

Miami Homestead General Aviation Airport (X51)



Airport Layout Plans Set Narrative Report

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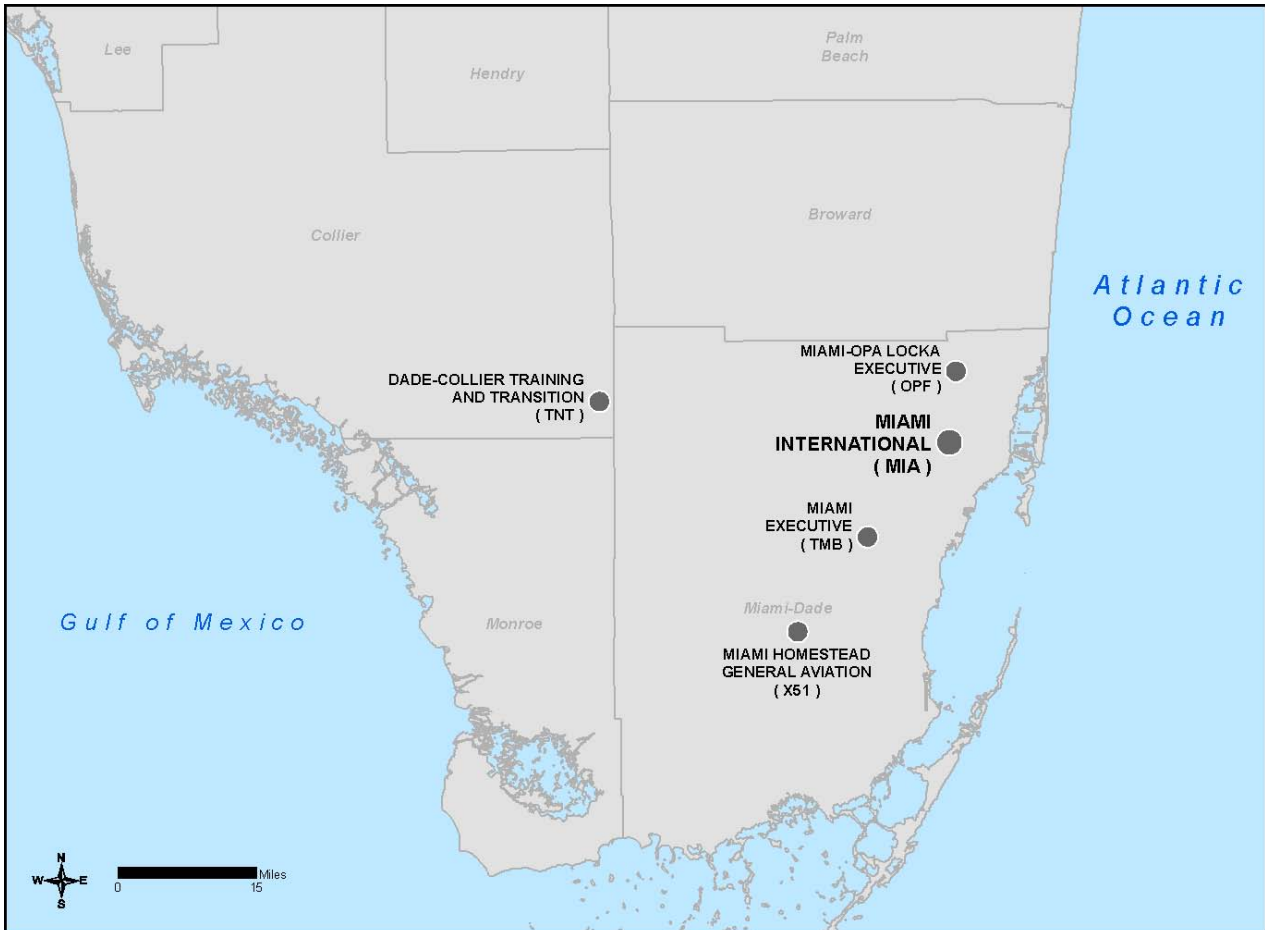
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A. Executive Summary

In 2008, the Miami-Dade Aviation Department (MDAD) initiated the Miami Dade Strategic Airport Master Plan (SMP), which serves as an update to the airport master plans for Miami International Airport and its four general aviation airports. These four airports comprise of Miami-Opa Locka Executive Airport (OPF), Miami Executive Airport (TMB), Miami Homestead General Aviation Airport (X51) and Dade-Collier Training and Transition Airport (TNT). The SMP defines Miami-Dade County's overall approach to serving the long-term capital needs for its system of five airports to continue providing a high level of service for the surrounding communities. Rather than preparing a comprehensive Master Plan document for each of the five airports, MDAD elected to document the individual analyses in a series of PowerPoint presentations. In lieu of a comprehensive airport master plan report, MDAD has elected to submit stand-alone Aeronautical Forecast documents and Airport Layout Plan (ALP) packages to the Federal Aviation Administration (FAA) for review and approval. The activity forecasts for the four general aviation airports were formerly approved by the FAA on August 6, 2012.

This document serves as the ALP Narrative Report for the Miami-Homestead General Aviation Airport (X51 or the Airport) that accompanies the ALP package that is reflective of the SMP's final recommendations for the Airport. The proposed development contained on the ALP for X51 would satisfy the Airport's operational demand levels projected through 2035 by the SMP Aeronautical Forecasts. 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 ALP Review Checklist contained in **Appendix A** of SOP 2.00.

Exhibit A-1 illustrates the location of the five airports operated by MDAD. X51 is located in the southeast portion of Miami-Dade County approximately three miles northwest of the City of Homestead. The Airport is central to several Florida attractions and is approximately 25 minutes from Biscayne National Park and Key Largo with east access to US-1, US-27 and I-75.

Exhibit A-1: Miami-Dade Airport Location Map

SOURCE: Airport Master Planning Study General Aviation Activity Forecasts, URS Corporation, January 2015.

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

The Airport primarily accommodates general aviation activity that includes: recreational use, flight training, sport aviation use (parachute operations), government use (firefighting) and an increasing amount of business-related aviation activity. Because of seasonal and other event-driven factors affecting the volume and use of the Airport, the range of aircraft types and sizes vary from the large turboprop aircraft such as the Cessna Caravan to the smaller recreational/sport aircraft, including ultra-light aircraft. It is anticipated that the year-over-year rate of growth of aviation activity at X51 will be lower than aviation activity across the State. This is due to the high concentration of piston aircraft operations and the lack of proximity to major economic centers within the County.

The current airfield at X51 has three runways. Two of the runways, Runways 10-28 and 18-36, are paved and configured to accommodate ADG II aircraft (wingspans less than 79 feet). The third runway, Runway 9U-27U, is a turf runway that is parallel to Runway 10-28. Runway 10-28 is the only runway with published instrument

approach procedures; Area Navigation (RNAV) approaches are available to both runway ends. **Table A-1** summarizes the predominant characteristics of the runways at X51.

Table A-1: Miami Homestead General Aviation Airport - Runway Characteristics

CHARACTERISTIC	9U-27U	10-28	18-36
Length	2,500 feet	3,000 feet	3,999 feet
Width	150 feet	75 feet	100 feet
Runway Design Code	A/II/VIS	B/II/4000	B/II/VIS
Approach Capability	Visual	Non-precision	Visual
Lowest Visibility Minimums	3-Miles	7/8-Mile	3-Miles

SOURCES: X51 Airport Layout Plan, July 2006; FAA Advisory Circular 150/5300-13A (Change 1), Airport Design, February 26, 2014; FAA Terminal Instrument Approach Procedures, December 2014.

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

This ALP Narrative Report describes the planning and rationale that resulted in identification of a preferred development plan for X51 and summarizes the set of drawings that make up 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 program represented in the SMP by the 2015 – 2035 planning horizon. The ALP set also provides information such as specific Airport data (i.e., runway coordinates, design aircraft), a graphical depiction of airspace surfaces (i.e., Title 14 Code of Federal Regulations Part 77 [14 CFR Part 77] imaginary surfaces, *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, which can be used for revenue 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 in the drawings demonstrates compliance with minimum airport design standards established by federal, state, and local authorities. This ALP set was developed in accordance with the guidance outlined 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 X51 so that the FAA and FDOT will be continually updated regarding current conditions.

The aeronautical forecasts for X51 include annual and peak period aircraft operations that would be accommodated at the Airport for the 2009 Base Year and for 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

For long range planning and assisting MDAD with long-range strategic planning, the demand levels associated with PAL 3 were estimated during the preparation of the aeronautical forecasts. Since these forecasts exceed the 20-year planning horizon, the facility required to serve PAL 3 are not depicted on the ALP and therefore not presented herein.

The aeronautical forecasts for X51 represent unconstrained conditions for future general aviation activity without consideration of existing or potential capacity constraints and provide justification for planning and development recommendations contained within the SMP. The various forecast metrics such as annual general aviation aircraft operations, annual itinerant operation by all aircraft, annual itinerant operation by current and future critical aircraft (Cessna 208 Caravan) and the forecast of based aircraft at X51 are summarized in **Table A-2**.

Table A-2: Miami Homestead General Aviation Airport - SMP General Aviation Forecasts

FORECAST METRIC	2010 (ACTUAL)	PAL 1 (2025)	PAL 2 (2035)
Annual General Aviation Aircraft Operations	70,600	77,800	87,000
Annual Itinerant Operation by all Aircraft	50,084	54,460	57,590
Annual Itinerant Operation by Current Critical Aircraft (Cessna 208 Caravan)	754	860	930
Annual Itinerant Operation by Future Critical Aircraft (Cessna 208 Caravan)	754	860	930
Based Aircraft	52	50	51
Annual Instrument Approaches	N/A	N/A	N/A
Annual Enplanements	N/A	N/A	N/A

SOURCES: URS Corporation, SMP General Aviation Forecasts, March 2012; Ricondo & Associates, Inc. August 2014.

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

A demand-capacity assessment of both the airfield and tenant/support facilities that serve aeronautical purposes was performed for X51. The airfield demand-capacity assessment concluded that X51 will have adequate capacity to accommodate demand forecast beyond PAL 2 (2035). Tenant and support facility requirements include consideration for aircraft parking and storage, automobile parking, aircraft fueling facilities, and airport support functions were also assessed. The future facility requirements to meet the PAL 2 demand levels forecasted for X51 include the following facilities and infrastructure:

- Proposed GA Site (2 acres)
- Proposed T-Hangar Site (2 acres)

Consistent with the previously approved ALP for X51, MDAD Aviation Department has elected to provide consideration for the future extension of Runway 18-36 to the south to allow for the accommodation of corporate jet operations in the future, should demand materialize. This would result in the following airfield modifications:

- Runway 18-36 Extension
- Taxiway B Connector
- Relocated Road
- Demolished Road (Dirt)

Using the gross facility requirements derived for X51, a development scenario was generated for the Airport. In an effort to demonstrate the general location of future facility development, this scenario was developed at a land use level of detail (i.e., detailed facility layouts were not developed). The areas designated for future tenant facilities coincide with the facility requirements projected for PAL 2 (2035) and serve the basis for generating an engineer's estimate of probable cost. 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-3 presents the total implementation costs for each of the capital improvement development needs identified in the SMP for X51. These projects are summarized in accordance with the four development phases.

Table A-3: Miami Homestead General Aviation Airport - Summary of Development Costs (in rounded Figures)

PROJECT DESCRIPTION	TOTAL COST
Phase 1	
T-Hangars	\$10,564,000
Phase 2	
Runway 18-36 Exit Taxiway	\$1,265,000
Conventional Hangar	<u>\$6,078,000</u>
Subtotal (Phase 2)	\$7,343,000
Phase 3	
Conventional Hangar	\$7,056,000
Phase 4	
Runway 18-36 Extension	<u>\$37,855,000</u>
Total	\$62,818,000

NOTES:

- 1/ 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.
- 2/ Costs are reflective of 2014 US dollars and include consideration for both hard (construction) and soft costs (design, permitting, and construction administration).

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

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

In order to clearly present the existing conditions and recommended airport improvements, the ALP set includes a number of individual drawing sheets. The ALP Sheet is essential in the process to apply for federal or state assistance for any individual development project and also serves as the mechanism for projects to undergo airspace review by the FAA. For X51, the ALP set is presented on the following drawing sheets:

- Cover (1 of 16)
- Airport Data Sheet (2 of 16)
- Existing Airport Layout Plan Drawing (3 of 16)
- Future Airport Layout Plan Drawing (4 of 16)
- Airport Airspace Plan (5 of 16)
- Airport Airspace Plan & Profile (6 of 16)
- Existing & Future Runway 10 Inner Portion of the Approach Surface Drawing (7 of 16)
- Existing & Future Runway 28 Inner Portion of the Approach Surface Drawing (8 of 16)
- Existing & Future Runway 18 Inner Portion of the Approach Surface Drawing (9 of 16)

- Existing & Future Runway 36 Inner Portion of the Approach Surface Drawing (10 of 16)
- Existing & Future Runway 9U Inner Portion of the Approach Surface Drawing (11 of 16)
- Existing & Future Runway 27U Inner Portion of the Approach Surface Drawing (12 of 16)
- Existing & Future Runway 10-28 Departure Drawing (13 of 16)
- Existing & Future Runway 18-36 Departure Drawing (14 of 16)
- Airport Land Use Drawing (15 of 16)
- Airport Property Map (16 of 16) - Pending

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

B. Basic Aeronautical Forecasts

The 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 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 expansion.
- 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 Forecast) report was developed for MDAD in June 2012 and subsequently approved by the FAA in August 2012. The FAA approval letter is included as **Appendix C** of this document. The section below summarizes the findings from that report.

The Aeronautical Forecast for X51 includes projections of future annual and peak general aviation aircraft operations (i.e., an aircraft take-off or a landing), as well as the number of based general aviation aircraft that will be accommodated at the Airport for the 2010 "Base Year" and at two additional forecast horizon periods, referred to as Planning Activity Levels (PALs):

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

The forecasts represent unconstrained conditions of future general aviation activity without consideration of existing or potential capacity constraints and provide justification for planning and development recommendations contained within the SMP. When considered and approved by the FAA as being consistent with the most current FAA Terminal Area Forecast (TAF) ¹ data for the Airport available at the time FAA reviewed these forecasts, these forecasts provide justification for planning and development recommendations contained within the SMP.

¹ The most current FAA TAF available at the time the X51 Forecasts were prepared are dated FY 2012.

The approach to forecasting future general aviation activity for MDAD's general aviation airports, including X51, differs from the approach used to forecast air carrier activity at MIA. This is due to unique operational characteristics and role of each airport. Due to the diversity of the level of service and facilities offered at X51, as well as the recognition of limited availability of historical aircraft operations and based aircraft data, data reported in the FAA's Air Traffic Activity Data System (ATADS) and the Terminal Area Forecast (TAF) were used to forecast annual aircraft operations and based aircraft for all four 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 about the airport's future share of that activity.

Using general aviation-specific data, as contained in Table 28, "Active General Aviation and Air Taxi Aircraft," published in the FAA's *Aerospace Forecasts, FY 2012-2032*², 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 the forecasts of general aviation activity by aircraft type for X51, as well as the forecasts of based aircraft.

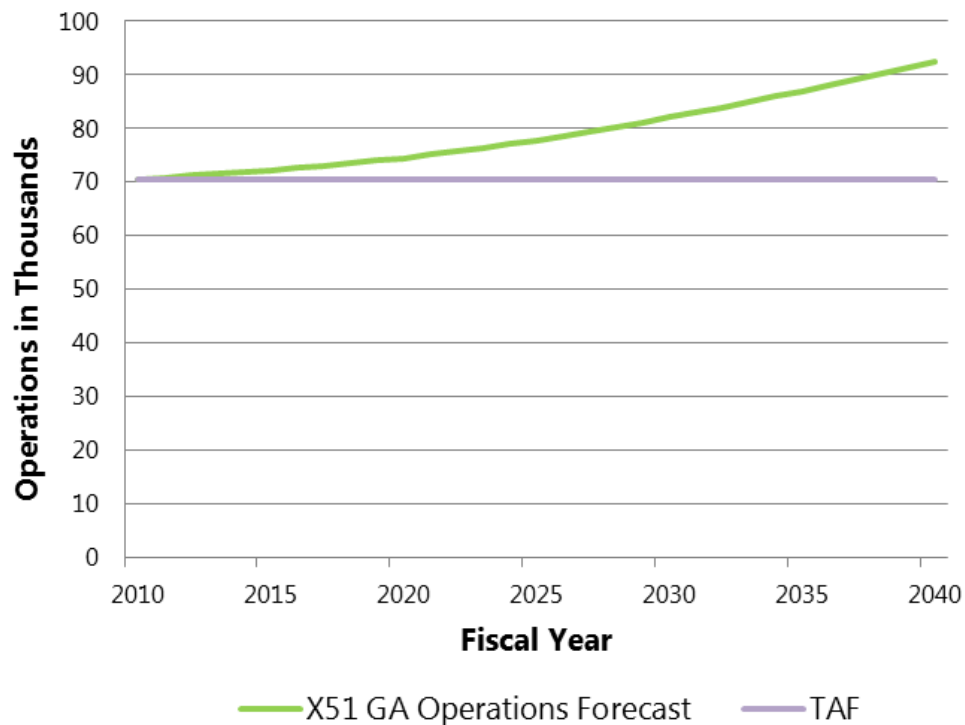
B.1 Total Annual Operations

As presented on **Exhibit B-1**, total annual general aviation aircraft operations at X51 is forecasted to increase from 70,600 in 2010 to 77,800 in 2025 and to 87,000 by 2035, at an average annual compound growth rate of 0.84 percent. The forecast year-over-year growth rate in the FAA TAF remains constant at 70,600 from 2010 through 2035.

