QUINCY MUNICIPAL AIRPORT

AIRPORT MASTER PLAN

9/1/2021

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1 INTRODUCTION

The Quincy-Gadsden Airport Authority (QGAA) has prepared the Quincy Municipal Airport Master Plan update using funding provided by the Federal Aviation Administration (FAA) and through a collaborative partnership with the Florida Department of Transportation (FDOT). The purpose of this plan is to provide a comprehensive framework for safe, efficient, and environmentally compatible airport development at Quincy Municipal Airport (Airport) that meets the needs and objectives of QGAA, Airport users and tenants, and the surrounding Airport service area. This comprehensive plan helps to ensure the Airport meets state and federal standards in a cost-effective manner and provides a basis for continued state and federal investment.

1.1 VISION

Quincy Municipal Airport is a general aviation (GA) facility that supports the recreational needs of GA aircraft in the region. For the foreseeable future, the Airport envisions itself continuing to fulfill this important role. The Airport also envisions a steady increase in the number of its based aircraft and anticipates remaining a GA facility during the planning period.

1.2 MASTER PLAN GOALS AND OBJECTIVES

To maximize public benefit from an individual airport, focused local planning is needed to reflect current market conditions and the community environment of Quincy Municipal Airport. The QGAA developed the Master Plan in coordination with federal and state agencies, local officials, and interested Airport users and stakeholders. The Master Plan considers Airport needs over a 20-year planning period, including a short-term horizon (five years), an intermediate horizon (10 years), and a long-term horizon (20 years).

This Master Plan evaluates the Airport's capabilities and role, forecasts future aviation demand, and plans for the timely development of new facilities to meet future demand. In this way, the Master Plan is a proactive document that identifies and plans for future facility needs before they arise. This ensures the QGAA can coordinate project approvals, design, finance, and construction in a timely manner.

1.3 BASELINE ASSUMPTIONS

Baseline assumptions used throughout the preparation of the Master Plan include:

- The Airport will continue to operate as a GA airport throughout the planning period.
- The Airport will continue to support only GA tenants.
- The Airport will remain under the ownership of QGAA.
- Considering the proximity of the airport to the Tallahassee Metropolitan Statistical Area (MSA), roughly 65 percent of the Airport's based aircraft and operations will originate from Tallahassee/Leon County, FL.

1.4 PUBLIC INVOLVEMENT

Public involvement is an important aspect of any master planning process. The purpose of the public involvement process is to encourage information sharing between the airport sponsor and members of the

community, tenants, and other interested parites. The public is defined as anyone who has an interest in the airport whether it is as a user, tenant, employee, the FAA, other governmental agencies, elected and appointed officials, residents of the community, or passengers. For this master plan, there were three components of community involvement used:

- Updates at Board Meetings
- Project Committee
- Workshops/Public Meetings

1.4.1 BOARD MEETINGS

Throughout the life of the project, update presentations were given at the public board meetings. These presentations included status updates on the progress of the project and allowed for a consistent and intertive process to gather feedback from members of the board as well as Airport tenants and the public. The feedback and guidance received from these meetings has been built into the development of this Master Plan and they are fully represented in the Recommended Development Plan. Throughout the project, the following Airport board meetings were presented at:

- December 16, 2019 (taxiway alternatives discussed, board authorized design to FAA standards)
- February 11, 2020 (update on master plan and ALP)
- July 13, 2020 (update on master plan and ALP)
- August 10, 2020 (update on master plan and ALP)
- September 14, 2020 (update on master plan and ALP)
- October 19, 2020 (update on master plan and ALP and timing of submittals for FAA review)
- November 9, 2020 (update on progress – master plan put on hold for taxiway alignment determination)
- March 8, 2021 (master plan resumed and plan/schedule forward presented to board)
- April 12, 2021 (Discussion of draft submittal to FAA)
- May 10, 2021 (Comments from FAA presented to board)

1.4.2 PROJECT COMMITTEE

The project committee was composed of members who have a direct interest in the future of the Airport. Participants provided an array of opinions regarding development options. Five meetings were held throughout the life of this project:

- Project Kick-off – 3/18/2019 (see PPT in Appendix A)
- Project Update – 7/9/2019 (see PPT in Appendix A)
- Instrument Flight Procedure Assessment Meeting – 9/5/2019 (see PPT in Appendix A)
- Update Meeting to FAA on Taxiway Alternatives – 11/19/2019 (see meeting package in Appendix A)
- Project Update at Airport Fly-In – 10/20/2020 (meeting held outdoors due to COVID, no PowerPoint presentation given)

Please note that from March of 2020 through the end of the project, COVID severely impacted the ability to hold in-person meetings related to the master plan. Throughout this time, the project team gave frequent updates on the process at Airport Board meetings to ensure information was being distributed to a wide audience.

1.4.3 WORKSHOPS/PUBLIC MEETINGS

A public workshop was held on September 7th, 2019 at Quincy Airport to discuss proposed alternatives for taxiway design. To begin the meeting, a brief overview of the project was given by the project team to introduce the project to attendees. Following, there was an open house where attendees were able to review the proposed taxiway layouts. Attendees were able to provide comments on the proposed development in order to guide the direction of the master plan. Based on the discussion and the comments received, attendees were almost evenly split on the preferred taxiway alignment. Based on this feedback, the Airport Board directed the project team to pursue discussions with the FAA and FDOT to determine if a modification of standards couple be applied to develop a non-standard taxiway alignment. A copy of the presentation materials (three boards with alternative taxiway alignments) are provided in Appendix B.

A final workshop was held on August 23rd, 2021 to present the final master plan based on FAA and FDOT comments. An overall summary of the project was presented along with the preferred development options of the airport. To support this presentation, displays if the project recommendations were also provided for attendees to provide comments on. Following the presentation, no comments or changes were requested. A copy of the presentation is provided in Appendix B.

2 INVENTORY

The first step of the airport master planning process is to develop a thorough inventory of an airport's existing conditions. This information summarizes airport facilities and related information to establish a baseline for an evaluation of future needs. Data sources include site visits; stakeholder interviews; FAA and FDOT data; and existing plans, documents, and studies. The inventory data for Quincy Municipal Airport is organized as follows:

- Existing reports and studies
- Airport ownership
- Airport location and access
- Airport role
- Airport activity
- Airport facilities
- Air traffic, airspace structure, and approach capability
- Climate and meteorological conditions
- Socioeconomic data
- Land use and zoning
- Environmental conditions
- Recycling practices
- Financial data

2.1 EXISTING REPORTS AND STUDIES

The following studies have been reviewed and provide historical context for this master plan:

- Quincy Airport Layout Plan Update and Narrative (2010)
- Gadsden County Comprehensive Plan 2015-2025
- Capital Regional Transportation Planning Agency (CRTPA) Regional Mobility Plan 2040
- Airport Pavement Evaluation Report (2017)
- Quincy Airport Security Assessment (2019)
- FDOT Five-Year Work Program
- Joint Automated Capital Improvement Program (JACIP)

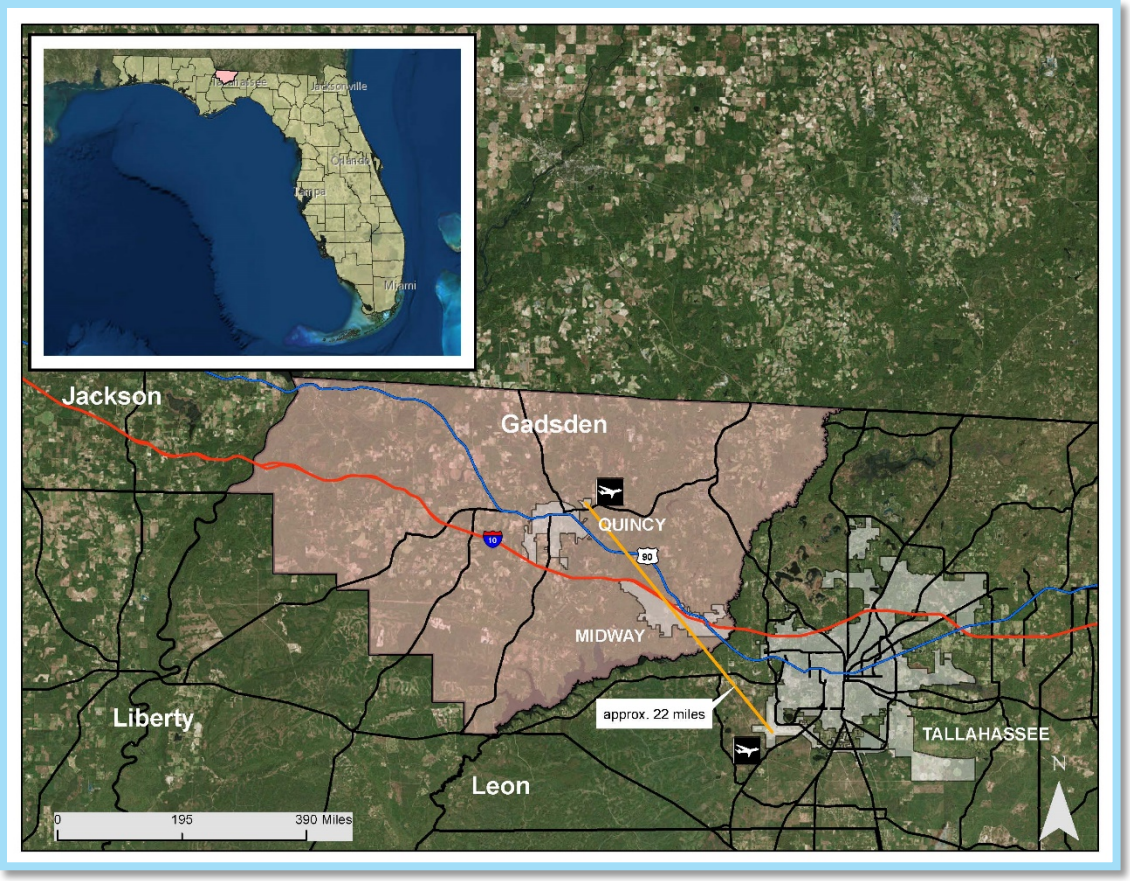
2.2 AIRPORT OWNERSHIP AND HISTORY

Quincy Municipal Airport is owned by Quincy-Gadsden Airport Authority, which was founded by state legislation in 1988. QGAA is comprised of two members appointed by Gadsden County, two members appointed by the City of Quincy, and one member appointed by the other four QGAA members. Each member serves a three-year appointment and is permitted to serve two consecutive appointments.

2.3 AIRPORT LOCATION AND ACCESS

Quincy Municipal Airport is located in Gadsden County, two miles northeast of the City of Quincy, as shown in Figure 1. The Airport is approximately 22 miles from Tallahassee International Airport (TLH), which itself is in a major metropolitan area.

Figure 1. Regional Airport Map



Source: ArcGIS, Kimley-Horn Analysis, February 2019

2.4 AIRPORT ROLE

Airports generally serve multiple functions and provide several community and economic benefits. Accordingly, ensuring that Quincy Municipal Airport has the necessary facilities to adequately support the various roles it may have in national, state, and regional air transportation systems is a vital aspect of this master planning effort.

The FAA and FDOT have a transportation system plan in place which classify airports based on their facilities and the markets airports serve. The Airport's role in the local/regional market is influenced by nearby airports, the City's ability to respond to market demands, and the operational needs of users. The following describes the various system roles and classifications of the Airport.

2.4.1 NATIONAL PLAN OF INTEGRATED AIRPORT SYSTEMS

The FAA's National Plan of Integrated Airport Systems (NPIAS) identifies airports that are important to the national air transportation system. The FAA uses the NPIAS to manage and administer the Airport Improvement Program (AIP) and support the FAA's strategic goals for safety, system efficiency, and environmental compatibility. The NPIAS classifies airports as one of the following roles within the national system:

- **Primary Commercial Service Airports.** Publicly owned commercial service (CS) airports that have more than 10,000 passenger boardings (known as enplanements) each calendar year and receive scheduled passenger service.
- **Nonprimary Commercial Service Airports.** Publicly owned CS airports that have at least 2,500 and not more than 10,000 enplanements each year.
- **Reliever Airports.** Airports designated by the FAA to relieve congestion at CS airports and to provide improved GA access to the overall community. These may be publicly or privately owned.
- **General Aviation Airports.** Airports included in the national system that are not categorized as CS or reliever airports are referred to as GA. Airports can be publicly or privately owned.

Recognizing the unique roles played by GA airports throughout the U.S., the FAA published a report titled *General Aviation Airports: A National Asset (ASSET)* in May 2012. The report documented the importance of the GA system and further categorized GA airports included in the NPIAS based on their general level of activity and operational characteristics shown in Table 1.

Table 1. ASSET Airport Categories and Criteria

ASSET Category (number of NPIAS airports)	Criteria (meets one of the minimum criteria for annual activity)
National (88): Supports national and state systems by providing communities with access to national and international markets in multiple states and throughout the U.S.	• 5,000+ instrument operations, 11+ based jets, and 20+ international flights or 500+ interstate departures • 10,000+ enplanements and at least one enplanement by a large certificate air carrier • 500+ million pounds of landed cargo
Regional (492): Supports regional economies, connecting communities to statewide and interstate markets	• In an MSA, 10+ domestic flights of 500 miles, 1,000+ instrument ops, and one or more based jet or 100+ based aircraft • Reliever with 90+ based aircraft
Local (1,278): Supplements local communities by providing access to intrastate and some interstate markets	• Publicly owned and 10+ instrument operations and 15+ based aircraft • Publicly owned and 2,500+ annual enplanements

ASSET Category (number of NPIAS airports)	Criteria (meets one of the minimum criteria for annual activity)
Basic (840): Provides basic aeronautical needs in local economy	• Publicly owned with 10+ based aircraft (or four or more based helicopters if a heliport) • Publicly owned and located 30+ miles from nearest NPIAS airport • Owned by or serving a Native American community • Identified and used by U.S. Forest Service, U.S. Marshall Services, U.S. Customs and Border Protection, or U.S. Postal Service or provides Essential Air Service • Publicly owned new or replacement airport that has opened within the last 10 years • Unique circumstances related to special aeronautical use

Source: General Aviation Airports: A National Asset (ASSET). May 2012. Federal Aviation Administration

Quincy Municipal Airport is currently included in the NPIAS and is identified as a Local GA airport. The NPIAS describes "Local" airports as a "critical component of our general aviation system, providing communities with access to local and regional markets."

2.4.2 FLORIDA AVIATION SYSTEM PLAN 2035

The Florida Aviation System Plan (FASP) 2035 is a long-term strategic plan that comprehensively assesses Florida's aviation system to understand relationships between facilities and users. The FASP also evaluates the existing system's ability to accommodate current and anticipated future demand. This evaluation helps FDOT implement strategic plans, policies, and priorities that enhance Florida's aviation system. The system includes all existing public-use airports that are owned and operated within the state and those public-use airports which will be developed and made operational in the future.

The FASP classifies Quincy Municipal Airport as a publicly owned, public-use airport. Publicly owned, public-use airports are owned by counties, municipalities, or a special district (e.g., airport authority). Many of these facilities were originally military installations that the U.S. government transferred to local agencies. Several publicly owned, public-use airport sponsors have accepted state and/or federal grant funding for new construction, maintenance, or other airport improvements. Acceptance and use of such grants are coupled with certain assurances, one of which is a requirement that the airport continue to be operational for a specified duration as determined by the FAA. This duration is typically 20 years after the acceptance and use of grant funding.

2.5 AIRPORT ACTIVITY

The following is a brief description of historical activity at Quincy Municipal Airport, including aircraft operations and based aircraft. Historical activity data can facilitate the identification of trends that may impact future activity.

Historical data for the Airport is based on data included in the Florida Aviation Database (FAD) and Terminal Area Forecast (TAF) and provided by Airport management. Although both operations and based aircraft are important metrics for establishing activity at an airport, for Quincy Municipal Airport, based aircraft are much more important. As a GA reliever for the Tallahassee MSA, the Airport has 79 based GA aircraft, far more than normally expected at an airport of its size.

2.5.1 AIRCRAFT OPERATIONS

The annual number of aircraft operations at an airport is a common measure of airport activity. An aircraft operation is either a departure (take-off) or an arrival (landing). A touch-and-go operation, where an aircraft lands and takes-off without exiting the active runway, counts as two operations.

There are several ways to categorize aircraft operations. One category classifies an operation as either *itinerant* or *local* in nature. Itinerant operations are those conducted by aircraft arriving from, or departing to, an area beyond the airport's local traffic pattern. Local operations are those conducted within the local traffic pattern. Touch-and-go training is an example of local activity, if the training originates from the airport.

The nature of the operator further categorizes aircraft activity. Itinerant (transient) aircraft operations are categorized as one of the following: air carrier, air taxi, GA, or military. Local operations are categorized as either GA or military.

