

# Miami-Opa Locka Executive Airport (OPF)



## Airport Layout Plans Set Narrative Report

PREPARED FOR:

Miami-Dade Aviation Department

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## A. Executive Summary

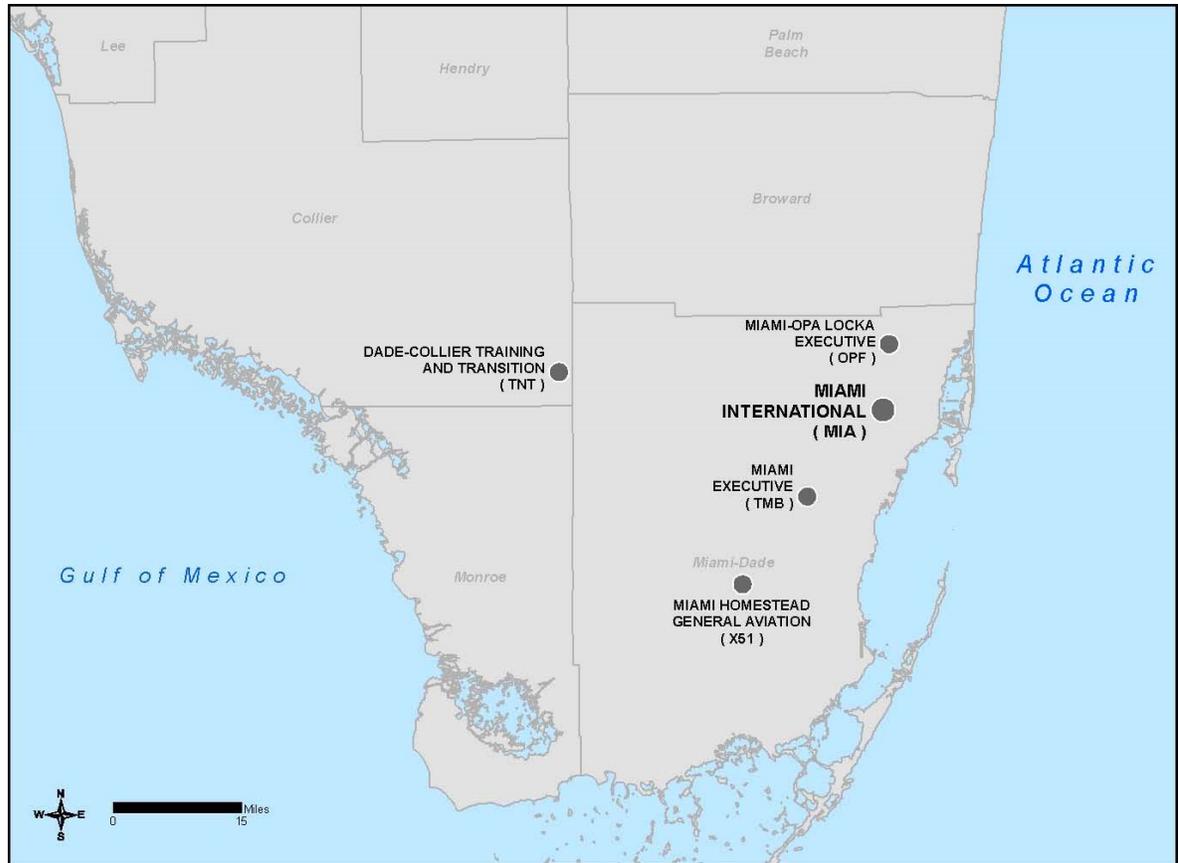
In 2009, the Miami-Dade Aviation Department (MDAD) initiated the Miami Dade Strategic Airport Master Plan (SMP) for the Miami-Dade County system of airports. The SMP serves as an update to the master plans for Miami International Airport (MIA) and the County's four general aviation (GA) airports: Miami-Opa Locka Executive Airport (OPF or the Airport), Miami Executive Airport (TMB), Miami Homestead General Aviation Airport (X51), and Dade-Collier Training and Transition Airport (TNT). The SMP defines MDAD's overall approach to implementing long-term airport improvements or expansion projects for its system of five airports to continue providing high levels of service to the surrounding communities. In lieu of submitting a comprehensive airport master plan report to the Federal Aviation Administration (FAA), MDAD decided to submit stand-alone Aeronautical Forecasts documents and Airport Layout Plan (ALP) packages (inclusive of a Narrative Report and Drawing Set) for FAA review and approval. The aeronautical forecasts for the County's four general aviation airports were approved by the FAA on August 6, 2012.

This document serves as the ALP Narrative Report for Miami-Opa Locka Executive Airport, which accompanies the ALP drawing set reflecting the final recommendations for the Airport as set forth in the SMP. The recommended development contained on the ALP for OPF would satisfy the aeronautical demand forecast at the Airport through 2035, as presented in the SMP Aeronautical Forecasts document for OPF. In accordance with the FAA Airports Division's Standard Operating Procedure 2.00 (ARP SOP 2.00), *Standard Procedure for FAA Review and Approval of Airport Layout Plans*, the structure of this ALP Narrative Report is consistent with that of the ARP SOP 2.00 ALP Review Checklist provided in **Appendix A**.

**Exhibit A-1** illustrates the location of the five County airports operated by MDAD. OPF is located approximately 7 miles north of MIA, within the City of Opa-locka. The site was a former military airfield that was conveyed to Miami-Dade County in 1962. As a designated General Aviation Reliever for MIA, OPF's tenants include several fixed base operators (FBOs), a flying club, a flight training center, and private/corporate hangars. The United States Coast Guard (USCG) facilities are excluded from Airport property, but have access to the airfield. OPF also has an Airport traffic control tower (ATCT), which is operated through the FAA's contract tower program.

The Airport is one of the busiest general aviation facilities in Florida with corporate jets representing the largest class of airplanes that use the airport on a regular basis. The airport serves as a primary general aviation Reliever Airport for MIA and is expected to continue to operate in a similar capacity and role for the foreseeable future.

### Exhibit A-1: Miami-Dade County Airport Locations



SOURCE: URS Corporation, *Strategic Airport Master Planning Study, General Aviation Activity Forecasts, Miami Dade Aviation Department*, January 2015.  
 PREPARED BY: Ricondo & Associates, Inc., December 2015.

The OPF airfield has three runways. Runways 9L-27R and 12-30 are the primary runways. Both are equipped with instrument landing systems (ILSs) and are configured to serve Airplane Design Group (ADG) IV aircraft (wingspans less than 171 feet). The south parallel runway, Runway 9R-27L, is a visual runway that primarily serves touch-and-go training activity. **Table A-1** summarizes the predominant characteristics of the runways at OPF.

This ALP Narrative Report describes the planning and rationale that resulted in the identification of a preferred development scenario for OPF and summarizes the drawings included in the ALP set. The purpose of the ALP set is to provide Airport management with a scaled, graphic presentation of the Airport's 20 year development.

**Table A-1: Runway Characteristics**

CHARACTERISTIC	9L-27R	9R-27L	12-30
Length (feet)	8,002	4,309	6,800
Width (feet)	150	100	150
Runway Design Code	D/IV/4000	B/II/VIS	D/IV/4000 - D/IV/VIS
Approach Capability	Precision / Precision	Visual / Visual	Precision / Non-Precision
Lowest Visibility Minimums	0.75 mile	3.0 miles	0.75 mile

SOURCES: Federal Aviation Administration, Advisory Circular 150/5300-13A (Change 1), *Airport Design*, February 26, 2014; Federal Aviation Administration Order 8260.3b, *United States Standards for Terminal Instrument Approach Procedures*, December 2014; Ricondo & Associates, Inc., December 2015.

PREPARED BY: Ricondo & Associates, Inc., December 2015.

program, as presented in the SMP for 2015 through 2035 (the planning horizon). The ALP drawing sheets also provide information such as specific Airport data (e.g., runway coordinates, design aircraft), a graphical depiction of airspace surfaces (e.g., Title 14 Code of Federal Regulations Part 77 [14 CFR Part 77] imaginary surfaces, FAA Order 8260.3b, *United States Standard for Terminal Instrument Procedures* [TERPS] departure surfaces, threshold siting surfaces), land use information, and property boundaries. These drawing sheets identify areas for future aviation-related development, as well as available land that can be used for revenue generation to support the Airport. The ultimate configuration of Airport facilities demonstrates a feasible improvement plan that provides for safe, compatible, and efficient Airport operations.

The dimensional information provided on the ALP drawings demonstrates compliance with minimum airport design standards established by federal, State of Florida, and local authorities. This ALP set was developed in accordance with the guidance set forth in FAA Advisory Circulars (ACs) 150/5070-6B (Change 2), *Airport Master Plans*, and 150/5300-13A (Change 1), *Airport Design*, and the Florida Department of Transportation's (FDOT's) *Guidebook for Airport Master Planning*. Furthermore, the ALP set was reviewed for compliance with the FAA's ALP Checklist-ARP SOP 2.00, which is provided in Appendix A of this document. The ALP set will be revised over time to reflect new facility and infrastructure development and proposed changes to planned development at OPF so that the FAA and FDOT will be continually updated regarding current conditions at OPF.

Other considerations, such as modifications of standards (MOS), declared distances, wind coverage, obstruction surfaces, and runway protection zones (RPZs), were also investigated. The current and future Airport Reference Code (ARC), Runway Design Codes (RDCs), Approach Reference Codes (APRCs), and Departure Reference Codes (DPRCs) were also identified for the airfield.

The aeronautical forecasts for OPF include annual and peak period GA aircraft operations, as well as the number of based GA aircraft accommodated at the Airport in the 2010 Base Year and at two additional planning periods, referred to as planning activity levels (PALs):

- PAL 1 – reflective of the demand level projected for 2025 under the SMP’s Baseline Forecast
- PAL 2 – reflective of the demand level projected for 2035 under the SMP’s Baseline Forecast

The SMP Baseline forecasts represent unconstrained conditions for future GA activity without consideration of existing or potential capacity constraints. These forecasts also provide justification for planning and development recommendations contained in the SMP. The various forecast metrics, such as annual GA aircraft operations, annual itinerant operations by all aircraft, annual itinerant operations by the current and future critical aircraft, and the forecast of based aircraft at OPF, are summarized in **Table A-2**.

**Table A-2: SMP Baseline Forecast Summary**

FORECAST METRIC	2010 (ACTUAL)	PAL 1 (2025)	PAL 2 (2035)
Annual Aircraft Operations	83,961	111,900	147,800
Annual Itinerant Operation by All Aircraft	64,582	90,700	113,750
Annual Itinerant Operation by Current Critical Aircraft	1,450	2,030	2,550
Annual Itinerant Operation by Future Critical Aircraft	1,450	2,030	2,550
Based Aircraft	231	298	383
Annual Instrument Operations	37,820	53,100	66,600
Annual Enplaned Passengers	N/A	N/A	N/A

SOURCES: URS Corporation, *SMP General Aviation Forecasts*, June 2012; Ricondo & Associates, Inc., December 2015.  
 PREPARED BY: Ricondo & Associates, Inc., December 2015.

MDAD entered into long-term leasehold agreements for OPF with several private developers. **Table A-3** presents a summary of the leasehold terms for each tenant of the developed facilities. With approximately 635 acres of airport property delegated to long-term leases and historical/environmental preservation, approximately 20 acres of property immediately south of Runway 9R-27L remain that could be developed in aeronautical uses by MDAD.

Currently, all aeronautical facilities at OPF are located within the boundaries of the leaseholds with AA Acquisitions, Landmark Aviation, Biscayne Capital, and Turnberry Airport Holdings. The U.S. Coast Guard facilities are located on land that is not owned by MDAD and therefore not considered airport property. These tenants have multiple subleases with other subtenants, most of which serve aeronautical purposes.

**Table A-3: OPF Tenant Leaseholds**

TENANT	LEASEHOLD AREA (ACRES)	LEASEHOLD TERM (YEARS)	EXPIRATION DATE
AA Acquisitions	180	55	March 2062
AVE, LLC	255	55	February 2062
Meek Foundation	125	55	August 2063
Turnberry Airport Holdings, LLC	41	40	June 2055
Biscayne Capital	1	25	August 2032
Landmark Aviation	25	35	June 2040
U.S. Government (Coast Guard)	50 <sup>1/</sup>	Not Applicable	Not Applicable

Note:

1/ The U.S. Coast Guard facilities are located on land that is not owned by the Miami-Dade Aviation Department.

SOURCE: Miami-Dade Aviation Department, OPF Tenant Leasehold Boundary Exhibits, November 2012.

PREPARED BY: Ricondo & Associates, Inc., December 2014.

Demand-capacity analyses of both the airfield and tenant/support facilities that serve aeronautical purposes are conducted for OPF. From the results of the airfield demand-capacity analysis, it was concluded that OPF will have adequate capacity to accommodate demand forecast through PAL 2 (2035). In developing tenant and support facility requirements, consideration was given to aircraft parking and storage, automobile parking, aircraft fueling facilities, and Airport support functions. Future facility requirements for accommodating the PAL 2 demand levels forecasted for OPF include the following facilities and infrastructure:

- Conventional Hangars
- Apron and Ramp Improvements
- Automobile Parking
- Aviation (Jet A) Fuel Facility
- Engine Run-up Enclosure
- Maintenance, Repair, and Overhaul (MRO) Facilities
- Four Airfield Modifications to Serve Future Aviation Tenant Facilities and to Ensure Compliance with FAA Design Standards
  - Runway 9R-27L Taxiway Connectors/Northeast Taxiway Extension
  - Runway 12-30 Taxiway Connectors/Partial Parallel Taxiway
  - Runway 9R-27L Taxiway Connectors/Parallel Taxiway
  - Runway 9L-27R Taxiway Connectors/Parallel Taxiway

Using the gross facility requirements derived for OPF, a development scenario was generated that incorporated the development plans provided by each of the primary leaseholders. To demonstrate the general locations of future facility development, this scenario was generated at a land use level of detail (i.e., detailed facility layouts were not developed) and then refined to include the facilities proposed by the primary leasehold tenants. Additional aviation facilities could also be developed immediately south of Runway 9R-27L and are incorporated into the development scenario. The areas designated for future tenant facilities coincide with the facility requirements for PAL 2 (2035), but only those facilities proposed outside of the primary tenant leasehold areas (south of Runway 9R-27L) served as the basis for generating an engineer's estimate of probable costs. These costs include consideration of construction costs and soft costs associated with design, permitting, bidding, construction, and program management.

For capital planning purposes, the facility and infrastructure development initiatives associated with the preferred development scenario was categorized into one of four development phases. Each phase reflects a 5-year period, as follows:

- Phase 1 (2016 - 2020)
- Phase 2 (2021 – 2025)
- Phase 3 (2026 – 2030)
- Phase 4 (2031 – 2035)

**Table A-4** presents the total implementation costs for each of the capital improvement development needs identified in the SMP for OPF. These projects are summarized in accordance with the four development phases.

Table A-4: Development Cost Summary

PROJECT DESCRIPTION	TOTAL COST
<b>Phase 1</b>	
Engine Run-up Enclosure	\$ 8,155,000
Runway 9R-27L Taxiway Connectors/Northeast Taxiway Extension	\$ 53,309,000
<b>Subtotal (Phase 1)</b>	<b>\$ 61,464,000</b>
<b>Phase 2</b>	
Runway 12-30 Taxiway Connectors/Taxiway	\$ 94,777,000
<b>Subtotal (Phase 2)</b>	<b>\$ 94,777,000</b>
<b>Phase 3</b>	
Runway 9R-27L Taxiway Connectors/Parallel Taxiway	\$ 40,036,000
<b>Subtotal (Phase 3)</b>	<b>\$ 52,587,000</b>
<b>Phase 4</b>	
Runway 9L-27R Taxiway Connectors/Parallel Taxiway	\$ 128,777,000
<b>Subtotal (Phase 4)</b>	<b><u>\$143,326,000</u></b>
<b>Grand Total</b>	<b>\$325,054,000</b>

## NOTES:

Costs include consideration of both hard (construction) and soft (design, permitting, and construction administration) costs and reflect projected costs at the time of construction using an annual escalation rate of 3 percent.

SOURCES: URS Corporation, *Construction Costs*, April 2014; Ricondo & Associates, Inc., *SMP Technical Analyses*, August, 2014.

PREPARED BY: Ricondo & Associates, Inc., December 2015.

To clearly present existing conditions and the recommended Airport improvements, the ALP set for OPF consists of 21 drawing sheets. The ALP sheets are essential in the process of applying for federal or State funding assistance for any development project and also serves as the mechanism for projects to undergo FAA airspace review. For OPF, the ALP set is presented on the following drawing sheets:

- Cover Sheet (1 of 21)
- Airport Data Sheet (2 of 21)
- Existing Airport Layout Plan (3 of 21)
- Future Airport Layout Plan (4 of 21)
- Airport Airspace Drawing (5 of 21)
- Runway 9L Outer Approach Airspace Drawing (6 of 21)
- Runway 27R Outer Approach Airspace Drawing (7 of 21)
- Runway 12 Outer Approach Airspace Drawing (8 of 21)
- Airport Airspace Plan and Profile (9 of 21)
- Runway 9L Inner Portion of the Approach Surface Drawing (10 of 21)
- Runway 27R Inner Portion of the Approach Surface Drawing (11 of 21)
- Runway 9R Inner Portion of the Approach Surface Drawing (12 of 21)
- Runway 27L Inner Portion of the Approach Surface Drawing (13 of 21)
- Runway 12 Inner Portion of the Approach Surface Drawing (14 of 21)
- Runway 30 Inner Portion of the Approach Surface Drawing (15 of 21)
- Runway 9L-27R Departure Surface Drawing (16 of 21)
- Runway 9R-27L Departure Surface Drawing (17 of 21)
- Runway 12-30 Departure Surface Drawing (18 of 21)
- On-Airport Land Use Drawing (19 of 21)
- Off-Airport Land Use Drawing (20 of 21)
- Airport Property Map (21 of 21)

Reduced reproductions of these drawings are included in **Appendix B** of this report for illustration purposes. A full-size set of the drawings is also being submitted with this report to the FAA and FDOT for review and acceptance.

## B. Basic Aeronautical Forecasts

Aeronautical forecasts were developed for future aviation demand at the Airport. Forecasts of aviation demand are important in the planning process as they provide the basis for determining the orderly development of the Airport facilities and infrastructure including:

- Documentation of the role of the Airport and determination of the type of aircraft to be accommodated in the 10 and 20 year planning horizons.
- Evaluation of the capacity of existing Airport facilities and their ability to accommodate required future growth in demand.
- Determination of the extent of airside and landside facilities required to accommodate forecast demand through the 20-year planning horizon.

A detailed *SMP General Aviation Activity Forecasts (Aeronautical Forecasts)* report was prepared for MDAD in June 2012 and the forecasts were subsequently approved by the FAA in August 2012. The FAA approval letter is included in **Appendix C** of this document. The findings from that report are summarized below.

The aeronautical forecasts for OPF include annual and peak period GA aircraft operations, as well as the number of based GA aircraft accommodated at the Airport in the 2010 Base Year and at two planning activity levels (PAL's):

- PAL 1 (FY 2025)
- PAL 2 (FY 2035)

The aeronautical forecasts represent unconstrained conditions for future GA activity without consideration of existing or potential capacity constraints. The forecasts also provide justification for planning and development recommendations contained in the SMP. These forecasts have been reviewed and approved by the FAA as being consistent with the most current FAA *Terminal Area Forecast (TAF)*<sup>1</sup>, and provide justification for planning and development recommendations contained in the SMP.

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<sup>1</sup> The most current FAA TAF available at the time the OPF Aeronautical Forecasts were prepared is dated January 2012.

The approach to forecasting general aviation activity at MDAD's GA airports, including OPF, differs from the approach used to forecast air carrier activity at MIA because of the unique operational characteristics and role of each airport. To reflect the diversity of the level of service and facilities offered at OPF, as well as recognition of the limited availability of historical aircraft operations and based aircraft data, data reported in the FAA's Air Traffic Activity Data System (ATADS) and the TAF were used to forecast annual aircraft operations and based aircraft at all four of the County's general aviation airports. This approach reflects a "top-down" market share approach to forecasting in which current activity at an airport is calculated as a static share (percentage or ratio) of some other more aggregate external measure for which forecasts have already been produced. Then, an assumption is made relative to the airport's future share of that activity.

Using general aviation-specific data, as provided in Table 28, "Active General Aviation and Air Taxi Aircraft," of the FAA's *Aerospace Forecasts, FY 2012-2032*<sup>2</sup>, forecasts of future year-over-year growth trends of the various types of active general aviation aircraft were developed. These trends served as the basis for forecasting general aviation activity by aircraft type at OPF, as well as based aircraft.

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## B.1 Total Annual Aircraft Operations

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**Exhibit B-1** reflects the total annual general aviation aircraft operations at OPF. Based on the Aeronautical Forecast the total annual GA aircraft operations are forecast to increase from 83,961 in 2010 to 111,900 in PAL 1 (2025) and to 147,800 in PAL 2 (2035), representing an average annual compound growth rate (AACGR) of 2.29 percent. The forecast year-over-year growth of GA aircraft operations in the FAA TAF for OPF increases from 83,961 in 2010 to 112,254 in PAL 2 (2035) at an AACGR of 1.17 percent.

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## B.2 Annual Itinerant Operations by all Aircraft

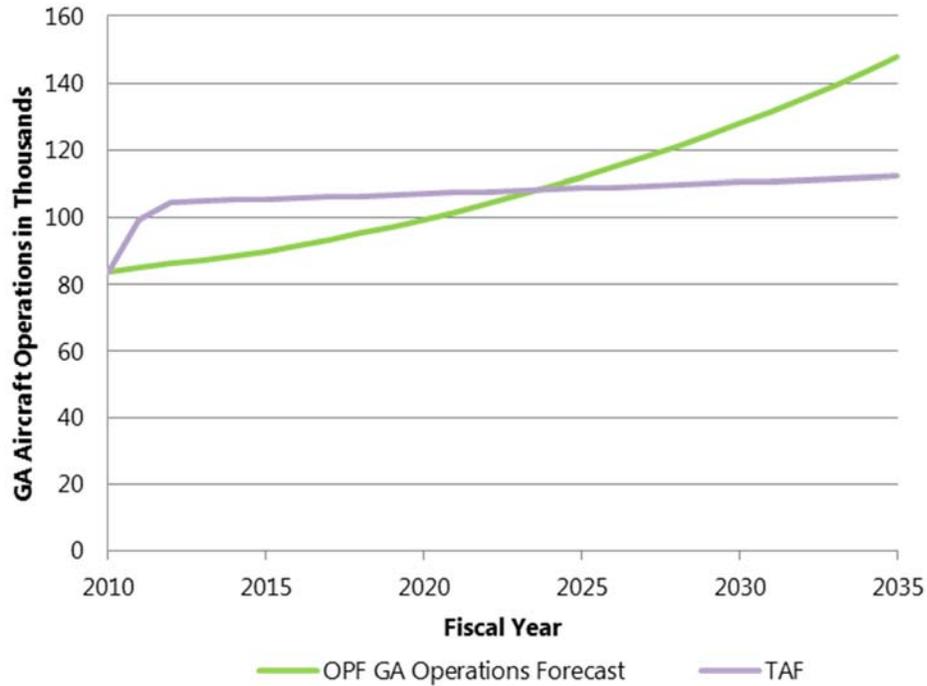
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For purposes of this ALP Narrative Report, the SMP's annual growth rate for total annual aircraft operations was applied to the actual number of annual itinerant aircraft operations in 2010, as contained in the FAA TAF. As presented on **Exhibit B-2**, applying these growth rates results in itinerant aircraft operations at OPF increasing from 64,582 (2010) to a forecast 90,700 at PAL 1 (2025) and a forecast of 113,750 at PAL 2 (2035). The forecast year-over-year growth of annual itinerant operations in the FAA TAF for OPF increases from 64,582 in 2010 to 86,700 in PAL 2 (2035).

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<sup>2</sup> The federal fiscal year (FY) is from October 1 through September 30.