B.2 Annual Itinerant Operations by all Aircraft

For the purpose of this Narrative Report, the SMP's annual growth rate for total annual aircraft operations was applied to the actual number of annual itinerant aircraft operations for 2010, as contained in the FAA's TAF. As presented on **Exhibit B-2**, applying these growth rates would cause itinerant aircraft operations to increase from 50,084 (2010) to 54,460 at PAL 1 (2025) and 57,590 at PAL 2 (2035).

² The FAA's fiscal year (FY) is from October 1 through September 30.

Exhibit B-1: Miami Homestead General Aviation Airport - Forecast of General Aviation Aircraft Operations

FISCAL YEAR	SMP GENERAL AVIATION OPERATIONS FORECAST FOR X51	FAA TERMINAL AREA FORECAST
2010 (ACTUAL)	70,600	70,600
PAL 1 (2025)	77,800	70,600
PAL 2 (2035)	87,000	70,600
AACGR (2010 – 2035)	0.84%	0.00%

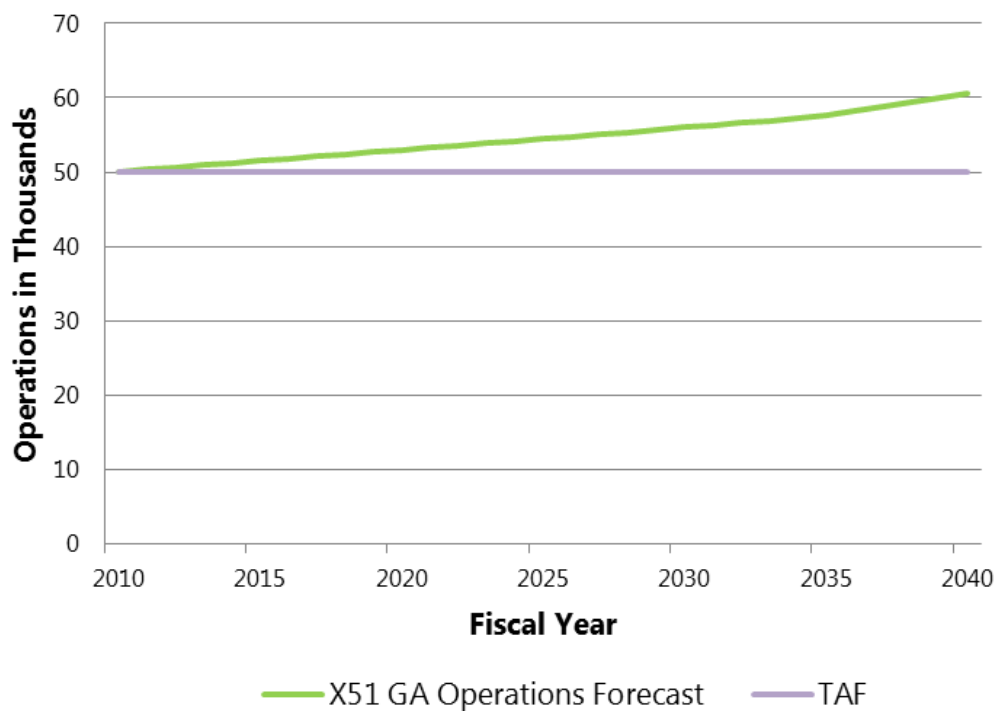
NOTES:

Fiscal year = October 1 through September 30

AACGR = Average Annual Compound Growth Rate

SOURCES: URS Corporation, SMP General Aviation Forecasts, March 2012; FAA *Terminal Area Forecast*, January 2012.

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

Exhibit B-2: Miami Homestead General Aviation Airport - Annual Itinerant Operations by all Aircraft

FISCAL YEAR	SMP GENERAL AVIATION OPERATIONS FORECAST ^{1/} FOR X51	FAA TERMINAL AREA FORECAST
2010 (ACTUAL)	50,084	50,084
PAL 1 (2025)	54,460	50,084
PAL 2 (2035)	57,590	50,084
AACGR (2010 – 2035)	0.84%	0.00%

NOTES:

1/ Taking the TAF total annual itinerant operation by all aircraft in 2010 as the starting point for the SMP General Aviation Forecasts values were calculated by applying the same average annual compound growth rate of 0.84% as for the growth in total aircraft operations.

Fiscal year = October 1 through September 30

AACGR = Average Annual Compound Growth Rate

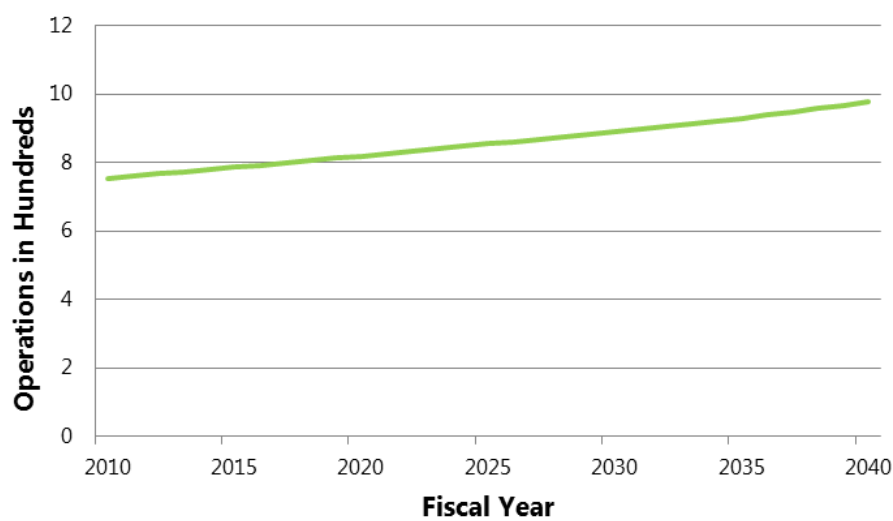
SOURCES: URS Corporation, SMP General Aviation Forecasts, March 2012; FAA *Terminal Area Forecast*, January 2012.

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

B.3 Annual Itinerant Operations by Current Critical Aircraft

Exhibit B-3 presents the total annual itinerant operations by current critical aircraft at X51. In accordance with operational data obtained from MDAD's Aircraft Noise and Monitoring System (ANOMS) the current critical aircraft at X51 is the Cessna 208 Caravan with 754 operations in 2010. The growth in annual itinerant operations by the current critical aircraft was calculated by applying the same average annual compound growth rate of 0.84 percent as for the growth in total aircraft operations. At this growth rate, the annual itinerant operation by current critical aircraft are expected to increase from 754 in 2010 to 860 at PAL 1 (2025) and ultimately to 930 at PAL 2 (2035).

Exhibit B-3: Miami Homestead General Aviation Airport - Annual Itinerant Operations by Current Critical Aircraft



— X51 GA Operations Forecast

FISCAL YEAR	SMP GENERAL AVIATION OPERATIONS FORECAST ^{1/}	FAA TERMINAL AREA FORECAST
2010 (ACTUAL)	754	Not Available
PAL 1 (2025)	860	Not Available
PAL 2 (2035)	930	Not Available
AACGR (2010 – 2035)	0.84%	Not Available

NOTES:

1/ Taking the critical aircraft operations in 2010 as the starting point, the SMP General Aviation Forecasts values were calculated by applying the same average annual compound growth rate of 0.84% as for the growth in total aircraft operations.

Fiscal year = October 1 through September 30

AACGR = Average Annual Compound Growth Rate

SOURCES: URS Corporation, SMP General Aviation Forecasts, March 2012; FAA *Terminal Area Forecast*, January 2012.

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

B.4 Annual Itinerant Operations by Future Critical Aircraft

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 X51 during the planning horizon. Therefore, the future critical aircraft at X51 is expected to remain unchanged; the Cessna 208 Caravan. The total annual itinerant operation by future critical aircraft will be the same as that of the current critical aircraft shown in Exhibit B-3.

B.5 Number of Based Aircraft

The forecast of based aircraft at X51 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 X51 was developed and analyzed. Using these data, forecast of future based aircraft by type were developed by referencing the FAA *Aerospace Forecasts, FY 2012-2032*, Table 28, "Active General Aviation and Air Taxi Aircraft." The forecast of based aircraft for X51 is presented by PAL and graphically shown on Exhibit B-4.

B.6 Annual Instrument Approaches

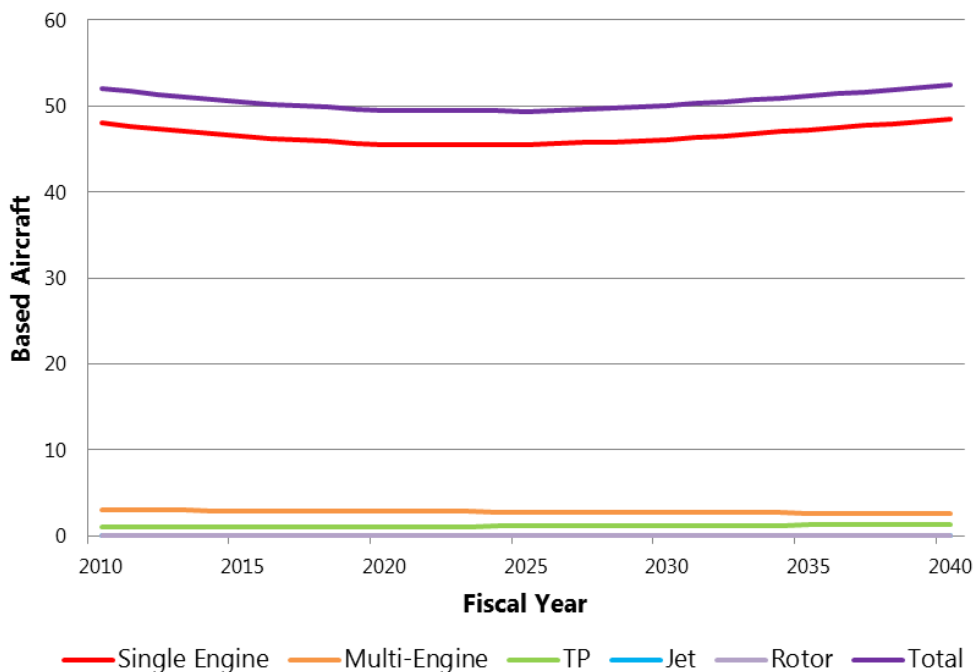
X51 is a non-towered airport with no ground based instrument approach procedures. While Runway 10-28 is served with RNAV/GPS approaches, the actual number of annual instrument operations is uncertain. Furthermore, the level of instrument operations is not anticipated to increase to a level that would justify the need for additional instrument approach capability or trigger other capacity enhancement needs at the Airport.

B.7 Number of Enplanements

X51 is a general aviation airport with no scheduled or charter air carrier or cargo service. Furthermore, the Airport is not expected to introduce air carrier service during the planning horizon. Therefore, the forecasting of passenger or cargo enplanements is not warranted or applicable.

B.8 Critical Aircraft

The current critical aircraft at X51 is the Cessna 208 Caravan with 754 operations in 2010. It is anticipated that this aircraft would remain the critical aircraft throughout the planning horizon.

Exhibit B-4: Miami Homestead General Aviation Airport - Forecasts of Based Aircraft**NOTES:**

Fiscal year = October 1 through September 30

AACGR = Average Annual Compound Growth Rate

N/A = Not applicable

SOURCES: URS Corporation, SMP General Aviation Forecasts, March 2012; FAA *Terminal Area Forecast*, January 2012.

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

B.9 Runway Design Code

The Runway Design Code (RDC) is a coding system outlined in FAA Advisory Circular (AC) 150/5300-13A, Change 1, *Airport Design*, as the basis for specifying applicable runway design standards. The intent of the RDC is to provide a simple method for compiling the numerous dimensional and performance specifications of aircraft operating at or forecast to operate at the Airport, into criteria that will define the dimensional and design standards for a given runway. The RDC consists of three parameters; Aircraft Approach Category (AAC), Airplane Design Group (ADG), and the approach visibility minimums.

X51 is composed of three runways: two paved runways (Runway 10-28 and Runway 18-36), and one turf runway (Runway 9U-27U). The following describes the RDC for each of the runway ends.

B.9.1 RUNWAY 10-28

- Airplane Approach Category – From an approach speed standpoint, the Cessna 208 Caravan is the critical aircraft; this aircraft falls within the Approach B category.
- Airplane Design Group – Based on wingspan, the Cessna 208 Caravan is the critical aircraft; this aircraft falls within the ADG II category.
- Visibility Minimums - The Runway 10 end is equipped with an RNAV approach, providing a visibility minimum of a $\frac{7}{8}$ statute mile (4000 RVR). The Runway 28 end is equipped with an RNAV approach, providing a visibility minimum of a 1 statute mile (5000 RVR).

B.9.2 RUNWAY 18-36

- Airplane Approach Category – From an approach speed standpoint, the Cessna 208 Caravan is the critical aircraft; this aircraft falls within the Approach B category.
- Airplane Design Group – Based on wingspan, the Cessna 208 Caravan is the critical aircraft; this aircraft falls within the ADG II category.
- Visibility Minimums – Currently, neither Runway end is equipped with any instrument approach procedure and therefore has visual approach visibility minimums. However, with the proposed addition of a non-precision instrument (NPI) approach, the visibility minimum is expected to be reduced to 1 statute mile (5000 RVR).

B.9.3 RUNWAY 9U-27U

- Airplane Approach Category – The runway is limited to ultralight aircraft, which is limited to Aircraft Approach Category A.
- Airplane Design Group – Based on wingspan, the critical aircraft falls within the ADG II category.
- Visibility Minimums – Neither runway end is equipped with any instrument approach procedure and therefore has visual approach visibility minimums.

Combined, these three parameters result in an RDC of B/II/4000 for Runway 10, B/II/5000 for Runway 28, B/II/VIS existing Runway 18 and Runway 36, B/II/5000 future Runway 18 and 36, and A/II/VIS for Runway 9U and Runway 27U. The RDC's for X51 are also summarized in **Table B-1**. The Airport's existing Airport Reference Code (ARC) is designated as B-II on the existing ALP, dated July 27, 2006 and no reconfiguration or resizing of any airfield element is warranted.

Table B-1: Miami Homestead General Aviation Airport – Runway Design Code

RUNWAYS	AIRPLANE APPROACH CATEGORY		AIRPLANE DESIGN GROUP		VISIBILITY MINIMUMS	
	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE
Runway 18	B	Same	II	Same	VIS	5,000
Runway 36	B	Same	II	Same	VIS	5,000
Runway 10	B	Same	II	Same	4,000	Same
Runway 28	B	Same	II	Same	5,000	Same
Runway 9U	A	Same	II	Same	VIS	Same
Runway 27U	A	Same	II	Same	VIS	Same

SOURCES: Airport Layout Plan, Homestead General Aviation Airport, August 2014.

PREPARED BY: Ricondo & Associates, Inc., August 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 consist 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 outlined 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 NAVAIDs.

The APRC is determined based on the existing runway to taxiway separation and visibility minimums. At X51, 250' separates the runway centerlines from their associated full length parallel taxiway centerline. The runway to taxiway separation combined with the visibility minimums discussed in Table B-1 result in an APRC of B/II/4000 for Runway 10, B/II/5000 for Runway 28, B/II/VIS existing Runway 18 and Runway 36, B/II/5000 future Runway 18 and 36, and A/II/VIS for Runway 9U and Runway 27U.

The DPRC is determined based on the existing runway to taxiway separation. With 250' separation between the runway centerlines and their associated full length parallel taxiway centerline, the DPRC for Runways 10,

28, 18, and 36 are B/II while Runways 9U and 27U are A/II. **Table B-2** summarizes the Approach and Departure Reference Codes for X51.