Without the presence of an air traffic control tower (ATCT), it is difficult to capture a precise count and categorization of aircraft operations. Like most GA airports, Quincy Municipal Airport must rely on activity estimates from the FAA, FDOT, and Airport management. Historical estimates reported by the FAA's TAF are shown in Table 2.

Table 2. Historical Aircraft Operations at Quincy Municipal Airport

Year	Itinerant Operations			Local Operations	Total Operations
	Air Taxi	General Aviation	Military	General Aviation	
2008	0	2,184	0	4,056	6,240
2009	0	2,184	0	4,056	6,240
2010	0	2,184	0	4,056	6,240
2011	0	2,184	0	4,056	6,240
2012	0	2,184	0	4,056	6,240
2013	0	2,184	0	4,056	6,240
2014	0	2,184	0	4,056	6,240
2015	0	2,184	0	4,056	6,240
2016	0	2,184	0	4,056	6,240
2017	0	2,184	0	4,056	6,240
2018	0	2,184	0	4,056	6,240

Source: Terminal Area Forecast (TAF) Fiscal Years 2019-2039

2.5.2 BASED AIRCRAFT

The FAA defines a based aircraft as "an aircraft that is operational and airworthy, which is typically based" at an airport "for a majority of the year." Pilots store based aircraft in a hangar facility or tied down on an apron. The number and types of based aircraft at an airport can fluctuate as aircraft owners relocate and/or change the type of aircraft they own. Table 3 summarizes based aircraft at the Airport since 2010, sourced from the Florida Aviation Database (FAD). Airport management conducted a based aircraft inventory in 2018 which are also reflected in the table below. The 79 single-engine piston aircraft inventoried by Airport management were not officially registered in the National Based Aircraft Registry at the time of this plan.

Table 3. Historical Based Aircraft[1]

Year	Based Aircraft*	
	FAD	Airport-Reported
2010	65	N/A
2011	65	N/A
2012	65	N/A
2013	60	N/A
2014	49	N/A
2015	59	N/A
2016	49	N/A
2017	49	N/A
2018	49	79

**All based aircraft at Quincy Municipal Airport are single-engine piston.*
Sources: Florida Aviation Database, 2010-2017, Airport management

[1] Airport management reports 79 based aircraft since 2019. The FAA's reporting database has not yet been updated with current information at the time of this report.

2.6 AIRPORT FACILITIES

Most airport facilities at Quincy Municipal Airport can be grouped as airfield or landside. A site visit and follow up with Airport management identified all airport facilities listed below:

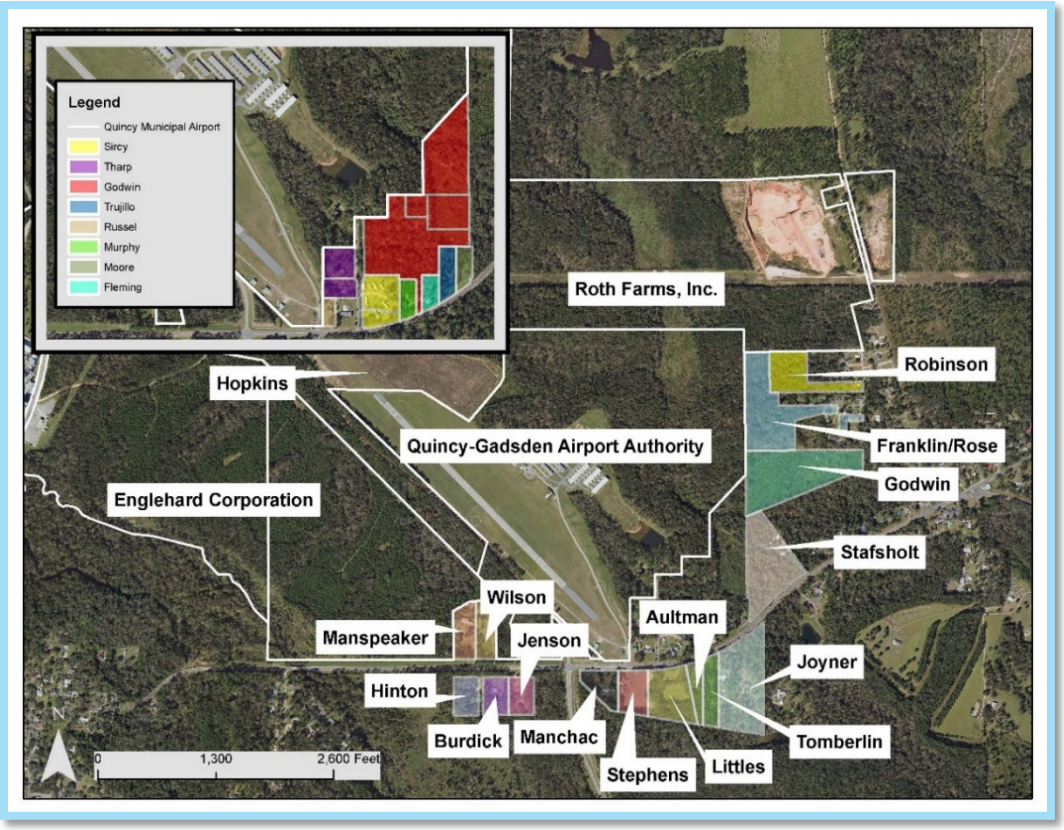
- Land Holdings (Airport Property)
- Airfield Facilities
  - Runway
  - Taxiway
  - Apron
  - Visual and Navigational Aids (NAVAIDS)
- Landside Facilities
  - Taxiway
  - Storage (Hangars and Tie-Downs)
  - Fuel
  - Terminal
  - Services
  - Ancillary/Support Facilities
  - Utilities
  - Vehicle Access, Circulation, and Parking
  - Fencing and Access (Airport Security)

These inventory categories are important components of airport infrastructure. Each component must itself provide sufficient capacity, while also seamlessly integrating with other infrastructure components. This allows the Airport to operate safely and efficiently, meet operational needs, and accommodate future demand.

2.6.1 LAND HOLDINGS

As shown in Figure 2, several property owners surround the Airport. Currently, there is a land use agreement with the Hopkins property owner on the northwest end (runway end 14) of the Airport, which serves as an aircraft overrun area, though physical development cannot be located on the property. The area to the southeast of the airport (off runway end 32) is owned by a variety of individual landowners. QGAA owns all 212 acres on which the Airport facilities are located.

Figure 2. Property Map and Land Holdings

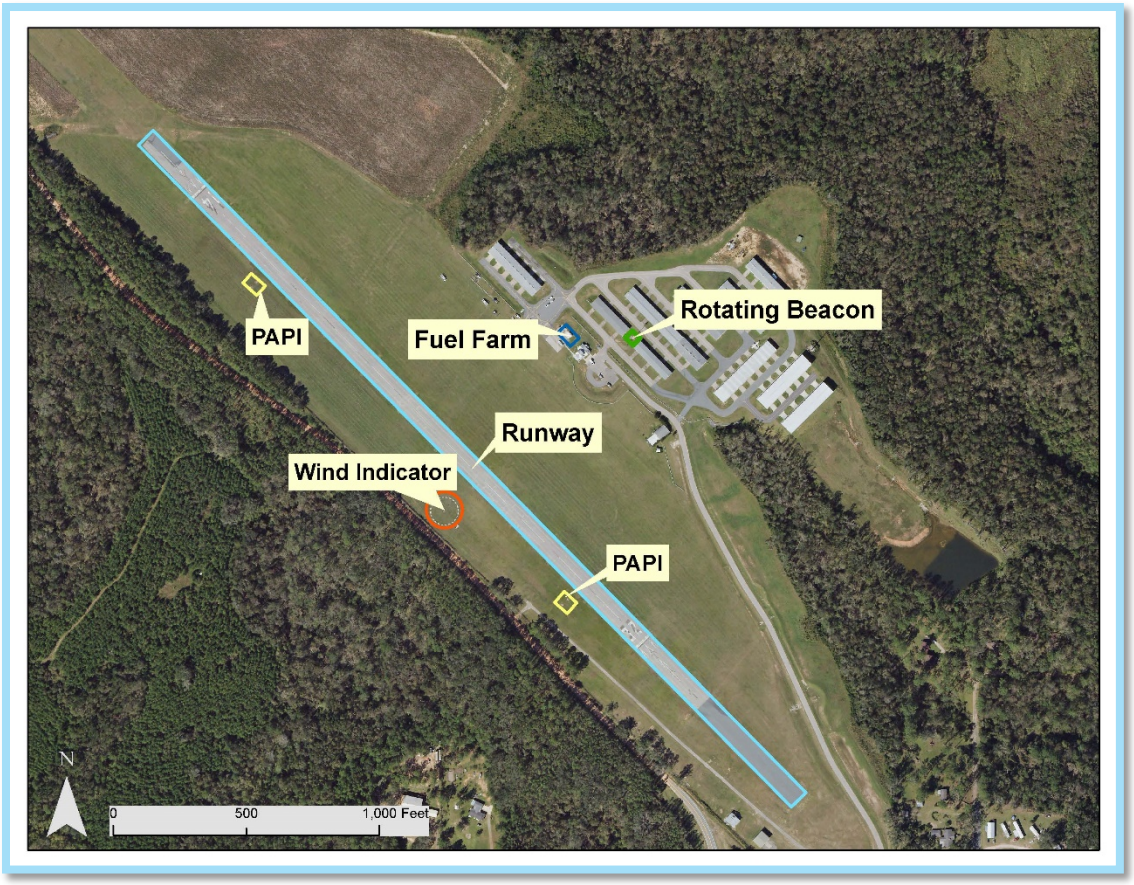


Sources: Gadsden County Property Appraiser, ArcGIS, Kimley-Horn Analysis, February 2019

2.6.2 AIRFIELD FACILITIES

Airfield facilities accommodate the takeoff and landing of aircraft and the movement of those aircraft about the airport (see Figure 3). Facilities include runways, taxiways, aprons, airfield lighting, NAVAIDS, and marking and signage.

Figure 3. Airfield Facilities



Source: ArcGIS, Kimley-Horn Analysis, January 2019

2.6.2.1 RUNWAY CHARACTERISTICS

Quincy Municipal Airport's single runway, Runway 14/32, is comprised of asphalt and is 2,974 feet long and 75 feet wide. The runway strength is rated for 20,000 pounds, single wheel. The runway has low intensity runway edge lights (LIRL), and both ends of the runway have runway end identifier lights (REIL). Pavement markings are in fair condition as shown in Figure 4. Pavement Condition Index (PCI) is an industry standard for measuring and rating airport pavements so maintenance and repair can be planned and implemented at the appropriate time during its lifecycle. PCI is expressed on a scale of 0 (failed pavement) to 100 (new pavement in perfect condition). As shown in Table 4, PCI at Runway 14/32 is 53.89, which is a "poor" condition. A graphic representation of the Airport's pavement condition index can be seen in Figure 5. Additionally, a pavement classification number (PCN) of 9/F/A/Y/T has been developed for Qunicy Municipal. The PCN is a standardized pavement reporting methodology that presents data on the pavement type, subgrade strength catgory, maximum allowable tire pressure, and the method of evaluation. PCNs are calculated based on both the current pavement conditions as well as the fleet mix of traffic that is present at the airport.

In addition to this paved runway, there is an unofficial turf alternative operating area located directly adjacent to the current runway that aircraft utilize. Though it is not an official airport facility, this alternative operating area will be discussed in the Alternatives Analysis of this master plan.

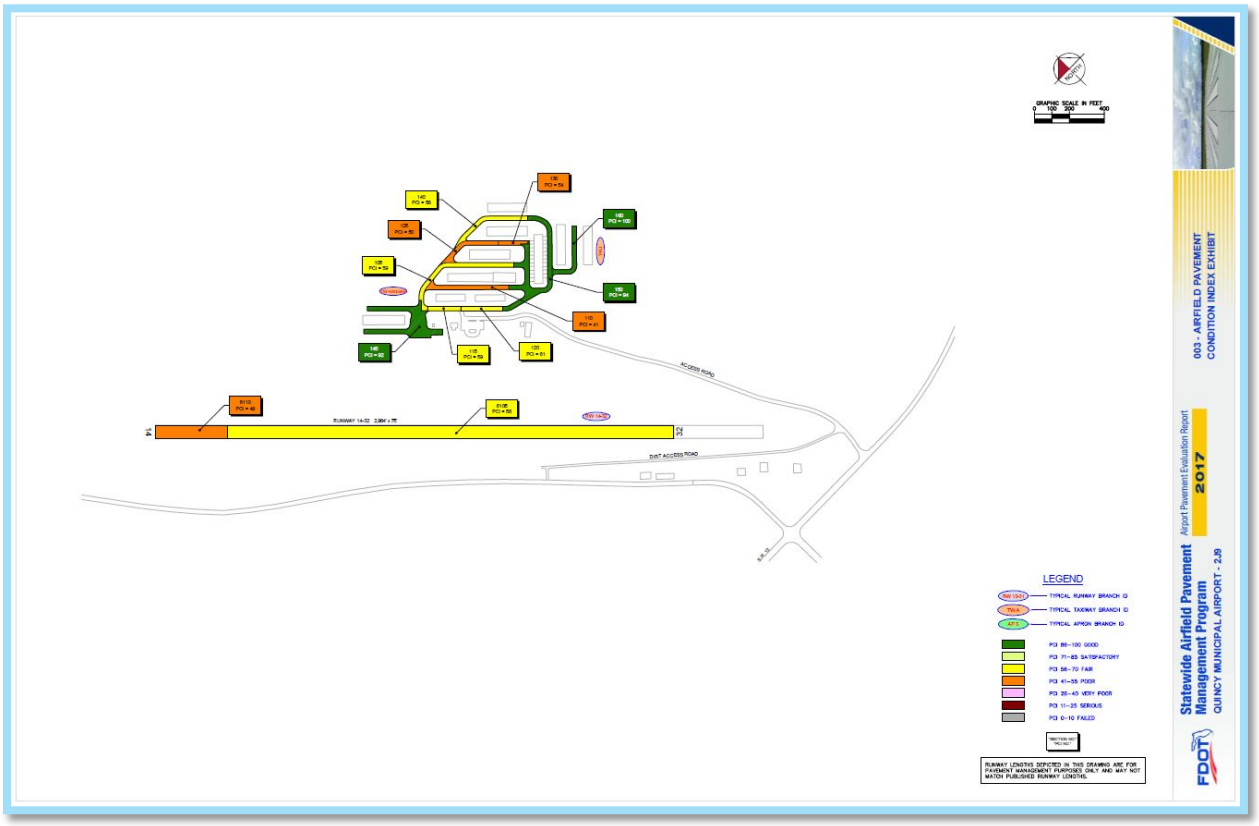
Table 4. Runway Data

Characteristic	Runway 14/32
Pavement Marking/Condition	• Centerline, edge marking, and runway designation number • Fair
Pavement Strength/Condition	• 20,000 lbs. • PCI: 53.89 • PCN: 9 /F/A/Y/T
Lighting	• LIRL • REIL

Source: Florida Aviation Database, 2018/2020

Figure 4. Runway Markings

Figure 5. Airfield PCI for Quincy Municipal Airport



Source: FDOT Airport Pavement Evaluation Report, 2017

2.6.2.2 PAVEMENT CLASSIFICATION NUMBER

FAA Advisory Circular (AC) 150/5335-5C defines the Pavement Classification Number (PCN) as "a number that expresses the load carrying capacity of a pavement for unrestricted operations." Each item in a PCN represents: PCN # / Pavement Type / Subgrade Category / Allowable Tire Pressure / Determination Method.

The numerical value indicates the load-carrying capacity of a pavement in terms of a standard single wheel load at a tire pressure of 181 psi. Pavement types are considered to function as either flexible or rigid structures. There are four standard subgrade strengths that can be identified for calculating and reporting PCN values: high, medium, low, and ultra low. Although the allowable tire pressure differs between the type of pavement, the codes are applied equally to both rigid and flexible pavement sections. As of March 2018, the PCN of the Airport's sole runway is 9/F/A/Y/T. Options for each item are shown in Table 5.

Table 5. PCN Items

PCN Number	Pavement Type	Subgrade Strength	Tire Pressure	Determination Method
Numerical Value	R – Rigid	A – High	W	T – Technical
	F – Flexible	B – Medium	X	U – Using Aircraft
		C – Low	Y	
		D – Ultra Low	Z	

Source: FDOT, PCN Evaluation Report, 2017

2.6.2.3 APRONS

Quincy Municipal Airport currently has no paved aprons. The Airport used grass tie-downs adjacent to the GA terminal building which is discussed in the subsequent section.