**Exhibit B-1: Total Forecast of General Aviation Aircraft Operations**



FISCAL YEAR	SMP GENERAL AVIATION OPERATIONS FORECAST FOR OPF	FAA TERMINAL AREA FORECAST
2010 (Actual)	83,961	83,961
PAL 1 (2025)	111,900	108,738
PAL 2 (2035)	147,800	112,254
AACGR (2010 – 2035)	2.29%	1.17%

NOTES:

The County's Fiscal Year = October 1 through September 30

AACGR = Average Annual Compound Growth Rate

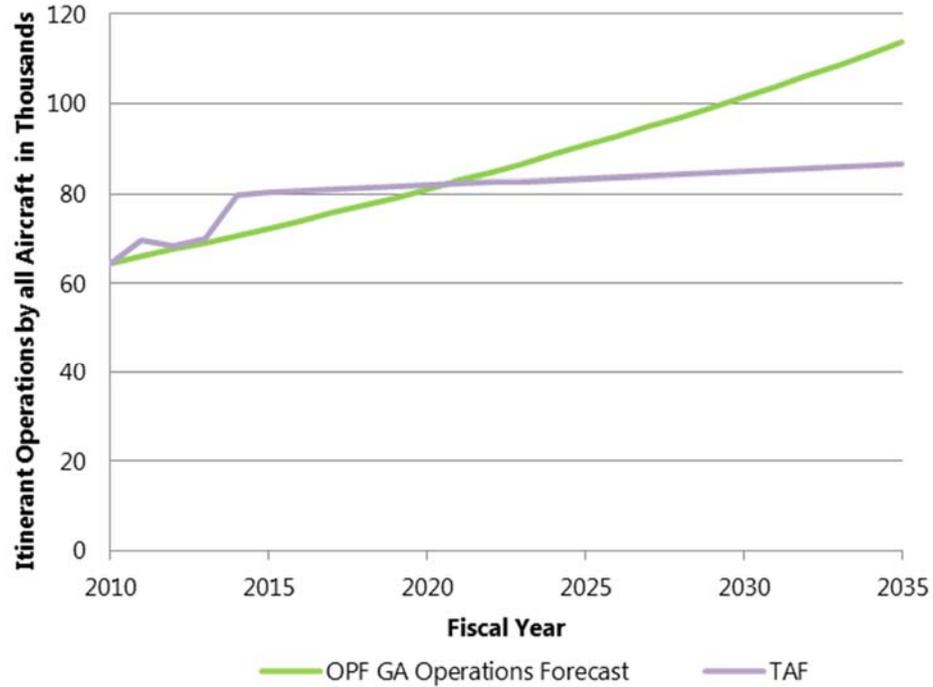
GA = General Aviation

TAF = Terminal Area Forecast

SOURCES: URS Corporation, *SMP General Aviation Forecasts*, June 2012; Federal Aviation Administration, *Terminal Area Forecast*, January 2012.

PREPARED BY: Ricondo & Associates, Inc., December 2015.

**Exhibit B-2: Annual Itinerant Operations by All Aircraft**



FISCAL YEAR	SMP GENERAL AVIATION OPERATIONS FORECAST <sup>1/</sup> FOR OPF	FAA TERMINAL AREA FORECAST
2010 (Actual)	64,582	64,582
PAL 1 (2025)	90,700	83,400
PAL 2 (2035)	113,750	86,700
AACGR (2010 – 2035)	2.29%	1.18%

NOTES:

The County's Fiscal year = October 1 through September 30

AACGR = Average Annual Compound Growth Rate

GA = General Aviation

TAF = Terminal Area Forecast

1/ Using the TAF total annual itinerant operation by all aircraft in 2010 as the starting point for the SMP forecasts values were calculated by applying AACGR for total annual aircraft operations (2.29 percent) to the total annual itinerant operation in 2010.

SOURCES: URS Corporation, SMP General Aviation Forecasts, June 2012; Federal Aviation Administration *Terminal Area Forecast*, January 2012.

PREPARED BY: Ricondo & Associates, Inc., December 2015.

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## B.3 Annual Itinerant Operations by Current Critical Aircraft

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**Exhibit B-3** presents total annual itinerant operations by the current critical aircraft at OPF. In accordance with operational data obtained from MDAD's Aircraft Noise and Operations Monitoring System (ANOMS), the current critical aircraft at OPF is the Boeing Business Jet (BBJ). To forecast annual itinerant operations by the current critical aircraft, a composite of several Airplane Design Group (ADG) III aircraft was used. Operations by ADG III aircraft at OPF totaled 1,450 in 2010. Growth in annual itinerant operations by the current critical aircraft was calculated by applying AACGR for total annual aircraft operations (1.25 percent) to the actual number of current critical aircraft operations in 2010. At this growth rate, annual itinerant operations by the current critical aircraft at OPF are forecast to increase from 1,450 in 2010 to 2,030 at PAL 1 and to 2,550 at PAL 2.

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## B.4 Annual Itinerant Operations by Future Critical Aircraft

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An evaluation of the 2010 aircraft fleet mix did not identify a more demanding aircraft that would be likely to exceed 500 annual operations at OPF during the planning horizon. Therefore, the future critical aircraft at OPF is expected to continue being a composition of ADG-III aircraft. The total number of annual itinerant operations by the future critical aircraft is forecast to be the same as for the current critical aircraft, as shown on Exhibit B-3.

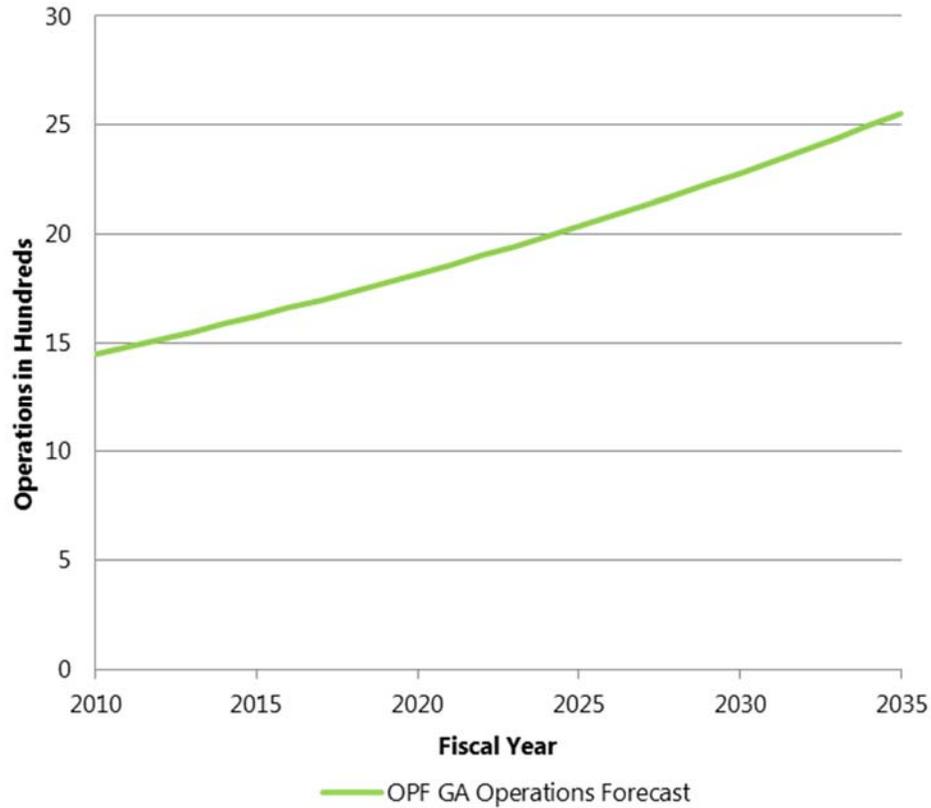
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## B.5 Based Aircraft

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The forecast of based aircraft at OPF is presented on **Exhibit B-4**. Using information and data provided by MDAD, an inventory of the numbers and types of aircraft permanently based at OPF was developed and analyzed. Using this data, future based aircraft by type at OPF were forecast by referencing the FAA *Aerospace Forecasts, FY 2012-2032*, Table 28, "Active General Aviation and Air Taxi Aircraft." The forecasts of based aircraft at OPF are presented by PAL and graphically shown on Exhibit B-4.

**Exhibit B-3: Annual Itinerant Operations by Current Critical Aircraft**



FISCAL YEAR	CURRENT CRITICAL AIRCRAFT OPERATIONS FORECAST <sup>1/</sup> FOR OPF	FAA TERMINAL AREA FORECAST
2010 (Actual)	1,450	Not Available
PAL 1 (2025)	2,030	Not Available
PAL 2 (2035)	2,550	Not Available
AACGR (2010 – 2035)	2.29%	Not Available

**NOTES:**

The County's Fiscal year = October 1 through September 30

AACGR = Average Annual Compound Growth Rate

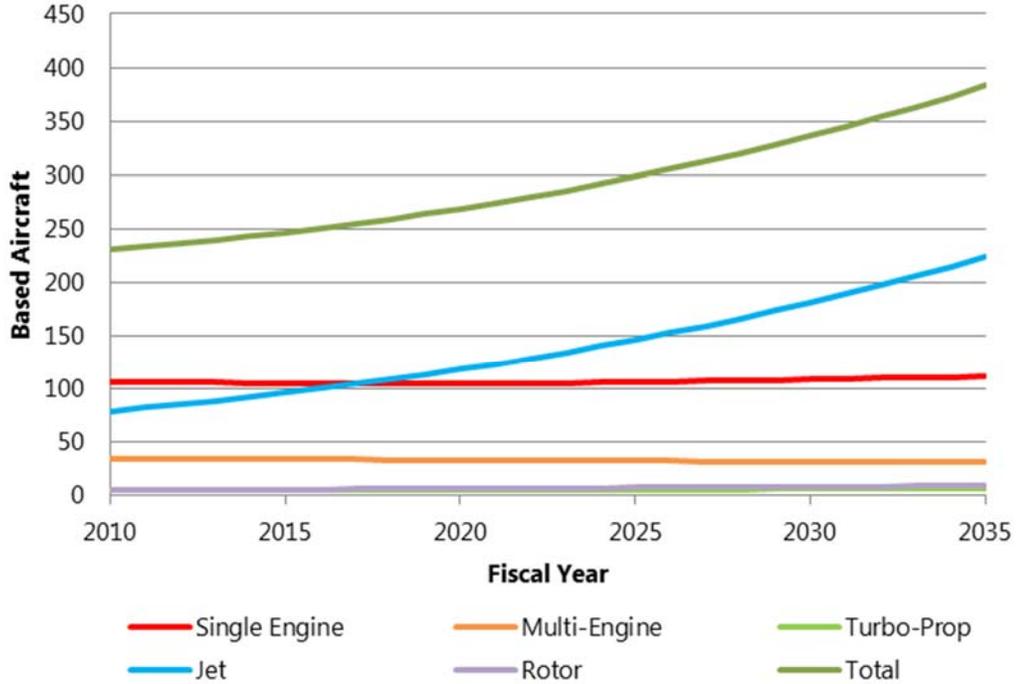
GA = General Aviation

1/ Using the critical aircraft (Group 3 Composite) operations in 2010 as the starting point, the SMP forecasts values were calculated by applying AACGR for total annual aircraft operations (2.29 percent) to the actual number of current critical aircraft operations in 2010.

SOURCES: URS Corporation, SMP General Aviation Forecasts, June 2012.

PREPARED BY: Ricondo & Associates, Inc., December 2015

**Exhibit B-4: Forecasts of Based Aircraft**



FISCAL YEAR	SINGLE ENGINE	MULTI-ENGINE	TURBO-PROP	JET	ROTOR	TOTAL
2010 (Actual)	107	35	5	79	5	231
PAL 1 (2025)	106	33	6	146	7	298
PAL 2 (2035)	112	31	6	224	9	382
AACGR (2010 – 2035)	0.80%	-0.48%	0.73%	4.26%	2.38%	2.04%

**NOTES:**

The County's Fiscal year = October 1 through September 30

AACGR = Average Annual Compound Growth Rate

SOURCES: URS Corporation, *SMP General Aviation Forecasts*, June 2012;

PREPARED BY: Ricondo & Associates, Inc., December 2015.

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## B.6 Annual Instrument Approaches

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The ATCT at OPF is operated through the FAA's contract tower program. Both primary Runways 9L-27R and 12-30 are equipped with instrument landing systems and are configured to serve ADG IV aircraft (wingspans greater than 118 feet but less than 171 feet). The FAA's ATADS was used to retrieve information on historical annual itinerant instrument operations at OPF. The growth in annual itinerant instrument flight rule (IFR) operations was calculated by applying AACGR for total annual aircraft operations (2.29 percent) to the actual number of itinerant IFR operations in 2010. At this growth rate, annual itinerant IFR operations are forecast to increase from 37,820 in 2010 to 53,100 at PAL 1 (2025) and to 66,600 at PAL 2 (2035). **Exhibit B-5** presents total annual itinerant instrument operations.

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## B.7 Enplaned Passengers

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OPF is a GA airport with no scheduled or charter air carrier or cargo service. As such, forecasting enplaned passengers or cargo were not prepared for OPF.

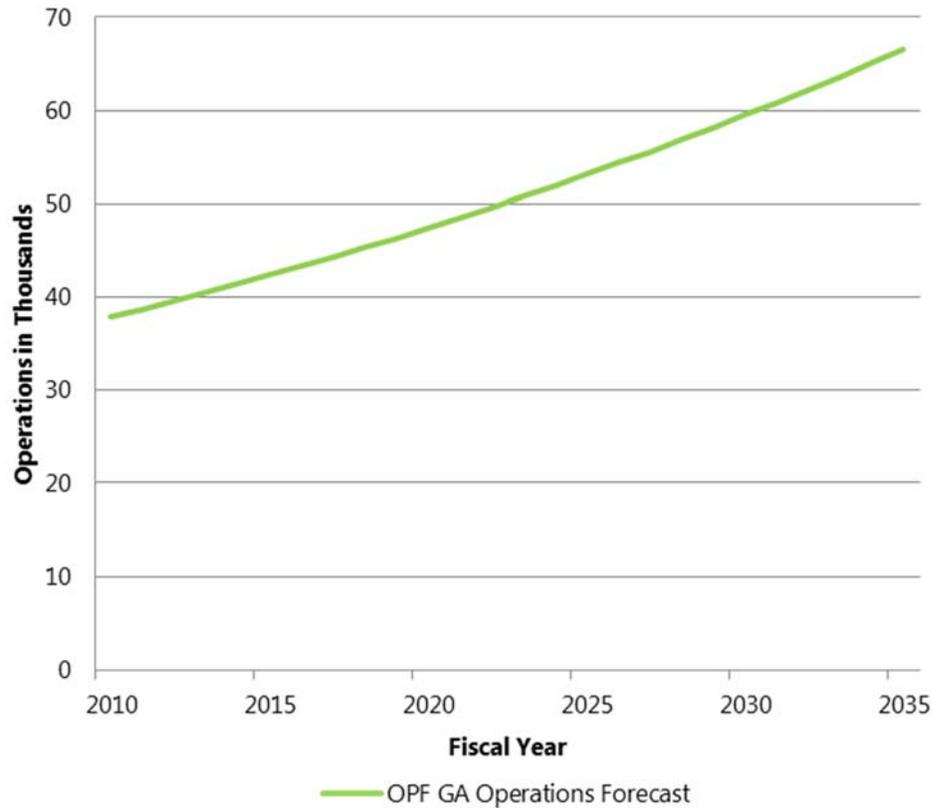
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## B.8 Critical Aircraft

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The current critical aircraft at OPF is the BBJ, which is an ADG III aircraft. A composite of several ADG III aircraft operating at OPF, such as the Airbus A319, Boeing 707/727/737, Gulfstream 5, and Bombardier 600, accounted for 1,450 operations at OPF in 2010. It is anticipated that the ADG-III will remain the critical aircraft throughout the planning horizon.

**Exhibit B-5: Annual Itinerant Instrument Operations by All Aircraft**



FISCAL YEAR	SMP GENERAL AVIATION OPERATIONS FORECAST <sup>1/</sup> FOR OPF	FAA TERMINAL AREA FORECAST
2010 (ACTUAL)	37,820	Not Available
PAL 1 (2025)	53,100	Not Available
PAL 2 (2035)	66,600	Not Available
AACGR (2010 – 2035)	2.29%	Not Available

**NOTES:**

The County’s Fiscal year = October 1 through September 30

AACGR = Average Annual Compound Growth Rate

GA = General Aviation

1/ Using the total itinerant instrument aircraft operations in 2010 as the starting point, the SMP General Aviation Forecasts values were calculated by applying AACGR for total annual aircraft operations (2.29 percent) to the actual number of itinerant instrument aircraft operations in 2010.

SOURCES: URS Corporation, SMP General Aviation Forecasts, June 2012; Federal Aviation Administration Air Traffic Activity System, August 2015; Ricondo & Associates, Inc., December 2015.

PREPARED BY: Ricondo & Associates, Inc., December 2015.

## B.9 Runway Design Code

The Runway Design Code is a coding system described in FAA AC 150/5300-13A (Change 1), *Airport Design*, as the basis for specifying applicable runway design standards. The RDC is used to compile the numerous dimensional and performance specifications of aircraft operating at or expected to operate at an airport into criteria that define the dimensional and design standards for a given runway. The RDC consists of three parameters: Airplane Approach Category (AAC), ADG, and approach visibility minimums. **Table B-1** summarizes the current RDCs for the three runways at OPF. The Runway 9L approach visibility minimum is currently published as  $\frac{3}{4}$ -mile. The airport will be mitigating any obstructions to the Runway 9L approach necessary to achieve a 2,400 foot ( $\frac{1}{2}$ -mile) visibility minimum.

**Table B-1: Runway Design Codes**

RUNWAY	AIRCRAFT APPROACH CATEGORY		AIRPLANE DESIGN GROUP		VISIBILITY MINIMUM (FEET)		RUNWAY DESIGN CODE	
	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE
9L	D	Same	IV	Same	4,000	2,400	D/IV/4,000'	D/IV/2,400
27R	D	Same	IV	Same	4,000	Same	D/IV/4,000'	Same
9R	B	Same	II	Same	VIS	Same	B/II/VIS	Same
27L	B	Same	II	Same	VIS	Same	B/II/VIS	Same
12	D	Same	IV	Same	4,000	Same	D/IV/4,000'	Same
30	D	Same	IV	Same	VIS	4,000	D/IV/VIS	D/IV/4,000'

NOTES:

VIS = Visual

SOURCES: Jacobsen Daniels Associates, LLC, December 2015; Ricondo & Associates, Inc., December 2015.

PREPARED BY: Ricondo & Associates, Inc., December 2015.

## B.10 Runway Reference Codes

The Runway Reference Code (RRC), or the Approach and Departure Reference Codes (APRC and DPRC), describe the current operational capabilities of a runway and adjacent taxiways where no special operating procedures are necessary. The APRC consists of the same three parameters as the RDC (AAC, ADG, and visibility minimums) whereas the DPRC consists of the AAC and ADG only. The APRC and DPRC coding system is set forth in FAA AC 150/5300-13A (Change 1), *Airport Design*. The APRC and DPRC differ from the RDC, as the RDC is based on planned development and has no operational application. The APRC and DPRC may change over time as improvements are made to the runway, taxiway, and navigational aids. **Table B-2** summarizes the existing and future APRCs and DPRCs for OPF.

**Table B-2: Approach and Departure Reference Codes**

RUNWAY	APPROACH REFERENCE CODE		DEPARTURE REFERENCE CODE	
	EXISTING	FUTURE	EXISTING	FUTURE
9L	D/IV/4000	D/IV/2,400	D/IV	Same
27R	D/IV/4000	Same	D/IV	Same
9R	B/III/5000 - D/II/5000	Same	B/III - D/II	Same
27L	B/III/5000 - D/II/5000	Same	B/III - D/II	Same
12	D/IV/2400 - D/V/4000	Same	D/IV - D/V	Same
30	D/IV/VIS - D/V/VIS	D/IV/2400 - D/V/4000	D/IV - D/V	Same

SOURCES: Jacobsen Daniels Associates, LLC, December 2015; Ricondo & Associates, Inc., December 2015.

PREPARED BY: Ricondo & Associates, Inc., December 2015.

## C. Alternatives/Proposed Development

### C.1 Proposed Development Items

A demand-capacity analysis of the airfield and tenant/support facilities that serve aeronautical purposes was conducted for OPF. The purpose of these analyses was to compare the capacity of existing facilities and infrastructure with current and future operational demand to determine when additional airport improvements would be required. When deficiencies were identified, future facility requirements were projected and quantified. A demand-capacity analysis was conducted for the following airport components:

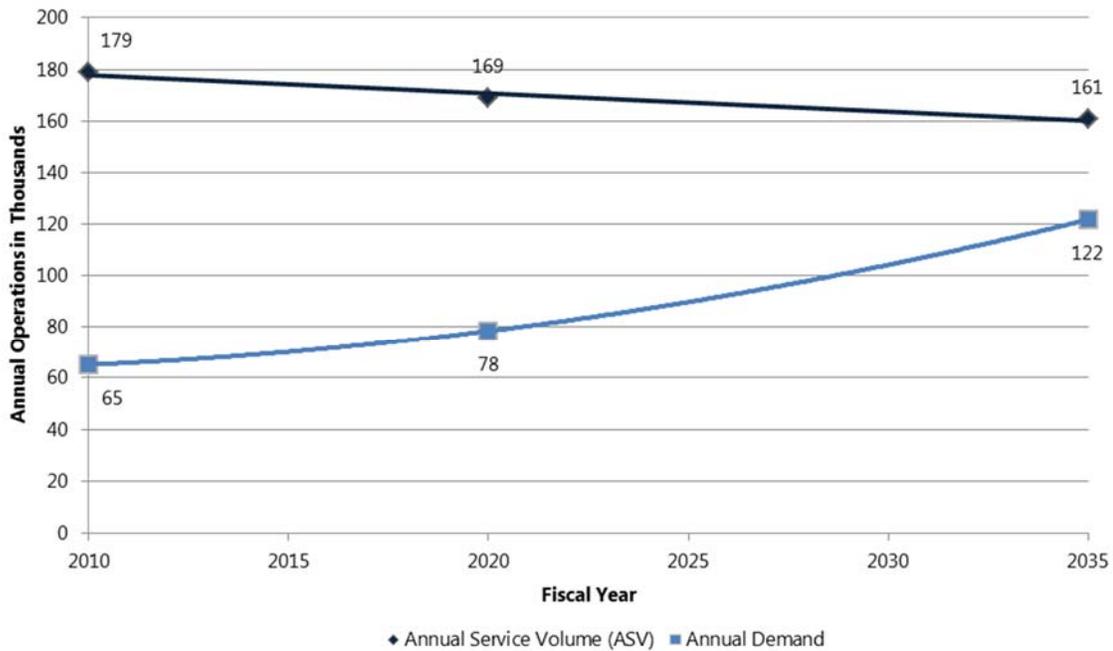
- Airfield
- Tenant/Support Facilities
  - Aircraft hangars, FBO terminals, and shops
  - Automobile parking facilities
  - Aircraft fuel storage facilities
  - Airport administration offices and maintenance
  - Aircraft rescue and fire-fighting (ARFF) facilities

#### C.1.1 AIRFIELD

**Exhibit C-1** graphically represents the airfield demand-capacity analysis for OPF. More specifically, the exhibit demonstrates the forecast operational demand at which the annual service volume (ASV) of the airfield would be reached. ASV represents the airfield's annual capacity given seasonal and daily fluctuations in aircraft operational demand.

It was determined through the airfield demand-capacity analysis that OPF would have adequate capacity to accommodate demand forecast beyond PAL 2 (2035). Although the forecasts do not demonstrate a need for any airfield capacity improvements, MDAD has elected to modify the runway exits along with certain taxiway enhancements that would support conformance with FAA design standards and taxiway circulation improvements.

**Exhibit C-1: Airfield Demand-Capacity Analysis Comparison**



SOURCES: Federal Aviation Administration, Advisory Circular 150/5060-5A (Change 1), *Airport Capacity and Delay*, September 23, 1983; Ricondo & Associates, Inc., July 2012.

PREPARED BY: Ricondo & Associates, Inc., December 2015.

Four airfield modifications to serve future aviation tenant facilities and to ensure compliance with FAA design standards were identified;

- Runway 9R-27L Taxiway Connectors/Northeast Taxiway Extension
- Runway 12-30 Taxiway Connectors/Partial Parallel Taxiway
- Runway 9R-27L Taxiway Connectors/Parallel Taxiway
- Runway 9L-27R Taxiway Connectors/Parallel Taxiway

**C.1.2 TENANT/SUPPORT FACILITIES**

**Table C-1** summarizes the facility requirements for OPF to satisfy the demand associated with PAL 2 (2035). These facility requirements include considerations for aircraft parking and storage, automobile parking, aircraft fueling facilities, and Airport support functions. To translate these requirements into gross acreage, a contingency for aircraft circulation and drainage/landscaping features was added.<sup>3</sup> Aircraft circulation includes areas dedicated to hangar egress and taxiway/taxilane circulation.

<sup>3</sup> A total contingency of 74 acres was added for aircraft circulation (38 acres) and drainage and landscaping (36 acres).