Table B-2: Miami Homestead General Aviation Airport – Approach and Departure Reference Codes

RUNWAYS	APRC		DPRC	
	EXISTING	FUTURE	EXISTING	FUTURE
Runway 18	B/II/VIS	B/II/5,000	B/II	Same
Runway 36	B/II/VIS	B/II/5,000	B/II	Same
Runway 10	B/II/4,000	Same	B/II	Same
Runway 28	B/II/5,000	Same	B/II	Same
Runway 9U	A/II/VIS	Same	A/II	Same
Runway 27U	A/II/VIS	Same	A/II	Same

SOURCES: Airport Layout Plan, Homestead General Aviation Airport, August 2014.

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

C. Alternatives/Proposed Development

C.1 Proposed Development Items

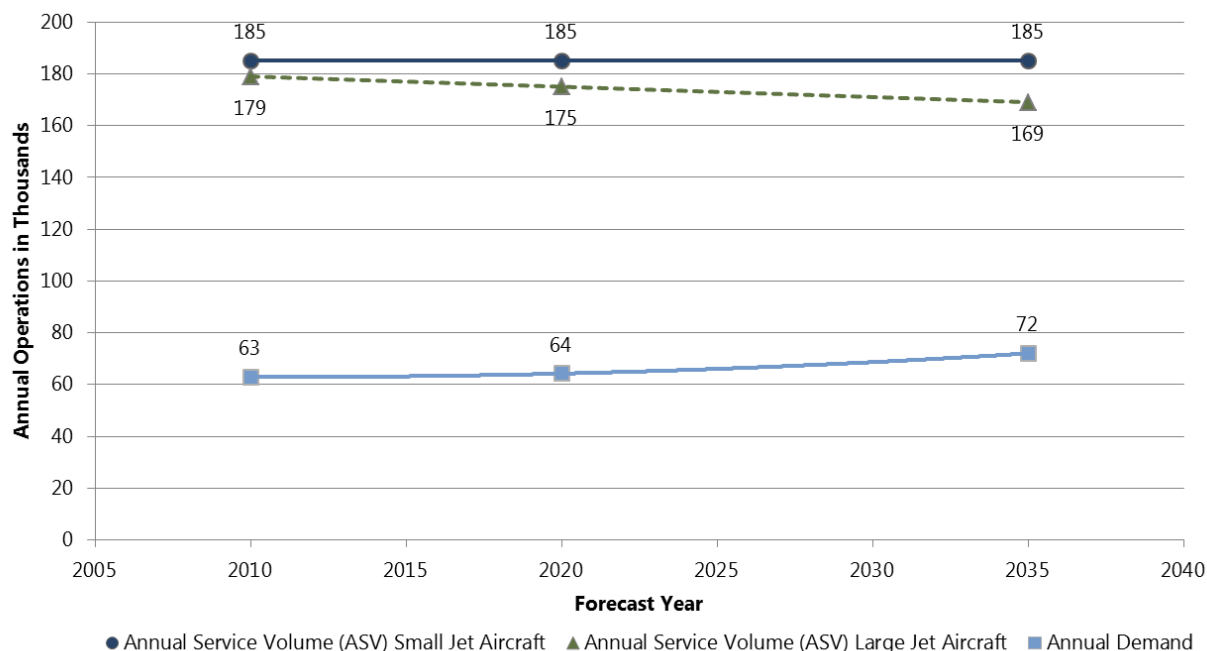
A demand-capacity assessment of both the airfield and tenant/support facilities that serve aeronautical purposes was performed for X51. The purpose of these assessments was to compare the capacity of existing facilities and infrastructure with current and future operational demand to determine when additional capital improvements would be required. When deficiencies were identified, future facility requirements were projected and quantified. A demand-capacity assessment was performed for the following facilities:

- Airfield
- Tenant/Support Facilities
 - Aircraft hangars, Fixed Base Operator (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 assessments for X51. More specifically, the exhibit demonstrates the estimated operational demand at which the Annual Service Volume (ASV) is projected to be reached. ASV represents the airfield's annual capacity given seasonal and daily fluctuations in demand.

From the airfield demand-capacity assessments, it was concluded that X51 would have adequate capacity to accommodate demand forecast beyond PAL 2 (2035). Although the forecast does not demonstrate a need for any airfield capacity improvements, MDAD has elected to maintain the potential extension of Runway 18-36 as shown on the current (FAA approved) ALP, should the demand for higher performance aircraft materialize at the Airport. Its depiction on the current ALP is intended to ensure preservation of the land and protection of its airspace.

Exhibit C-1: Miami Homestead General Aviation Airport - Airfield Demand-Capacity Comparison**NOTE:**

The original analysis considers that all future jet activity at X51 would be conducted exclusively by small aircraft (<12,500 lbs.) To cover all scenarios, a sensitivity analysis was performed to consider large jet aircraft operations (12,500 lbs. to 300,000 lbs.). Under both fleet mixes, X51 will not reach capacity within the planning period.

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

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

C.1.2 TENANT/SUPPORT FACILITIES

Table C-1 summarizes the facility requirements for X51 to satisfy the demand associated with PAL 2 (2035). These facility requirements include consideration 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.³ Aircraft circulation includes areas dedicated to hangar egress and taxiway/taxilane circulation.

³ A total contingency of 1.86 acres is added for Aircraft Circulation (0.75 acres) and Drainage and Landscaping (1.1 acres).

Table C-1: Miami Homestead General Aviation Airport – Tenant/Support Facility Needs

FACILITY TYPE	EXISTING	PAL 2 (2035) GROSS FACILITY REQUIREMENTS	ADDITIONAL FACILITIES TO SERVE PAL 2 (2035)
Aircraft Parking/Storage			
T-Hangars	23,500	35,500	12,000
Conventional Hangars	12,750	33,600	20,850
Apron/Ramp ^{1/}	353,000	425,600	72,600
Automobile Parking	27,600	26,800 ^{2/}	0
Aviation Fuel			
100 LL	1,550	1,550	0
Jet A	1,550	1,550	0
Airport Support			
MDAD Maintenance Yard	1,500	1,500	0
MDAD Administration	1,700	1,700	0
MDAD Covered Parking	1,000	1,000	0
Aircraft Rescue and Fire-fighting Facilities	N/A	N/A	N/A
Total Facilities	424,150	528,800	105,450
		Aircraft Circulation Adjustment	32,850
		Drainage and Landscape Adjustment	48,400
		Total Adjusted PAL 2 Requirements	186,700
		Acreage	4.3 acres

NOTES:

N/A = Not Applicable

Unless noted otherwise, all values are expressed in square feet.

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

2/ Existing vehicular parking facilities exceed the parking requirements for PAL 2 resulting in a surplus of 800 square feet.

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

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

Two development projects were identified during the demand/capacity analysis in order to meet existing and/or forecasted demand. These two projects include the following:

- Proposed GA Site (2 acres)
- Proposed T-Hangar Site (2 acres)

Consistent with the previously approved ALP, MDAD has elected to provide consideration for the potential extension of Runway 18-36 to the south to allow for the accommodation of corporate jet operations in the future. The runway extension is intended to ensure preservation of the land and protection of airspace. This results in the following four projects:

- Runway 18-36 Extension
- Taxiway B Connector
- Relocated Road
- Demolished Road (Dirt)

C.2 Near-Term and Future Approach Procedures Requirements

Consistent with the previous ALP for X51, the following non-precision instrument approach procedure improvements are proposed:

- Runway 18 Non-Precision Instrument Approach – The ALP reflects the proposed addition of a Non-Precision Instrument Approach (NPI) to Runway 18. It is assumed that the NPI approach would be in the form of an Area Navigation (RNAV)/ Global Positioning System (GPS) approach.
- Runway 36 Non-Precision Instrument Approach – The ALP reflects the proposed addition of a NPI to Runway 36. It is assumed that the NPI approach would be in the form of an RNAV/GPS approach.

C.3 Navigational Aids

X51 has both Visual and Instrument Approach Aids. **Table C-2** summarizes the various approach aids at X51

Table C-2: Miami Homestead General Aviation Airport – Navigational Aids

RUNWAYS	RUNWAY LIGHTS		RUNWAY MARKING		VISUAL APPROACH AIDS		INSTRUMENT APPROACH AIDS	
	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE
Runway 18	MIRL	Same	Visual	Non-Precision	None	PAPI (4R), NP-GPS	N/A	NP-GPS
Runway 36	MIRL	Same	Visual	Non-Precision	PAPI (4R)	PAPI (4R), NP-GPS	N/A	NP-GPS
Runway 10	MIRL	Same	Non-Precision	Same	PAPI (2L), NP-GPS	Same	NP-GPS	Same
Runway 28	MIRL	Same	Non-Precision	Same	NP-GPS	Same	NP-GPS	Same
Runway 9U	None	Same	N/A	Same	None	Same	N/A	Same
Runway 27U	None	Same	N/A	Same	None	Same	N/A	Same

SOURCES: Airport Layout Plan, Homestead General Aviation Airport, August 2014.

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

C.4 Wind Coverage

Table C-3 summarizes the wind coverage's associated with each runway at X51. As shown, all three runways provide a combined all weather wind coverage of 99.56 percent. As the wind coverage associated with the existing runway configuration at X51 exceeds 95 percent, no additional runways are required to provide adequate wind coverage.

Table C-3: Runway Wind Coverage

RUNWAY	RUNWAY DESIGN CODE	MAXIMUM CROSSWIND COMPONENT	ALL WEATHER WIND COVERAGE
10-28	B-II	13 knots	98.92%
9U-27U	A-II	10.5 knots	89.15%
18-36	B-II	13 knots	96.97%
Combined			99.86%

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

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

D. Modification to Standards

There are currently no modifications to standards for X51. It is anticipated that with the future development to accommodate the demands through PAL 2, there would still be no need for any modifications to standards.

E. Obstruction Surfaces

There are currently no threshold siting surface penetrations and no obstructions to 14 CFR Part 77 that have been identified.

F. Runway Protection Zone

The existing RPZ for Runways 18, 36, 9U and 27U are all within the airport boundary. The existing RPZ for Runway 10-28 extends beyond the airport boundary. Also with planned expansion of Runway 36 the future RPZ for RW 36 will extend beyond the airport boundary. There are currently no incompatible land uses within the existing RPZs, nor are any anticipated in the future.

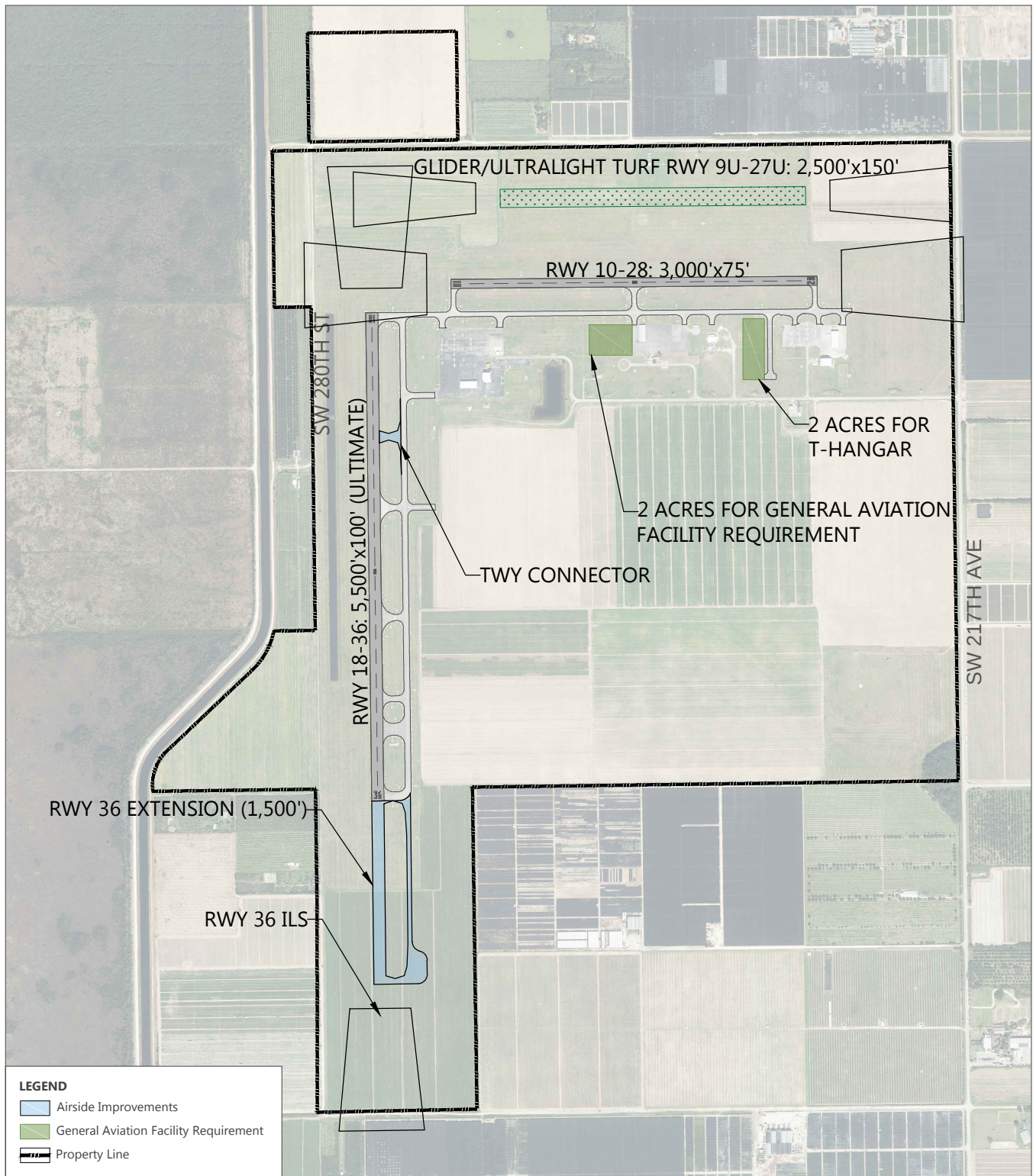
G. Development Summary

In consultation with MDAD staff, a preferred development scenario was identified for the Airport. The preferred development scenario for X51 was limited to GA development only. In addition to the development and expansion of general aviation facilities, MDAD also provide consideration for the potential extension of Runway 18-36 to protect for potential change in the aircraft fleet mix composition. As a result, the following development is depicted on the Future ALP:

- Proposed GA Site (2 acres)
- Proposed T-Hangar Site (2 acres)
- Runway 18-36 Extension
- Taxiway B Connector
- Relocated Road
- Demolished Road (Dirt)

To demonstrate the general location of future facility development, this scenario was developed at a land use level of detail (i.e., detailed facility layouts were not developed). The areas designated for future tenant facilities coincide with the facility requirements projected for PAL 2. **Exhibits G-1** illustrates the proposed development scenario for the X51.

[Preliminary Draft for Discussion Purposes Only]

**EXHIBIT G-1**

0 1,200 ft.

Miami Homestead General Aviation Airport Proposed Development Scenario

Order-of-Magnitude Cost Estimates

For the development scenario, an engineer's estimate of probable costs was prepared. The areas designated for future tenant facilities coincide with the facility requirements projected for PAL 2 and serve the basis for generating an engineer's estimate of probable cost. These costs include consideration of construction costs, and soft costs associated with design, permitting, bidding, construction and program management. **Table G-1** summarizes the estimated costs and projected funding sources for implementation at X51, expressed in 2013 dollars.

Table G-1: Preliminary Capital Funding Plan (in rounded Figures)

	FAA AIRPORT IMPROVEMENT PROGRAM FUNDS	FDOT GRANTS	MIAMI DADE COUNTY FUNDS	THIRD PARTY INVESTOR	TOTAL
Phase 1					
T-Hangars	\$5,746,000	\$2,409,000	\$2,409,000	\$0	\$10,564,000
Phase 2					
Runway 18-36 Exit Taxiway	\$1,137,000	\$ 64,000	\$ 64,000	\$0	\$1,265,000
Conventional Hangar	\$3,492,000	\$1,293,000	\$1,293,000	\$0	\$6,078,000
Subtotal (Phase 2)	\$4,629,000	\$1,357,000	\$1,357,000	\$0	\$7,343,000
Phase 3					
Conventional Hangar	\$4,054,000	\$1,501,000	\$1,501,000	\$0	\$7,056,000
Phase 4					
Runway 18-36 Extension (If Necessary)	\$34,069,000	\$1,893,000	\$1,893,000	\$0	\$37,855,000
Total	\$48,498,000	\$7,160,000	\$7,160,000	\$0	\$62,818,000

NOTES:

- 1/ 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.
- 2/ Costs are reflective of 2014 US dollars and include consideration for both hard (construction) and soft costs (design, permitting, and construction administration).

