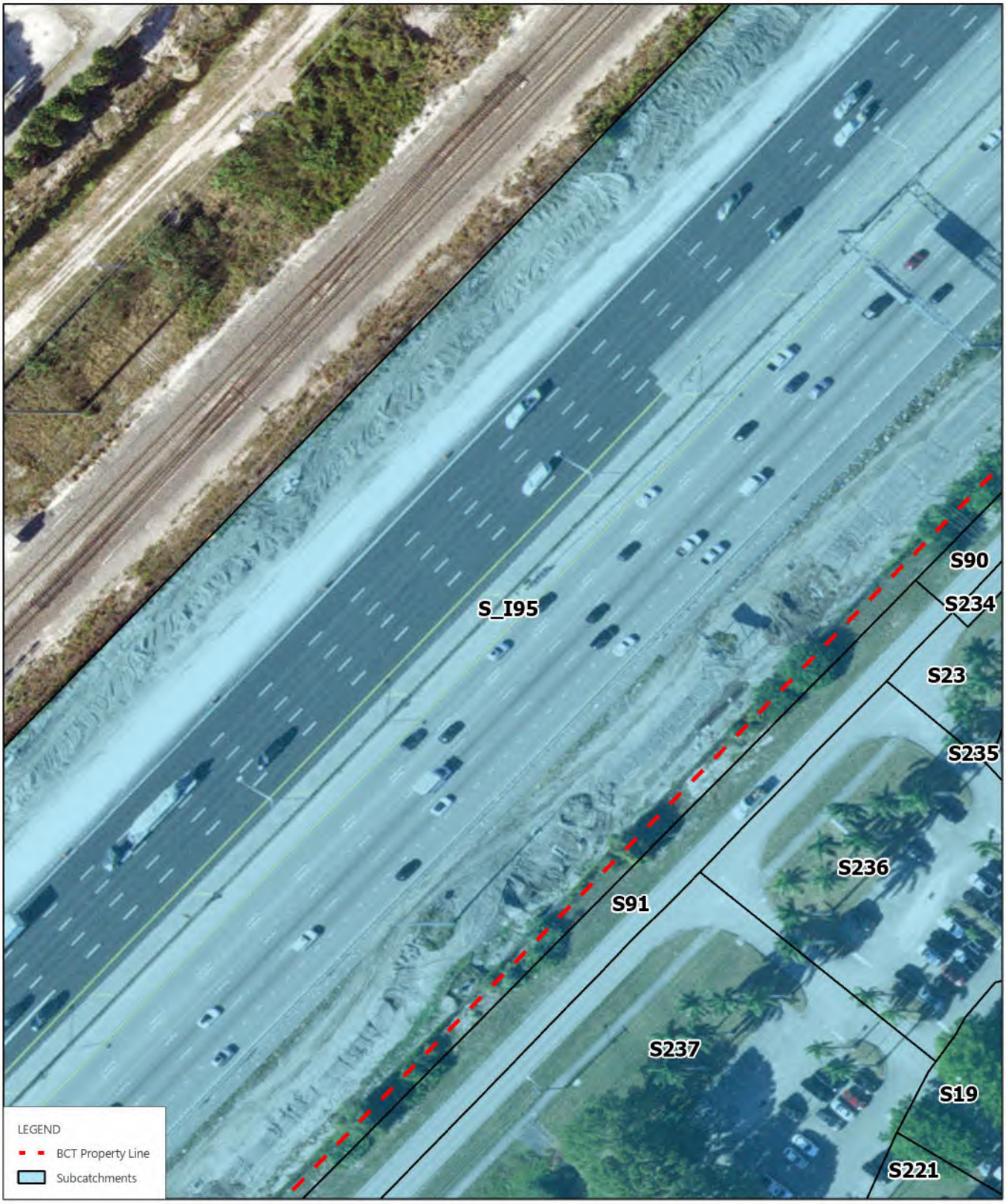

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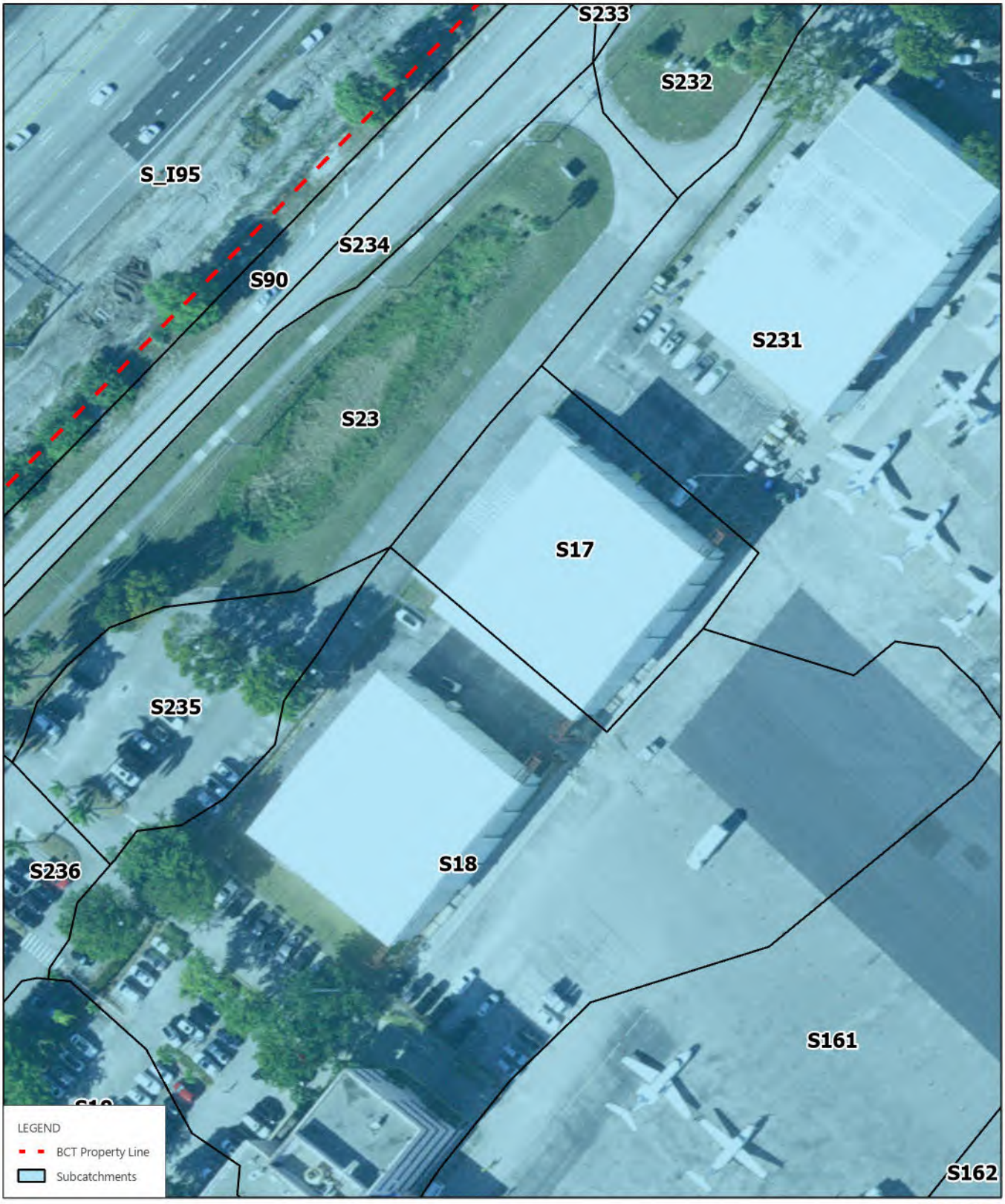

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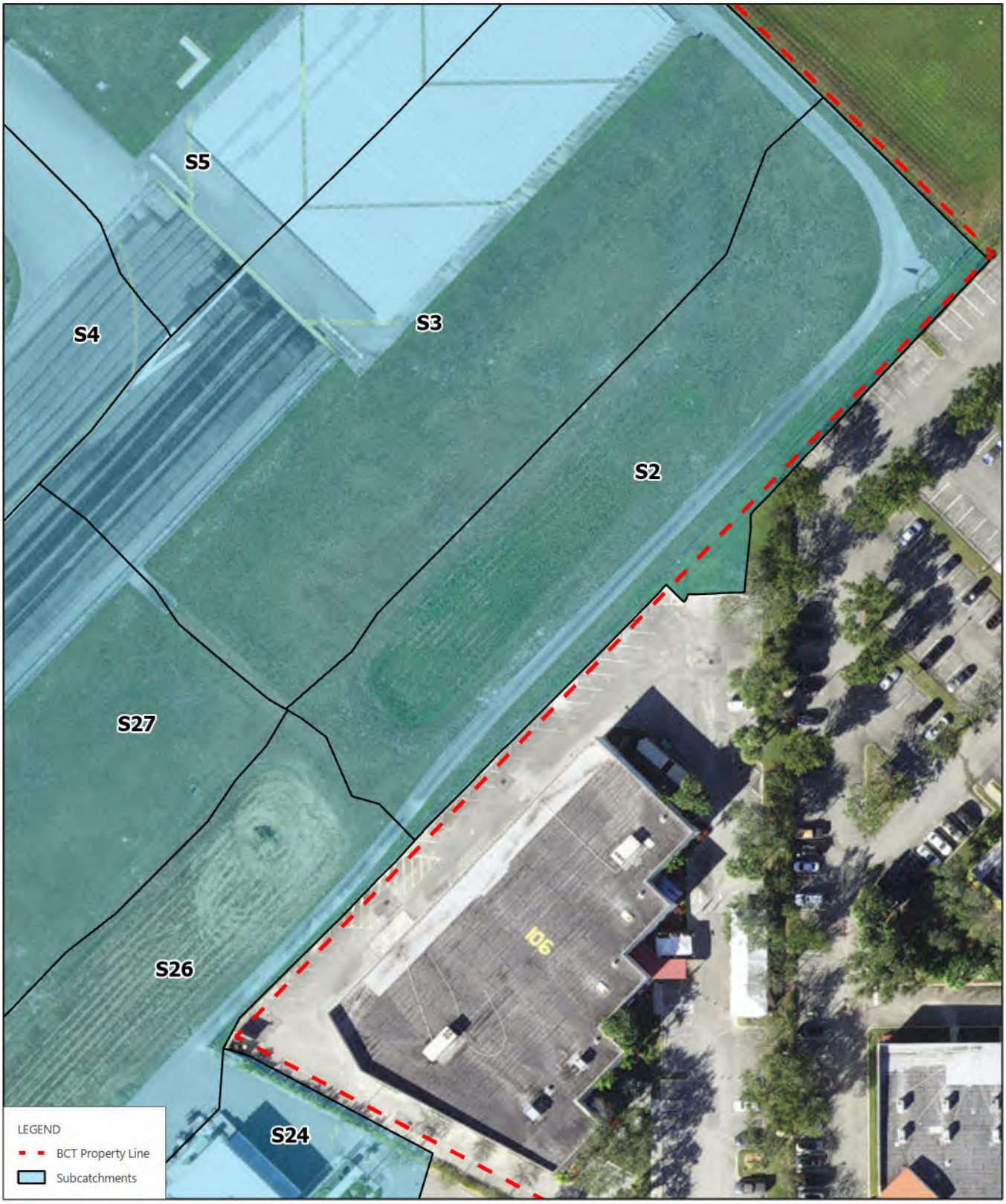

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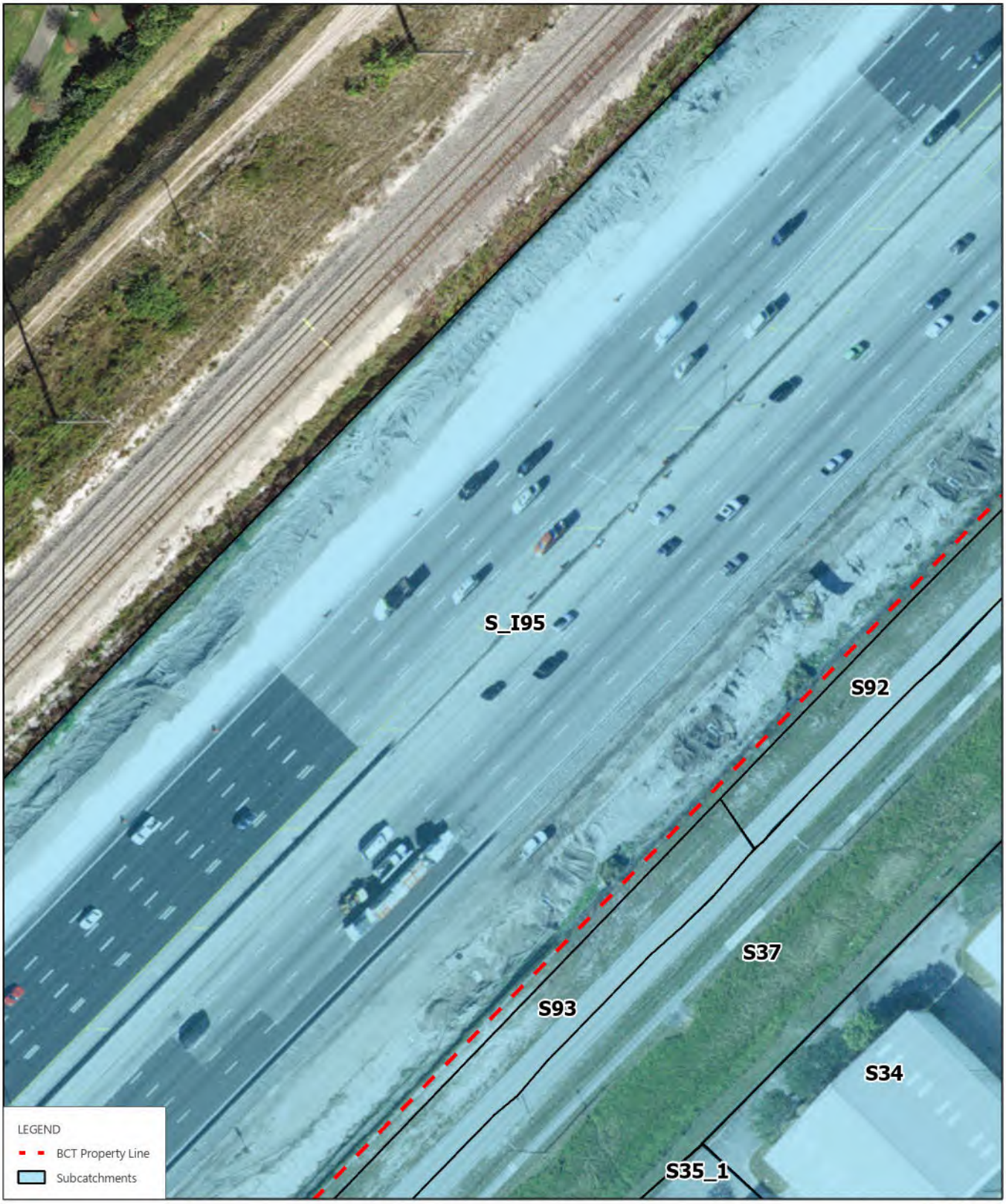

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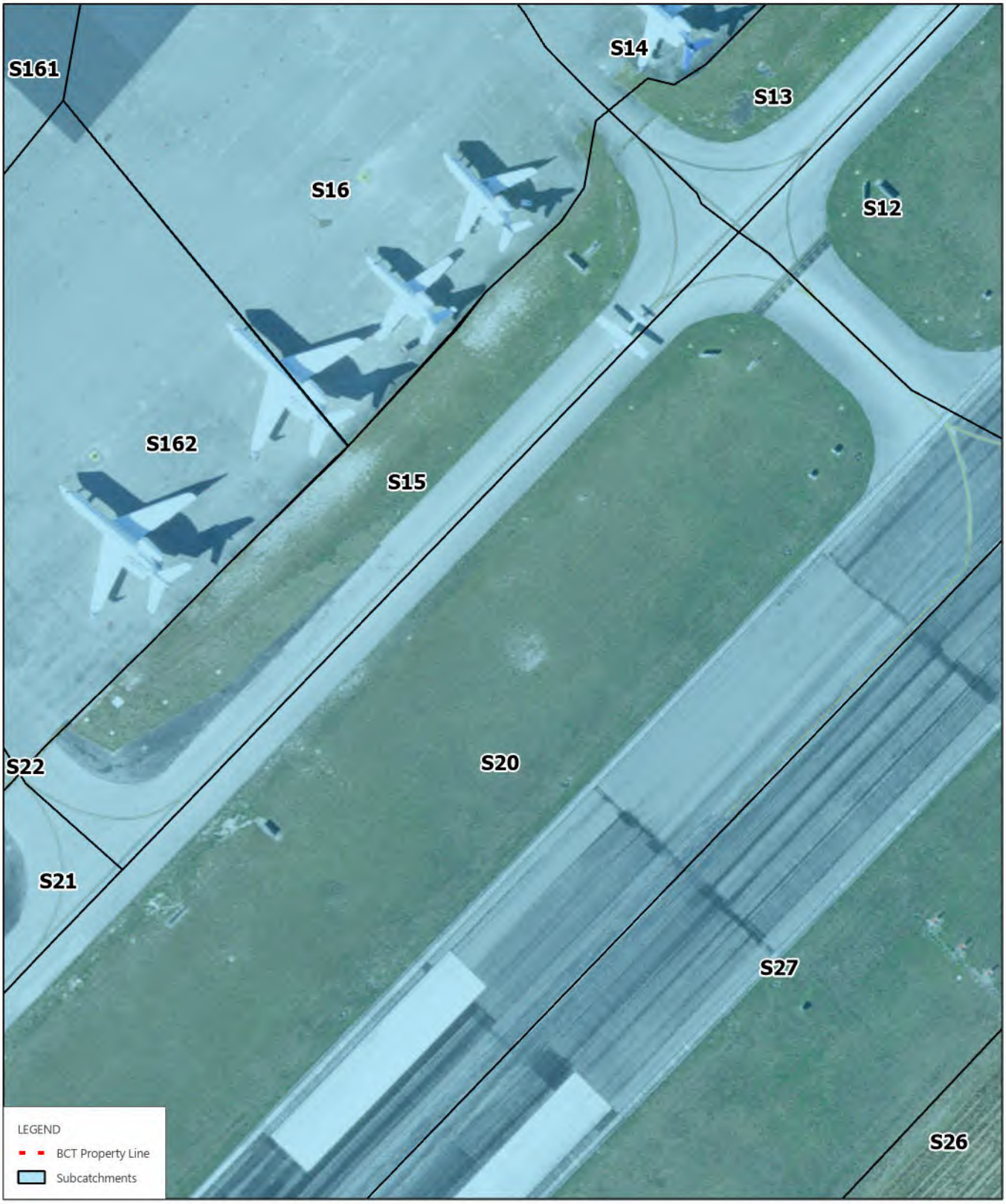

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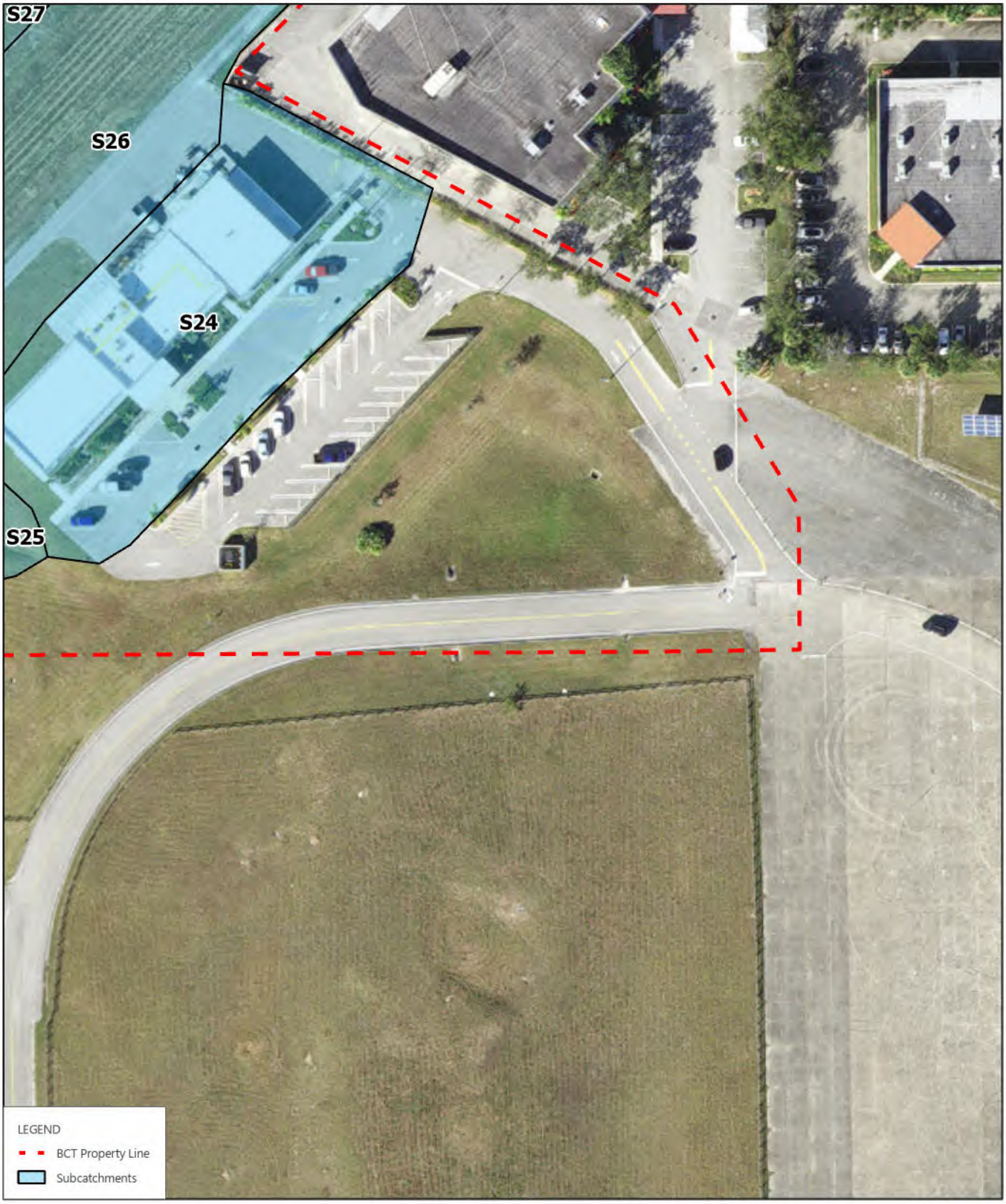

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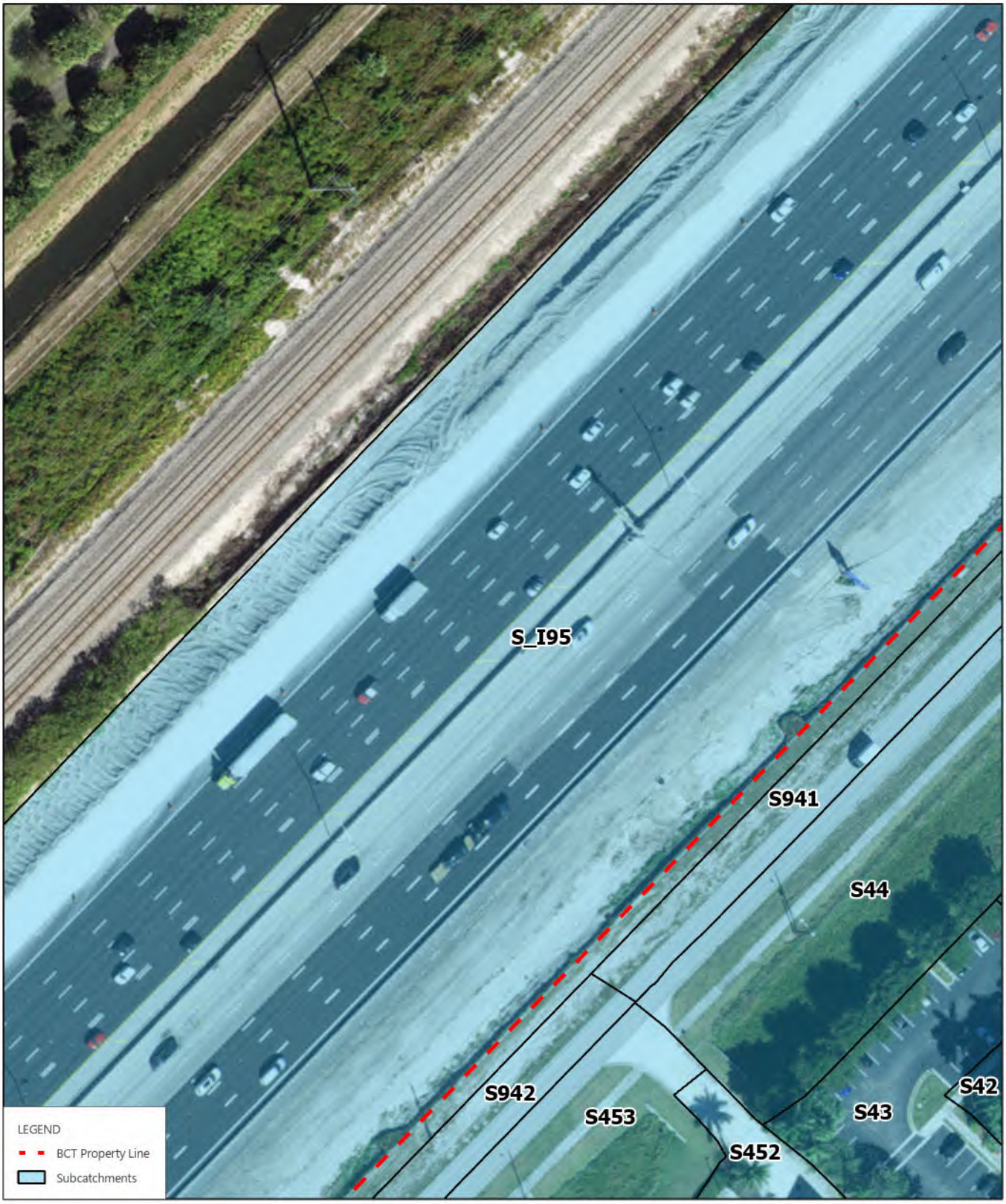

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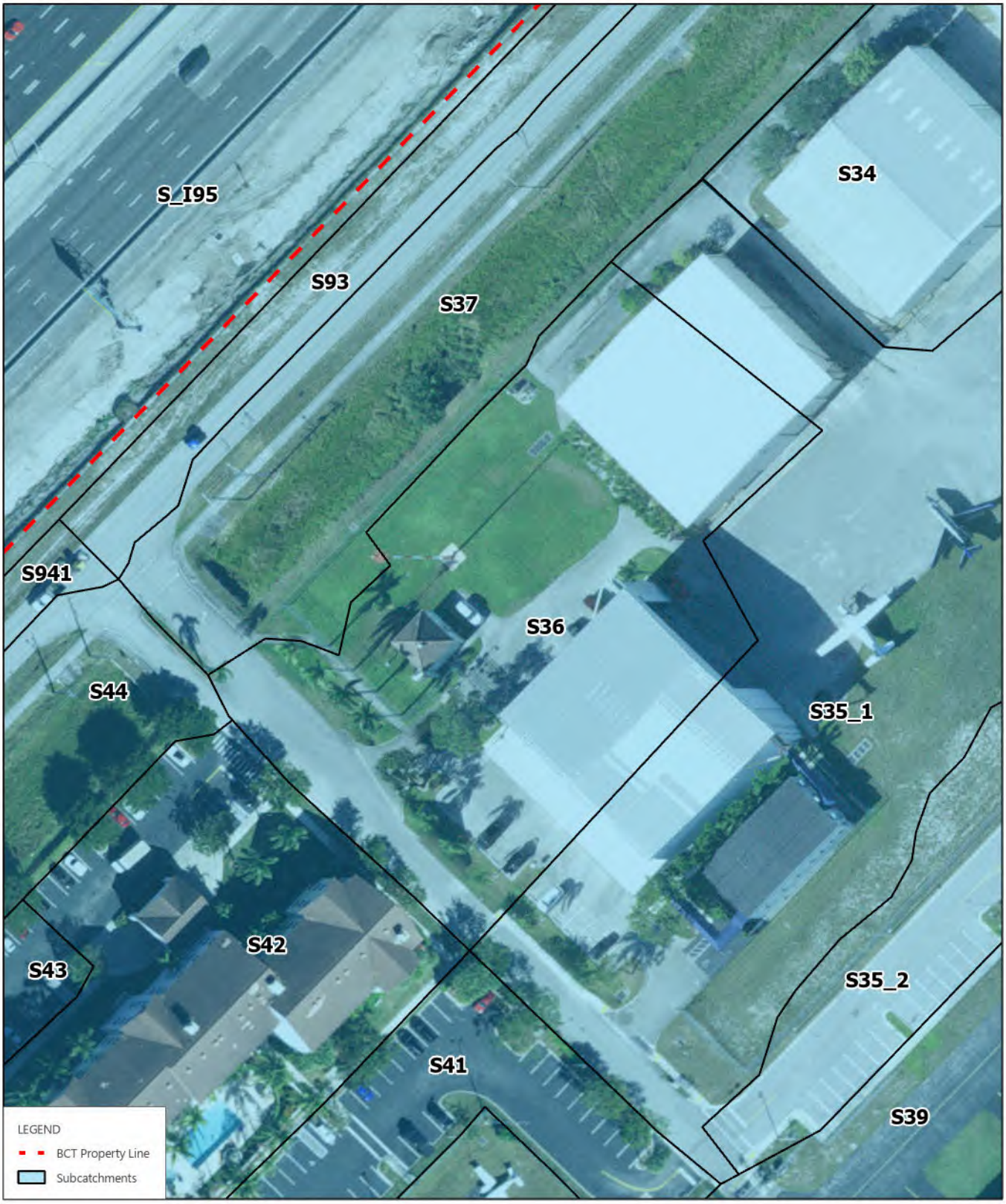

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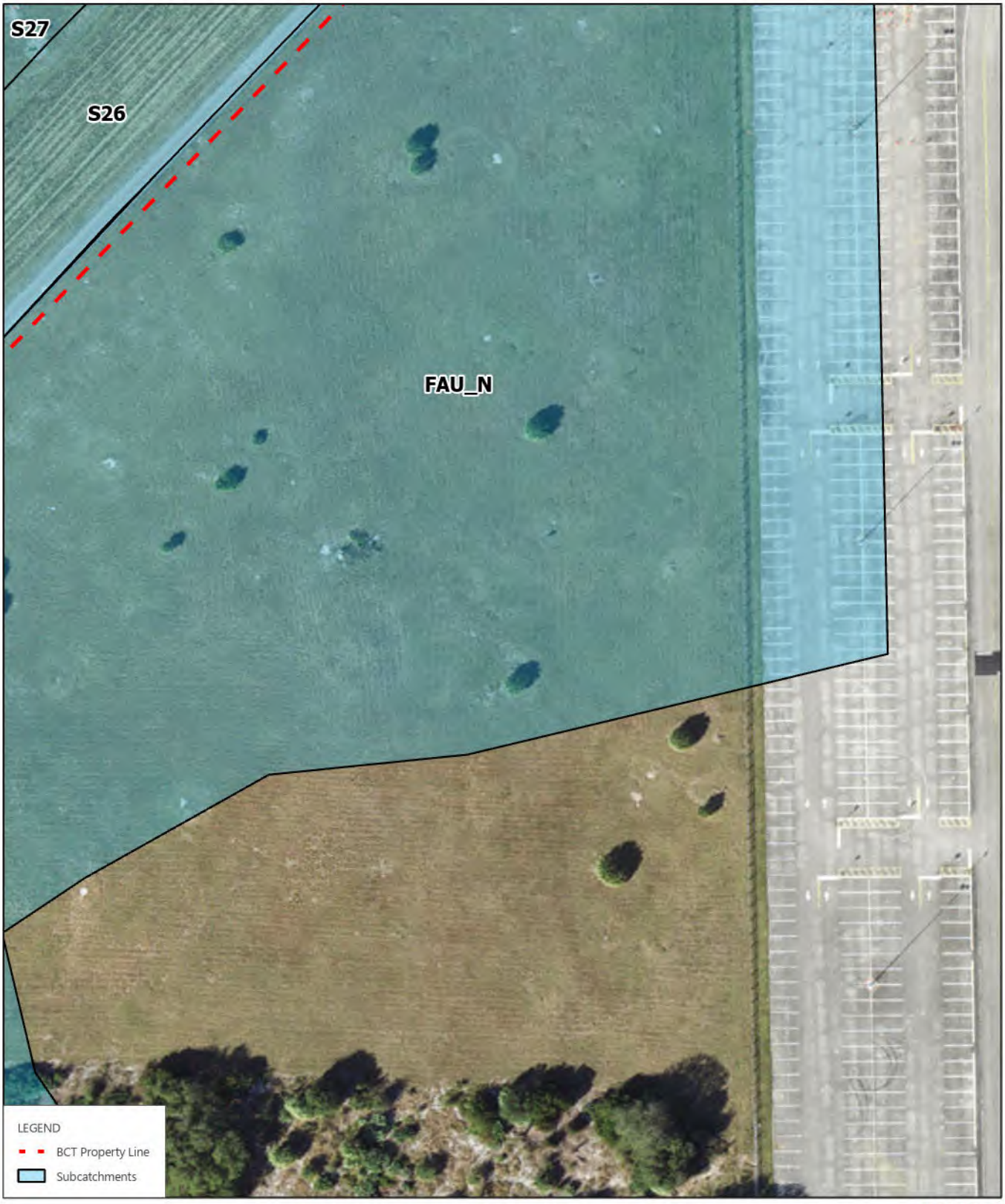

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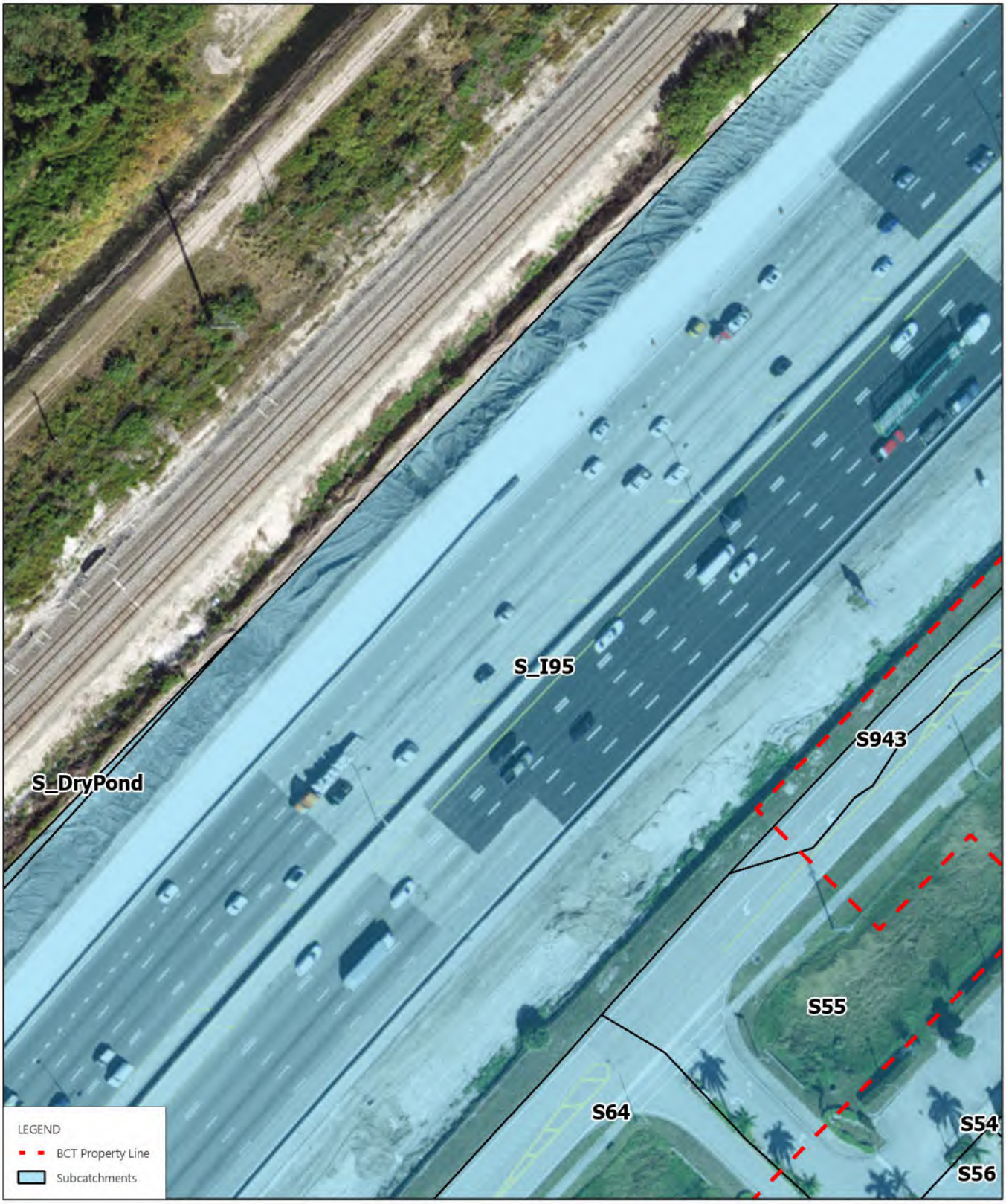

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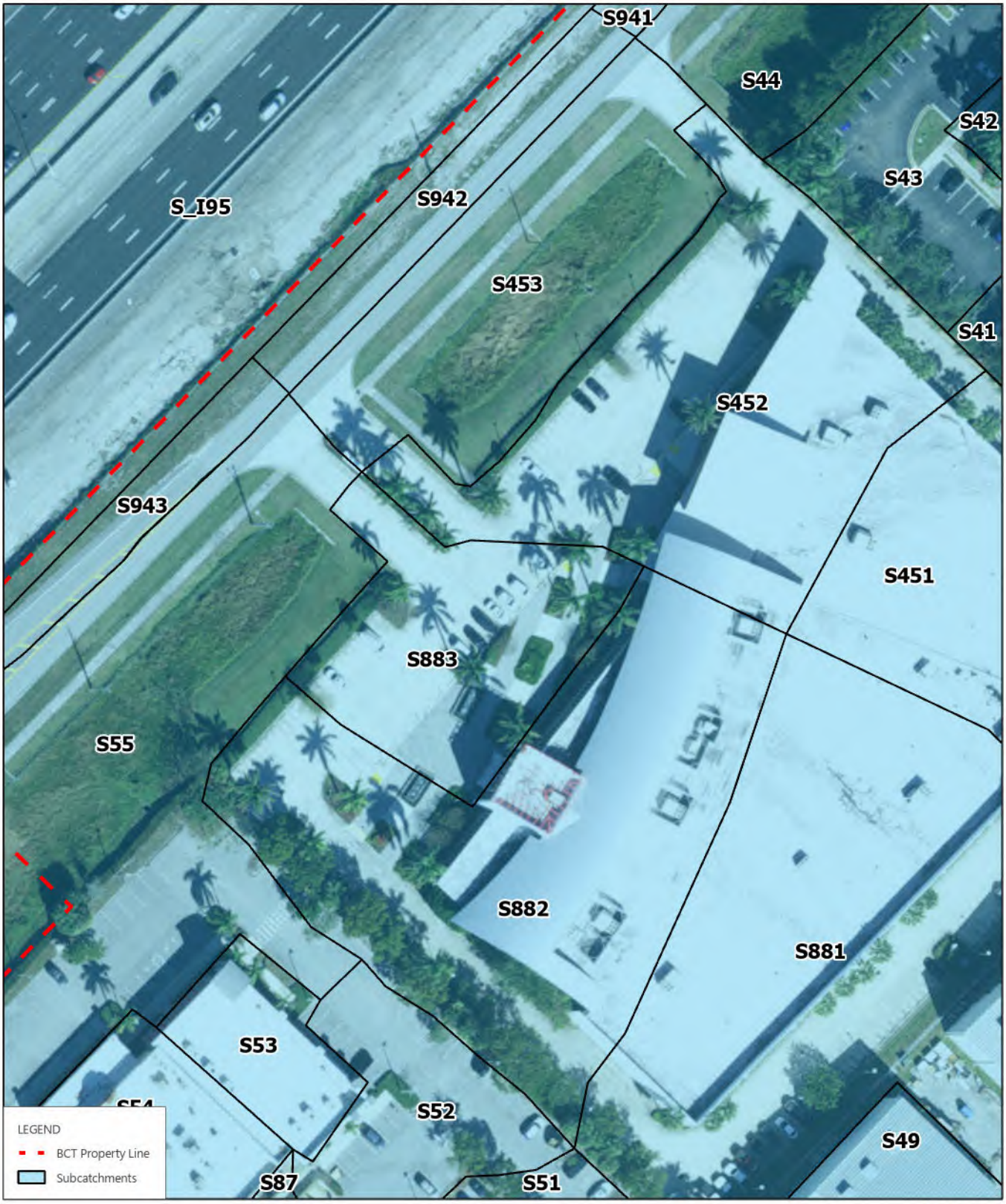