2.6.2.4 VISUAL AIDS AND NAVIGATIONAL AIDS (NAVIADS)

NAVAIDS assist pilots in locating an airport and safely maneuvering aircraft through landing and take-off in varying meteorological conditions. NAVAIDS also support the control and movement of aircraft on the airfield. NAVAIDs are any visual or electronic device, airborne or on the ground, that provide point-to-point guidance, position information, or operational data to aircraft in flight. Quincy Municipal Airport has the following NAVAIDS:

- Wind indicator (see Figure 6)
- Rotating weather beacon and AWOS (see Figure 7)
- Two Precision Approach Path Indicators (PAPIs) at each runway end (see Figure 8)

Figure 6. Wind Indicator

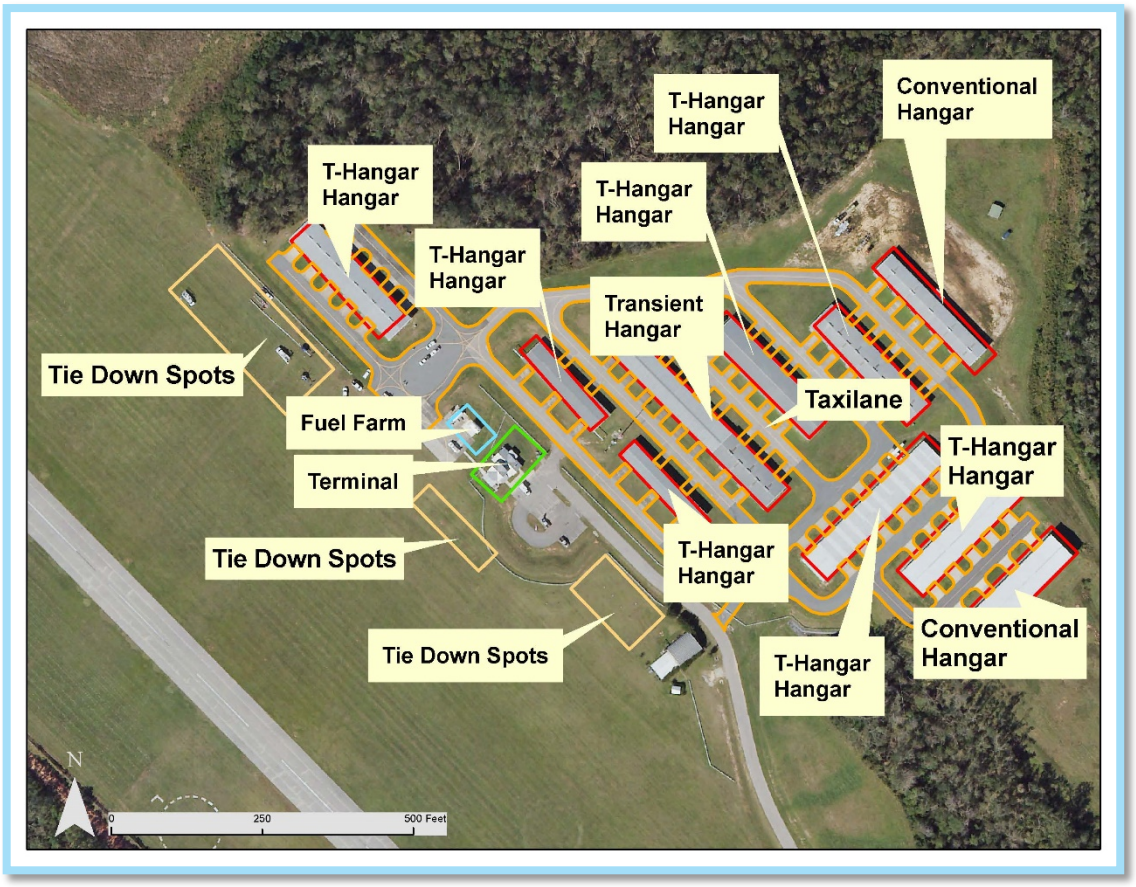
Figure 7. Rotating Beacon

Figure 8. PAPIs

2.6.3 LANDSIDE FACILITIES

Landside facilities are those outside of the runway/taxiway/apron environment that support aircraft, pilots, and passengers. GA facilities include storage (hangars and tie-downs), fuel, taxi lanes, services, terminals, and vehicle access and parking, as depicted in Figure 9.

Figure 9. Landside Facilities



Source: ArcGIS, Kimley-Horn Analysis, January 2019

2.6.3.1 TAXIWAY

There is no taxiway that leads to and from the runway to the airport facilities. However, there are taxi lanes that connect each of the 10 hangar units to each other (see Figure 10 and Figure 11).

Figure 10. Taxilane

Figure 11. Taxilane

2.6.3.2 STORAGE (HANGARS AND TIE-DOWNS)

Quincy Municipal Airport has 10 hangar units with full occupancy. Of the existing hangar units, the Airport has a mixture of T-hangars, shaded (transient) hangars, and conventional hangars (see Figure 12 and Figure 13). There are currently five aircraft on the waitlist to rent hangar space at the Airport. The Airport also provides outdoor tie-downs for transient pilots to secure their aircraft (see Figure 14).

Figure 12. Conventional Hangars

Figure 13. Shaded (Transient) Hangar

Figure 14. Tie-Downs

2.6.3.3 FUEL

Quincy Municipal Airport provides 100 low lead (LL) fuel through a 24-hour self-serve fuel pump near the Airport terminal. The fueling system includes a 12,000-gallon above-ground tank and the self-service pump (see Figure 15). Table 6 summarizes historical fuel sales at the Airport.

Figure 15. Fuel Farm

Table 6. Historic Fuel Sales at the Airport

Year	Avgas (gallons)
2012	55,500
2013	45,000
2014	45,500
2015	50,250
2016	43,750
2017	47,000
2018[2]	41,400
Total	**328,400**

Source: Airport management

[2] As a result of the fuel system replacement, fuel sales were lower in 2018.

2.6.3.4 TERMINAL

Quincy Municipal Airport owns the GA terminal adjacent to the vehicle parking area (see Figure 16). The terminal was updated in 2008 and provides space for basic pilot services and flight planning.

Figure 16. General Aviation Terminal

2.6.3.5 SERVICES

The Airport serves as the fixed-based operator (FBO) and provides basic pilot services. The Airport does not currently support flight instruction or a full-time flight training school. The Airport does support other activities, including aircraft maintenance services, airframe repairs, and power plant repairs.

2.6.3.6 ANCILLARY/SUPPORT FACILITIES

Support facilities are those that ensure an airport can operate properly. The Airport has minimal support facilities, including equipment to maintain grass in a tractor shed on-site.

2.6.3.7 UTILITIES

Utilities at an airport help support airport facilities, such as an airport terminal, and facilitate aviation and non-aviation development. Quincy Municipal Airport has utilities connections all over the airport. Table 7 summarizes available utilities and providers at the Airport.

Table 7. Quincy Municipal Airport Utilities

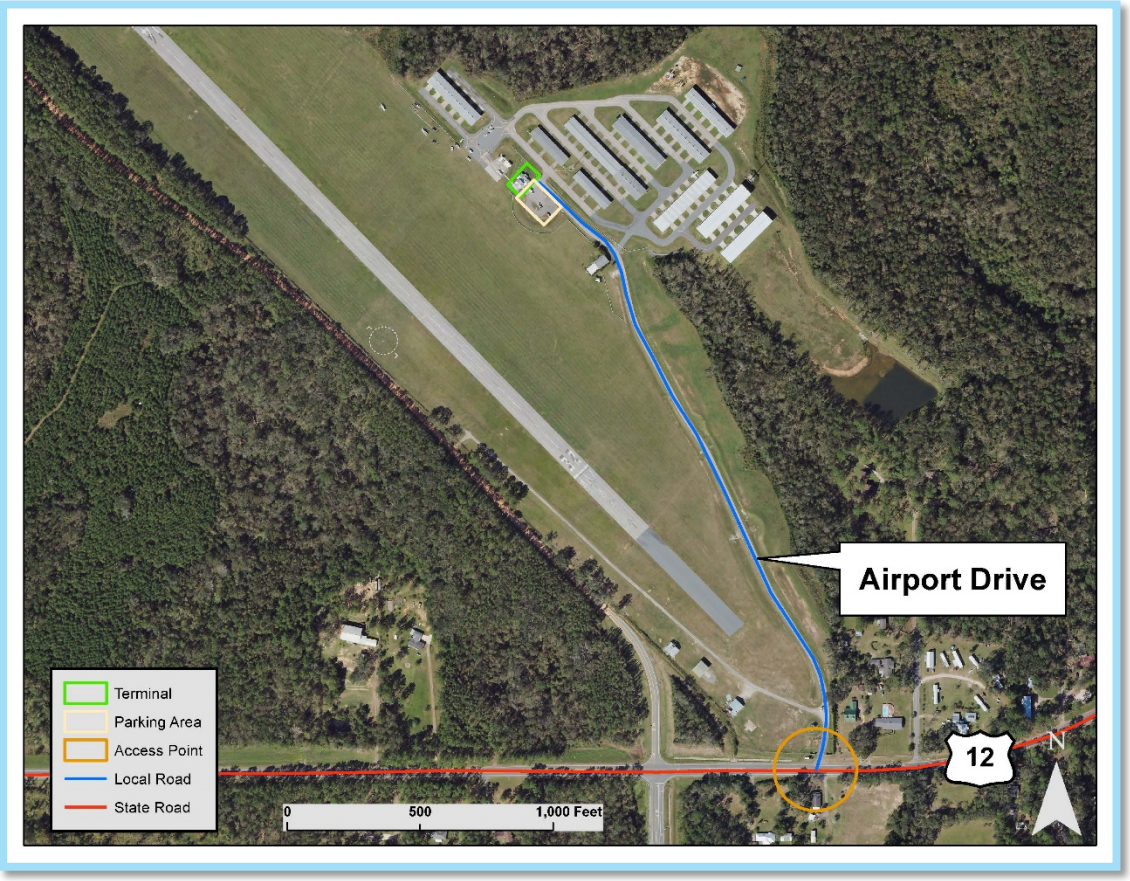
Utility	Provider
Electricity	City of Quincy, Florida
Potable Water	City of Quincy, Florida
Sanitary Sewer	Septic
Solid Waste	Septic
Telephone	TDS Telecom
Internet	TDS Telecom

Source: Airport Management

2.6.3.8 VEHICLE ACCESS, CIRCULATION, AND PARKING

Vehicle control at an airport is important, as it prevents unlawful and dangerous incursions into the air operations area (AOA) and facilitates a user's experience. The Airport has one controlled vehicle access point (see Figure 17). The main access point, on Airport Drive, is on the east side of the Airport, near the GA terminal. The main access point has partial security chain-link fencing. The Airport has designated parking spots for tenants, employees, and visitors.

Figure 17. Vehicle Access



Source: ArcGIS, Kimley-Horn Analysis, February 2019

2.6.3.9 FENCING AND ACCESS (AIRPORT SECURITY)

FDOT conducted a security assessment at Quincy Municipal Airport in 2018. This assessment provides the Airport various recommendations based on the outcome of the report. The security assessment recommended that the Airport remove vegetation that has encroached upon areas around the perimeter fence, causing the fence to become damaged and needing repair. The report also recommended improved access control at the main, and only, access point to the airport by consistently securing the electric vehicle gate.

2.7 AIR TRAFFIC, AIRSPACE STRUCTURE, AND APPROACH CAPABILITY

The U.S. National Airspace System (NAS) is an integrated collection of controls, procedures, and policies implemented by the FAA to ensure the safe and efficient movement and control of aircraft during flight. The NAS is divided into various airspace classes to designate the level of air traffic control (ATC) service and operating rules for a given area. The following describes the airspace classification, aeronautical chart, approach and departure procedures, traffic patterns and conflicts, and noise abatement measures at the Airport.

2.7.1 AIRSPACE CLASSIFICATION

Through Federal Aviation Regulations (FARs), the FAA has developed airspace classifications to promote the safe and efficient movement and control of aircraft during flight and approach/departure procedures. Airspace is generally categorized as controlled, uncontrolled, or special use as defined below.

- **Controlled.** Airspace that is supported by ground-to-air communications, NAVAIDS, and ATC services. Controlled airspace is further divided into five different classes (A thru E). The classification of any airspace is determined by its location.
- **Uncontrolled.** All airspace that has not been designated as controlled or special use and within which an ATC has neither the authority nor the responsibility for control. All uncontrolled airspace is considered Class G.
- **Special Use.** Designated airspace where unique or hazardous situations require special attention and/or impose operating restrictions (e.g., military activities).

Within these categories, FARs Parts 71 and 73 establish specific airspace classifications that impose various requirements upon the operation of aircraft, including visibility minimums, cloud clearance, communication with the ATC, and specific aircraft equipment. The location and dimensions of these classification are based on the airport and type of activity supported. Table 8 provides detailed descriptions of each airspace classification and its relation to Quincy Municipal Airport. Figure 18 shows a graphical representation of airspace classifications. While there are airports that are near restricted areas, 2J9 is not near any restricted area, as depicted in Figure 19.

Table 8. Airspace Classification Summary

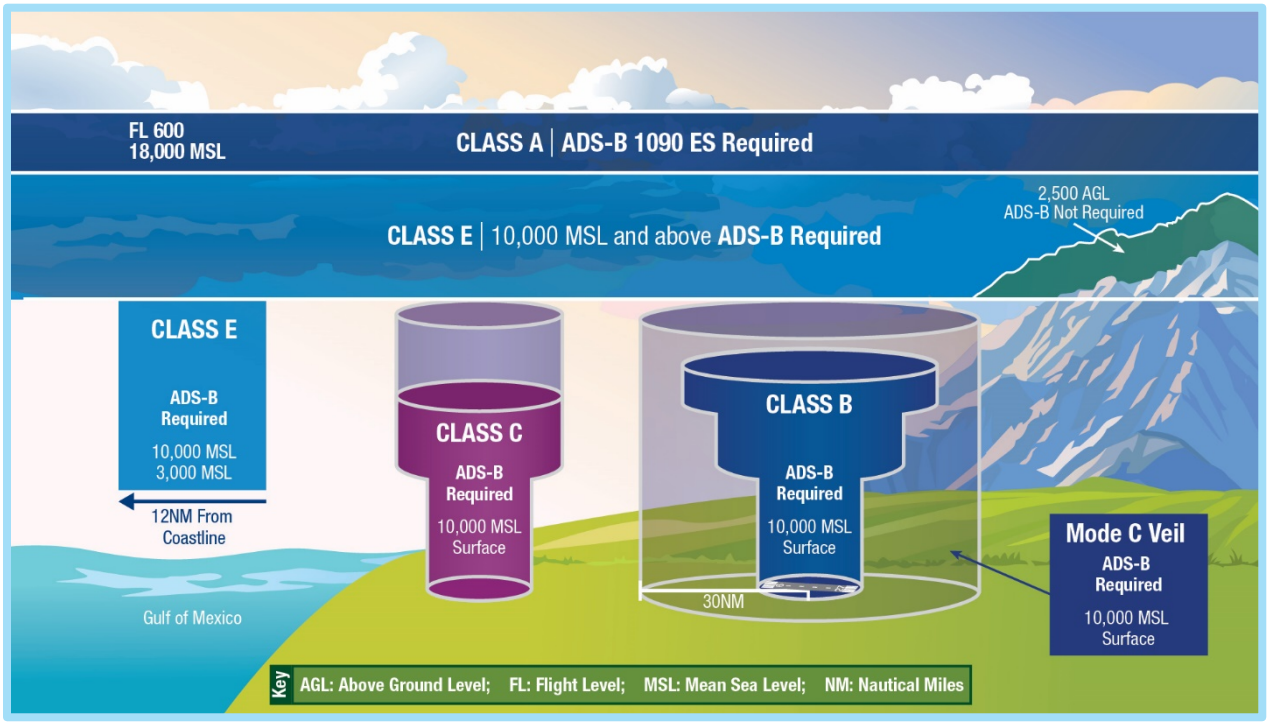
Airspace Classification	Definition	Applicability to Quincy Municipal Airport
Class A	Class A exists across the entire U.S. beginning at 18,000 feet above mean sea level (MSL) and extends to higher altitudes. FAR Part 71.193 designates this airspace for positive ATC control of aircraft. The Positive Control Area allows flights only operating under Instrument Flight Rules (IFR)[3] with a pilot who has an instrument rating; prior ATC permission is required.	Class A airspace exists above the Airport but generally does not affect operations.
Class B	Class B airspace is around major airports. Pilots must get permission to enter this airspace from the controlling agency, typically the Terminal Radar Approach Control (TRACON) facility associated with the airport and region.	Class B airspace does not exist near the Airport.
Class C	Class C airspace extends from the surface to 4,000 feet above the airport elevation. Although the configuration of each Class C airspace area is individually tailored, the airspace usually consists of a surface area with a five-mile radius and an outer circle with a one-mile radius that extends from 1,200 feet to 4,000 feet above the airport elevation. An aircraft must establish and maintain two-way radio communication with the controlling agency providing ATC services prior to entering the airspace.	Class C airspace surrounds Tallahassee International Airport, approx. 22 miles southeast of the Airport.
Class D	Class D airspace exists at any airport with an operating ATCT where Class B or Class C airspace does not exist. Class D airspace typically extends five miles from the airport to an altitude of 2,500 feet AGL. Pilots must establish two-way radio communication with the controlling agency, usually the ATCT, before entering this classification of airspace.	Class D airspace does not exist near the Airport.
Class E	Generally, if the airspace is not Class A, B, C, or D, and it is controlled airspace, it is Class E airspace. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. When designated as a surface area, the airspace will be configured to contain all instrument procedures.	The Airport is in Class E airspace.