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

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

G.1 Development Projects Completed Since Last ALP

No new development projects have been undertaken and completed at X51 since the last approved ALP dated July 27, 2006.

G.2 Implementation Plan

For capital improvement planning considerations, the facility and infrastructure development initiatives associated with the preferred development scenarios 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)

Exhibit G-2 illustrates the sequencing of facility development for X51, in accordance with the four development phases listed above. The sequencing of proposed capital development outlined in the SMP is summarized in **Table G-2**.

Table G-2: Miami Homestead General Aviation Airport - Capital Development Needs by Phase

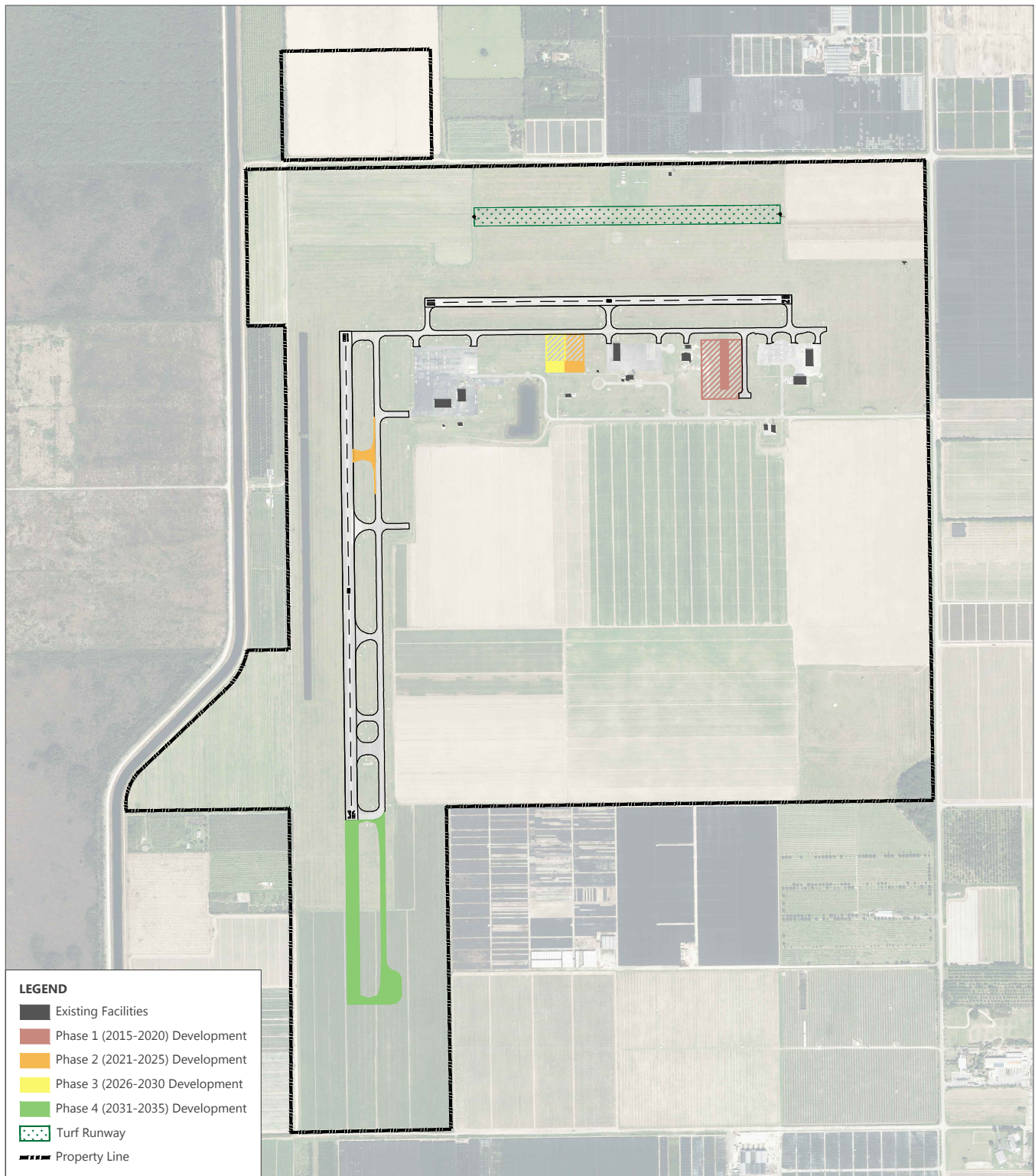
	PHASE 1	PHASE 2	PHASE 3	PHASE 4
Airfield:				
Runway 18-36 Exit Taxiway		X		
Runway 18-36 Extension				If Necessary
Tenant Facilities:				
T-Hangars	X			
Conventional Hangars		X	X	

NOTE: The Miami-Dade Aviation Department has elected to provide consideration for the potential extension of Runway 18-36 to the south to allow for the potential accommodation of corporate jet operations in the future.

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

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

[Preliminary Draft for Discussion Purposes Only]



SOURCES: Woolpert X51 Aerial Photogrammetry, flown February 2014; Ricondo & Associates, Inc., and Jacobsen-Daniels Associates, LLC, Land Use Development Alternatives April 2014.

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

EXHIBIT G-2

0 1,200 ft.

Miami Homestead General Aviation Airport Implementation Sequencing for Preferred X51 Development Scenario

Drawing: P:\MDAD\Strategic MP\Phase 4 Tasks\4K - Update GA Airport Layout Plans\CAD\Narrative Report Exhibits\X51\Exhibit G-2 Implementation Sequencing.dwg Layout: Implementation Sequencing Plotted: Dec 19, 2017, 09:05AM

H. Shadow or Line-of-Sight Study

There is currently no operational air traffic control tower at X51 and therefore no shadow or line-of-sight studies for X51.

I. Letters of Coordination

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

J. Wildlife Hazard Management

A wildlife hazard assessment has not been performed for X51. The Airport has no based jets and therefore falls into Airport Group 4 of the FAA's Wildlife Hazard Assessment Implementation Schedule. In accordance with the FAA's implementation schedule, MDAD intends on completing a wildlife hazard assessment prior to 2020.

K. Preliminary Identification of Environmental Features

Exhibits K-1 through K-7 illustrate the various environmental features at X51 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 construction within Zone AH flood zones, should Runway 18-36 be extended. The proposed development of general aviation facilities would also encroach the Zone AH flood zones. Flood Zone AH corresponds to the areas of the 100-year shallow flooding with a constant water-surface elevation where average depths between 1 and 3 feet. Mandatory flood insurance purchase requirements apply.

Table K-1: Summary of Potential Environmental Impacts

ENVIRONMENTAL FEATURE	DESCRIPTION OF POTENTIAL IMPACTS	MITIGATION APPROACH
Major Drainage Ditches	Taxiway R Relocation Aircraft Hardstand Expansion	Convert Canal to Box Culvert Convert Canal to Box Culvert
Wetlands	No Direct Impacts	N/A
Flood Zones	Cargo Expansion (Zone AH)	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 AH – Zone that corresponds to the areas of the 100-year shallow flooding with a constant water-surface elevation where average depths are between 1 and 3 feet. 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., September 2015

[Preliminary Draft for Discussion Purposes Only]

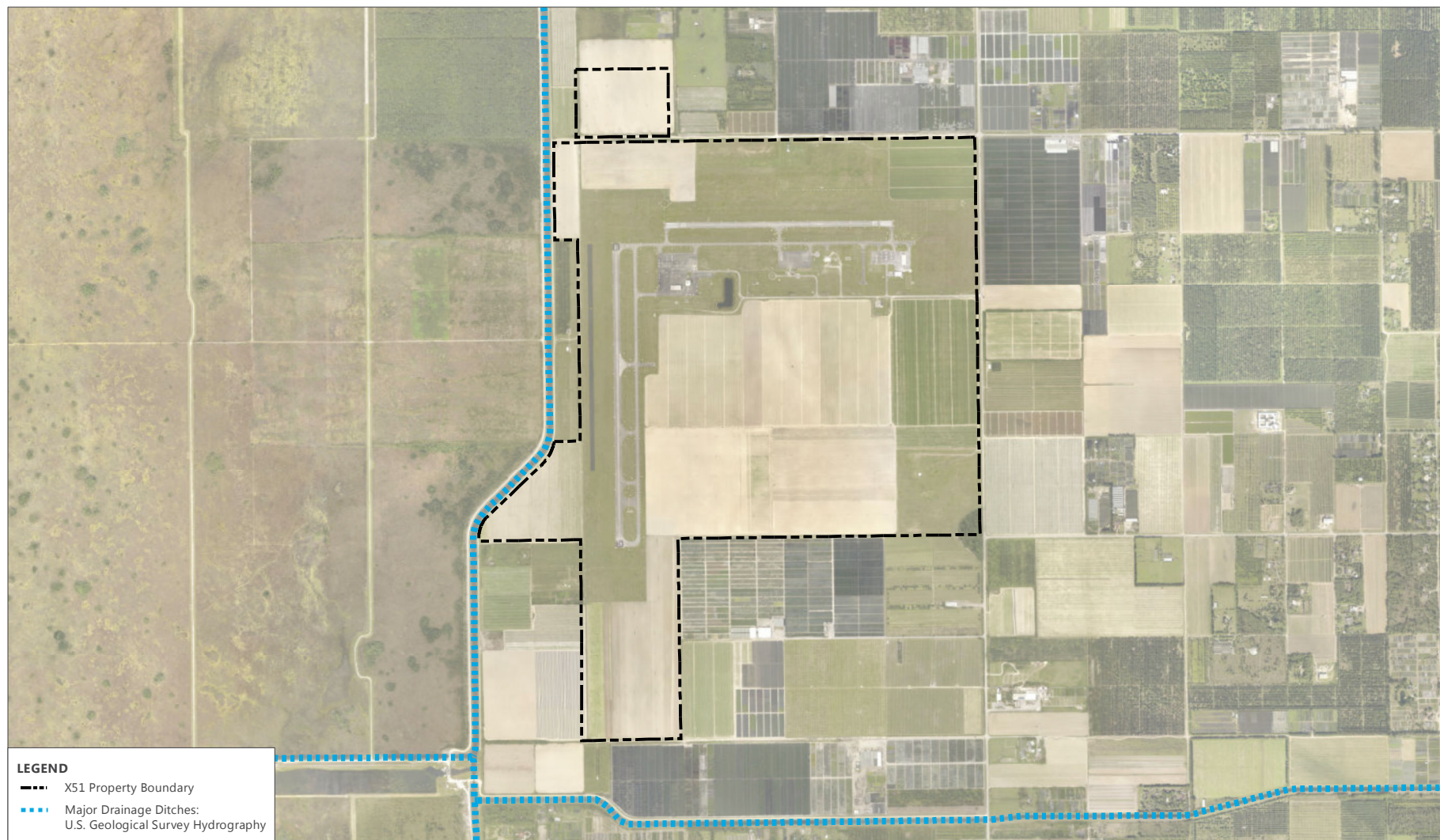


EXHIBIT K-1

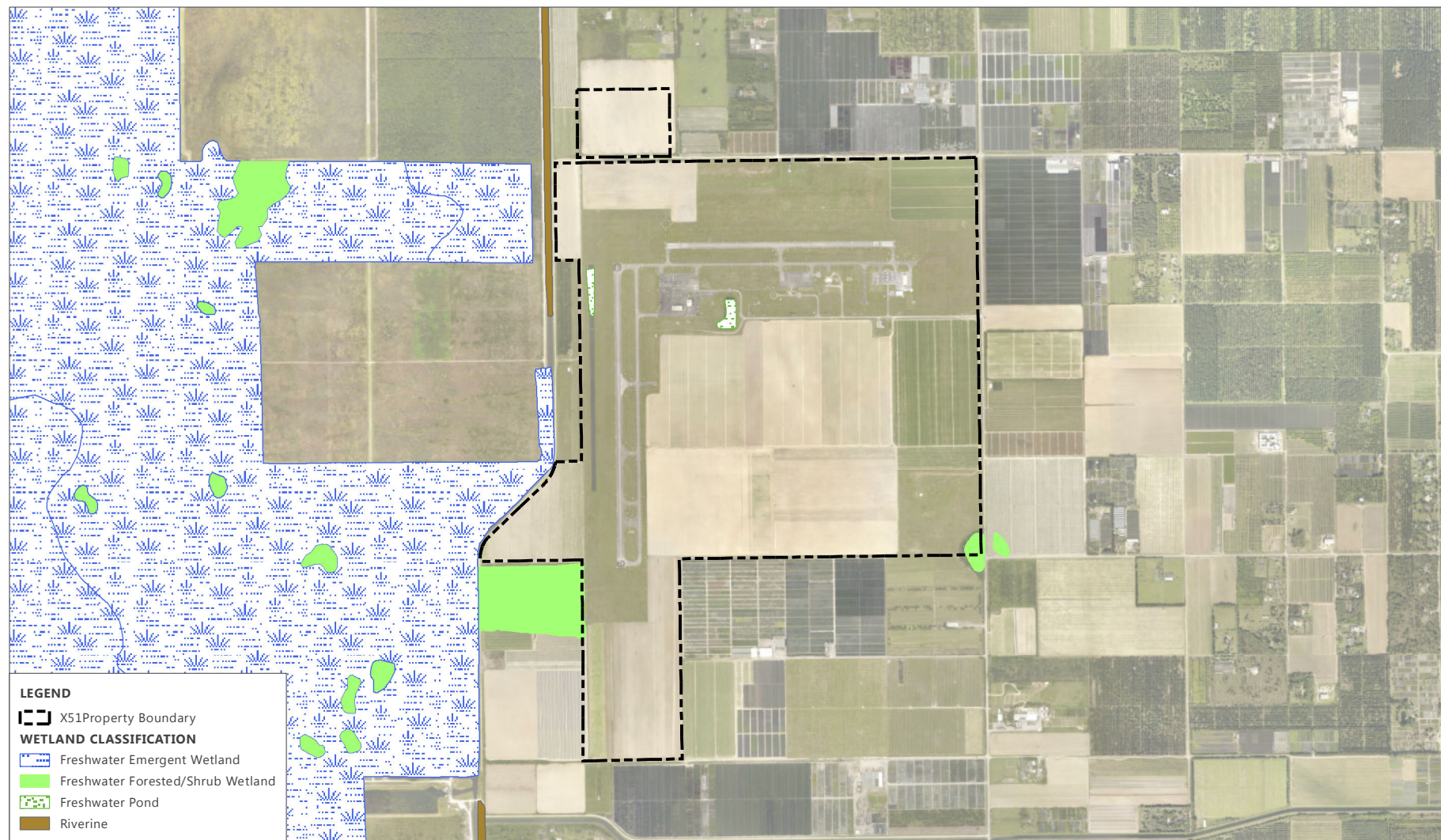


NORTH

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[Preliminary Draft for Discussion Purposes Only]



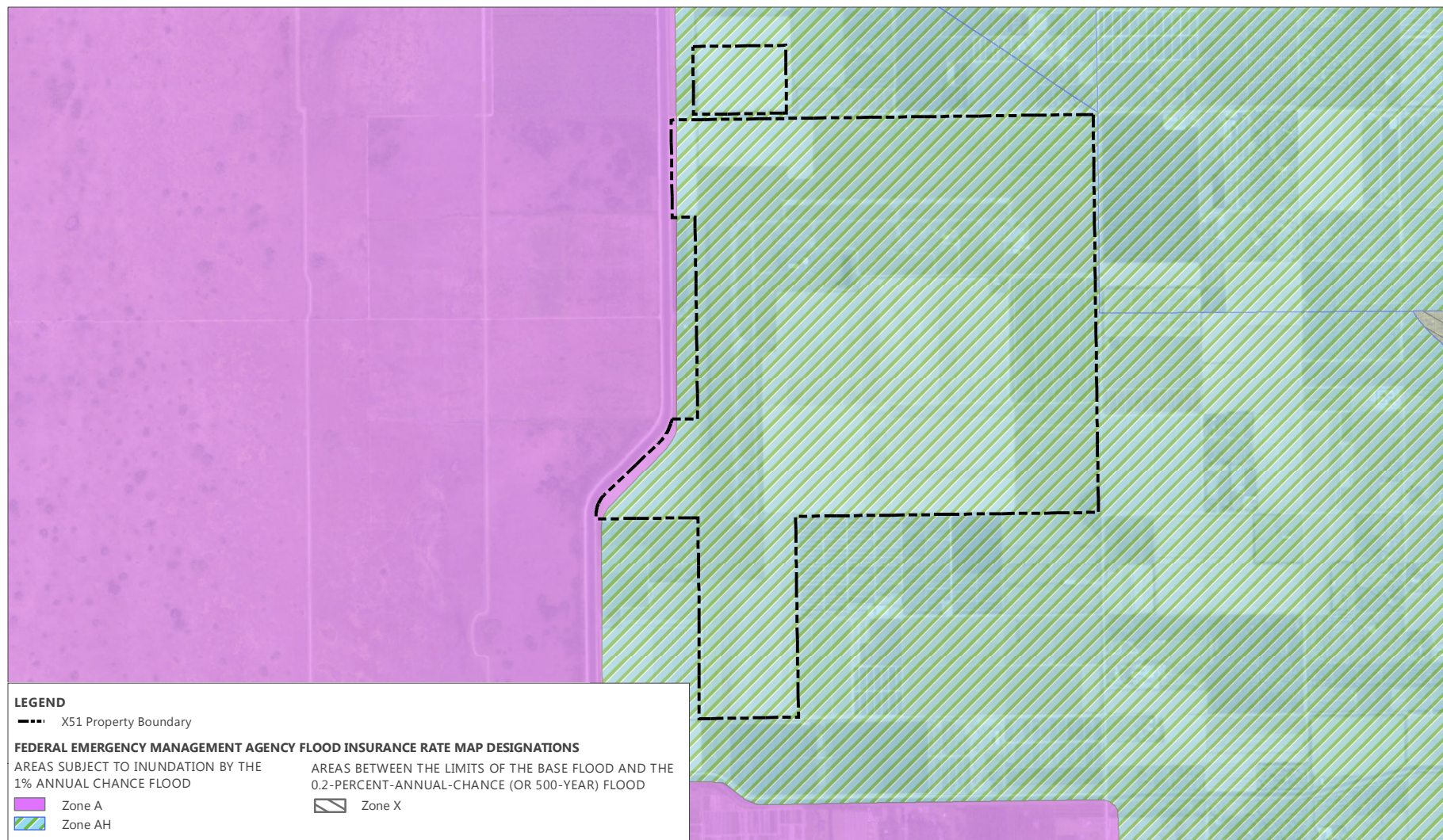
SOURCES: Miami-Dade County Aviation Department; Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, December 2017 (aerial basemap); Florida Geographic Data Library, GIS Metadata Explorer: GIS Data, <http://www.fgdl.org/metadataexplorer/explorer.jsp>, (accessed, September 29, 2015); PREPARED BY: Ricondo & Associates, Inc., September 2015.