**Table C-1: Tenant/Support Facility Needs (in square feet unless otherwise noted)**

FACILITY TYPE	EXISTING	PAL 2 (2035) GROSS FACILITY REQUIREMENTS	ADDITIONAL FACILITIES TO SERVE PAL 2 (2035)
Aircraft Parking/Storage			
T-Hangars	15,000 <sup>1/</sup>	0	0
Conventional Hangars	503,100	2,170,600	1,667,500
Apron/Ramp	2,327,100	3,345,700 <sup>2/</sup>	1,018,600
Automobile Parking	215,800	584,900	369,100
Aviation Fuel			
100 LL	6,000	6,000	0
Jet A	12,100	20,350	8,250
Airport Support			
MDAD Maintenance Yard	36,700	36,700	0
MDAD Administration	9,450	9,450	0
MDAD Covered Parking	2,250	2,250	0
Aircraft Rescue and Fire-fighting Facilities	11,250	11,250	0
<b>Total Facilities</b>	<b>3,138,750</b>	<b>6,187,200</b>	<b>3,063,450</b>
		Aircraft Circulation Adjustment <sup>3/</sup>	1,667,500
		Drainage and Landscape Adjustment	1,585,200
		<b>Total Adjusted PAL 2 Requirements</b>	<b>6,316,150</b>
		<b>Acreage</b>	<b>145.0 acres</b>

## NOTES:

1/ The gross area of the existing T-hangar facilities was increased to account for the areas dedicated to hangar access and egress.

2/ Excludes apron area needed for hangar access and egress.

3/ The hangar access and egress areas, as well as taxiway circulation areas are included in the Aircraft Circulation Adjustment.

SOURCE: Ricondo & Associates, Inc., and Jacobsen/Daniels Associates, LLC, *SMP Technical Analyses*, March 2013.

PREPARED BY: Jacobsen/Daniels Associates, LLC, August 2013.

In accordance with the facility requirements associated with PAL 2, the Future ALP depicts the development of the following tenant/support facilities at OPF:

- Conventional Hangars
- Apron and Ramp Improvements
- Automobile Parking
- Aviation (Jet A) Fuel Facility
- A Maintenance, Repair, and Overhaul (MRO) facility

At the request of MDAD, consideration for an aircraft run-up enclosure is also provided.

## C.2 Near Term and Future Approach Procedures Requirements

Mitigation of obstructions at the Runway 9L approach will decrease the visibility minimum from three-quarters of a mile to one half a mile. All other approach procedures at OPF are anticipated to remain the same through the 20-year planning horizon.

## C.3 Navigational Aids

OPF has both visual and instrument approach aids, as summarized in **Table C-2**.

**Table C-2: Navigational Aids**

RUNWAY	RUNWAY LIGHTS		RUNWAY MARKING		VISUAL APPROACH AIDS		INSTRUMENT APPROACH AIDS	
	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE
9L	HIRL	Same	Precision	Same	MALSR, VASI-V4L	Same	ILS	Same
27R	HIRL	Same	Precision	Same	MALSR, VASI-V4L	Same	ILS/DME	Same
9R	MIRL	Same	Visual	Same	VASI-V4L	Same	None	Same
27L	MIRL	Same	Visual	Same	PAPI-P4L	Same	None	Same
12	HIRL	Same	Precision	Same	MALSR, PAPI-P4L	Same	ILS/DME	Same
30	HIRL	Same	Non-Precision	Same	PAPI-P4L	Same	None	Same

**NOTES:**

DME = Distance Measuring Equipment

HIRL = High Intensity Runway Lights

ILS = Instrument Landing System

MALSR = Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights

MIRL = Medium Intensity Runway Lights PAPI-P4L = 4 box Precision Approach Path Indicator system on the left side of the runway centerline

PAPI-P4L = 4 box Precision Approach Path Indicator system on the left side of the runway centerline

VASI-V4L = 4 box Visual Approach Slope Indicator system on the left side of the runway centerline

SOURCES: Jacobsen Daniels Associates, LLC, December 2015; Ricondo & Associates, Inc., December 2015.

PREPARED BY: Ricondo & Associates, Inc., December 2015.

## C.4 Wind Coverage

**Table C-3** summarizes the wind coverage associated with each runway at OPF. As shown, all three runways provide a combined, all-weather wind coverage of 99.98 percent. As the wind coverage associated with the existing runway configuration at OPF exceeds 95 percent, no additional runways are required to provide adequate wind coverage.

**Table C-3: Runway Wind Coverage**

<b>RUNWAY</b>	<b>RUNWAY DESIGN CODE</b>	<b>MAXIMUM CROSSWIND COMPONENT</b>	<b>ALL WEATHER WIND COVERAGE</b>
9R-27L	B-II	13 knots	98.64%
9L-27R	D-IV	20 knots	99.94%
12-30	D-IV	20 knots	99.98%
		<b>Combined</b>	<b>99.98%</b>

SOURCES: Jacobsen Daniels Associates, LLC, December 2015; Ricondo & Associates, Inc., December 2015.

PREPARED BY: Ricondo & Associates, Inc., December 2015

## D. Modification of Standards

There are currently no modifications of standards for OPF. It is anticipated that with the future development to accommodate demand through PAL 2, there would still be no need for any modifications of standards.

## E. Obstruction Surfaces

Currently, there are no threshold siting obstructions at OPF. However, a total of 35 obstructions to 14 CFR Part 77 surfaces (existing and future) have been identified:

- Obstruction #3 (tower) results in a 24.3-foot penetration to the Runway 12 approach surface
- Obstruction #4 (tower) results in a 27.7-foot penetration to the Runway 12 approach surface
- Obstruction #5 (light pole) results in a 3.2-foot penetration to the Runway 9L 50:1 approach surface
- Obstruction #6 (building) results in a 0.4-foot penetration to the Runway 9L 50:1 approach surface
- Obstruction #7 (light pole) results in a 3.6-foot penetration to the Runway 9L 50:1 approach surface
- Obstruction #8 (building) results in a 4.4-foot penetration to the Runway 9L 50:1 approach surface and in a 7.9-foot penetration to the Runway 12 approach surface
- Obstruction #19 (antenna tower) results in a 24.9-foot penetration to the Runway 27R approach surface
- Obstruction #32 (airfield service road) results in a 12.7-foot penetration to the Runway 27R approach surface
- Obstruction #33 (airfield service road) results in a 12.4-foot penetration to the Runway 27R approach surface
- Obstruction #53 (airfield service road) results in a 12.4-foot penetration to the Runway 30 20:1 approach surface
- Obstruction #110 (pipe) results in a 2.6-foot penetration to the Runway 27R approach surface

## F. Runway Protection Zones

Runway protection zones enhance the protection of people and property on the ground. The existing arrival RPZs for Runways 9R, 9L, 27R, 12, and 30 extend beyond the Airport boundary. No recent developments have increased the incompatible land uses within the existing RPZs, but some incompatible uses exist. Buildings are located within the arrival RPZs associated with Runways 9L, 12, and 30. However, no additional incompatible land uses are anticipated, as MDAD has acquired aviation easements for those portions of the RPZs wherein it does not own the land.

## G. Development Summary

MDAD has entered into long-term leasehold agreements for OPF with three private developers: AA Acquisitions, CPF Investment Group, and the Meek Foundation. These developers have multiple subleases with subtenants at OPF, most of which serve aeronautical purposes. In addition, two other tenants, Landmark Aviation and Fontainebleau, lease facilities directly from MDAD. The land associated with the United States Coast Guard facilities are excluded from Airport property, but has access to the airfield. **Exhibit G-1** illustrates the leasehold boundaries for each tenant that leases property at OPF directly from MDAD. The exhibit also depicts several tracts in the southeast parcel that have been designated as “preserve” for historical and environmental reasons. **Table G-1** presents a summary of the leasehold terms for each tenant.

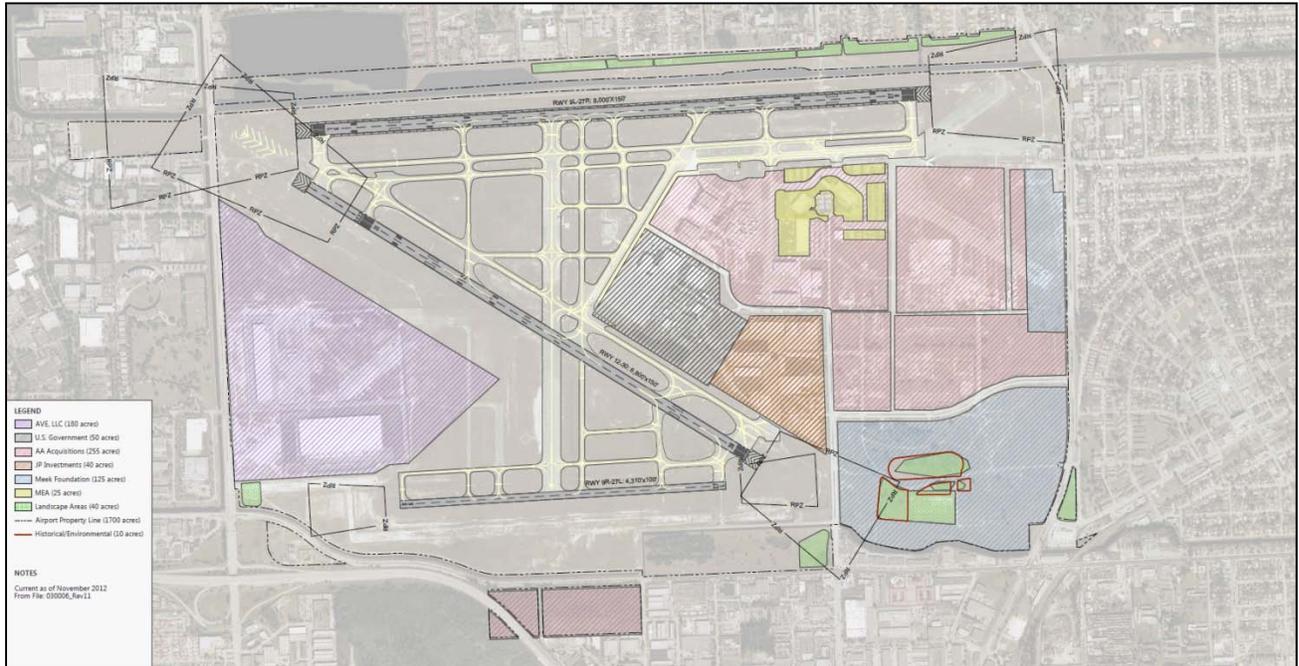
**Table G-1: OPF Tenant Leaseholds**

TENANT	LEASEHOLD AREA (ACRES)	LEASEHOLD TERM (YEARS)	EXPIRATION DATE
AA Acquisitions	180	55	March 2062
CPF Investment Group	255	55	February 2062
Meek Foundation	125	55	August 2063
Fontainebleau	40	30	November 2035
Landmark Aviation	25	35	June 2040

SOURCE: Miami-Dade Aviation Department, OPF Tenant Leasehold Boundary Exhibits, November 2012.

PREPARED BY: Ricondo & Associates, Inc., December 2014.

**Exhibit G-1: Current OPF Leasehold Commitments**



SOURCES: Miami-Dade Aviation Department, OPF Tenant Leasehold Boundary Exhibits, November 2012; Woolpert, OPF Aerial Photograph, January 20, 2010.

PREPARED BY: Jacobsen/Daniels Associates, LLC, March 2014.

With approximately 685 acres of Airport property delegated to long-term leases and historical/environmental preservation, approximately 20 acres of property immediately south of Runway 9R-27L could be leased or developed by MDAD for aeronautical uses.

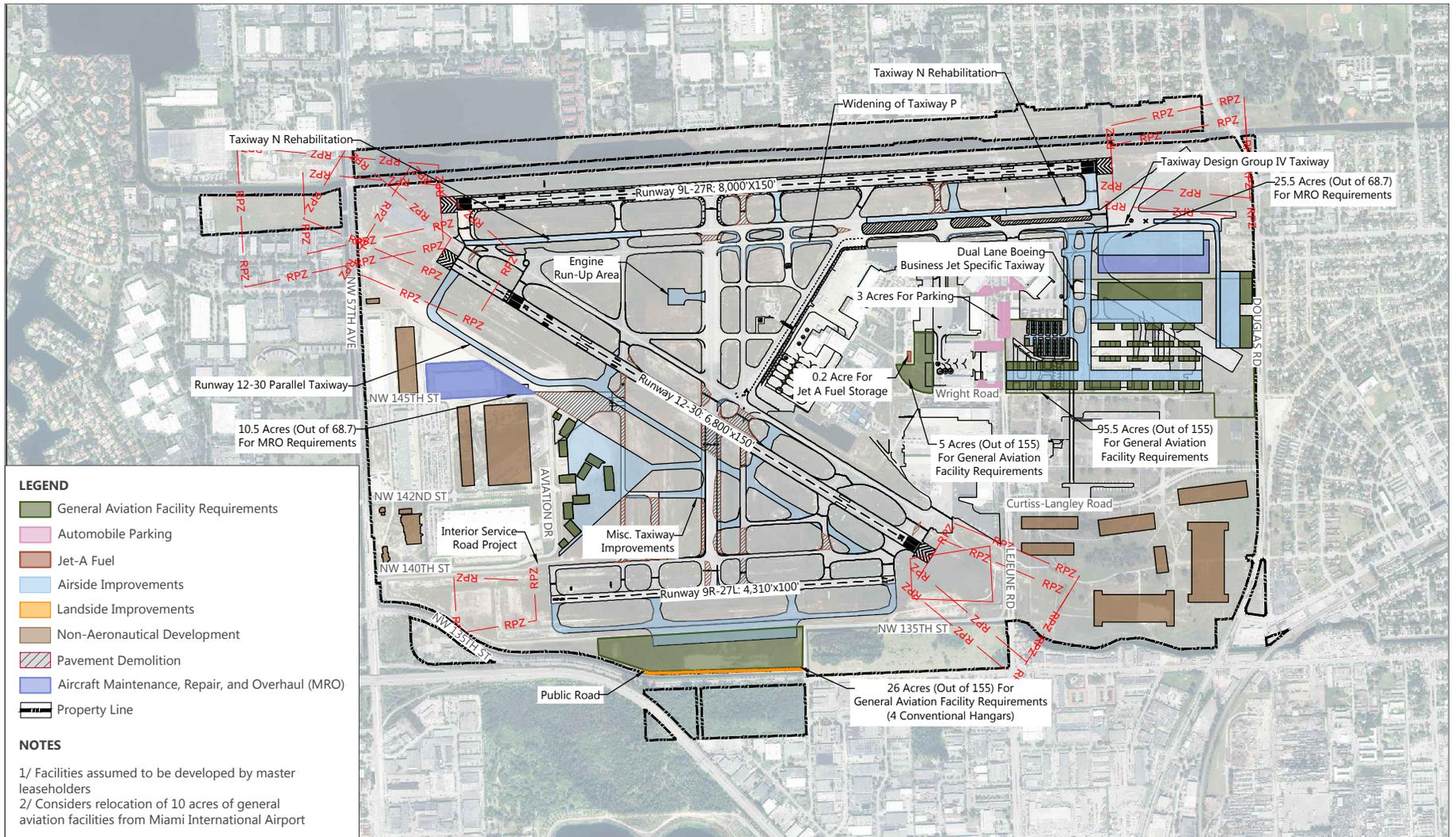
In consultation with MDAD staff, a preferred development scenario was identified for the Airport. The preferred development scenario for OPF incorporates the master site development plans for the three developers that have long-term leases at OPF, and also incorporates potential aeronautical development on the 20-acre tract south of Runway 9R-27L. In addition to the development and expansion of general aviation facilities, the potential development of aircraft MRO facilities was considered. Airfield modifications necessary to support future tenant facility development and compliance with FAA airfield design standards were also included. As a result, 10 development projects were identified during performance of the demand-capacity analysis to meet existing and forecast demand. These projects include the following:

- Conventional Hangars
- Apron and Ramp Improvements
- Automobile Parking
- Aviation (Jet A) Fuel Facility
- Engine Run-up Enclosure
- MRO Facilities
- Runway 9R-27L Taxiway Connectors/Northeast Taxiway Extension
- Runway 12-30 Taxiway Connectors/Taxiway
- Runway 9R-27L Taxiway Connectors/Parallel Taxiway
- Runway 9L-27R Taxiway Connectors/Parallel Taxiway

To demonstrate the general location of future facility development, the preferred development scenario was created as a bubble diagram illustrating general facility requirements (i.e., detailed facility layouts were not developed). The areas designated for future tenant facilities coincide with the facility requirements associated with PAL 2. The preferred development scenario does, however, depict specific airfield improvements that would enhance airfield efficiency and/or mitigate the risk of runway incursions. **Exhibit G-2** illustrates the preferred development scenario for OPF.

Many taxiways at OPF are currently configured to TDG-5 standards (75-foot pavement widths). Although the design aircraft is designated as the BBJ-2, future tenant facility development includes potential MRO, and cargo facilities that could induce operations by larger aircraft including ADG-IV aircraft. These aircraft could also require TDG-5 design standards for future airfield enhancements north of runway 12-30. In addition, the future south parallel taxiway to runway 12-30 is configured to meet TDG-5 standards. These taxiways also provide consideration for the construction of taxiway shoulders in accordance to TDG-5 standards.

Taxiway exit reconfigurations are primarily intended to mitigate runway incursion risks as outlined in *Advisory Circular 5300-13A, Change 1*. Given the potential change to the future aircraft fleet mix, particularly if cargo and/or MRO facilities are developed at OPF, the evaluation of runway exit placements and configurations should be conducted upon initiating design. For the time being the ALP considered the establishment of perpendicular runway entrances/exits and/or crossings in the future.



SOURCES: Woolpert, *OPF Aerial Photogrammetry*, December 2013; Ricondo & Associates, Inc., and Jacobsen/Daniels Associates, LLC, *Land Use Development Alternatives*, April 2014; RLC Architects, *Master Site Development Plan - AVE Aviation and Commerce Center, CPF*, February 6, 2014; AA Acquisitions, LLC, *Master Site Development Plan*, July 9, 2014.  
 PREPARED BY: Ricondo & Associates, Inc., November 2014.

**EXHIBIT G-2**



Development Scenario

Drawing: P:\Project-Miami\MDAD\Strategic MPI\Phase 4 Tasks\4K - Update GA Airport Layout Plans\CAD\OPF\Narrative Report Exhibits\Exhibit G-2 Preferred Development Scenario 20180530.dwg\Layout: Exhibit G-2 Plotted: Jul 16, 2018, 03:33PM

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## G.1 Development Projects Completed since Last Airport Layout Plan

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The following development projects at OPF have been completed since the existing ALP dated June 2007 was approved:

- Construction of new ATCT.
- Construction of the Orion FBO terminal and associated hangars (2) and apron
- Construction of hangars (2) within the Landmark Aviation leasehold
- Construction of Fontainebleau hangars (3) and FBO terminal within the Fontainebleau leasehold
- Construction of hangars (2) within the Fontainebleau leasehold
- Construction of various warehouses within the CPF Investment Group leasehold
- Construction of a gas station/convenience store within the CPF Investment Group leasehold
- Construction of a United States Postal Service facility within the CPF Investment Group leasehold

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## G.2 Implementation Plan

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For capital improvement planning considerations, the facility and infrastructure development initiatives associated with the preferred development scenario were categorized into one of four development phases. Each phase reflects a 5-year period, as follows:

- Phase 1 (2016 - 2020)
- Phase 2 (2021 – 2025)
- Phase 3 (2026 – 2030)
- Phase 4 (2031 – 2035)

The sequencing of proposed capital development included in the SMP is summarized in **Table G-2**.

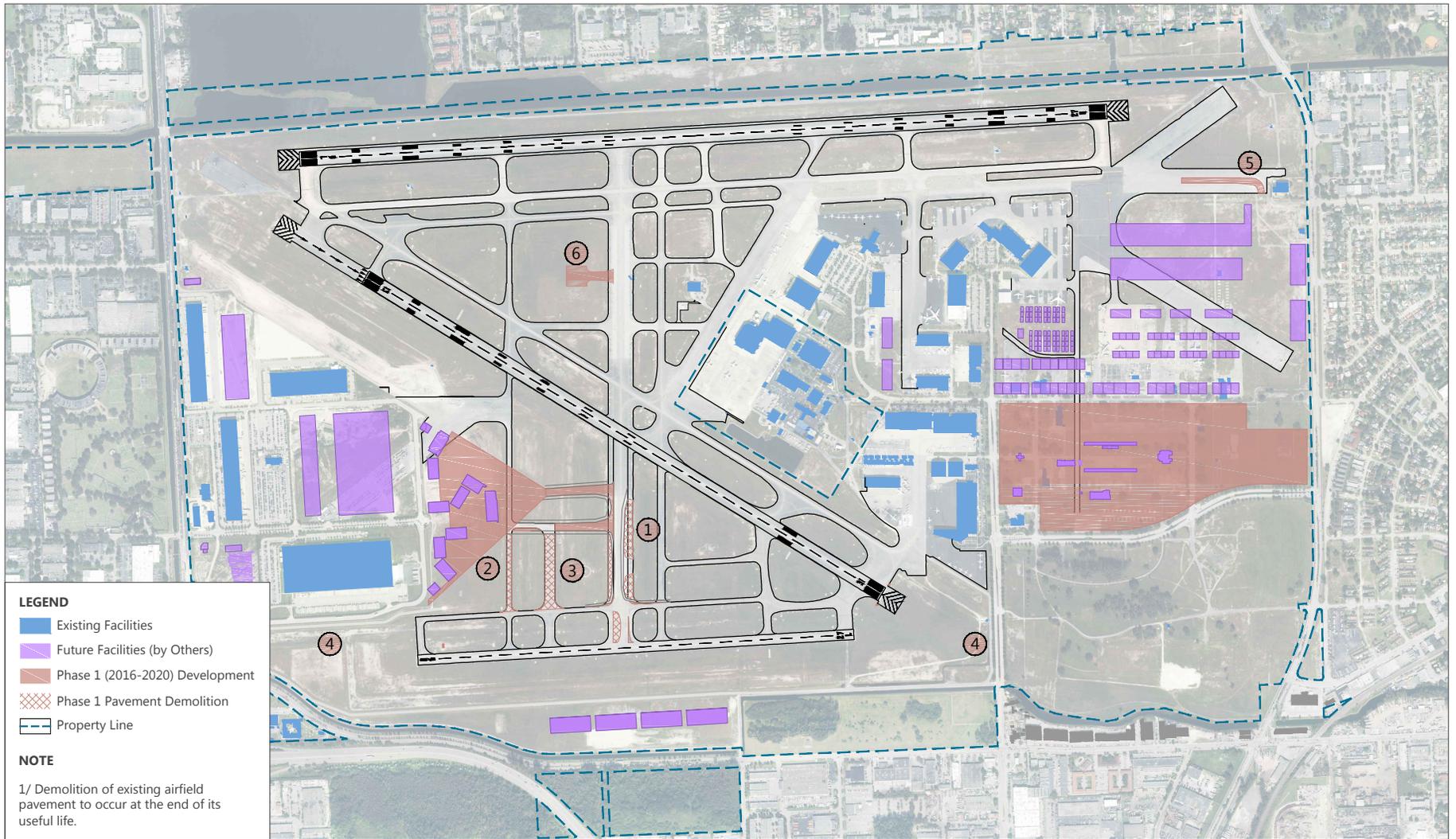
**Table G-2: Capital Development Needs by Phase**

	PHASE 1	PHASE 2	PHASE 3	PHASE 4
Apron and Ramp Improvements	X	X	X	X
Aviation (Jet A) Fuel Facility		X		X
Automobile Parking	X	X	X	X
Engine Run-up Enclosure		X		
Maintenance, Repair, and Overhaul (MRO) Facilities	As warranted - MRO facility development is not tied to a particular planning activity level or development phase			
Misc. Taxiway Connectors/Extend Taxiway P to the East	X			
Runway 12-30 Taxiway Connectors/Taxiway		X		
Runway 9R-27L Taxiway Connectors/Parallel Taxiway		X	X	X
Taxiway N Reconstruction				X
Site Development		X	X	X
Utilities	X	X	X	X
AOA South Service Road	X			
Public Access Road to South GA Area		X		
AOA North Service Road and Bridges				X

SOURCE: Ricondo & Associates, Inc., and Jacobsen/Daniels Associates, LLC, *SMP Technical Analyses*, March 2013.

PREPARED BY: Ricondo & Associates, Inc., December 2015.

The capital development needs shown in Table G-2 were used to create an implementation sequencing plan. **Exhibits G-3, G-4, G-5, and G-6** illustrate the implementation sequencing for the planning horizon. Each exhibit provides a breakdown of facility and airfield improvements required to accommodate anticipated demand levels. The sequencing is broken down into four phases; Phase 1 (2016-2020), Phase 2 (2021-2025), Phase 3 (2026-2030), and Phase 4 (2031-2035).