[3] Instrument Flight Rules (IFR) is one of two sets of regulations governing all aspects of aircraft operations. The FAA defines IFR as, "rules and regulations established by the FAA to govern flight under conditions in which flight by outside visual reference is not safe. IFR flight depends upon flying by reference to instruments in the flight deck, and navigation is accomplished by reference to electronic signals." Visual Flight Rules (VFR) are a set of regulations under which a pilot operates an aircraft in weather conditions generally clear enough to allow the pilot to see where the aircraft is going. Specifically, the weather must be better than basic VFR weather minima, i.e. in visual meteorological conditions (VMC), as specified by the FAA. The pilot must be able to operate the aircraft with visual reference to the ground and by visually avoiding obstructions and other aircraft.

Airspace Classification	Definition	Applicability to Quincy Municipal Airport
Class G	Class G airspace is referred to as uncontrolled airspace and is not depicted on aeronautical charts. This classification of airspace comprises all airspace not identified as another class. IFR flights typically do not operate in Class G airspace, as no ATC services are provided. VFR flights are permitted if visibility and cloud clearance minimums are met.	Class G airspace does not exist near the Airport.
Restricted Areas	Restricted areas denote the existence of unusual, often invisible, hazards to aircraft. Examples include artillery firing, aerial gunnery, or guided missiles. Penetration of restricted areas without authorization may be extremely hazardous to the aircraft and its occupants.	The Airport is not near Military Operating Areas (MOAs).

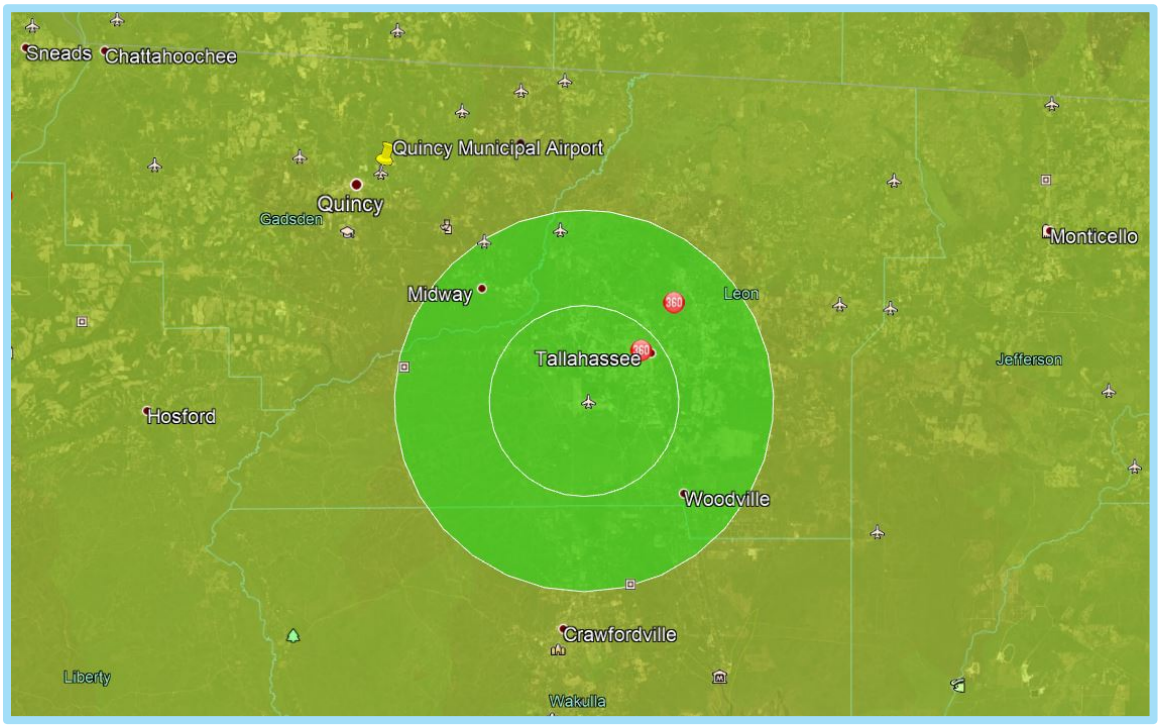
Source: Federal Aviation Administration

Figure 18. Graphical Representation of Airspace Classifications



FL- Flight Level, MSL-Mean Sea Level, AGL-Above Ground Level
Source: Federal Aviation Administration

Figure 19. Airspace Classification around Quincy Municipal Airport

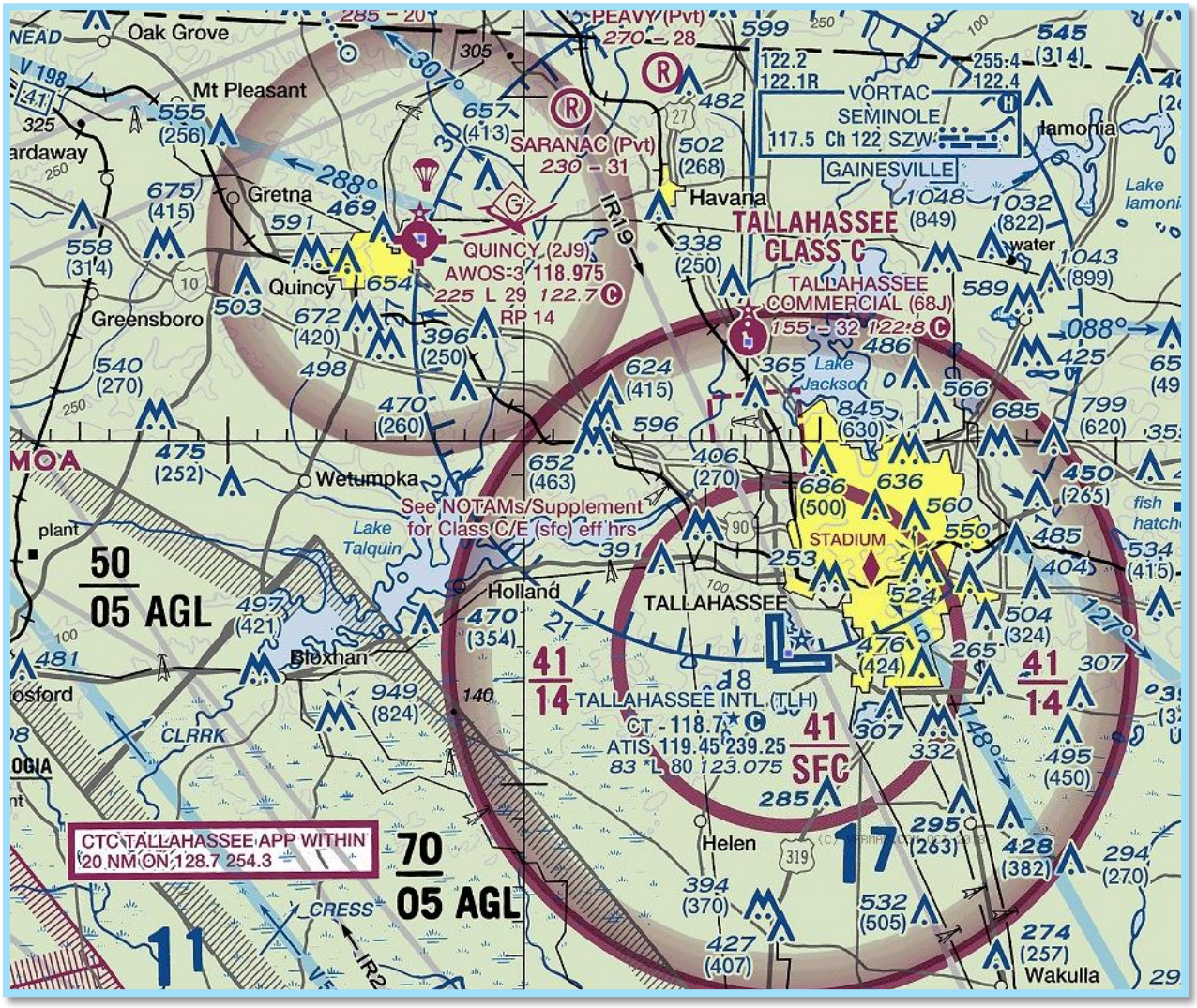


Source: Federal Aviation Administration ADS-B Coverage Map

2.7.2 AERONAUTICAL CHART

The FAA's National Aeronautical Charting Office (NACO) publishes aeronautical charts (or maps) that pilots use to navigate through the National Air System (NAS). These charts, known as sectional charts or sectionals, provide detailed information on airspace classes, navigation routes and systems, and radio frequencies. These charts also depict topographical features identifiable from altitude, such as terrain elevations, ground features, and landmarks, that are important to aviators. Figure 20 is the sectional chart for Quincy Municipal Airport, which shows that the airport has an elevation of 225 feet and is near the Tallahassee Class C airspace.

Figure 20. Section Chart



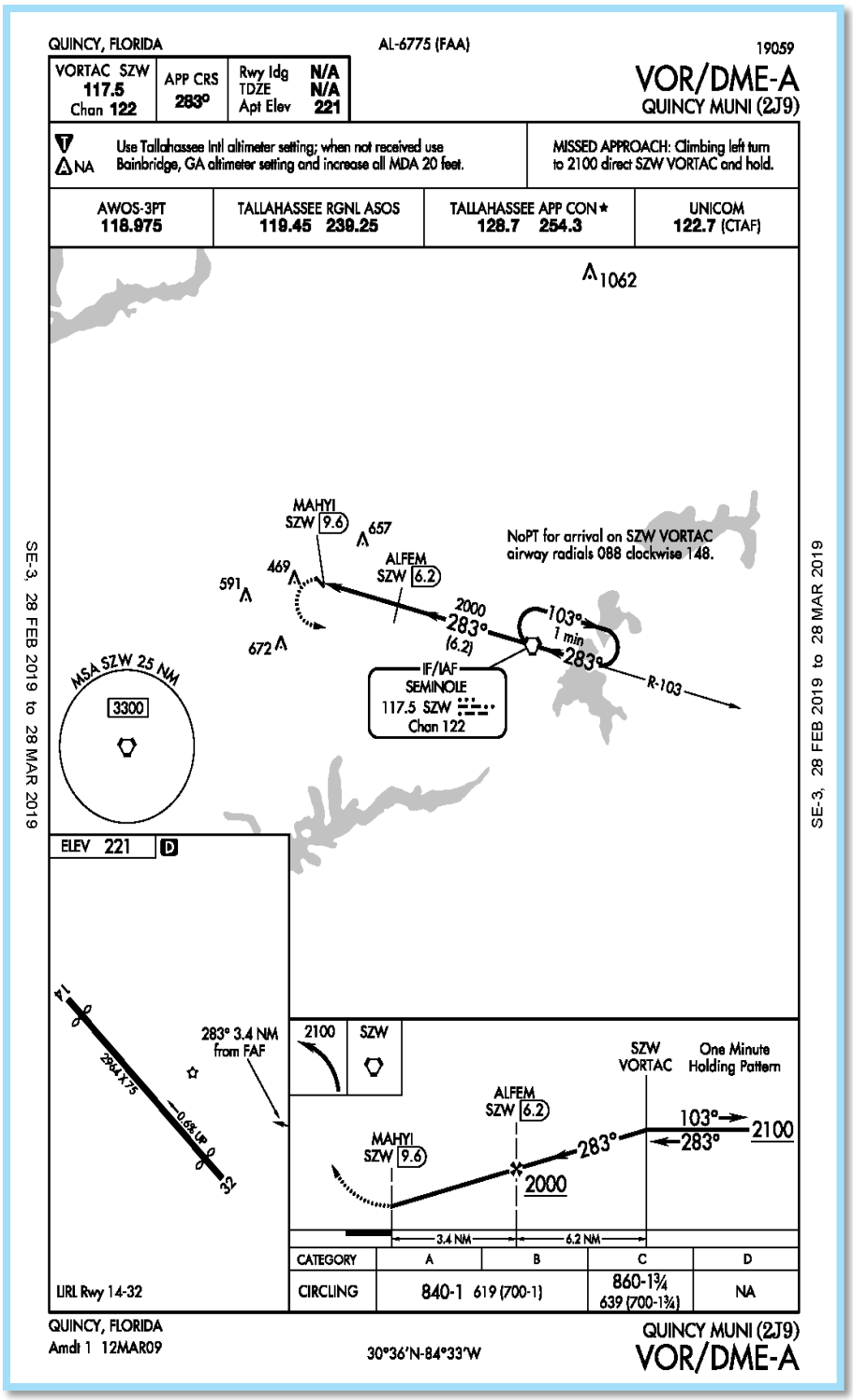
Source: Federal Aviation Administration

2.7.3 APPROACH AND DEPARTURE PROCEDURES

The ability of an approaching aircraft to land at an airport is predicated on weather conditions, the level of pilot training, the type of navigation equipment in the aircraft and on the ground, and any specific approach procedures established by the FAA. Under VFR conditions, pilots may approach an airport using only visual references to enter the traffic pattern and land. These are basic flight maneuvers that pilots can perform at all public-use airports.

Under IFR conditions, properly trained pilots with adequately equipped aircraft can follow FAA published instrument approach procedures (IAP) to land at an airport. An IAP is a series of predetermined maneuvers for guiding an aircraft from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually. Quincy Municipal Airport has visual approach capabilities; pilots follow a circling patter around the airport before landing, and when pilots take off from the airport, they make a left turn once they have left the runway as shown in Figure 21.

Figure 21. Quincy Municipal Airport Instrument Approach Capabilities



Source: Federal Aviation Administration

2.8 NOISE ABATEMENT MEASURES

One of the most prominent concerns for airport land use, particularly for neighboring residents, is aircraft noise. To address problems arising from aircraft noise, the FAA has adopted a set of noise exposure guidelines to examine the compatibility of land uses in and around an airport relative to existing and projected noise levels.

Table 9 summarizes these guidelines and specifies the level of noise exposure considered by the federal government to be acceptable for residential, public, commercial, manufacturing, production, and recreational land uses. The guidelines presented in Table 9 use a decibel-based (dB) measure of cumulative noise exposure called the Day-Night Average Sound Level (DNL or L_{dn}). DNL is the average noise level over any number of days. To reflect the added intrusiveness of nighttime noise events that result from community background noise levels decreasing at night (defined as 10 p.m. to 7 a.m.) those aircraft operations are artificially increased by 10 dB.

Generally, all land uses are acceptable in areas with noise exposure less than 65 DNL (i.e., beyond the limits of the 65 DNL contour). Residences, schools, churches, and other noise-sensitive land uses are considered non-compatible within the 65 greater DNL contour. Although incompatibility may be perceived by the surrounding community at lower average noise levels, or during a single-event higher noise level, the FAA recognizes the 65 DNL as the significant threshold.

The extents of noise exposure are modeled using a computer-based program known as the Aviation Environmental Design Tool (AEDT). The AEDT identifies contours of the forecasted daily sound levels around the airfield using aircraft operation counts, the flight paths and profiles, and noise and performance information. Development around Quincy Municipal Airport does not warrant a noise study or noise contours at this time.

Table 9. Federal Guidelines for Aircraft Noise and Compatible Land Uses

Land Use	Yearly Day-Night Average Sound Level (L_{dn}) in Decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
Residential						
Residential, other than mobile homes and transient lodgings	Y	N (1)	N (1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N (1)	N (1)	N (1)	N	N
Public Use						
Schools	Y	N (1)	N (1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Government buildings	Y	Y	25	30	N	N
Transportation	Y	Y	Y (2)	Y (3)	Y (4)	Y (4)
Parking	Y	Y	Y (2)	Y (3)	Y (4)	N

Land Use	Yearly Day-Night Average Sound Level (L_{dn}) in Decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail-building materials, hardware and farm equipment	Y	Y	Y (2)	Y (3)	Y (4)	N
Retail trade, general	Y	Y	25	30	N	N
Utilities	Y	Y	Y (2)	Y (3)	Y (4)	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing, general	Y	Y	Y (2)	Y (3)	Y (4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y (6)	Y (7)	Y (8)	Y (8)	Y (8)
Livestock farming and breeding	Y	Y (6)	Y (7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y (5)	Y (5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts, and camps	Y	Y	Y	N	N	N
Golf courses, riding stables, and water recreation	Y	Y	25	30	N	N

Sources: Federal Aviation Administration Airports Desk Reference, 2007

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide an NLR of 20 dB; thus, the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation and closed windows yearround. However, the use of NLR criteria will not eliminate outdoor noise problems.
(2) Measures to achieve NLR 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
(3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
(4) Measures to achieve NLR 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal level is low.
(5) Land use compatible provided special sound reinforcement systems are installed.
(6) Residential buildings require an NLR of 25.
(7) Residential buildings require an NLR of 30.
(8) Residential buildings not permitted.