EXHIBIT K-2



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[Preliminary Draft for Discussion Purposes Only]



SOURCES: Miami-Dade County Aviation Department; Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, December 2017 (aerial basemap); 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



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[Preliminary Draft for Discussion Purposes Only]



SOURCES: Miami-Dade County Aviation Department; Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, December 2017 (aerial basemap); 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



NORTH

0 3,300 ft.

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[Preliminary Draft for Discussion Purposes Only]



SOURCES: Miami-Dade County Aviation Department; Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, December 2017 (aerial basemap); Miami-Dade County, GIS Data; PREPARED BY: Ricondo & Associates, Inc., September 2015.

EXHIBIT K-5

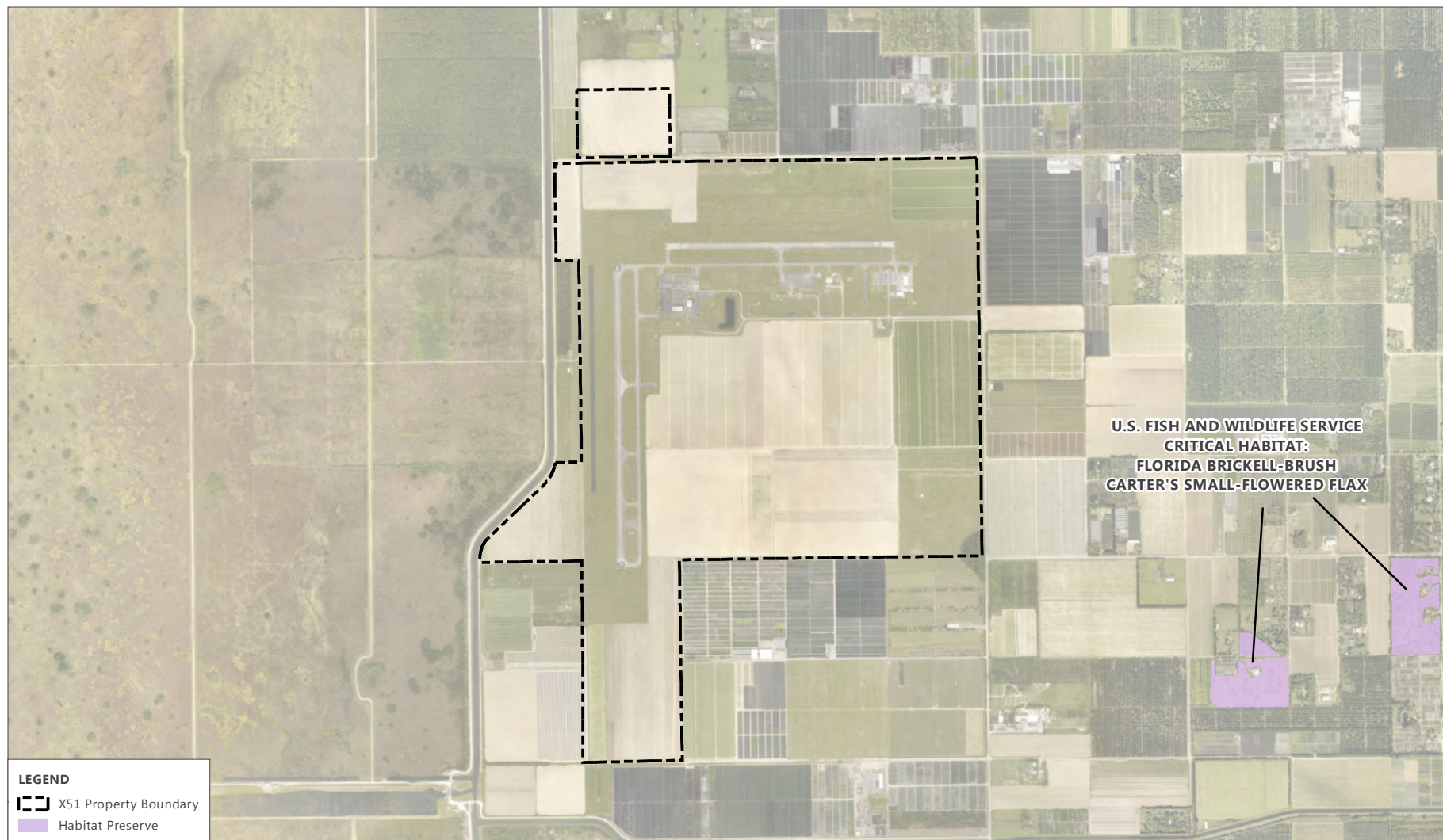


NORTH

0 2,000 ft.

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[Preliminary Draft for Discussion Purposes Only]



SOURCES: Miami-Dade County Aviation Department; Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, December 2017 (aerial basemap); Florida Geographic Data Library, GIS Metadata Explorer: GIS Data, <http://www.fgd.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.

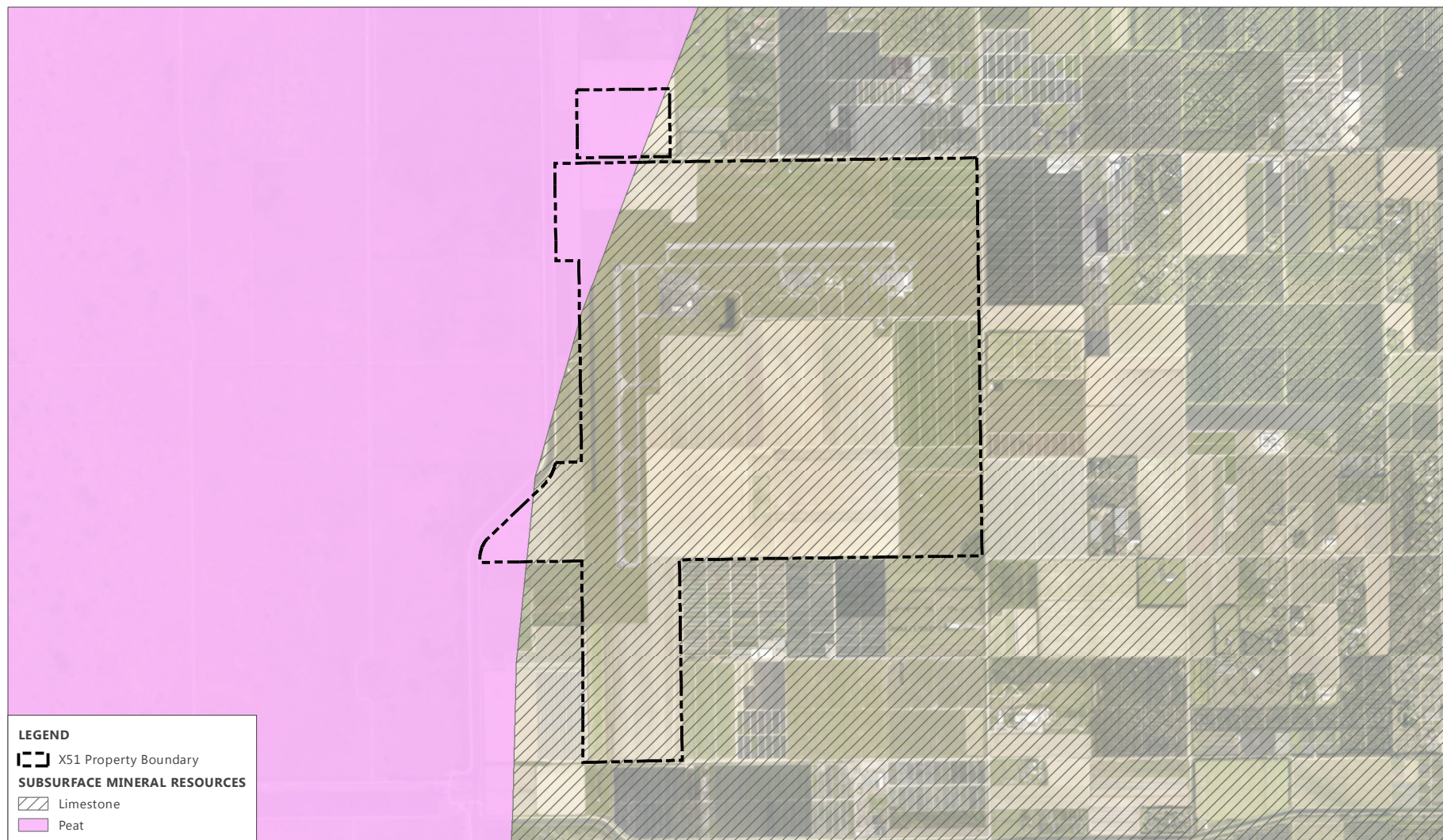
EXHIBIT K-6



Flora and Fauna

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[Preliminary Draft for Discussion Purposes Only]



SOURCES: Miami-Dade County Aviation Department; Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, December 2017 (aerial basemap); 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



NORTH

0 2,000 ft.

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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. All safety areas are in compliance with FAA standards.

M. Declared Distances

The declared distances table is used to aid in identifying the maximum distances available and suitable for meeting takeoff, rejected takeoff, and landing distances performance requirements for turbine powered aircraft. X51 does not have displaced thresholds, stopways, or clearways, and has standard Runway Safety Areas (RSA), Runway Object Free Areas (ROFA), Runway Projection Zones (RPZ), and Threshold Siting Surface (TSS) as a result of this the Takeoff Run Available (TORA), Takeoff Distance Available (TODA), Accelerate-Stop Distance Available (ASDA), and Landing Distance Available (LDA) will be equal to the runway length. **Table M-1** identifies the TORA, TODA, ASDA, and LDA for the three runways.

Table M-1: Miami Homestead General Aviation Airport – Declared Distances

	TORA		TODA		ASDA		LDA	
	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE
Runway 18	3,999	5,500	3,999	5,500	3,999	5,500	3,999	5,500
Runway 36	3,999	5,500	3,999	5,500	3,999	5,500	3,999	5,500
Runway 10	3,000	Same	3,000	Same	3,000	Same	3,000	Same
Runway 28	3,000	Same	3,000	Same	3,000	Same	3,000	Same
Runway 9U	2,500	Same	2,500	Same	2,500	Same	2,500	Same
Runway 27U	2,500	Same	2,500	Same	2,500	Same	2,500	Same

NOTE: Unless noted otherwise, all values are expressed in square feet.

SOURCES: ALP Homestead General Aviation Airport, July 27, 2006.

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

N. Airport Layout Plan Drawings

The following sections provide a brief description of the information specific to each of the drawing sheets that comprise the ALP set. These drawings were developed and produced as a set on 36 inches by 24 inches sheets using AutoCAD MAP 3D 2013 software. To provide vertical and horizontal accuracy for the ALP set, a digitized map was flown in April 2008 by I.F. Rooks and Associates and was used as a base for all the drawings. The aerial image was flown in 2014 and provided by MDAD. The coordinates, elevations, and aerial photogrammetry are in U.S. Survey Feet. The horizontal datum is 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).

Reduced reproductions of these drawings are included in this report in **Appendix B** for illustration purposes. A full-size set of the drawings will be submitted to the FAA and FDOT for review and acceptance. An ALP set provides guidance on the direction for future development possibilities on the airport property.

N.1 Cover Sheet

Sheet one, the Cover/Title Sheet, lists the subsequent drawings within the ALP set. It also provides the reader a location and vicinity map. The location map is a scaled representation of location of the airport in the State of Florida, and a vicinity map shows the approximate location of the airport, its boundary, and major roadways. The vicinity map also depicts the roadway system serving the airport and the local community.

N.2 Data Sheet

This sheet contains six data tables.

- **Airport Data Table** - This table lists existing and future information specific to the Airport, such as Airport elevation, service level, role, reference code, design aircraft, owner, Airport Reference Point, temperature information, and available navigational aids.
- **Runway Data Table** - This table is a compiled tabulation of information relating specifically to runways at the Airport. Various specifications are listed for each existing and future runway, including, but not limited to, runway location, dimensions, design group, available lighting and navigational aids, as well as safety areas as defined in AC 150/5300-13A.

- **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 including but not limited to, taxiway width, shoulder width, and taxiway safety area and object free area size.
- **Modifications of Design Standards (MOS) Table** - This table lists any approved modifications to applicable design standards or any non-standard 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 was obtained from the National Oceanic and Atmosphere Administration's (NOAA) National Climatic Data Center. The wind data information is provided for all weather conditions, visual metrological conditions (ceiling at or above 1,000 feet and visibility greater than or equal to 3 miles), and instrument metrological conditions (ceiling below 1,000 feet and /or visibility less than 3 miles). These components detail the percentage of time a runway end or combination of ends or runways are available for arrivals. When combined, the coverage is intended to be as near as possible to 100 percent. The Wind Rose depicts the runway orientation and percentages over which winds from a given direction occur. The box width varies based on the crosswind component desired and is intended to graphically portray the information displayed in the Wind Coverage Table. The wind coverage is summarized for each runway ends and grouping of runway ends. The historic wind data was obtained for X51 for the ten-year period beginning on January 1, 2004 and ending on December 31, 2013.

N.3 Existing Airport Layout Plan

The Existing ALP sheet depicts the existing conditions at the airport. It is provided as both a reference document to identify existing facilities (including runways, taxiways, buildings, and other structures) and a presentation document to identify a starting point to this study. The ALP sheet illustrates the airport in its entirety at a scale of 1 inch = 500 feet. The Existing ALP sheet is a graphic presentation of the actual layout of the existing facilities at X51. Major features of the ALP drawing include runways, taxiways, aprons, navigational aids, existing facilities, the roadway system, and non-airport facilities surrounding the perimeter of the airport property. This drawing 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. It also includes pertinent clearance and dimensional information associated with the runways and taxiways such as runway safety areas, RPZs. Imaginary elements are included on the drawing sheet including airport reference point (existing/future), ground contours, and other dimensional data recommended by the FAA. The Existing ALP sheet also demonstrates the Airport's compliance with standards set forth in AC 150/5300-13A (Change 1) or necessary modifications to those standards.

N.4 Future Airport Layout Plan

The Future ALP depicts the proposed Airport development projects that will be necessary to meet the forecast demand over the next 20 year period. The proposed development that is presented graphically on the ALP is consistent with those projects recommended under Section G. Proposed developments include the following.