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BCT SUB-CATCHMENTS

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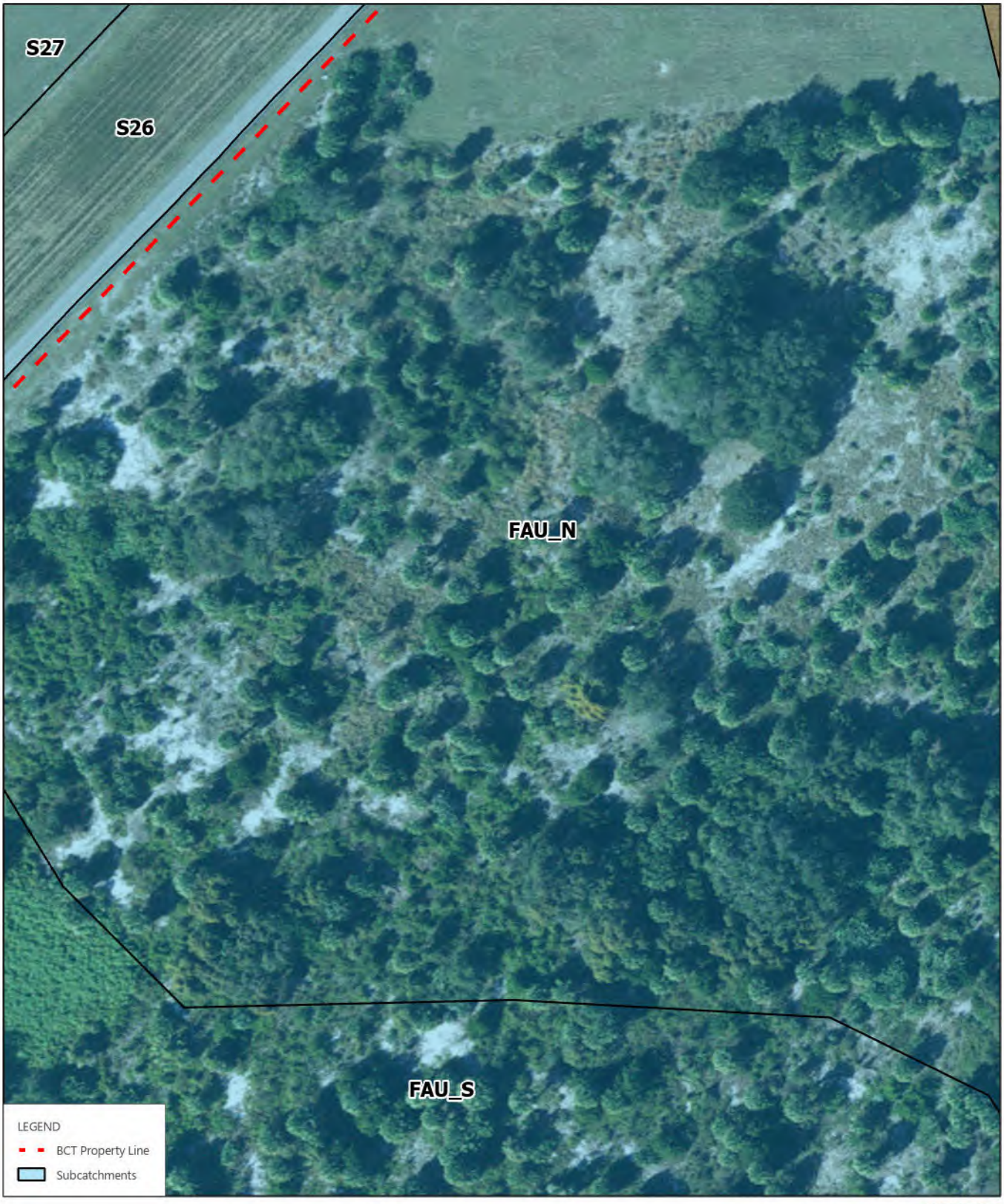

EXHIBIT F

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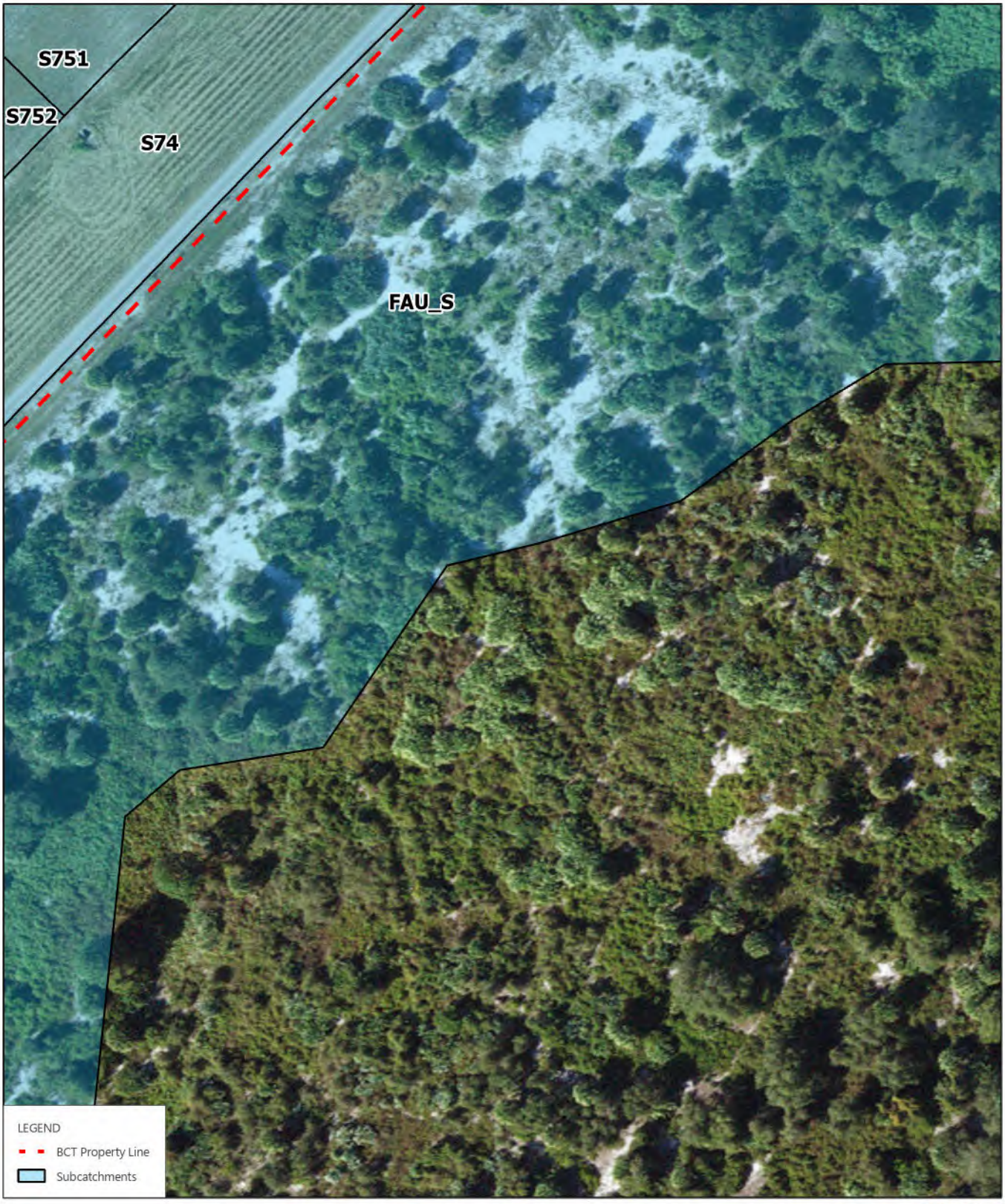

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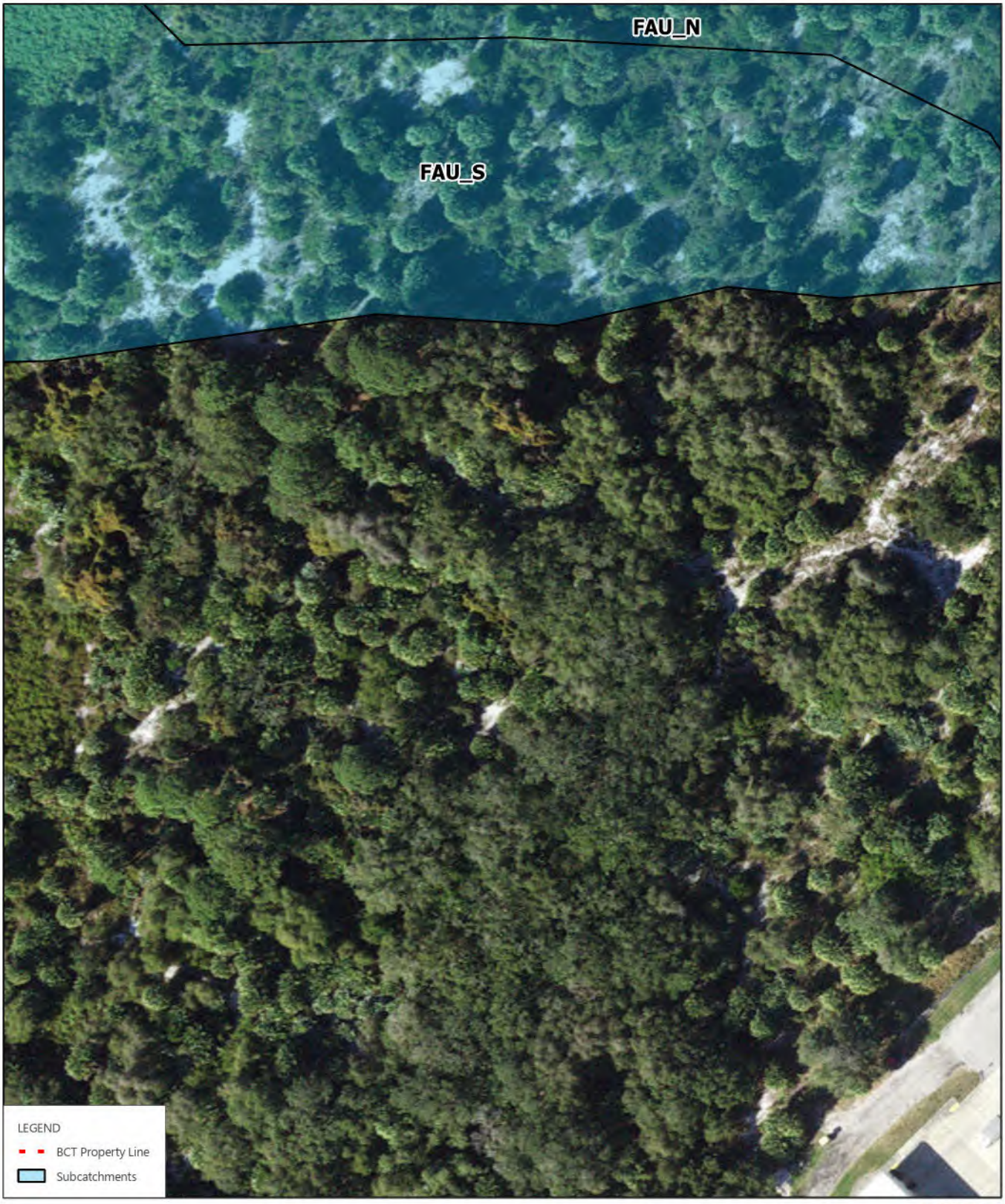

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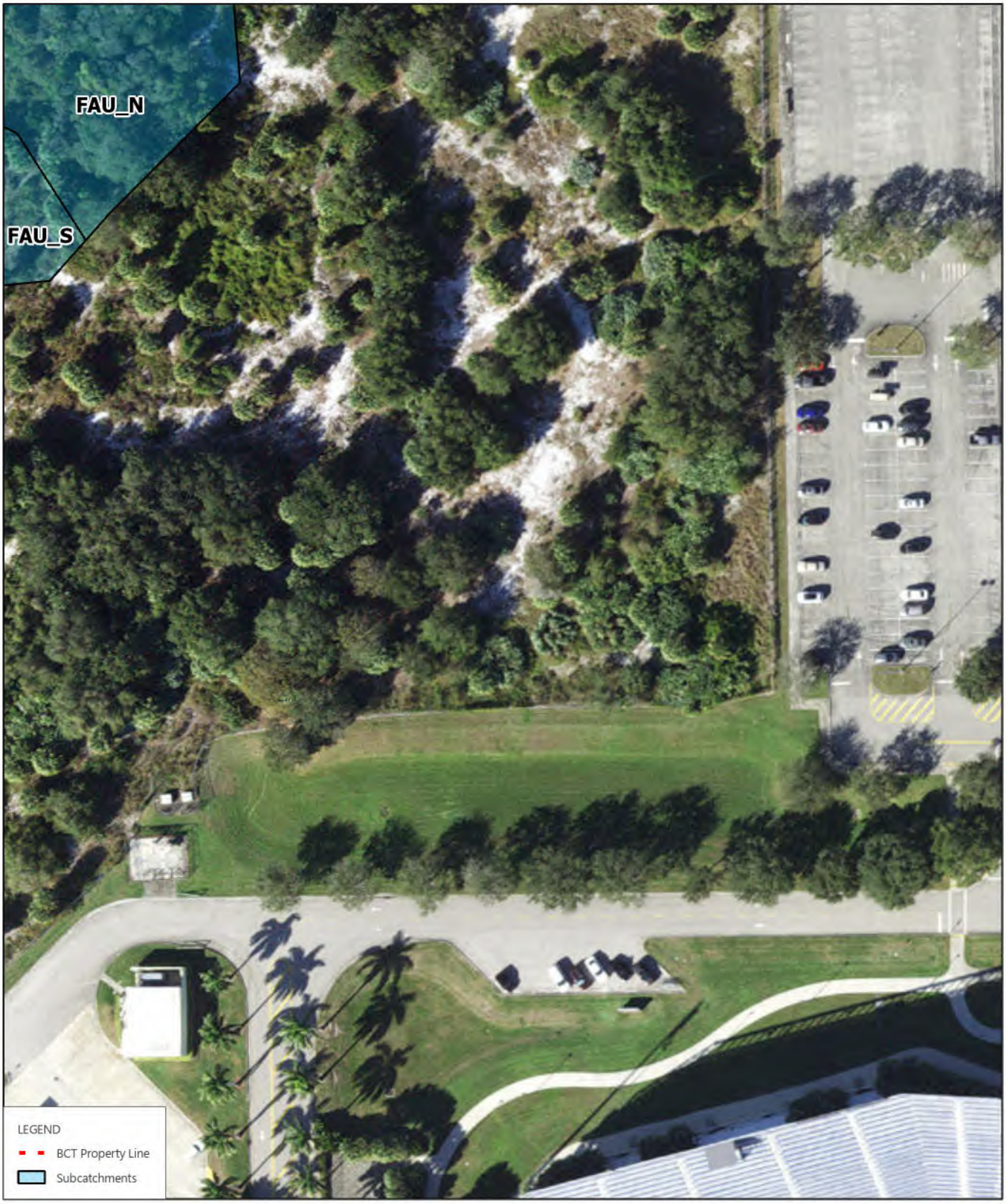

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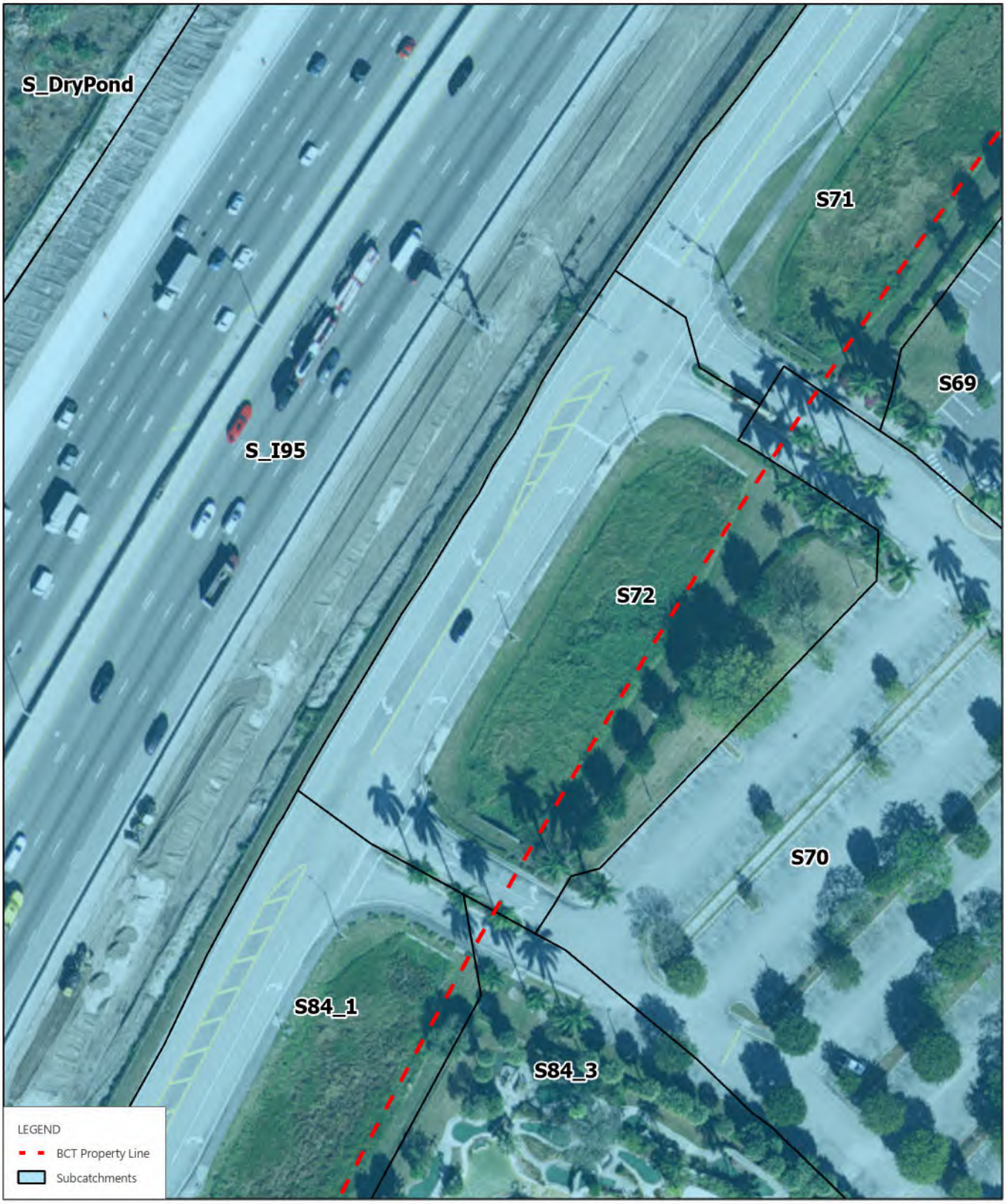

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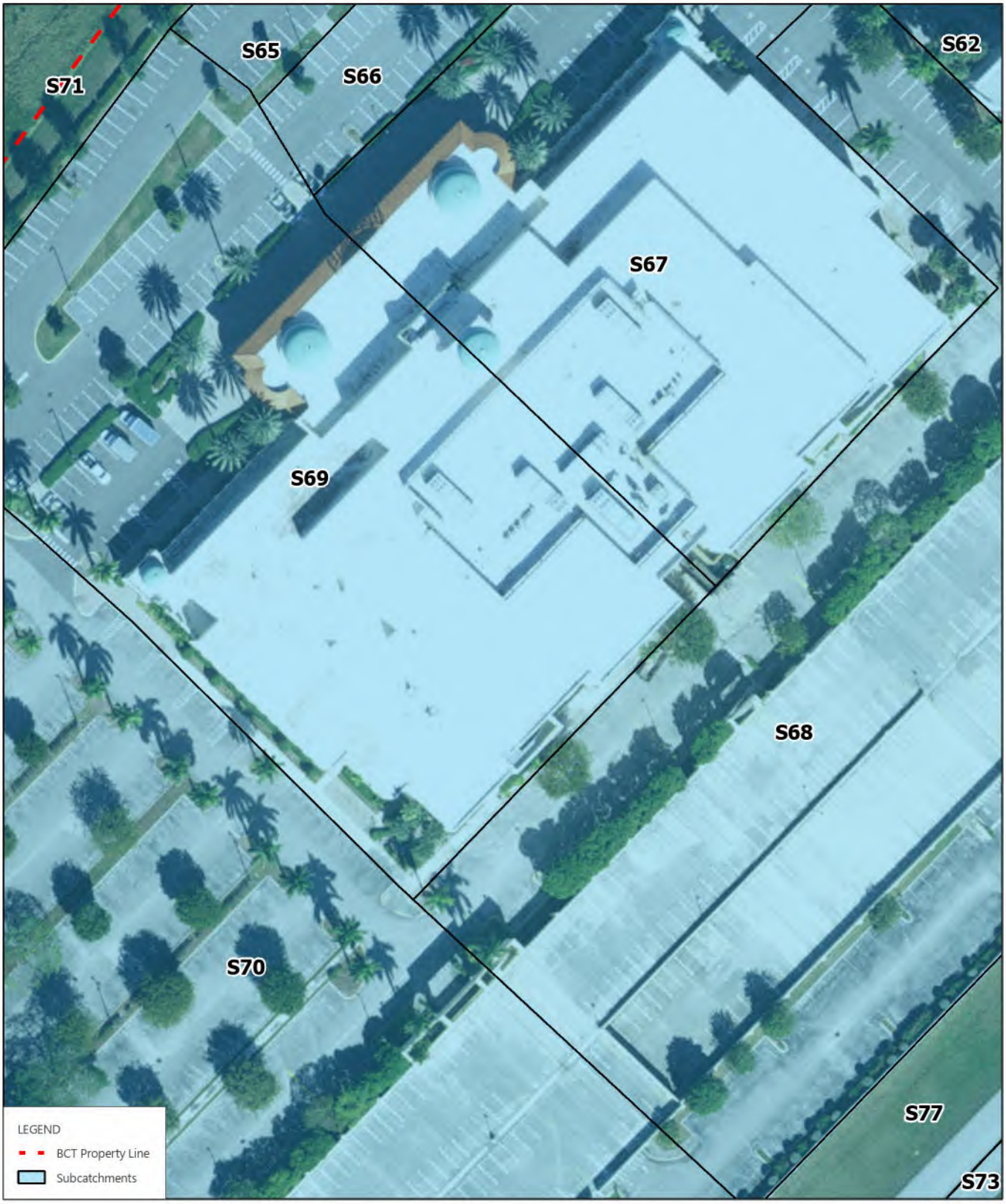

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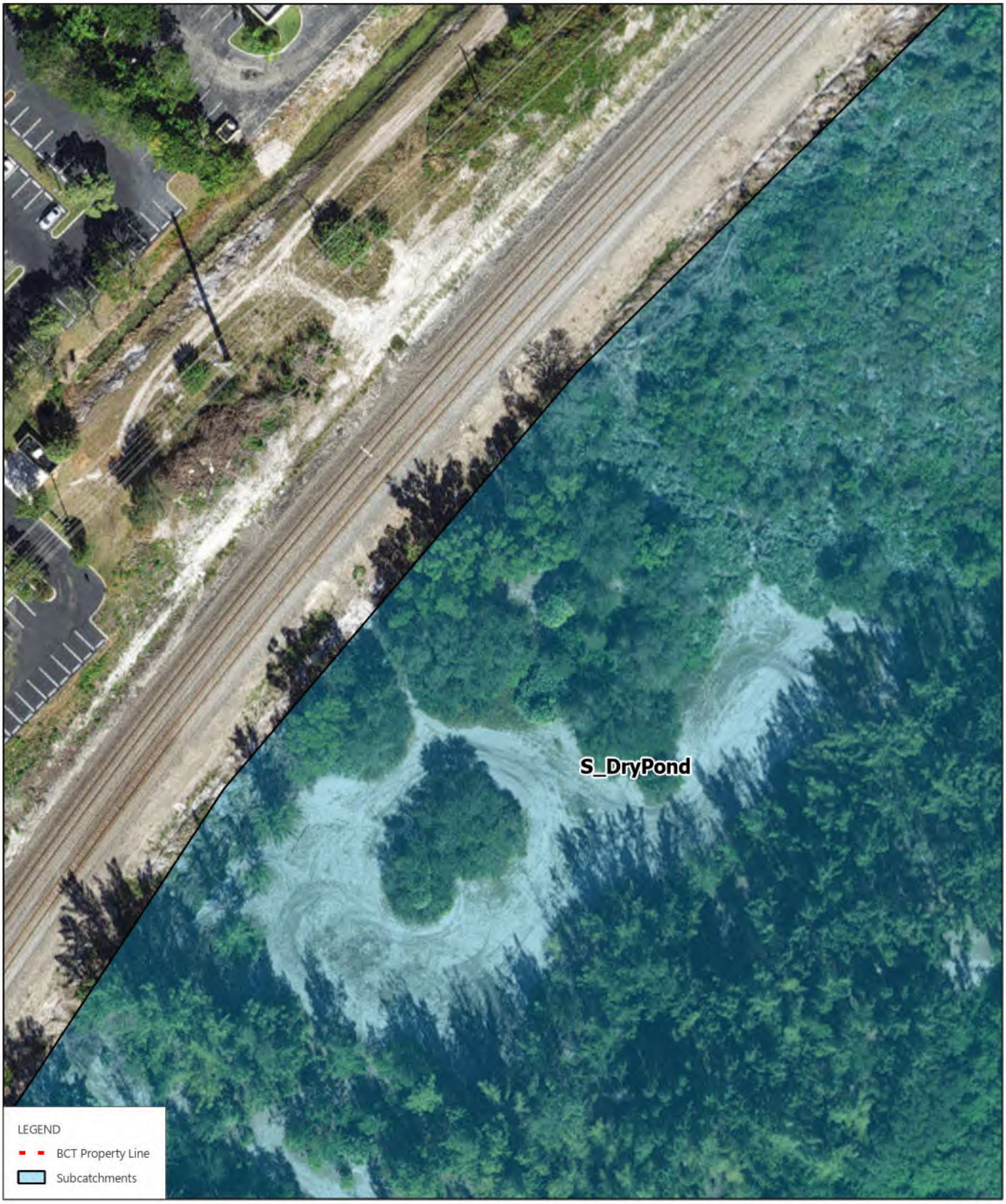

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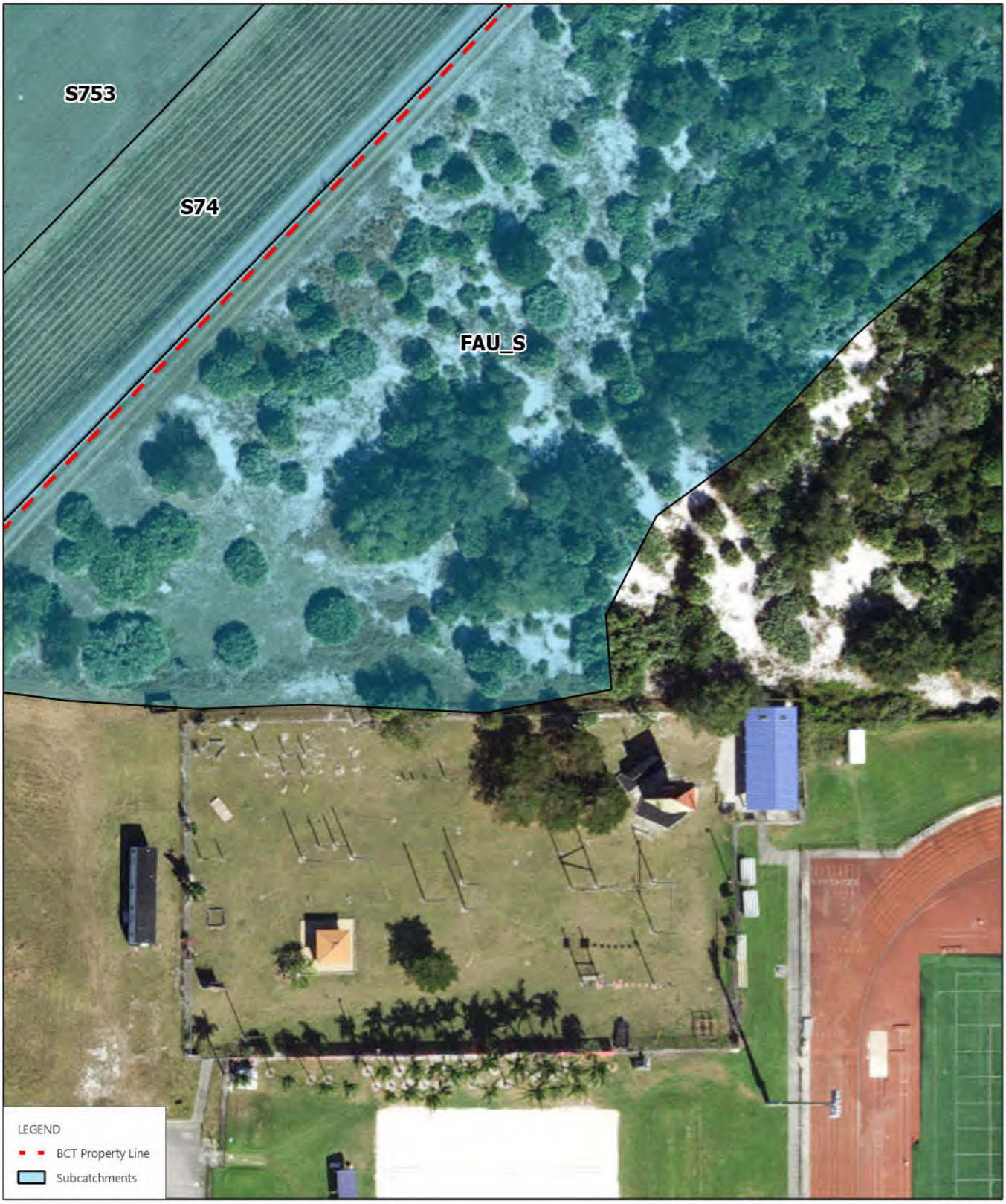

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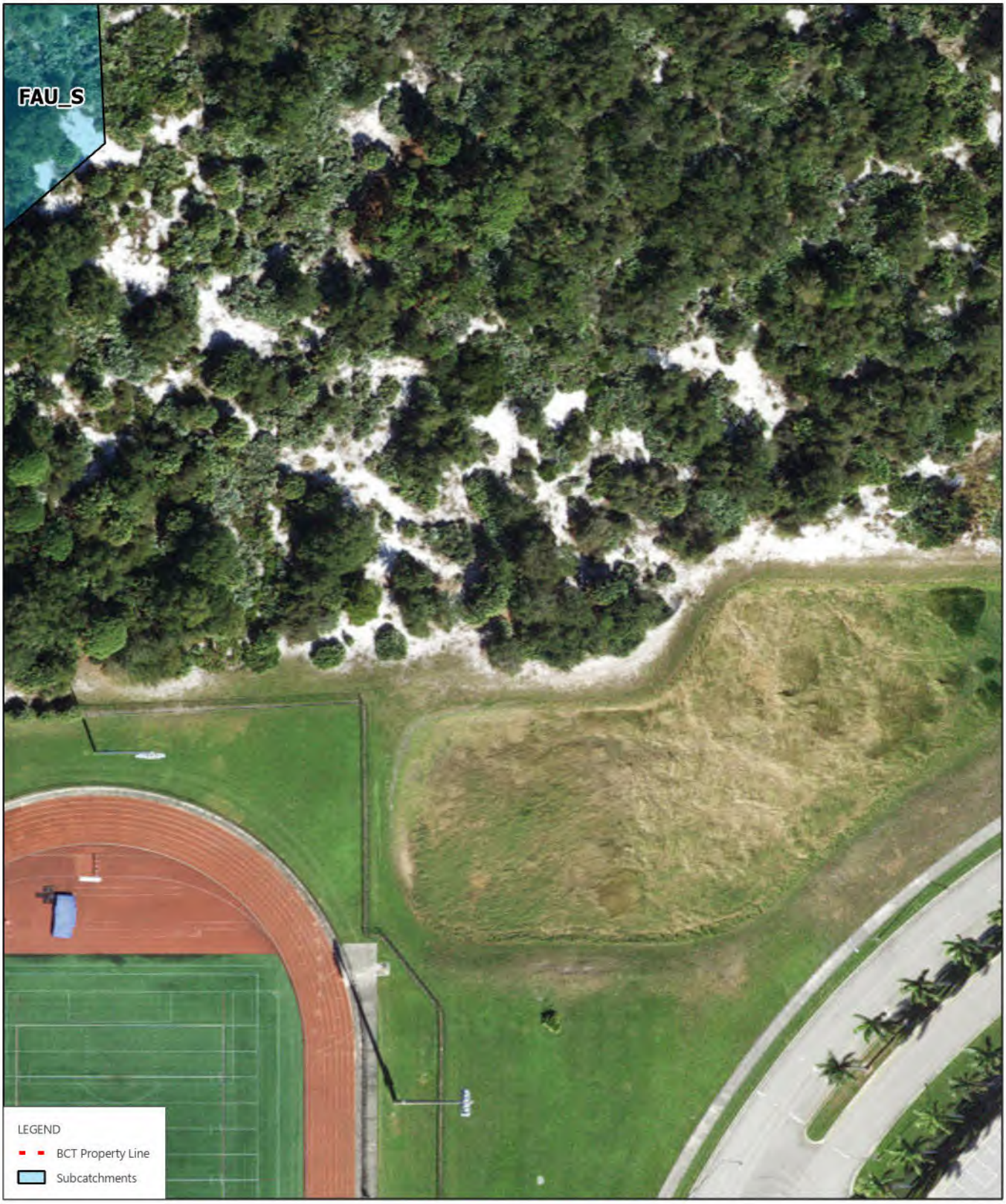

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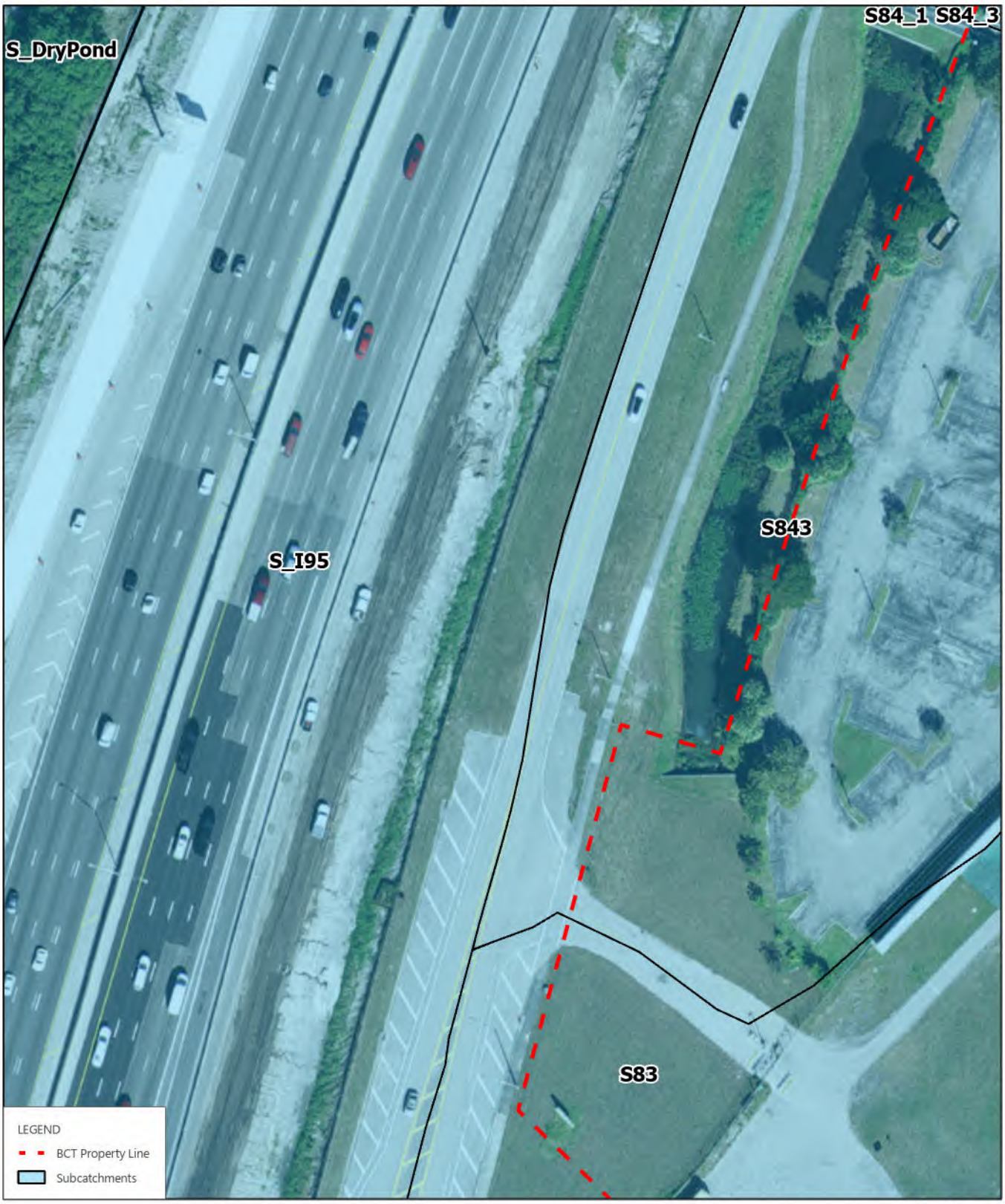

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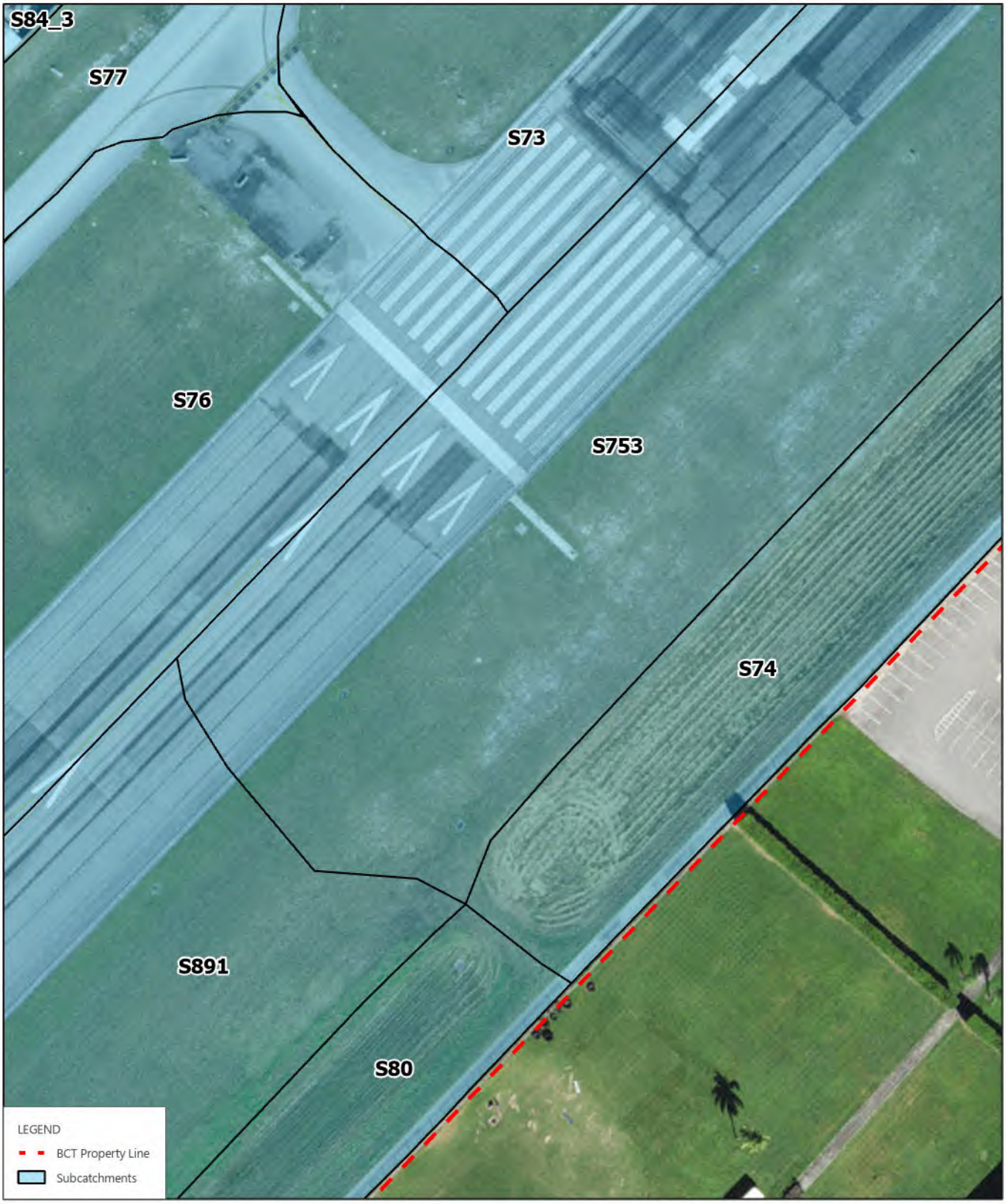