2.9 WEATHER CONDITIONS

Ceiling and visibility conditions at and around an airport play a major role in the airport's usage and operational efficiency. A ceiling is defined as the height above the ground or water of the base of the lowest layer of clouds covering more than half the sky. Low ceiling and/or poor visibility conditions limit the overall effective usage of an airport.

2.10 CLIMATE AND METEOROLOGICAL CONDITIONS

Climate and meteorological conditions affect operations at an airport, including aircraft take-offs and landings, the availability of airport services, and ease of access to airport facilities. According to the National Oceanic and Atmospheric Administration (NOAA), conditions at the Airport as are follows:

- The average annual observed temperature is 67.4°F
- In the hottest month (July), the normal maximum temperature is 90.9°F, and the normal average temperature is 80.7°F
- In the coldest month (January), the normal maximum temperature is 63.8°F, and the normal average temperature is 51.8°F

2.11 WIND COVERAGE

Wind speed and direction influence runway use, airfield capacity, and development decisions regarding runway orientation and length. Ideally, a runway is oriented with the prevailing wind, as landing and departing aircraft into the wind provides greater lift. FAA planning standards indicate that an airport should be capable of operating under allowable wind conditions at least 95 percent of the time. The 95 percent wind coverage is based on the crosswind not exceeding the following:

- 10.5 knots (12 mph) for small single-engine and light-twin aircraft
- 13 knots (15 mph) for the larger and heavier turboprop and medium jet type aircraft
- 16 knots (18.4 mph) for the larger corporate jet and narrow-body commercial aircraft

Wind conditions affect aircraft to varying degrees. Generally, the smaller the airplane, the more wind affects it, particularly crosswind components. Larger aircraft have a higher tolerance for crosswind than smaller aircraft due to their size, weight, and operational speed. When crosswinds exceed the allowable tolerance for the aircraft categories using the airport, the availability of a crosswind runway is highly desirable. Without one, arriving aircraft may need to divert to an alternate airport or wait for the wind conditions to change.

Table 10 summarizes wind coverage at Quincy Municipal Airport using AWOS information from Tallahassee International Airport[4], calculated using the FAA's Airport Design Tools, Windrose File Generator. Wind analysis results indicate the wind coverage of the existing runway orientation is above 95 percent using a 10.5 crosswind component. While it is not anticipated that the Airport will experience larger corporate or commercial aircraft, the 13 knot and 16 knot wind coverage is presented as informational only.

Table 10. Runway 14/32 Crosswind Coverage

Weather Class	10.5 kt (%)	13 kt (%)	16 kt (%)
All Weather	97.0	98.75	99.68
IFR	97.09	98.41	99.42
VFR	96.95	98.59	99.73

Source: Federal Aviation Administration Windrose File Generator, September 2020

2.12 SOCIOECONOMIC DATA

The relationship between socioeconomic factors and an airport's role and activity levels is vital for the master planning process for two primary reasons: 1) Socioeconomic data provides a baseline understanding of existing conditions in an airport's market area, and 2) Socioeconomic data informs aviation forecasts, since population, employment, and income are key indicators of aviation demand. Growth in these factors can represent economic vitality, which could increase and may be indicative of increased GA activity.

The following presents a comparative summary of socioeconomic data for the City of Quincy, Gadsden County, and the State of Florida. The data suggests that City and County growth is generally behind Florida's growth. This master plan will use and compare appropriate data from Tallahassee Metropolitan Statistical Area (MSA) in the forecasts section because socioeconomic data for the Airport is not completely representative of the potential growth at the Airport due to its proximity to the Tallahassee MSA. Airport management has also noted that roughly 65 percent of the Airport's based aircraft owners reside in Tallahassee/Leon County, FL.

Socioeconomic data for the City of Quincy are from the U.S. Census Bureau American Community Survey Five-Year Estimates. Socioeconomic data for the State of Florida and Gadsden County are from Woods & Poole Economics, Inc. (an independent firm that specializes in long-term county, statistical area, and state economic and demographic projections). The forecasting chapter presents forecasted socioeconomic data from Woods & Poole Economics, Inc.

[4] AWOS data from Tallahassee International Airport (TLH) is being used for this report. At the time of this report, Quincy Municipal Airport's AWOS was not reporting current data.

2.12.1 POPULATION

Florida and Gadsden County's population have grown by a compound annual growth rate (CAGR) of 1.41 and 0.38 percent, respectively, in the past five years, while the City of Quincy's population has decreased by over one percent. Table 11 summarizes population growth in Florida, Gadsden County, and the City of Quincy over the past five years.

Table 11. Population Summary

Year	Florida	Gadsden County	City of Quincy
2013	19,600,311	46,191	8,046
2014	19,893,297	46,281	8,022
2015	20,158,753	46,461	7,947
2016	20,443,113	46,675	7,743
2017	20,731,650	46,891	7,599
CAGR Change	**1.41%**	**0.38%**	**-1.42%**

Sources: U.S. Census Bureau American Community Survey Five-Year Estimates, 2017
Woods & Poole Economics, Inc.

2.12.2 TOTAL EMPLOYMENT

Historically, the percent of individuals employed has been greater in the State of Florida than it has been in Gadsden County or the City of Quincy. However, the unemployment rate in the state, the county, and the city has generally been decreasing over the past five years. Table 12 summarizes employment and unemployment in the three locations.

Table 12. Employment Summary

Year	Florida		Gadsden County		City of Quincy	
	Employment (%)	Unemployed (%)	Employed (%)	Unemployed (%)	Employed (%)	Unemployed (%)
2013	52.7	11.8	46.0	14.1	39.7	17.8
2014	52.7	10.9	44.6	13.1	37.2	19.4
2015	53.1	9.7	45.1	11.2	41.3	14.4
2016	53.6	8.4	44.5	9.6	42.4	10.6
2017	54.2	7.2	44.4	8.5	43.8	7.3

Source: U.S. Census Bureau American Community Survey Five-Year Estimates, 2017

2.12.3 EMPLOYMENT BY INDUSTRY

Educational services, healthcare, public administration, and construction comprise the greatest percentage of employment in City of Quincy. Retail trade, construction, educational services, and healthcare comprise the greatest percentage of employment in Gadsden County. Table 13 provides a breakdown of employment by industry.

Table 13. 2017 Employment by Industry

Industry	Gadsden County		City of Quincy	
	Estimate	Percent (%)	Estimate	Percent (%)
Agriculture, forestry, fishing and hunting, and mining	466	10.5	122	2.8
Construction	1,685	37.3	275	6.3
Manufacturing	620	14	110	2.5
Wholesale trade	370	8.3	43	1
Retail trade	1,843	41.5	142	3.2
Transportation and warehousing, and utilities	768	17.3	0	0
Information	327	7.4	52	1.2
Finance and insurance, real estate, and rental and leasing	550	12.4	27	0.6
Professional, scientific, management, administrative, and waste management services	1,180	26.6	201	4.6
Educational services, healthcare, social assistance	4,140	93.2	862	19.7
Arts, entertainment, recreation, accommodation, and food services	1,111	25.0	139	3.2
Other services, except public administration	606	13.6	194	4.4
Public administration	2,672	60.2	491	11.2
Total	**16,338**	**367.3**	**2,658**	**57.5**

Source: U.S. Census Bureau American Community Survey Five-Year Estimates, 2017

2.12.4 INCOME

Both mean household income and median household income are lower in the City of Quincy than Gadsden County and Florida. Additionally, the percent of individuals below the poverty line is higher in both the City of Quincy and Gadsden County than in Florida. Table 14 summarizes household income.

Table 14. 2017 Household Income

Household Income	Florida	Gadsden County	City of Quincy
Mean Household Income	$72,993	$50,733	$47,279
Median Household Income	$50,883	$39,830	$36,000

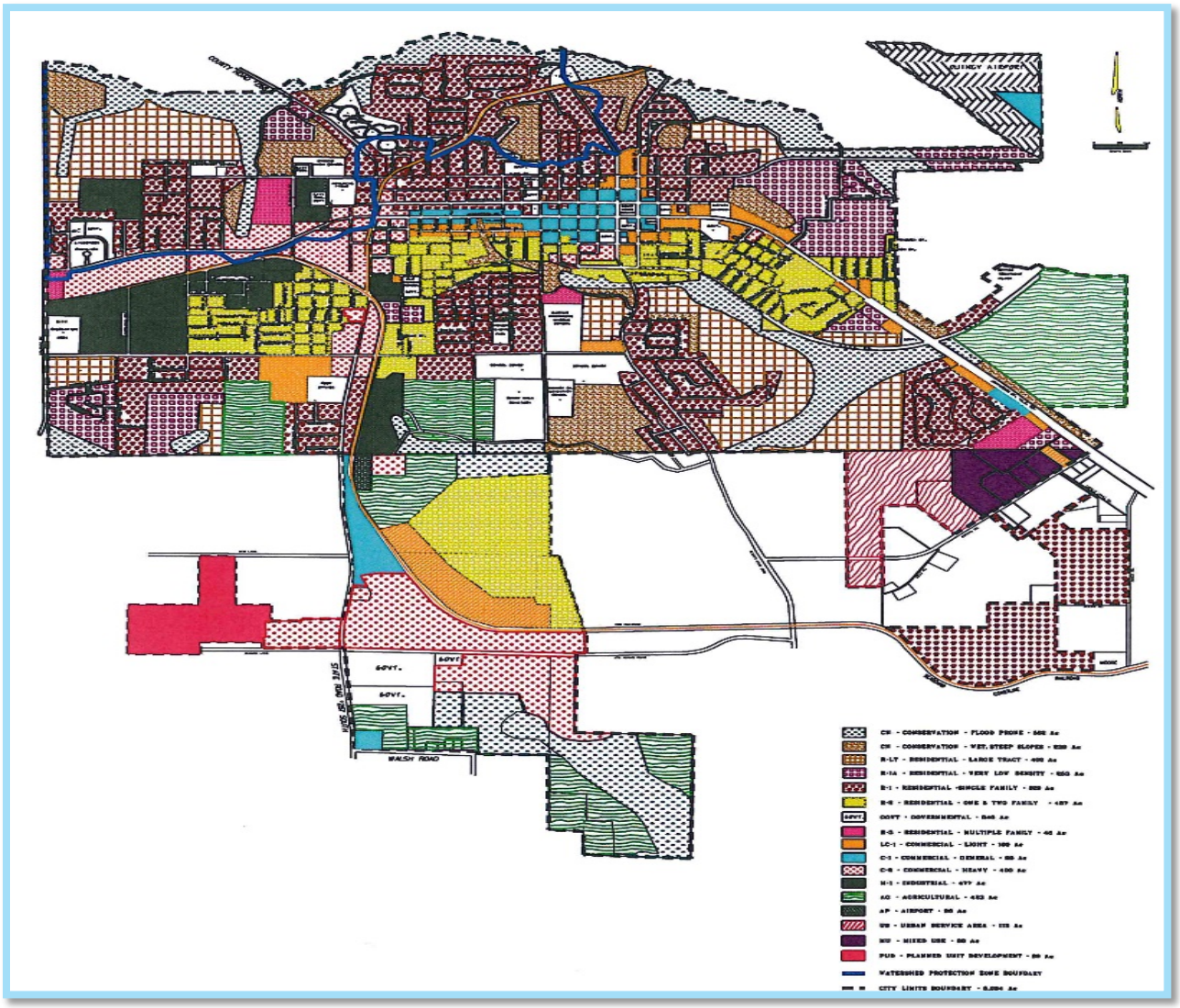
Source: U.S. Census Bureau American Community Survey Five-Year Estimates, 2017

2.13 LAND USE AND ZONING

The City of Quincy has zoning authority of the Quincy Municipal Airport property. Land around the Airport is zoned for very low-density residential. From the 2012 City of Quincy Zoning Map, the Airport is zoned as 'airport.' From the 2015 Gadsden County Future Land Use Map, the Airport's land use is 'municipal.' Quincy Municipal Airport Guiding zoning documents include:

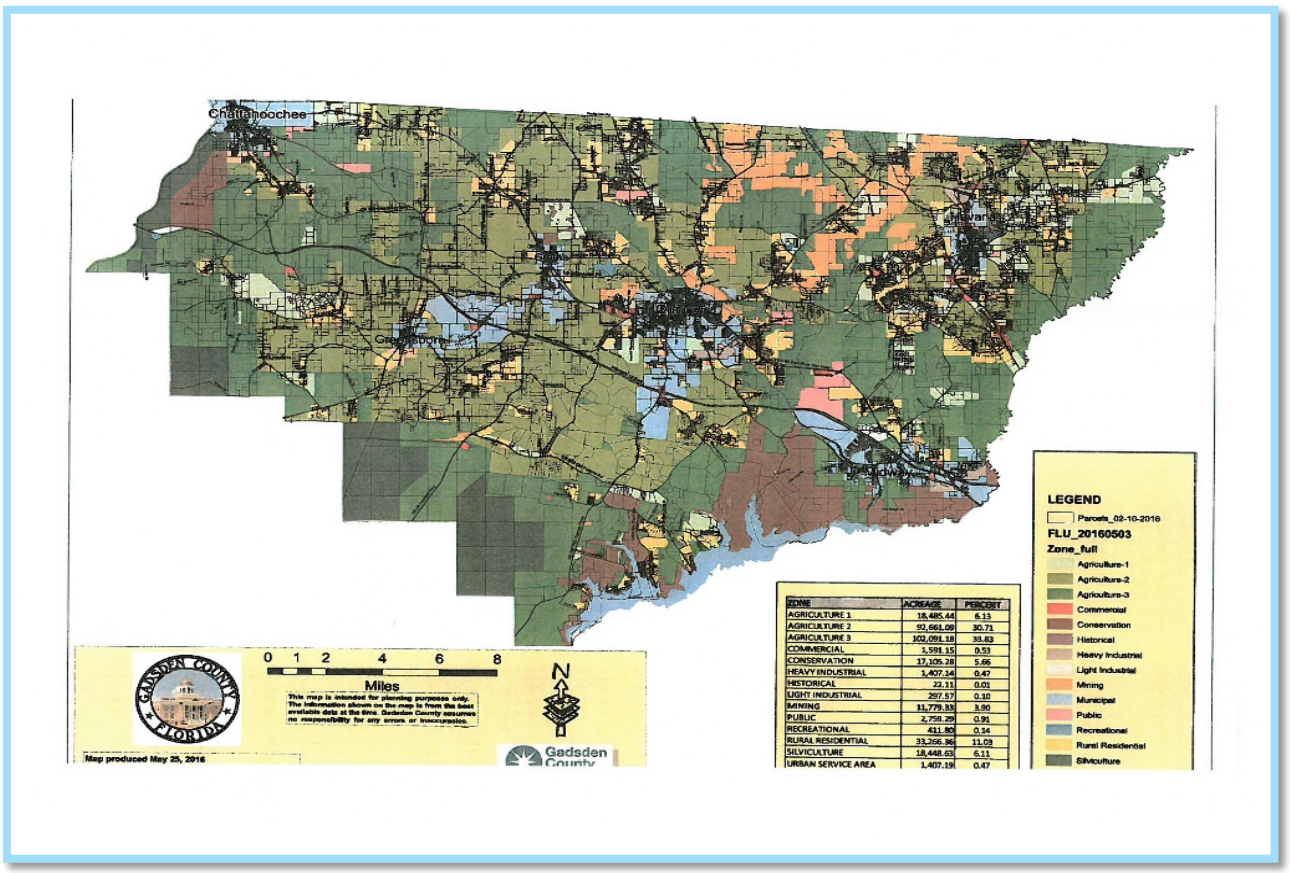
- City of Quincy Zoning Map, 2012 (see Figure 22)
- Gadsden County Future Land Use Map, 2015 (see Figure 23)

Figure 22. City of Quincy Zoning Map



Source: City of Quincy, Building and Planning Department, February 2019

Figure 23. Gadsden County Future Land Use Map



Source: Gadsden County, Growth Management, February 2019

2.13.1 FLORIDA STATUTES, TITLE XXV, CHAPTER 333: AIRPORT ZONING

Florida Statutes Chapter 333, "Airport Zoning", requires political jurisdictions to adopt, administer, and enforce airport land use compatibility zoning regulations. At a minimum, airport land use compatibility zoning regulations must address:

- Landfills
- Incompatible land uses within noise contours, when appropriate
- Residential and education land uses within the area contiguous to the airport, measuring half the length of the longest runway on either side of, and the end of, runway centerlines
- Incompatible land uses in general

Current zoning regulations for Quincy Municipal Airport are in Article 3, Division 4 of the City of Quincy Code of Ordinances. Relevant sections of the City of Quincy Code of Ordinances are copied below.