- T-Hangars – The ALP reflects the construction of a proposed set of 12 T-Hangars totaling 12,000 square feet in floor area on the eastern end of Taxiway A. The site for the T-Hangars is approximately 4 acres and includes a set of T-hangars and an associated apron and taxilane.
- Conventional Hangar – The ALP reflects the construction of a proposed conventional box hangar (20,850 square feet) south of Taxiway A and west of Taxiway A2. The site for the hangar is approximately 1 acre and includes a hangar and apron space.
- Runway Exit Taxiway – A new Runway 18-36 exit located approximately 750' south of the Runway 18 threshold is proposed.
- Runway 18-36 and Taxiway B Extension – A 1,501' extension to Runway 18-36 and Taxiway B is proposed. The extension would relocate the Runway 36 threshold south requiring the relocation of a service road and Precision Approach Path Indicator (PAPI).
- Runway 18 Non-Precision Instrument Approach – The ALP reflects the proposed addition of a Non-Precision Instrument Approach (NPI) to Runway 18. It is assumed that the NPI approach would be in the form of an Area Navigation (RNAV)/ Global Positioning System (GPS) approach.
- Runway 36 Non-Precision Instrument Approach – The ALP reflects the proposed addition of a NPI to Runway 36. It is assumed that the NPI approach would be in the form of an RNAV/GPS approach.

N.5 Airport Airspace Plan

To enhance the safe operation of aircraft in the airspace around the airport, the FAA has adopted FAR Part 77 "Safe, Efficient Use, and Preservation of the Navigable Airspace." Subpart C of FAR Part 77 establishes imaginary surfaces for determining obstructions to air navigation. FAR Part 77 surfaces are utilized in zoning and land use planning adjacent to the airport to protect the navigable airspace from encroachment by hazards, which could potentially affect the safety of airport operations.

The Airport Airspace sheet is a set of two (2) drawings depicting the 14 CFR Part 77 imaginary airspace surfaces for the Airport. The Airport Airspace Drawing (Sheet 5) and Airport Airspace Plan & Profile (Sheet 6) illustrate physical features on and around the airport, including any existing obstructions that penetrate the FAR Part 77 imaginary surfaces. These imaginary surfaces are intended to provide airports and sponsors with a mechanism to evaluate existing and proposed objects as part of the 7460 process for determining hazards to air navigation. FAR Part 77 surfaces correspond to available navigational aids and types of approaches available to a runway end. The specific imaginary surfaces depicted on these drawing include:

- **Primary Surfaces** – Longitudinally centered on each runway, this surface extends 200 feet beyond each end of the runway and has an elevation equal to that of the runway centerline. The width of the primary surface is that prescribed for the most precise instrument approach procedure, existing or planned, for either end of the runway. The primary surface for X51's runway is 500 feet wide for Runway 10-28 and 18-36 and 250 feet wide for Runway 9U-27U.
- **Approach Surfaces** - These surfaces are longitudinally centered along the extended centerline and extend outward and upward from each end of the primary surface. The size and slope of the approach surface is based upon 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. **Table N-1** summarizes the characteristics of the future approach surfaces at the Airport.
- **Transitional Surfaces** - These surfaces extend outward and upward from the lateral edges of all primary and approach surfaces with a slope of 7 to 1. The overall width of the transitional surfaces for the portions of the precision approach surfaces is 5,000 feet which is measured perpendicular from the runway centerline.
- **Horizontal Surface** – This surface is a plane located 150 feet above the established airport elevation. Its perimeter is composed of arcs of specific radii connected by lines tangent to the arcs. The arcs are centered on the midpoint of the ends of all the primary surfaces.
- **Conical Surface** – This surface extends outward and upward from the periphery of the horizontal surface at a slope of 20:1, for a horizontal distance of 4,000 feet.

Table N-1: Miami Homestead General Aviation Airport - CFR Part 77 Approach Surface Characteristics

RUNWAY END	OVERALL LENGTH (IN FEET)	OUTERMOST WIDTH (IN FEET)	SLOPE
Runway 10	10,000	3,500	34:1
Runway 28	10,000	3,500	34:1
Runway 18 Existing	5,000	1,500	20:1
Runway 18 Future	10,000	3,500	34:1
Runway 36 Existing	5,000	1,500	20:1
Runway 36 Future	10,000	3,500	34:1
Runway 9U	5,000	1,250	20:1
Runway 27U	5,000	1,250	20:1

SOURCE: 14 CFR Part 77, Safe, efficient use, and preservation of navigable airspace, September 2008.

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

NAVAIDS that have frangible mounts are fixed-by-function and were not included in the obstruction analysis at X51, per FAR Part 77. Obstacle and obstruction data was used from the 2007 ALP. The obstruction data was obtained from the National Aeronautical Charting Office (NACO) in August 2005.

N.6 Existing & Future Inner Portion of the Approach Surface Drawings

The Inner Approach Surface Drawings (Sheets 7 to 12) are prepared for each of the runway approaches and consists of scaled drawings of the area immediately beyond the existing and proposed runway ends at X51, including but not limited to the RPZs off each runway end. It is recommended by the FAA that the area within each RPZ should be kept free of obstacles that could constitute a hazard to aircraft approaching or departing the airport. These drawings depict the location of roadways, structures, natural ground elevations, and other man-made 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, whichever is further. The drawings also detail objects that penetrate existing and proposed approach surfaces or violate the primary surface criteria. No penetrating obstructions were identified on any of the inner portions of the approach surfaces at X51.

All obstacle and obstruction data was used from the 2007 ALP. The survey was completed in the National Geodetic Vertical Datum of 1929 (NGVD29), no additional obstruction surveys have been performed since. Therefore, the original obstruction data in NGVD29 is reflected. The obstruction data was obtained from NACO in August 2005, and all obstacle data was obtained from NOAA and National Geodetic Survey (NGS) in February 2005.

N.7 Departure Surface Drawings

The Departure Surface Drawings (Sheets 13 and 14) 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 40:1 Departure Surface. These drawings depict the location of potential obstructions. The sheets also include obstruction tables detailing objects, departure surface penetrations, object top elevation, and disposition. No penetrating obstructions were identified on any of the departure surface drawings.

All obstacle and obstruction data was used from the 2007 ALP. The survey was completed in the National Geodetic Vertical Datum of 1929 (NGVD29), no additional obstruction surveys have been performed since. Therefore, the original obstruction data in NGVD29 is reflected.

N.8 Airport Land Use Drawing

Land use planning allows coordinating use of the airport property in a manner compatible with the functional design of the airport facility. Airport land use planning is important for the orderly development and efficient use of available space. There are two primary considerations for airport land use planning: first, to secure those areas essential for the safe and efficient operation of the airport; and second, to determine compatible land uses for the balance of the property that would be most advantageous to the airport and community.

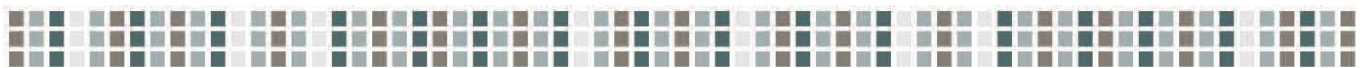
The Airport Land Use Drawing illustrates the proposed utilization of property within the existing boundary of the Airport. This drawing identifies various land use designations for airport owned property ranging from Airport Operations Areas covering portions of the airport utilized by aircraft or those areas required to meet FAA design and safety requirements, to Everglades National Park / natural resources. The land use areas, and their location on and around the airfield, are described below and are depicted using various patterns of hatching on the sheet.

- General / Corporate Aviation – This land use is intended for existing and future general aviation-related development, such as aircraft hangars, fixed based operators, and aprons. This land identifies those portions of the airport that are undeveloped or underdeveloped with the potential for the development of one or more forms of aviation.
- Airport Operation Area (AOA) – This consists of the land area 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 areas, and taxiway object free areas.
- Aviation Related Use – This area is intended for long-term aviation related development.
- Aviation and/or non-Aviation Development – This 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.
- Natural Resource / Vacant & Everglades National Park – This consists of the land area managed and operated by the Florida Game and Freshwater Fish Commission.
- Agriculture – This consists of the land area reserved for agricultural purposes.

N.9 Airport Property Map

The Airport Property Map presents a historical chronology of all land conveyances associated with the Airport that are available from public records. It illustrates the property boundary and identifies the various parcels that were acquired in the 1960s to create this boundary. This sheet identifies the parcel information such as the grantor, record data, acreage, date, etc. The Airport Property Map serves as a method of tracking current Airport property and as a place in which to depict and identify future property acquisition or easements that may be necessary for future Airport development. The Airport Property map drawing is pending receipt of available information from MDAD.

Appendix A ALP Narrative Report Checklist from ALP Checklist-ARP SOP 2.0



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 Homestead General Aviation Airport		
City and State	Homestead, FL	Location Identifier	X51
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	December 2017	
	Name of Individual	Date	
	(734) 961-3200		
	Telephone		
	robertt@jacobsendaniels.com		
	Email address		
Consulting QA/QC Review	David Ramacorti, C.M. (Director)		
	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	

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Critical Design Aircraft or Family of Aircraft:

	Make	Model	Annual Itinerant Operations
Existing	Cessna	208 Caravan	754
Future	Same	Same	930 in 2035

Forecasted Year: 2012

Airport Reference Code (ARC): B-II

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

Runway	RDC	RRC
18/36	B/II/VIS	B/II/VIS
10	B/II/4000	B/II/4000
28	B/II/5000	B/II/5000
9U/27U	A/II/VIS	A/II/VIS

Approach Minimums:

Rwy End	Minimum	Rwy End	Minimum
18	Visual	36	Visual
10	250 – 7/8	28	313 - 1
9U	Visual	27U	Visual

Runways (Existing and Future):

Runway	Existing		Future		Departure Surface (Y or N/A)
	Length (ft)	Width (ft)	Length (ft)	Width (ft)	
18/36	3,999	100	5,500	100	Y
10/28	3,000	75	3,000	75	Y
9U/27U	2,500	150	2,500	150	N/A

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.	From AC 150/5070-6, Section 202: An accompanying ALP Narrative Report should explain and document those changes and contain at least the following elements: – Basic aeronautical forecasts. – Basis for the proposed items of development. – Rationale for unusual design features and/or modifications to FAA Airport Design Standards. – Summary of the various stages of airport development and layout sketches of the major items of development in each stage. – An environmental overview to document environmental conditions that should be considered in the identification and analysis of airport development alternatives and proposed projects.	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.,	The need for new or additional navigational aids is a function of the fleet mix, the percentage of time that poor weather conditions	X			

Approach Lights, Wind Cones, AWOS, etc.)	are present, and the cost to the users of not being able to use the airport while it is not accessible.				
14. Wind coverage. Is it adequate for existing and future runway layouts? Has wind data been updated?	This analysis determines if additional runways are needed to provide the necessary wind coverage. Reference AC 150/5300-13A, Appendix 2 for guidance on wind coverage analysis techniques.	X			
D. Modification to Standards.	Any approved nonconformance to FAA standards, other than dimensional standards for RSAs and OFZs, require FAA approval. A description of all approved modification to standards shall be provided. See AC 150/5300-13A, Paragraph 106(b) and FAA Order 5300.1.	X			
E. Obstruction Surfaces (14 CFR Part 77 and Threshold Siting Surface)	Reference 14 CFR Part 77 and AC 150/5300-13A, Paragraph 303.	X			
F. Runway Protection Zone	A description of any incompatible land uses inside the RPZ shall be provided. Prior to including new or modified land use in the RPZ, the Regional and ADO staff must consult with the National Airport Planning and Environmental Division, APP-400. This policy is exempt from existing land uses in the RPZ. See AC 150/5300-13A, Paragraph 310 and FAA memorandum dated September 27, 2012.	X			
G. Development summary (including sketches, schedules, and cost estimates) for stages of construction for: Development summary (including sketches, schedules, and cost estimates) for stages of construction for:	Documentation provided should include any electronic spreadsheets and files to facilitate in modifying the financial plan on an as-needed basis.	X			
15. Development Projects Completed Since Last ALP		X			
16. 0-5 years				X	

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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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	turbine powered aircraft. The narrative shall also provide clarification on why declared distances have been implemented. Declared distances data must be listed for all runway ends. The TORA, TODA, ASDA, and LDA will be equal to the runway length in cases where a runway does not have displaced thresholds, stopways, or clearway, and have standard RSAs, ROFAs, RPZs, and TSS. Reference AC 150/5300-13A, Paragraph 323.				
Remarks					

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 http://www.ncdc.noaa.gov/	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 http://www.ngdc.noaa.gov/geomagnetic-web/#declination . This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, "Flight Procedures and Airspace." Chapter 2, Section 5, for further information.	X			
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 runways that are "utility")	A column for each runway end should be present. List the runway end number and if pavement strength is less than 12,500 pounds (single-wheel), then note as utility.	X			
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	List the maximum longitudinal grade of each runway centerline. See AC 150/5300-13A, Paragraph 313.	X			

runway meets line of sight requirements					
6. Percent (%) Wind Coverage (each runway)	List the percent wind coverage for each runway for each Aircraft Approach Category. See AC 150/5300-13A, Appendix 2.	X			
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	X			

	memorandum dated September 27, 2012.				
13. Runway marking type (visual or basic, non-precision, precision)	Indicate the existing and ultimate pavement markings for each runway. See AC 150/5340-1, Section 2.	X			
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	X			

	OFZ, and Precision OFZ if applicable.				
21. Threshold siting surface (TSS)	List the existing and ultimate threshold siting surface (i.e. approach and departure surfaces). Identify any objects penetrating the surface. If none, state "No TSS Penetrations". Reference AC 150/5300-13A, Paragraph 303.	X			
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	X			

	for new systems. See AC 150/5340-30, Chapter 4.				
28. Identify the vertical and horizontal datum	All latitude/longitude coordinates shall be in North American Datum of 1983 (NAD 83). A note shall be put on the Airport Layout Drawing that denotes that the NAD 83 coordinate system was used. All elevations shall be NAVD88. A note shall be put on the Airport Layout Drawing that denotes that the NAVD88 vertical control datum was used.	X			
E. Modification to Standards Approval Table (if applicable, a separate written request, including justification, should accompany the modification to standards). Show: Approval Date/ Airspace Case No. / Standard to be Modified / Description	Provide a table to list all FAA approved Modifications to Standards. See AC 150/5300-13A, Paragraph 106(b), and FAA Order 5300.1. List "None Required" on the table if no Modifications have yet been proposed or approved.	X			
F. Declared Distances Table	Required even if Declared Distances are not in effect. Declared distances are only to be used for runways with turbine-powered aircraft. The TORA, TODA, ASDA, and LDA will be equal to the runway length in cases where a runway does not have displaced thresholds, stopways, or clearways, and have standard RSAs, ROFAs, RPZs, and TSS. Reference AC 150/5300-13A, Paragraph 323.	X			
1. Take Off Run Available (TORA)	List the runway length declared available and suitable for the ground run of an airplane taking off, i.e., Take Off Run Available (TORA). The TORA may be reduced such that it ends prior to the runway to resolve incompatible land uses in the departure RPZ, and/or to mitigate environmental effects. Reference AC 150/5300-13A, Paragraph 323(d)(1).	X			
2. Take Off Distance Available (TODA)	List the length of remaining runway or clearway (CWY)	X			

	beyond the far end of the TORA ADDED TO the TORA. The resulting sum is the Take Off Distance Available (TODA) for the runway. The TODA may be reduced to mitigate penetrations to the 40:1 instrument departure surface, if applicable. The TODA may also extend beyond the runway end through the use of a clearway Reference AC 150/5300-13A, Paragraph 323(d)(2).				
3. Accelerate Stop Distance Available (ASDA)	5300-13A List the length the length of runway plus stopway (if any) declared available and suitable for satisfying accelerate-stop distance requirements for a rejected takeoff. Additional RSA and ROFA can be obtained by reducing the ASDA. Reference AC 150/5300-13A, Paragraph 323(d)(3).	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 http://www.ngdc.noaa.gov/geomag-web/#declination . This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, "Flight Procedures and Airspace." Chapter 2, Section 5, for further information.	X			
2. Airport reference point – locate by symbol a Lat./Long. To nearest	List the Airport Reference Point, the latitude and longitude of the approximate center of the airport. Use the NAD 83 coordinate	X			

second (existing, future, 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	X			

	roads, or 10' for private roads). 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	Show the latitude and longitude of the threshold center and end	X			

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ultimate degrees, minutes, seconds (to the nearest 0.01 second)	of pavement (if different) to the nearest .01 of a second.				
d. Runway Safety Areas (RSA) – actual, existing, future, and ultimate (including dimensions)	Show the extents of the existing and ultimate RSA 5300-13A. Reference AC 150/5300-13A, Paragraph 307.	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	X			

	and slope. See FAA Order 7400.2, Figure 6-3-9.				
k. Threshold Siting Criteria: Approach/Departure Surface (existing, future, and ultimate) 5300-13A	Determine and identify pursuant to AC 150/5300-13A, Paragraph 303(b) and 303(c).	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	