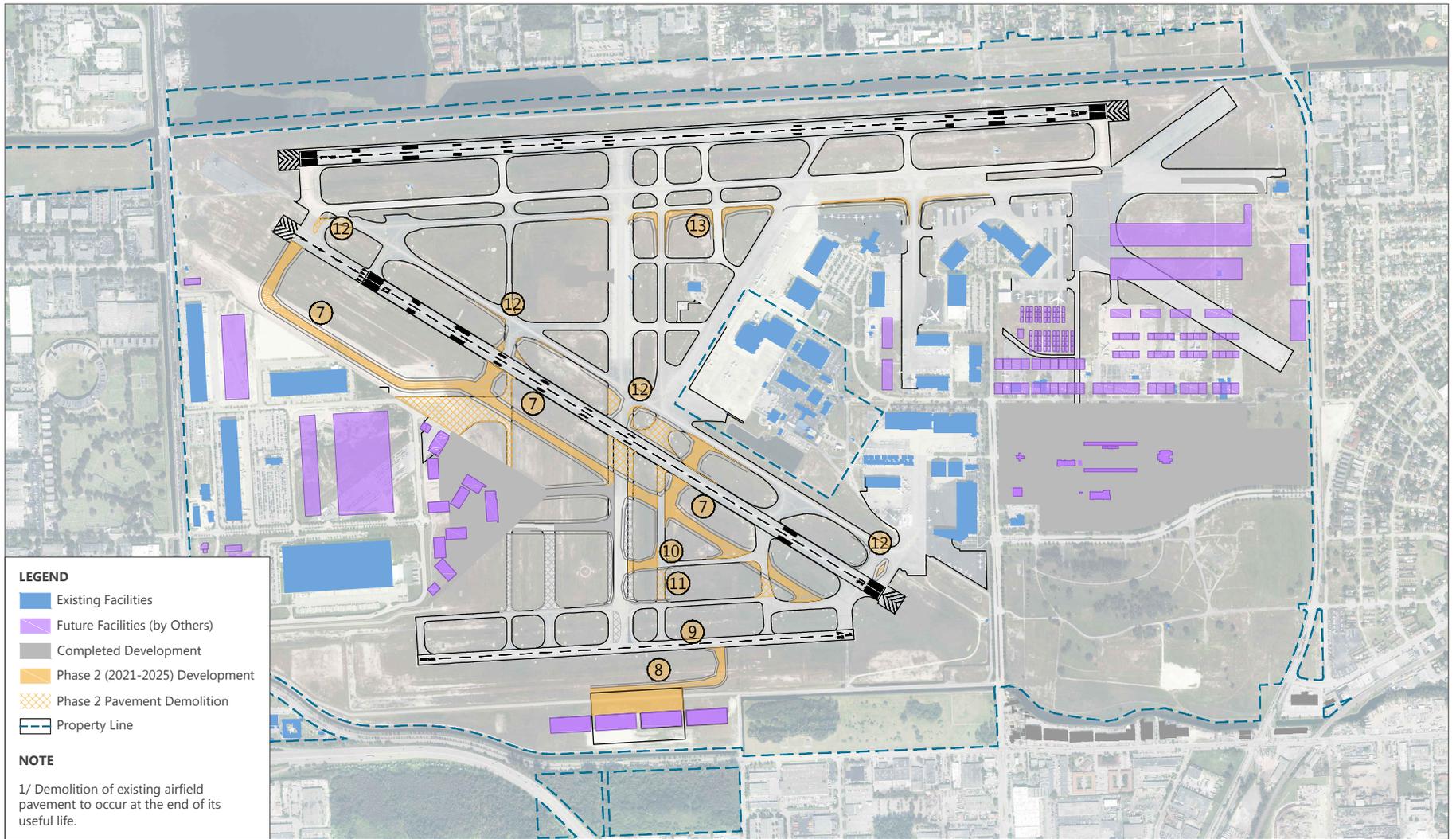


SOURCES: Woolpert, *OPF Aerial Photogrammetry*, December 2013; Ricondo & Associates, Inc., and Jacobsen/Daniels Associates, LLC, *Land Use Development Alternatives*, April 2014; RLC Architects, *Master Site Development Plan - AVE Aviation and Commerce Center, CPF*, February 6, 2014; AA Acquisitions, LLC, *Master Site Development Plan*, July 9, 2014.  
 PREPARED BY: Ricondo & Associates, Inc., November 2014.

**EXHIBIT G-3**

### Implementation Sequencing Phase 1 (2016-2020)



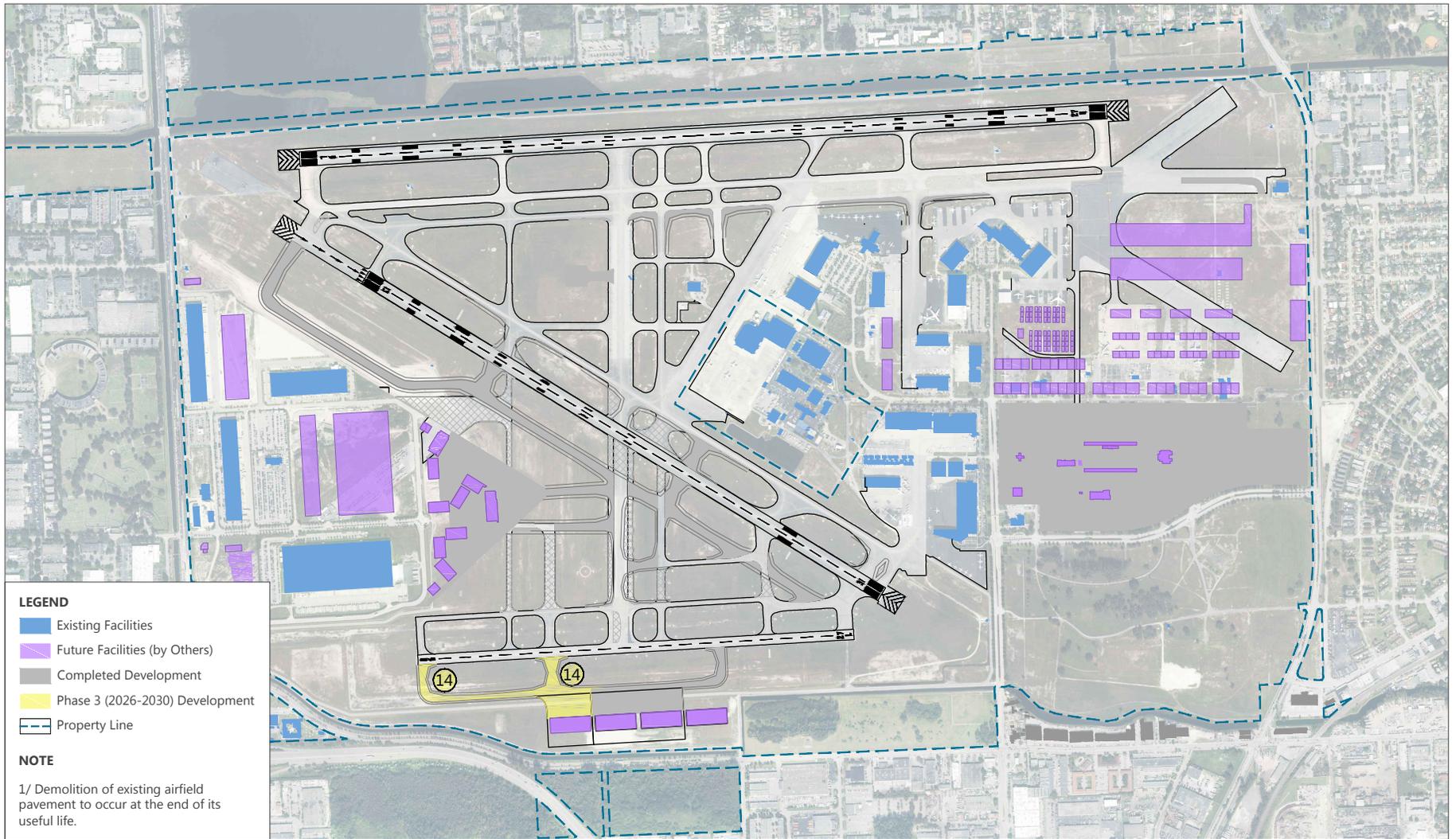


SOURCES: Woolpert, *OPF Aerial Photogrammetry*, December 2013; Ricondo & Associates, Inc., and Jacobsen/Daniels Associates, LLC, *Land Use Development Alternatives*, April 2014; RLC Architects, *Master Site Development Plan - AVE Aviation and Commerce Center, CPF*, February 6, 2014; AA Acquisitions, LLC, *Master Site Development Plan*, July 9, 2014.  
 PREPARED BY: Ricondo & Associates, Inc., November 2014.

**EXHIBIT G-4**

Implementation Sequencing  
 Phase 2 (2021-2025)



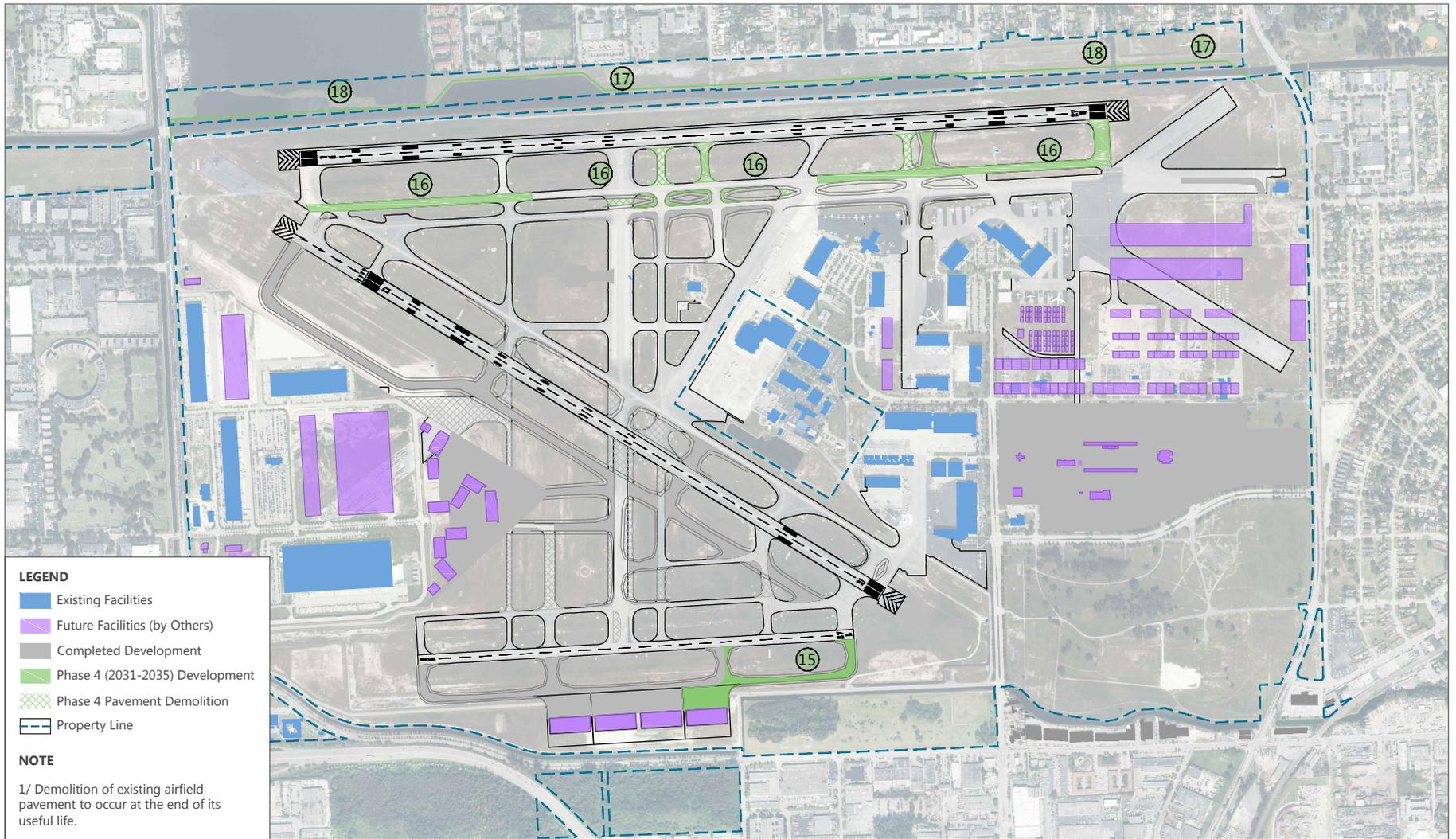


SOURCES: Woolpert, *OPF Aerial Photogrammetry*, December 2013; Ricondo & Associates, Inc., and Jacobsen/Daniels Associates, LLC, *Land Use Development Alternatives*, April 2014; RLC Architects, *Master Site Development Plan - AVE Aviation and Commerce Center, CPF*, February 6, 2014; AA Acquisitions, LLC, *Master Site Development Plan*, July 9, 2014.  
 PREPARED BY: Ricondo & Associates, Inc., November 2014.

EXHIBIT G-5

### Implementation Sequencing Phase 3 (2026-2030)





SOURCES: Woolpert, *OPF Aerial Photogrammetry*, December 2013; Ricondo & Associates, Inc., and Jacobsen/Daniels Associates, LLC, *Land Use Development Alternatives*, April 2014; RLC Architects, *Master Site Development Plan - AVE Aviation and Commerce Center, CPF*, February 6, 2014; AA Acquisitions, LLC, *Master Site Development Plan*, July 9, 2014.  
 PREPARED BY: Ricondo & Associates, Inc., November 2014.

EXHIBIT G-6

### Implementation Sequencing Phase 4 (2031-2035)



### *Rough Order-of-Magnitude (ROM) Cost Estimates*

For the preferred development scenario, a ROM cost estimate was prepared. The areas designated for future tenant facilities coincide with the facility requirements associated with PAL 2 and formed the basis for generating the ROM estimate of probable costs. These costs include construction costs and soft costs associated with design, permitting, bidding, and construction and program management. However, the costs associated with facility development within the existing tenant leases were excluded, as these facilities would be constructed by third-party developers. The cost estimate accounts for the implementation sequencing plan to predict the Federal, State and Local funding for projects identified in the preferred alternative. **Table G-3** summarizes the estimated costs and projected funding sources that would be incurred by MDAD associated with the facilities and infrastructure. **Exhibit G-7** illustrates the sequencing of facility development for OPF in accordance with the four development phases illustrated above.

**Table G-3: Preliminary Capital Funding Plan**

Project Description	FAA AIRPORT IMPROVEMENT PROGRAM	FDOT GRANT	MIAMI DADE COUNTY	TOTAL
<b>Phase 1</b>				
Engine Run-up Enclosure	\$ 7,339,000	\$ 408,000	\$ 408,000	\$ 8,155,000
Runway 9R-27L Taxiway Connectors/Northeast Taxiway Extension	\$ 46,237,000	\$ 3,536,000	\$ 3,536,000	\$ 53,309,000
<b>Subtotal (Phase 1)</b>	<b>\$ 53,576,000</b>	<b>\$ 3,944,000</b>	<b>\$ 3,944,000</b>	<b>\$ 61,464,000</b>
<b>Phase 2</b>				
Runway 12-30 Taxiway Connectors/Taxiway	\$ 49,499,000	\$22,639,000	\$22,639,000	\$ 94,777,000
<b>Subtotal (Phase 2)</b>	<b>\$ 49,499,000</b>	<b>\$22,639,000</b>	<b>\$22,639,000</b>	<b>\$ 94,777,000</b>
<b>Phase 3</b>				
Runway 9R-27L Taxiway Connectors/Parallel Taxiway	\$ 14,354,000	\$12,841,000	\$12,841,000	\$ 40,036,000
<b>Subtotal (Phase 3)</b>	<b>\$ 14,354,000</b>	<b>\$12,841,000</b>	<b>\$12,841,000</b>	<b>\$ 40,036,000</b>
<b>Phase 4</b>				
Runway 9L-27R Taxiway Connectors/Parallel Taxiway	\$ 90,207,000	\$19,285,000	\$19,285,000	\$ 128,777,000
<b>Subtotal (Phase 4)</b>	<b>\$ 90,207,000</b>	<b>\$19,285,000</b>	<b>\$19,285,000</b>	<b>\$ 128,777,000</b>
<b>Total</b>	<b>\$207,636,000</b>	<b>\$58,709,000</b>	<b>\$58,709,000</b>	<b>\$ 325,054,000</b>

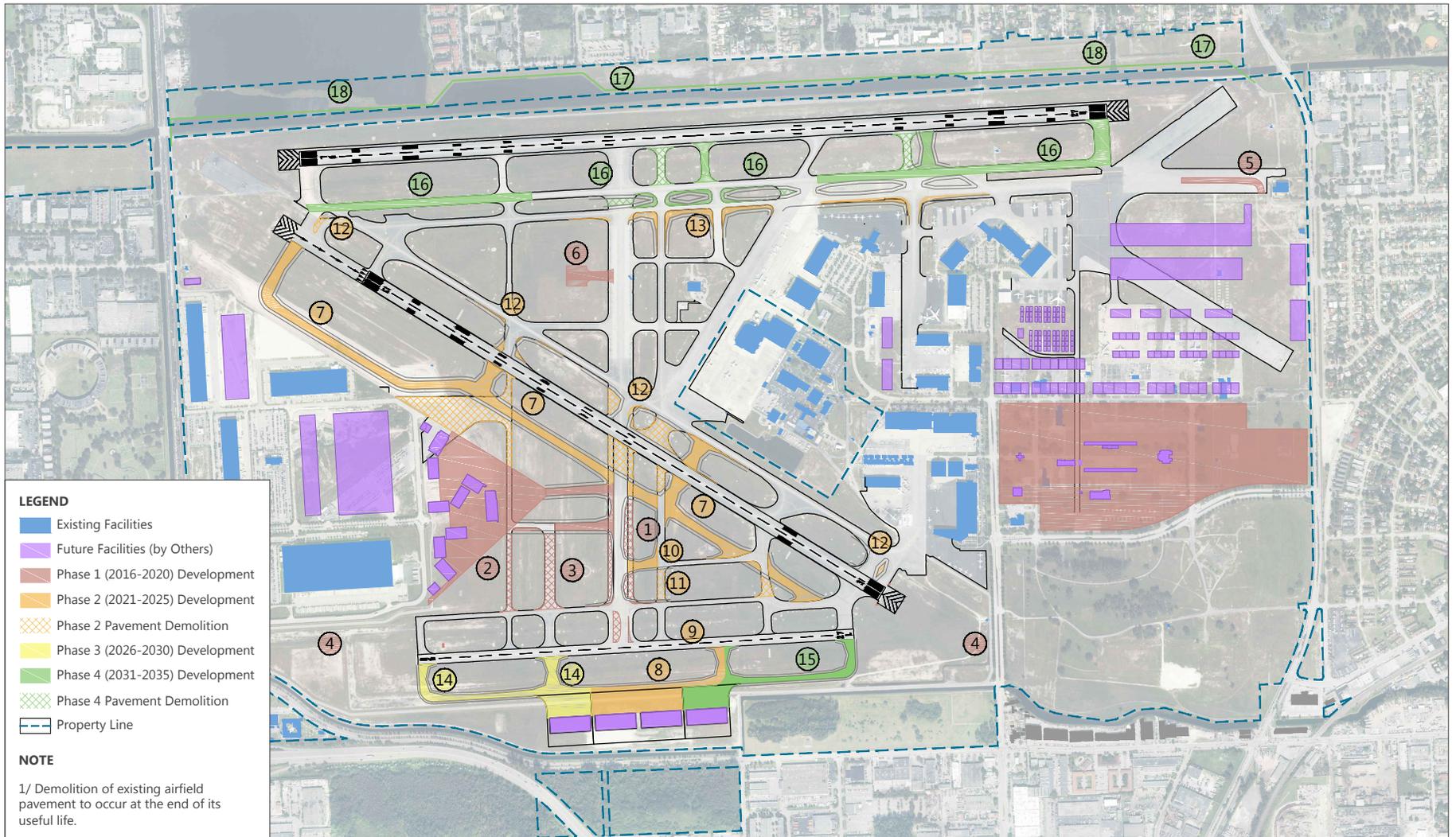
NOTES:

Project funding sources were established in accordance with current funding eligibility guidelines and do not reflect a commitment by the FAA or FDOT to provide funds at this time.

Costs include consideration of both hard (construction) and soft (design, permitting, and construction administration) costs and reflect projected costs at the time of construction using an annual escalation rate of 3 percent.

SOURCES: URS Corporation, *Construction Costs*, April 2014; Ricondo & Associates, Inc., *SMP Technical Analyses*, August, 2014.

PREPARED BY: Ricondo & Associates, Inc., December 2015.



SOURCES: Woolpert, *OPF Aerial Photogrammetry*, December 2013; Ricondo & Associates, Inc., and Jacobsen/Daniels Associates, LLC, *Land Use Development Alternatives*, April 2014; RLC Architects, *Master Site Development Plan - AVE Aviation and Commerce Center, CPF*, February 6, 2014; AA Acquisitions, LLC, *Master Site Development Plan*, July 9, 2014.  
 PREPARED BY: Ricondo & Associates, Inc., November 2014.

**EXHIBIT G-7**

### Implementation Sequencing Preferred Development Scenario



## H. Shadow or Line-of-Sight Study

A new ATCT opened at OPF in 2008. No line-of-sight issues were identified based on discussions with ATCT staff. However, future facility developments at the Airport will be evaluated to ensure line-of sight capability.

# I. Letters of Coordination

This section does not apply to this ALP Narrative Report as no coordination with outside agencies was conducted.

## J. Wildlife Hazard Management

A Wildlife Hazard Assessment (WHA) was initiated, in part, pursuant to Safety Recommendation A-09-073, issued by the National Transportation Safety Board to the FAA on April 29, 2009. The WHA for OPF was completed in April 2015. The WHA addresses the baseline conditions at the Airport and recommends implementing actions to reduce the likelihood of future wildlife strikes and create a safer operating environment. Recommendations were identified at various points throughout the assessment and documented in the WHA report.

In accordance with the WHA for OPF, the following wildlife hazard concerns were identified:<sup>4</sup>

- Small flocking birds – Grackles, starlings, doves and pigeons, meadowlarks, swallows
- Large wading birds – Great egrets, great blue herons
- Medium-sized wading birds – Cattle egrets and white ibis
- Medium to large raptors – American kestrels, hawks, osprey, vultures
- Large-/medium-sized mammals – Dogs, cats, foxes, raccoons
- Medium to large reptiles – Iguanas, turtles, alligators

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<sup>4</sup> Environmental Science Associates, *Miami-Opa Locka Executive Airport Wildlife Hazard Assessment*, April 2015.

## K. Preliminary Identification of Environmental Features

**Exhibits K-1** through **K-7** illustrate the various environmental features at OPF and within the surrounding environs. **Table K-1** summarizes the potential environmental impacts associated with the proposed development depicted on the Future ALP and the proposed mitigation approach for those areas that may be directly impacted. As shown, these impacts are limited to encroachment of Flood Zone Area AE.