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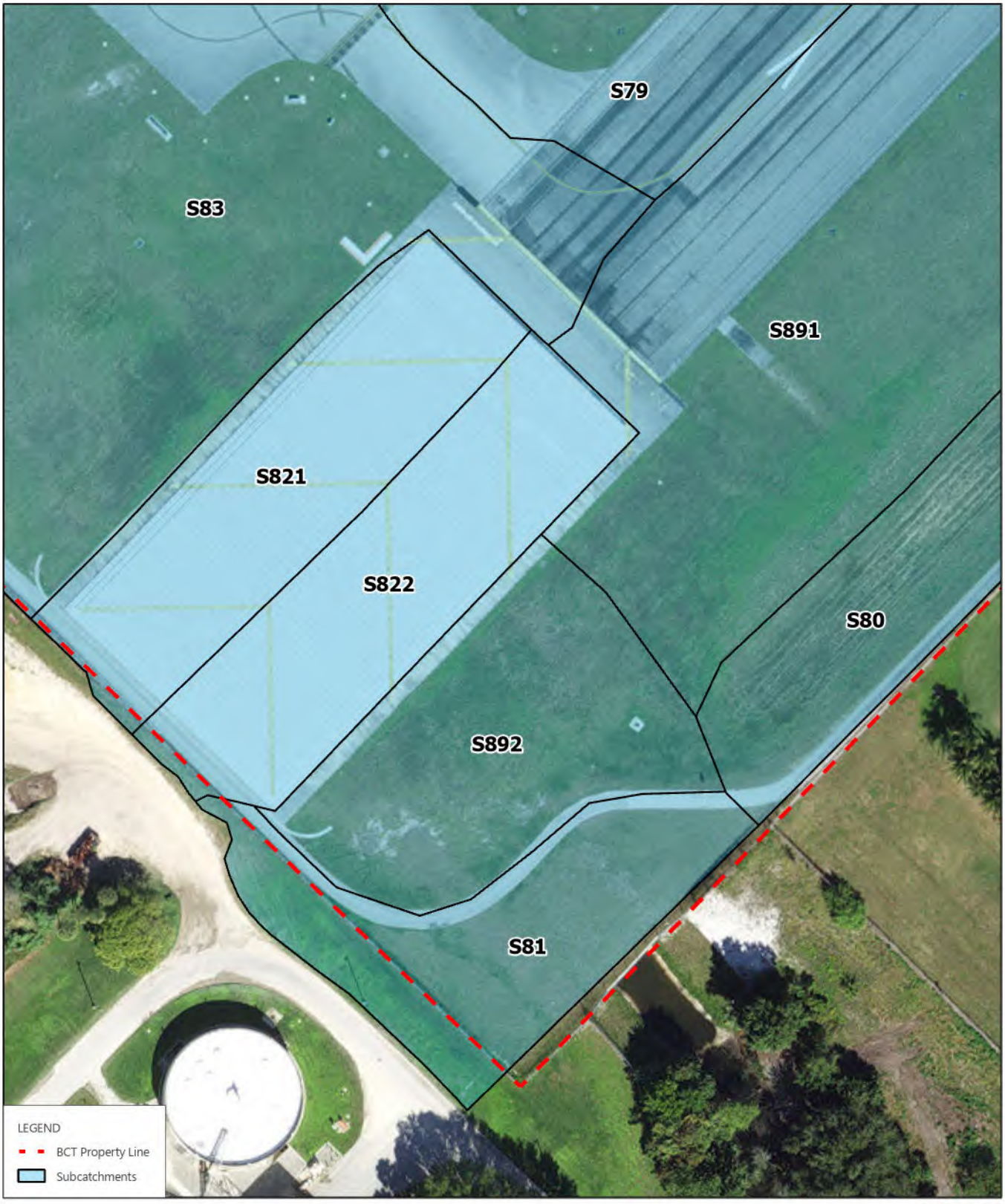

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EXHIBIT F

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EXHIBIT F

BCT SUB-CATCHMENTS
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PAGE-K4

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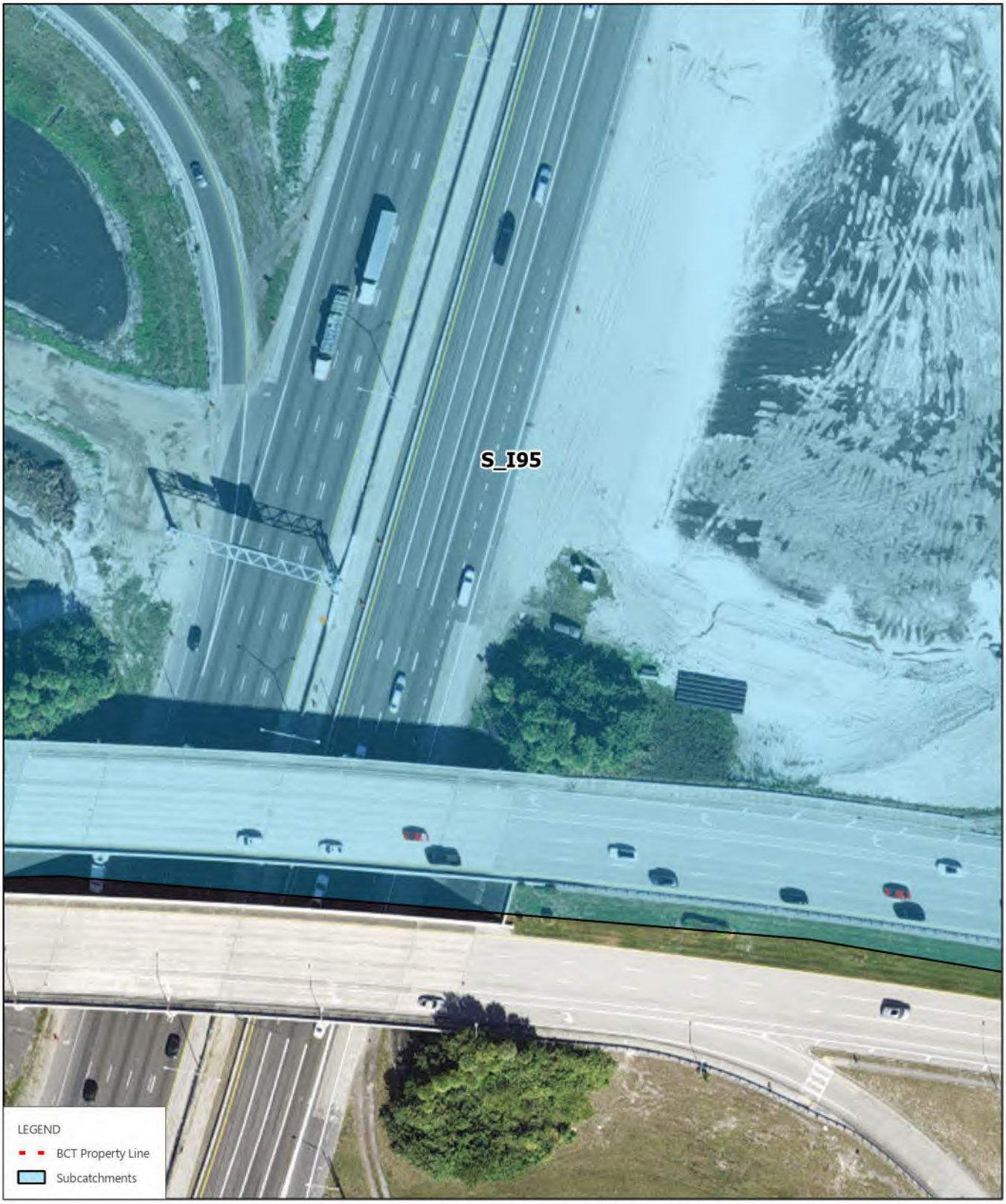

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EXHIBIT F

BCT SUB-CATCHMENTS
PAGE-L3

Exhibit G

BCT Node Network

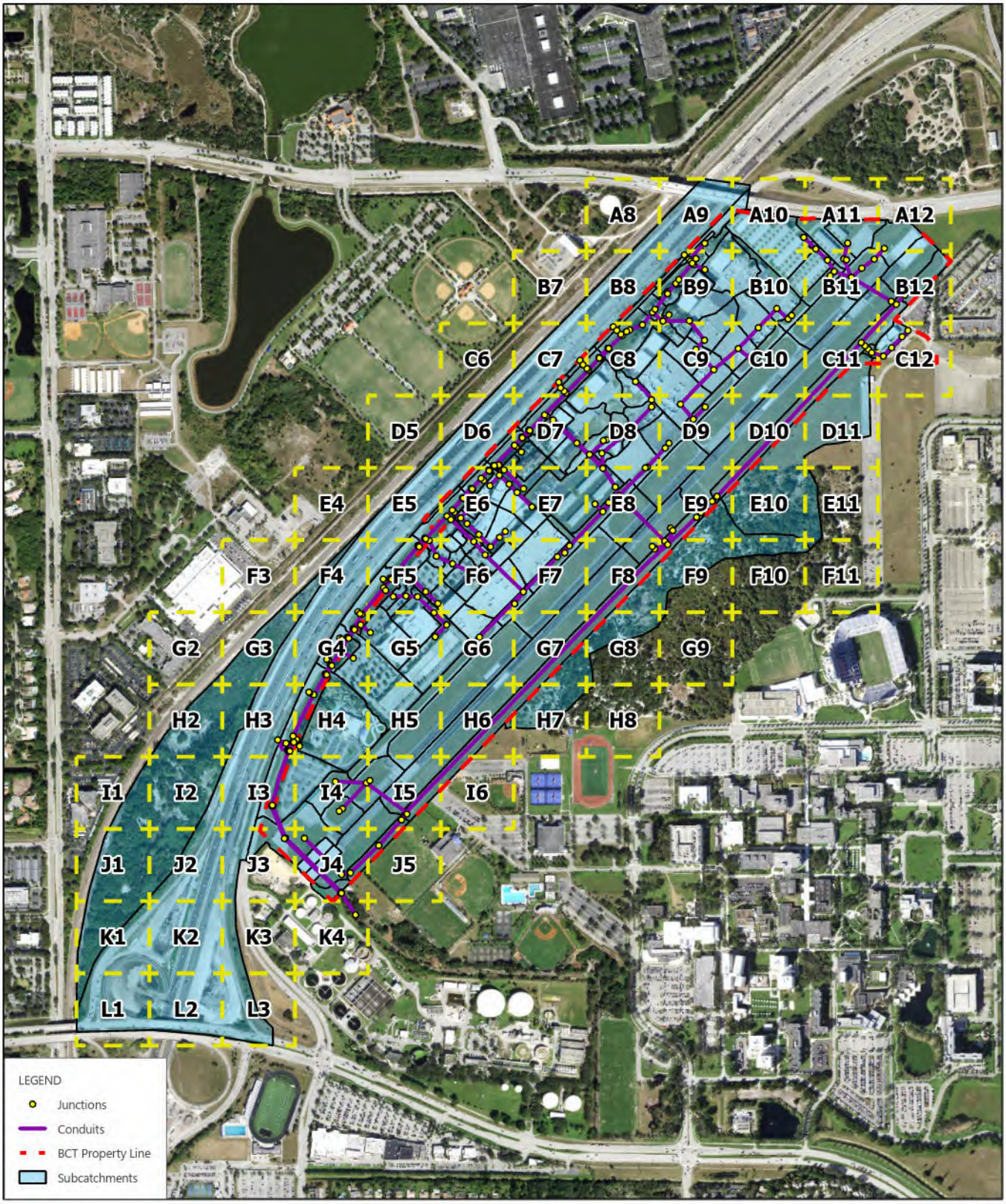

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EXHIBIT G

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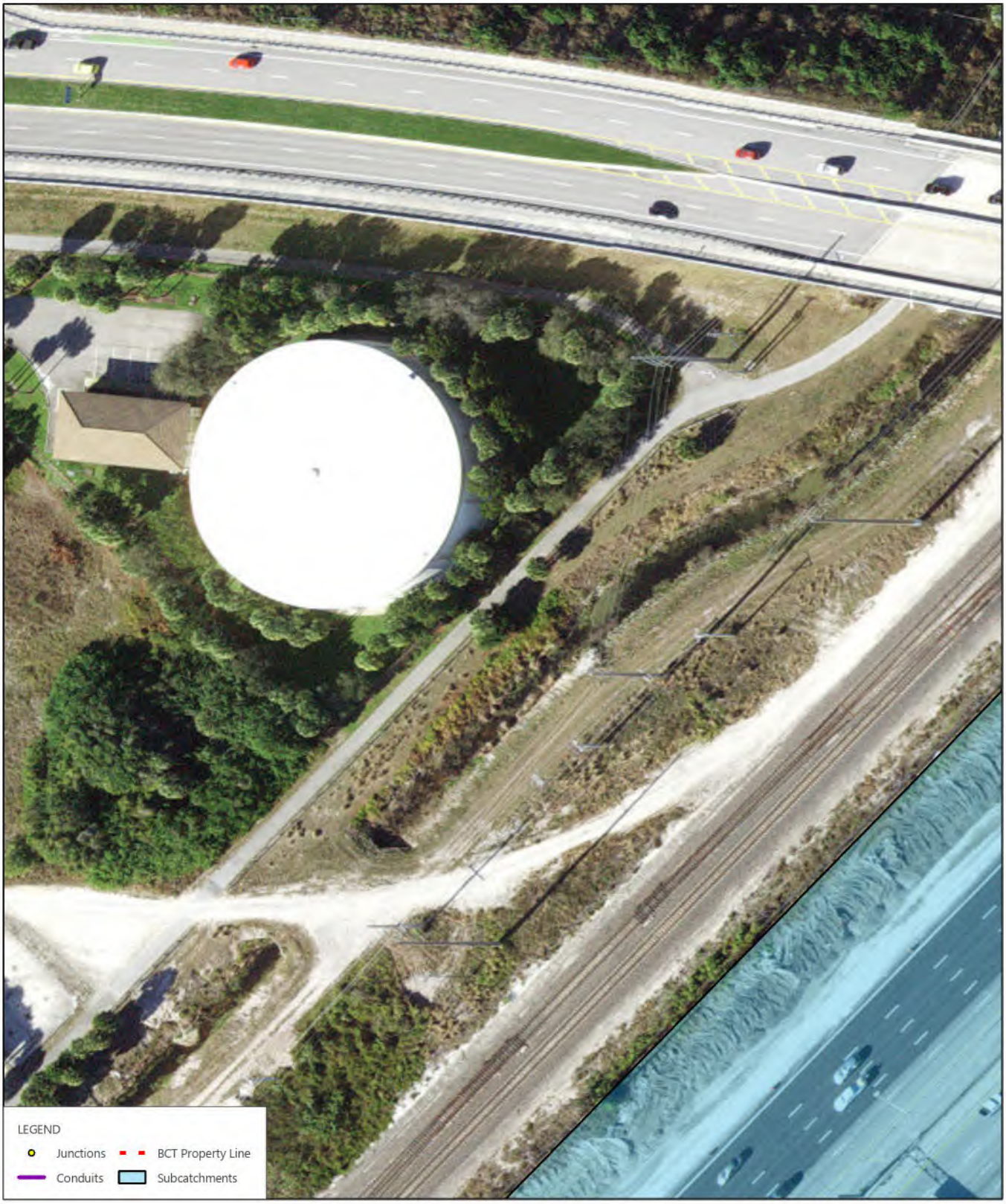
KEY SHEET



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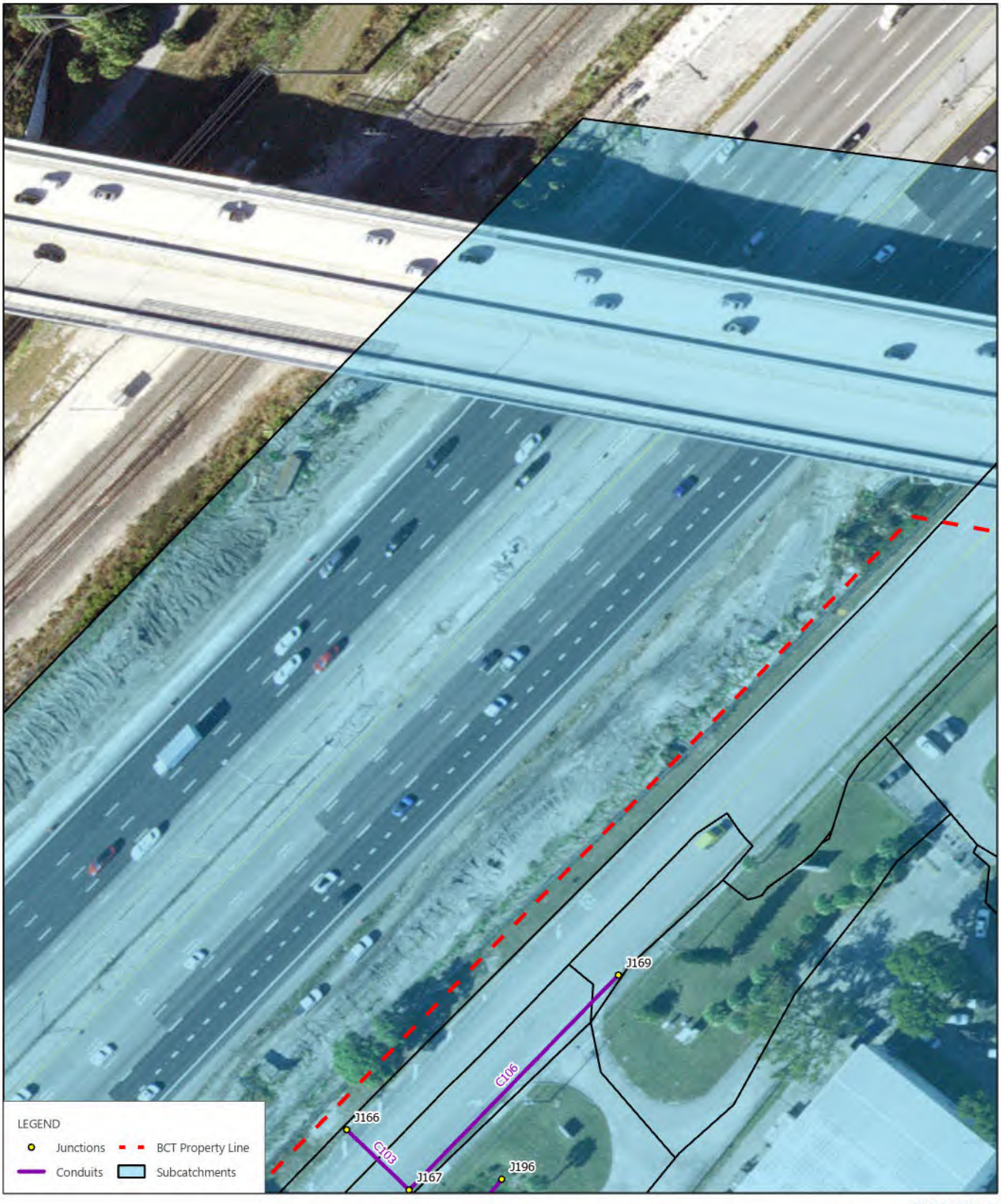

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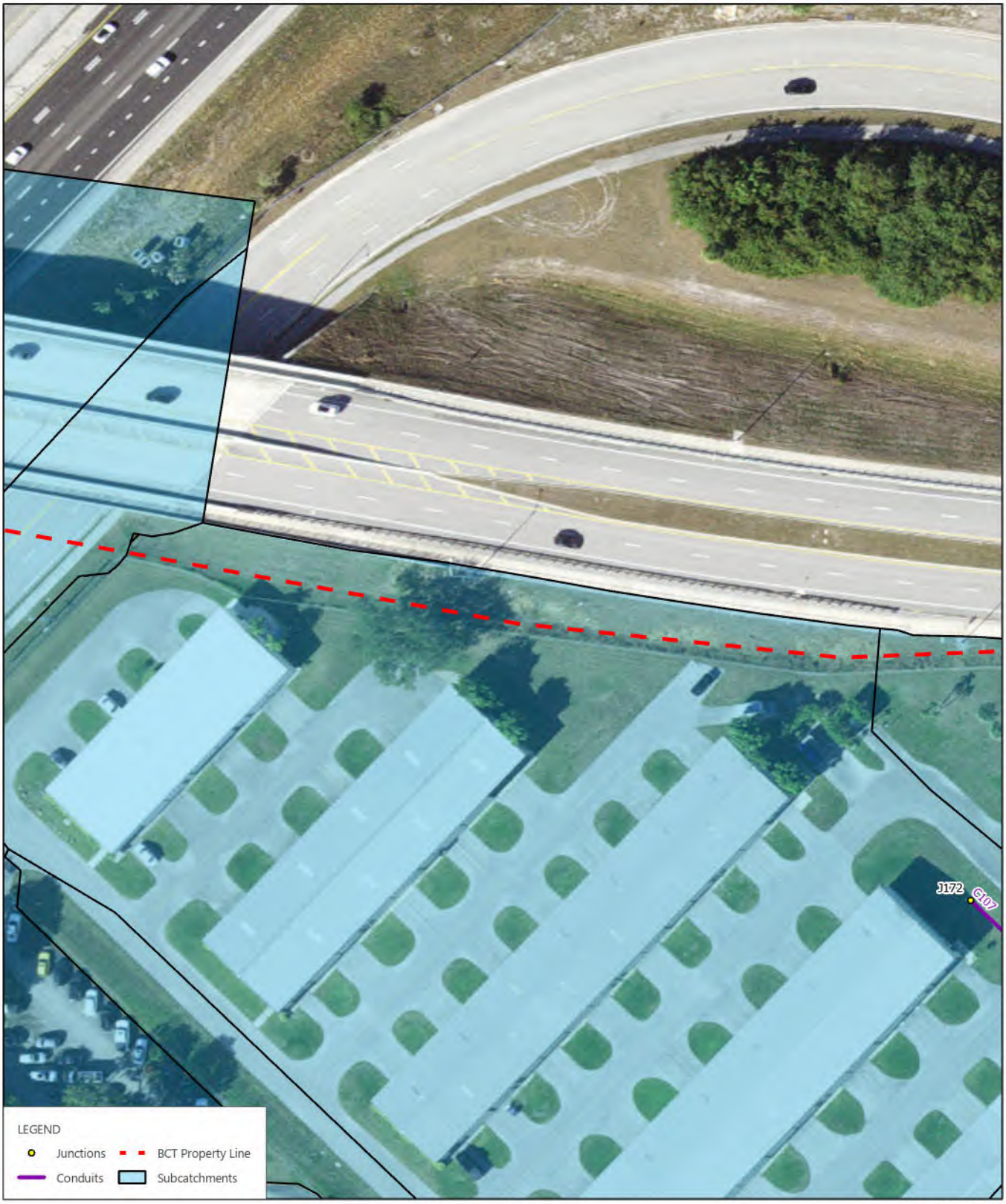

EXHIBIT G

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EXHIBIT G

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EXHIBIT G

BCT NODE NETWORK
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EXHIBIT G

BCT NODE NETWORK
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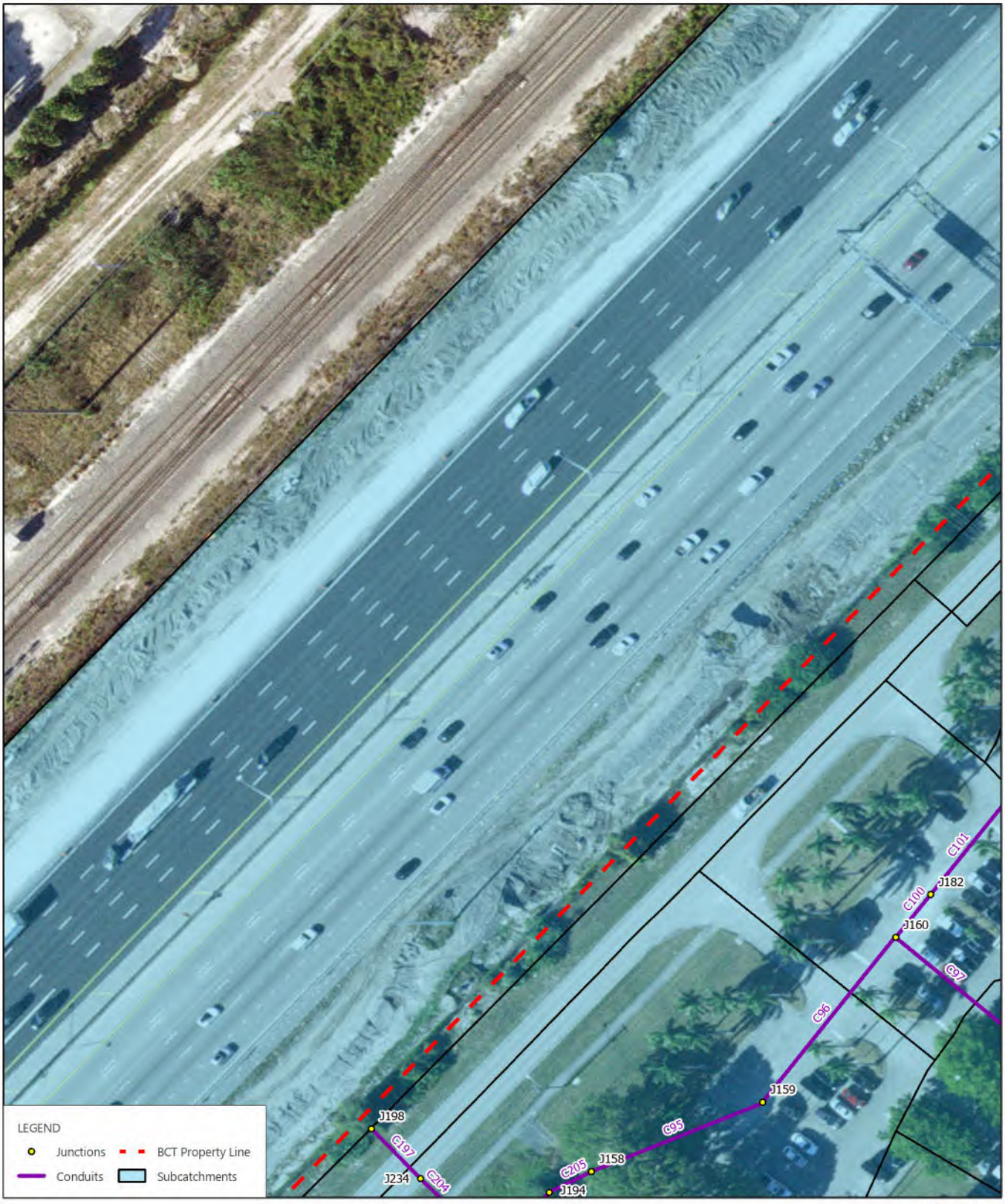

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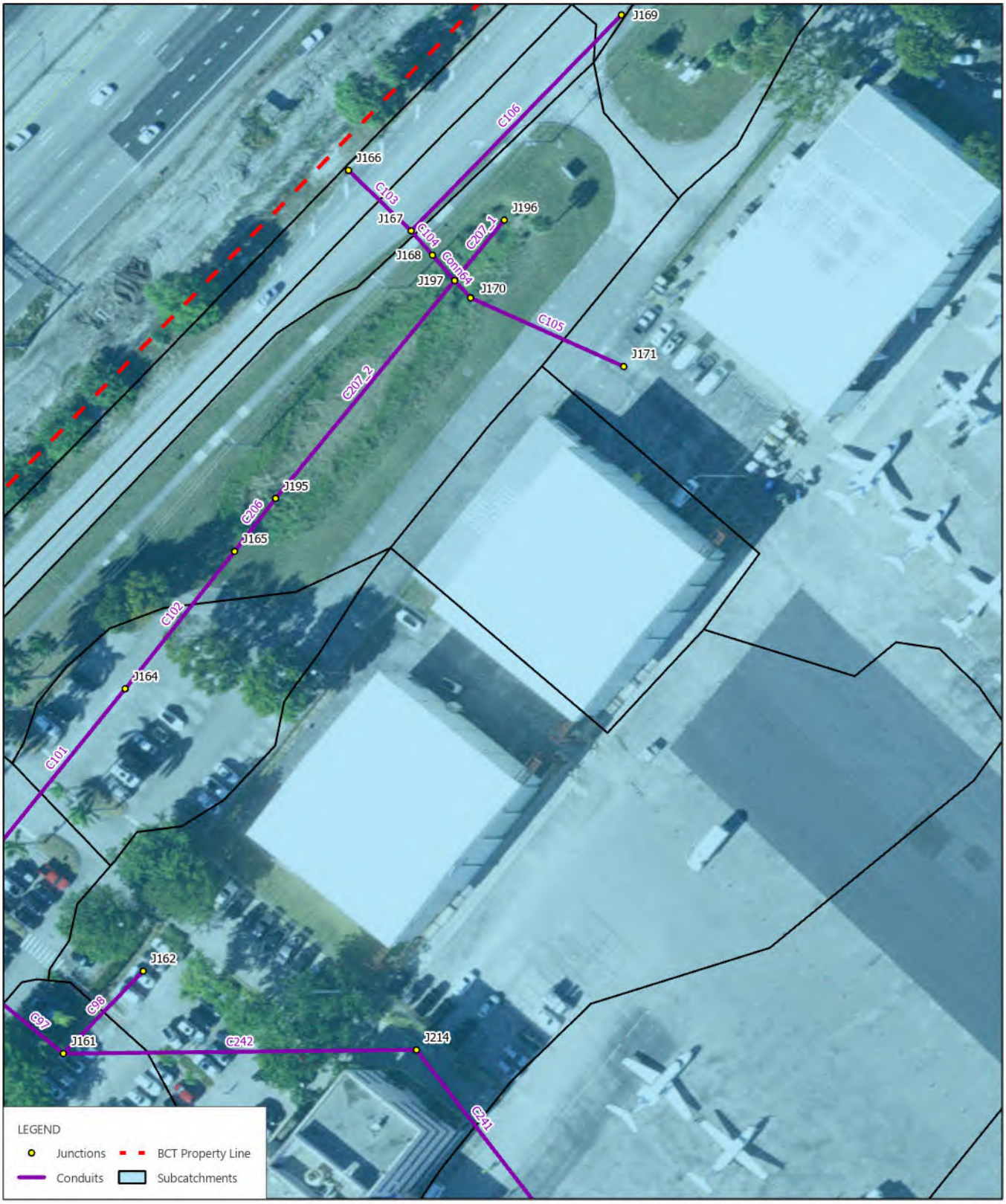

EXHIBIT G

BCT NODE NETWORK
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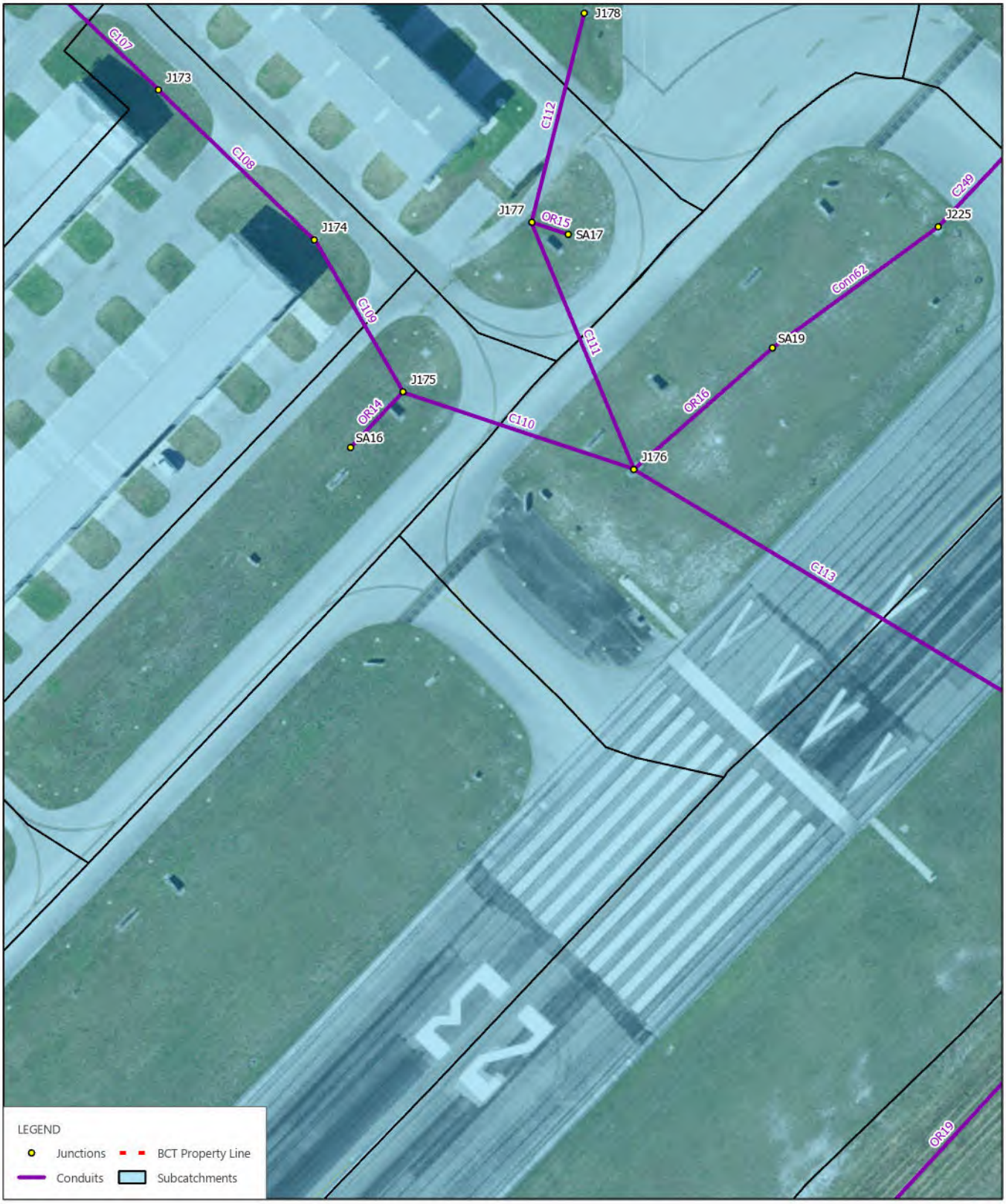
NORTH

0 100 200 Feet

EXHIBIT G

BCT NODE NETWORK
PAGE-B10



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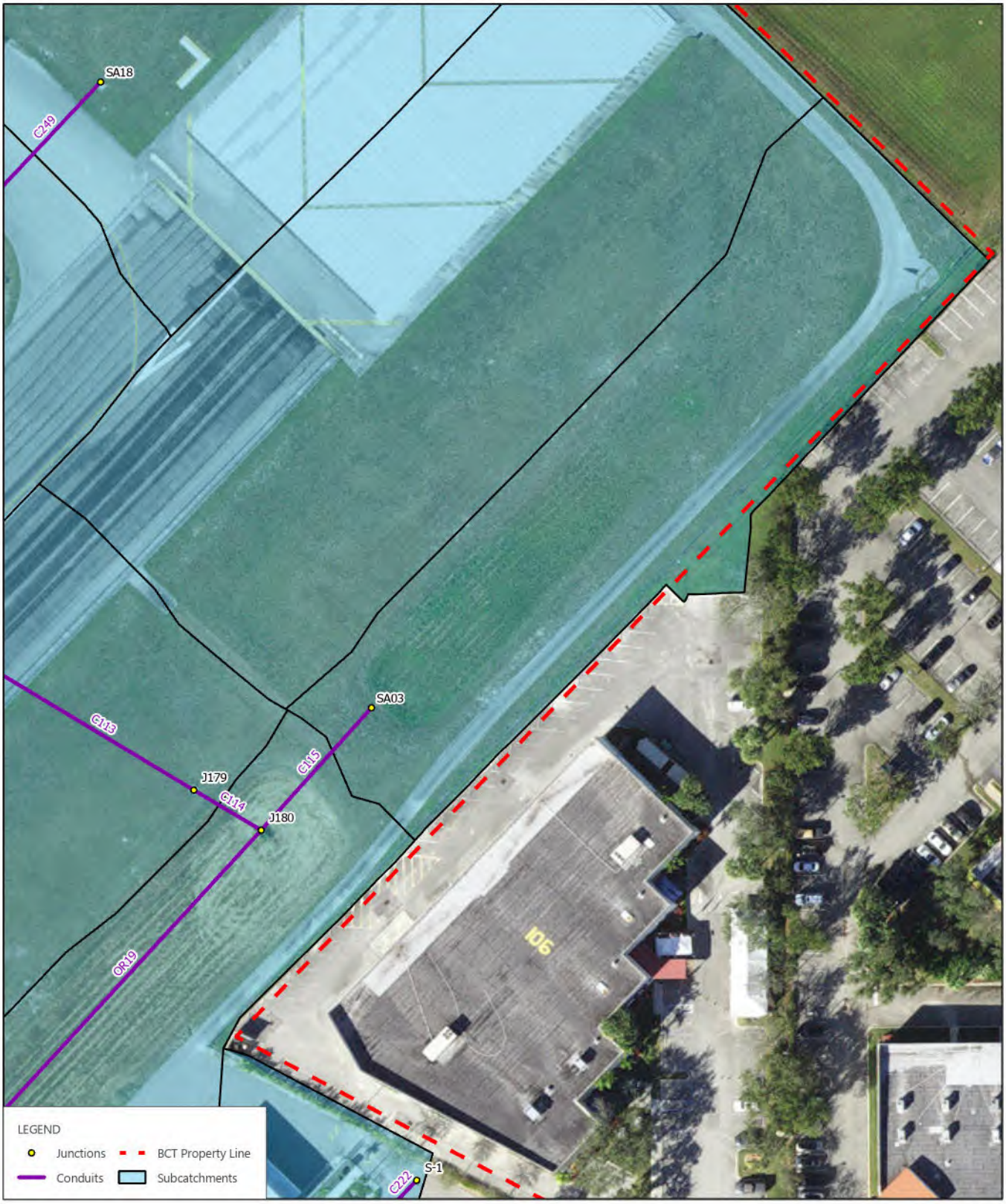

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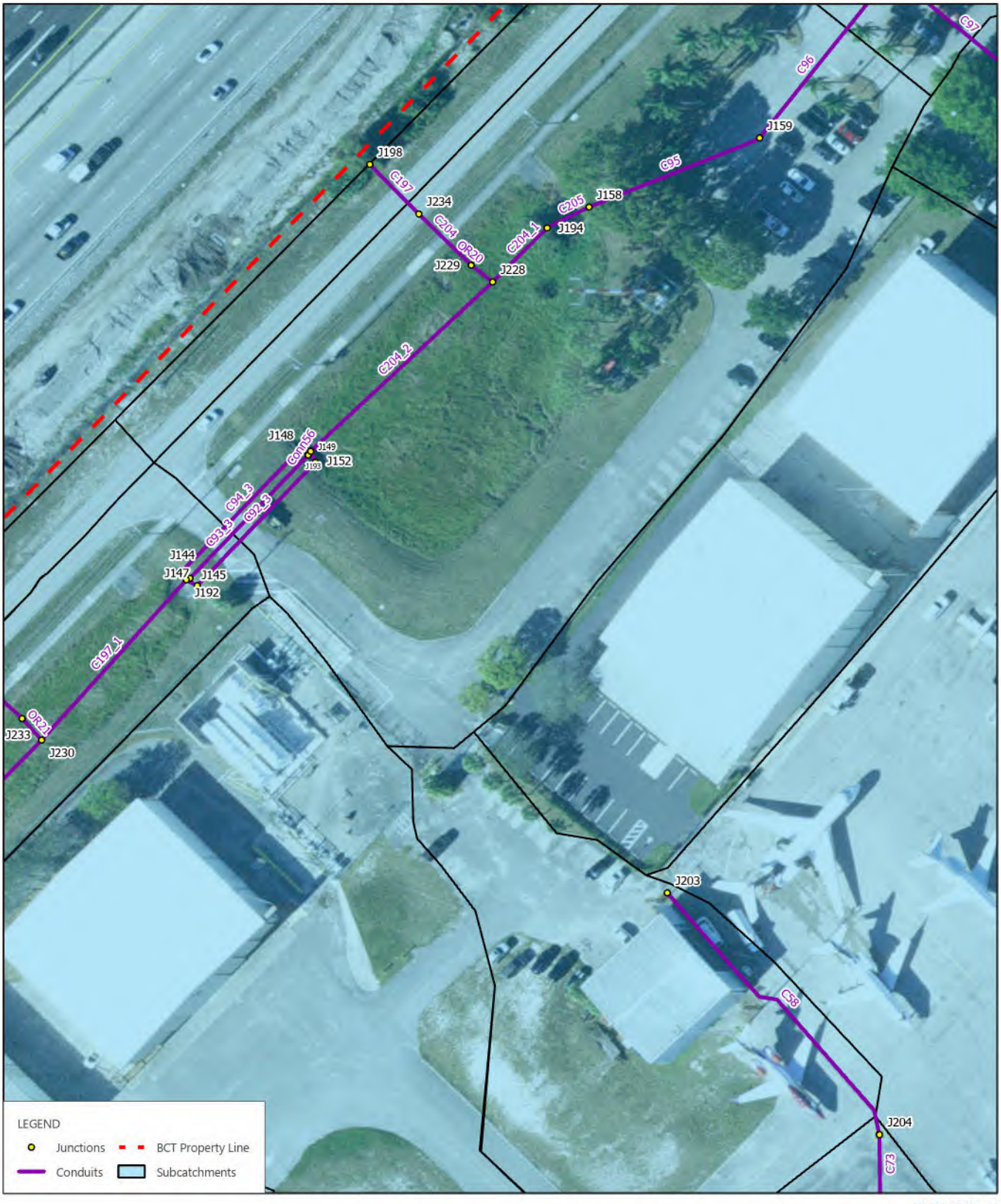

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BCT NODE NETWORK
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NORTH