2.13.2 CITY OF QUINCY CODE OF ORDINANCES DIVISION 4 AIRPORT ZONING

(Ord. No. 789, art. II, § 12.05, 8-11-92)

Sec. 46-254. - Airport zones and airspace height limitations.

To carry out the provisions of this division, certain zones are created and established which include all the land lying beneath the approach, transitional, horizontal, and conical surfaces as they apply to a particular airport. Such zones are shown on the city airport zoning map, which is on file for inspection in the office of community development. An area located in more than one of the described zones are considered to be in the zone with the more restrictive height limitation. The various zones are defined as follows:

Primary Zone. The primary zone is an area longitudinally centered on a runway, extending 200 feet beyond each end of the runway with the width so specified for each runway for the most precise approach existing or planned for either end of the runway. No structure or obstruction shall be permitted within the primary zone that is not part of the landing and takeoff area facilities and is of a greater height than the nearest point on the runway centerline. The width of the primary zone is, for runway 14/32, 250 feet for utility runways having only visual approaches.

Horizontal Zone. The horizontal zone is the area around each civil airport with an outer boundary, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the primary zone of each airport's runway and connecting the adjacent arcs by lines tangent to those arcs. The radius of each arc is 5,000 feet for all runways designated as utility or visual. The height limitation for structures in the horizontal zone is 150 feet above established airport elevation.

Conical Zone. The conical zone is the area extending outward from the periphery of the horizontal zone for a distance of 4,000 feet. The height limitations for structures in the conical zone is 150 feet above airport height at the inner boundary, with permitted height increasing one foot vertically for every 20 feet of horizontal distance measured outward from the inner boundary to a height of 350 feet above airport height at the outer boundary.

Approach Zone. The approach zone is an area longitudinally centered on the extended runway centerline and extending outward from each end of the primary surface. An approach zone is designated for each runway based upon the type of approach available or planned for that runway end.

a. The inner edge of the approach zone is the same width as the primary zone, and it expands uniformly to a width of 1,250 feet for that end of a utility runway with only visual approaches.
b. The approach surface extends for a horizontal distance of 5,000 feet for all utility and visual runways.
c. The outer width of an approach zone to an end of a runway shall be that width prescribed in this subsection for the most precise approach existing or planned for that runway end.
d. The permitted height limitation within the approach zones is the same as the runway and height at the inner edge and increases with horizontal distance outward from the inner edge as follows: Permitted height increases one foot vertically for every 20 feet of horizontal distance for all utility and visual runways.

Transitional Zone. The transitional zone is the area extending outward from the sides of the primary zones and approach zones connecting them to the horizontal zone. Height limits within the transitional zone are the same as the primary zone or approach zone at the boundary line where it adjoins, and increases at a rate of one foot vertically for every seven feet horizontally, with the horizontal distance measured at right angles to the runway centerline and extended centerline until the height matches the height of the horizontal zone or conical zone, or for a horizontal distance of 5,000 feet from the side of the part of the precision approach zone that extends beyond the conical zone.

Other Areas. In addition to height limitations, no structure or obstruction shall be permitted that would cause a minimum descent altitude or a decision height to be raised.

2.14 ENVIRONMENTAL CONDITIONS

Environmental factors can influence how an airport develops and how airport development has the potential to impact environmental resources. In 1969, the U.S. Congress passed the National Environmental Policy Act (NEPA), which requires "federal government to use practicable means to create and maintain conditions under which man and nature can exist in productive harmony." Section 102 of NEPA further requires federal agencies to incorporate environmental considerations in their planning and decision-making processes. Due to the FAA's participation in airport planning and development projects, airport sponsors must incorporate environmental considerations into the master planning process.

FAA Order 1050.1E *Environmental Impacts: Policies and Procedures and the Associated Environmental Desk Reference for Airport Actions* describes the various environmental resources that must be taken into consideration. Though not evaluated to the level of detail required for official agency approval of proposed capital improvement projects, the following provides an overview of the environmental resources and considerations within the environs of Quincy Municipal Airport. This information will help identify and evaluate alternative development scenarios, which will ultimately lead to a recommended development program that is in concert with the community and environment. Further environmental evaluation and agency approval may be required for specific development projects prior to design and construction.

2.14.1 ENDANGERED SPECIES

Several statutes protect the fish, wildlife, and plant resources of the U.S., including the Fish and Wildlife Coordination Act of 1958, the Fish and Wildlife Conservation Act of 1980, the Migratory Bird Treaty Act (MBTA) of 1918, and the Endangered Species Act (ESA) of 1973. The federal government enacted the ESA, as amended, to provide a program for preserving endangered and threatened species and the ecosystems upon which they depend for survival. The ESA requires federal agencies, including the FAA, to implement protection programs for listed species and to use their authorities to further the purposes of the ESA.

The U.S. Fish and Wildlife Service (USFWS), in conjunction with the Florida Fish and Wildlife Commission, has jurisdiction over federal- and state-listed endangered and threatened species in Florida. The USFWS defines an endangered species as "a species in danger of extinction throughout all or a significant portion of its range." The USFWS defines a threatened species as "a species likely to become endangered within the foreseeable future throughout all or a significant portion of its range." Several threatened species and one known candidate species are known to be in areas near the Airport, but no critical habitats are within the property (see Table 15).

Table 15. Species Near Quincy Municipal Airport

Species List	Status
Wood Stork	Threatened
Eastern Indigo Snake	Threatened
Gopher Tortoise	Candidate

Source: U.S. Fish and Wildlife Service, March 2019

2.14.2 WATER RESOURCES

Water resources on or near an airport property impact airport development. In addition to the wildlife hazard risks associated with open sources of water, airport development can affect, or be affected by, wetlands, floodplains, and water quality concerns. The following describes the water resources near Quincy Municipal Airport and any related concerns.

Executive Order (EO) 11988 directs federal agencies to "take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health and welfare, and restore and preserve the natural and beneficial values served by floodplains." Department of Transportation (DOT) Order 5650.2, Floodplain Management and Protection, contains DOT's policies and procedures for implementing the executive order.

The executive order and the DOT order establish a policy to avoid taking action within a 100- year floodplain, where practicable. The Federal Emergency Management Agency (FEMA) is responsible for mapping the extents of floodplain areas and assessing flood risk in support of the National Flood Insurance Program for the U.S. As shown in Figure 24, Zones A and AE represent Special Flood Hazard Areas that are subject to inundation by one percent annual chance flood. Those structures that are located within the

special flood hazard have a 26-percent chance of flooding during the life of a standard 30-year mortgage (see Table 16). Only a portion of Quincy Municipal Airport property is in a Zone A.

Table 16. Special Flood Hazard Areas – High Risk

Zone	Description
A	Areas subject to inundation by the 1-percent-annual-chance flood event. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown.
AE, A1-A30	Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. BFEs are shown within these zones. (Zone AE is used on new and revised maps in place of Zones A1–A30.)
AH	Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually areas of ponding) where average depths are 1–3 feet. BFEs derived from detailed hydraulic analyses are shown in this zone.
AO	Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are 1–3 feet. Average flood depths derived from detailed hydraulic analyses are shown within this zone.
AR	Areas that result from the decertification of a previously accredited flood protection system that is determined to be in the process of being restored to provide base flood protection.
A99	Areas subject to inundation by the 1-percent-annual-chance flood event, but which will ultimately be protected upon completion of an under-construction federal flood protection system. These are areas of special flood hazard where enough progress has been made on the construction of a protection system, such as dikes, dams, and levees, to consider it complete for insurance rating purposes. Zone A99 may be used only when the flood protection system has reached specified statutory progress toward completion. No BFEs or flood depths are shown.

Source: Federal Emergency Management Administration

Figure 24. Waterbodies and Flood Zones

Source: Federal Emergency Management Administration, ArcGIS, Kimley-Horn Analysis, March 2019

2.15 WETLANDS

Wetlands provide a multitude of ecological, economic, and social benefits. For instance, wetlands provide habitat for fish, wildlife, and plants (many of which have a commercial or recreational value), recharge groundwater, reduce flooding, provide clean drinking water, help regulate the climate, offer food and fiber, and support cultural and recreational activities. Wetlands and the jurisdictional "Waters of the U.S." are protected under Sections 401 and 404 of the Clean Water Act (CWA) and EO 11990, Protection of Wetlands. Federal agencies that regulate impacts on water resources within Florida include the U.S. Army Corps of Engineers (USACE), the USEPA, and the USFWS. The USACE is the primary regulatory authority enforcing Section 404 requirements.

Section 404 of the CWA regulates the discharge of dredge and fill material into U.S. waters and wetlands. Dredge and fill material include fill for infrastructure development and the conversion of wetlands to uplands. According to the Section 404(b)1 guideline, project proponents must avoid and minimize impacts to U.S. waters and wetlands at the project site to the maximum extent practicable. For those impacts that are determined to be unavoidable, compensatory mitigation may be required either through regional conditioning or on a case-by-case basis. Mitigation could include replacement, purchasing credits in a wetland mitigation bank, or an in-lieu fee. Figure 25 shows that wetlands are on Airport property.

Figure 25. Wetlands Map

Source: U.S. Fish and Wildlife Service, ArcGIS, Kimley-Horn Analysis, March 2019

2.16 STORM WATER MANAGEMENT

Quincy Municipal Airport currently has a storm water management system in place which monitors the quality of storm water runoff at the airport. A Storm Water Master Plan was completed in May 2010.

2.17 SEA LEVEL RISE

The National Oceanic and Atmospheric Administration's (NOAA) Sea Level Riser Viewer demonstrates that Quincy Municipal Airport is not vulnerable to sea level rise.

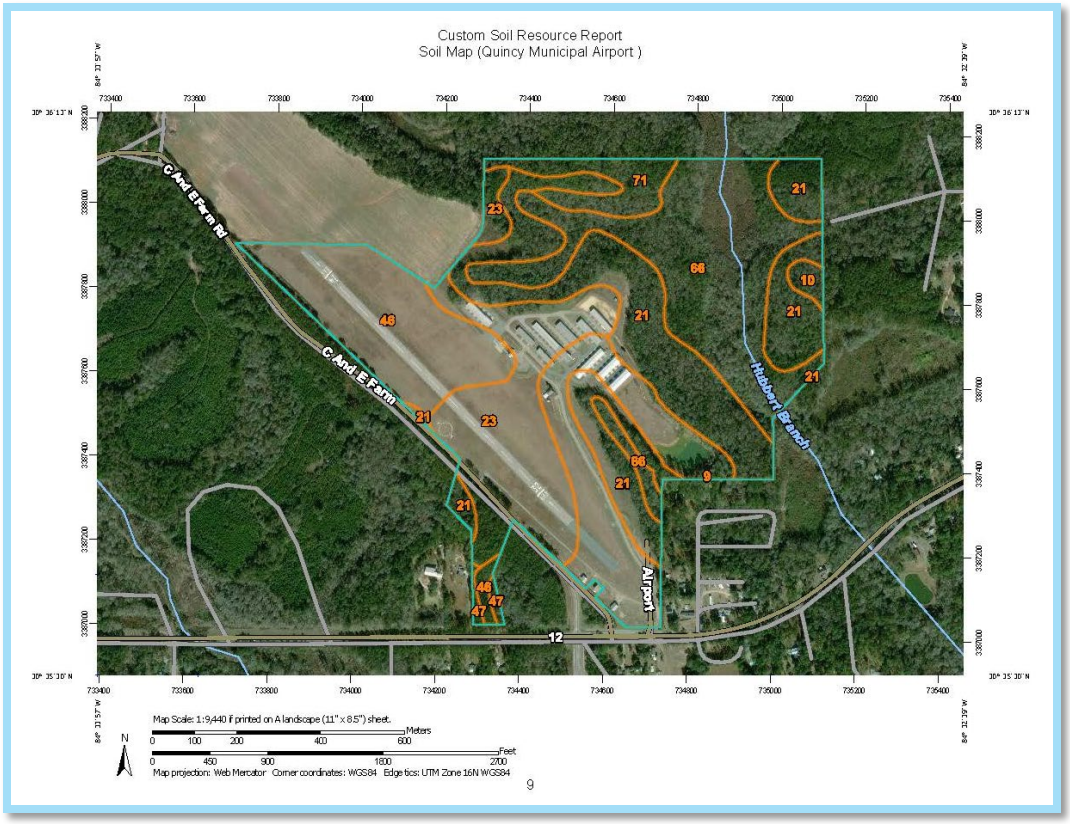
2.18 FARMLAND

The Farmland Protection Policy Act (FPPA) of 1981 authorizes the U.S. Department of Agriculture (USDA) to minimize federal programs' contribution to unnecessary and irreversible conversion of farmland to nonagricultural uses. Prime farmland, as defined by the USDA, is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor and without intolerable soil erosion. There are similar classifications for unique farmlands, farmlands of state importance, and farmlands of local importance. According to the FPPA (PL 90-542), lands already committed to urban development or water storage do not meet the definition of prime or unique farmland.

In conjunction with the State of Florida, the USDA Natural Resource Conservation Service (NRCS) has jurisdiction over farmlands in Florida. The USDA-NCRS online Geographical Information System (GIS) classifies most of the Airport property as "Not Prime Farmland." As depicted in Figure 26, farmlands on Airport property include:

- 9: Bonifay-Alpin complex, 0 to 5 percent slopes
- 10: Bonifay-Albany-Centenary complex, 0 to 5 percent slopes
- 21: Dothan-Fuquay-Cowarts complex, 0 to 5 percent slopes
- 23: Fuquay-Lucy-Orangeburg complex, 0 to 5 percent slopes
- 46: Orangeburg loamy sand, 2 to 5 percent slopes
- 47: Orangeburg-Tifton-Norfolk complex, 5 to 8 percent slopes
- 66: Pickney, Dorovon, and Bibb soils, frequently flooded
- 71: Cowarts-Nankin complex, 2 to 5 percent slopes

Figure 26. USDA Prime Farmlands



Source: National Resources Conservation Service, February 2019

2.19 HISTORIC PLACES

The National Historic Preservation Act (NHPA), as amended, provides for the preservation of cultural resources eligible for inclusion in the National Register of Historic Places (NRHP). Section 106 of the NHPA directs heads of federal or independent agencies that have direct or indirect jurisdiction over a federal, or federally assisted, undertaking to "consider the effect on any district, site, building, structure, or object that is included in or eligible for the inclusion in the National Register." The U.S. National Park Service is responsible for maintaining the NRHP. The State of Florida Historic Preservation Office (SHPO) also maintains a list of historic and archeological resources. There are no historical places located near the Airport.

2.20 PUBLIC PARKS

Section 4(f) of the Department of Transportation Act of 1966 [Title 49, USC Section 1653 (f); amended and recodifies in 49 USC Section 303] provides that the Secretary of Transportation (including the FAA) will not approve any program or project that requires the use of publicly owned land from a park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance; or land from a historic site of national, state, or local significance.

Section 6(f) of the Land and Water Conservation Fund Act (L&WCFA) [16 USC, Section 4601 et. seq.); 36 Code of Federal Regulations (CFR) Part 59] prohibits the taking of lands purchased with land and water conservation funds. While the Secretary of Transportation has jurisdiction over Section 4(f) lands, the Department of the Interior and National Park Service have jurisdiction over Section 6(f).