**Table K-1: Summary of Potential Environmental Impacts**

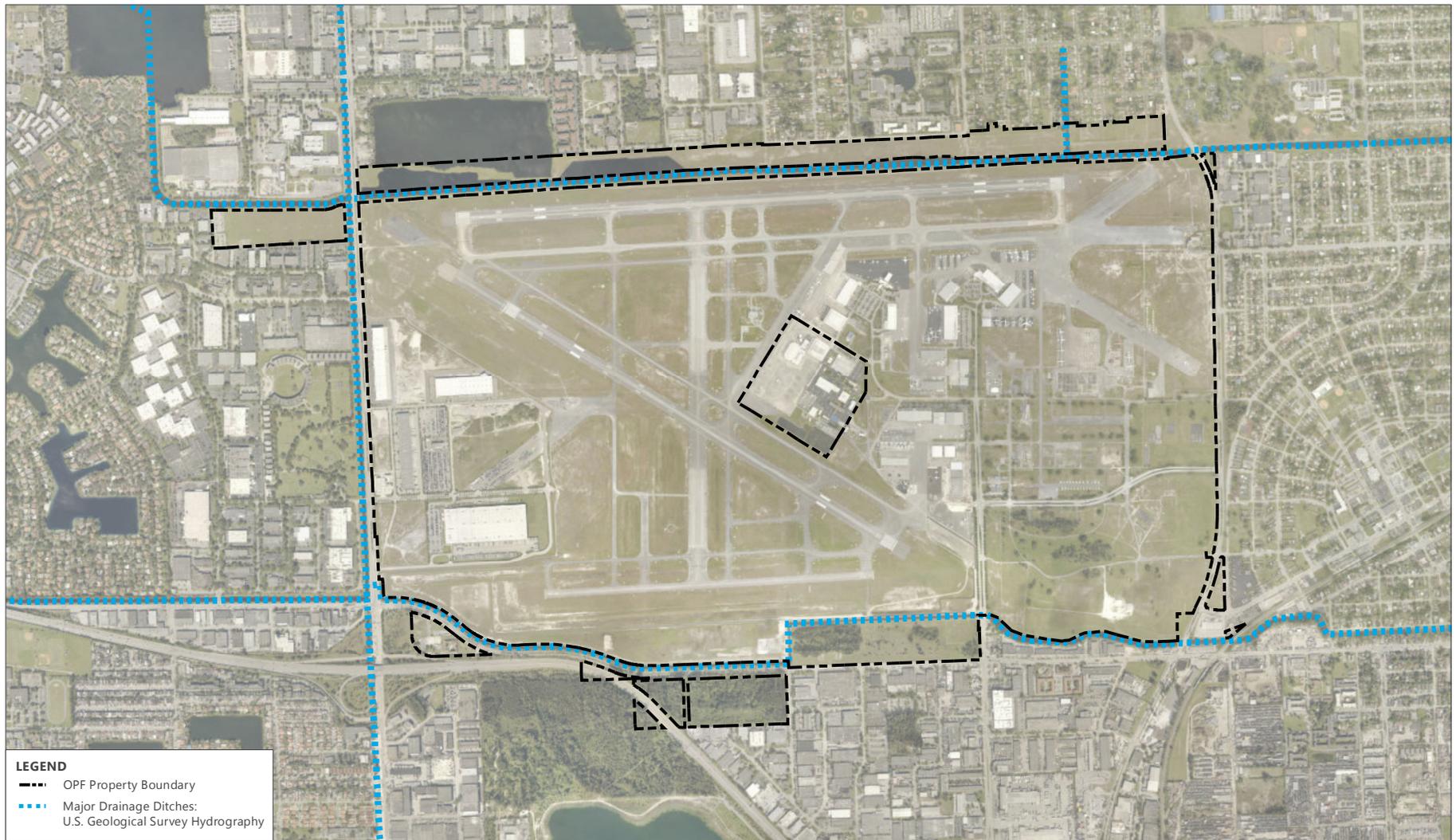
ENVIRONMENTAL FEATURE	DESCRIPTION OF POTENTIAL IMPACTS	MITIGATION APPROACH
Major Drainage Ditches	No Direct Impacts	N/A
Wetlands	No Direct Impacts	N/A
Flood Zones	Aeronautical and Nonaeronautical Development (Zone AE)	Grading and Drainage as Required
Historical or Cultural Resources	No Direct Impacts	N/A
DOT Section 4(f) Features	No Direct Impacts	N/A
Flora/Fauna	No Direct Impacts	N/A
Natural Resources	No Direct Impacts	N/A
Other Features	None Identified	N/A

Notes:

N/A = Not Applicable

Flood Zone AE is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by detailed methods. In most instances, Base Flood Elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone. Mandatory flood insurance purchase requirements apply.

Sources: Miami-Dade Aviation Department; ESRI Database: Esri, DigitalGlobe, GeoEYE, i-cubed, United States Department of Agriculture, AEX, Getmapping, AeroGrid, IGN, swisstopo, and the GIS User Community (Aerial Photography), 2015; Florida Geographic Data Library, GIS Metadata Explorer; GIS Data, <http://www.fgdl.org/metadataexplorer/explorer.jsp> (accessed September 29, 2015); United States Geological Survey, GIS Data: Hydrography, <http://nhd.usgs.gov/data.html> (accessed September 25, 2015); Miami-Dade County GIS Data; Prepared by: Ricondo & Associates, Inc., December 2015



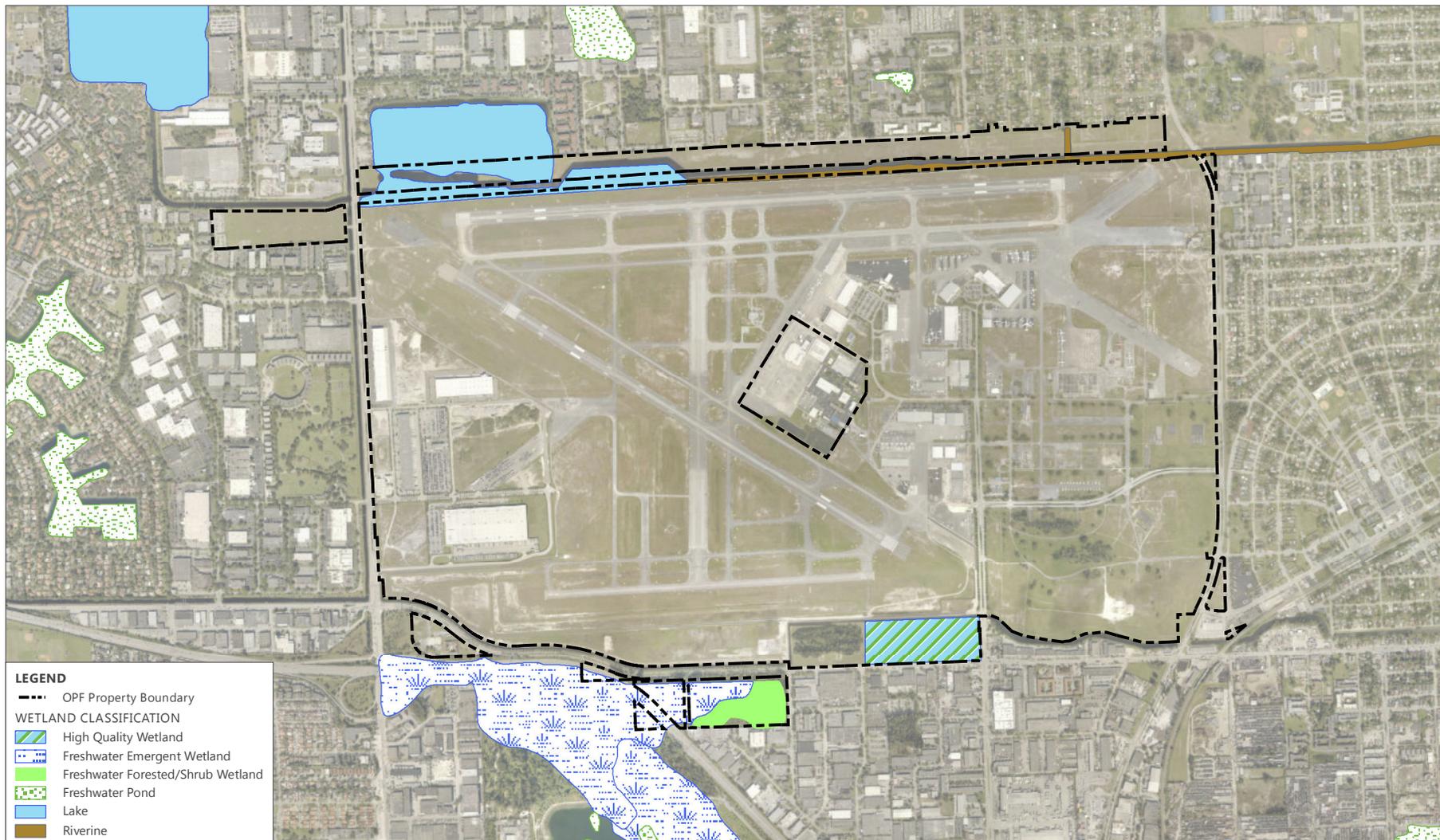
SOURCES: Miami-Dade County Aviation Department; Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2018 (aerial); U.S. Geological Survey, GIS Data: Hydrography, <http://nhd.usgs.gov/data.html>, (accessed: September 25, 2015).  
PREPARED BY: Ricondo & Associates, Inc., September 2015.

**EXHIBIT K-1**



## Major Drainage Ditches

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**LEGEND**

- OPF Property Boundary
- WETLAND CLASSIFICATION**
- High Quality Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine

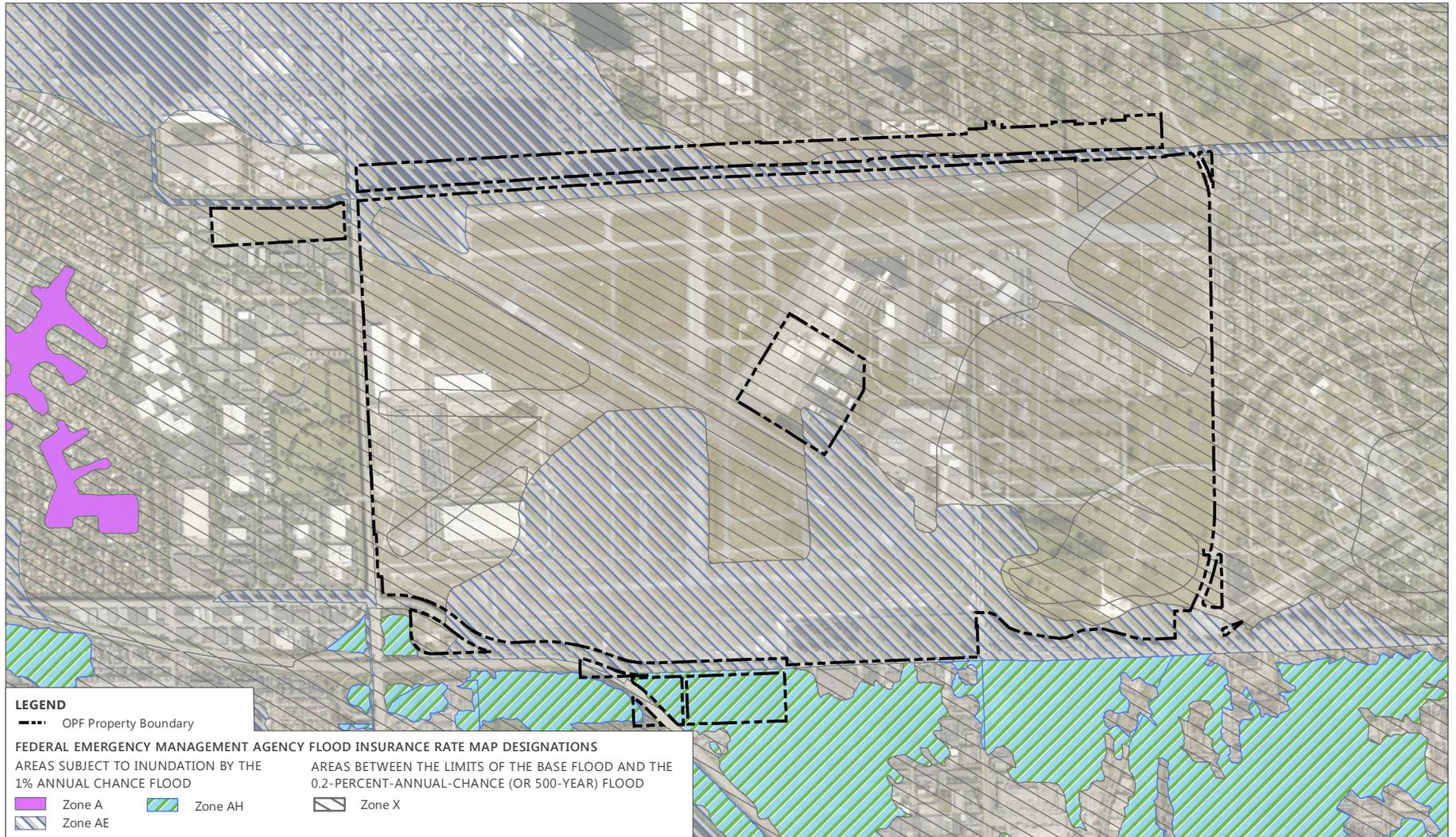
SOURCES: Miami-Dade County Aviation Department; Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2018 (aerial); Florida Geographic Data Library, GIS Metadata Explorer: GIS Data, <http://www.fgdl.org/metadataexplorer/explorer.jsp>, (accessed, September 29, 2015).  
 PREPARED BY: Ricondo & Associates, Inc., September 2015.

**EXHIBIT K-2**



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Wetlands



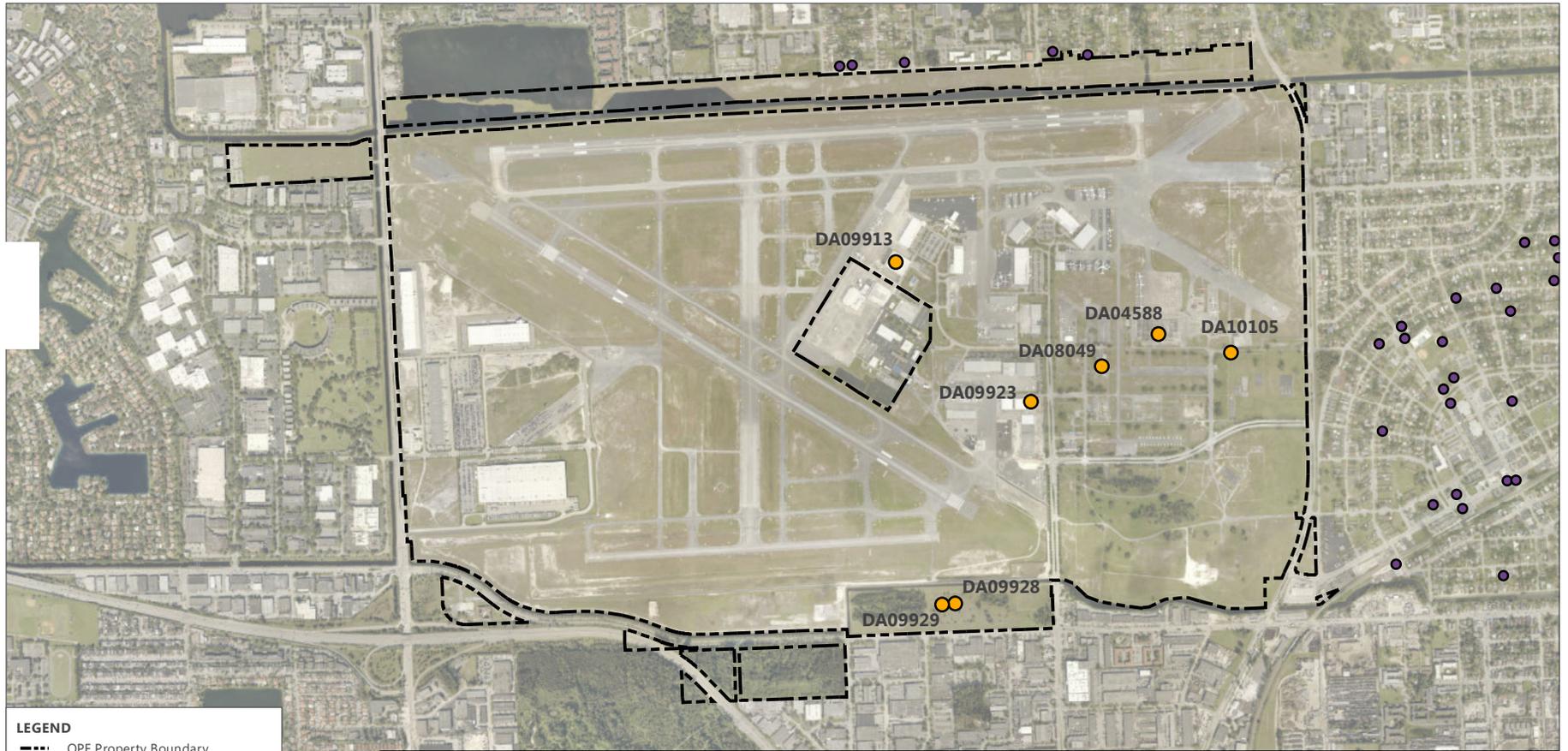
SOURCES: Miami-Dade County Aviation Department; Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2018 (aerial); Florida Geographic Data Library, GIS Metadata Explorer: GIS Data, <http://www.fgdl.org/metadataexplorer/explorer.jsp>, (accessed, September 29, 2015).  
 PREPARED BY: Ricondo & Associates, Inc., September 2015.

**EXHIBIT K-3**



Flood Zones

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**LEGEND**

--- OPF Property Boundary

**CULTURAL RESOURCE CLASSIFICATION**

- State Historic Preservation Office (SHPO) Cultural Resources
- State Historic Preservation Office (SHPO) Cultural Resources Within OPF Boundary (See Table)

SITEID	SITENAME	ADDRESS	YEARBUILT	STRUCUSE1	SURV EVAL	SHPO EVAL
DA04588	OPA-LOCKA AIRPORT HANGAR		C1935		ELIGIBLE FOR NRHP	NOT EVALUATED BY SHPO
DA09913	BUILDING 102- HANGAR 2	14850 NW 44TH CT	1941	OTHER	INELIGIBLE FOR NRHP	ELIGIBLE FOR NRHP
DA09923	BUILDING 114-BASE FIRE STATION	4240 NW 144TH ST	1942	OTHER	INELIGIBLE FOR NRHP	ELIGIBLE FOR NRHP
DA09928	BUILDING 908 AMMUNITION STORAGE BUNKERS		1942	OTHER	INELIGIBLE FOR NRHP	ELIGIBLE FOR NRHP
DA09929	BUILDING 910- AMMUNITION STORAGE BUNKERS		1942	OTHER	INELIGIBLE FOR NRHP	ELIGIBLE FOR NRHP
DA10105	CORAL ROCK ENTRANCE GATE		1942	OTHER	INELIGIBLE FOR NRHP	ELIGIBLE FOR NRHP
DA08049	BUILDING 119 OPA LOCKA AIRPORT	4000 NW 145TH ST	1941	WAREHOUSE	INELIGIBLE FOR NRHP	ELIGIBLE FOR NRHP

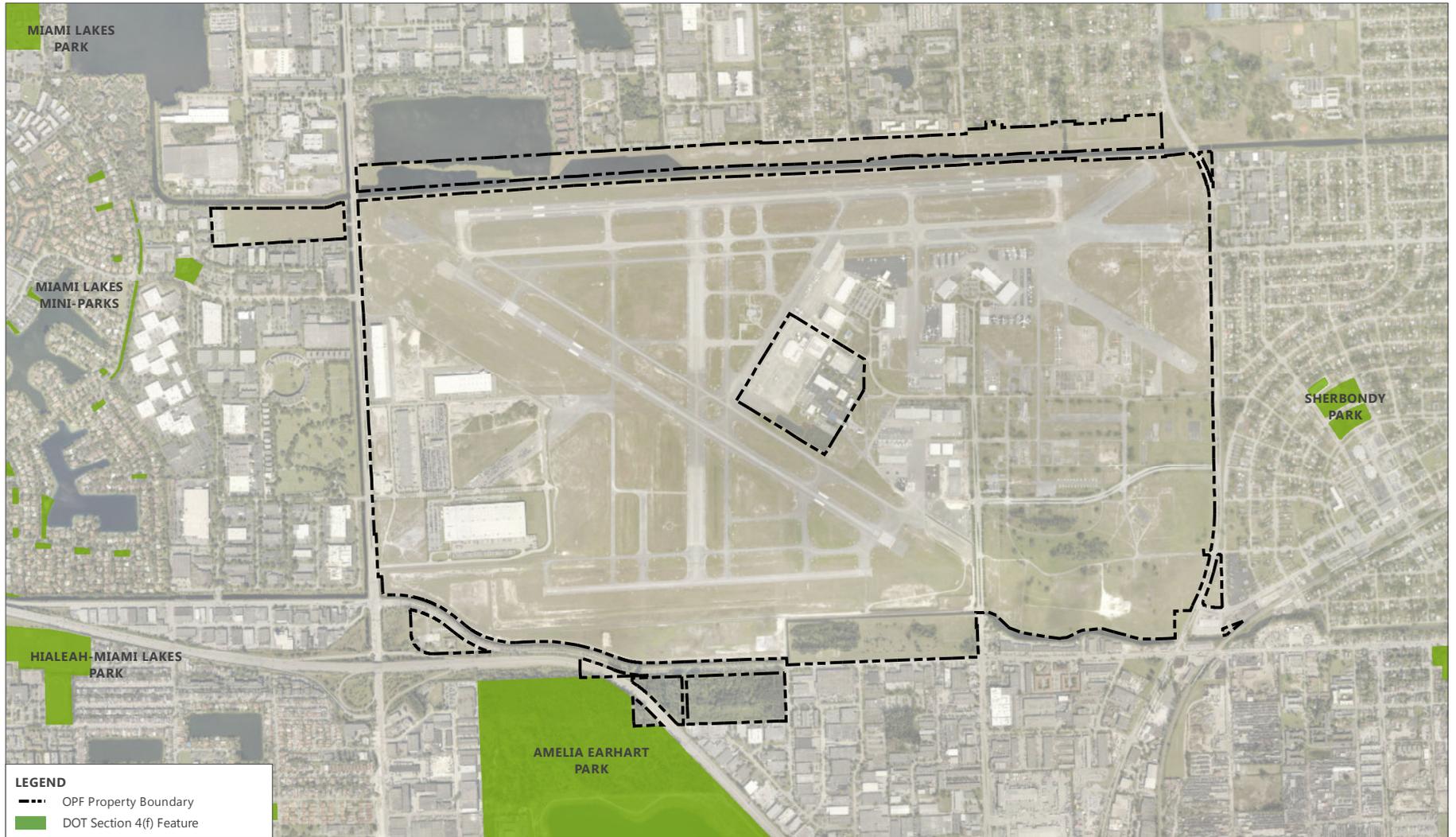
SOURCES: Miami-Dade County Aviation Department; Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2018 (aerial); Florida Geographic Data Library, GIS Metadata Explorer: GIS Data, <http://www.fgdl.org/metadataexplorer/explorer.jsp>, (accessed, September 29, 2015).  
 PREPARED BY: Ricondo & Associates, Inc., September 2015.

**EXHIBIT K-4**



Cultural Resources

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**LEGEND**

- OPF Property Boundary
- DOT Section 4(f) Feature

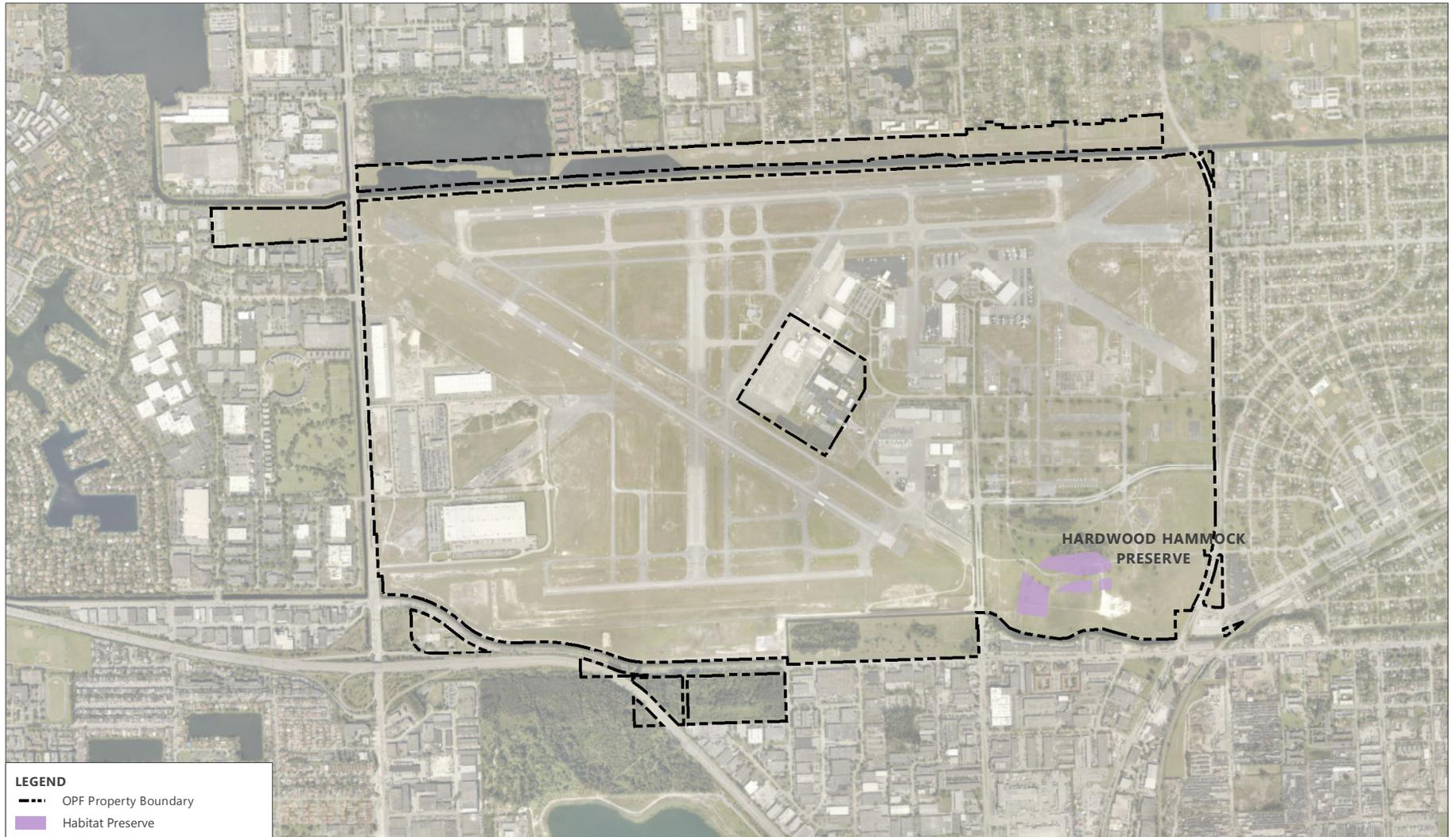
SOURCES: Miami-Dade County Aviation Department; Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2018 (aerial); Miami-Dade County, GIS Data; PREPARED BY: Ricondo & Associates, Inc., September 2015.