0 100 200 Feet

EXHIBIT G

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EXHIBIT G

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EXHIBIT G

BCT NODE NETWORK
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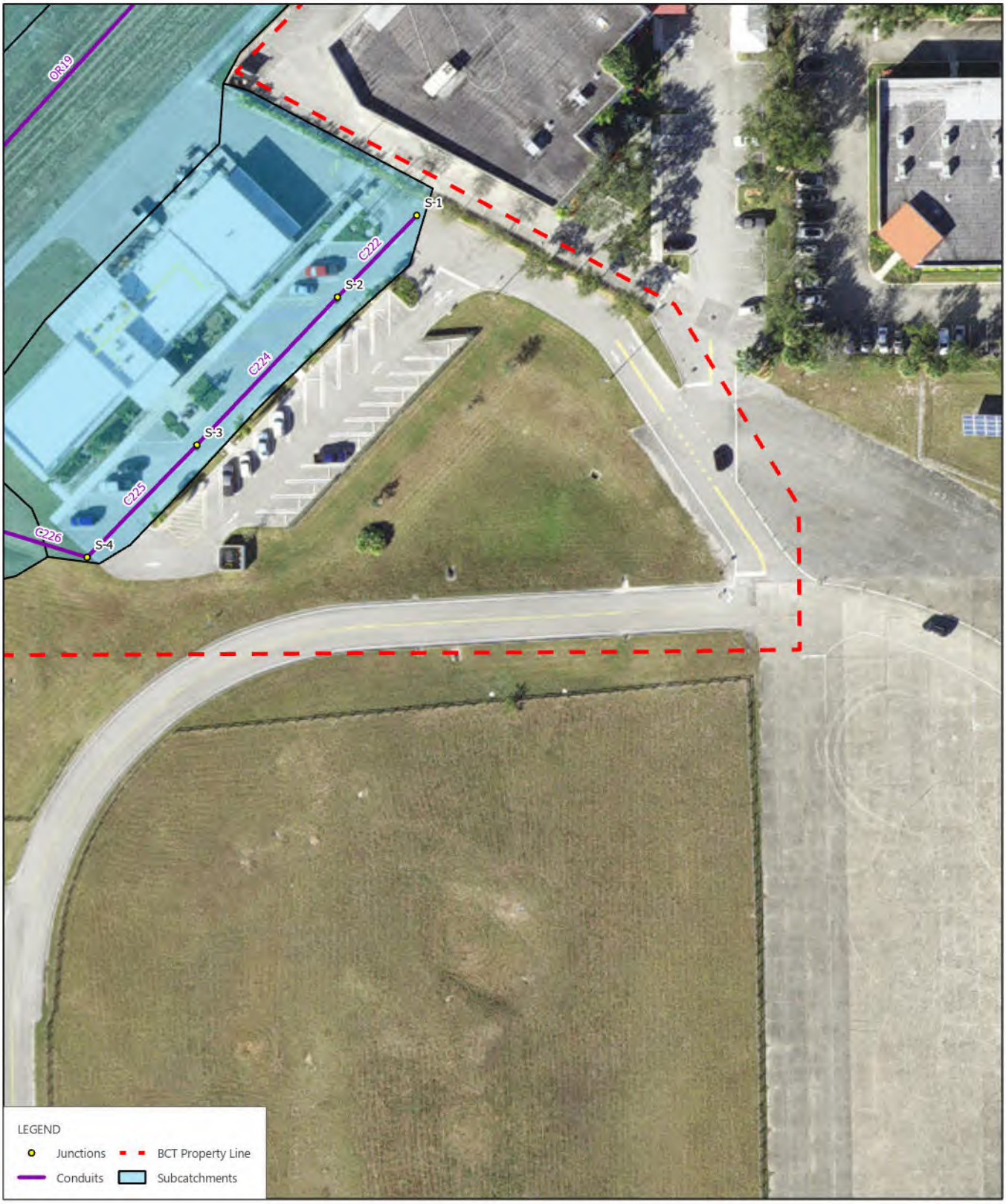

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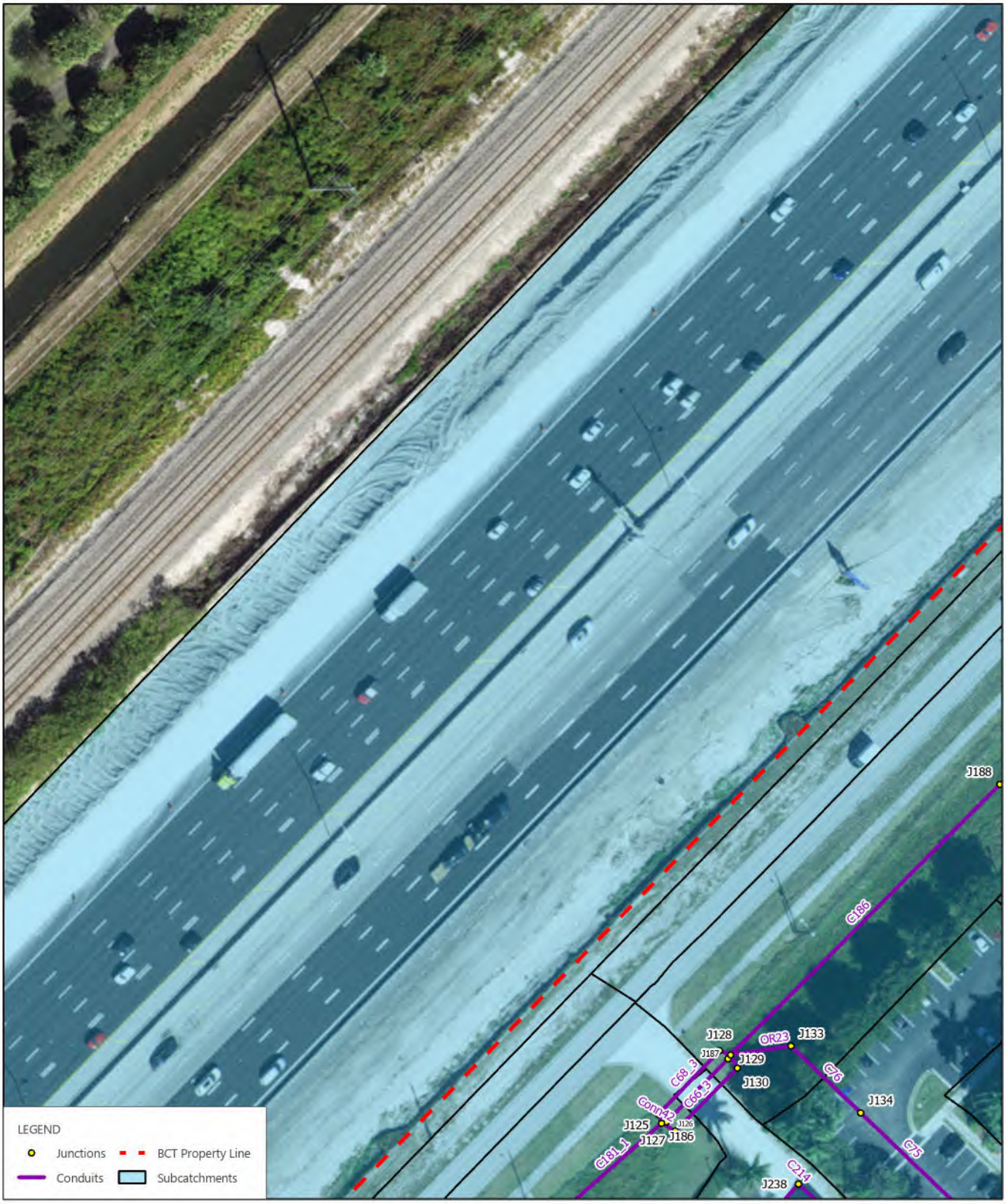

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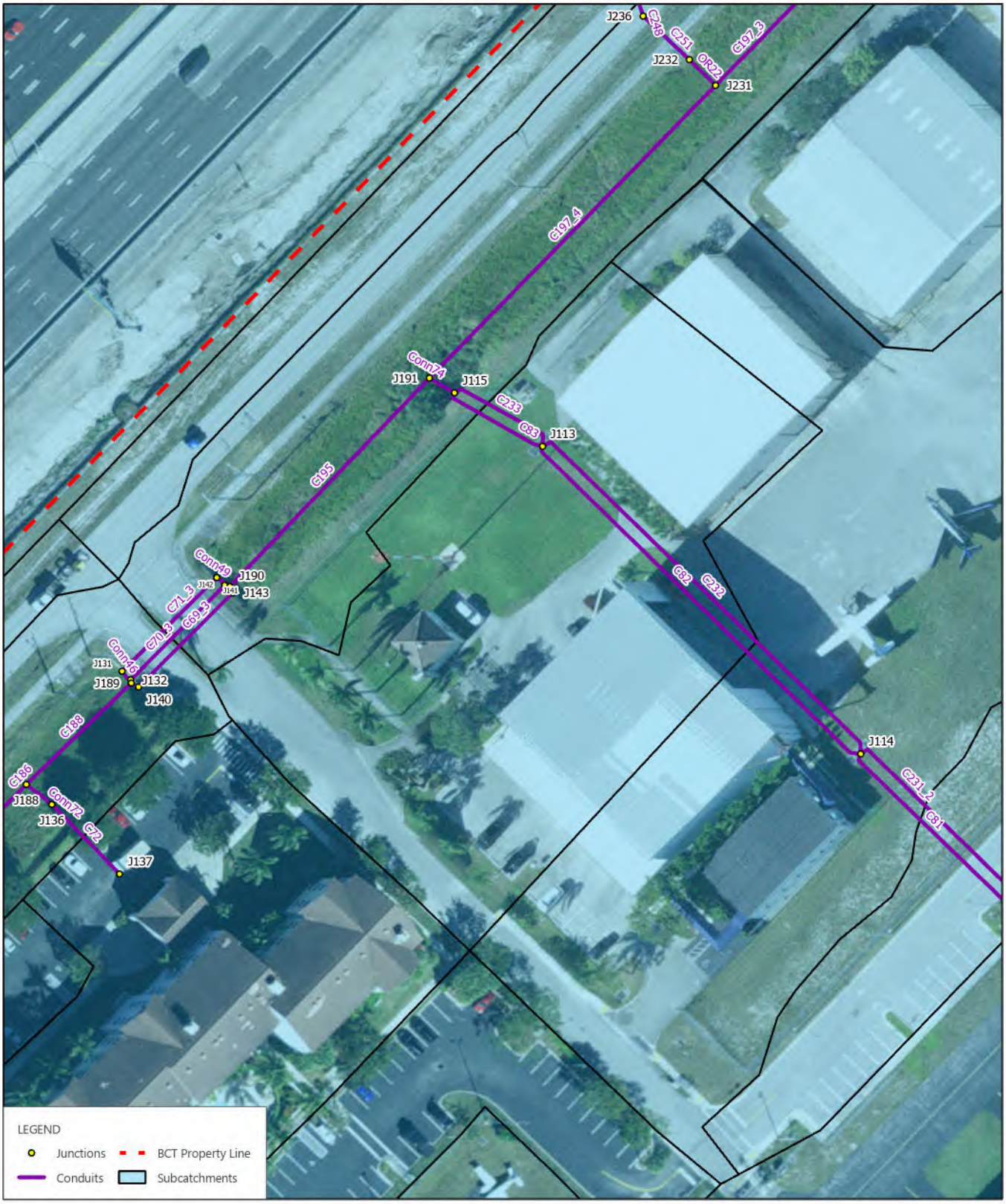

EXHIBIT G

BCT NODE NETWORK
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EXHIBIT G

BCT NODE NETWORK
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NORTH

0 100 200 Feet

EXHIBIT G

BCT NODE NETWORK
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NORTH

0 100 200 Feet

EXHIBIT G

BCT NODE NETWORK
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EXHIBIT G

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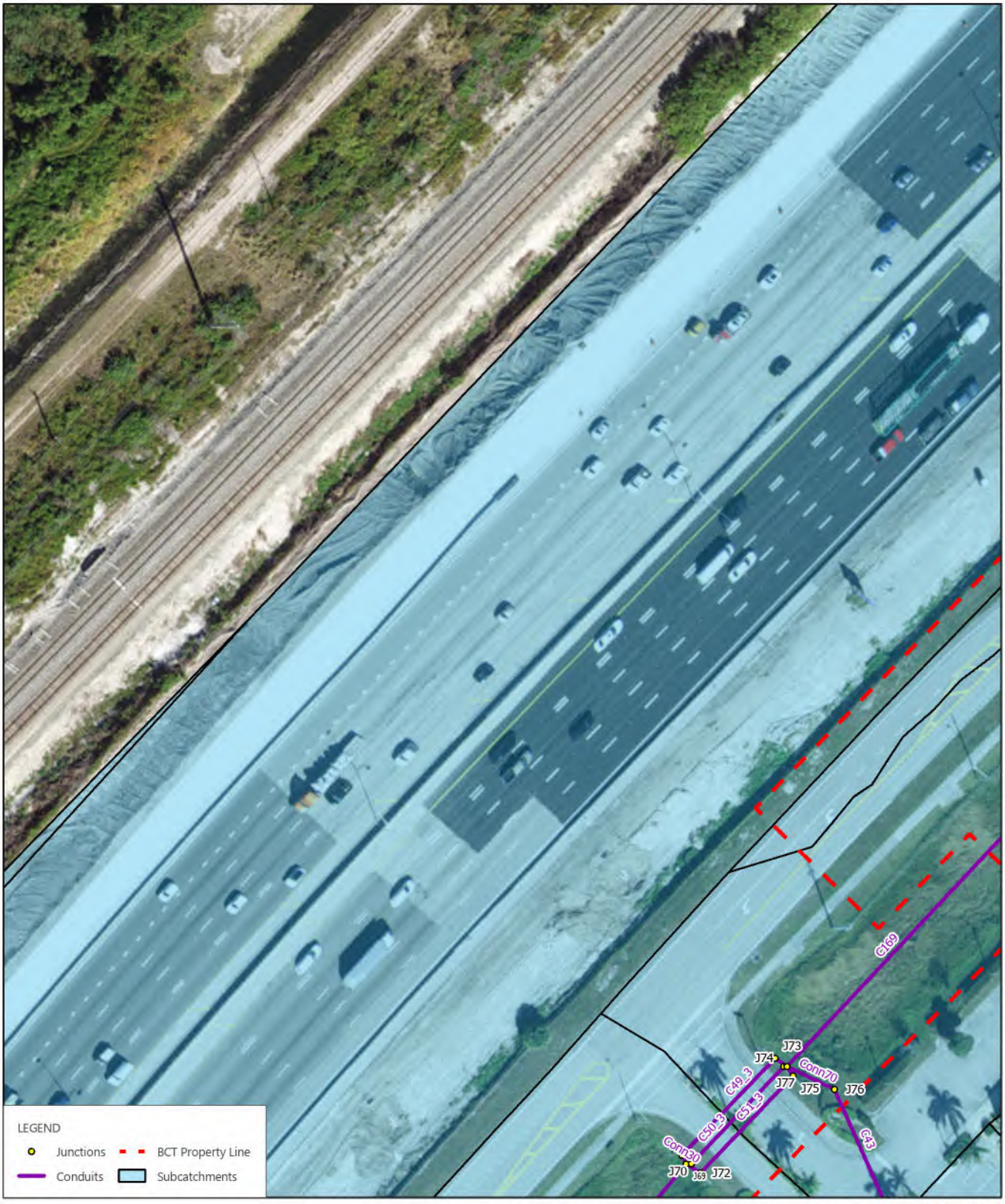

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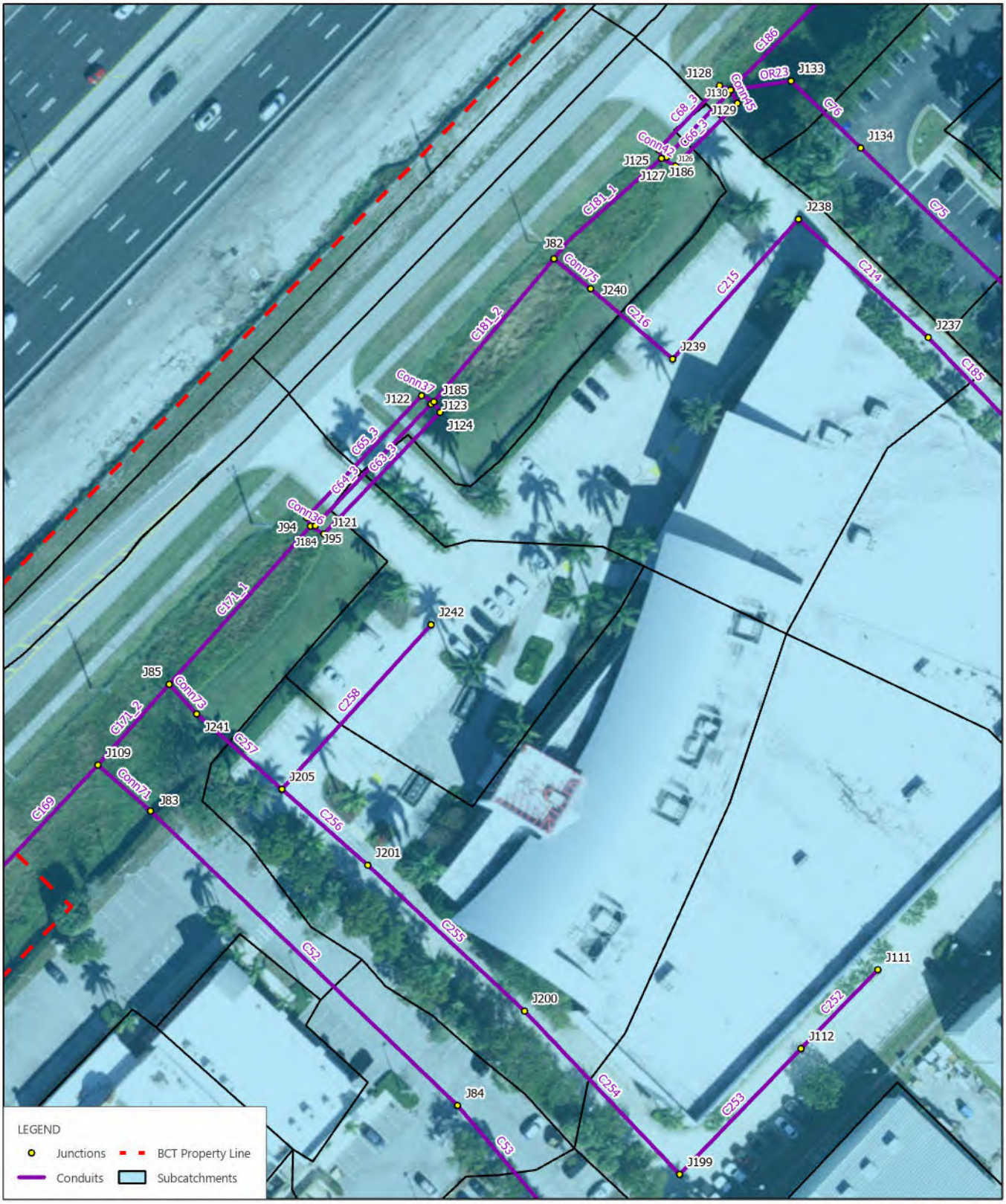

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EXHIBIT G

BCT NODE NETWORK
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NORTH

0 100 200 Feet

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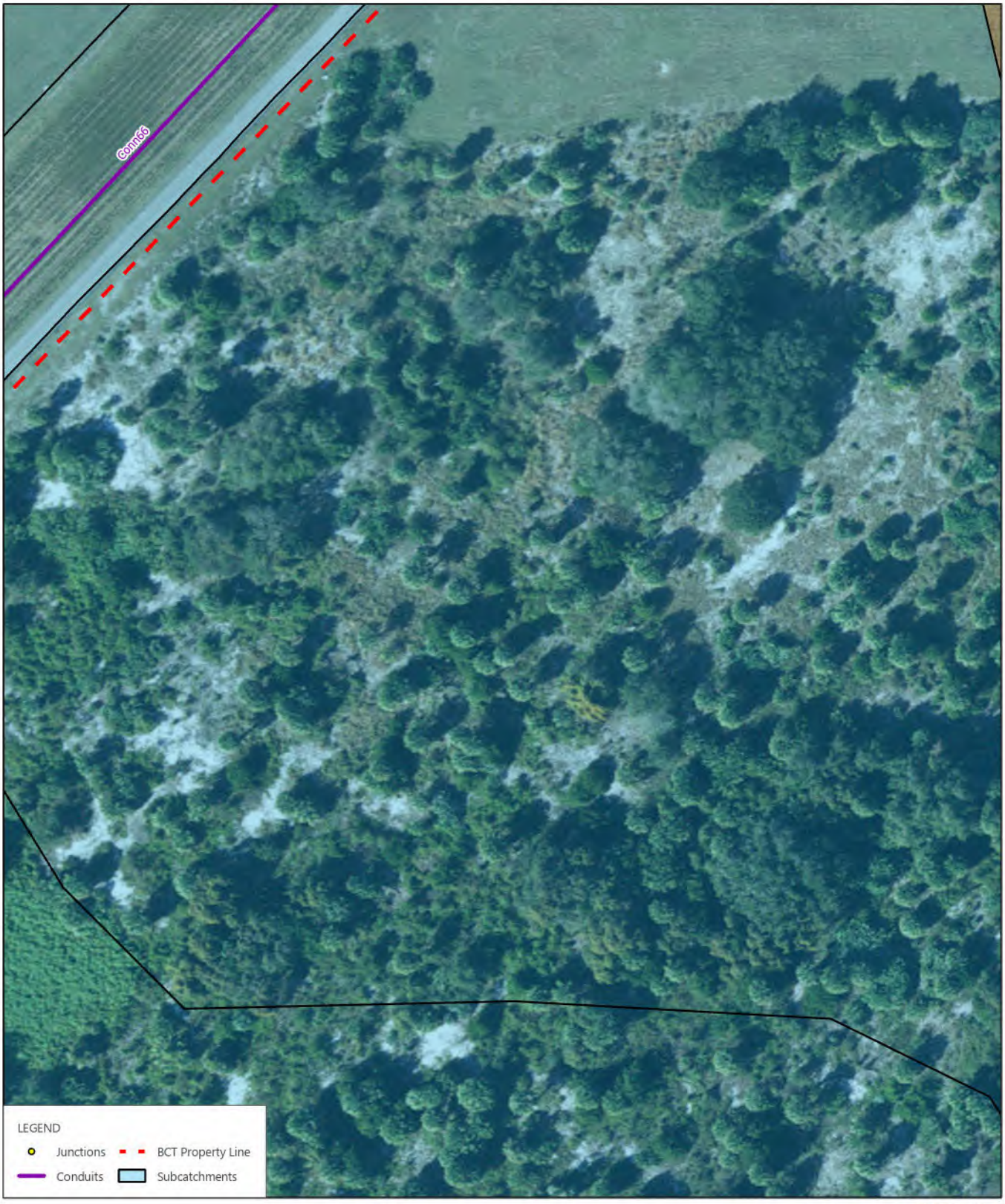

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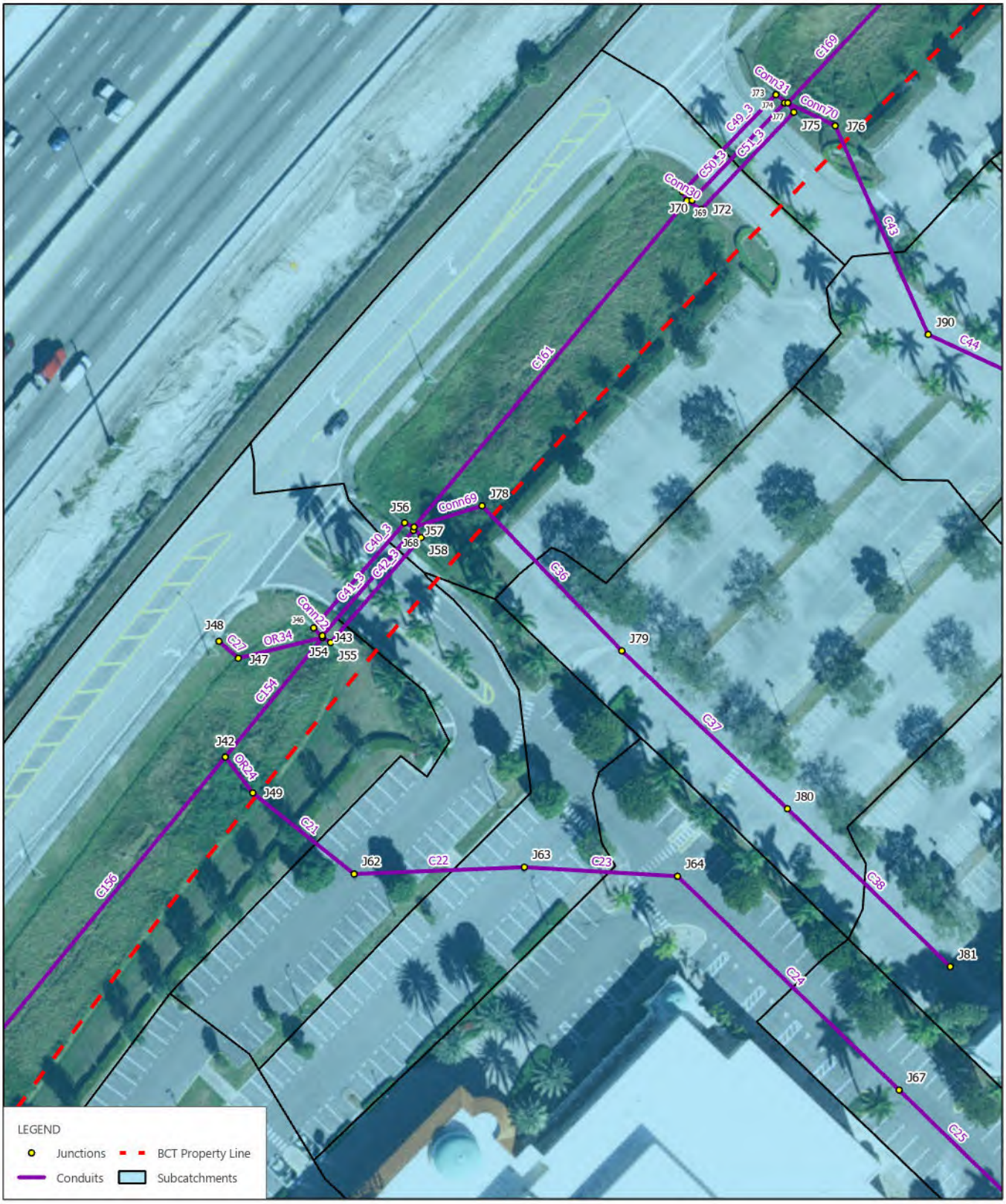

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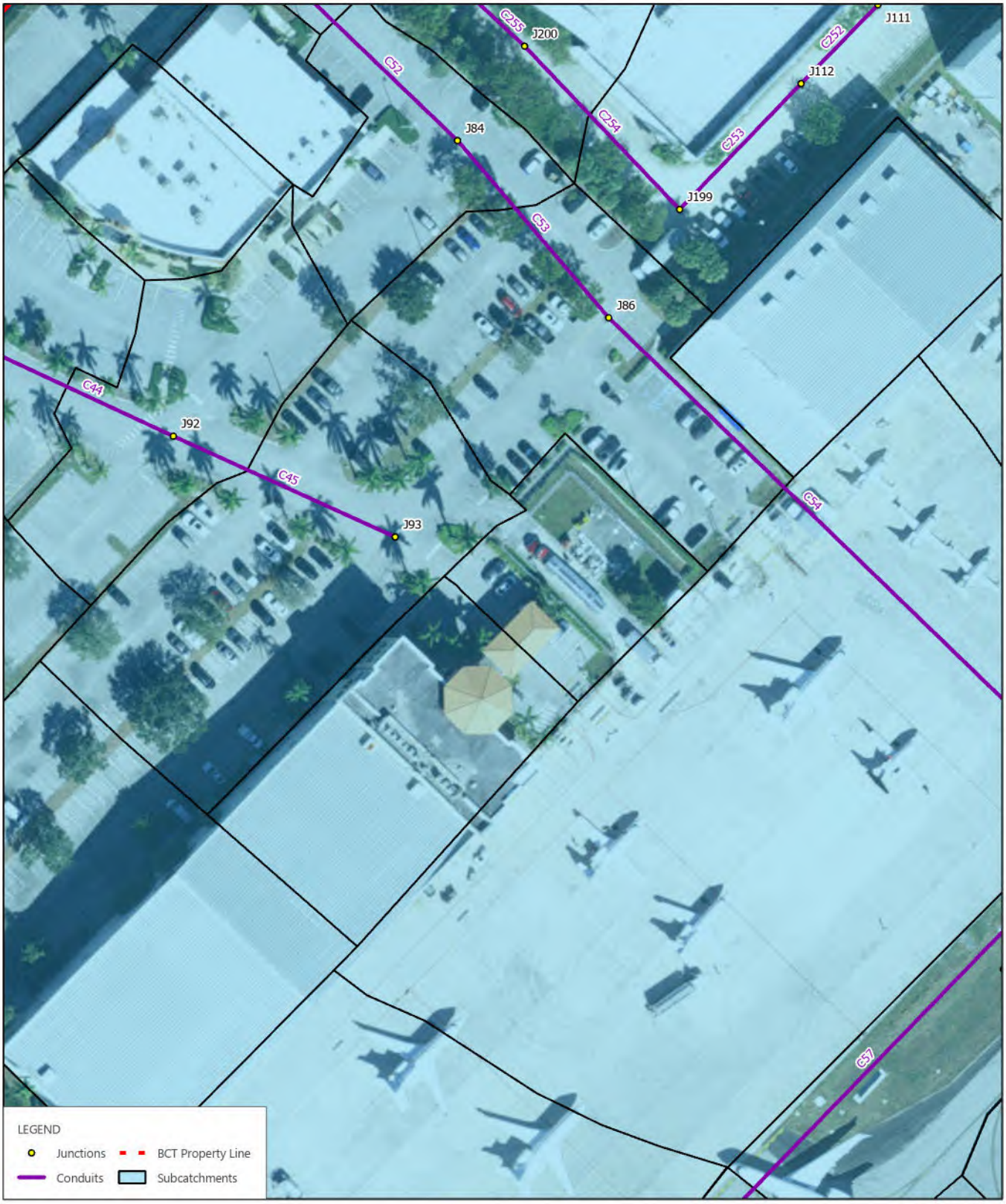

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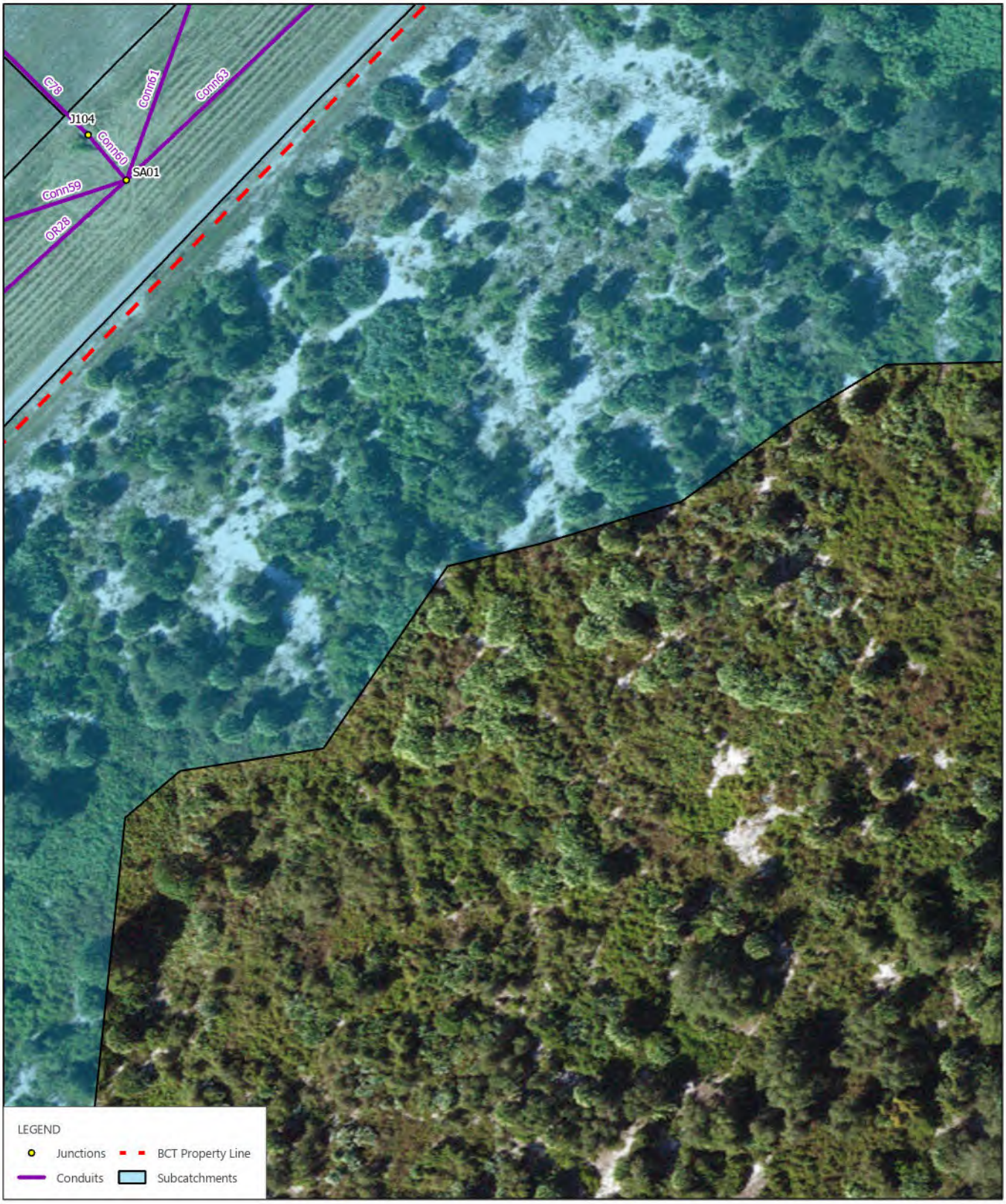

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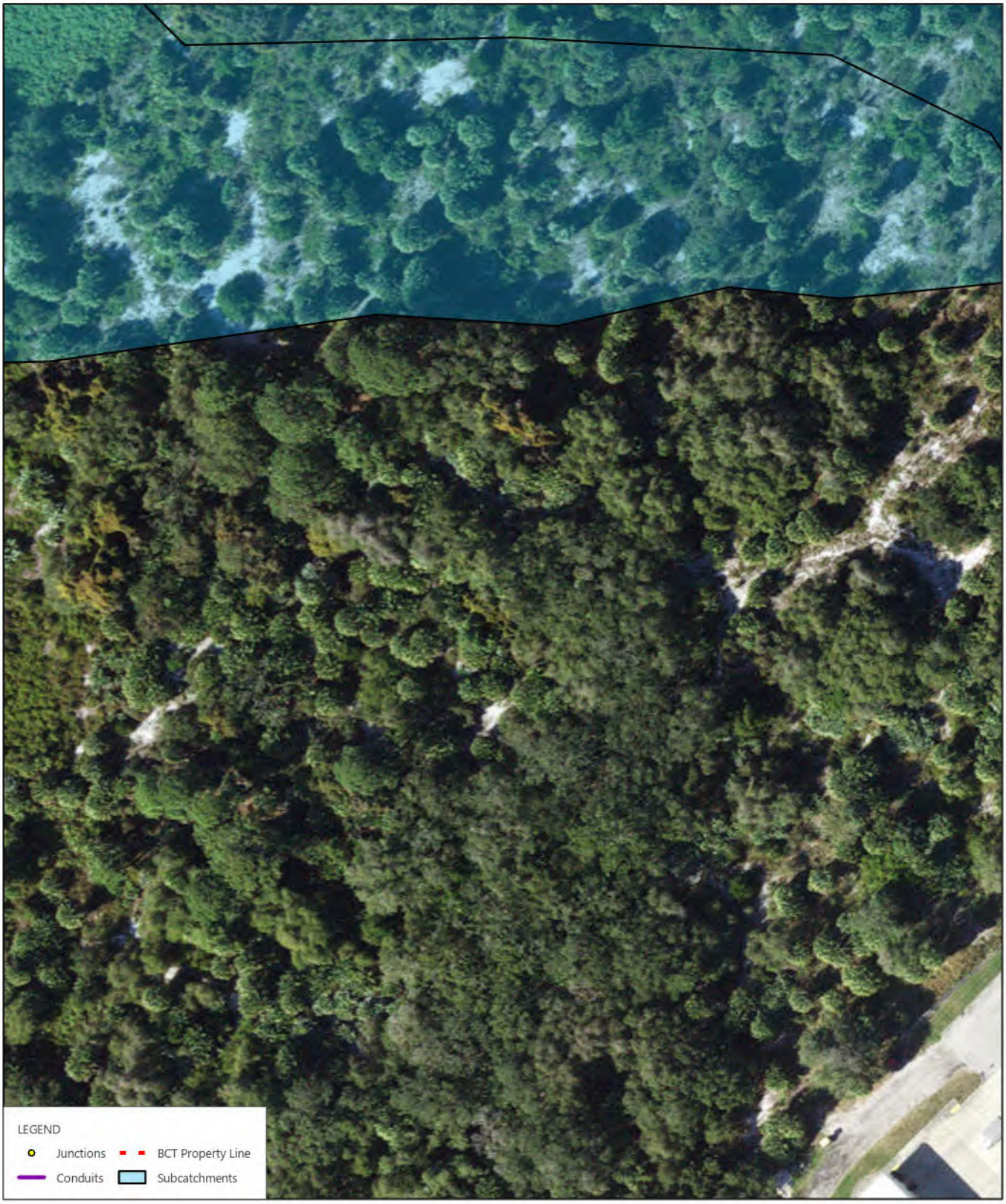

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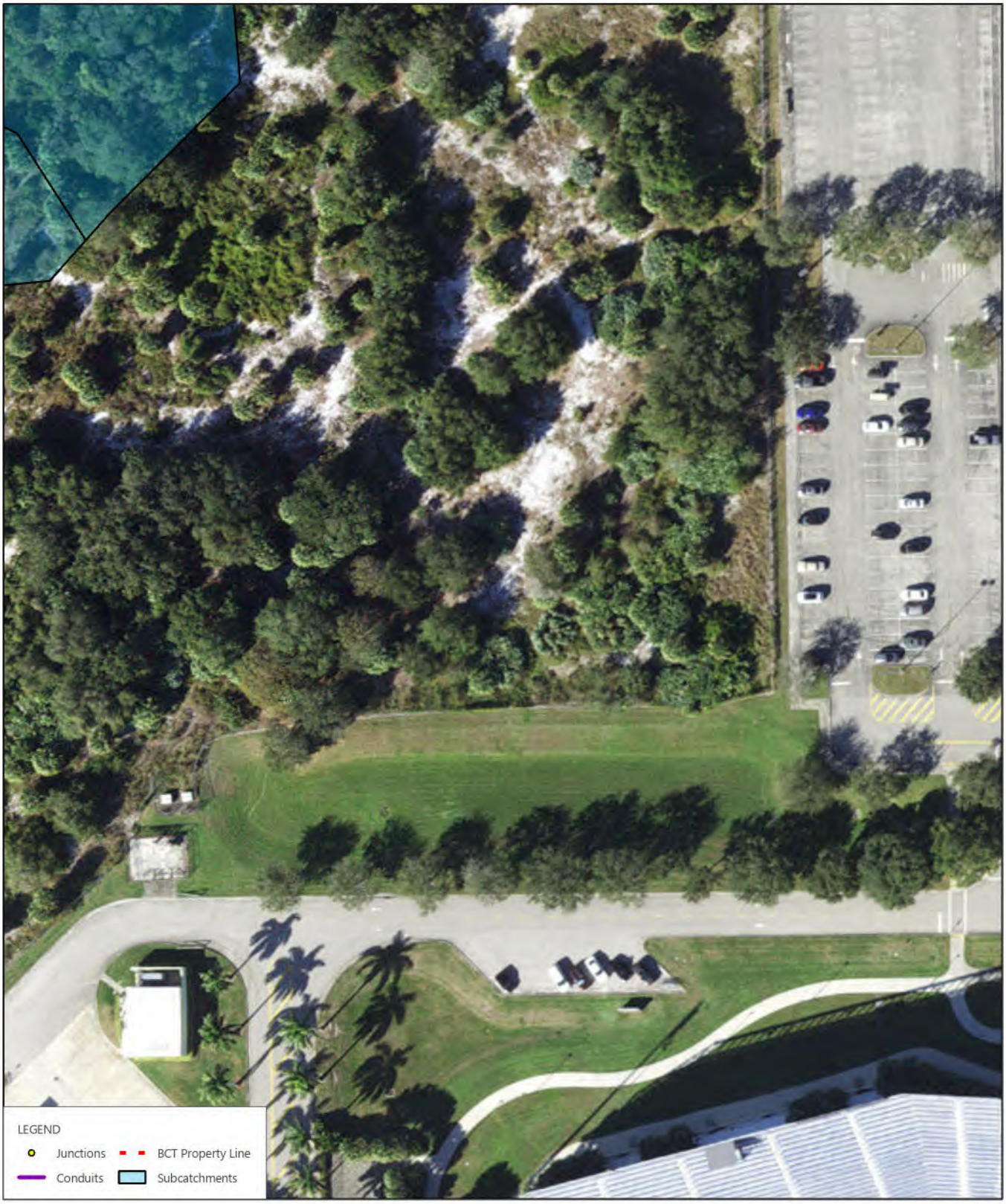