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	Secondary Airport Control Stations (PACS/SACS) if they exist. See AC 150/5300-16. Show the location of all section corners on or near the airport property.				
b. Offsets, stations, etc.	Show as applicable.			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			

6. Note specifying height restriction (ordinances/statutes)	List any local zoning restrictions that are in place to protect the airport and surrounding airspace. See AC 150/5190-4.			X	
7. North Arrow with magnetic declination and year	Magnetic declination may be calculated at http://www.ngdc.noaa.gov/geomagnetic-web/#declination . This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, "Flight Procedures and Airspace." Chapter 2, Section 5, for further information.	X			
C. Profile view					
1. Airport Elevation	List the Airport Elevation, the highest point on an airport's usable runway expressed in feet above mean sea level (MSL). Use NAVD88 datum. See AC 150/5300-13A, Chapter 1, Paragraph 102(g).	X			
2. Composite Ground Profile along extended Runway Centerline (Representing the composite profile, based on the highest terrain across the width and along the length of the approach surface)	Depict the ground profile along the extended runway centerline representing the composite profile, based on the highest terrain across the width and along the length of the approach surface.	X			
3. Significant objects (bluffs, rivers, roads, schools, towers, etc.) and elevations	Identify all significant objects (roads, rivers, railroads, towers, poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions. Use the objects' same alphanumeric identifier that was used on the plan view. Identify the top elevations of all significant objects (roads, rivers, railroads, towers, poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions.	X			
4. Existing, future, and ultimate runway ends and approach slopes	Show existing and ultimate runway ends and FAR Part 77	X			

	approach surface slopes. See 14 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	Identify all significant objects (roads, rivers, railroads, towers, poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions. Use the objects alphanumeric identifier that was used on the plan view. Identify the top elevations of all significant objects (roads, rivers, railroads, towers, poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions.	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			

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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 elevations, plus movable object heights	Provide elevation information for the traverse ways' centerline elevation where they intersect the Part 77 Approach surfaces (existing and ultimate). Note whether this elevation is the actual elevation or the traverse way elevation plus the traverse way adjustment (23' for railways, 17' for interstate highways, 15' for other public roads, or 10' for private roads). See also 14 CFR Part 77.	X			
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	X			

	ADO staff must consult with the National Airport Planning and Environmental Division, APP-400. This policy is exempt from existing land uses in the RPZ. See AC 150/5300-13A, Paragraph 310, Table 3-5 and FAA memorandum dated September 27, 2012.				
e. NAVAID critical area	Show the critical area outline for all Instrument Landing System and other electronic Navigational Aids located on the airport. See AC 150/5300-13A, Chapter 6 for general guidance and FAA Order 5750.16 for critical area dimensions.	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 http://www.ngdc.noaa.gov/geomagnetic-web/#declination . This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, Chapter 2, Section 5, for further information.	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	Show the boundaries of the existing and ultimate Part 77	X			

surface; existing and future VASI/PAPI siting surface	Approach Surface. See FAA Order 7400.2, Figure 6-3-9, See also 14 CFR Part 77.				
4. Threshold Siting Surface	Depict any applicable siting requirements pursuant to Table 3-2 of FAA AC 150/5300-13A.	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			

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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	X			

	the OFZ standard is not permitted.				
E. Runway Centerline Profile	This may be shown on the Inner Portion of the Approach Surface drawing if there is space to show the runway and Runway Safety Area in sufficient detail otherwise a separate sheet may be necessary. At a minimum this drawing is to show the full length of the runway and Runway Safety Area including: runway elevations, runway and Runway Safety Area gradients, all vertical curves, and a line representing the 5' line-of-sight. See AC 150/5300-13A, Paragraph 305.	X			
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	X			

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	object elevation in MSL for each 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)				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	

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	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 http://www.ngdc.noaa.gov/geomagnetic-web/#declination . This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, "Flight Procedures and Airspace." Chapter 2, Section 5, for further information.			X	
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		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 http://www.ngdc.noaa.gov/geomagnetic-web/#declination . This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, "Flight Procedures and Airspace." Chapter 2, Section 5, for further information.	X			
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					

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Airport Property Map / Exhibit A

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

Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
A. Will Property Map serve as Exhibit A? – If YES , follow the directions to the right. – If NO , go to item B below.	If prepared in accordance with AC 150/5100-17, Land Acquisition and Relocation Assistance for Airport Improvement Program Assisted Projects, use ARP SOP no. 3.00 Exhibit A guidance instead of below checklist.			X	
If Property Map will not serve as Exhibit A: 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	

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	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 2017 Airport Layout Plan Set





LOCATION MAP
NTS

AIRPORT LAYOUT PLAN

FOR

MIAMI HOMESTEAD GENERAL AVIATION AIRPORT (X51)

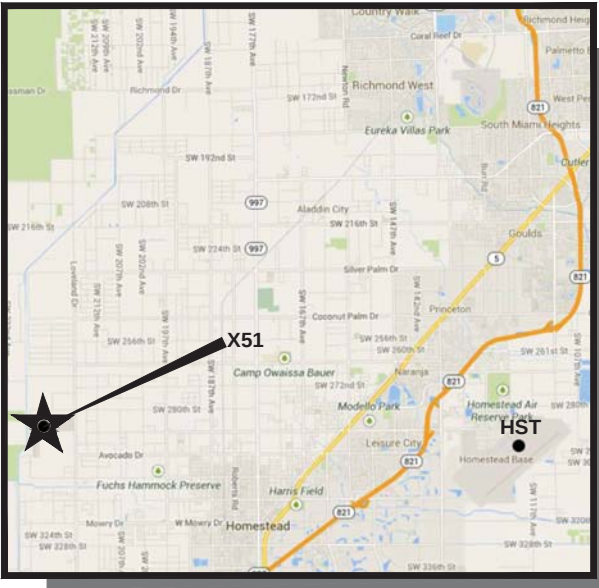
HOMESTEAD, FL

MIAMI-DADE AVIATION DEPARTMENT

DECEMBER 2017

Emilio González, Aviation Director
Miami-Dade Board of County Commissioners
<http://www.miamidade.gov/commission/>

- District 1 - Barbara J. Jordan
- District 2 - Jean Monestime
- District 3 - Audrey Edmonson
- District 4 - Sally A. Heyman
- District 5 - Bruno A. Barreiro
- District 6 - Rebeca Sosa
- District 7 - Xavier L. Suarez
- District 8 - Daniella Levine Cava
- District 9 - Dennis C. Moss
- District 10 - Javier D. Souto
- District 11 - Joe A. Martinez
- District 12 - José "Pepe" Diaz
- District 13 - Esteban Bovo, Jr



VICINITY MAP
NTS

Drawing Index	
Sheet Number	Sheet Title
01	COVER SHEET
02	AIRPORT DATA SHEET
03	EXISTING AIRPORT LAYOUT PLAN
04	FUTURE AIRPORT LAYOUT PLAN
05	AIRPORT AIRSPACE DRAWING
06	AIRPORT AIRSPACE PLAN & PROFILE
07	RUNWAY 10 INNER PORTION OF THE APPROACH DRAWING
08	RUNWAY 28 INNER PORTION OF THE APPROACH DRAWING
09	RUNWAY 18 INNER PORTION OF THE APPROACH DRAWING
10	RUNWAY 36 INNER PORTION OF THE APPROACH DRAWING
11	RUNWAY 9U INNER PORTION OF THE APPROACH DRAWING
12	RUNWAY 27U INNER PORTION OF THE APPROACH DRAWING
13	RUNWAY 10-28 DEPARTURE DRAWING
14	RUNWAY 18-36 DEPARTURE DRAWING
15	LAND USE DRAWING
16	AIRPORT PROPERTY MAP

FDOT Approval

Florida Department of Transportation

Date

Airport Approval

Homestead General Aviation Airport

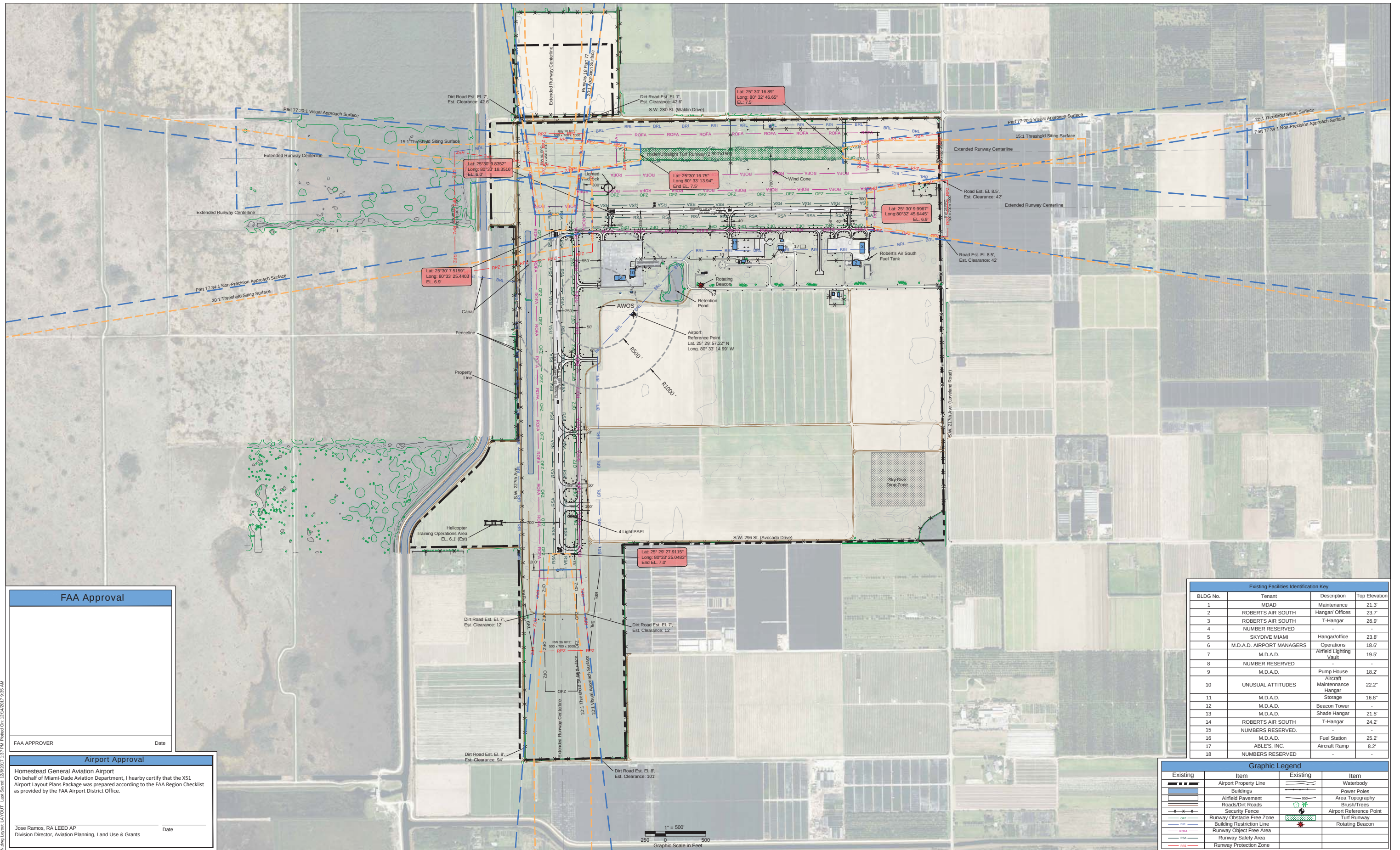
On behalf of Miami-Dade Aviation Department, I hereby certify that the X51 Airport Layout Plans Package was prepared according to the FAA Region Checklist as provided by the FAA Airport District Office.

Jose Ramos, RA LEED AP

Division Director, Aviation Planning, Land Use & Grants

Date

Revision	Description	Date	Name



Existing Facilities Identification Key			
BLDG No.	Tenant	Description	Top Elevation
1	MDAD	Maintenance	21.3'
2	ROBERTS AIR SOUTH	Hangar/ Offices	23.7'
3	ROBERTS AIR SOUTH	T-Hangar	26.9'
4	NUMBER RESERVED	-	-
5	SKYDIVE MIAMI	Hangar/office	23.8'
6	M.D.A.D. AIRPORT MANAGERS	Operations	18.6'
7	M.D.A.D.	Airfield Lighting Vault	19.5'
8	NUMBER RESERVED	-	-
9	M.D.A.D.	Pump House	18.2'
10	UNUSUAL ATTITUDES	Aircraft Maintenance Hangar	22.2"
11	M.D.A.D.	Storage	16.8"
12	M.D.A.D.	Beacon Tower	-
13	M.D.A.D.	Shade Hangar	21.5'
14	ROBERTS AIR SOUTH	T-Hangar	24.2'
15	NUMBERS RESERVED.	-	-
16	M.D.A.D.	Fuel Station	25.2'
17	ABLE'S, INC.	Aircraft Ramp	8.2'
18	NUMBERS RESERVED	-	-

Graphic Legend			
Existing	Item	Existing	Item
	Airport Property Line		Waterbody
	Buildings		Power Poles
	Artificial Pavement		Area Topography
	Road/On Roads		Brush/Trees
	Security Fence		Airport Reference Point
	Runway Obstacle Free Zone		Turf Runway
	Building Restriction Line		Rotating Beacon
	Runway Object Free Area		
	Runway Safety Area		
	Runway Protection Zone		

FAA Approval

FAA APPROVER _____ Date _____

Airport Approval

Homestead General Aviation Airport
On behalf of Miami-Dade Aviation Department, I hereby certify that the X51
Airport Layout Plans Package was prepared according to the FAA Region Checklist
as provided by the FAA Airport District Office.

Jose Ramos, RA LEED AP
Division Director, Aviation Planning, Land Use & Grants



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

NOTES:

- | | | | |
|----|---|----|---|
| 1. | The Building Restriction Line (BRL) depicted on the ALP provides 35 feet of clearance under the applicable FAR Part 770.10-20 and 770.10-21. The BRL provides 25 feet of clearance under the FAR Part 77. | 5. | Per FAR Part 77.23(b) all traverse ways have been increased by 15' for a (Non Intersect), 17' for an (Y-intersect), and 23' for (Railroads). Traverse points have not been surveyed they are estimated based on the ALP topography. |
| 2. | Horizontal Datum is in Florida, East, State Plane Coordinate System, NAD83. | 6. | The location of the Airport property line has been estimated. |
| 3. | All elevations are Above Mean Sea Level (AMSL) relative to the North American Vertical Datum of 1988 (NAVD88). | 7. | In absence of published data, the location of the grass strip was estimated using coordinates obtained from Google Earth. |
| 4. | Runway ends and elevations shown were taken from the FAA AVMS database. | 8. | MDAD is currently reviewing the existing coordinates of Runway 90-27U |

Declination: 6°5'22" W (2014)
Changing: 5.98' W per Year

[illegible]

EXISTING AIRPORT LAYOUT PLAN

MIAMI HOMESTEAD GENERAL AVIATION AIRPORT
AIRPORT LAYOUT PLANS UPDATE

X51

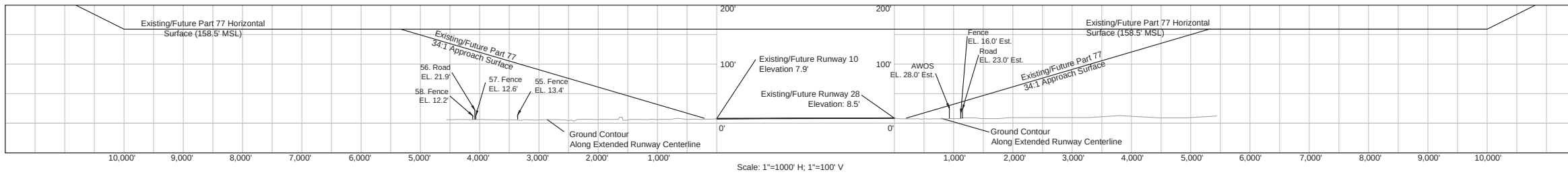
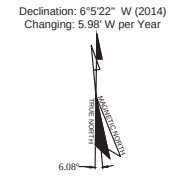
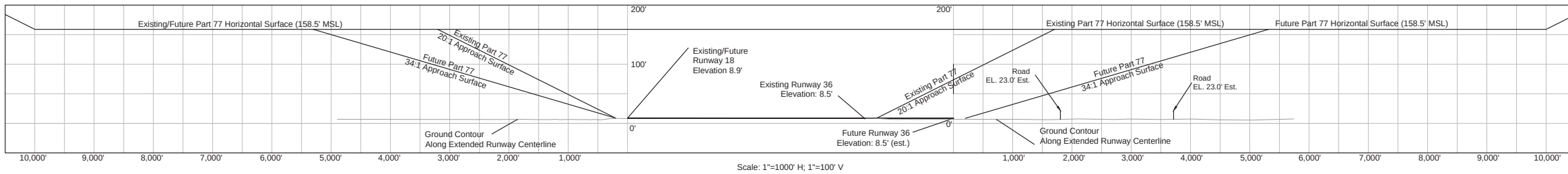
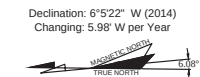
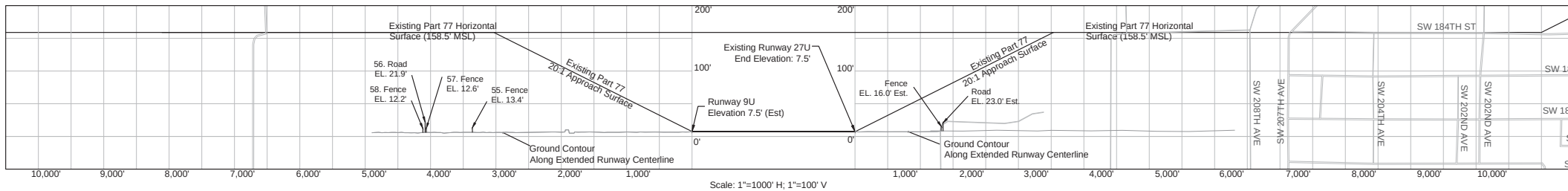
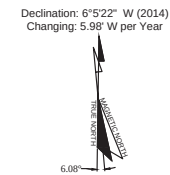
Drawn by: *CLJ*

Checked By: *JEK*

Issue Date: DECEMBER 2017

Sheet:

3 OF 16

[illegible][illegible][illegible]

Obstruction and runway end elevation data for Runways 10-28 and 18-36 are based on National Oceanic and Atmospheric Administration (NOAA), National Geodetic Survey (NGS), February 2005 (http://www.ngs.noaa.gov/AERO/uddf/SOUTHERN/FLORIDA/X51_04D.LPV) and Obstruction Data File, National Aeronautical Charting Office (NACO), August 2005. Both surveys were completed in the National Geodetic Vertical Datum of 1929 (NGVD29). The Runway end elevations published under the FAA's AVNIS Database, as of September 5, 2014, are reflective of the North America Vertical Datum of 1988 (NAVD88) and vary from those elevations surveyed by NOAA in 2005.