**EXHIBIT K-5**



Department of Transportation (DOT) Section 4(f) Features

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SOURCES: Miami-Dade County Aviation Department; Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2018 (aerial); Florida Geographic Data Library, GIS Metadata Explorer: GIS Data, <http://www.fgdl.org/metadataexplorer/explorer.jsp>, (accessed, September 29, 2015); U.S. Fish and Wildlife Service, GIS Data: Critical Habitat, <http://ecos.fws.gov/crithab/>, (accessed: September 29, 2015).

PREPARED BY: Ricondo & Associates, Inc., September 2015.



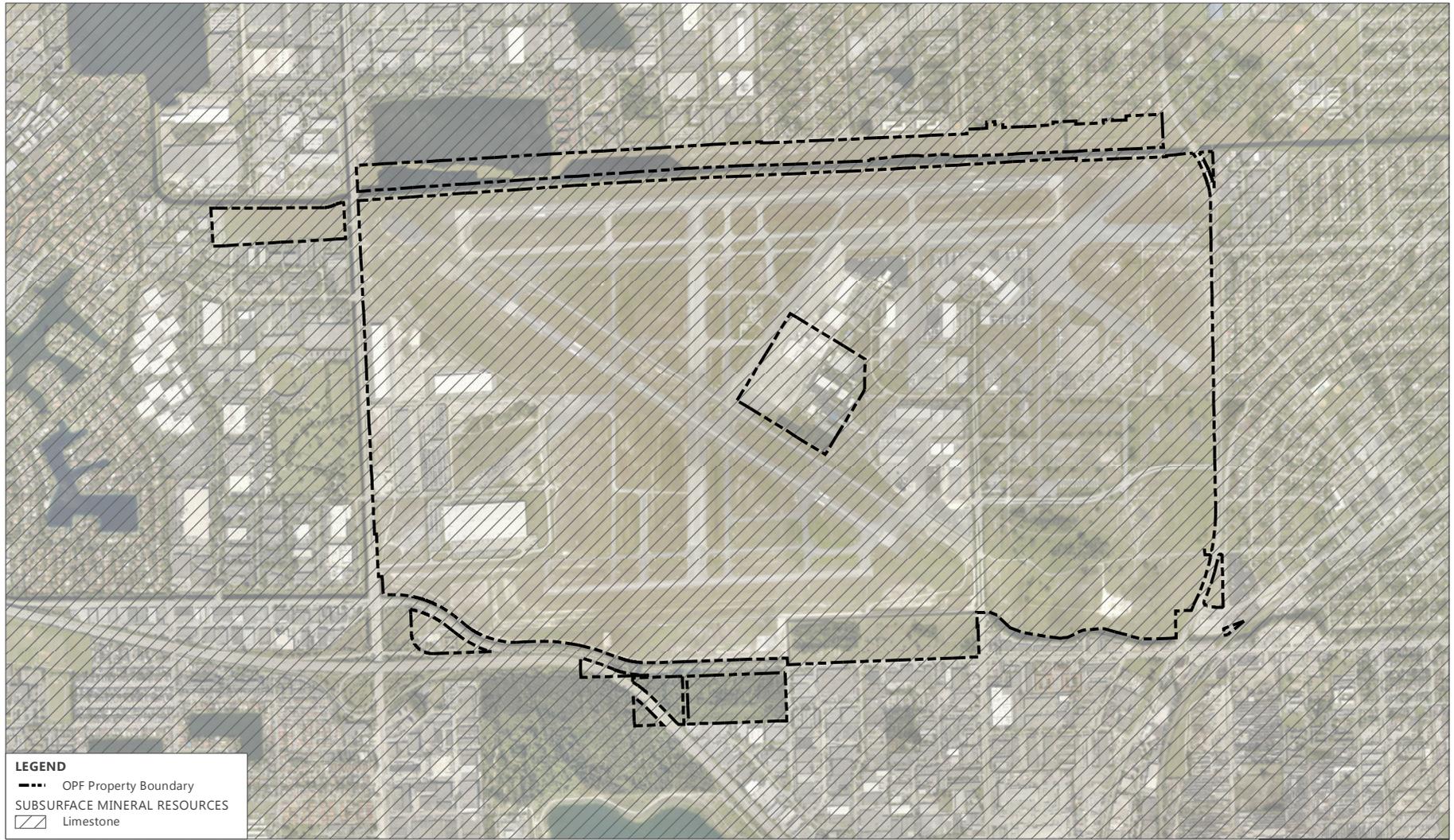
NORTH

0 2,000 ft.

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**EXHIBIT K-6**

Flora and Fauna



**LEGEND**  
- - - OPF Property Boundary  
SUBSURFACE MINERAL RESOURCES  
Limestone

SOURCES: Miami-Dade County Aviation Department; Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2018 (aerial); Florida Geographic Data Library, GIS Metadata Explorer: GIS Data, <http://www.fgdl.org/metadataexplorer/explorer.jsp>, (accessed, September 29, 2015).  
PREPARED BY: Ricondo & Associates, Inc., September 2015.

**EXHIBIT K-7**



### Natural Resources

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## L. Action Items from Runway Safety Program Office

This section is not applicable as there are currently no action items from the Runway Safety Program Office.

## M. Declared Distances

The declared distances table below is used to aid in identifying the maximum distances available and suitable for meeting takeoff, rejected takeoff, and landing distance performance requirements for turbine powered aircraft. The takeoff run available (TORA), takeoff distance available (TODA), accelerate-stop distance available (ASDA), and landing distance available (LDA) are listed in **Table M-1**.

Due to the location of the Runway 12 localizer the TORA, ASDA are reduced by 13 feet. Runway 12 includes an 800-foot displaced threshold reducing the LDA to 5,987 feet. The TODA for Runway 12 is extended to 7,787 feet due to a 987' long clearway extending to the existing localizer

**Table M-1: Miami-Opa Locka Executive Airport – Declared Distances (in linear feet)**

RUNWAY	TORA		TODA		ASDA		LDA	
	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE
9L	8,002	Same	8,002	Same	8,002	Same	8,002	Same
27R	8,002	Same	8,002	Same	8,002	Same	8,002	Same
9R	4,309	Same	4,309	Same	4,309	Same	4,309	Same
27L	4,309	Same	4,309	Same	4,309	Same	4,309	Same
12	6,787	Same	7,787	Same	6,787	Same	5,987	Same
30	6,800	Same	6,800	Same	6,800	Same	6,800	Same

SOURCES: Jacobsen Daniels Associates, LLC, December 2015; Ricondo & Associates, Inc., December 2015.

PREPARED BY: Ricondo & Associates, Inc., December 2015

## N. Airport Layout Plan Drawings

This section provides a brief description of the information specific to each drawing sheet in the ALP set. These drawings were developed and produced as a set on 36 inch by 24 inch sheets using AutoCAD MAP 3D 2013 software. The coordinates, elevations, and aerial photogrammetry are in U.S. survey feet. The horizontal datum is the Florida State Plane Coordinate System, East Zone, North American Datum of 1983/1990 adjustment (NAD 83/90). The vertical datum is the North American Vertical Datum of 1988 (NAVD 88). The Airport did not perform an obstruction survey as part of the SMP, therefore any obstruction evaluation was performed in the National Geodetic Vertical Datum of 1929. The obstruction data included in this ALP set was obtained from the National Aeronautical Charting Office in August 2005, and all obstacle data were obtained from the National Oceanic and Atmospheric Administration and the National Geodetic Survey in February 2005.

Reduced reproductions of these drawings are included in Appendix B to this report for illustration purposes. A full-size set of the drawings is being submitted along with this report to the FAA and FDOT for review and acceptance.

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### N.1 Cover Sheet

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Sheet 1, the Cover Sheet, lists the drawings in the ALP set. It also provides location and vicinity maps. The location map is a scaled representation of the location of the Airport in the State of Florida, and the vicinity map shows the approximate location of the Airport, its boundaries, and major roadways. The vicinity map also depicts the roadway system serving the Airport and the local community.

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### N.2 Data Sheet

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Sheet 2, the Data Sheet, contains six data tables used in the ALP set.

- **Airport Data Table** - This table lists existing and future information specific to the Airport, such as elevation, service level, role, reference code, critical aircraft, owner, reference point, temperature information, and available navigational aids.
- **Runway Data Table** - This table is a compiled tabulation of information relating specifically to the three runways at the Airport. Various specifications are listed for each runway, including, but not limited to,

runway location, dimensions, ADG, available lighting and navigational aids, declared distances, and safety areas as defined in FAA AC 150/5300-13A (Change 1), *Airport Design*.

- **Declared Distances Table** - Existing and future declared distances for each runway end are shown.
- **Taxiway Data Table** - This table provides information associated with the existing and future taxiways at the Airport, including, but not limited to, taxiway width, shoulder width, taxiway safety area, and object free area sizes.
- **Modifications of Standards (MOS) Table** - This table lists any approved modifications to applicable design standards or any nonstandard conditions that may be depicted on the ALP or present at the Airport.
- **Wind Rose and Wind Coverage Table** - The sheet also includes the Airport wind roses. The wind data depicted on this sheet were obtained from the National Oceanic and Atmospheric Administration's National Climatic Data Center. Wind data are provided for all weather conditions, visual meteorological conditions (ceiling at or above 1,000 feet and visibility greater than or equal to 3 miles), and instrument meteorological conditions (ceiling below 1,000 feet and/or visibility less than 3 miles). These components provide information on the percentage of time a runway end or a combination of runway ends or runways are available for arrivals. When combined, the coverage is intended to be as near as possible to 100 percent. Wind coverage is summarized for each runway end and combination of runway ends. Historical wind data were obtained for OPF for the 10-year period beginning in January 2004 and ending in December 2013.

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## N.3 Existing Airport Layout Plan

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Sheet 3 provides the Existing ALP, which depicts existing conditions at the Airport. The ALP sheet illustrates the Airport in its entirety at a scale of 1 inch = 500 feet. Major features on the ALP include runways, taxiways, aprons, navigational aids, existing facilities, the roadway system, and non-Airport facilities surrounding Airport property. This drawing sheet also includes information from the data sheet for runway approaches, runway end elevations, runway high and low points, true azimuths for each runway, and the angle of declination (magnetic north), including the annual rate of change for the magnetic declination. The Existing ALP also includes pertinent clearance and dimensional information associated with the runways and taxiways, such as runway safety areas and RPZs. Imaginary elements are also included on the drawing sheet, including the Airport reference point (existing/future), ground contours, and other dimensional data recommended by the FAA. The Existing ALP demonstrates the Airport's compliance with standards set forth in FAA AC 150/5300-13A (Change 1), *Airport Design*, or necessary modifications of those standards.

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## N.4 Future Airport Layout Plan

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Sheet 4 provides the Future ALP, which depicts the recommended Airport development projects necessary to meet forecast demand over the 20-year planning horizon. The recommended development presented graphically on the Future ALP is consistent with those projects discussed in Section C of this document. Future facility and infrastructure improvements depicted on the Future ALP include:

- Conventional Hangars
- Apron and Ramp Improvements
- Automobile Parking
- Aviation (Jet A) Fuel Facility
- Engine Run-up Enclosure
- MRO Facilities
- Runway 9R-27L Taxiway Connectors/Northeast Taxiway Extension
- Runway 12-30 Taxiway Connectors/Taxiway
- Runway 9R-27L Taxiway Connectors/Parallel Taxiway
- Runway 9L-27R Taxiway Connectors/Parallel Taxiway

Together with the Data Sheet (Sheet 2) and the Existing ALP (Sheet 3), this sheet serves as an overview for the FAA and MDAD as grant and other federal funding for future improvements are assigned.

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## N.5 Airport Airspace Plan Drawings

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The Airport Airspace Plan drawings consist of five sheets depicting the 14 CFR Part 77 imaginary airspace surfaces for the Airport. These include the Airport Airspace Drawing (Sheet 5), Runway 9L Outer Approach Airspace Drawing (Sheet 6), Runway 27R Outer Approach Airspace Drawing (Sheet 7), Runway 12 Outer Approach Airspace Drawing (Sheet 8), and Airport Airspace Plan and Profile (Sheet 9). To enhance the safe operation of aircraft in the airspace around an airport, the FAA has adopted 14 CFR Part 77, "Safe, Efficient Use, and Preservation of the Navigable Airspace." Subpart C of 14 CFR Part 77 establishes imaginary surfaces for determining obstructions to air navigation, which are illustrated on the Airport Airspace Plan drawings.

The Airport Airspace Plan drawings also illustrate physical features on and around the Airport, including any existing obstructions that penetrate the 14 CFR Part 77 imaginary surfaces.

14 CFR Part 77 surfaces correspond to available navigational aids and types of approaches available to a runway end. **Table N-1** summarizes the 14 CFR Part 77 dimensions associated with each runway end at the Airport. The specific imaginary surfaces depicted on these drawing include:

- **Approach Surfaces** - These surfaces are longitudinally centered along the extended runway centerline and extend outward and upward from each end of the primary surface. The size and slope of the approach surface are based on the type of approach, existing or planned, for that runway end. The inner edge of the approach surface is the same width as the primary surface. However, its overall length, slope, and outermost width may vary.
- **Transitional Surfaces** - These surfaces extend outward and upward from the lateral edges of all primary and approach surfaces at a slope of 7 to 1. The overall width of the transitional surfaces is 5,000 feet, which is measured perpendicularly from the runway centerline.
- **Horizontal Surface** - This surface is a plane located 150 feet above the established Airport elevation. Its perimeter consists of arcs of specific radii connected by lines tangential to the arcs. The arcs are centered on the midpoint of the ends of all primary surfaces.
- **Conical Surface** - This surface extends outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

**Table N-1: 14 CFR Part 77 Approach Surface Characteristics**

RUNWAY END	OVERALL LENGTH (FEET)	OUTERMOST WIDTH (FEET)	SLOPE
9L	50,000	16,000	50:1/40:1
27R	50,000	16,000	50:1/40:1
9R	5,000	1,500	20:1
27L	5,000	1,500	20:1
12	50,000	16,000	50:1/40:1
30	5,000	1,500	20:1

SOURCE: 14 CFR Part 77, "Safe, Efficient Use, and Preservation of the Navigable Airspace," September 2008.

PREPARED BY: Ricondo & Associates, Inc., December 2015.

Navigational aids that have frangible mounts are fixed-by-function and were not included in the obstruction analysis at OPF, in accordance with 14 CFR Part 77. Obstacle and obstruction data from the 2007 ALP were used. The obstruction data were obtained from the National Aeronautical Charting Office in August 2005.

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## N.6 Inner Portions of the Approach Surface Drawings

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Sheets 10 through 15 of the ALP set provide the inner portions of the approach surfaces for Runways 9L-27R, 9R-27L, and 12-30. These sheets consist of scaled drawings of the areas immediately beyond the existing runway ends at OPF, including, but not limited to, the RPZs off each runway end. The FAA recommends that the area within each RPZ be kept free of obstacles that could constitute a hazard to aircraft approaching or departing an airport. These drawings depict the locations of roadways, structures, natural ground elevations, and other manmade or natural features within the limits of each RPZ or out to where the ultimate approach surface slope is 100 feet above the threshold elevation of the runway, whichever is further. The drawings also depict objects that penetrate existing and proposed approach surfaces or violate the primary surface criteria.

Obstacle and obstruction data from the 2007 ALP were used. The obstruction data were obtained from the National Aeronautical Charting Office in August 2005, and all obstacle data were obtained from the National Oceanic and Atmospheric Administration and the National Geodetic Survey in February 2005.

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## N.7 Departure Surface Drawings

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Sheets 16, 17 and 18 of the ALP set provide the departure surface drawings for Runways 9R, 12 and 30, respectively. These drawings are prepared for each runway end with an existing or future instrument departure procedure. The sheets consist of scaled plan and profile drawings of the area within the 40 to 1 departure surface. The drawing sheets depict the locations of potential obstructions. The sheets also provide obstruction tables listing objects, departure surface penetrations, object top elevations, and disposition.

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## N.8 On-Airport Land Use Drawing

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Sheet 19 of the ALP set provides the On-Airport Land Use Plan, which illustrates the recommended use of property within the current and expanded boundary of the Airport. This sheet identifies various land use designations for MDAD-owned Airport property, including the Air Operations Area (AOA), which encompasses portions of the Airport used by aircraft. The land use areas, and their locations on and around the airfield, are described below and are depicted using various patterns of hatching on the drawing sheet.

- **Airport Support Functions/Airside Equipment (Non-tenant Area)** - This land use area is intended to represent areas that cannot be developed because they provide for Airport support (within the runway visibility zone) or areas intended for airside equipment that does not require routine airfield access.
- **Commercial/Industrial** - This land use area is intended to represent development that is compatible with and may encourage aviation growth. Development may or may not be directly related to the aviation industry.

- **Aeronautical** - This land use area is intended for existing and future general/corporate aviation-related development, such as aircraft hangars, FBOs, and aprons. This land use area encompasses those portions of the Airport that are undeveloped or underdeveloped with the potential for development of one or more forms of aviation.
- **Government (FAA, U.S. Customs and Border Protection, MDAD, Police, Fire)** - This land area is used for government facilities that rely on the airfield for operations (U.S. Coast Guard) or is required for Airport support (MDAD offices, ARFF).
- **Other Uses/Flexible** - This land use area consists of land that has not been reserved for any other purpose and is, or could be, populated by aviation-related or non-aviation-related developments.
- **Archaeological/Historic/Environmental Preservation** - This land use area is used for historic buildings that are listed in or eligible for listing in the National Register of Historic Places.
- **Avigation Easement (On-/Off-Airport)** - This land use area consists of property where the right of overflight in the airspace above or in the vicinity of a particular property, or the right to remove any obstructions to such overflights, has been conveyed.
- **Air Operations Area** - This land use area consists of the land reserved for activities supporting and sustaining the safe and efficient operation of aircraft, including land devoted to airfield facilities, such as runways and taxiways, and property within the limits of the RPZ, runway object free area, and taxiway object free area.

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## N.9 Off-Airport Land Use Plan

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Sheet 20 of the ALP set provides the Off-Airport Land Use Plan drawing, which depicts the land uses within the vicinity of OPF. The land uses shown coincide with the 2015 Miami-Dade County Land Use Map issued by the Miami-Dade County Regulatory and Economic Resources Department's Research and Economic Analysis Section.

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## N.10 Airport Property Map

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Sheet 21 of the ALP set provides the Airport Property Map, which presents the existing and ultimate relevant property tracts, including the acreage of each parcel, location description, how the Airport property was acquired (e.g., federal Airport Improvement Program funds, military/government surplus, local funding), the date each tract of land was acquired, and the existing ownership status of proposed property acquisitions. The property map serves as a guide for MDAD to analyze the current and future uses of land acquired with federal grant funds.

# Appendix A ALP Narrative Report Checklist from Airport Layout Plan Checklist- ARP SOP 2.00

**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	Miami – Opa Locka Executive Airport		
City and State	Miami, FL	Location Identifier	OPF
Airport Owner	Miami-Dade County		

**ALP Submission Information (to be completed by Sponsor or Consultant)**

ALP Prepared by	Jacobsen Daniels Associates	
	Name of Consulting Firm	
	Chris Johnson / Robert Tykoski	05/2018
	Name of Individual	Date
	(734) 961-3200	
	Telephone	
	robertt@jacobsendaniels.com	
	Email address	
Consulting QA/QC Review	David Ramacorti, C.M. (Director)	05/2018
	Name and Title of Individual	Date
Sponsor Review	Ammad Riaz P.E. (Chief Aviation Planning Division)	
	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	Boeing	Business Jet	1.450 (Composite of several Group 3 aircraft)
Future	Same	Same	Same

Forecasted Year: 2012

Airport Reference Code (ARC): B-II

**Runway Design Code (RDC) & Runway Reference (RRC):**

Runway	RDC	RRC
9L	D/IV/4000	D/IV/4000
27R	D/IV/4000	D/IV/4000
9R	B/II/VIS	B/III/500, D/II/5000
27L	B/II/VIS	B/III/5000, D/II/5000
12	D/IV/4000	D/IV/2400, D/V/4000
30	D/IV/VIS	D/IV/VIS, D/V/VIS

**Approach Minimums:**

Rwy End	Minimum	Rwy End	Minimum
9L	¾	27R	1
9R	Visual	27L	Visual
12	¾	30	Visual

**Runways (Existing and Future):**

Runway	Existing		Future		Departure Surface (Y or N/A)
	Length (ft)	Width (ft)	Length (ft)	Width (ft)	
9L/27R	8,002	150	8,002	150	Y
9R/27L	4,309	100	4,309	100	Y
12/30	6,800	150	6,800	150	Y

For the balance of the checklist, enter a mark (  or X ) to confirm inclusion.

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.	<p>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:</p> <ul style="list-style-type: none"> <li>- Basic aeronautical forecasts.</li> <li>- Basis for the proposed items of development.</li> <li>- Rationale for unusual design features and/or modifications to FAA Airport Design Standards.</li> <li>- Summary of the various stages of airport development and layout sketches of the major items of development in each stage.</li> <li>- An environmental overview to document environmental conditions that should be considered in the identification and analysis of airport development alternatives and proposed projects.</li> </ul>	X			
1. Identify Projects along with description		X			
2. Create a Timeline for each Project		X			
3. Identify and List:		X			
a. Proposed Projects (e.g., Hangar development)		X			
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.)		X			
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.)				X	
d. Funding Plan		Capital Improvement Plan for the forecast horizons. See AC 150/5070-6, Chapter 11. Only a rough, order-of-magnitude report	X		

	is needed in the executive summary.				
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.	X			
1. Total annual operations	Total local and itinerant aircraft operations at the airport.	X			
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.	X			
3. Annual itinerant operations by current critical aircraft		X			
4. Annual itinerant operations by future critical aircraft		X			
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.	X			
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.	X			
7. Number of enplanements	See AC 150/5070-6, Chapter 7, Section 702.a. and Figure 7-2.			X	
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	X			

	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).	X			
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.	X			
C. Alternatives/Proposed Development		X			
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.	X			
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.	X			
13. Navigational Aids or Other Equipment Needs (e.g., Approach Lights, Wind	The need for new or additional navigational aids is a function of the fleet mix, the percentage of time that poor weather conditions	X			

<p>Cones, AWOS, etc.)</p>	<p>are present, and the cost to the users of not being able to use the airport while it is not accessible.</p>				
<p>14. Wind coverage. Is it adequate for existing and future runway layouts? Has wind data been updated?</p>	<p>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.</p>	<p>X</p>			
<p>D. Modification to Standards.</p>	<p>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.</p>	<p>X</p>			
<p>E. Obstruction Surfaces (14 CFR Part 77 and Threshold Siting Surface)</p>	<p>Reference 14 CFR Part 77 and AC 150/5300-13A, Paragraph 303.</p>	<p>X</p>			
<p>F. Runway Protection Zone</p>	<p>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.</p>	<p>X</p>			
<p>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:</p>	<p>Documentation provided should include any electronic spreadsheets and files to facilitate in modifying the financial plan on an as-needed basis.</p>	<p>X</p>			
<p>15. Development Projects Completed Since Last ALP</p>		<p>X</p>			
<p>16. 0-5 years</p>				<p>X</p>	

17. 6-10 years				X	
18. 11-20 years				X	
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.			X	
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.			X	
J. Wildlife Hazard Management Issues Review (in narrative).	Reference AC 150/5200-33.	X			
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.	X			
19. Major airport drainage ditches				X	
20. Wetlands				X	
21. Flood Zones				X	
22. Historic or Cultural features				X	
23. Section 4(f) features				X	
24. Flora/Fauna				X	
25. Natural Resources				X	
26. Etc. (other features identified in Order 5050.4B)				X	
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.			X	
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	X			

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	<p>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.</p>				
Remarks					

**A.1. 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.

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.	X			
B. Airport sponsor approval block	Provide an approval block for the sponsoring authority's representative to sign. Include space for name, title, and date.		X		
C. Date of ALP (date the airport sponsor signs the ALP)	The month and year of signature prominently shown near the title.	X			
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.	X			
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.			X	
F. State outline with county boundaries. County in which airport is located should be highlighted.	Provide as needed.			X	
G. Location map (general area)		X			
H. Vicinity map (specific airport area)		X			

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Remarks

**A.2. Airport Data Sheet**

- For smaller airports, some of the ALP sheets may be combined if practical and approved FAA.