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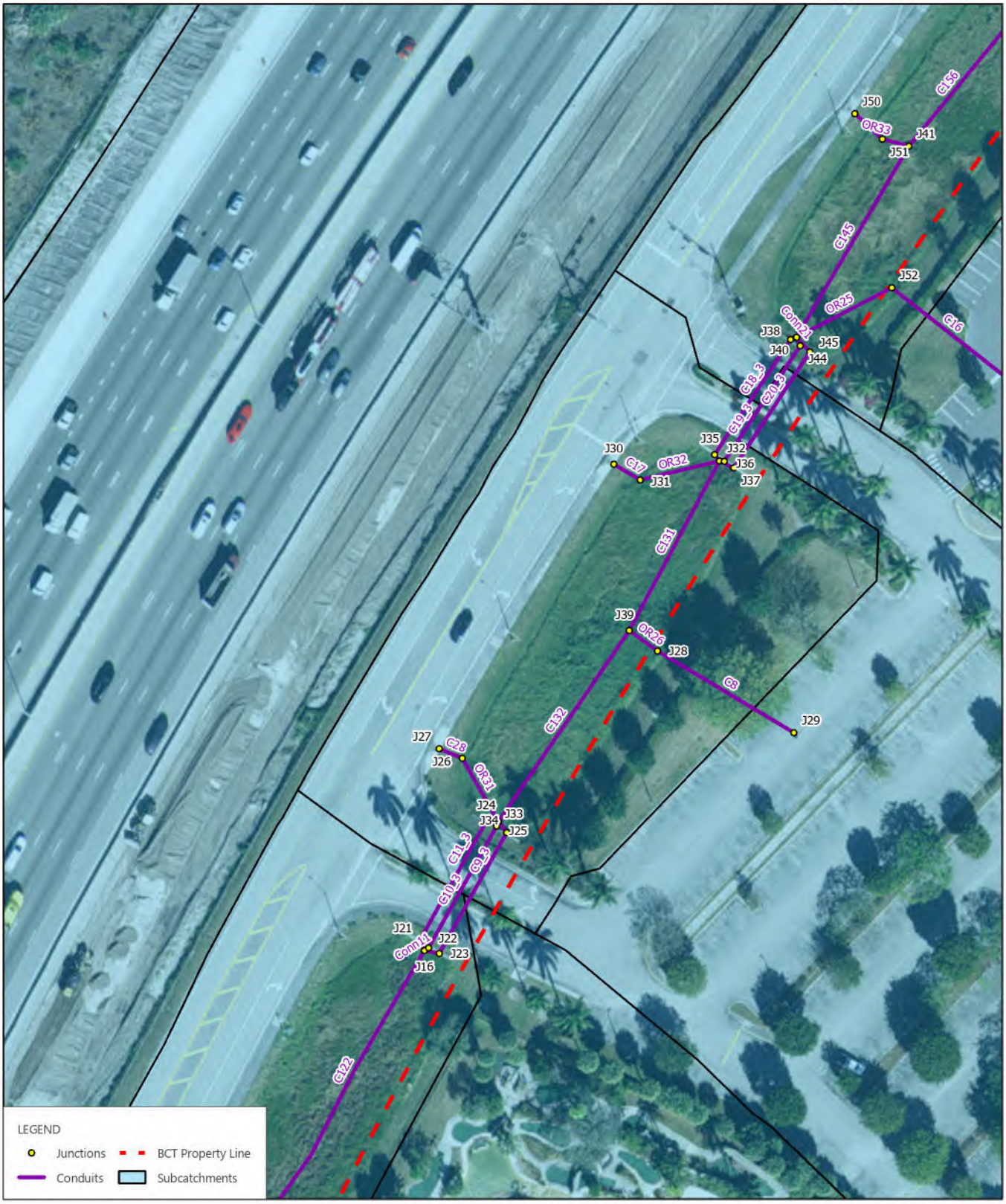

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EXHIBIT G

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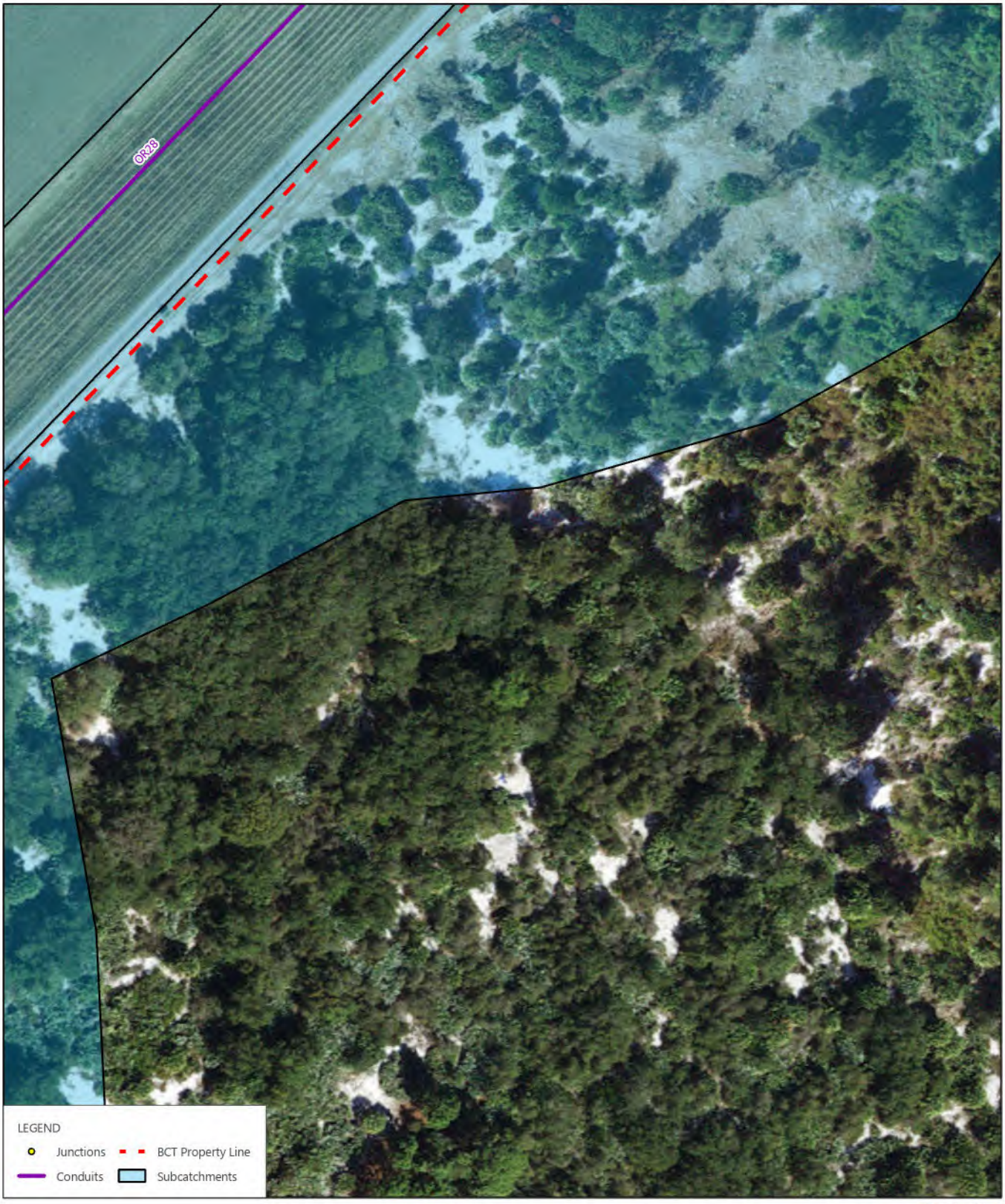

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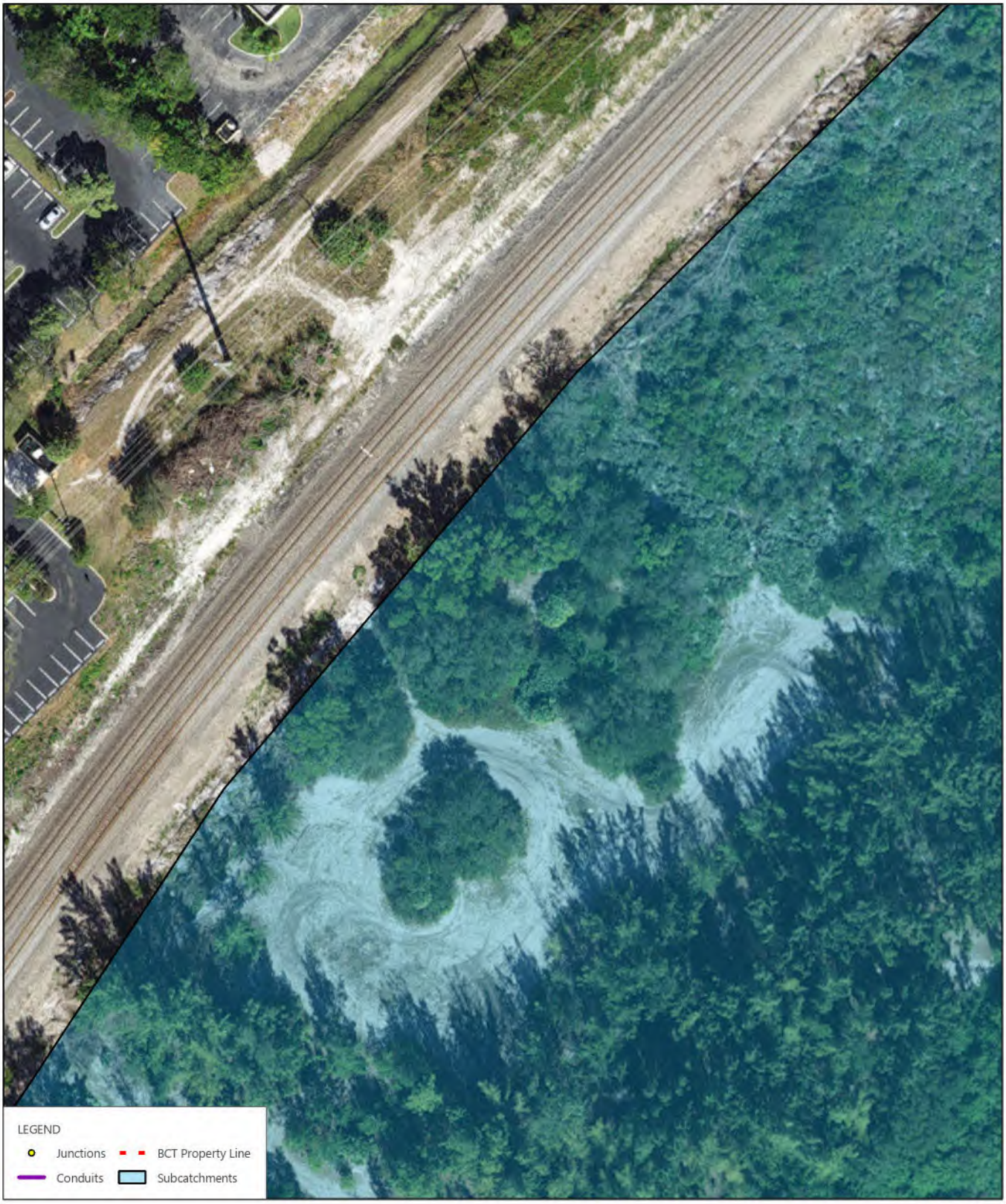

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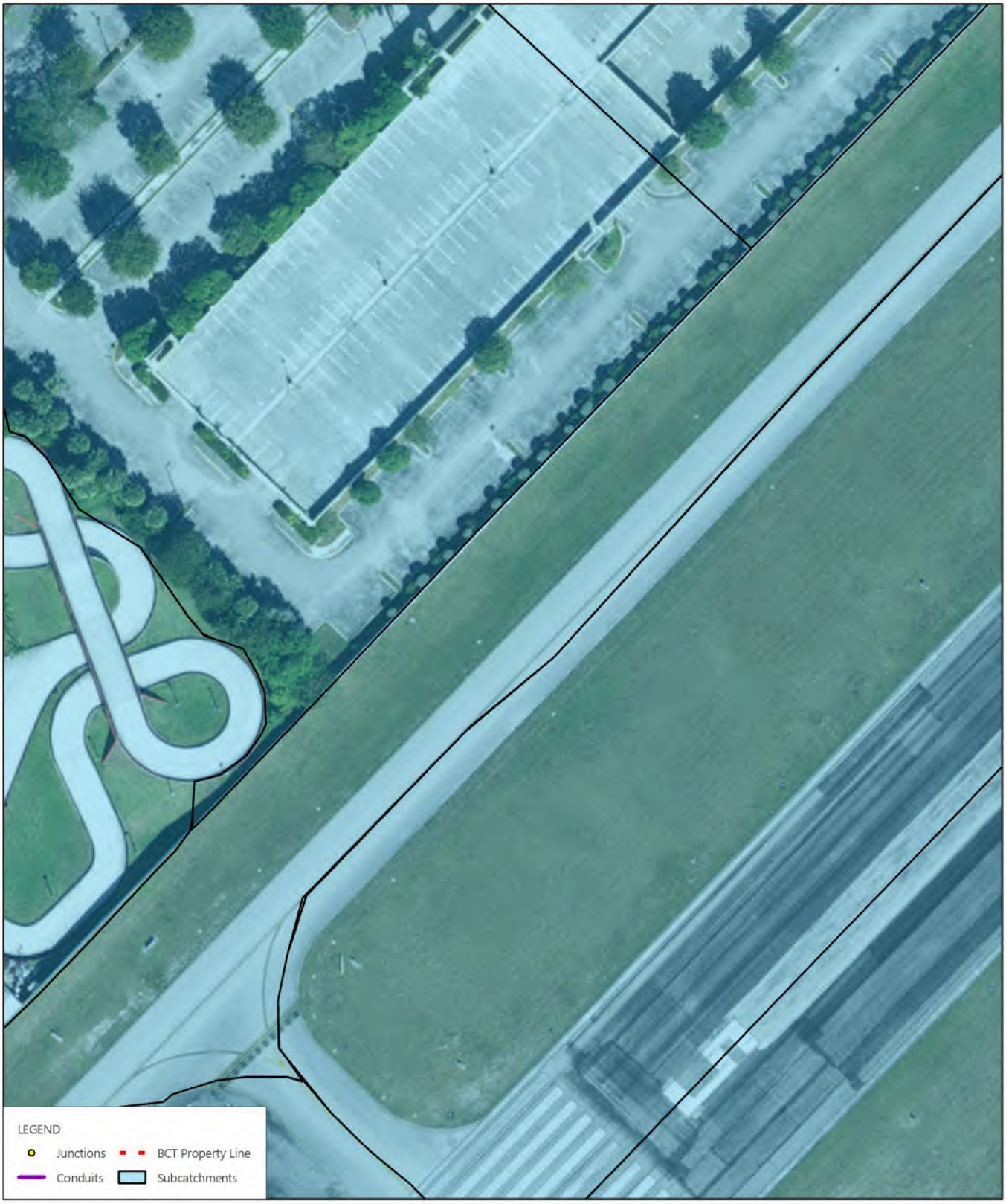

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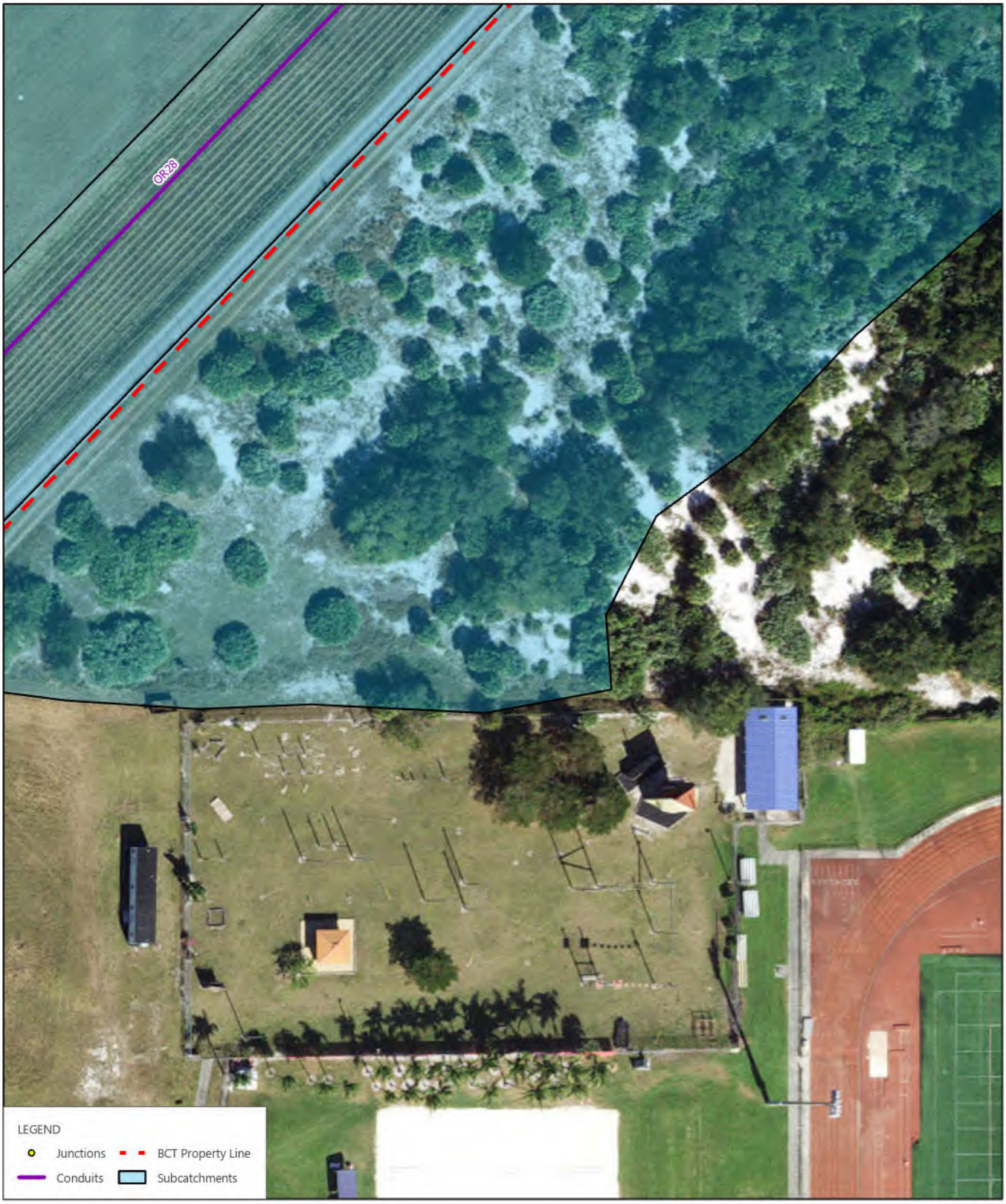

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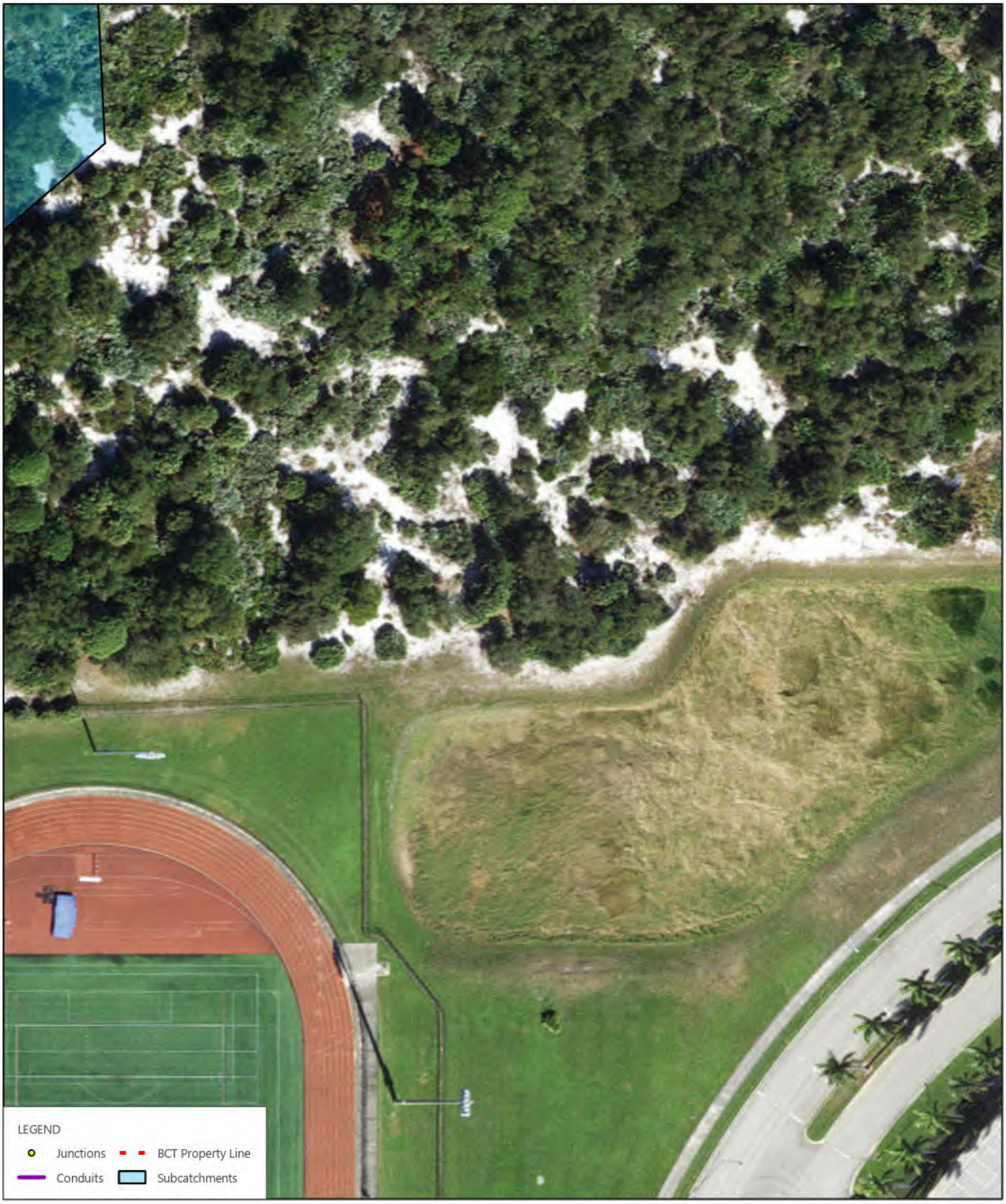

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EXHIBIT G

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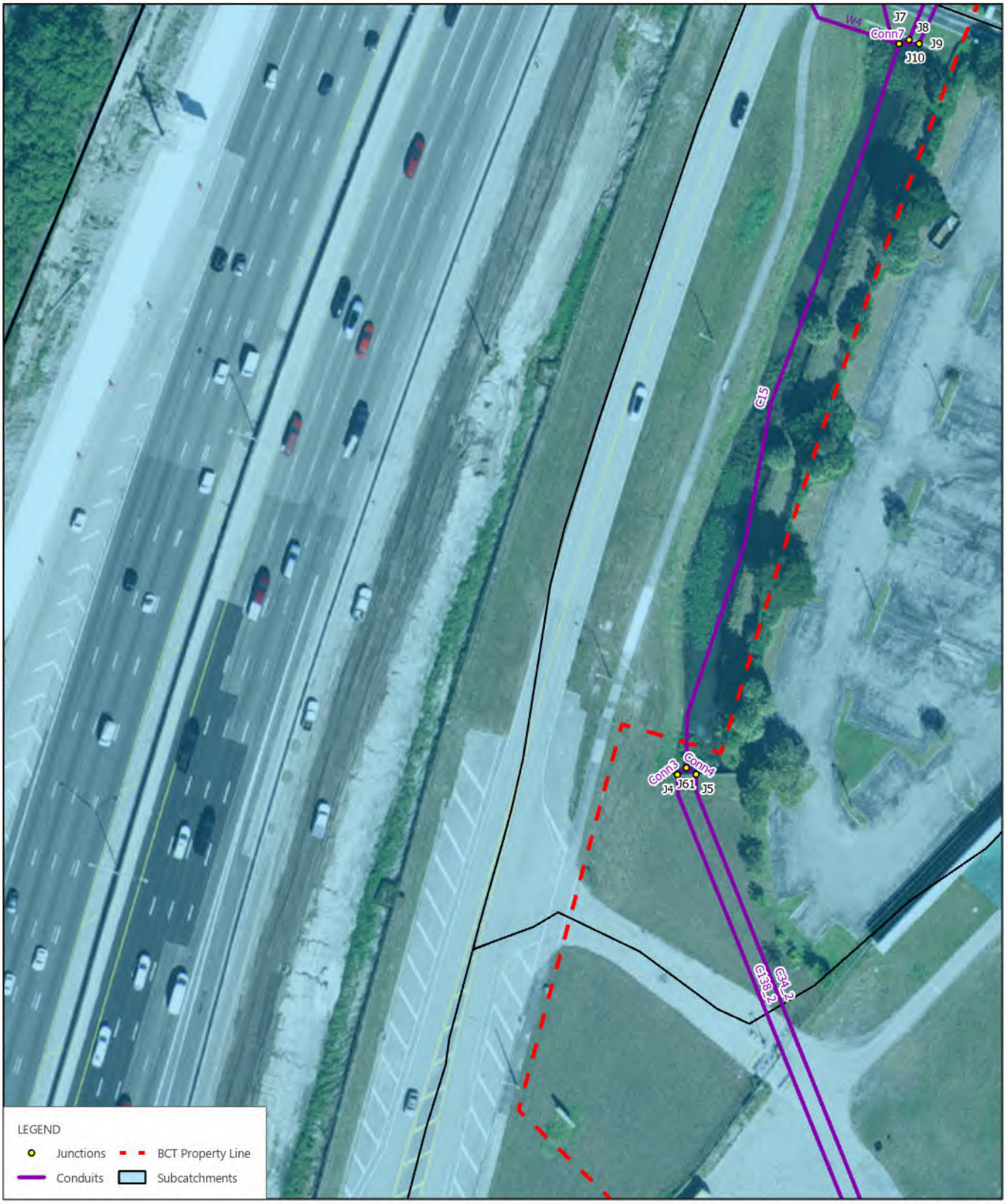

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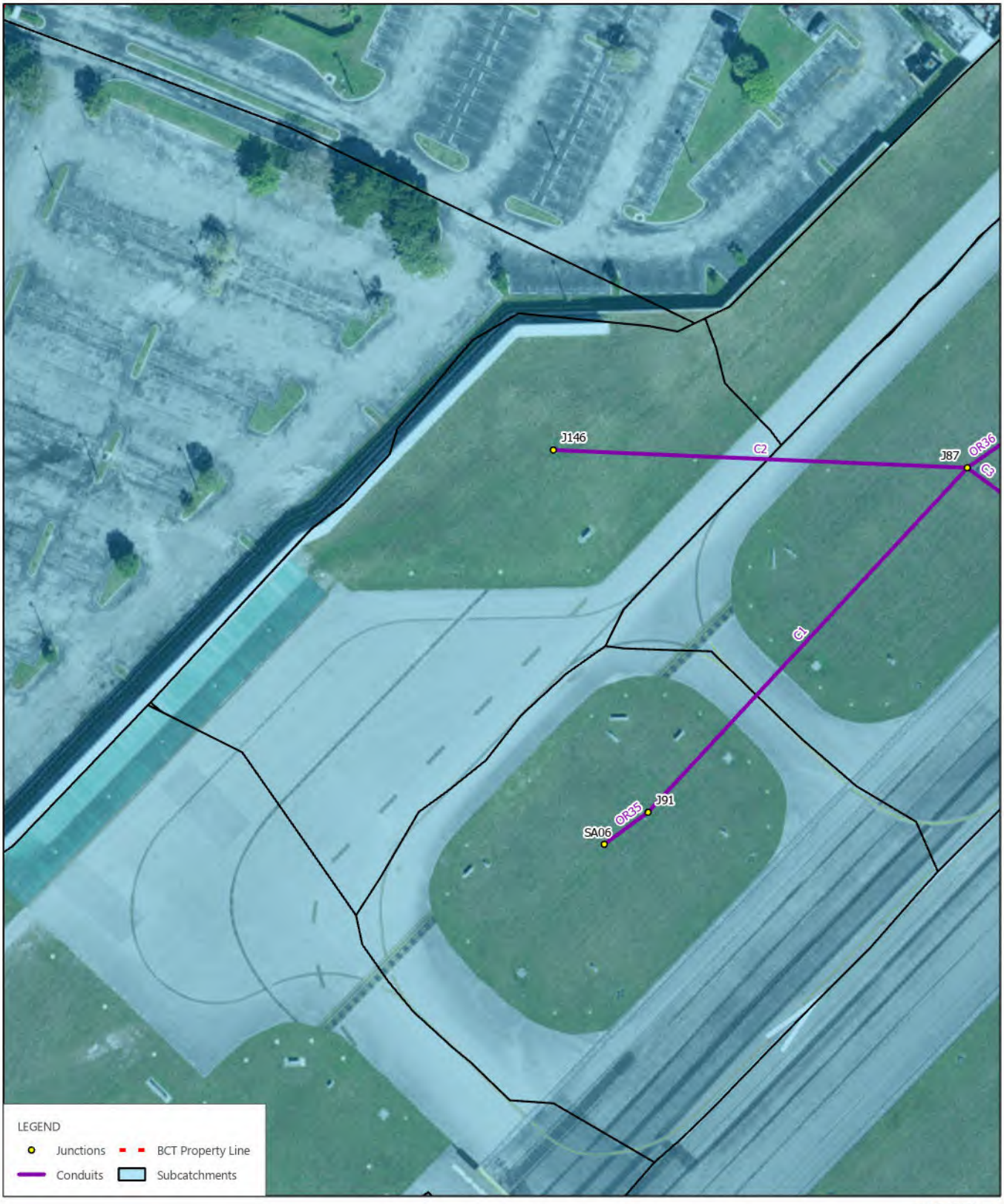

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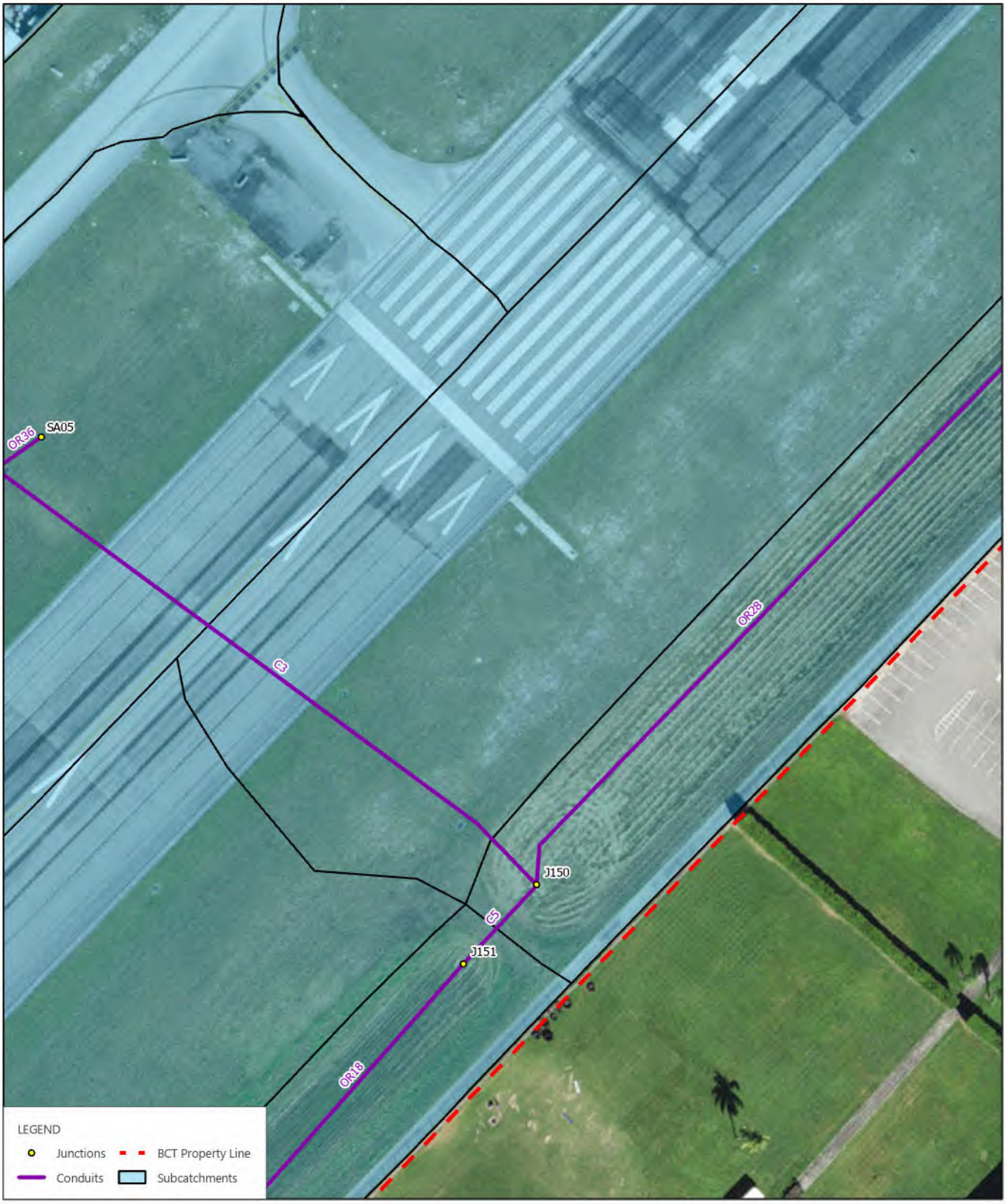

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BCT NODE NETWORK
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EXHIBIT G

BCT NODE NETWORK
PAGE-I6

EXHIBIT G

BCT NODE NETWORK
PAGE-J1

EXHIBIT G

BCT NODE NETWORK
PAGE-J2

EXHIBIT G

BCT NODE NETWORK
PAGE-J3

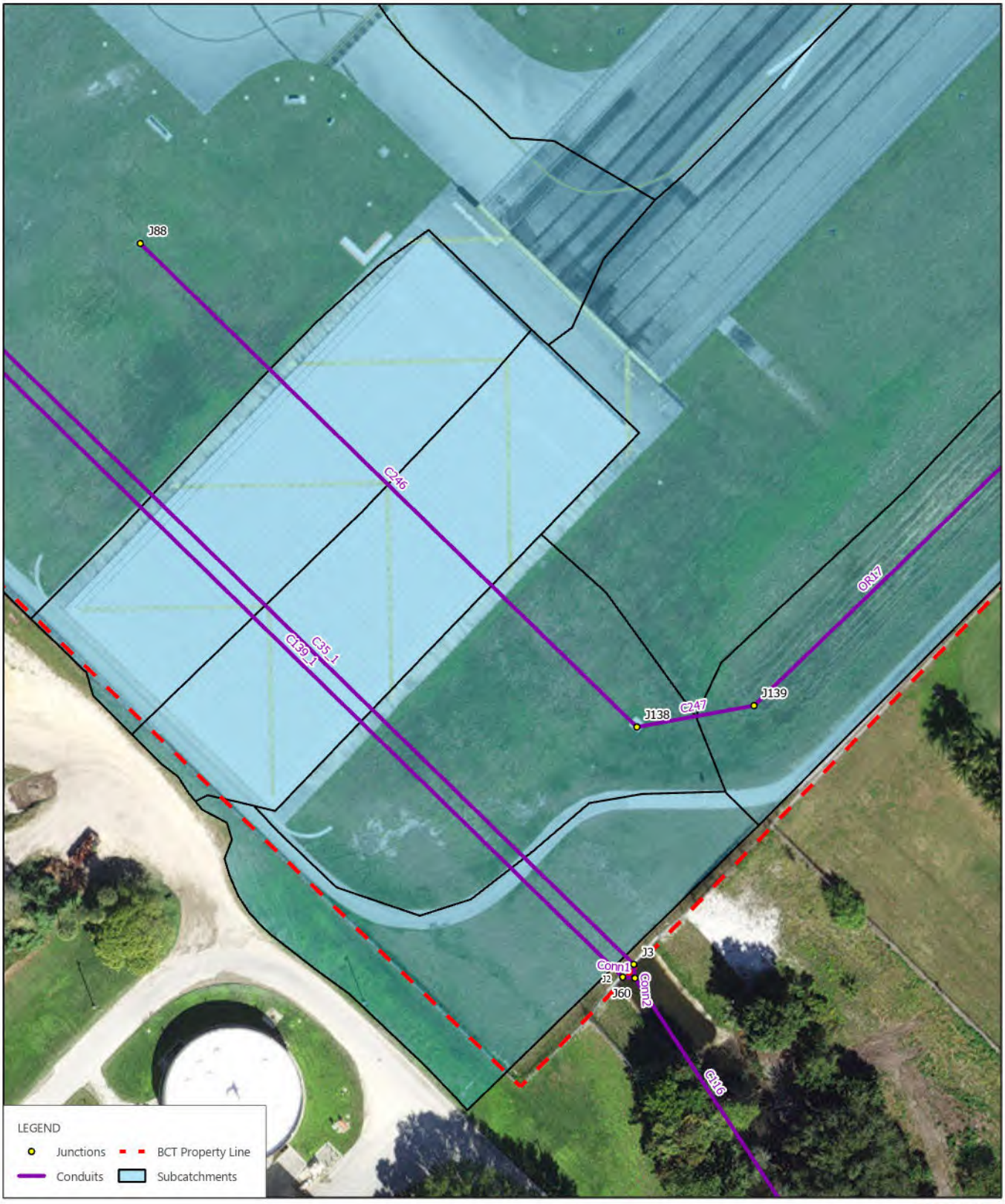


EXHIBIT G

BCT NODE NETWORK
PAGE-J4

EXHIBIT G

BCT NODE NETWORK
PAGE-J5

EXHIBIT G

BCT NODE NETWORK
PAGE-K1

EXHIBIT G

BCT NODE NETWORK
PAGE-K2

EXHIBIT G

BCT NODE NETWORK
PAGE-K3

EXHIBIT G

BCT NODE NETWORK
PAGE-K4

EXHIBIT G

BCT NODE NETWORK
PAGE-L1

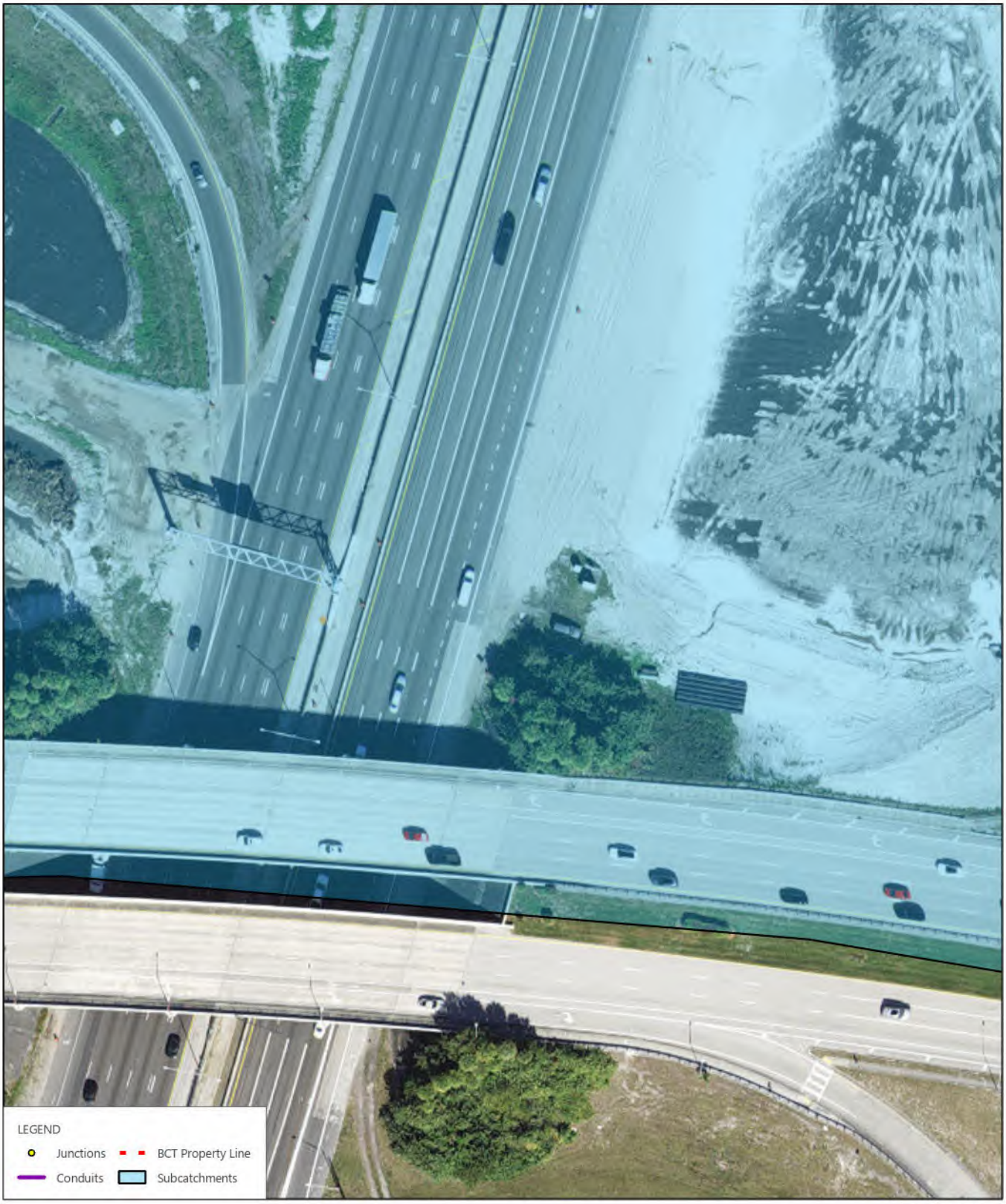


EXHIBIT G

BCT NODE NETWORK
PAGE-L2

EXHIBIT G

BCT NODE NETWORK
PAGE-L3

Exhibit H

Stormwater Management Facilities

Exhibit H-1 Stormwater Management Facilities

Exhibit H-2 Control Structure Details

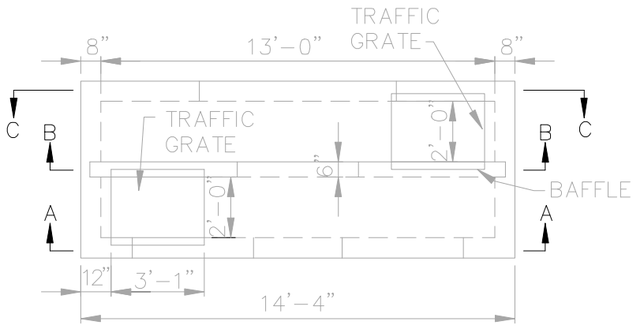
Exhibit H-1

Stormwater Management Facilities

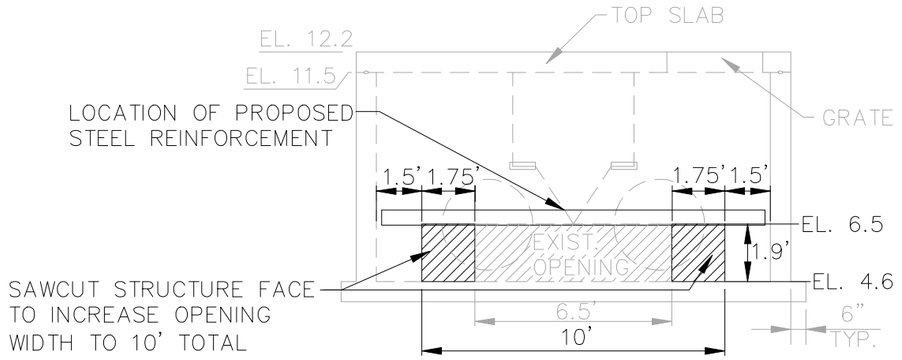
EXHIBIT H-1
STORM WATER MANAGEMENT FACILITIES

Exhibit H-2

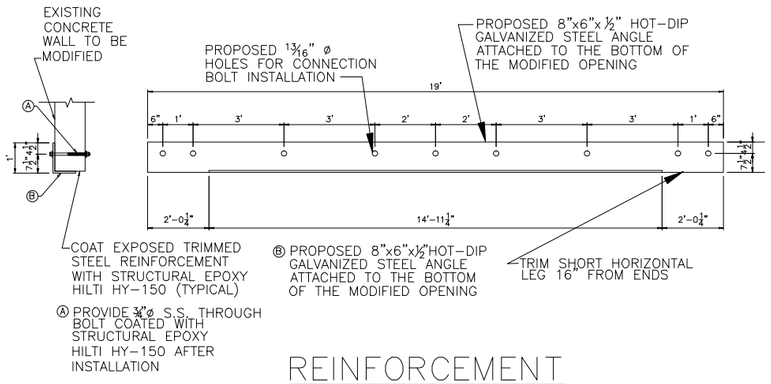
Control Structure Details



PLAN



SECTION A–A
(NORTH FACE) 2



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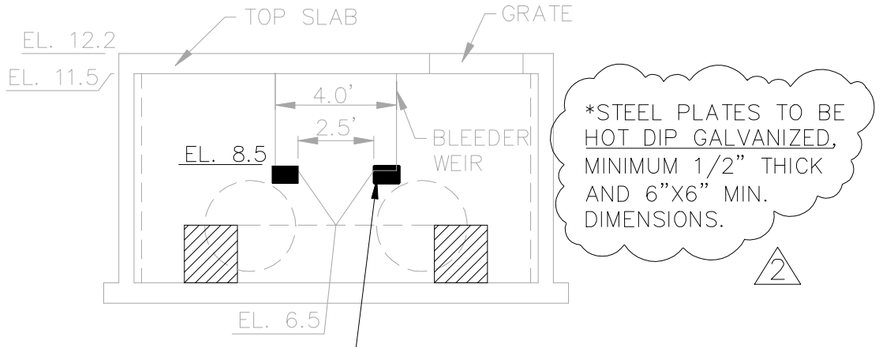
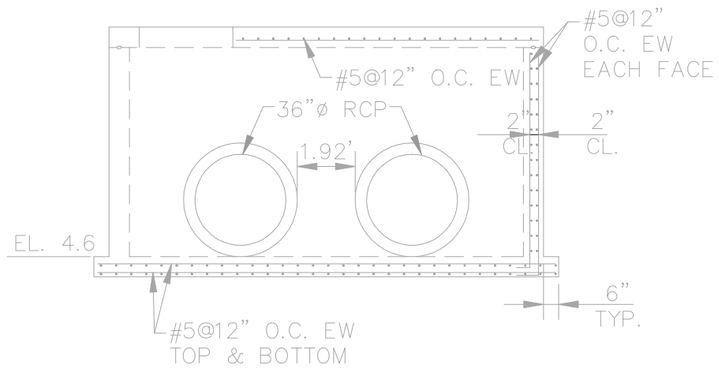


SECTION B–B
(MIDDLE OF STRUCTURE)



SECTION C–C
(SOUTH FACE)

ELEVATIONS ON THIS SHEET REFERENCE NGVD 29 DATUM FOR CONSISTENCY WITH MASTER SFWMD PERMIT 50-01365-S-06. ALL OTHER SHEETS REFERENCE NAVD 88 DATUM.