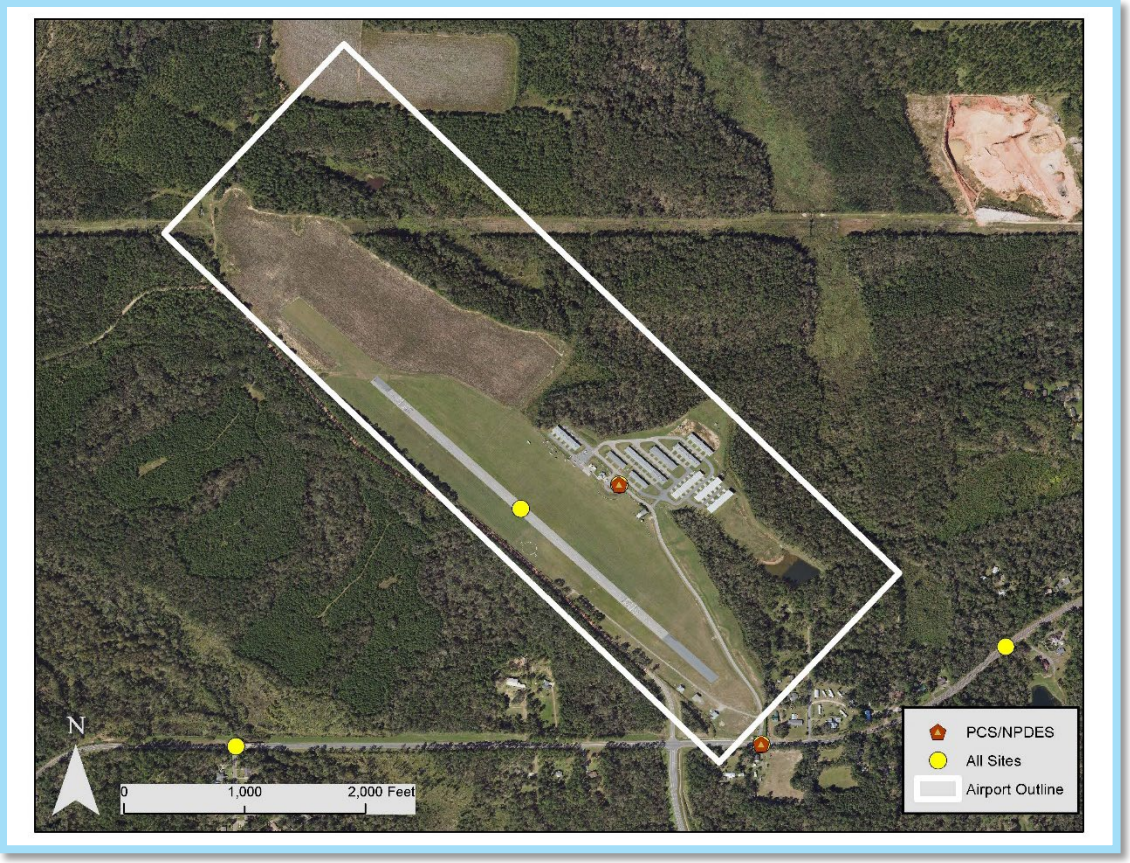
As previously mentioned, there are no known historic sites located on Airport property. There are also no wildlife or waterfowl refuges located near the Airport. There is no City-owned public park or recreation facility adjacent to the Airport.

2.21 HAZARDOUS MATERIALS SITES

The terms hazardous materials, hazardous waste, and hazardous substances are generally associated with industrial wastes, petroleum products, dangerous goods, or other contaminants. The regulations governing hazardous materials, as it applies to airport development actions, are found in the Resource Conservation and Recovery Act (RCRA), the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), and the Community Environmental Response Facilitation Act (CERFA). These statutes address the use, storage, and disposal of hazardous materials and the environmental threats caused by mishandling these materials. To protect from potentially large clean-up costs and legal liabilities, airport sponsors should (to the extent possible) avoid hazardous waste sites and contaminated property that could affect, or be affected by, an airport development project.

The Facility Registry Service is an EPA managed list of facility data to support EPA's mission of protecting human health and the environment. According to the U.S. EPA Envirofacts, Facility Registry Service (FRS), the Airport is listed as a facility. A “facility” is defined as any “area where hazardous substance has been deposited, stored, disposed of, or placed.” The area itself could extend beyond the area that is contaminated. While the Airport is listed as a facility, there are no Superfund sites near the airport. Superfund sites exist across the country due to hazardous waste that is dumped, left out in the open, or otherwise improperly managed. These sites include and are not limited to, manufacturing facilities, processing plants, landfills, and mining sites. As depicted in Figure 27, the National Pollutant Discharge Elimination System (NPDES) permit program addresses water pollution by regulating point sources that discharge pollutants to waters of the United States. Quincy Municipal airport is coded as has having discharge pollutants and is regulated by the NPDES.

Figure 27. Hazardous Materials Sites near Quincy Municipal Airport



Source: Environmental Protection Agency, ArcGIS, Kimley-Horn Analysis, March 2019

2.22 RECYCLING PRACTICES

In recent years and following the Modernization and Reform Act of 2012, the handling of solid waste and recycling at airports has become a focus of the FAA. Per this Act and Per 49 USC § 47102(5)(C):

"The master plan must address issues related to solid waste recycling at the airport. This is a new master plan requirement under the FAA Modernization and Reform Act of 2012 (Public Law 112-95), and until APP-400 issues guidance on this requirement, the ADO must coordinate this portion of the master plan scope with APP-400. The FAA Modernization and Reform Act of 2012 (Public Law 112-95) also made the cost of a waste audit an allowable master planning element."

Of the eight types of waste identified by the FAA, the following are typically produced at Quincy Municipal Airport:

- **Municipal Solid Waste (MSW).** Everyday items that are used and then discarded, such as product packaging, bottles, food scraps, and newspapers.
- **Construction and Demolition Waste (C&D).** Any non-hazardous solid waste from land clearing, excavation, and/or the construction, demolition, renovation, or repair of structures, roads, and utilities.

- **Green Waste.** Tree, shrub, and grass clippings; leaves; weeds; small branches; seeds; pods; and similar debris generated by landscape maintenance activities.
- **Spill Cleanup and Remediation Wastes.** Materials that are generated and remediation of contamination from a variety of sources on an airport (storage tanks, vehicular leaks, spills from maintenance activities, etc.).
- **Hazardous Waste.** Material that must be handled in accordance with stringent federal regulations. Waste designated as "hazardous" is covered by regulations outlining legal handling, treatment, or disposal. Hazardous waste that may be found at the Airport include: solvents, caustic part washes, heavy metal paint waste and paint chips, wastewater sludges from metal etching and electroplating, unused epoxies and monomers, and waste fuels.

While there are currently no specific recycling guidelines at the Airport, the City could consider a program to minimize solid waste entering the local waste stream. According to the FAA document *Recycling, Reuse, and Waste Reduction at Airports,* there are ten steps to design and implement an effective waste minimization program. Of these ten steps, "waste identification" and "waste collection and hauling" are two components that could be implemented to better understand and manage waste removal at the Airport. It is also possible that just providing airport tenants with recycling information and a consolidated collection facility for recyclables could reduce the amount of waste from the Airport that is entering local landfills.

Recycling can provide benefits to both an airport and its surrounding community. Reduction of waste and reuse of materials can lessen an airport's direct and indirect pollution output, and in some cases, can reduce operational costs or generate additional revenue. As such, the FAA is emphasizing that airports strive to implement some form of recycling program to support nationwide sustainability initiatives and promote community health.

The Airport does not currently have a formal recycling program. A review of airport-related activities reveals that the most commonly found items that could be recycled include scrap metals, industrial waste, petroleum products, and office materials such as plastic and paper. Scrap metals and petroleum products may have some market value, but they also may have costs associated with their collection and disposal (i.e., disposal of waste oil and other hazardous materials). Currently, the individual tenants are responsible for managing their own waste streams.

The implementation of a formal airport-wide recycling program would take time and a significant amount of coordination effort. However, a voluntary program could be established whereby airport-related tenants could participate if prompted, but would not be required to participate.

There are many resources that provide guidance on implementable actions to reduce, reuse, and recycle waste in an airport environment. These include the:

- FAA *Recycling, Reuse and Waste Reduction at Airports, A Synthesis Document* (http://www.faa.gov/airports/resources/publications/reports/environmental/media/recyclingsynthesis2013.pdf)
- Airport Cooperative Research Program (ACRP) Synthesis Report 42 *Integrating Environmental Sustainability into Airport Contracts* (http://www.trb.org/main/blurbs/169023.aspx)
- Airport Cooperative Research Program (ACRP) Report 42 *Sustainable Airport Construction Practices* (http://www.trb.org/main/blurbs/164240.aspx)
- Sustainable Aviation Guidance Alliance (SAGA) (http://www.airportsustainability.org/)

Recycling programs are completely scalable to the needs, resources, and operational environment of each individual airport. A CS airport may have more solid waste volume and more opportunity for reducing its waste stream than a GA airport, such as Quincy Municipal Airport. A northern airport may have the opportunity to recycle its glycol deicing fluids where a southern airport may not. Recycling efforts can address day-to-day operations as well as individual construction projects. The following is a small sample of potential recycling actions that might be implemented at the Airport:

- Provide centralized recycling collection for airport tenants. Sortable and transportable recycling receptacles could be purchased or rented for frequently disposed materials such as paper, plastic, and aluminum.
- Recycling education and outreach. At a minimum, the City or recycling service could provide airport tenants with information on waste reduction and recycling opportunities and best practices.
- Require or incentivize engineers and contractors to incorporate recycled materials into their design and construction projects.
- Stockpile demolished pavement materials and excavated soils for future development projects.

3 FORECASTS

Projections of future aviation activity at an airport provide the foundation for effective decision making in airport planning and development. Forecasts are used to determine the type, size, and timing of new or expanded airport facilities to meet anticipated user needs. Forecast are also used to help justify the financial investment in those improvements.

As presented in this chapter, forecasts of aviation activity at Quincy Municipal Airport were prepared using accepted FDOT and FAA guidance as well as methodologies that consider aviation and socioeconomic trends within the Airport's community and throughout the nation. These projections were prepared for near-term (2024), mid-term (2029), and long-term (2039) timeframes. Because 2018 is the most recent full year of data, it is the base-year for this analysis. As appropriate, sources of data are provided for individual analyses. It should be noted that since this forecast was developed, the COVID-19 pandemic struck and had a significant impact on the aviation industry. Following the completion of this forecast, it was reported by the Airport that the pandemic had little to no impact to airport operations. Due to this, the forecasts will not be updated based on the impacts of COVID-19.

Demographic data for the State of Florida were used to identify local trends and conditions that could impact GA demand at the Airport. A detailed socioeconomic analysis for Gadsden County will also provide a comparison of identified trends and conditions. Gadsden County's local demographic data, however, will not yield appropriate results to forecast activity at Quincy Municipal Airport. From conversations with Airport management, approximately 65 percent of based aircraft owners do not live within the county's boundary.

Fluctuations in an airport's activity can occur due to a variety of unanticipated factors, such as local and national economic health, fuel prices, technological advancements, regulatory changes, and market competition. The objective of this forecasting effort is to identify the magnitude of change that can be expected over the planning period, while acknowledging future uncertainties and the cyclical nature of the economy, which has a direct effect on GA activity. This forecasting effort is not intended to specifically predict activity on a year-by-year basis, but to forecast a growth trend that estimates long-term activity levels. The projections of aviation demand developed for the Airport are considered a reasonable representation of future activity levels and are described in the following sections:

- FAA Forecasts
- Forecast Assumptions
- Based Aircraft Forecasts
- Aircraft Operations Forecasts
- Forecast of Local/Itinerant Operations
- Forecast of Military Operations
- Forecasts of Daytime/Nighttime Operations
- Forecast of Touch-and-Go Operations
- Peaking Characteristics and Peak Operations Projections
- Critical Aircraft
- Forecast Summary
- FAA TAF Comparison

3.1 FAA FORECASTS

The FAA publishes annual Aerospace Forecasts that summarize anticipated trends in GA activity. These anticipated trends provide a general framework for anticipated future levels of regional and national aviation activity. Several factors are considered in FAA forecasts, including U.S. economic trends, international economic trends, and projected fuel costs. Monitored and forecasted national GA activity includes active pilots, active hours flown, and active aircraft fleet. Historical and projected activity in each of these categories is examined in the following sections for their relevance to the Airport's forecasts. The most recent version of this report includes a 20-year forecast and is titled *FAA Aerospace Forecast Fiscal Years 2019-2039.*

3.1.1 ACTIVE PILOTS

An active pilot is defined by the FAA as those persons with a pilot certificate and a valid medical certificate.

Table 17 presents the total number of active U.S. pilots across several categories, including an overall total. Note that instrument-rated pilots, who can fly more sophisticated aircraft in a variety of weather conditions, are not added like the other categories, since instrument-rated pilots are a subset of the total number of pilots. Aircraft flown by instrument-rated pilots include corporate jet aircraft and turboprop aircraft, which are almost always flown under instrument flight plans.

As shown in Table 17, between 2014 and 2018, the total number of active pilots in the U.S. decreased, dropping from a total of 472,953 active pilots in 2014 to 465,513 in 2018. This can be attributed to the aging of the pilot population and the increased cost to own and operate aircraft. In the next 20 years, the total number of active pilots in the U.S. is projected to increase by a compound annual growth rate (CAGR) of 0.09 percent. By 2039, the total number of active pilots in the U.S. is projected to be 478,015. Some of this projected increase in active pilots can be attributed to recently passed legislation, which relieves certain limitations related to pilots obtaining medical certificates. This projected increase can also be attributed to the need to train commercial airline pilots for an expected growth in airline activity around the world. It is also important to note that the *FAA Aerospace Forecast Fiscal Years 2019-2039* has excluded student pilots from its forecast, although, the student pilot population has a minimal impact on the Airport.

3.1.2 ACTIVE HOURS FLOWN

Active hours flown is a valuable measure to project GA activity because it captures several activity-related data including aircraft utilization, frequency of use, and duration of use. As shown in Table 18, single-engine piston hours flown are projected to decrease over the next 20 years. The decrease in single-engine piston hours flown can be attributed to the declining fleet of single-engine aircraft, many of which are being retired, as well as aging owners of such aircraft no longer flying. Multi-engine hours flown are also projected to decrease, while turboprop and jet hours are anticipated to continue steadily increasing. Projected growth in corporate and business activity, as previously noted, contributes to the anticipated growth in turboprop and jet hours flown. The CAGR of U.S. active hours flown from 2014-2018 increased by 2.46 percent while the total number of hours flown is projected to also increase by 0.78 percent between 2019 and 2039.

3.1.3 ACTIVE AIRCRAFT FLEET

The FAA annually tracks the number of active GA aircraft in the U.S. The FAA defines active aircraft as those aircraft currently registered in the U.S. and flying at least one hour during the year. Table 19 summarizes recent (2014-2018) active aircraft trends, as well as future (2019-2039) active aircraft by aircraft type. Similarly and for the same reasons, the active single-engine and multi-engine piston aircraft fleet is projected to continually decrease through 2039, while active turboprop and jet aircraft will continue to increase. The total active fleet increased at an annual rate of 1.0 percent from 2014 to 2018 and is projected to decrease at an annual rate of 0.04 percent from 2019 through 2039.

3.1.4 FAA FORECAST SUMMARY

The cyclical nature of GA activity is illustrated in the historical national data presented in this analysis. While national GA activity experienced rebounding growth during the mid and late-1990s, the 2001 terrorist attacks and the 2008 economic downturn dampened this nationwide activity, even while pockets of the U.S. continued to realize growth in GA. FAA projections of U.S. GA activity, including active pilots, active aircraft, and hours flown all showed varied levels of growth and decline through the FAA's forecast horizon of 2039, with growth generally focused in corporate and business aviation sectors that are most often tied to turboprop and jet GA aircraft.

Table 17. Historical and Projected U.S. Active Pilots

Certificate Type	Historical					Projected					Average Annual Growth (2019-39)
	2014	2015	2016	2017	2018	2019	2024	2029	2034	2039	
Students	0	0	0	0	0	0	0	0	0	0	0.0%
Recreational	220	190	175	153	144	140	120	95	80	60	-4.15%
Sport	5,157	5,482	5,889	6,097	6,246	6,515	7,925	9,360	10,680	11,705	2.97%
Private	174,883	170,718	162,313	162,455	163,695	164,550	162,800	156,350	149,100	143,400	-0.69%
Commercial	104,322	101,164	96,081	98,161	99,880	101,650	102,300	101,150	99,650	98,250	-0.17%
Transport	152,993	154,730	157,894	159,825	162,145	163,300	168,400	174,200	180,800	187,900	0.70%
Rotorcraft	15,511	15,566	15,518	15,355	15,033	14,750	14,650	15,850	17,550	19,450	1.39%
Glider	19,927	19,460	17,991	18,139	18,370	18,550	18,300	17,840	17,420	17,250	-0.36%
Total	**472,953**	**467,310**	**455,861**	**460,185**	**465,513**	**469,455**	**474,495**	**474,845**	**475,280**	**478,015**	**0.09%**
Instrument Rated[1]	306,066	304,329	302,572	306,652	311,017	314,800	321,400	327,100	332,200	337,300	0.35%

Sources: FAA Aerospace Forecast Fiscal Years 2019-2039

[1]When deriving total, instrument-rated pilots should not be added to other categories.