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.	X			
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.	X			
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.	X			
2. Percentage of wind coverage/crosswind		X			
3. Source of data	Wind data may be obtained from NOAA at <a href="http://www.ncdc.noaa.gov/">http://www.ncdc.noaa.gov/</a>	X			

	Reference AC 150/5300-13A, Appendix 2, Paragraph A2-5 and A2-6.				
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.	X			
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.	X			
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.	X			
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.	X			
4. Airport Navigational Aids, including ownership (NDB, TVOR, ASR, Beacon, etc.)	List the electronic aids available at the airport.	X			
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	X			

	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.	X			
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.	X			
8. Airport magnetic variation, date and source	Magnetic declination may be calculated at <a href="http://www.ngdc.noaa.gov/geomagnetic-web/#declination">http://www.ngdc.noaa.gov/geomagnetic-web/#declination</a> . 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			
9. NPIAS service level (GA, RL, P, CS, etc.)	See FAA Order 5090.3C.	X			
10. State equivalent service role	As applicable pursuant to State Aviation Department System Plan.	X			
D. Runway Data Table	The Runway Data Table should show information for both existing and ultimate runways.	X			
1. Runway identification (Include identifying	A column for each runway end should be present. List the runway end number and if	X			

runways that are "utility")	pavement strength is less than 12,500 pounds (single-wheel), then note as utility.				
2. Runway Design Code (RDC)	5300-13A The 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).	X			
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.	X			
4. Pavement Strength & Material Type	Indicate the runway surface material type, e.g., turf, asphalt, concrete, water, etc.	X			
a. Strength by wheel loading	List the existing and ultimate design strength of the landing surface. See AC 150/5320-6, Chapter 3.	X			
b. Strength by PCN	See AC 150/5335-5.	X			
c. Surface treatment	Note any surface treatment: grooved, PFC, etc.	X			
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.	X			
6. Percent (%) Wind	List the percent wind coverage for each runway for each Aircraft	X			

Coverage (each runway)	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.	X			
8. Displaced Threshold	Provide the pavement elevation of the runway pavement at any displaced threshold. See AC 150/5300-13A, Paragraph 303(2).	X			
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.	X			
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.	X			
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.	X			
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.	X			
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,	X			

	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.	X			
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.	X			
16. Visibility minimums (existing and future)	List the existing and ultimate visibility minimums for each runway. See AC 150/5300-13A, Table 1-3.	X			
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.	X			
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.	X			
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.	X			
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.	X			
21. Threshold siting surface (TSS)	List the existing and ultimate threshold siting surface (i.e. approach and departure	X			

	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.	X			
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.	X			
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.	X			
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.	X			
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.	X			
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.	X			
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.	X			
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	X			

	<p>Drawing that denotes that the NAD 83 coordinate system was used.</p> <p>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.</p>				
<p>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</p>	<p>Provide a table to list all FAA approved Modifications to Standards. See AC 150/5300-13A, Paragraph 106(b), and FAA Order 5300.1.</p> <p>List "None Required" on the table if no Modifications have yet been proposed or approved.</p>	X			
<p>F. Declared Distances Table</p>	<p>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.</p>	X			
<p>1. Take Off Run Available (TORA)</p>	<p>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).</p>	X			
<p>2. Take Off Distance Available (TODA)</p>	<p>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</p>	X			

	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).	X			
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).	X			
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.	X			
Remarks					

**A.1. 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')

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.	X			
B. Space for the FAA approval stamp	Leave a blank four-inch by four-inch area for the FAA approval stamp.	X			
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.	X			
1. True and magnetic North arrow with year of magnetic declination	Magnetic declination may be calculated at <a href="http://www.ngdc.noaa.gov/geomag-web/#declination">http://www.ngdc.noaa.gov/geomag-web/#declination</a> . 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			
2. Airport reference point – locate by symbol a Lat./Long. To nearest second (existing, future,	List the Airport Reference Point, the latitude and longitude of the approximate center of the airport. Use the NAD 83 coordinate	X			

and ultimate) NAD 83	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.	X			
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.	X			
5. Elevations: All NAVD88	All latitude/longitude coordinates shall be in NAD83/NAVD88.	X			
a. Runway – existing, future, and ultimate ends (nearest 0.1 ft.)	Show the latitude and longitude of the threshold center and end of pavement.	X			
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.		X		
c. Runway high/low points (existing and future)	For all runways identify high and low points (centerline) and provide elevation information.		X		
d. Label runway/runway intersection elevations	Label the pavement elevation of runway intersections where the centerlines cross.			X	
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).	X			
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).	X			

	See also 14 CFR Part 77.				
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.	X			
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.	X			
6. Runway Details		X			
a. Runway Design – runway length, runway width, shoulder width, blast pad width, blast pad length, and cross wind component.  (existing, future, and ultimate)	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.  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.	X			
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.	X			
c. End Coordinates – existing, future, and ultimate degrees,	Show the latitude and longitude of the threshold center and end of pavement (if different) to the	X			

	minutes, seconds (to the nearest 0.01 second)	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.	X			
e.	Runway Object Free Areas (ROFA)	Show the extents of the existing and ultimate ROFA. Reference AC 150/5300-13A, Paragraph 309.	X			
f.	Precision Obstacle Free Zone (POFZ)	Show the extents of the existing and ultimate POFZ. Reference AC 150/5300-13A, Paragraph 308(d).	X			
g.	Obstacle Free Zone (OFZ)	Show the extents of the existing and ultimate OFZ. Reference AC 150/5300-13A, Paragraph 308.	X			
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.	X			
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.	X			
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	X			

	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).	X			
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.	X			
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.	X			
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.	X			
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.	X			
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.	X			
7. Taxiway Details	Show the taxiway centerline separation distances to parallel taxiway/taxilane centerlines, fixed or movable objects.	X			
a. Dimensions – width (existing & ultimate)	Taxiway width based on Taxiway Design Group (TDG). See AC 150/5300-13A, Table 4-2.	X			
b. Taxiway Edge Safety Margin (TESM)	TESM dimension based on TDG. See AC 150/5300-13A, Table 4-2.	X			

c. Taxiway Shoulder Width	Taxiway shoulder width based on TDG. See AC 150/5300-13A, Table 4-2.	X			
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.	X			
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.	X			
d. Taxiway/Taxilane Centerline Separation from:		X			
i. Runway centerline	Show the distance from centerline of runway to centerline of taxiway. See AC 150/5300-13A, Table 4-1.	X			
ii. Parallel taxiway	Show the distance from centerline of taxiway to centerline of parallel taxiway. See AC 150/5300-13A, Table 4-1.	X			
iii. Aircraft parking	Show the distance from centerline of taxiway to marked aircraft parking/tie downs. See AC 150/5300-13A, Table 4-1.	X			
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.	X			
8. Fences (identify height)	Show the location of existing and ultimate fences and identify height.		X		
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.		X		

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.		X		
c. Identify Special Use Areas (e.g., deicing or aerial application areas on or near apron)	Show as applicable and pursuant to representative ACs.			X	
10. Roads	Label all roads.	X			
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.	X			
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.	X			
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).	X			
c. Runway Visibility Zone (RVZ)	Show the RVZ for the existing and ultimate airport configurations. See AC 150/5300-13A, 305(c).	X			
d. Airport Property Lines and Easements (existing, future, and ultimate)	Show the airport property boundaries, including easements, for the existing and ultimate airport configurations.	X			
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			X	

	<p>Secondary Airport Control Stations (PACS/SACS) if they exist. See AC 150/5300-16.</p> <p>Show the location of all section corners on or near the airport property.</p>				
b. Offsets, stations, etc.	Show as applicable.			X	
14. Any Air Traffic Control Tower (ATCT) line of sight/shadow study areas (use separate sheet if necessary)	Reference FAA Order 6480.4.			X	
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.	X			
16. Facilities and movement areas that are to be phased out, if any, are described	Show as applicable.	X			
Remarks					

**A.2. 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.

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.	X			
B. Plan view (based on ultimate runway lengths) Include location of water or sewage facilities if inside horizontal surface.		X			
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.	X			
2. Runway end numbers	Show the ultimate runways and runway numbers. Contact the FAA before renumbering existing runways.	X			
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.	X			
4. 50’ elevation contours on sloping surfaces (NAVD88)	Show contour lines on all sloping Part 77 imaginary surfaces. See 14 CFR Part 77.19.	X			
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.	X			

<p>6. Note specifying height restriction (ordinances/statutes)</p>	<p>List any local zoning restrictions that are in place to protect the airport and surrounding airspace. See AC 150/5190-4.</p>			<p>X</p>	
<p>7. North Arrow with magnetic declination and year</p>	<p>Magnetic declination may be calculated at <a href="http://www.ngdc.noaa.gov/geomagnetic-web/#declination">http://www.ngdc.noaa.gov/geomagnetic-web/#declination</a>. 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.</p>	<p>X</p>			
<p>C. Profile view</p>					
<p>1. Airport Elevation</p>	<p>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).</p>	<p>X</p>			
<p>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)</p>	<p>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.</p>	<p>X</p>			
<p>3. Significant objects (bluffs, rivers, roads, schools, towers, etc.) and elevations</p>	<p>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.</p> <p>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.</p>	<p>X</p>			
<p>4. Existing, future, and ultimate runway ends and approach slopes</p>	<p>Show existing and ultimate runway ends and FAR Part 77 approach surface slopes. See 14</p>	<p>X</p>			

		CFR Part 77.19.				
D. Obstruction Data Tables (identify obstacles not depicted on the Inner Portion of the Approach Surface Drawing)						
1. Object identification number	<p>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.</p> <p>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.</p>	X				
2. Description	Provide a brief description of the object, e.g., Power Pole, Cell Tower, Natural Gas Flare, etc.	X				
3. Date of Obstruction Survey	Provide the date of latest obstruction survey.	X				
4. Ground Surface Elevation	Provide the ground surface elevation (MSL) at the base of each object.			X		
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.	X				
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.	X				
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.	X				
a. Proposed Disposition (existing)		X				
b. Proposed Disposition (future)		X				

Effective Date: October 1, 2013

ARP SOP No. 2.00

Remarks

**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.

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.	X			
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.	X			
2. Aerial photo for base map	Use an aerial photograph for the base map.	X			
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.	X			
4. Property line within approaches	Show the property lines that are within the area/portion of airport shown.	X			
5. Road & railroad	Provide elevation information for	X			

elevations, plus movable object heights	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.	X			
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.	X			
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.	X			
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.	X			
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.	X			
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	X			

	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.	X			
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.	X			
10. North arrow with magnetic declination and year	Magnetic declination may be calculated at <a href="http://www.ngdc.noaa.gov/geomagnetic-web/#declination">http://www.ngdc.noaa.gov/geomagnetic-web/#declination</a> . 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.	X			
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.	X			
2. Future development from plan view	Identify future development using same alphanumeric identifier that was used on the plan view.	X			
3. Part 77 Approach/transition surface; existing and future VASI/PAPI siting	Show the boundaries of the existing and ultimate Part 77 Approach Surface. See FAA Order 7400.2, Figure 6-3-9, See	X			

surface	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.	X			
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	X			
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.	X			
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.	X			
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.	X			
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.	X			
1. Object identification number	List each object by the same alphanumeric symbol used in the plan view.	X			
2. Description	Provide a brief description of the object, e.g., Power Pole, Cell Tower, Natural Gas Flare, etc.	X			
3. Date of Obstruction Survey and Survey Accuracy	Provide the date of latest obstruction survey.	X			

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.	X			
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.	X			
6. Object elevation	List the Above Ground Level (AGL) height and the top of object elevation in MSL for each object.			X	
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.			X	
8. Allowable approach surface elevation (if applicable)				X	
9. Amount of approach surface penetration (if applicable)		X			
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.	X			
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.	X			
E. Runway Centerline Profile	This may be shown on the Inner Portion of the Approach Surface	X			

	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.	X			
2. Elevation	Show runway elevations, runway and Runway Safety Area gradients, and all vertical curve data. See AC 150/5300-13A, Paragraph 318.	X			
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.			X	
Remarks					

**A.3. 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.

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.	X			
B. Plan view (existing & future)	See AC 150/5300-13A, Paragraph 303(c).	X			
1. Aerial Photo for base map	Use an aerial photograph for the base map. A USGS 7.5 minute series map is also acceptable.	X			
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).	X			
3. 50' elevation contours on sloping surfaces (NAVD88)	Show contour lines on the Part 77 imaginary surfaces. See 14 CFR Part 77.19.	X			
4. Depict property line, including easements	Show the property line(s) that are within the area/portion of airport shown.	X			
5. Identify, by numbers, all traverse ways with elevations and computed	Identify all significant objects (roads, rivers, railroads, towers, poles, etc.) within the departure	X			

vertical clearance in the departure surface	surfaces, regardless of whether or not they are obstructions using unique alphanumeric characters.				
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.	X			
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.	X			
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.	X			
3. Identify obstructions with numbers on the plan view	Identify the objects using same alphanumeric identifier that was used on the plan view.	X			
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.	X			
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.	X			
2. Description	Provide a brief description of the object, e.g., Power Pole, Cell Tower, Tree, Natural Gas Flare, etc.	X			
3. Object Elevation	List the Above Ground Level (AGL) height and the top of object elevation in MSL for each	X			

	object.				
4. Amount of surface penetration	List the object protrudes above the departure surface. See AC 150/5300-13A, Paragraph 303(c).	X			
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).	X			
6. Separate table for each departure surface	A separate table for each runway end must be used to enhance information clarity.	X			
Remarks					

**A.4. 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.

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.			X	
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.			X	
1. Structure identification number				X	
2. Top elevation of structures (AMSL)				X	
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.			X
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.			X	

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.			X	
E. Air carrier gates positions shown (existing/future)	Show the existing and ultimate air carrier gate positions. See AC 150/5300-13A, Chapter 5.			X	
F. Existing and future security fencing with gates	Show the existing and ultimate security fencing and gates. See AC 150/5300-13A, Paragraph 606.			X	
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).			X	
H. Taxiway or Taxilane centerlines designated	Show centerlines of all taxiway and taxilanes within the area/portion of airport shown.			X	
I. Dimensions				X	
1. Clearance Dimensions between runway, taxiway, and taxilane centerlines and hangars, buildings, aircraft parking, and other objects.	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.			X	
2. Dimensions of aprons, taxiways, etc.  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			X	

	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.			X	
K. Auto parking (existing & ultimate)	Show the existing and ultimate auto parking areas. See AC 150/5300-13A, Appendix 5.			X	
L. Major airport drainage ditches or storm sewers	Show any significant airport drainage ditches or storm sewers within the area/portion of airport shown.			X	
M. Special Use Area (e.g., Agricultural spraying support, Deicing, or Containment)	Show any special use areas within the area/portion of airport shown.			X	
N. North Arrow with magnetic declination and year	Magnetic declination may be calculated at <a href="http://www.ngdc.noaa.gov/geomagnetic-web/#declination">http://www.ngdc.noaa.gov/geomagnetic-web/#declination</a> . 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	
O. Fence	Show the existing and ultimate perimeter fencing or general area fencing.			X	
P. Entrance Road	Show the existing and ultimate entrance road. See 5300-13AFAA Order 5100.38, Chapter 6, Section 2.			X	
Remarks					

**A.5. 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.	X			
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.	X			
C. Plan view of land uses by category (Agricultural, Aeronautical, Commercial, Residential, etc.). Use local land use categories.		X			
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).	X			
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.	X			
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.			X	

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.	X			
F. Public facilities (schools, hospitals, parks, churches etc.)	Identify public facilities, e.g., schools, parks, etc.			X	
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.			X	
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.			X	
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.			X	
J. North arrow with magnetic declination and year	Magnetic declination may be calculated at <a href="http://www.ngdc.noaa.gov/geomagnetic-web/#declination">http://www.ngdc.noaa.gov/geomagnetic-web/#declination</a> . 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			
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.	X			
L. Crop Restrictions	Show the Crop Restriction Line (CRL). See AC 150/5300-13A, Paragraph 322 and AC 150/5200-33.	X			
Remarks					

Effective Date: October 1, 2013

ARP SOP No. 2.00

--

- Scale 1"=200' to 1"=600'.

Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
A. Will Property Map serve as Exhibit A?  – If <b>YES</b> , follow the directions to the right. – If <b>NO</b> , 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.			X	
<b>If Property Map will not serve as Exhibit A:</b> B. Title and Revision Blocks				X	
C. Plan view showing parcels of land (existing, future, and ultimate)				X	
1. Fee land interests (existing and future)				X	
2. Easement interests (existing and future)				X	
a. Part 77 protection				X	
b. Compatible Land Use				X	
c. RPZ protection				X	
3. Airport Property Line				X	
D. Legend – shading/cross hatching, survey monuments, etc.				X	
E. Data Table				X	
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			X	

Effective Date: October 1, 2013

ARP SOP No. 2.00

	be noted. The drawing should also depict easements beyond the airport boundary.				
2. Method of acquisition or property status (fee simple, easement, etc.)				X	
3. Type of Acquisition Indicated	(e.g., AIP-noise, AIP-entitlement, PFC, surplus property, local purchase, local donation, condemnation, other)			X	
4. Acreage				X	
F. Access point(s) for through-the-fence arrangements including residential				X	
Remarks					

# Appendix B Miami-Opa Locka Executive Airport 2018 Airport Layout Plan Set





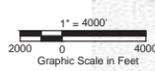
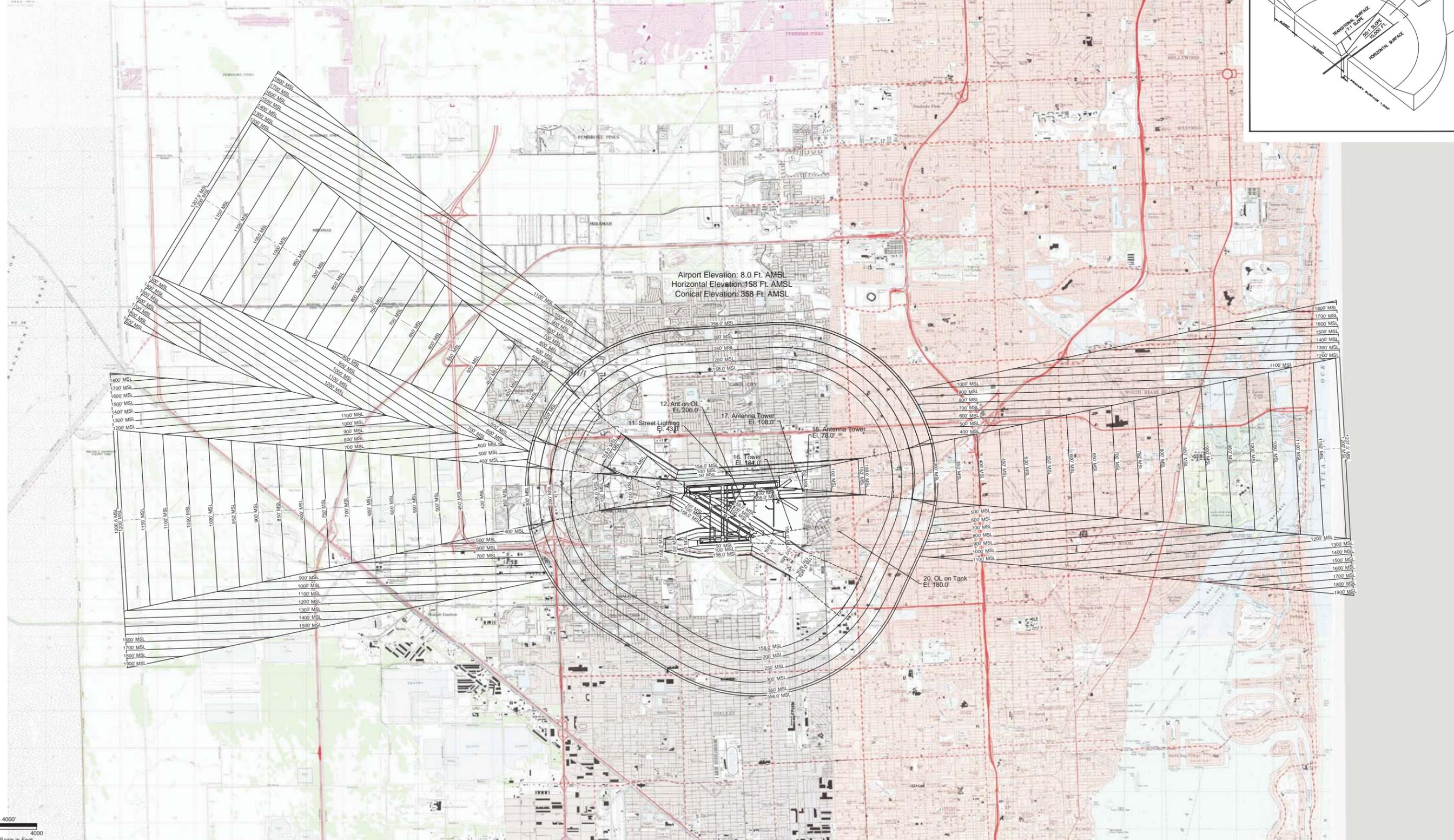
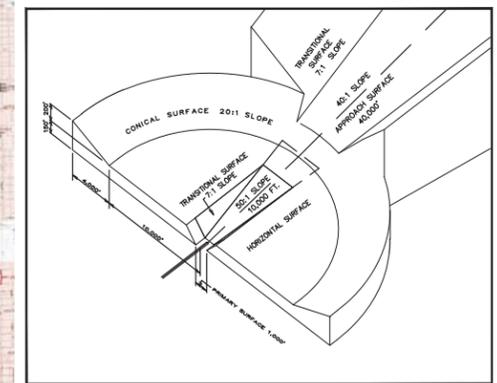




Part 77 Obstruction Table

Obstacle ID	Description	Top Elevation	Penetration (Surface)	Disposition
11	Street Lighting	43.0	9.0	Lower
12	Ant on OL	206.0	48.0	None
16	Tower	181.0	21.0	Light
17	Ant Tower	108.0	44.5	Light
18	Ant Tower	78.0	8.0	Light
20	OL on Tank	180.0	20.0	None

VIEW OF IMAGINARY SURFACES



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**MIAMI-DADE COUNTY**

**NOTES:**

- Horizontal Datum: Florida East, State Plane Coordinate System US Feet.
- All elevations are Above Mean Sea Level (AMSL) relative to the National Geodetic Vertical Datum of 1929 (NGVD29).
- All tree obstructions to be trimmed or removed.
- Refer to the Inner Portion of the Approach Surface Drawings for close-in obstructions. Updated obstruction surveys were not conducted as part of this Airport Layout Plan set update. Field surveys should be performed to validate obstacle heights and potential final impact to the proposed approach surfaces.
- Runway end locations and elevations based on North American Vertical Datum of 1988 (NAVD88).
- Planimetric mapping from 01/18/2010 Third Party survey
- Federal Communication Commission, Antenna Structure Registration, July 2006
- Per FAR Part 77.23(b) the following traverse ways must be increased by: 10' for an airport controlled Vehicle (Service Road (VSR)), 15' for a (Non Interstate), 17' for an (Interstate), and 23' for (Railroads). Traverse points have not been surveyed they are estimated based on the ALP topography.

Declination: 06°18'57.6" W (2014)  
Changing: 0°5.8" W per Year

Revision and Description	Date	Name

AIRPORT AIRSPACE DRAWING

MIAMI-OPA LOCKA EXECUTIVE AIRPORT AIRPORT LAYOUT PLANS UPDATE

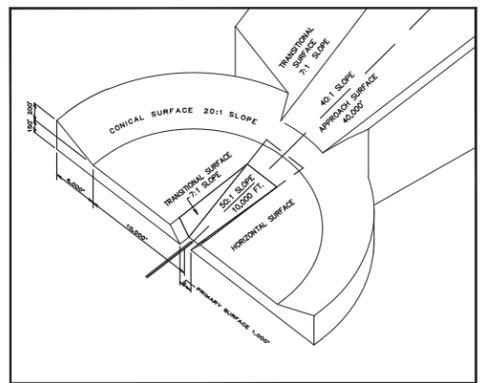
**OPF**

Drawn by: *CLJ*  
Checked By: *JEK*  
Issue Date: MAY 2018  
Sheet: **5 of 21**

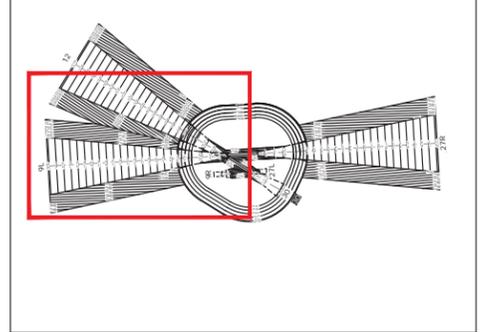
Airport Elevation: 8.0 Ft. AMSL  
 Horizontal Elevation: 158 Ft. AMSL  
 Conical Elevation: 358 Ft. AMSL



**VIEW OF IMAGINARY SURFACES**



**KEY MAP**



**Part 77 Obstruction Table**

Obstacle ID	Description	Top Elevation	Penetration (Surface)	Disposition
11	Street Lighting	43.0	9.0	Lower
12	Ant on OL	206.0	48.0	None
16	Tower	181.0	21.0	Light
17	Ant Tower	108.0	44.5	Light
18	Ant Tower	78.0	8.0	Light
20	OL on Tank	180.0	20.0	None

Note: This drawing does not reflect the obstructions listed in the table due to being outside of the drawing area.