NGVD 29 = NAVD 88 + 1.55'

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
11/12/12	JFV	2 BID ADDENDUM #2			

A.D.A. ENGINEERING, INC.
8550 N.W. 33RD STREET · SUITE 101
DORAL, FLORIDA 33122
PHONE (305) 551-4608 · FAX (305) 551-8977
WWW.ADAENGINEERING.COM · EB # 0000312

BY:_____
JEFFREY VOLLAT
P.E. No. 63930
CIVIL ENG. STATE OF FL.

BOCA RATON AIRPORT AUTHORITY
3701 FAU BOULEVARD, SUITE 205
BOCA RATON, FLORIDA 33431

DATE:	SCALE:	CADD FILE:
11/12/2012	AS SHOWN	08-Details
DESIGN BY:	DRAWN BY:	CHECKED BY:
JV	JV	AV

ADMIN. BUILDING GRADING AND DRAINAGE CONTROL STRUCTURE MODIFICATIONS

SHEET 8

Exhibit I

Rainfall Data

Exhibit I-1 Rainfall Data: Precipitation Frequency

Exhibit I-2 Rainfall Data: 5YR-24HR

Exhibit I-3 Rainfall Data: 25YR-24HR

Exhibit I-4 Rainfall Data: 100YR-24HR

Exhibit I-1

Rainfall Data: Precipitation Frequency

NOAA Atlas 14, Volume 9, Version 2
Location name: Boca Raton, Florida, USA*
Latitude: 26.3785°, Longitude: -80.1077°
Elevation: 11.44 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**6.72** (5.33-8.53)	**7.76** (6.16-9.88)	**9.49** (7.49-12.1)	**10.9** (8.58-14.0)	**12.9** (9.80-17.1)	**14.4** (10.7-19.5)	**15.9** (11.5-22.2)	**17.5** (12.2-25.1)	**19.6** (13.1-29.0)	**21.1** (13.8-32.0)
10-min	**4.92** (3.90-6.25)	**5.69** (4.51-7.23)	**6.95** (5.48-8.86)	**7.99** (6.28-10.2)	**9.44** (7.18-12.5)	**10.6** (7.87-14.3)	**11.7** (8.42-16.2)	**12.8** (8.90-18.4)	**14.3** (9.59-21.3)	**15.5** (10.1-23.4)
15-min	**4.00** (3.17-5.08)	**4.62** (3.66-5.88)	**5.65** (4.46-7.20)	**6.50** (5.11-8.33)	**7.67** (5.84-10.2)	**8.58** (6.39-11.6)	**9.49** (6.85-13.2)	**10.4** (7.23-15.0)	**11.6** (7.80-17.3)	**12.6** (8.22-19.0)
30-min	**3.16** (2.51-4.01)	**3.67** (2.91-4.66)	**4.50** (3.56-5.74)	**5.20** (4.09-6.66)	**6.16** (4.68-8.17)	**6.90** (5.14-9.32)	**7.64** (5.51-10.6)	**8.40** (5.83-12.1)	**9.40** (6.29-13.9)	**10.2** (6.64-15.4)
60-min	**2.17** (1.72-2.76)	**2.52** (2.00-3.21)	**3.10** (2.45-3.95)	**3.59** (2.82-4.60)	**4.28** (3.26-5.69)	**4.81** (3.59-6.52)	**5.36** (3.87-7.47)	**5.92** (4.12-8.52)	**6.68** (4.48-9.93)	**7.27** (4.75-11.0)
2-hr	**1.38** (1.10-1.74)	**1.60** (1.28-2.03)	**1.97** (1.57-2.50)	**2.29** (1.81-2.92)	**2.74** (2.10-3.62)	**3.09** (2.32-4.16)	**3.45** (2.51-4.78)	**3.83** (2.68-5.47)	**4.33** (2.93-6.41)	**4.73** (3.11-7.11)
3-hr	**1.03** (0.828-1.30)	**1.20** (0.961-1.51)	**1.49** (1.19-1.88)	**1.73** (1.38-2.20)	**2.09** (1.61-2.77)	**2.38** (1.79-3.20)	**2.67** (1.96-3.70)	**2.99** (2.10-4.27)	**3.42** (2.32-5.04)	**3.76** (2.48-5.63)
6-hr	**0.608** (0.490-0.759)	**0.714** (0.574-0.892)	**0.899** (0.721-1.13)	**1.07** (0.850-1.34)	**1.31** (1.02-1.74)	**1.52** (1.16-2.04)	**1.74** (1.28-2.40)	**1.97** (1.40-2.81)	**2.30** (1.57-3.38)	**2.56** (1.71-3.81)
12-hr	**0.342** (0.277-0.424)	**0.408** (0.330-0.507)	**0.528** (0.426-0.657)	**0.638** (0.512-0.799)	**0.807** (0.636-1.07)	**0.950** (0.730-1.27)	**1.10** (0.822-1.52)	**1.27** (0.911-1.81)	**1.51** (1.04-2.21)	**1.71** (1.15-2.52)
24-hr	**0.194** (0.158-0.239)	**0.234** (0.190-0.288)	**0.306** (0.249-0.379)	**0.374** (0.302-0.466)	**0.479** (0.381-0.634)	**0.569** (0.441-0.761)	**0.667** (0.500-0.916)	**0.774** (0.559-1.10)	**0.928** (0.647-1.35)	**1.05** (0.713-1.55)
2-day	**0.113** (0.093-0.139)	**0.134** (0.110-0.165)	**0.174** (0.142-0.214)	**0.211** (0.171-0.260)	**0.268** (0.215-0.352)	**0.317** (0.248-0.421)	**0.371** (0.280-0.506)	**0.430** (0.313-0.605)	**0.515** (0.362-0.746)	**0.585** (0.399-0.853)
3-day	**0.085** (0.070-0.103)	**0.098** (0.081-0.120)	**0.124** (0.102-0.152)	**0.149** (0.121-0.183)	**0.187** (0.151-0.245)	**0.220** (0.173-0.292)	**0.257** (0.195-0.349)	**0.297** (0.217-0.416)	**0.355** (0.251-0.512)	**0.403** (0.276-0.585)
4-day	**0.069** (0.057-0.084)	**0.079** (0.065-0.096)	**0.098** (0.080-0.119)	**0.116** (0.095-0.142)	**0.144** (0.116-0.188)	**0.169** (0.133-0.223)	**0.196** (0.149-0.266)	**0.226** (0.166-0.317)	**0.271** (0.192-0.390)	**0.307** (0.211-0.445)
7-day	**0.048** (0.040-0.058)	**0.053** (0.044-0.064)	**0.062** (0.051-0.075)	**0.071** (0.058-0.087)	**0.087** (0.071-0.113)	**0.100** (0.080-0.132)	**0.116** (0.089-0.157)	**0.134** (0.099-0.186)	**0.160** (0.114-0.229)	**0.181** (0.125-0.261)
10-day	**0.038** (0.032-0.046)	**0.041** (0.034-0.050)	**0.048** (0.040-0.058)	**0.055** (0.045-0.067)	**0.066** (0.053-0.085)	**0.075** (0.060-0.099)	**0.086** (0.066-0.116)	**0.099** (0.073-0.137)	**0.117** (0.084-0.167)	**0.132** (0.092-0.190)
20-day	**0.025** (0.021-0.030)	**0.028** (0.023-0.033)	**0.033** (0.027-0.039)	**0.037** (0.031-0.045)	**0.044** (0.035-0.055)	**0.049** (0.039-0.063)	**0.055** (0.042-0.072)	**0.061** (0.045-0.083)	**0.070** (0.050-0.098)	**0.076** (0.053-0.109)
30-day	**0.020** (0.017-0.024)	**0.022** (0.019-0.027)	**0.027** (0.022-0.032)	**0.030** (0.025-0.036)	**0.035** (0.029-0.044)	**0.039** (0.031-0.050)	**0.043** (0.033-0.056)	**0.047** (0.035-0.064)	**0.052** (0.038-0.073)	**0.057** (0.040-0.080)
45-day	**0.016** (0.014-0.019)	**0.018** (0.016-0.022)	**0.022** (0.018-0.026)	**0.025** (0.021-0.029)	**0.028** (0.023-0.035)	**0.031** (0.025-0.039)	**0.034** (0.026-0.044)	**0.036** (0.027-0.048)	**0.039** (0.028-0.055)	**0.042** (0.030-0.059)
60-day	**0.014** (0.012-0.017)	**0.016** (0.014-0.019)	**0.019** (0.016-0.022)	**0.021** (0.018-0.025)	**0.024** (0.019-0.029)	**0.026** (0.021-0.032)	**0.028** (0.022-0.036)	**0.030** (0.022-0.040)	**0.032** (0.023-0.044)	**0.034** (0.024-0.048)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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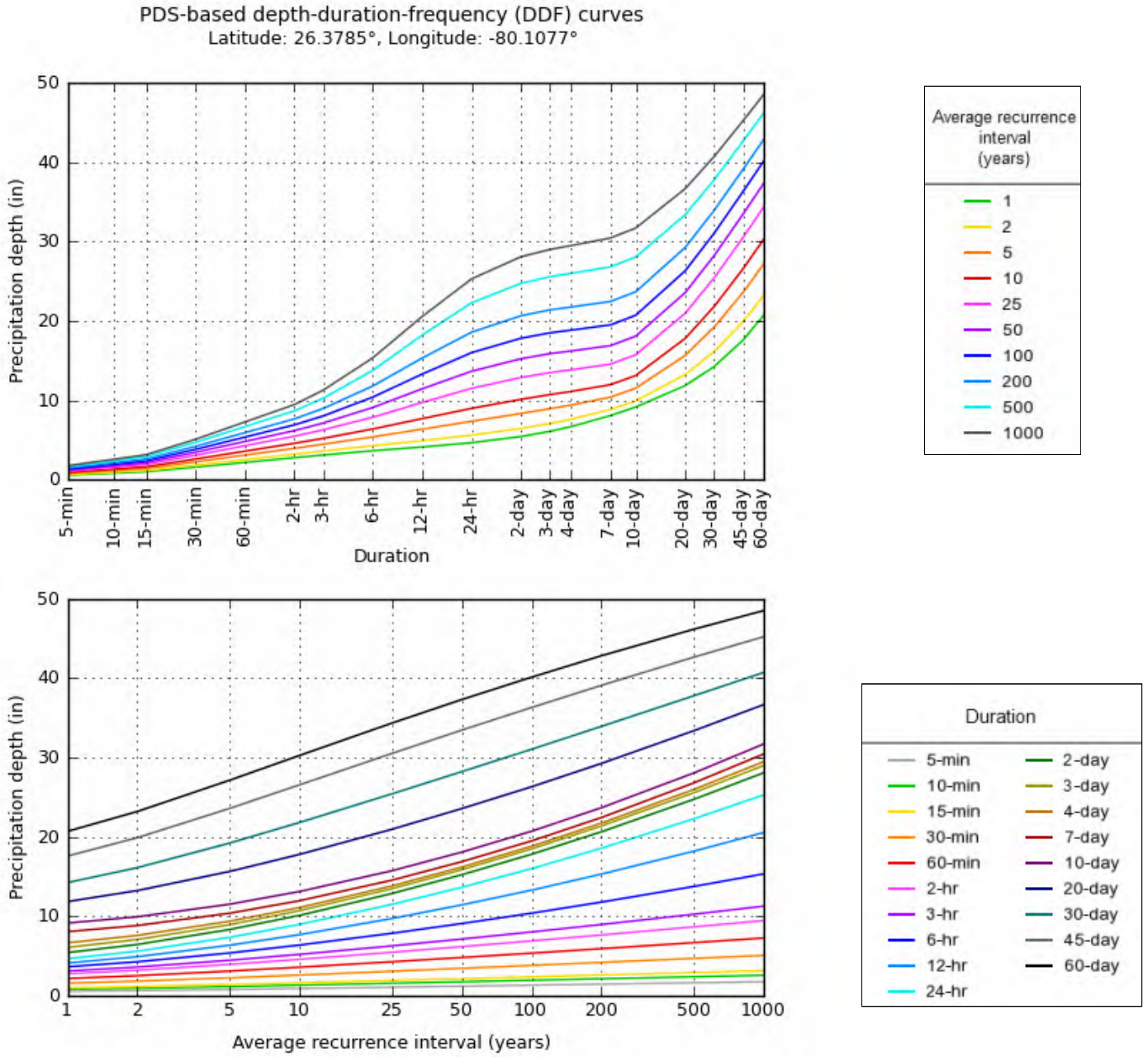
PF graphical



NOAA Atlas 14, Volume 9, Version 2

Created (GMT): Wed Jan 25 18:21:01 2023

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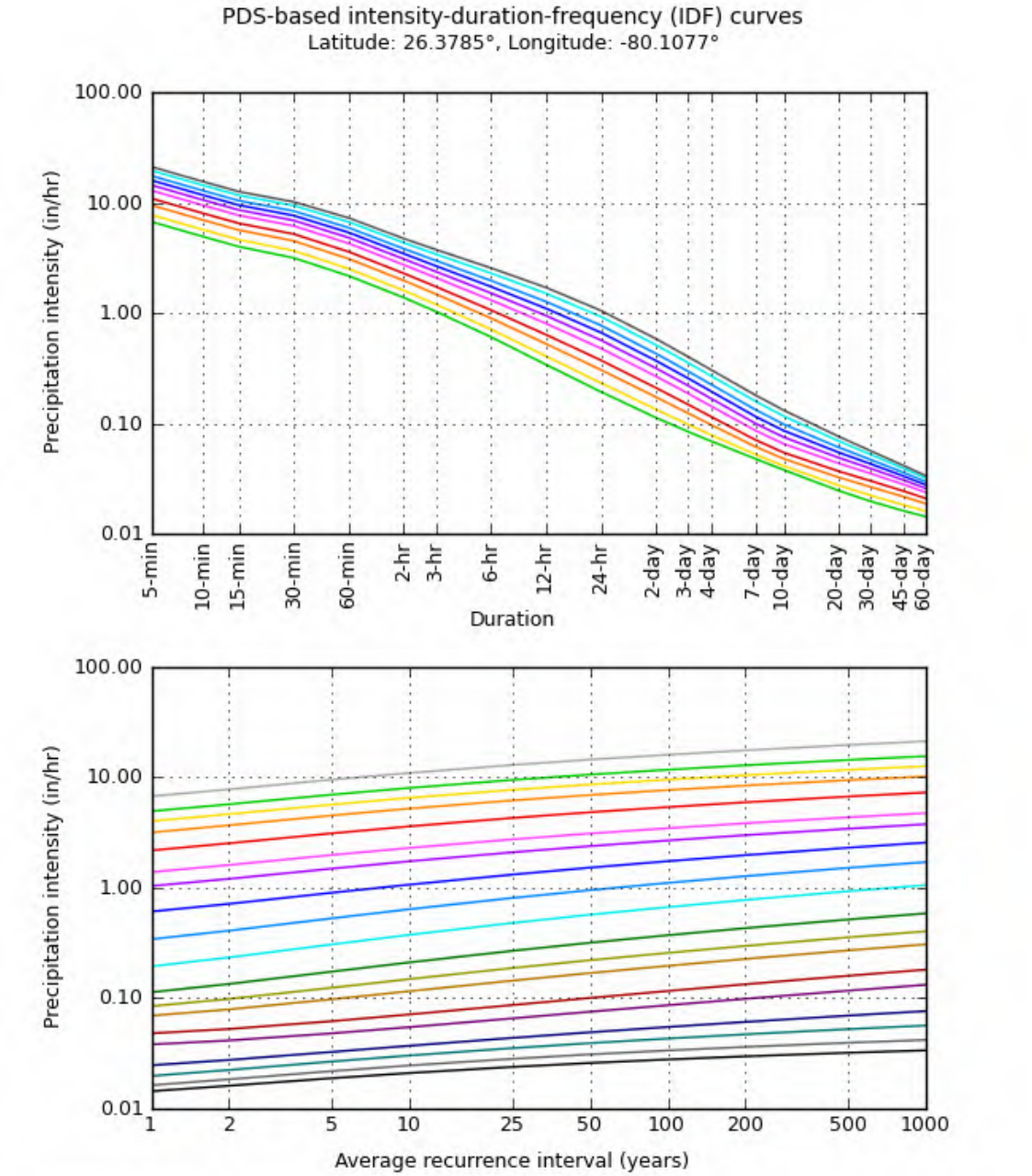
Maps & aerials

Small scale terrain



NOAA Atlas 14, Volume 9, Version 2

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Maps & aerials

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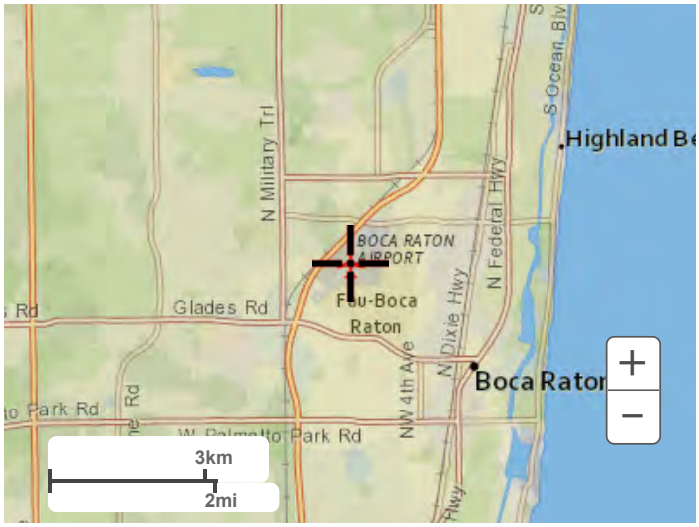
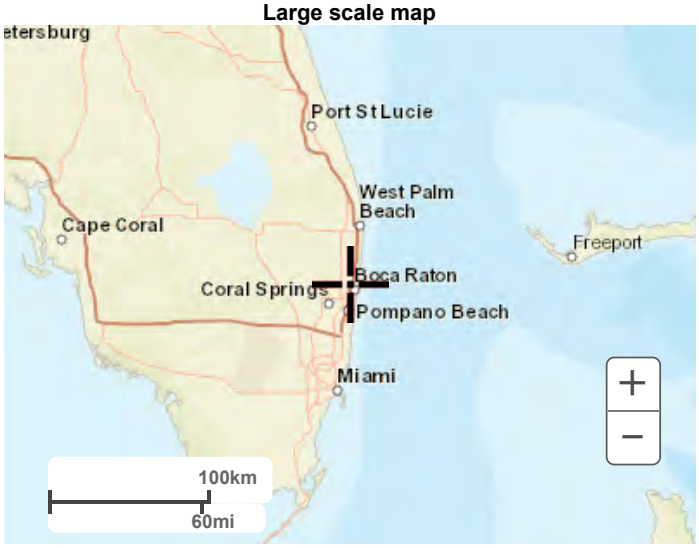


Large scale terrain

Large scale map



Large scale aerial

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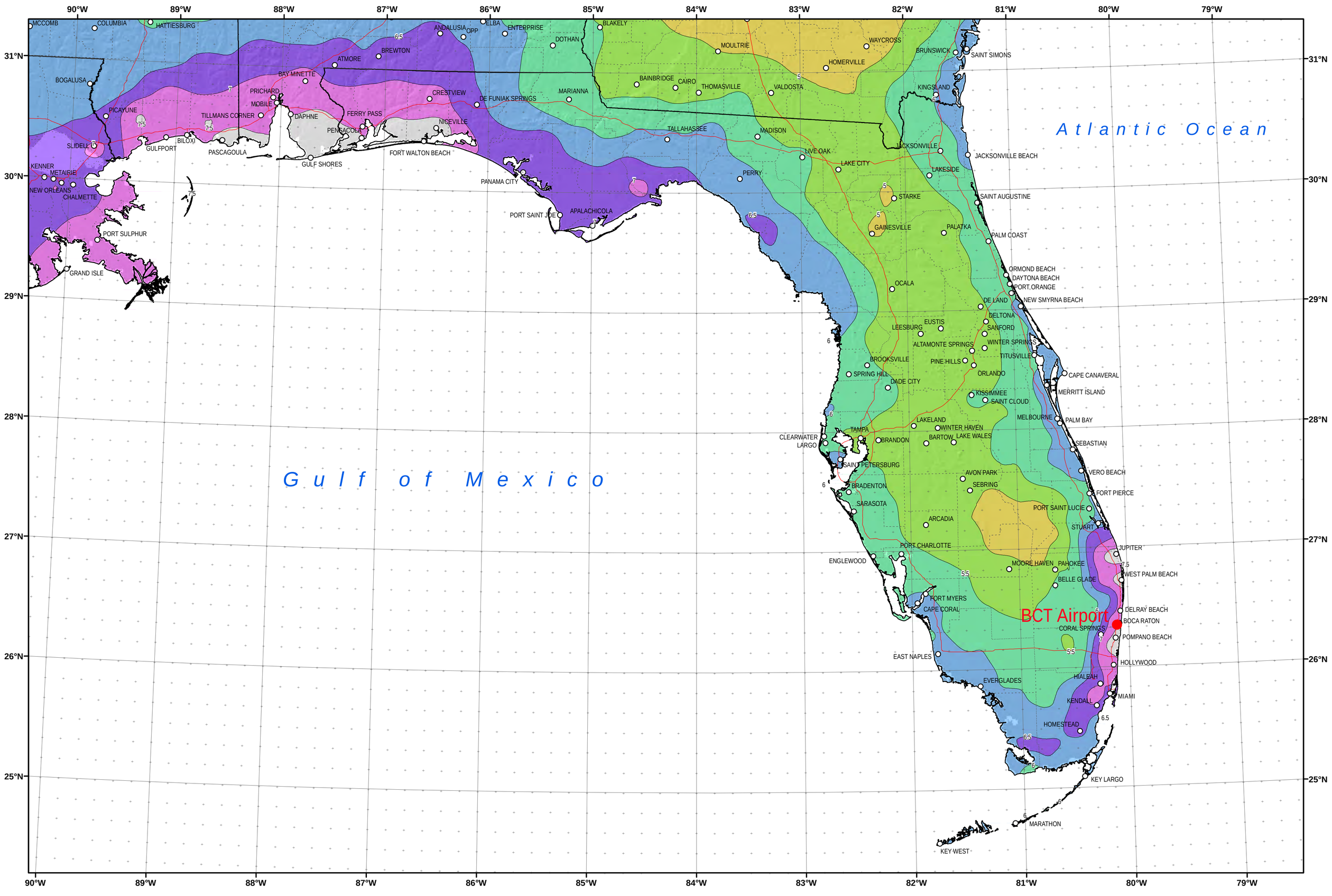
US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Exhibit I-2

Rainfall Data: 5YR-24HR



NOAA Atlas 14, Volume 9, Version 2
Southeastern States

Prepared by U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE
OFFICE OF HYDROLOGIC DEVELOPMENT
HYDROMETEOROLOGICAL DESIGN STUDIES CENTER
April 2013

0 5 10 20 30 40 50 Miles

0 10 20 40 60 80 100 Kilometers

FLORIDA

Isopluvials of 5-year 24-hour precipitation in inches

SCALE 1:2,250,000

Projection: Lambert Conformal Conic; Datum NAD83; Standard Parallels: 26˚N and 30˚N; Central Meridian 84˚W.

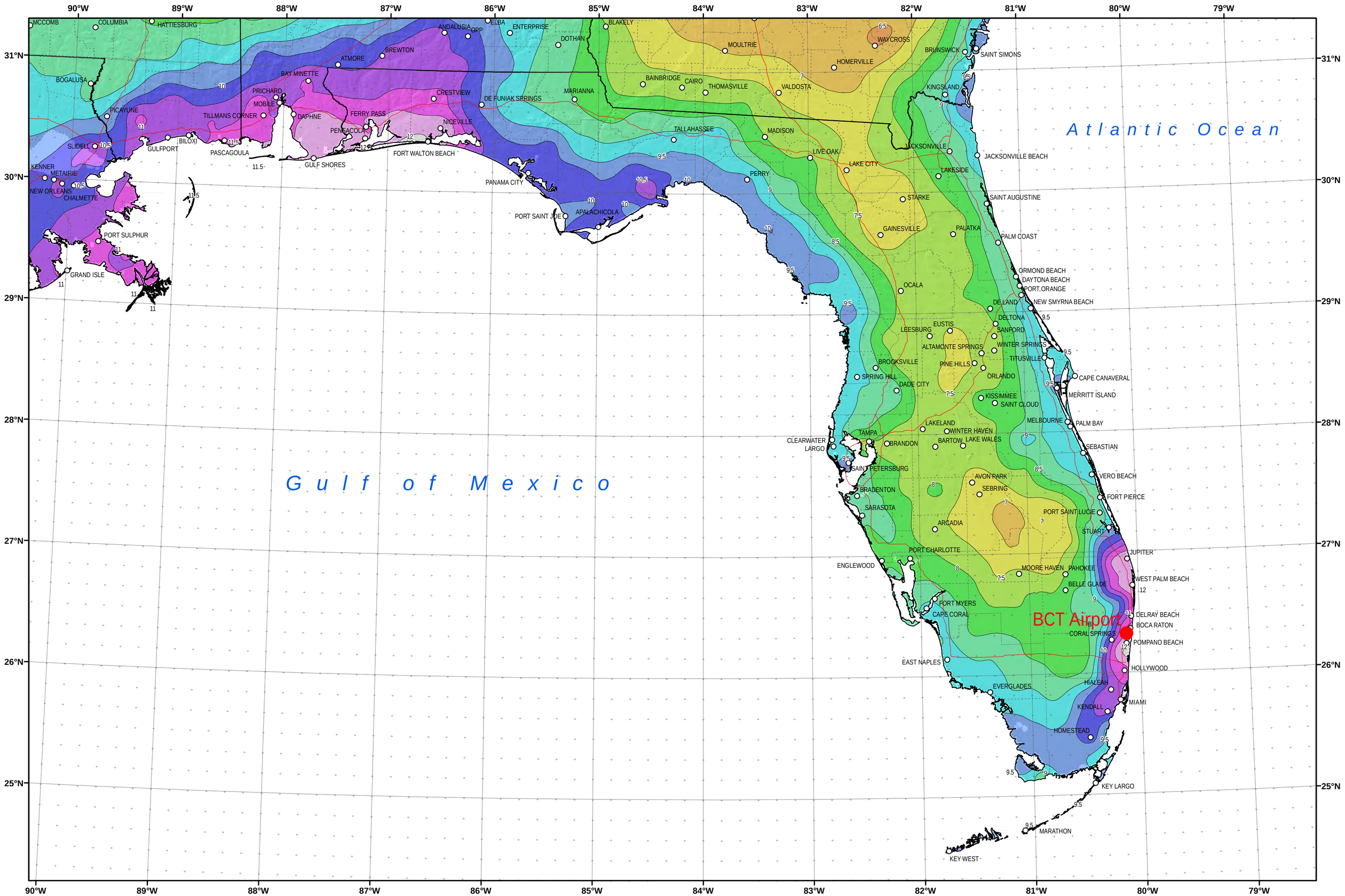
- 3.85 - 4.00
- 4.01 - 4.50
- 4.51 - 5.00
- 5.01 - 5.50
- 5.51 - 6.00
- 6.01 - 6.50
- 6.51 - 7.00
- 7.01 - 7.50
- 7.51 - 7.92

Legend based on entire Volume 9 project area.

BCT Geolocation: 26.379774° N, -80.107705° E

Exhibit I-3

Rainfall Data: 25YR-24HR



NOAA Atlas 14, Volume 9, Version 2
Southeastern States

Prepared by U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE
OFFICE OF HYDROLOGIC DEVELOPMENT
HYDROMETEOROLOGICAL DESIGN STUDIES CENTER
April 2013

0 5 10 20 30 40 50 Miles

0 10 20 40 60 80 100 Kilometers

FLORIDA

Isopluvials of 25-year 24-hour precipitation in inches

SCALE 1:2,250,000

Projection: Lambert Conformal Conic; Datum NAD83; Standard Parallels: 26˚N and 30˚N; Central Meridian 84˚W.

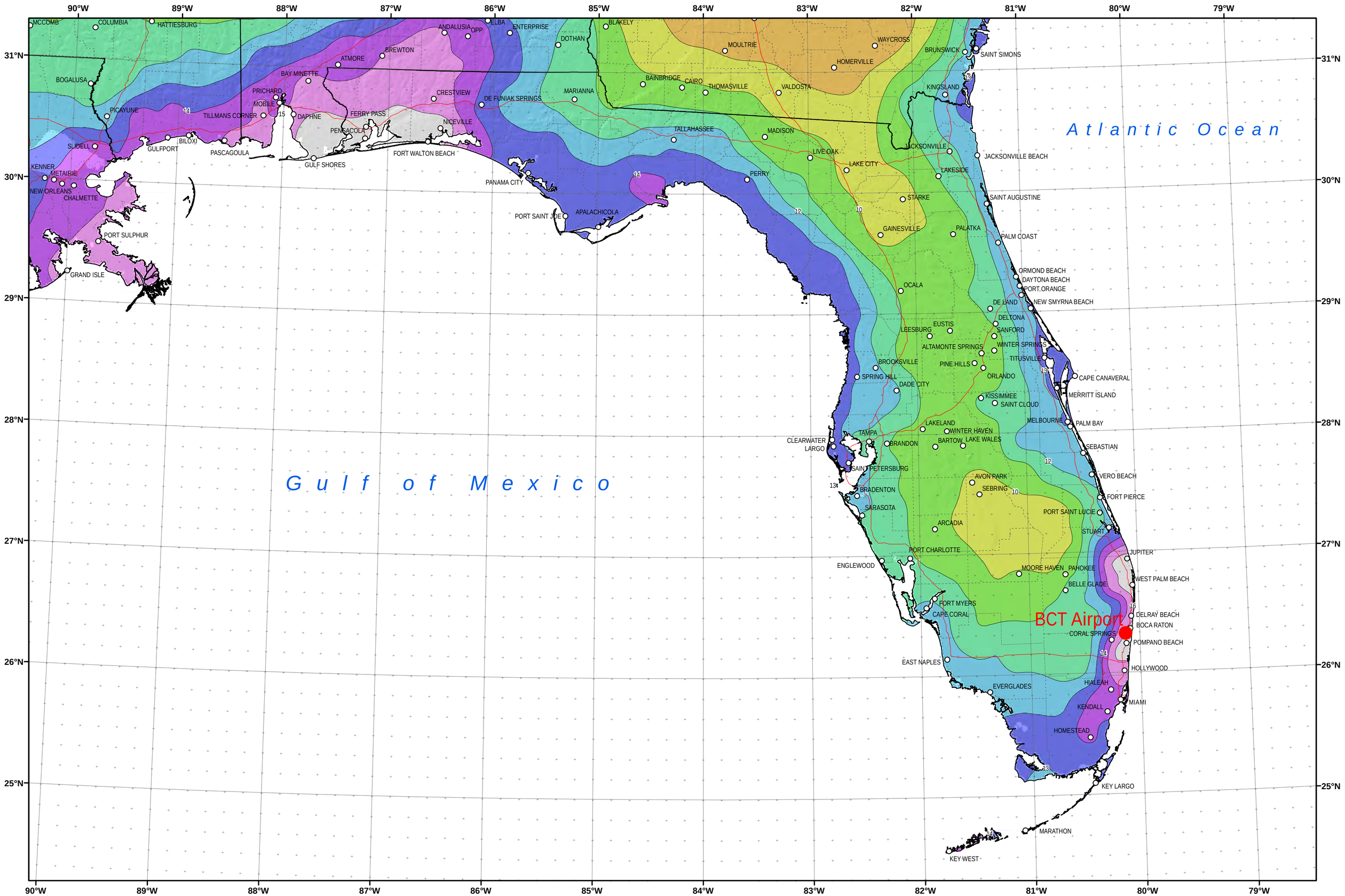
5.24 - 5.50	7.01 - 7.50	9.01 - 9.50	11.01 - 11.50
5.51 - 6.00	7.51 - 8.00	9.51 - 10.00	11.51 - 12.00
6.01 - 6.50	8.01 - 8.50	10.01 - 10.50	12.01 - 12.35
6.51 - 7.00	8.51 - 9.00	10.51 - 11.00	

Legend based on entire Volume 9 project area.

BCT Geolocation: 26.379774° N, -80.107705° E

Exhibit I-4

Rainfall Data: 100YR-24HR



NOAA Atlas 14, Volume 9, Version 2
Southeastern States

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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE
OFFICE OF HYDROLOGIC DEVELOPMENT
HYDROMETEOROLOGICAL DESIGN STUDIES CENTER
April 2013

0 5 10 20 30 40 50 Miles

0 10 20 40 60 80 100 Kilometers

FLORIDA

Isopluvials of 100-year 24-hour precipitation in inches

SCALE 1:2,250,000

Projection: Lambert Conformal Conic; Datum NAD83; Standard Parallels: 26˚N and 30˚N; Central Meridian 84˚W.

- 6.60 - 7.00
- 7.01 - 8.00
- 8.01 - 9.00
- 9.01 - 10.00
- 10.01 - 11.00
- 11.01 - 12.00
- 12.01 - 13.00
- 13.01 - 14.00
- 14.01 - 15.00
- 15.01 - 16.00
- 16.01 - 16.98

Legend based on entire Volume 9 project area.

BCT Geolocation: 26.379774° N, -80.107705° E

Exhibit J

Water Quality

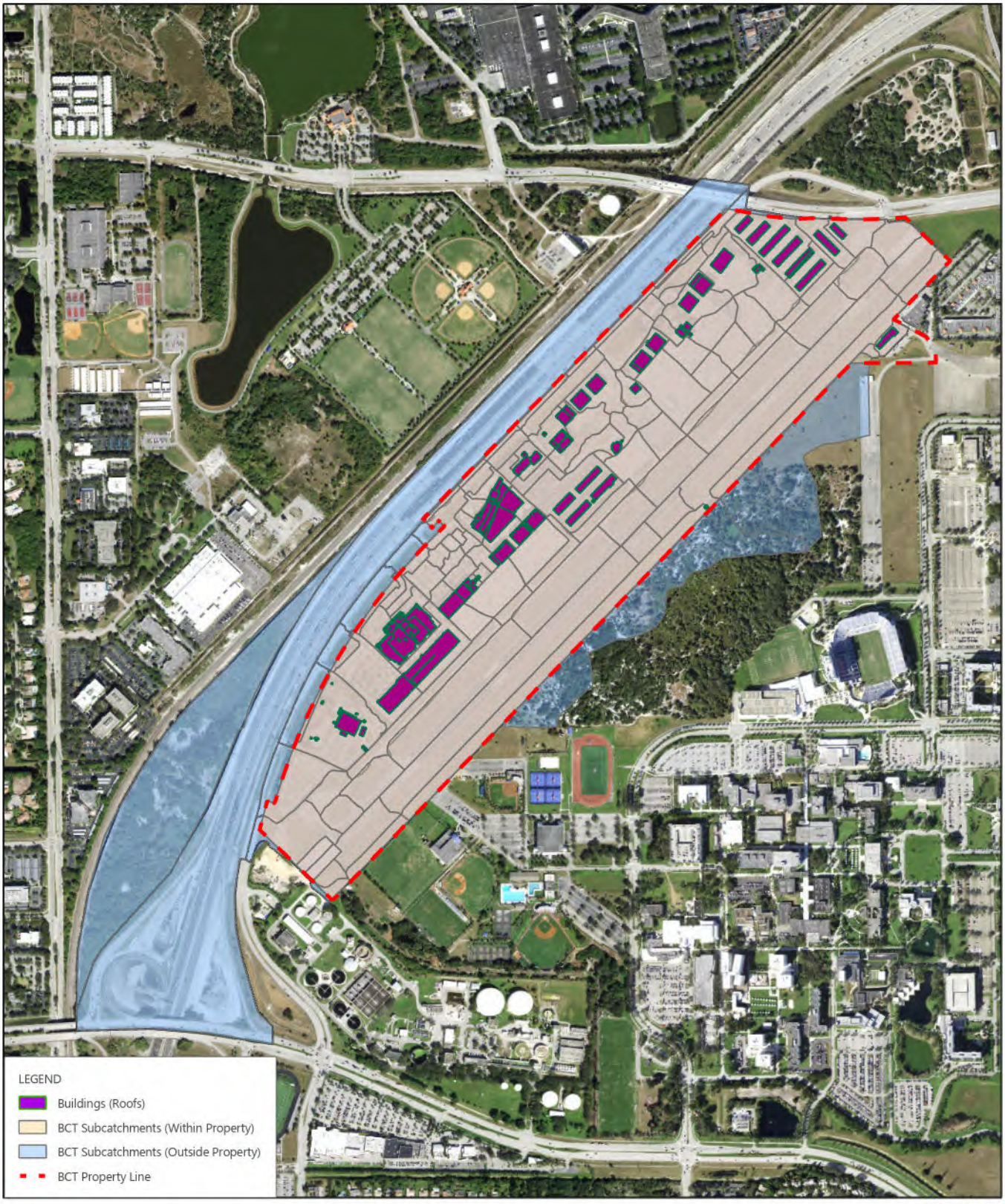

EXHIBIT J
WATER QUALITY

Exhibit K

FederalEmergency Management Agency (FEMA) – Flood Insurance Rate Maps (FIRM)

NOTES TO USERS

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

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

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

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

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

The **projection** used in the preparation of this map was Transverse Mercator State Plane Florida East FIPS Zone 0901 Feet. The **horizontal datum** was NAD83 HARN, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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

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

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

Base map information shown on this FIRM was provided in digital format by Palm Beach County. The original orthophotographic base imagery was provided in color with a one-foot pixel resolution at a scale of 1" = 200' from photography flown November 2010 - January 2011.