No additional obstruction surveying has been performed since 2005. Therefore, for consistency, the original data (2005 NOAA/NACO) is presented on this sheet without adjustment to the runway end elevation or obstacle clearance/penetration values. The current published elevations are noted in Sheet 2 - Runway Data Table.



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Ypsilanti, MI 48197
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Suite 920
Miami, Florida 33126-3511
(305) 260-2727



- NOTES:
1. Horizontal Datum: Florida East, State Plane Coordinate System US Feet.
 2. All elevations are Above Mean Sea Level (AMSL) relative to the National Geodetic Vertical Datum of 1929 (NGVD29).
 3. Obstacles within the prime surface are identified by function and are assumed to be installed on frangible masts.
 4. All obstruction data was taken from the National Aeronautical Charting Office (NACO), August 2005.
 5. Detailed obstruction surveys were not conducted as part of this Airport Layout Plan set update. Field surveys should be performed to validate the obstacle heights and positions.
 6. Per FAR Part 77.23(b) the following traverse ways must be increased: 10' for an airport controlled Volume (Service Road (VSR), 15' for a Non Intersect, 15' for a Y-intersect, and 23' for Railroads. Traverse points have not been surveyed they are estimated based on the ALP topography sheet to Sheet 7 through Sheet 12 in the Airport and Obstruction submittal.
 7. MDAD is currently reviewing the existing corridors of Runway 9L/27U.

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AIRPORT LAYOUT PLANS UPDATE

X51

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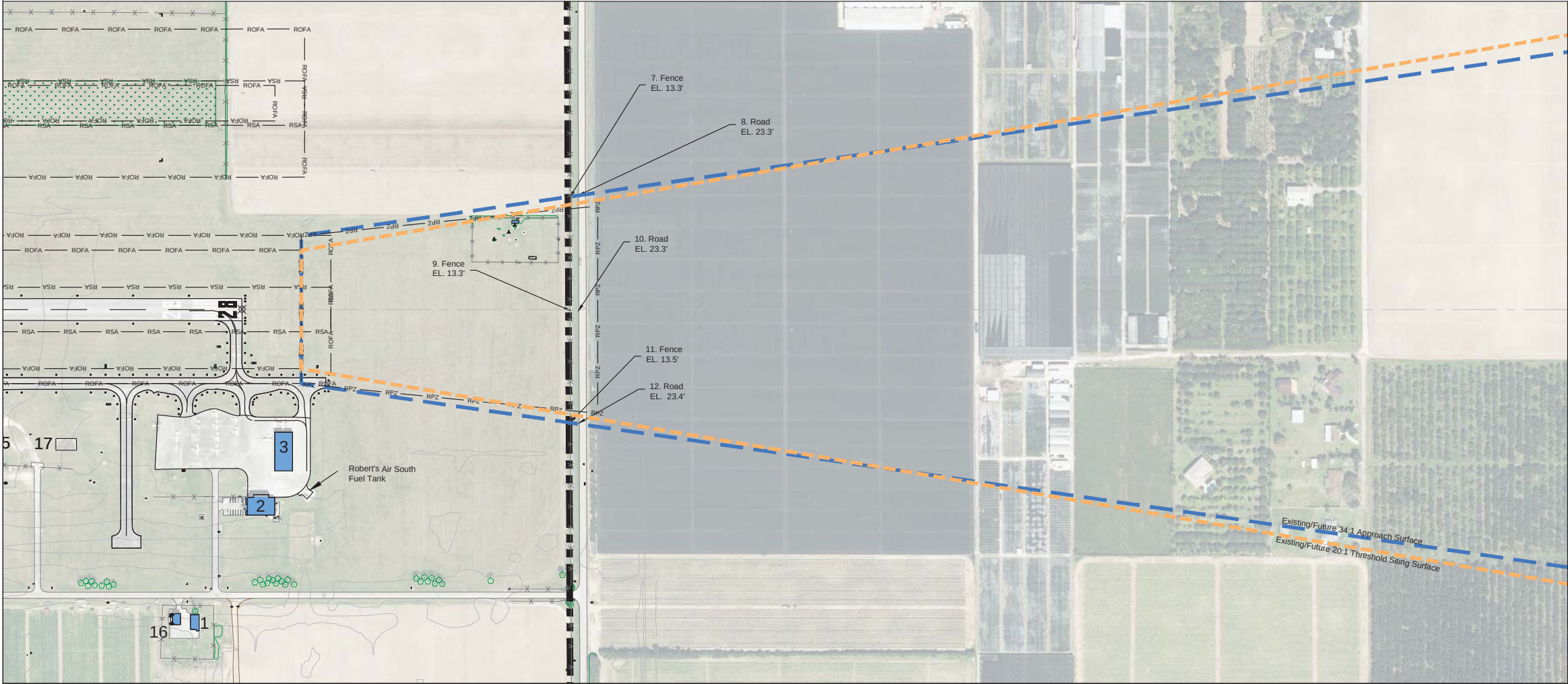
Checked By: JEK

Issue Date: DECEMBER 2017

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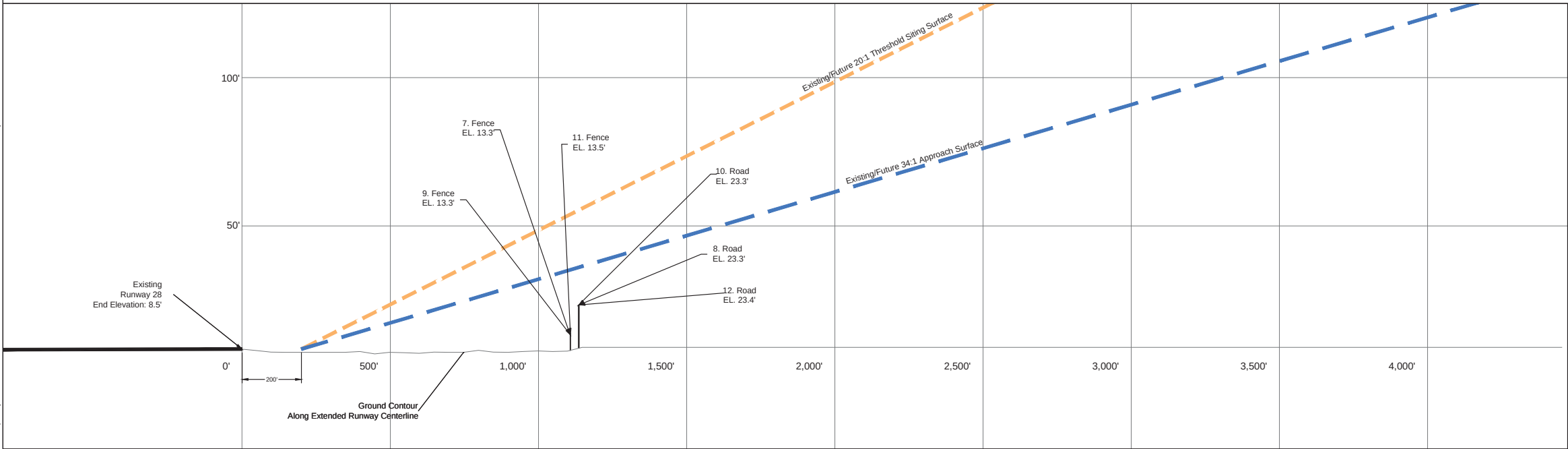
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Plan View - R/W 28
Scale: 1"=200'

NO THRESHOLD SITING SURFACE PENETRATIONS



Profile View - R/W 28
Scale: 1"=200' H; 1"=20' V

Airspace Obstruction Table				
Obstacle ID	Description	Top Elevation	Penetration (Surface)	Disposition
7	Fence (N)	13.3'	None	None
8	Road (N)	23.3'	None	None
9	Fence (N)	13.3'	None	None
10	Road (N)	23.3'	None	None
11	Fence (N)	13.5'	None	None
12	Road (N)	23.4'	None	None

Source:

- National Oceanic and Atmospheric Administration (NOAA), National Geodetic Survey (NGS), February 2005.
(http://www.ngs.noaa.gov/AERO/udf/SOUTHERN/FLORIDA/X51_04D.LPV)
- Obstruction Data File, National Aeronautical Charting Office (NACO), August 2005

Note:

At the time of the obstruction analysis, the Runway 28 end elevation was reported as 8.5' MSL, as reflected on the 2007 Airport Layout Plans (ALP). The 2007 ALP was performed in the National Geodetic Vertical Datum of 1929 (NGVD29). The current published runway end elevation, as reflected in the Runway Data Table is 6.9' MSL. This is reflective of the North American Vertical Datum of 1988 (NAVD88). No additional obstruction surveying has been performed. Therefore, for consistency, the original data is presented on this sheet without adjustment.

Graphic Legend	
EXISTING	DESCRIPTION
	Ground Contour
	Airport Property Line
	Roads/Dirt Roads
	On-Airport Buildings
	Airfield Pavement
	Airport Reference Point
	Fence
	Stream / Creek / Basins
	Tree
	Object Free Area (OFA)
	Runway Safety Area (RSA)
	Object Free Zone (OFZ)
	Overhead Power Lines
	Existing Part 77 Approach Surface
	Existing Threshold Siting Surface
	Features along Airspace Surface edge

Calculated: Runway 28 End Elevation: 6.9' MSL, as reflected on the 2007 Airport Layout Plans (ALP). The 2007 ALP was performed in the National Geodetic Vertical Datum of 1929 (NGVD29). The current published runway end elevation, as reflected in the Runway Data Table is 6.9' MSL. This is reflective of the North American Vertical Datum of 1988 (NAVD88). No additional obstruction surveying has been performed. Therefore, for consistency, the original data is presented on this sheet without adjustment.



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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).
- Obstacles within the primary surface are fixed by function and are assumed to be installed on frangible mounts.
- Digital Obstruction Data File, National Aeronautical Charting Office (NACO), August 2005.
- 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.
- 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.
- Threshold Siting Surface information was obtained from AC 150/5300-13A, within Table 3-2 Approach/Departure Standards Table.

Declination: 6°5'22" W (2014)
Changing: 5.98" W per Year



Revision and Description	Date	Name

RUNWAY 28 INNER PORTION OF THE APPROACH DRAWING

MIAMI HOMESTEAD GENERAL AVIATION AIRPORT
AIRPORT LAYOUT PLANS UPDATE

X51

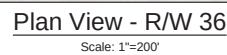
Drawn by: CLJ

Checked By: JEK

Issue Date: DECEMBER 2017

Sheet:

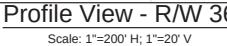
8 OF 16



Source:

1. National Oceanic and Atmospheric Administration (NOAA), National Geodetic Survey (NGS), February 2005.
(http://www.ngs.noaa.gov/AERO/uddf/SOUTHERN/FLORIDA/X51_04D.LPV)
2. Obstruction Data File, National Aeronautical Charting Office (NACO), August 2005

NO THRESHOLD SITING SURFACE PENETRATIONS



Note:
At the time of the obstruction analysis, the Runway 36 end elevation was reported as 8.5' MSL, as reflected on the 2007 Airport Layout Plans (ALP). The 2007 ALP was performed in the National Geodetic Vertical Datum of 1929 (NGVD29). The current published runway end elevation, as reflected in the Runway Data Table is 7.0' MSL. This is reflective of the North American Vertical Datum of 1988 (NAVD88). No additional obstruction surveying has been performed. Therefore, for consistency, the original data is presented on this sheet without adjustment.

Graphic Legend	
EXISTING	DESCRIPTION
	Ground Contour
	Airport Property Line
	Roads/Dirt Roads
	On-Airport Buildings
	Existing Airfield Pavement
	Future Airfield Pavement
	Landside Pavement Demolition
	Landside Pavement Improvement
	Airport Reference Point
	Fence
	Stream / Creek / Basins
	Tree
	Building Restriction Line (BRL)
	Object Free Area (OFA)
	Runway Safety Area (RSA)
	Object Free Zone (OFZ)
	Overhead Power Lines
	Existing Part 77 Approach Surface
	Existing Threshold Siting Surface
	Future Part 77 Approach Surface
	Future Threshold Siting Surface
	Features along Airspace Surface edge

MIAMI-DADE COUNTY, FLORIDA
AIRPORT LAYOUT PLANS
121 PEARL ST.
YPSILANTI, MI 48197
(734) 961-3200

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

1000 N.W. 57th Court
Suite 620
Miami, Florida 33126-3511
(305) 260-2727

MIAMI-DADE
COUNTY

NOTES:
1. This composite map illustrates information contained in the official Miami-Dade zoning district maps and reflects existing land uses.
2. Property managed and operated by the Florida Game and Freshwater Fish Commission.

Declination: 6°5'22" W (2014)
Changing: 5.98" W per Year

Graphic Scale in Feet
250 0 500

6.08°

1" = 500'

Revision and Description
Date
Name

LAND USE DRAWING
MIAMI HOMESTEAD GENERAL AVIATION AIRPORT
AIRPORT LAYOUT PLANS UPDATE

X51
Drawn by: CLJ
Checked By: JEK
Issue Date: DECEMBER 2017
Sheet: 15 of 16

Land Use Legend
Description
Agricultural
Commercial Brewery
Everglades National Park (See Note 2)
Aviation Related Use
General/Corporate Aviation
Aviation and/or Non-Aviation Development
AOA

Graphic Legend
Existing
Item
Airport Property Line
Runway Object Free Area (ROFA)
Runway Protection Zone (RPZ)
Runway Visibility Zone (RVZ)
Airfield Improvements
Future Facility
Landside Pavement/Dirt Road Demolition
Landside Pavement/Dirt Road Improvement
Turf Runway

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Declination: 6°5'22" W (2014)
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Graphic Scale in Feet
250 0 500

6.08°

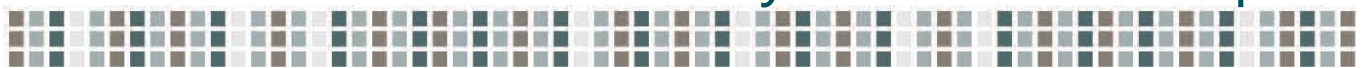
1" = 500'

Revision and Description
Date
Name

LAND USE DRAWING
MIAMI HOMESTEAD GENERAL AVIATION AIRPORT
AIRPORT LAYOUT PLANS UPDATE

X51
Drawn by: CLJ
Checked By: JEK
Issue Date: DECEMBER 2017
Sheet: 15 of 16

Appendix C FAA Approval Letter for MDAD SMP Study GA 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.