- NOTES:**
- Horizontal Datum: Florida East, State Plane Coordinate System US Feet.
  - All elevations are Above Mean Sea Level (AMSL) relative to the National Geodetic Vertical Datum of 1929 (NGVD29).
  - All tree obstructions to be trimmed or removed.
  - Refer to the Inner Portion of the Approach Surface Drawings for close-in obstructions. Updated obstruction surveys were not conducted as part of this Airport Layout Plan set update. Field surveys should be performed to validate obstacle heights and potential final impact to the proposed approach surfaces.
  - Runway end locations and elevations based on North American Vertical Datum of 1988 (NAVD88).
  - Planimetric mapping from 01/18/2010 Third Party survey
  - Federal Communication Commission, Antenna Structure Registration, July 2006
  - Per FAR Part 77.23(b) the following traverse ways must be increased by: 10' for an airport controlled Vehicle (Service Road (VSR)), 15' for a (Non Interstate), 17' for an (Interstate), and 23' for (R)ailroads. Traverse points have not been surveyed they are estimated based on the ALP topography.

Declination: 06°18'57.6" W (2014)  
 Changing: 0°5.8" W per Year

Revision and Description	Date	Name

**RUNWAY 9L OUTER APPROACH AIRSPACE DRAWING**

MIAMI-OPA LOCKA EXECUTIVE AIRPORT  
 AIRPORT LAYOUT PLANS UPDATE

**OPF**  
 Drawn by: CLJ  
 Checked by: JEK  
 Issue Date: MAY 2018  
 Sheet: 6 OF 21

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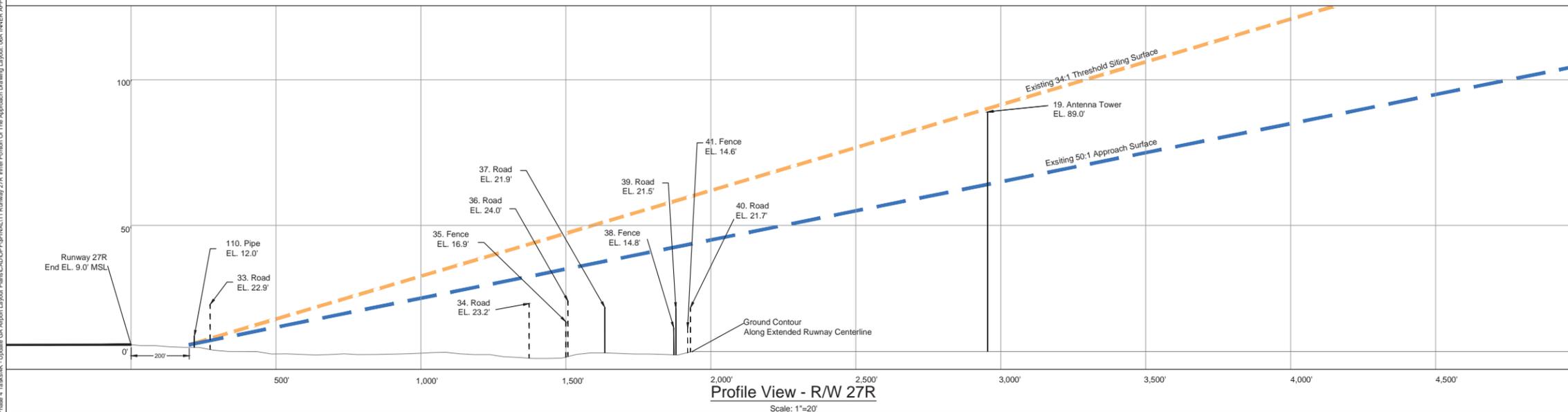


Plan View - R/W 27R  
Scale: 1"=200'

NO THRESHOLD SITING SURFACE PENETRATIONS

Airspace Obstruction Table					
Obstacle ID	Description	Top Elevation	Part 77 Penetration	Threshold Siting Surface Penetration	Proposed Disposition
19	Antenna Tower	89.0'	24.9'	None	OL/OM
33	Road	22.9'	12.4'	None	N/A
34	Road	23.2'	None	None	N/A
35	Fence	16.9'	None	None	N/A
36	Road	24.0'	None	None	N/A
37	Road	21.9'	None	None	N/A
38	Fence	14.8'	None	None	N/A
39	Road	21.5'	None	None	N/A
40	Road	21.7'	None	None	N/A
41	Fence	14.6	None	None	N/A
110	Pipe	12.0'	2.6'	None	OL/OM

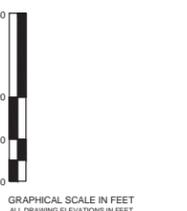
Source:  
National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce for the Federal Aviation Administration (FAA), Obstruction Data Sheet (ODS) 256 Opa-locka Airport, Surveyed March 1993, 7th Edition.



Profile View - R/W 27R  
Scale: 1"=200'

At the time of the obstruction analysis, the Runway 27R end elevation was 9.0' MSL, as reflected on the 2007 Airport Layout Plans. The 2007 ALP was performed in the NGVD 29 Datum. The current published runway end elevation, as reflected in the Runway Data Table, is 7.3' MSL. This is reflective of the NAVD 88 Datum. However, no additional obstruction surveying has been performed. Therefore, for consistency, the original data is presented on this sheet without adjustment.

Graphic Legend	
Item	Description
[Symbol]	Existing Airfield Pavement
[Symbol]	Future Airfield Development
[Symbol]	Airfield Pavement Rehabilitation
[Symbol]	Future Pavement Demolition
[Symbol]	Existing Building
[Symbol]	Future Facility
[Symbol]	Landside Development
[Symbol]	Non-Aeronautical Development
[Symbol]	Ground Contour
[Symbol]	Property Boundary
[Symbol]	Runway Object Free Area
[Symbol]	RSA
[Symbol]	Runway Object Free Zone
[Symbol]	Inner Approach Object Free Zone
[Symbol]	TOFA
[Symbol]	Runway Protection Zone
[Symbol]	Future Taxiway Centerline
[Symbol]	Future Taxiway Shoulder Pavement
[Symbol]	Part 77 Approach Surface
[Symbol]	Threshold Siting Surface



Colorado: Record: Plot Size: 11.0000 x 17.0000; Last Saved: 5/7/2018 3:30 PM; Printed On: 7/16/2018 1:38 PM  
 File: P:\Projects\MIAMI-DADE\20180520\20180520-27R\20180520-27R.dwg; User: jacobson; Plot: 27R.dwg; Plot Device: HP DesignJet 5000; Plot Style: 27R.ctb; Plot Date: 7/16/2018 1:38 PM

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**MIAMI-DADE COUNTY**

**NOTES:**

- Horizontal Datum: Florida East, State Plane Coordinate System US Feet.
- All elevations are Above Mean Sea Level (AMSL) relative to the National Geodetic Vertical Datum of 1929 (NGVD29).
- All tree obstructions to be trimmed or removed.
- Updated obstruction surveys were not conducted as part of this Airport Layout Plan set update. Field surveys should be performed to validate obstacle heights and potential final impact to the proposed approach surfaces.
- Planimetric mapping from 01/18/2010 Third Party survey
- Federal Communication Commission, Antenna Structure Registration, July 2006
- Per FAR Part-77.23(b) the following traverse ways must be increased by: 10' for an airport controlled Vehicle (Service Road (VSR)), 15' for a (N)on Interstate, 17' for an (I)nterstate, and 23' for (R)ailroads. Traverse points have not been surveyed they are estimated based on the ALP topography.

Revision and Description	Date	Name

**RUNWAY 27R INNER PORTION OF THE APPROACH DRAWING**

MIAMI-OPA LOCKA EXECUTIVE AIRPORT  
AIRPORT LAYOUT PLANS UPDATE

**OPF**  
 Drawn by: *CLJ*  
 Checked By: *JEK*  
 Issue Date: MAY 2018  
 Sheet: **11** of **21**



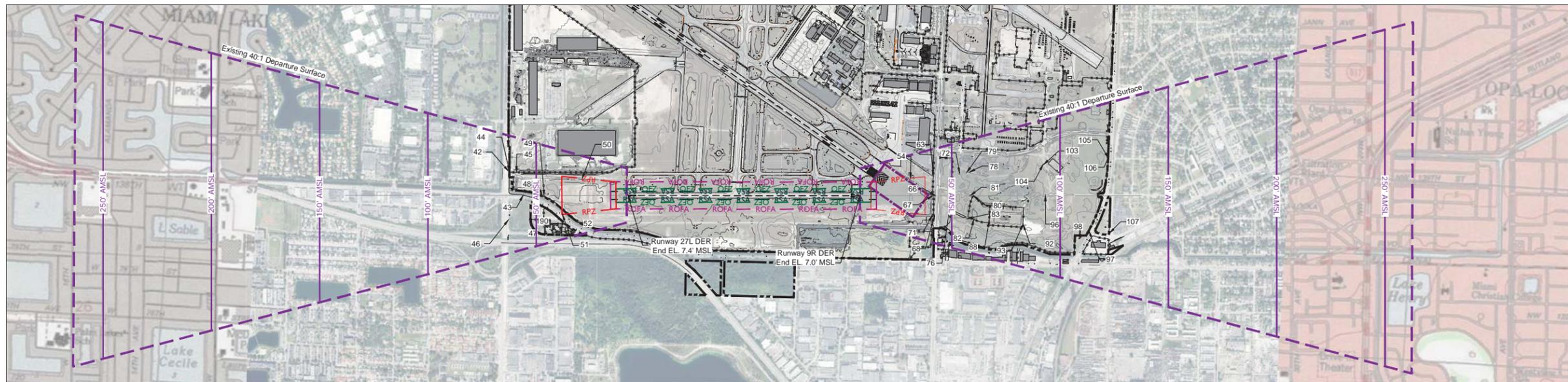






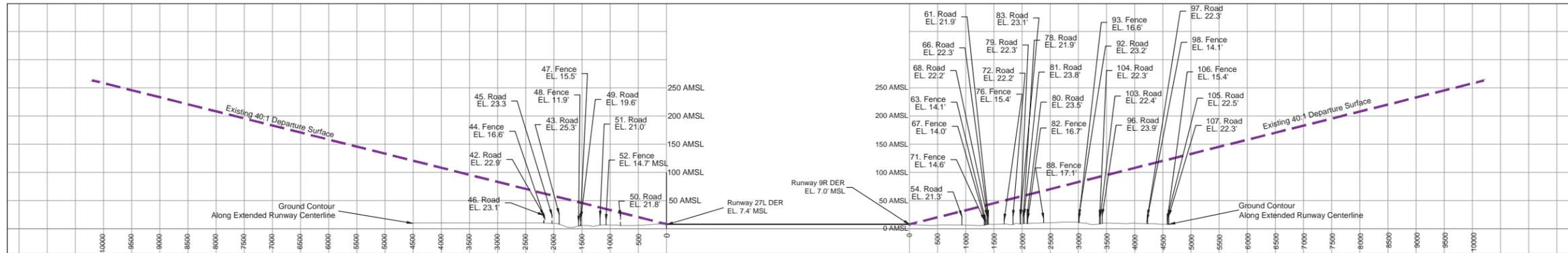


Source:  
National Oceanic and Atmospheric Administration (NOAA),  
U.S. Department of Commerce for the Federal Aviation  
Administration (FAA), Obstruction Data Sheet (ODS) 256  
Opa-locka Airport, Surveyed March 1993, 7th Edition.



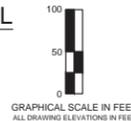
Plan View - R/W 9R-27L

Scale: 1"=1000'



Profile View - R/W 9R-27L

Scale: 1"=100'



Graphic Legend	
Item	Description
	Existing Airfield Pavement
	Existing Building
	Ground Contour
	Property Boundary
	Runway Object Free Area
	Runway Safety Area
	Runway Object Free Zone
	Runway Protection Zone
	TERPS Departure Surface

At the time of the obstruction analysis, the Runway 09R end elevation and Runway 27L end elevation were 7.4' MSL and 7.0' MSL, respectively, as reflected on the 2007 Airport Layout Plans. The 2007 ALP was performed in the NGVD 29 Datum. The current published runway end elevations, as reflected in the Runway Data Table, are 5.8' MSL and 5.8' MSL, respectively. This is reflective of the NAVD 88 Datum. However, no additional obstruction surveying has been performed. Therefore, for consistency, the original data is presented on this sheet without adjustment.

Runway 27L Airspace Obstruction Table				
Obstacle ID	Description	Top Elevation	Departure Surface Penetration	Proposed Disposition
42	Road (N)	22.9'	None	N/A
43	Road (N)	25.3'	None	N/A
44	Fence	16.6'	None	N/A
45	Road (N)	23.3'	None	N/A
46	Road (N)	23.1'	None	N/A
47	Fence	15.5'	None	N/A
48	Fence	11.9'	None	N/A
49	Road	19.6'	None	N/A
50	Road	21.8'	None	N/A
51	Road	21.0'	None	N/A
52	Fence	14.7'	None	N/A

Runway 9R Obstruction Table				
Obstacle ID	Description	Top Elevation	Departure Surface Penetration	Proposed Disposition
54	Road (N)	21.3	None	N/A
61	Road (N)	21.9'	None	N/A
63	Fence	14.1'	None	N/A
66	Road (N)	22.3'	None	N/A
67	Road (N)	14.0'	None	N/A
68	Fence	22.2'	None	N/A
71	Fence	14.6'	None	N/A
72	Road	22.2'	None	N/A
76	Road	15.4'	None	N/A
78	Road	21.9'	None	N/A
79	Fence	22.3'	None	N/A
80	Road	23.5'	None	N/A
81	Road	23.8'	None	N/A
82	Fence	16.7'	None	N/A
83	Road	23.1'	None	N/A
88	Fence	17.1'	None	N/A
92	Road	23.2'	None	N/A
93	Fence	16.6'	None	N/A
96	Road	23.9'	None	N/A
97	Road	22.3'	None	N/A
98	Fence	14.1'	None	N/A
103	Road	22.4'	None	N/A
104	Road	22.3'	None	N/A
105	Road	22.5'	None	N/A
106	Fence	15.4'	None	N/A
107	Road	22.3'	None	N/A

- NOTES:
- Horizontal Datum: Florida East, State Plane Coordinate System US Feet.
  - All elevations are Above Mean Sea Level (AMSL) relative to the National Geodetic Vertical Datum of 1929 (NGVD29).
  - All tree obstructions to be trimmed or removed.
  - Updated obstruction surveys were not conducted as part of this Airport Layout Plan set update. Field surveys should be performed to validate obstacle heights and potential final impact to the proposed approach surfaces.
  - Planimetric mapping from 01/18/2010 Third Party survey
  - Federal Communication Commission, Antenna Structure Registration, July 2006
  - Per FAR Part-77.23(b) the following traverse ways must be increased by: 10' for an airport controlled Vehicle (Service Road (VSR)), 15' for a (N)on Interstate, 17' for an (I)nterstate, and 23' for (R)oads. Traverse points have not been surveyed they are estimated based on the ALP topography.

Declination: 06°18'57.6" W (2014)  
Changing: 0°5.8" W per Year

Revision and Description	Date	Name

RUNWAY 9R-27L DEPARTURE SURFACE DRAWING

MIAMI-OPA LOCKA EXECUTIVE AIRPORT  
AIRPORT LAYOUT PLANS UPDATE

OPF  
Drawn by: RFT  
Checked By: JEK  
Issue Date: MAY 2018  
Sheet: 17 of 21

Colorado: Record: Plot Size: 11x17.5" Date: 05/20/2018 11:13:41 AM Project: 07-112018-155-PRJ  
 File: P:\Programs\AutoCAD\Drawings\18175\18175-112018-155-PRJ\18175-112018-155-PRJ-18175-112018-155-PRJ-18175-112018-155-PRJ.dwg  
 User: jacobson@jacobsonassociates.com  
 Plot Date: 05/20/2018 11:13:41 AM  
 Plotter: HP DesignJet T1100e  
 Scale: 1"=1000'  
 Title: Runway 9R-27L Departure Surface Drawing Layout

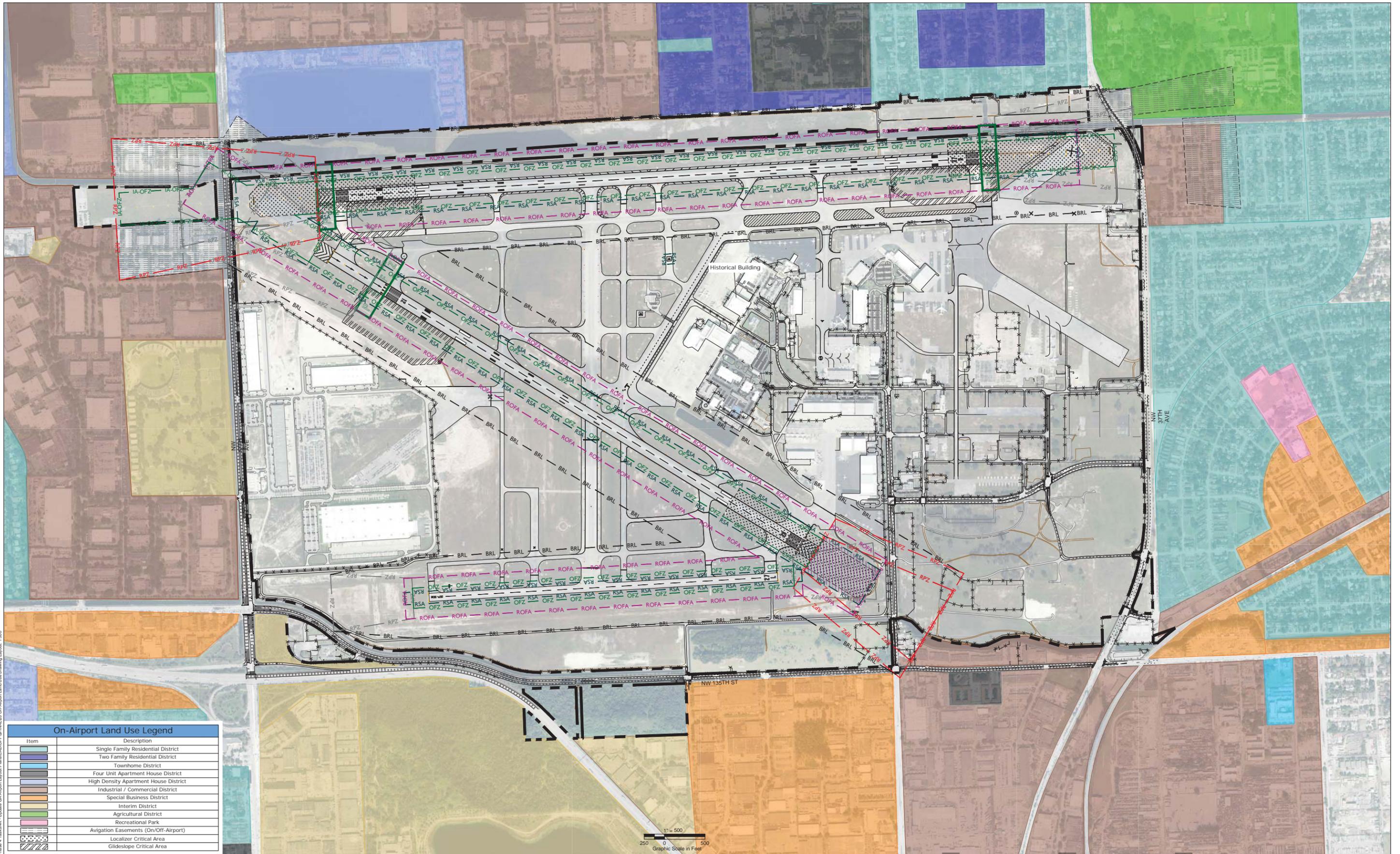
**jda**  
jacobsondaniels associates, inc.  
121 Pearl St.  
Ypsilanti, MI 48197  
(734) 961-3200

**RICONDO & ASSOCIATES**  
1000 N.W. 57th Court  
Suite 920  
Miami, Florida 33126-3511  
(305) 260-2727

**MIAMI-DADE COUNTY**







Item	Description
[Light Blue Box]	Single Family Residential District
[Light Purple Box]	Two Family Residential District
[Light Green Box]	Townhome District
[Light Yellow Box]	Four Unit Apartment House District
[Light Orange Box]	High Density Apartment House District
[Light Brown Box]	Industrial / Commercial District
[Light Grey Box]	Special Business District
[Light Blue-Gray Box]	Interim District
[Light Green Box]	Agricultural District
[Light Yellow Box]	Recreational Park
[Light Blue Box]	Aviation Easements (On/Off-Airport)
[Red Hatched Box]	Localizer Critical Area
[Blue Hatched Box]	Glideslope Critical Area

**NOTES:**  
 1. This composite map illustrates information contained in the official Miami-Dade zoning district maps and reflects existing land uses

Declination: 06°18'57.6" W (2014)  
 Changing: 0°5.8" W per Year

Revision and Description	Date	Name

121 Pearl St.  
Ypsilanti, MI 48197  
(734) 961-3200

1000 N.W. 57th Court  
Suite 920  
Miami, Florida 33136-3511  
(305) 260-2727

**OFF-AIRPORT LAND USE DRAWING**

MIAMI-OPA LOCKA EXECUTIVE AIRPORT  
 AIRPORT LAYOUT PLANS UPDATE

**OPF**

Drawn by: CLJ  
 Checked By: JEK  
 Issue Date: MAY 2018

Sheet:  
**20 of 21**

C:\Users\jacobson\Documents\Projects\2018\1805\180501\18050101\18050101\_115\_01\_RL\_Planet\_Co\_11162018.dwg  
 File Path: C:\Users\jacobson\Documents\Projects\2018\1805\180501\18050101\18050101\_115\_01\_RL\_Planet\_Co\_11162018.dwg  
 Plot Date: 5/16/2018 10:58:11 AM  
 Plot Scale: 1"=500'  
 Plot Size: 11.00 x 17.00  
 Plot Orientation: Landscape  
 Plot Color: Black  
 Plot Lineweight: 0.20  
 Plot Linetype: Solid  
 Plot Font: Arial, 10  
 Plot Title: OFF-AIRPORT LAND USE DRAWING LAYOUT: 1/50



# Appendix C FAA Approval Letter for MDAD Strategic Master Plan General Aviation Forecast Report



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

**ORLANDO AIRPORTS DISTRICT OFFICE**

5950 Hazeltine National Dr., Suite 400

Orlando, Florida 32822-5003

Phone: (407) 812-6331 Fax: (407) 812-6978

August 6, 2012

Mr. Jose A. Ramos, R.A.  
Division Director  
Aviation Planning, Land Use, and Grants  
Miami-Dade Aviation Department  
Miami International Airport  
P.O. Box 592075  
Miami, Florida 33159

Dear Mr. Ramos,

RE: Miami Dade Aviation Department  
Strategic Airport Master Planning Study  
Approval of General Aviation Activity Forecasts

This letter responds to your consultant's July 27, 2012 transmission of the "Strategic Airport Master Planning Study General Aviation Activity Forecasts" dated June 2012. While the forecasts depicted in Table 5, on page 44 of the report, as attached, are not consistent with the 2011 Federal Aviation Administration (FAA) Terminal Area Forecasts (TAF,) the methods and assumptions used in preparing these forecasts are found to be reasonable. In addition, the overall general aviation demand forecast for the Miami Dade area, as shown in your report, is consistent with the sum of the general aviation demand the 2011 TAF presents for the individual Miami Dade airports. Therefore, we approve the forecasts to be used in your on-going master planning efforts.

If you have any questions, please feel free to contact me at (407) 812-6331, ext. 122.

Sincerely,

**ORIGINAL SIGNED BY**

Rebecca R. Henry  
Planning Specialist

cc: Paul Devoti, APP-400  
Remy Lucette, Ricondo & Associates, Inc.