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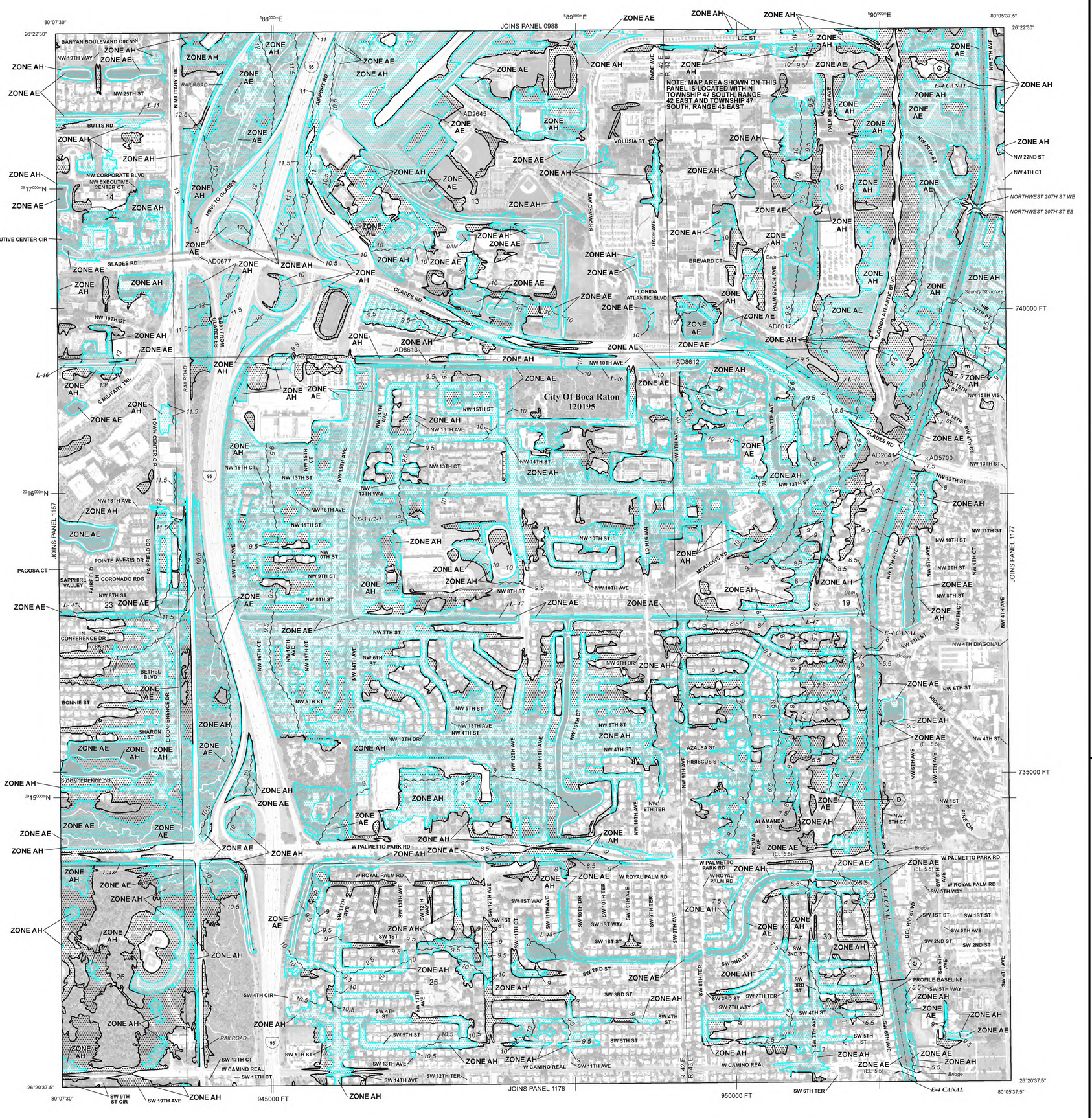
Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which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

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.



LEGEND

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

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

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

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

OTHER FLOOD AREAS

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

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4275000mE — 1000-meter Universal Transverse Mercator grid ticks, zone 17
- 6000000 FT — 5000-foot grid values: Florida State Plane coordinate system, East Zone (FIPSZONE = 901), Transverse Mercator projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories List on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
OCTOBER 5, 2017

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

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

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

MAP SCALE 1" = 500'

250 0 250 500 750 1,000 FEET
150 0 150 300 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1176F

FIRM

FLOOD INSURANCE RATE MAP

PALM BEACH COUNTY, FLORIDA

AND INCORPORATED AREAS

PANEL 1176 OF 1200

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BOCA RATON, CITY OF	120195	1176	F

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

MAP NUMBER
12099C1176F

EFFECTIVE DATE
OCTOBER 5, 2017

Federal Emergency Management Agency

NOTES TO USERS

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

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

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

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

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

The **projection** used in the preparation of this map was Transverse Mercator State Plane Florida East FIPS Zone 0901 Feet. The **horizontal datum** was NAD83 HARN, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
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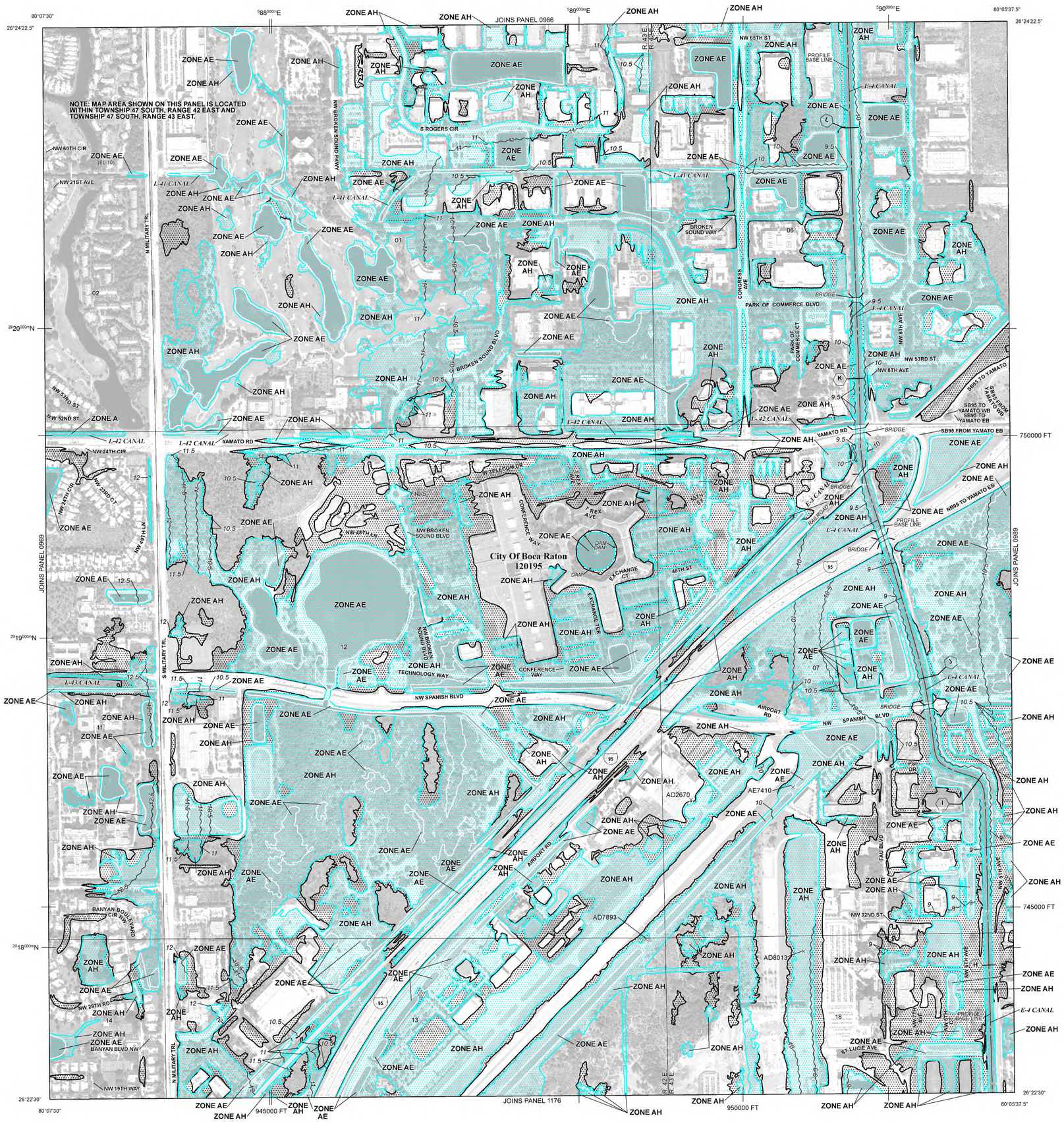

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513 (EL 987) Base Flood Elevation line and value; elevation in feet* / Base Flood Elevation value where uniform within zone; elevation in feet*
* Referenced to the North American Vertical Datum of 1988
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97°07'30", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
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M1.5 River Mile

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OCTOBER 5, 2017

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250 0 250 500 750 1,000 FEET
150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0988F

FIRM

FLOOD INSURANCE RATE MAP

PALM BEACH COUNTY, FLORIDA

AND INCORPORATED AREAS

PANEL 988 OF 1200

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BOCA RATON, CITY OF	120195	0988	F

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MAP NUMBER
12099C0988F

EFFECTIVE DATE
OCTOBER 5, 2017

Federal Emergency Management Agency

Exhibit L

Permitting Matrix

EXHIBIT L PERMITTING MATRIX / REGULATORY CONSIDERATIONS

AGENCY	PERMIT TYPE	PERMIT #	EXPIRATION DATE	NOTES/REMARKS
FEDERAL				
EPA	NPDES			Administered by FDEP (refer to FDEP below).
FAA				AC 150/5320-5D: Airport Drainage Design AC 150/5300-33B: Hazardous Wildlife Attractants on or near Airports.
STATE				
FDEP	NPDES			Palm Beach County has entered an inter-local agreement with the City of Boca Raton to oversee joint activities under the county-wide MS4 NPDES Permit.
SFWMD	ERP	50-01365-S	6/5/2023	Environmental Resource Permit
LOCAL				
PBC				Stormwater Pollution Prevention Ordinance
BRAA				BRAA Rules and Regulations
LWDD				BCT is located within the Hillsboro basin of LWDD, however, LWDD defers to the SFWMD for permitting criteria.

Exhibit M

Existing Condition Inundation Areas

Exhibit M-1 BCT Inundation Areas (5 Year 24-H Storm)

Exhibit M-2 BCT Inundation Areas (25 Year 72-H Storm)

Exhibit M-3 BCT Inundation Areas (100 Year 72-H Storm)

Exhibit M-1

BCT Inundation Areas (5 Year 24-H Storm)

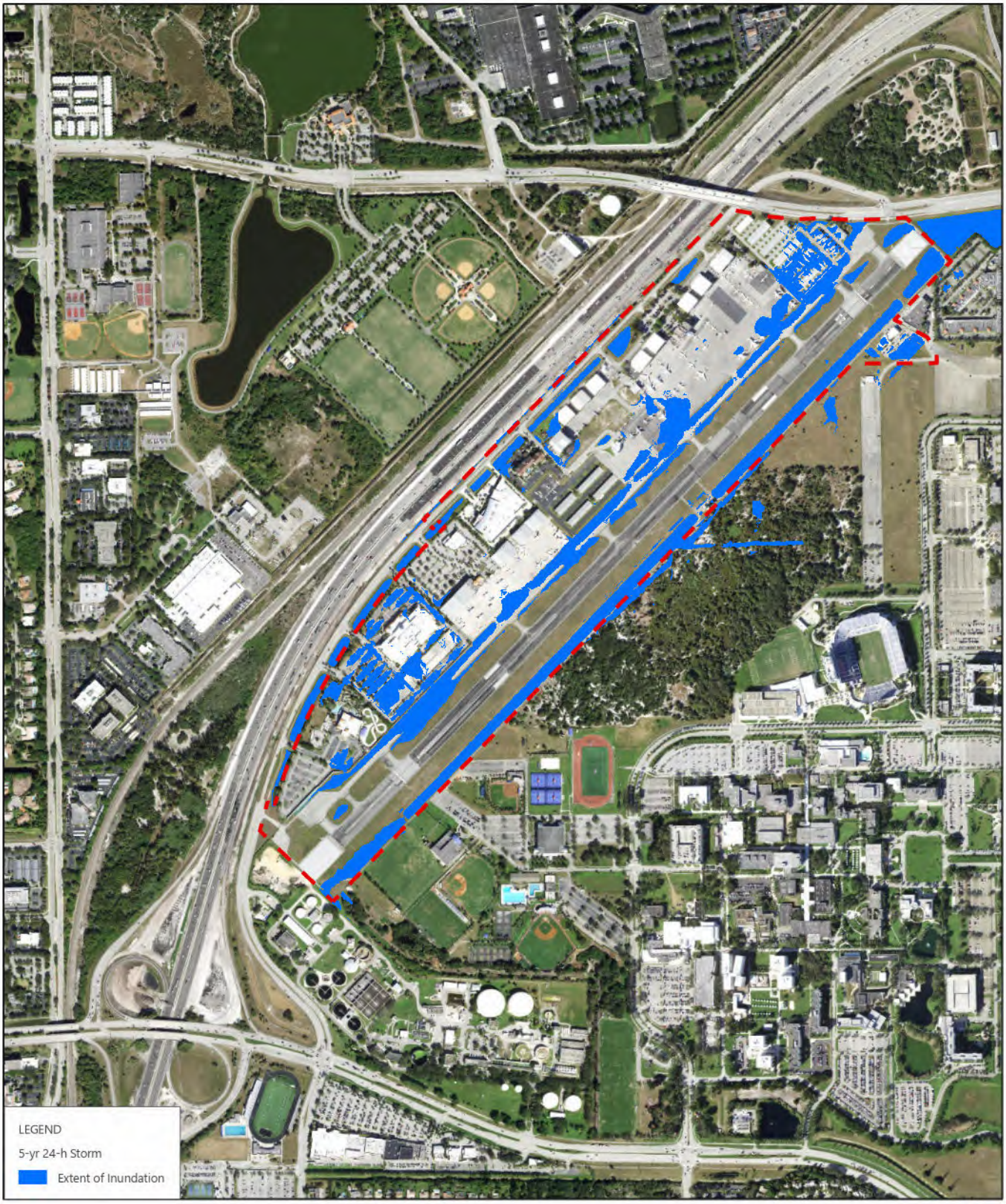


EXHIBIT M-1
BCT INUNDATION AREAS (5 YEAR 24-H STORM)

Exhibit M-2

BCT Inundation Areas (25 Year 72-H Storm)

EXHIBIT M-2

BCT INUNDATION AREAS (25 YEAR 72-H STORM)

Exhibit M-3

BCT Inundation Areas (100 Year 72-H Storm)

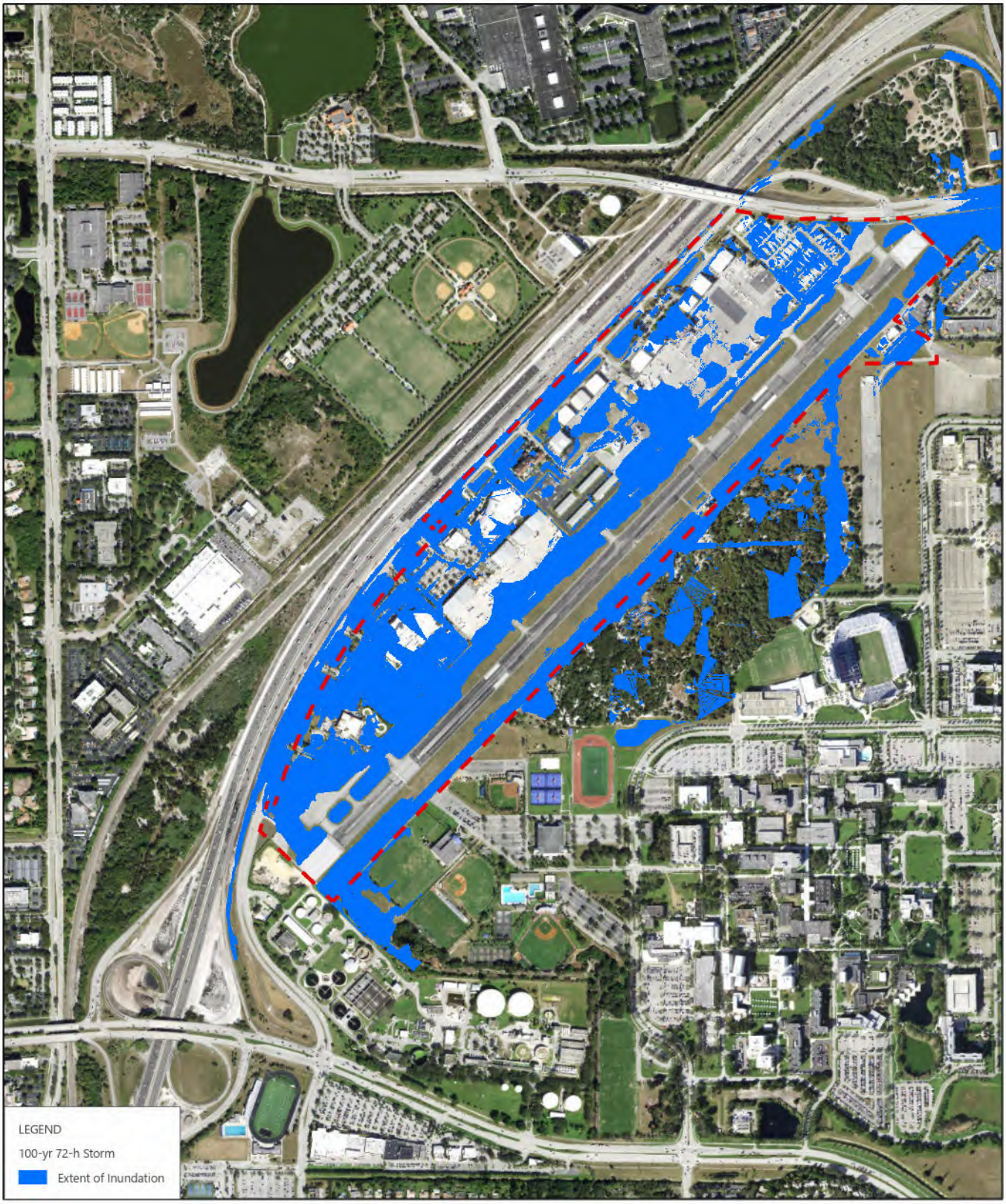


EXHIBIT M-3

BCT INUNDATION AREAS (100 YEAR 72-H STORM)

Exhibit N

Document Control Tracking Form

BCT Stormwater Master Plan Document Received List

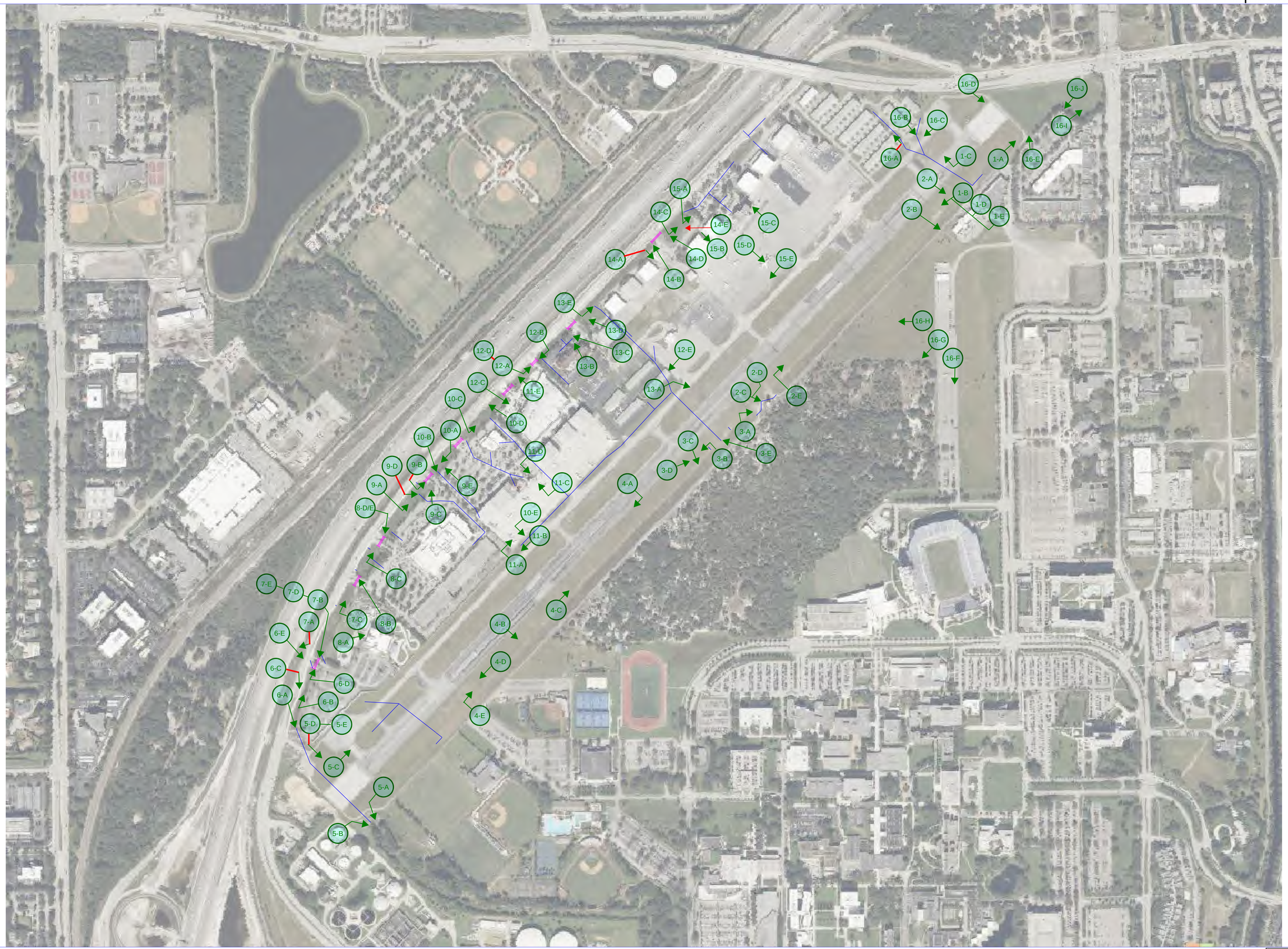
November 2023

#	Received Date	Name of Document	Company/ Consultant	# of Pages	Description	Issued Date (latest version)	Received / Pending	Remarks
1	7/25/2022	BCT Stormwater Pollution Prevention Plan	BCT Authority	27	BCT Specific SWPPP	2/22/2021	Received	PDF Report
2	7/25/2022	Underground Containment Feasibility Study	American Infrastructure Development, Inc.	49	Analysis of utility underground containment systems to store volume under pavement	N/A	Received	PDF Report
3	7/25/2022	FL PalmBeachCoastal 2007 Lidar	N/A	N/A	USGS LiDAR BCT Subset	2007	Received	LAS Files
4	7/25/2022	FAU Research and Development Park Conceptual Plans	ADA Engineering	N/A	CAD Files for Conceptual Plan of FAU Research Parcel	6/1/2012	Received	CAD Files (DWG)
5	7/25/2022	BRAA EMAS Geotechnical Testing Results	Tierra / CH2M	N/A	Multiple files containing Geotech Testing Results	2017	Received	PDF Files
6	7/25/2022	BRAA Drainage Improvements	Ricondo / American Infrastructure Development, Inc	N/A	Stormwater Improvements adjacent to EMAS Contains PDF Reports and Drawings related to project	2020	Received	PDF Files
7	7/25/2022	BCT Airport Layout Plan	Ricondo	N/A	BCT Airport Layout Plan. Contains 2018 Draft Plan and 2022 Plan	6/2/2022	Received	2018 contains complete ALP Set. 2022 Contains only existing layout figure
8	7/25/2022	Master Drainage System Conceptual Modifications	CH2M Hill	N/A	Master Drainage System Plan	Feb-2006	Received	PDF Files
9	8/18/2022	FAU Research Park Development Potential Required Stormwater Management Memo	ADA Engineering	7	Analysis of water quality treatment alternatives uses for the FAU Research Park Parcel	3/15/2011	Received	PDF Report
10	8/18/2022	Administration Building Stormwater System Improvements	ADA Engineering	13	Design Drawings for Admin Building Improvements	10/5/2012	Received	PDF Drawing Set
11	11/28/2022	BCT Airport Layout Plan	N/A	N/A	PDF and CAD Files of BCT ALP	2021-2022	Received	
12	11/28/2022	BRAA Airport Road Improvements	American Infrastructure Development, Inc.	138	PDF Drawings of BCT Airport Road Improvements	May 2022	Received	PDF Record Drawing Set for Airport Road Improvements to BCT
13	11/28/2022	Drainage	American Infrastructure Development, Inc.	16	PDF Drawing and CAD files for Storm Drainage System Improvements Culvert Extensions.	2/4/2020	Received	PDF Drawing Set of Culvert Improvements on the South Side of the Runway
14	11/28/2022	GIS Survey Data	N/A	N/A	CAD Files for COGO Points	5/3/2021	Received	CAD Files and Excel File for COGO Points
15	11/28/2022	Master Plan Mapping	N/A	N/A	CAD Files Containing Contours (2-feet), DTM, PLN, and Aerial	2021-2022	Received	Contours provided at 2-ft intervals
16	11/28/2022	SW Infrastructure Design	ADA Engineering	13	PDF Drawing Set of Stormwater Infrastructure Improvements for BCT Admin Bldg.	10/5/2012	Received	PDF Drawing Set
17	11/28/2022	Topo	N/A	N/A	CAD Files of BCT Topo Survey showing 2-feet Contours	N/A	Received	CAD Drawing Files of 2-ft Contours
18	12/9/2022	Permits	N/A	N/A	LAS LiDAR Files for 2007 LiDAR Data.	2007	Received	Duplicate of Document Log #3
19	12/9/2022	I-95 Drainage System	FDOT4	N/A	As-builts for I-95 drainage surrounding BCT airport	6/1/1991	Received	PDF as-builts
20	12/9/2022	June 4th 2022 Rain Event Photo Packet	BCT Authority	50	Photo packet of rain event photos (6/4/2022)	6/4/2022	Received	Photos
21	1/30/2023	SWI Addendum/June 2006 Study	BCT Authority	28	Information associated with control structures.	11/13/2012	Received	PDF Report
22	2/10/2023	Control Structure Details	BCT Authority	42	Conformed Plans; SWI_Addendum2; Combined drawings BCT	11/13/2012	Received	PDF Reports
23	2/15/2023	AIRPORT ROAD 20SHEET SET-As BUILT-Civil-Drainage	Ricondo	13	Drainage plan view as-builts	1/20/2021	Received	PDF as-builts
24	2/28/2023	City Furnishure and Ashely As-builts	KAMM Consulting	250	Construction set	8/16/2010	Received	PDF as-builts
25	7/18/2023	2023 Survey Results	Brown and Phillips Inc. Professional Surveying Services	Many	Site visist jpg images. Sid files. Stormwater master plan specific purpose survey PDF	June 2023	Received	JPG, SID, PDF
26	8/21/2023	CONSTRUCTION PLANS FOR WIDEN TAXIWAYS F AND P4 RELOCATION OF TAXIWAYS B AND C	Ricondo	54	PDF plans for TW widening	3/3/2021	Recieved	PDF plans
27	8/21/2023	BOCA RATON AIRPORT RUNWAY 23 DEPARTURE END EMAS RECORD DRAWINGS	Ricondo	63	PDF record drawings	3/26/2018	Recieved	PDF record drawings
28	8/21/2023	Customs and Border Protection Facility Bid Documents	Ricondo	154	PDF record drawings	3/6/2016	Recieved	PDF drawings
29	8/22/2023	Atlantic Aviation BCT FBO Facilities and Site Redevelopment Projec	Kimley Horm	68	RFI response with attachments	8/9/2023	Recieved	PDF RFI response with attachments
30	8/22/2023	Existing Conditions and Demo, Fire Access, Landscape, Site, Utility Plans	Boca Raton Airport Authority	N/A	Zip File		Recieved	5 PDF documents
31	8/22/2023	BCT TW Improvements	Ricondo	N/A			Received	3 PDFs and a folder
32	8/22/2023	Taxiways P5, C, P9 and P10 Widening, and Papi Replacement	Ricondo	36	PDF	3/9/2020	Received	MASTER_T-W_PAPI_drwgs_3_9_2020
33	8/25/2023	Property Roof Shape Files	Ricondo	N/A	Shape files		Received	

Print Date: 10/5/2023

Exhibit O

Airport Site Visit Pictures (2023)



6FEB2023 / LLB

Site Visit Conducted: 1/20/2023
Prepared on: 2/3/2023
Prepared by: Peter Sahwell, E.I.

Picture 1-A

Picture 1-B

Picture 1-C

Picture 1-D

Picture 1-E

Picture 10-A

Picture 10-B

Picture 10-C

Picture 10-D

Picture 10-E

Picture 11-A

Picture 11-B

GATE
4W
DANGER
FLAMMABLE MATERIAL
NO SMOKING OR
OPEN FLAMES
DANGER
NO SMOKING
WITHIN 50 FEET
RESTRICTED AREA
MONITORED
BY VIDEO
CAMERA

Picture 11-C

Picture 11-D

Picture 11-E

Picture 12-A

Picture 12-B

Picture 12-C

Picture 12-D

Picture 12-E

Picture 13-A

Picture 13-B

Picture 13-C

Picture 13-D

Picture 13-E

Picture 14-A

Picture 14-B

Picture 14-C

Picture 14-D

Picture 14-E

Picture 15-A

Picture 15-B

Picture 15-C

Picture 15-D

Picture 15-E

Picture 16-A

Picture 16-B

Picture 16-C

Picture 16-D

Picture 16-E

Picture 16-F

Picture 16-G

Picture 16-H

Picture 16-I

Picture 16-J

Picture 2-A

Picture 2-B

Picture 2-C

Picture 2-D

Picture 2-E

Picture 3-A

Picture 3-B

Picture 3-C

Picture 3-D

Picture 3-E

Picture 4-A

Picture 4-B

Picture 4-C

Picture 4-D

Picture 4-E

Picture 5-A

Picture 5-B

Picture 5-C

Picture 5-D

Picture 5-E

Picture 6-A

Picture 6-B

Picture 6-C

Picture 6-D

Picture 6-E

Picture 7-A

Picture 7-B

Picture 7-C

Picture 7-D

Picture 7-E

Picture 8-A

Picture 8-B

Picture 8-C

Picture 8-D

Picture 8-E

Picture 9-A

Picture 9-B

Picture 9-C

Picture 9-D

Picture 9-E

Stormwater Master Plan (Existing Conditions) – Supplemental Tables

Table 1 BCT Sub-Catchment Areas
Table 2 BCT Drainage Network
Table 3 BCT Model Output Files
Table 4 Water Quantity Summary of Results
Table 5 Water Quality Calculations
Table 6 Water Quality Summary of Results

Table 1

BCT Sub-Catchment Areas

Table 1

Boca Raton Airport Sub-catchment Areas

November 2023

Sub-Catchment ID	Area (Acres)	% Imperviousness
FAU_N	16.23	4.7
FAU_S	16.29	0.0
S2	1.28	10.4
S3	2.11	44.4
S4	2.03	46.4
S5	1.91	49.4
S6	1.91	51.6
S8	1.76	58.0
S9	0.91	40.3
S10	1.67	67.8
S11	4.89	65.0
S12	2.89	46.0
S13	0.56	67.3
S14	2.55	84.5
S15	1.02	59.5
S16	1.82	99.4
S17	0.54	99.7
S18	2.53	90.5
S19	0.57	80.7
S20	5.97	40.8
S21	1.23	56.4
S22	1.26	100.0
S23	1.14	24.2
S24	0.81	80.7
S25	0.21	0.0
S26	4.98	14.6
S27	10.83	37.9
S29	1.68	87.1
S30	2.22	89.3
S31	0.67	52.2
S32	0.96	91.4
S33	0.18	97.8
S34	2.70	78.9
S35_1	2.58	52.4
S35_2	1.45	54.6
S36	1.55	62.7
S37	2.02	24.2
S38	1.29	33.2
S39	5.65	67.1
S41	0.88	74.9
S42	1.10	76.6
S43	0.42	81.5
S44	0.90	21.9
S46	5.45	44.2
S47	1.23	40.2
S48	2.59	99.9
S49	0.46	100.0
S50	0.27	56.1
S51	0.64	81.4
S52	0.33	92.9
S53	0.18	95.0
S54	0.28	90.4
S55	1.98	41.6
S56	0.50	82.8
S57	0.83	80.3
S58	0.50	88.5
S59	2.55	99.7
S60	0.73	60.8
S61	1.19	99.0
S62	1.04	88.9
S63	1.10	84.0
S64	1.40	49.7
S65	0.49	81.4
S66	0.48	81.6
S67	2.03	96.0
S68	3.80	85.5
S69	2.58	87.5
S70	5.23	82.8
S71	2.22	40.0
S72	1.49	39.0
S73	7.57	39.5
S74	7.60	10.7
S76	2.39	45.3
S77	3.34	38.9
S78	1.33	54.2
S79	1.41	53.9
S80	1.16	11.0
S81	0.57	10.8
S83	4.16	43.5
S84_1	2.32	34.3
S84_3	6.89	68.4
S87	0.46	81.3
S90	1.06	89.2
S91	0.47	100.0
S92	0.23	100.0
S93	0.42	100.0
S161	1.84	100.0
S162	1.50	100.0

Table 1

Boca Raton Airport Sub-catchment Areas

November 2023

Sub-Catchment ID	Area (Acres)	% Imperviousness
S221	1.39	92.3
S222	0.97	59.4
S223	4.06	100.0
S224	1.30	99.8
S231	3.13	95.5
S232	0.41	22.6
S233	0.08	92.5
S234	0.23	92.3
S235	0.42	90.4
S236	0.59	66.3
S237	2.45	42.5
S281	3.07	40.7
S282	2.30	46.2
S451	1.34	93.0
S452	1.04	90.7
S453	0.67	27.7
S751	1.5671	41.002
S752	1.1899	37.884
S753	12.5451	37.326
S821	0.6979	97.607
S822	0.6498	97.316
S843	4.8015	70.165
S881	1.7675	88.454
S882	1.1867	80.751
S883	0.4617	76.622
S891	2.7655	31.878
S892	0.6816	10.165
S941	0.2647	100
S942	0.1983	100
S943	0.2831	99.506
S_DryPond	31.7291	0
S_I95	80.494	54.1
Total	**367.15**	**NA**
% Imperviousness	**NA**	**47.4**

Table 2

BCT Drainage Network

Table 2

BOCA RATON AIRPORT DRAINAGE NETWORK

November 2023

ELEMENT ID	U/S NODE	U/S INVERT	D/S NODE	D/S INVERT	ELEMENT	LENGTH (FT)	ELEMENT TYPE	GEOM1 (V-IN)	GEOM2 (H-IN)	SIDE SLOPE (L)	SIDE SLOPE (R)	BARRELS	REMARKS
C1	J91	3.70	J87	1.20	Pipe_RCP	274.72	CIRCULAR	24				1	
C2	J146	3.24	J87	1.20	Pipe_RCP	242.36	CIRCULAR	24				1	
C3	J87	1.20	J150	-2.56	Pipe_RCP	398.74	CIRCULAR	36				1	
C5	J151	-1.83	J150	-2.56	Pipe_RCP	63.35	CIRCULAR	15				1	
C6_4	J19	3.47	J8	2.24	Pipe_RCP	73.89	CIRCULAR	48				1	
C7_4	J20	3.54	J9	2.41	Pipe_RCP	76.24	CIRCULAR	48				1	
C8	J29	-4.65	J28	-4.43	Pipe_RCP	92.79	CIRCULAR	30				1	
C9_3	J34	4.38	J23	4.37	Pipe_RCP	80.83	CIRCULAR	48				1	
C10_3	J33	4.29	J22	4.47	Pipe_RCP	81.40	CIRCULAR	48				1	
C11_3	J24	4.36	J21	4.32	Pipe_RCP	80.77	CIRCULAR	48				1	
C15	J10	1.17	J61	2.28	Swale	442.44	IRREGULAR					1	X-SECTION (LiDAR)
C16	J53	1.16	J52	-0.90	Pipe_RCP	96.59	CIRCULAR	15				1	
C17	J30	0.01	J31	0.01	Pipe_RCP	17.97	CIRCULAR	15				1	
C18_3	J38	4.49	J35	4.44	Pipe_RCP	80.50	CIRCULAR	48				1	
C19_3	J44	4.44	J36	4.54	Pipe_RCP	80.70	CIRCULAR	48				1	
C20_3	J45	4.48	J37	4.55	Pipe_RCP	80.94	CIRCULAR	48				1	
C21	J62	-1.73	J49	-1.73	Pipe_RCP	75.77	CIRCULAR	30				1	
C22	J63	-1.89	J62	-1.73	Pipe_RCP	99.48	CIRCULAR	30				1	
C23	J64	-1.60	J63	-1.89	Pipe_RCP	89.56	CIRCULAR	30				1	
C24	J67	-1.63	J64	-1.60	Pipe_RCP	179.78	CIRCULAR	30				1	
C25	J65	-1.13	J67	-1.63	Pipe_RCP	136.44	CIRCULAR	30				1	
C26	J66	-1.30	J65	-1.13	Pipe_RCP	128.97	CIRCULAR	30				1	
C27	J48	0.50	J47	0.22	Pipe_RCP	15.02	CIRCULAR	15				1	
C28	J27	-0.43	J26	-0.40	Pipe_RCP	14.61	CIRCULAR	15				1	
C29	J18	0.11	J17	-0.04	Pipe_RCP	7.93	CIRCULAR	15				1	
C30	J50	-2.56	J51	0.13	Pipe_RCP	21.93	CIRCULAR	15				1	
C31	J12	-2.19	J13	-2.68	Pipe_RCP	54.69	CIRCULAR	42				1	
C32_1	J6	0.74	J7	1.21	Pipe_RCP	55.45	CIRCULAR	60				1	
C34_2	J5	2.25	J1	0.98	Pipe_RCP	269.45	CIRCULAR	72				1	
C35_1	J1	0.98	J3	0.70	Pipe_RCP	607.90	CIRCULAR	72				1	
C36	J79	5.34	J78	4.92	Pipe_RCP	117.62	CIRCULAR	24				1	
C37	J80	6.44	J79	5.34	Pipe_RCP	133.55	CIRCULAR	18				1	
C38	J81	6.58	J80	6.44	Pipe_RCP	132.45	CIRCULAR	15				1	
C40_3	J56	4.60	J46	4.45	Pipe_RCP	81.15	CIRCULAR	48				1	
C41_3	J57	4.57	J54	4.62	Pipe_RCP	81.29	CIRCULAR	48				1	
C42_3	J58	4.56	J55	4.52	Pipe_RCP	80.88	CIRCULAR	48				1	
C43	J90	5.33	J76	5.09	Pipe_RCP	133.34	CIRCULAR	30				1	
C44	J92	5.47	J90	5.33	Pipe_RCP	140.82	CIRCULAR	30				1	

Table 2

BOCA RATON AIRPORT DRAINAGE NETWORK

November 2023

ELEMENT ID	U/S NODE	U/S INVERT	D/S NODE	D/S INVERT	ELEMENT	LENGTH (FT)	ELEMENT TYPE	GEOM1 (V-IN)	GEOM2 (H-IN)	SIDE SLOPE (L)	SIDE SLOPE (R)	BARRELS	REMARKS
C45	J93	5.76	J92	5.47	Pipe_RCP	142.21	CIRCULAR	24				1	
C49_3	J73	4.62	J70	4.70	Pipe_RCP	78.59	CIRCULAR	48				1	
C50_3	J74	4.59	J71	4.62	Pipe_RCP	78.35	CIRCULAR	48				1	
C51_3	J75	4.54	J72	4.52	Pipe_RCP	78.24	CIRCULAR	48				1	
C52	J84	4.68	J83	4.82	Pipe_RCP	248.31	CIRCULAR	30				1	
C53	J86	4.91	J84	4.68	Pipe_RCP	135.94	CIRCULAR	24				1	
C54	J89	4.46	J86	4.91	Pipe_RCP	414.53	CIRCULAR	24				1	
C57	J96	4.53	J89	4.46	Pipe_RCP	491.51	CIRCULAR	30				1	
C58	J203	8.78	J204	5.91	Trench_Drain	192.88	RECT_OPEN	19	12			1	
C59	J89	4.46	J97	4.48	Pipe_RCP	380.54	CIRCULAR	30				1	
C60	J97	4.48	J98	2.59	Pipe_RCP	127.63	CIRCULAR	36				1	
C61	J98	2.59	J99	2.07	Pipe_RCP	372.74	CIRCULAR	36				1	
C62	J99	2.07	J101	2.20	Pipe_RCP	176.47	CIRCULAR	36				1	
C63_3	J124	4.27	J121	4.34	Pipe_RCP	98.09	CIRCULAR	48				1	
C64_3	J123	4.27	J95	4.39	Pipe_RCP	97.95	CIRCULAR	48				1	
C65_3	J122	4.30	J94	4.39	Pipe_RCP	97.74	CIRCULAR	48				1	
C66_3	J130	5.34	J127	5.26	Pipe_RCP	51.44	CIRCULAR	48				1	
C67_3	J129	5.28	J126	5.30	Pipe_RCP	51.51	CIRCULAR	48				1	
C68_3	J128	5.39	J125	5.29	Pipe_RCP	51.59	CIRCULAR	48				1	
C69_3	J143	4.92	J140	4.94	Pipe_RCP	77.70	CIRCULAR	48				1	
C70_3	J142	5.00	J132	4.92	Pipe_RCP	77.81	CIRCULAR	48				1	
C71_3	J141	4.90	J131	4.85	Pipe_RCP	77.77	CIRCULAR	48				1	
C72	J137	3.21	J136	5.59	Pipe_RCP	56.67	CIRCULAR	18				1	
C73	J204	5.91	J207	5.60	Pipe_RCP	55.82	CIRCULAR	15				1	
C74	J207	5.60	J208	4.45	Pipe_RCP	294.99	CIRCULAR	24				1	
C75	J135	2.52	J134	3.10	Pipe_RCP	211.14	CIRCULAR	15				1	
C76	J134	3.10	J133	-0.75	Pipe_RCP	56.38	CIRCULAR	18				1	
C77	J100	4.06	J99	2.07	Pipe_RCP	85.00	CIRCULAR	24				1	
C78	J101	2.20	J104	3.21	Pipe_RCP	503.64	CIRCULAR	48				1	
C79	J101	2.20	J107	1.73	Pipe_RCP	76.01	CIRCULAR	48				1	
C80	J107	1.73	J108	1.85	Pipe_RCP	175.36	CIRCULAR	48				1	
C81	J108	1.85	J114	1.91	Pipe_RCP	285.81	CIRCULAR	48				1	
C82	J114	1.91	J113	1.91	Pipe_RCP	260.98	CIRCULAR	48				1	
C83	J113	1.91	J115	2.13	Pipe_RCP	62.80	CIRCULAR	48				1	
C84	J110	4.13	J108	1.85	Pipe_RCP	119.34	CIRCULAR	24				1	
C85	J206	6.30	J227	6.20	Pipe_RCP	162.59	CIRCULAR	24				1	
C86	J105	5.13	J106	5.13	Pipe_RCP	25.07	CIRCULAR	18				1	
C87	J103	4.37	J102	5.13	Pipe_RCP	26.38	CIRCULAR	18				1	

Table 2

BOCA RATON AIRPORT DRAINAGE NETWORK

November 2023

ELEMENT ID	U/S NODE	U/S INVERT	D/S NODE	D/S INVERT	ELEMENT	LENGTH (FT)	ELEMENT TYPE	GEOM1 (V-IN)	GEOM2 (H-IN)	SIDE SLOPE (L)	SIDE SLOPE (R)	BARRELS	REMARKS
C88	J117	4.81	J116	4.95	Pipe_RCP	49.76	CIRCULAR	24				1	
C89	J118	4.44	J117	4.81	Pipe_RCP	64.53	CIRCULAR	24				1	
C90	J119	4.54	J118	4.44	Pipe_RCP	90.73	CIRCULAR	24				1	
C91	J120	4.89	J119	4.54	Pipe_RCP	53.60	CIRCULAR	24				1	
C92_3	J152	4.94	J147	4.96	Pipe_RCP	100.19	CIRCULAR	48				1	
C93_3	J149	4.87	J145	4.87	Pipe_RCP	100.15	CIRCULAR	48				1	
C94_3	J148	5.07	J144	4.86	Pipe_RCP	100.14	CIRCULAR	48				1	
C95	J159	2.48	J158	3.17	Pipe_RCP	108.07	CIRCULAR	60				1	
C96	J160	3.02	J159	2.48	Pipe_RCP	123.91	CIRCULAR	60				1	
C97	J161	2.84	J160	3.02	Pipe_RCP	105.94	CIRCULAR	48				1	
C98	J162	4.72	J161	2.84	Pipe_RCP	67.04	CIRCULAR	18				1	
C100	J182	4.08	J160	3.02	Pipe_RCP	30.48	CIRCULAR	30				1	
C101	J164	4.33	J182	4.08	Pipe_RCP	153.32	CIRCULAR	30				1	
C102	J165	4.76	J164	4.33	Pipe_RCP	102.49	CIRCULAR	30				1	
C103	J166	5.88	J167	5.90	Pipe_RCP	50.85	CIRCULAR	12				1	
C104	J167	5.90	J168	6.00	Pipe_RCP	18.85	CIRCULAR	18				1	
C105	J171	5.28	J170	5.13	Pipe_RCP	98.02	CIRCULAR	24				1	
C106	J169	7.90	J167	5.90	Pipe_RCP	175.94	CIRCULAR	15				1	
C107	J172	5.63	J173	4.75	Pipe_RCP	130.26	CIRCULAR	18				1	
C108	J173	4.75	J174	3.82	Pipe_RCP	126.22	CIRCULAR	18				1	
C109	J174	3.82	J175	3.22	Pipe_RCP	102.73	CIRCULAR	24				1	
C110	J175	3.22	J176	2.16	Pipe_RCP	142.12	CIRCULAR	30				1	
C111	J177	3.46	J176	2.16	Pipe_RCP	156.04	CIRCULAR	24				1	
C112	J178	4.50	J177	3.46	Pipe_RCP	125.79	CIRCULAR	18				1	
C113	J176	2.16	J179	-0.81	Pipe_RCP	363.37	CIRCULAR	36				1	
C114	J179	-0.81	J180	-2.61	Pipe_RCP	45.75	CIRCULAR	36				1	
C115	SA03	5.23	J180	-2.61	Pipe_RCP	96.18	CIRCULAR	15				1	
C116	J60	0.70	OF1	1.02	OutCanal	100.00	TRAPEZOIDAL	102	300	1:8	1:8	1	
C122	J16	4.12	J14	4.28	Swale	182.88	IRREGULAR					1	X-SECTION (LiDAR)
C123	J14	4.28	J15	4.14	Swale	360.98	IRREGULAR					1	X-SECTION (LiDAR)
C125	J15	4.14	J11	4.64	Swale	37.83	IRREGULAR					1	X-SECTION (LiDAR)
C131	J32	4.44	J39	4.74	Swale	112.11	IRREGULAR					1	X-SECTION (LiDAR)
C132	J39	4.74	J25	4.29	Swale	135.27	IRREGULAR					1	X-SECTION (LiDAR)
C133	Storage195	3.22	J6	0.74	Pipe_RCP	68.81	CIRCULAR	60				1	
C138_2	J4	2.70	J59	1.42	Pipe_RCP	274.51	CIRCULAR	72				1	
C139_1	J59	1.42	J2	0.81	Pipe_RCP	611.28	CIRCULAR	72				1	
C145	J41	4.29	J40	4.29	Swale	129.46	IRREGULAR					1	X-SECTION (LiDAR)
C154	J43	4.29	J42	4.29	Swale	90.01	IRREGULAR					1	X-SECTION (LiDAR)

Table 2

BOCA RATON AIRPORT DRAINAGE NETWORK

November 2023

ELEMENT ID	U/S NODE	U/S INVERT	D/S NODE	D/S INVERT	ELEMENT	LENGTH (FT)	ELEMENT TYPE	GEOM1 (V-IN)	GEOM2 (H-IN)	SIDE SLOPE (L)	SIDE SLOPE (R)	BARRELS	REMARKS
C156	J42	4.29	J41	4.29	Swale	267.13	IRREGULAR					1	X-SECTION (LiDAR)
C161	J69	3.76	J68	3.76	Swale	248.27	IRREGULAR					1	X-SECTION (LiDAR)
C169	J109	3.29	J77	3.29	Swale	242.17	IRREGULAR					1	X-SECTION (LiDAR)
C171_1	J184	3.29	J85	3.29	Swale	123.74	IRREGULAR					1	X-SECTION (LiDAR)
C171_2	J85	3.29	J109	3.29	Swale	62.87	IRREGULAR					1	X-SECTION (LiDAR)
C181_1	J186	4.77	J82	4.77	Swale	86.08	IRREGULAR					1	X-SECTION (LiDAR)
C181_2	J82	4.77	J185	4.27	Swale	108.92	IRREGULAR					1	X-SECTION (LiDAR)
C185	J227	6.20	J237	6.10	Pipe_RCP	89.51	CIRCULAR	24				1	
C186	J188	5.54	J187	5.28	Swale	222.78	IRREGULAR					1	X-SECTION (LiDAR)
C188	J189	4.85	J188	5.54	Swale	85.12	IRREGULAR					1	X-SECTION (LiDAR)
C195	J191	2.13	J190	4.62	Swale	168.36	IRREGULAR					1	X-SECTION (LiDAR)
C197	J198	6.98	J234	1.76	Pipe_RCP	40.85	CIRCULAR	18				1	
C197_1	J192	4.63	J230	4.63	Swale	126.61	IRREGULAR					1	X-SECTION (LiDAR)
C197_3	J230	4.63	J231	4.63	Swale	250.28	IRREGULAR					1	X-SECTION (LiDAR)
C197_4	J231	4.63	J191	2.13	Swale	238.94	IRREGULAR					1	X-SECTION (LiDAR)
C204	J234	1.76	J229	1.26	Pipe_RCP	42.93	CIRCULAR	18				1	
C204_1	J194	5.51	J228	5.06	Swale	45.03	IRREGULAR					1	X-SECTION (LiDAR)
C204_2	J228	5.06	J193	4.87	Swale	145.75	IRREGULAR					1	X-SECTION (LiDAR)
C205	J158	3.17	J194	5.51	Swale	27.47	IRREGULAR					1	X-SECTION (LiDAR)
C206	J195	4.13	J165	4.76	Swale	39.14	IRREGULAR					1	X-SECTION (LiDAR)
C207	J224	6.65	J235	1.06	Pipe_RCP	41.80	CIRCULAR	18				1	
C207_1	J196	5.67	J197	5.34	Swale	45.65	IRREGULAR					1	X-SECTION (LiDAR)
C207_2	J197	5.34	J195	4.13	Swale	164.60	IRREGULAR					1	X-SECTION (LiDAR)
C210	J208	4.45	J110	4.13	Pipe_RCP	234.90	CIRCULAR	24				1	
C211	J210	4.00	J209	3.43	Pipe_RCP	203.93	CIRCULAR	18				1	
C214	J237	6.10	J238	6.00	Pipe_RCP	102.50	CIRCULAR	24				1	
C215	J238	6.00	J239	6.00	Pipe_RCP	109.73	CIRCULAR	30				1	
C216	J239	6.00	J240	6.00	Pipe_RCP	63.03	CIRCULAR	30				1	
C221	J235	1.06	J233	0.95	Pipe_RCP	42.86	CIRCULAR	18				1	
C222	S-1	5.45	S-2	5.45	Pipe_RCP	66.46	CIRCULAR	30				1	
C224	S-2	5.45	S-3	5.45	Pipe_RCP	119.13	CIRCULAR	30				1	
C225	S-3	5.45	S-4	5.45	Pipe_RCP	91.64	CIRCULAR	30				1	
C226	S-4	5.45	PondAdm	1.25	Pipe_RCP	94.19	CIRCULAR	30				1	
C227	S-6	7.00	S7	6.80	Pipe_RCP	36.50	CIRCULAR	36				1	
C229	J101	2.20	J107	1.73	Pipe_RCP	73.98	CIRCULAR	48				1	
C230	J107	1.73	J108	1.85	Pipe_RCP	179.46	CIRCULAR	48				1	
C231	J222	2.95	J223	2.48	Pipe_RCP	173.56	CIRCULAR	18				1	
C231_1	J108	1.85	J223	2.48	Pipe_RCP	151.22	CIRCULAR	48				1	

Table 2

BOCA RATON AIRPORT DRAINAGE NETWORK

November 2023

ELEMENT ID	U/S NODE	U/S INVERT	D/S NODE	D/S INVERT	ELEMENT	LENGTH (FT)	ELEMENT TYPE	GEOM1 (V-IN)	GEOM2 (H-IN)	SIDE SLOPE (L)	SIDE SLOPE (R)	BARRELS	REMARKS
C231_2	J223	2.48	J114	1.91	Pipe_RCP	136.68	CIRCULAR	48				1	
C232	J114	1.91	J113	1.91	Pipe_RCP	263.83	CIRCULAR	48				1	
C233	J113	1.91	J115	2.13	Pipe_RCP	66.00	CIRCULAR	48				1	
C234	J209	3.43	J101	2.20	Pipe_RCP	313.85	CIRCULAR	18				1	
C235	J221	3.08	J217	2.95	Pipe_RCP	373.65	CIRCULAR	24				1	
C236	J220	3.95	J219	3.66	Pipe_RCP	206.86	CIRCULAR	24				1	
C237	J219	3.66	J218	3.41	Pipe_RCP	226.63	CIRCULAR	24				1	
C238	J218	3.41	J217	2.95	Pipe_RCP	252.19	CIRCULAR	24				1	
C239	J217	2.95	J216	4.14	Pipe_RCP	211.45	CIRCULAR	24				1	
C240	J216	4.14	J215	4.12	Pipe_RCP	97.10	CIRCULAR	24				1	
C241	J215	4.12	J214	4.08	Pipe_Assumed	192.18	CIRCULAR	24				1	
C242	J214	4.08	J161	2.84	Pipe_RCP	206.11	CIRCULAR	42				1	
C243	J213	4.59	J221	3.08	Pipe_Assumed	154.22	CIRCULAR	24				1	
C244	J212	4.99	J218	3.41	Pipe_Assumed	134.16	CIRCULAR	24				1	
C245	J211	5.41	J220	3.95	Pipe_Assumed	121.69	CIRCULAR	24				1	
C246	J88	0.68	J138	0.28	Pipe_RCP	405.01	CIRCULAR	36				1	
C247	J138	0.28	J139	-0.74	Pipe_RCP	69.59	CIRCULAR	36				1	
C248	J226	1.31	J236	0.99	Pipe_RCP	46.51	CIRCULAR	18				1	
C249	SA18	7.88	J225	8.90	Pipe_RCP	115.83	CIRCULAR	15				1	
C251	J236	0.99	J232	0.83	Pipe_RCP	37.03	CIRCULAR	18				1	
C252	J111	6.30	J112	6.30	Pipe_RCP	64.25	CIRCULAR	24				1	
C253	J112	6.30	J199	6.30	Pipe_RCP	102.09	CIRCULAR	24				1	
C254	J199	6.30	J200	6.30	Pipe_RCP	131.41	CIRCULAR	24				1	
C255	J200	6.30	J201	6.30	Pipe_RCP	125.02	CIRCULAR	30				1	
C256	J201	6.30	J205	6.30	Pipe_RCP	66.94	CIRCULAR	30				1	
C257	J205	6.30	J241	6.30	Pipe_RCP	66.36	CIRCULAR	30				1	
C258	J242	6.30	J205	6.30	Pipe_RCP	129.65	CIRCULAR	24				1	

Table 3

BCT Model Output Files

Table 3.1 Stormwater Model (Output Files): BCT (5YR/24HR)

Table 3.2 Stormwater Model (Output Files): BCT (25YR/72HR)

Table 3.3 Stormwater Model (Output Files): BCT (100YR/72HR)

Table 3.1

Stormwater Model (Output Files): BCT (5YR/24HR)

Table 3.1

Boca Raton Airport - 5YR/24HR Event

November 2023

Node ID	Max HGL (Ft)	Overtopping
CS-1-DS	6.56	
CS-1-US	8.03	
J1	4.19	
J2	3.04	
J3	3.04	
J4	4.60	
J5	4.46	
J6	8.74	
J7	8.66	
J8	6.54	
J9	6.51	
J10	6.47	
J11	8.11	
J12	8.97	
J13	8.90	YES
J14	8.11	
J15	8.11	
J16	8.11	
J17	8.14	
J18	8.16	
J19	6.51	
J20	6.51	
J21	8.12	
J22	8.12	
J23	8.12	
J24	8.13	
J25	8.13	
J26	8.16	
J27	8.18	
J28	8.57	
J29	8.43	YES
J30	8.18	
J31	8.17	
J32	8.13	
J33	8.13	
J34	8.13	
J35	8.14	
J36	8.14	
J37	8.14	
J38	8.15	
J39	8.13	
J40	8.15	
J41	8.15	
J42	8.16	
J43	8.16	
J44	8.15	
J45	8.15	
J46	8.16	
J47	8.18	
J48	8.20	
J49	8.51	
J50	8.21	
J51	8.19	
J52	10.90	YES
J53	8.40	YES
J54	8.16	
J55	8.16	
J56	8.17	
J57	8.17	
J58	8.17	
J59	4.09	
J60	3.03	
J61	5.43	
J62	8.51	YES
J63	8.39	YES
J64	8.44	YES
J65	8.43	
J66	8.40	YES
J67	8.39	YES
J68	8.17	
J69	8.17	
J70	8.18	
J71	8.18	
J72	8.18	
J73	8.18	
J74	8.18	
J75	8.18	
J76	8.23	
J77	8.19	
J78	8.22	
J79	8.54	YES
J80	9.36	YES
J81	9.28	YES
J82	8.20	
J83	10.05	YES
J84	9.30	YES
J85	8.19	
J86	9.26	YES
J87	8.39	
J88	7.45	YES
J89	9.22	YES
J90	8.20	

Table 3.1

Boca Raton Airport - 5YR/24HR Event

November 2023

Node ID	Max HGL (Ft)	Overtopping
J91	8.48	
J92	8.22	
J93	8.23	
J94	8.19	
J95	8.19	
J96	8.93	YES
J97	9.13	
J98	9.08	
J99	8.95	
J100	9.80	YES
J101	8.36	
J102	9.59	
J103	9.22	YES
J104	8.27	
J105	8.97	YES
J106	8.31	
J107	10.47	YES
J108	10.27	YES
J109	8.19	
J110	10.16	YES
J111	8.73	
J112	8.64	
J113	9.43	YES
J114	9.31	YES
J115	8.38	
J116	9.10	YES
J117	9.31	YES
J118	9.34	YES
J119	9.28	YES
J120	9.30	YES
J121	8.19	
J122	8.20	
J123	8.20	
J124	8.20	
J125	8.20	
J126	8.20	
J127	8.20	
J128	8.20	
J129	8.20	
J130	8.20	
J131	8.23	
J132	8.23	
J133	10.60	YES
J134	8.87	YES
J135	8.92	YES
J136	8.42	
J137	8.29	
J138	7.13	YES
J139	7.99	YES
J140	8.23	
J141	8.23	
J142	8.23	
J143	8.24	
J144	8.26	
J145	8.26	
J146	8.50	
J147	8.26	
J148	8.26	
J149	8.26	
J150	8.37	YES
J151	7.99	YES
J152	8.26	
J158	8.27	
J159	8.28	
J160	8.29	
J161	8.30	
J162	8.95	
J164	11.13	YES
J165	8.70	
J166	10.33	YES
J167	10.31	YES
J168	8.95	
J169	8.99	
J170	11.05	
J171	10.07	
J172	10.10	YES
J173	9.51	YES
J174	9.47	YES
J175	9.69	YES
J176	9.60	YES
J177	9.69	YES
J178	8.60	YES
J179	8.55	
J180	8.53	
J182	10.58	YES
J184	8.19	
J185	8.20	
J186	8.20	
J187	8.22	
J188	8.22	
J189	8.22	
J190	8.25	

Table 3.1

Boca Raton Airport - 5YR/24HR Event

November 2023

Node ID	Max HGL (Ft)	Overtopping
J191	8.25	
J192	8.25	
J193	8.27	
J194	8.27	
J195	8.70	
J196	8.70	
J197	8.69	
J198	8.49	
J199	8.51	
J200	8.34	
J201	8.29	
J203	9.95	
J204	9.54	YES
J205	8.26	
J206	8.23	
J207	9.57	YES
J208	9.47	YES
J209	8.84	
J210	9.03	
J211	9.67	YES
J212	9.71	YES
J213	9.50	YES
J214	8.33	
J215	9.71	YES
J216	9.68	YES
J217	9.52	YES
J218	12.70	YES
J219	12.60	YES

Node ID	Max HGL (Ft)	Overtopping
J220	12.45	YES
J221	9.11	YES
J222	8.52	
J223	10.65	YES
J224	8.41	
J225	9.54	
J226	8.55	
J227	8.31	
J228	8.27	
J229	8.51	
J230	8.25	
J231	8.25	
J232	8.50	
J233	8.44	
J234	8.49	
J235	8.41	
J236	8.63	
J237	8.33	
J238	8.22	
J239	8.20	
J240	8.20	
J241	8.19	
J242	8.27	
S-1	8.27	
S-2	8.27	
S-3	8.27	
S-4	8.27	
S-6	8.27	
S7	8.27	

Table 3.2

Stormwater Model (Output Files): BCT (25YR/72HR)

Table 3.2

Boca Raton Airport - 25YR/72HR Event

November 2023

Node ID	Max HGL (Ft)	Overtopping
CS-1-DS	7.31	
CS-1-US	8.55	
J1	4.93	
J2	3.63	
J3	3.64	
J4	5.25	
J5	5.15	
J6	9.42	
J7	9.33	
J8	7.27	
J9	7.27	
J10	7.15	
J11	8.70	
J12	9.05	
J13	8.90	YES
J14	8.70	
J15	8.70	
J16	8.70	
J17	8.62	
J18	8.60	YES
J19	7.25	
J20	7.25	
J21	8.76	
J22	8.75	
J23	8.76	
J24	8.77	
J25	8.78	
J26	8.80	
J27	8.82	
J28	9.70	YES
J29	8.43	YES
J30	8.82	
J31	8.81	
J32	8.78	
J33	8.77	
J34	8.77	
J35	8.85	
J36	8.84	
J37	8.84	
J38	8.85	
J39	8.78	
J40	8.87	
J41	8.87	
J42	8.87	
J43	8.87	
J44	8.86	
J45	8.85	
J46	8.92	
J47	8.90	
J48	8.92	
J49	10.90	YES
J50	8.92	
J51	8.90	
J52	10.90	YES
J53	8.40	YES
J54	8.94	
J55	8.95	
J56	8.93	
J57	8.93	
J58	8.93	
J59	4.83	
J60	3.62	
J61	6.41	
J62	8.51	YES
J63	8.39	YES
J64	8.44	YES
J65	9.29	YES
J66	8.40	YES
J67	8.39	YES
J68	8.98	
J69	8.98	
J70	9.07	
J71	9.07	
J72	9.08	
J73	9.07	
J74	9.07	
J75	9.07	
J76	10.05	
J77	9.13	
J78	9.40	YES
J79	8.54	YES
J80	9.36	YES
J81	9.28	YES
J82	9.29	
J83	10.05	YES
J84	9.30	YES
J85	9.14	
J86	9.26	YES
J87	8.56	
J88	7.45	YES
J89	9.22	YES
J90	8.88	YES

Table 3.2

Boca Raton Airport - 25YR/72HR Event

November 2023

Node ID	Max HGL (Ft)	Overtopping
J91	8.77	
J92	9.22	YES
J93	9.32	YES
J94	9.22	
J95	9.22	
J96	8.93	YES
J97	9.30	YES
J98	9.29	
J99	9.13	YES
J100	9.80	YES
J101	9.13	YES
J102	9.59	YES
J103	9.22	YES
J104	8.73	
J105	8.97	YES
J106	9.60	
J107	10.47	YES
J108	10.27	YES
J109	9.14	
J110	10.16	YES
J111	10.60	YES
J112	11.30	YES
J113	9.43	YES
J114	9.31	YES
J115	9.25	
J116	8.67	
J117	9.31	YES
J118	9.34	YES
J119	9.28	YES
J120	9.08	
J121	9.22	
J122	9.26	
J123	9.26	
J124	9.26	
J125	9.37	
J126	9.33	
J127	9.36	
J128	9.36	
J129	9.37	
J130	9.35	
J131	9.47	
J132	9.47	
J133	10.60	YES
J134	8.87	YES
J135	8.92	YES
J136	10.60	YES
J137	9.62	YES
J138	7.13	YES
J139	7.99	YES
J140	9.46	
J141	9.47	
J142	9.47	
J143	9.47	
J144	9.56	
J145	9.56	
J146	8.50	YES
J147	9.55	
J148	9.56	
J149	9.57	
J150	8.37	YES
J151	7.99	YES
J152	9.57	
J158	9.58	
J159	9.60	
J160	9.61	
J161	9.81	
J162	9.67	YES
J164	11.13	YES
J165	10.12	
J166	10.33	YES
J167	10.31	YES
J168	10.22	
J169	10.24	YES
J170	11.05	YES
J171	10.88	YES
J172	10.10	YES
J173	9.51	YES
J174	9.47	YES
J175	9.69	YES
J176	9.29	
J177	9.69	YES
J178	8.60	YES
J179	8.76	YES
J180	8.88	
J182	10.58	YES
J184	9.14	
J185	9.29	
J186	9.29	
J187	9.39	
J188	9.39	
J189	9.39	
J190	9.49	

Table 3.2

Boca Raton Airport - 25YR/72HR Event

November 2023

Node ID	Max HGL (Ft)	Overtopping
J191	9.49	
J192	9.49	
J193	9.58	
J194	9.58	
J195	10.12	
J196	10.12	
J197	10.12	
J198	10.54	
J199	10.60	YES
J200	10.60	YES
J201	10.60	YES
J203	10.35	YES
J204	9.54	YES
J205	9.87	
J206	10.80	YES
J207	9.57	YES
J208	9.47	YES
J209	9.11	YES
J210	9.13	YES
J211	9.67	YES
J212	9.71	YES
J213	9.50	YES
J214	10.67	YES
J215	9.71	YES
J216	9.68	YES
J217	9.52	YES
J218	12.70	YES
J219	12.60	YES

Node ID	Max HGL (Ft)	Overtopping
J220	12.45	YES
J221	9.11	YES
J222	9.49	
J223	10.65	YES
J224	9.85	
J225	9.90	
J226	9.52	YES
J227	11.40	YES
J228	9.58	
J229	9.96	
J230	9.49	
J231	9.49	
J232	9.62	
J233	10.40	YES
J234	10.35	
J235	9.82	
J236	9.60	YES
J237	11.40	YES
J238	10.90	YES
J239	10.60	YES
J240	10.47	YES
J241	9.67	
J242	9.90	
S-1	10.50	YES
S-2	10.50	YES
S-3	10.50	YES
S-4	12.00	YES
S-6	9.32	
S7	9.31	

Table 3.3

Stormwater Model (Output Files): BCT (100YR/72HR)

Table 3.3

Boca Raton Airport - 100YR/72HR Event

November 2023

Node ID	Max HGL (Ft)	Overtopping
CS-1-DS	7.60	
CS-1-US	8.73	
J1	5.52	
J2	4.67	
J3	4.67	
J4	5.58	
J5	5.59	
J6	9.43	
J7	9.36	
J8	7.53	
J9	7.56	
J10	7.43	
J11	8.90	
J12	9.18	
J13	8.90	YES
J14	8.90	
J15	8.90	
J16	8.90	
J17	8.63	
J18	8.60	YES
J19	7.52	
J20	7.54	
J21	8.95	YES
J22	8.93	YES
J23	8.97	
J24	8.98	
J25	8.99	
J26	9.02	
J27	9.03	
J28	9.70	YES
J29	8.43	YES
J30	9.04	
J31	9.03	
J32	8.99	
J33	8.97	
J34	8.98	
J35	9.09	
J36	9.08	
J37	9.08	
J38	9.09	
J39	8.99	
J40	9.13	
J41	9.13	
J42	9.13	
J43	9.13	
J44	9.09	
J45	9.09	
J46	9.22	
J47	9.13	
J48	9.12	
J49	10.90	YES
J50	9.03	YES
J51	9.05	
J52	10.90	YES
J53	8.40	YES
J54	9.22	
J55	9.24	
J56	9.22	
J57	9.22	
J58	9.22	
J59	5.41	
J60	4.66	
J61	6.80	
J62	8.51	YES
J63	8.39	YES
J64	8.44	YES
J65	8.43	
J66	8.40	YES
J67	8.39	YES
J68	9.30	
J69	9.30	
J70	9.43	
J71	9.42	YES
J72	9.45	
J73	9.43	
J74	9.43	
J75	9.43	
J76	9.54	
J77	9.55	
J78	9.40	YES
J79	8.54	YES
J80	9.36	YES
J81	9.28	YES
J82	9.74	
J83	10.05	YES
J84	9.30	YES
J85	9.55	
J86	9.26	YES
J87	8.59	
J88	7.45	YES
J89	9.22	YES
J90	8.88	YES

Table 3.3

Boca Raton Airport - 100YR/72HR Event

November 2023

Node ID	Max HGL (Ft)	Overtopping
J91	8.96	
J92	9.22	YES
J93	9.32	YES
J94	9.66	
J95	9.66	
J96	8.93	YES
J97	9.30	YES
J98	9.29	
J99	9.13	YES
J100	9.80	YES
J101	9.13	YES
J102	9.59	YES
J103	9.22	YES
J104	8.72	
J105	8.97	YES
J106	8.89	
J107	10.47	YES
J108	10.27	YES
J109	9.55	
J110	10.16	YES
J111	10.60	YES
J112	11.30	YES
J113	9.43	YES
J114	9.31	YES
J115	9.39	
J116	8.67	
J117	9.31	YES
J118	9.34	YES
J119	9.28	YES
J120	9.08	
J121	9.66	
J122	9.69	
J123	9.69	
J124	9.68	
J125	9.83	
J126	9.82	
J127	9.83	
J128	9.81	
J129	9.81	
J130	9.81	
J131	9.87	
J132	9.89	
J133	10.60	YES
J134	8.87	YES
J135	8.92	YES
J136	10.60	YES
J137	9.62	YES
J138	7.13	YES
J139	7.25	
J140	9.89	
J141	9.90	
J142	9.90	
J143	9.90	
J144	10.01	
J145	10.02	
J146	8.50	YES
J147	9.97	
J148	9.97	
J149	9.97	
J150	8.37	YES
J151	7.99	YES
J152	9.96	
J158	9.98	
J159	10.26	
J160	9.97	
J161	9.85	YES
J162	9.67	YES
J164	11.13	YES
J165	10.48	
J166	10.33	YES
J167	10.31	YES
J168	11.05	YES
J169	10.24	YES
J170	11.05	YES
J171	10.88	YES
J172	10.10	YES
J173	9.51	YES
J174	9.47	YES
J175	9.69	YES
J176	9.55	
J177	9.69	YES
J178	8.60	YES
J179	8.76	YES
J180	8.88	
J182	10.58	YES
J184	9.55	
J185	9.74	
J186	9.74	
J187	9.82	
J188	9.82	
J189	9.82	
J190	9.91	

Table 3.3

Boca Raton Airport - 100YR/72HR Event

November 2023

Node ID	Max HGL (Ft)	Overtopping
J191	9.91	
J192	9.91	
J193	9.95	
J194	9.95	
J195	10.47	
J196	10.47	
J197	10.47	
J198	10.68	
J199	10.60	YES
J200	10.60	YES
J201	10.60	YES
J203	10.35	YES
J204	9.54	YES
J205	10.31	
J206	10.80	YES
J207	9.57	YES
J208	9.47	YES
J209	9.11	YES
J210	9.13	
J211	9.67	YES
J212	9.71	YES
J213	9.50	YES
J214	10.67	YES
J215	9.71	YES
J216	9.68	YES
J217	9.52	YES
J218	12.70	YES
J219	12.60	YES

Node ID	Max HGL (Ft)	Overtopping
J220	12.45	YES
J221	9.11	YES
J222	9.61	
J223	10.65	YES
J224	10.48	
J225	10.14	
J226	9.52	YES
J227	11.40	YES
J228	9.95	
J229	10.54	
J230	9.91	
J231	9.91	
J232	10.06	
J233	10.35	
J234	10.62	
J235	10.43	
J236	9.60	YES
J237	11.40	YES
J238	10.90	YES
J239	10.33	
J240	10.21	
J241	10.05	YES
J242	10.60	YES
S-1	10.50	YES
S-2	10.50	YES
S-3	10.50	YES
S-4	12.00	YES
S-6	9.37	
S7	9.36	

Table 4

Water Quantity Summary of Results

Table 4 November 2023

WATER QUANTITY: SUMMARY OF RESULTS

Boca Raton Airport	
Storm Event	**AIRPORT OUTFALL PEAK FLOW (cfs)**
5 YR / 24 HR	44.80
25 YR / 72 HR	59.50
100 YR / 72 HR	77.20

Table 5

Water Quality Calculations

Table 5

Boca Raton Airport
Water Quality Calculations

November 2023

Sub-Catchment ID	Area (Acres)	Bldg. Roof / Wet Pond (Acres)	WQ Area (Acres)	% Imperviousness	Treatment Vol. (2.5" x %Imp x WQ) (Ac-Ft)	Treatment Vol. (1.0" x WQ) (Ac-Ft)	Volume to be Treated (Ac-Ft)
FAU_N	N/A						
FAU_S	N/A						
S_AdmOut	1.440		1.440	25.0	0.08	0.12	0.12
S_I95	N/A						
S10	1.673	0.463	1.211	67.8	0.17	0.10	0.17
S11	4.658	1.432	3.226	65.0	0.44	0.27	0.44
S12	2.841		2.841	46.0	0.27	0.24	0.27
S13	0.520		0.520	67.3	0.07	0.04	0.07
S14	2.592	0.040	2.552	84.5	0.45	0.21	0.45
S15	0.964		0.964	59.5	0.12	0.08	0.12
S16	1.834		1.834	99.4	0.38	0.15	0.38
S161	1.837	0.019	1.818	100.0	0.38	0.15	0.38
S162	1.544		1.544	100.0	0.32	0.13	0.32
S17	0.536	0.377	0.159	99.7	0.03	0.01	0.03
S18	2.532	0.506	2.026	90.5	0.38	0.17	0.38
S19	0.566	0.006	0.560	80.7	0.09	0.05	0.09
S2	1.237		1.237	10.4	0.03	0.10	0.10
S20	6.090		6.090	40.8	0.52	0.51	0.52
S21	1.111		1.111	56.4	0.13	0.09	0.13
S22	1.258		1.258	100.0	0.26	0.10	0.26
S221	1.430	0.650	0.780	92.3	0.15	0.07	0.15
S222	0.998	0.090	0.909	59.4	0.11	0.08	0.11
S223	4.062		4.062	100.0	0.85	0.34	0.85
S224	1.296		1.296	99.8	0.27	0.11	0.27
S23	1.138		1.138	24.2	0.06	0.09	0.09
S231	3.132	0.439	2.693	95.5	0.54	0.22	0.54
S232	0.408		0.408	22.6	0.02	0.03	0.03
S233	0.083		0.083	92.5	0.02	0.01	0.02
S234	0.225		0.225	92.3	0.04	0.02	0.04
S235	0.418		0.418	90.4	0.08	0.03	0.08
S236	0.587		0.587	66.3	0.08	0.05	0.08
S237	2.419		2.419	42.5	0.21	0.20	0.21
S24	0.814	0.210	0.604	80.7	0.10	0.05	0.10
S25	0.206		0.206	0.0	0.00	0.02	0.02
S26	4.984		4.984	14.6	0.15	0.42	0.42
S27	10.829	0.007	10.822	37.9	0.85	0.90	0.90
S281	3.135		3.135	40.7	0.27	0.26	0.27
S282	2.319		2.319	46.2	0.22	0.19	0.22
S29	1.645		1.645	87.1	0.30	0.14	0.30
S3	2.108		2.108	44.4	0.19	0.18	0.19
S30	2.183		2.183	89.3	0.41	0.18	0.41
S31	0.671	0.002	0.669	52.2	0.07	0.06	0.07
S32	0.957		0.957	91.4	0.18	0.08	0.18
S33	0.183		0.183	97.8	0.04	0.02	0.04
S34	2.609	0.576	2.034	78.9	0.33	0.17	0.33
S35_1	2.633	0.285	2.347	52.4	0.26	0.20	0.26
S35_2	1.447	0.119	1.327	54.6	0.15	0.11	0.15
S36	1.546	0.423	1.123	62.7	0.15	0.09	0.15
S37	1.999		1.999	24.2	0.10	0.17	0.17
S38	1.263		1.263	33.2	0.09	0.11	0.11

Table 5

Boca Raton Airport
Water Quality Calculations

November 2023

Sub-Catchment ID	Area (Acres)	Bldg. Roof / Wet Pond (Acres)	WQ Area (Acres)	% Imperviousness	Treatment Vol. (2.5" x %Imp x WQ) (Ac-Ft)	Treatment Vol. (1.0" x WQ) (Ac-Ft)	Volume to be Treated (Ac-Ft)
S39	5.629	1.118	4.512	67.1	0.63	0.38	0.63
S4	2.181		2.181	46.4	0.21	0.18	0.21
S41	0.880	0.000	0.880	74.9	0.14	0.07	0.14
S42	1.095	0.369	0.727	76.6	0.12	0.06	0.12
S43	0.419	0.004	0.415	81.5	0.07	0.03	0.07
S44	0.896		0.896	21.9	0.04	0.07	0.07
S451	1.337	0.820	0.517	93.0	0.10	0.04	0.10
S452	1.037	0.394	0.643	90.7	0.12	0.05	0.12
S453	0.666		0.666	27.7	0.04	0.06	0.06
S46	5.478		5.478	44.2	0.50	0.46	0.50
S47	1.251		1.251	40.2	0.10	0.10	0.10
S48	2.594	0.000	2.594	99.9	0.54	0.22	0.54
S49	0.461	0.434	0.026	100.0	0.01	0.00	0.01
S5	1.911		1.911	49.4	0.20	0.16	0.20
S50	0.271	0.011	0.260	56.1	0.03	0.02	0.03
S51	0.636	0.003	0.632	81.4	0.11	0.05	0.11
S52	0.334		0.334	92.9	0.06	0.03	0.06
S53	0.180		0.180	95.0	0.04	0.01	0.04
S54	0.281		0.281	90.4	0.05	0.02	0.05
S55	1.467		1.467	41.6	0.13	0.12	0.13
S56	0.498		0.498	82.8	0.09	0.04	0.09
S57	0.829	0.001	0.828	80.3	0.14	0.07	0.14
S58	0.501	0.428	0.073	88.5	0.01	0.01	0.01
S59	2.547	0.003	2.544	99.7	0.53	0.21	0.53
S6	1.891	0.142	1.749	51.6	0.19	0.15	0.19
S60	0.704		0.704	60.8	0.09	0.06	0.09
S61	1.188		1.188	99.0	0.25	0.10	0.25
S62	1.035	0.484	0.551	88.9	0.10	0.05	0.10
S63	1.105		1.105	84.0	0.19	0.09	0.19
S64	0.445		0.445	49.7	0.05	0.04	0.05
S65	0.450		0.450	81.4	0.08	0.04	0.08
S66	0.475		0.475	81.6	0.08	0.04	0.08
S67	2.032	1.519	0.513	96.0	0.10	0.04	0.10
S68	3.797	1.497	2.300	85.5	0.41	0.19	0.41
S69	2.581	1.663	0.918	87.5	0.17	0.08	0.17
S70	5.208	0.890	4.318	82.8	0.74	0.36	0.74
S71	0.441		0.441	40.0	0.04	0.04	0.04
S72	0.433		0.433	39.0	0.04	0.04	0.04
S73	7.743		7.743	39.5	0.64	0.65	0.65
S74	7.603	0.011	7.592	10.7	0.17	0.63	0.63
S751	1.567		1.567	41.0	0.13	0.13	0.13
S752	1.190		1.190	37.9	0.09	0.10	0.10
S753	12.546		12.546	37.3	0.98	1.05	1.05
S76	2.448		2.448	45.3	0.23	0.20	0.23
S77	3.114		3.114	38.9	0.25	0.26	0.26
S78	1.346		1.346	54.2	0.15	0.11	0.15
S79	1.411		1.411	53.9	0.16	0.12	0.16
S8	1.671	0.280	1.391	58.0	0.17	0.12	0.17
S80	1.165		1.165	11.0	0.03	0.10	0.10
S81	0.410		0.410	10.8	0.01	0.03	0.03

Table 5

Boca Raton Airport
Water Quality Calculations

November 2023

Sub-Catchment ID	Area (Acres)	Bldg. Roof / Wet Pond (Acres)	WQ Area (Acres)	% Imperviousness	Treatment Vol. (2.5" x %Imp x WQ) (Ac-Ft)	Treatment Vol. (1.0" x WQ) (Ac-Ft)	Volume to be Treated (Ac-Ft)
S821	0.687		0.687	97.6	0.14	0.06	0.14
S822	0.637		0.637	97.3	0.13	0.05	0.13
S83	3.490		3.490	43.5	0.32	0.29	0.32
S84_1	0.316		0.316	34.3	0.02	0.03	0.03
S84_3	6.873	0.797	6.076	68.4	0.87	0.51	0.87
S843	3.323		3.323	70.2	0.49	0.28	0.49
S87	0.462		0.462	81.3	0.08	0.04	0.08
S881	1.768	1.022	0.746	88.5	0.14	0.06	0.14
S882	1.187	0.644	0.542	80.8	0.09	0.05	0.09
S883	0.462	0.004	0.458	76.6	0.07	0.04	0.07
S891	2.766		2.766	31.9	0.18	0.23	0.23
S892	0.682		0.682	10.2	0.01	0.06	0.06
S9	0.896		0.896	40.3	0.08	0.07	0.08
S90	0.777		0.777	89.2	0.14	0.06	0.14
S91	0.474		0.474	100.0	0.10	0.04	0.10
S92	0.253		0.253	100.0	0.05	0.02	0.05
S93	0.441		0.441	100.0	0.09	0.04	0.09
S941	0.265		0.265	100.0	0.06	0.02	0.06
S942	0.198		0.198	100.0	0.04	0.02	0.04
S943	0.226		0.226	99.5	0.05	0.02	0.05
						Total Volume to be Treated (Ac-ft)	**24.46**

Table 6

Water Quality Summary of Results

TABLE 6 Nov-23

WATER QUALITY: SUMMARY OF RESULTS

BCT Airport (Ac-Ft)

Treatment Element	Treatment Volume (Required)	Volume Treated (Actual)	REMARKS
Retention (Dry)		1.89	Based on 2y/24HR event
Detention (Dry)		23.70	Based on 2y/24HR event
Sub-total =	**24.50**	**25.59**	Actual > Required