Table 18. Active General Aviation and Air Taxi Hours Flown (In Thousands)

Certificate Type	Historical					Projected					Average Annual Growth (19-39)
	2014	2015	2016	2017	2018	2019	2024	2029	2034	2039	
Single-Engine Piston	10,395	11,217	11,865	12,047	12,029	11,894	10,906	10,186	9,672	9,483	-1.13%
Multi-Engine Piston	1,573	1,608	1,683	1,536	1,568	1,578	1,577	1,563	1,547	1,532	-0.15%
Turboprop	2,613	2,538	2,708	2,625	2,672	2,713	2,898	3,105	3,365	3,707	1.57%
Jet	3,881	3,837	3,847	4,065	4,294	4,528	5,571	6,417	7,173	7,916	2.83%
Rotorcraft	3,242	3,294	3,128	3,320	3,420	3,521	3,932	4,323	4,729	5,169	1.94%
Experimental	1,244	1,295	1,224	1,241	1,274	1,305	1,445	1,570	1,681	1,784	1.58%
Sport	165	191	187	209	221	233	301	374	456	542	4.31%
Other	158	162	193	168	169	170	173	175	176	177	0.20%
Total	**23,271**	**24,142**	**24,835**	**25,212**	**25,647**	**25,943**	**26,802**	**27,713**	**28,798**	**30,311**	**0.78%**

Sources: FAA Aerospace Forecast Fiscal Years 2019-2039

Table 19. Active General Aviation and Air Taxi Aircraft

Certificate Type	Historical					Projected					Average Annual Growth (19-39)
	2014	2015	2016	2017	2018	2019	2024	2029	2034	2039	
Single-Engine Piston	126,036	127,887	129,652	129,833	129,885	129,285	123,145	116,360	110,160	105,195	-1.03%
Multi-Engine Piston	13,146	13,254	12,986	13,083	13,040	13,010	12,805	12,575	12,330	12,085	-0.37%
Turboprop	9,777	9,712	9,779	9,949	9,925	9,925	10,135	10,770	11,640	12,810	1.28%
Jet	12,362	13,440	13,751	14,217	14,585	14,970	17,025	19,110	21,100	23,050	2.18%
Rotorcraft	9,966	10,506	10,577	10,511	10,705	10,895	11,850	12,850	13,965	15,175	1.67%
Experimental	26,191	27,922	27,585	26,921	27,365	27,755	29,465	30,880	32,040	33,040	0.88%
Sport	2,231	2,369	2,478	2,551	2,665	2,790	3,420	4,100	4,820	5,555	3.50%
Other	4,699	4,941	4,986	4,692	4,715	4,745	4,820	4,865	4,880	4,890	0.15%
Total	**204,408**	**210,031**	**211,794**	**211,757**	**212,885**	**213,375**	**212,665**	**211,510**	**210,935**	**211,800**	**-0.04%**

Sources: FAA Aerospace Forecast Fiscal Years 2019-2039

3.2 FORECAST ASSUMPTIONS

Forecast assumptions have been developed based on input provided by Airport staff and on an examination of the trends identified in previous sections of this chapter. These assumptions provide general guidelines that aid in the development of forecasts of aviation demand and include the following:

- Quincy Municipal Airport will continue to operate as a GA airport through the planning period.
- Airports within the Gadsden and Leon County area will remain open for the foreseeable future.
- On a national level, the aviation industry will grow as forecasted by the FAA in its annual Aerospace Forecasts.
- The socioeconomic characteristics of Gadsden County, the Tallahassee MSA, and the State of Florida will continue to grow as forecasted.
- Both federal and state aviation programs will stay in place throughout the planning period to assist in funding future capital development needs.
- The forecasts are considered "unconstrained," meaning they assume that the Airport will be able to develop the various facilities necessary to accommodate future based aircraft and annual aircraft operations.
- COVID-19 did not and will not affect operations.

3.3 BASED AIRCRAFT FORECASTS

Several sources were considered to prepare based aircraft forecasts, including Woods and Poole Economics, Inc., *FAA Aerospace Forecasts Fiscal Years 2019-2039*, TAF, FAD, and the FASP 2035. These sources were used to generate methodologies, which in turn were used to develop forecasts of based aircraft demand through the 20-year planning period. CAGR, referenced throughout the forecasts, calculates a constant rate of change over a given period. CAGR dampens the effect of volatility during periods that experience change, meaning it is essentially a "smoothed" annual growth rate. Based on current data collection efforts, five sources were identified to determine based aircraft at Quincy Municipal Airport. Those five sources include:

- The FAA's National Based Aircraft Inventory Program (basedaircraft.com), which states that Quincy Municipal Airport has 56 based aircraft.
- The 5010 Airport Master Record and Reports, which state that the Airport has 27 based aircraft.
- FDOT's FAD reports facility statistics for both based aircraft and operations. The FAD states that the Airport has 49 based aircraft.
- The TAF, the official FAA forecast of aviation activity for U.S. airports, states that the Airport has 59 based aircraft.
- Airport management, which reports that the Airport has 79 based aircraft.

The number of aircraft at the Airport has been validated at 79 for this master plan. From conversations with the Airport and based on current activity levels, 79 based aircraft will be used for all subsequent analyses. Based aircraft reported from the other four sources severely underreports the true activity at the Airport.

The Airport is currently working to update the FAA's database (basedaircraft.com) to reflect true aviation activity. Tables 20 through 27 provide projections for based aircraft at the Airport over a 20-year period beginning in 2019 based on several variables:

- TAF Methodology
- FAD Methodology
- FASP 2035 Methodology
- FAA Aerospace Fleet Projection Methodology
- Socioeconomic Variables
  - Population
  - Employment
  - Mean Household Income
  - Employment Combination

3.3.1 TERMINAL AREA FORECAST METHODOLOGY

As mentioned above, the TAF contains historical data and projections for airports included in the NPIAS. The TAF Methodology assumes that based aircraft at Quincy Municipal Airport will grow at the same rate as TAF projections (0.0 percent CAGR). The 0.0 percent growth rate was applied to the revised based aircraft (79) in 2019 which projects 79 based aircraft at the airport in 2039. The results of the TAF Methodology are presented in Table 20.

Table 20. Terminal Area Forecast Methodology – Based Aircraft

Year	Single-Engine	Multi-Engine	Jet	Helo	Other	Total
Historical						
2015	49	0	0	0	10	59
2016	49	0	0	0	10	59
2017	49	0	0	0	10	59
2018	49	0	0	0	10	59
Projected						
2019	79	0	0	0	0	79*
2024	79	0	0	0	0	79
2029	79	0	0	0	0	79
2039	79	0	0	0	0	79

Sources: Terminal Area Forecast, 2019, Kimley-Horn Analysis
**As reported by Airport management*

3.3.2 FLORIDA AVIATION DATABASE (FAD) METHODOLOGY

The Florida Aviation Database (FAD) is used by the FDOT and reports facility statistics related to based aircraft and annual aircraft operations. The FAD forecasted aviation activity at Quincy Municipal Airport and applied an average annual growth rate of 1.0 percent to the reported 49 based aircraft. The FAD Methodology assumes based aircraft will grow at the same rate as projected by the FAD. As such, the 1.0 percent growth rate was applied to the revised based aircraft in 2019 (79) which projects the Airport will experience 96 based aircraft by 2039. Results of the FAD Methodology are presented in Table 21.

Table 21. Florida Aviation Database – Based Aircraft

Year	Based Aircraft
2019	79*
2024	83
2029	87
2039	96
CAGR 2019-2039	1.0%

Sources: Kimley-Horn Analysis, September 2019
**As reported by Airport management*

3.3.3 FLORIDA AVIATION SYSTEM PLAN 2035 METHODOLOGY

Florida's most recent state aviation system plan (FASP 2035) projected based aircraft at each system airport. The FASP categorized GA airports by their based aircraft activity levels at the time of development: high activity (200+ based aircraft), medium activity (50 to 199 based aircraft), and low activity (Fewer than 50 based aircraft). Quincy Municipal Airport is categorized as having medium activity. Several methodologies were analyzed for each activity level (County population, FAA Aerospace, and FAA TAF or Straight-Line). The FASP determined that the preferred methodology to project based aircraft was the county population methodology which projected a 0.39 percent growth rate for based aircraft at the Airport over a 20-year planning period.

The FASP 2035 methodology assumes that based aircraft at the Airport will grow at the same rate as reported in the system plan. Using this methodology, the Airport is projected to have 85 based aircraft in 2039. Table 22 presents the forecasted results of the FASP 2035 methodology.

Table 22. FASP 2035 Methodology – Based Aircraft

Year	Based Aircraft
2019	79*
2024	81
2029	82
2039	85
CAGR 2019-2039	0.39%

Sources: FASP 2035, Kimley-Horn Analysis, 2019
**As reported by Airport management*

3.3.4 FAA AEROSPACE FLEET PROJECTION METHODOLOGY

The *FAA Aerospace Forecast Fiscal Years 2019-2039* is a methodology that assumes based aircraft at Quincy Municipal Airport will increase at the same rate as the U.S. national GA fleet. According to the 2019 FAA forecast, the national GA fleet will decrease at -0.04 percent from 2019-2039. As shown in Table 23, the national GA fleet growth rate of -0.04 percent is applied to the 79 based aircraft at the Airport in 2019 and projects no growth in based aircraft at the Airport in 2039.

Table 23. FAA Aerospace Fleet Projection Methodology – Based Aircraft

Year	National Fleet	Based Aircraft
2019	213,375	79*
2024	212,665	79
2029	211,510	79
2039	211,800	79
CAGR 2019-2039	-0.04%	

Sources: FAA Aerospace Forecast Fiscal Years 2019-2039, Kimley-Horn Analysis
**As reported by Airport management*

3.3.5 SOCIOECONOMIC VARIABLES

Local socioeconomic factors do not always affect or reflect aviation-related activity at an airport. However, local socioeconomic factors can provide an indication of the overall health of the local economy, the potential type of aircraft activity that may occur at an airport, and the propensity to travel or own an aircraft. Several socioeconomic variables were evaluated to gain an understanding of how they may impact growth of based aircraft, those variables include:

- Population Variable
- Employment Variable
- Mean Household Income Variable
- Employment Combination Variable

The following sections individually analyze population, employment, and mean household income in Gadsden County, the Tallahassee MSA, and the State of Florida to project-based aircraft at Quincy Municipal Airport.

3.3.5.1 POPULATION VARIABLE

The population variable assumes that between 2019 and 2039, the number of based aircraft at Quincy Municipal Airport will increase at the same rate as the population of Gadsden County, the population of the Tallahassee MSA, and the State of Florida.

Using the Gadsden County population variable, based aircraft at the Airport are projected to increase from 79 in 2019 to 85 in 2039, which reflects a CAGR of 0.36 percent. Using the Tallahassee MSA population variable, based aircraft at the Airport are projected to increase from 79 in 2019 to 98 in 2039, which reflects a CAGR of 1.07 percent. Using the State of Florida population variable, based aircraft at the Airport are projected to increase from 79 in 2019 to 103 in 2039, which reflects a CAGR of 1.33 percent. Results of population forecasts are summarized in Table 24.

Table 24. Population Variable – Based Aircraft

Socioeconomic – Population						
Year	Gadsden County		Tallahassee MSA		State of Florida	
	Population	Based Aircraft	Population	Based Aircraft	Population	Based Aircraft
2019	47,321	79*	397,734	79*	21,320,443	79*
2024	48,383	81	421,089	84	22,858,936	85
2029	49,387	82	445,172	88	24,477,523	91
2039	50,850	85	491,987	98	27,768,100	103
CAGR 2019-2039	0.36%		1.07%		1.33%	

Sources: Woods and Poole Economics, Inc., Kimley-Horn Analysis
**As reported by Airport management*

3.3.5.2 EMPLOYMENT VARIABLE

The employment variable assumes that between 2019 and 2039, the number of based aircraft will increase at the same rate as the growth of employment for Gadsden County, the Tallahassee MSA, and the State of Florida.

Using the Gadsden County employment variable, based aircraft at the Airport are projected to increase from 79 in 2019 to 96 in 2039, which reflects a CAGR of 1.00 percent. Using the Tallahassee MSA employment variable, based aircraft are projected to increase from 79 in 2019 to 101 in 2039, which reflects a CAGR of 1.23 percent. Using the State of Florida employment variable, based aircraft are projected to increase from 79 in 2019 to 108 in 2039, which reflects a CAGR of 1.59 percent. Results of employment forecasts are summarized in Table 25.

Table 25. Employment Variable – Based Aircraft

Socioeconomic – Employment						
Year	Gadsden County		Tallahassee MSA		State of Florida	
	Employment	Based Aircraft	Employment	Based Aircraft	Employment	Based Aircraft
2019	19,538	79*	237,765	79*	12,000,776	79*
2024	20,752	84	255,338	85	13,103,305	86
2029	21,878	88	272,295	90	14,221,620	94
2039	23,858	96	303,554	101	16,452,946	108
CAGR 2019-2039	1.00%		1.23%		1.59%	

Sources: Woods and Poole Economics, Inc., Kimley-Horn Analysis
**As reported by Airport management*

3.3.5.3 MEAN HOUSEHOLD INCOME VARIABLE

The mean household income variable assumes that based aircraft at the Airport will increase between 2019 and 2039 at the same rate for Gadsden County, the Tallahassee MSA, and the State of Florida. Results of mean household income forecasts are summarized in Table 26, reported in current year (2019) dollars. Using the Gadsden County mean household income variable, based aircraft are projected to increase from 79 in 2019 to 200 in 2039, which reflects a CAGR of 4.76 percent. Using the Tallahassee MSA mean household income variable, based aircraft are projected to increase from 79 in 2019 to 194 in 2039, which reflects a CAGR of 4.59 percent. Using the State of Florida mean household income variable, based aircraft are projected to increase from 79 in 2019 to 206 in 2039, which reflects a CAGR of 4.91 percent. Results of the mean household income forecast are summarized in Table 26.

Table 26. Mean Household Income Variable – Based Aircraft

Socioeconomic – Mean Household Income (MHI)						
Year	Gadsden County		Tallahassee MSA		State of Florida	
	MHI**	Based Aircraft	MHI**	Based Aircraft	MHI**	Based Aircraft
2019	$82,880	79*	$94,487	79*	$118,567	79*
2024	$101,089	96	$113,672	95	$144,708	96
2029	$128,903	123	$143,430	120	$185,353	123
2039	$210,208	200	$231,960	194	$309,382	206
CAGR 2019-2039	4.76%		4.59%		4.91%	

Sources: Woods and Poole Economics, Inc., Kimley-Horn Analysis
**As reported by Airport management*
***In current year dollars*

3.3.5.4 EMPLOYMENT COMBINATION VARIABLE

When there is a lack of factors to drive decision-making, it can be difficult to identify a justified, single socioeconomic variable to forecast based aircraft demand at the Airport over the 20-year planning horizon. The prior socioeconomic methodologies compared population, employment, and mean household income in Gadsden County, the Tallahassee MSA, and the State of Florida to forecast based aircraft at the Airport. Because of the lack of factors to drive decision-making, the Socioeconomic Combination Variable was employed which averages the Tallahassee MSA and State of Florida growth rates to use one combined socioeconomic combination rate.

Airport management confirmed that approximately 65 percent of its based aircraft owners live outside Gadsden County which means that socioeconomic factors within the county may not be indicative of aviation demand at the Airport. As such, Gadsden County socioeconomic factors were removed from the combination variable.

The Socioeconomic Combination Methodology assumes that based aircraft at Quincy Municipal Airport will increase at the same rate as the average employment of the Tallahassee MSA (1.23 percent) and State of Florida (1.59%). The resulting average growth rate of 1.41 percent was applied to the 79 based aircraft in 2019 which projects that the Airport will experience 105 based aircraft by 2039. Results of this methodology are presented in Table 27.

Table 27. Socioeconomic Employment Combination Variable – Based Aircraft

Socioeconomic – Employment					
Year	Tallahassee MSA		State of Florida		Combination
	Employment	Based Aircraft	Employment	Based Aircraft	Based Aircraft
2019	237,765	79*	12,000,776	79*	79*
2024	255,338	85	13,103,305	86	85
2029	272,295	90	14,221,620	94	91
2039	303,554	101	16,452,946	108	105
CAGR 2019-2039	1.23%		1.59%		1.41%

Sources: Woods and Poole Economics, Inc., Kimley-Horn Analysis

3.3.6 BASED AIRCRAFT PREFERRED METHODOLOGY

In total, nine methodologies were examined to develop forecasts of based aircraft. The methodologies resulted in a range from 79 based aircraft (FAD) to 206 based aircraft (Socioeconomic – Mean Household Income) by 2039.

The lowest projection of based aircraft was based on the *FAA Aerospace Forecast Fiscal Years 2019-2039*, which applied the national average of -0.04 percent growth through 2039. At the national level, single-engine piston aircraft are on the decline; however, based aircraft at the Airport do not correspond to national trends as proven by the continued increase of based aircraft over the last decade. As such, this methodology is not considered reasonable or indicative of aviation activity at Quincy Municipal Airport.

Forecast methodologies using the TAF, FAD, and FASP 2035 project growth rates of between zero and one percent. Given the current activity at the Airport, a forecast methodology with a rate of one percent or less would not be indicative of future activity levels.

The socioeconomic methodologies in this section compared population, employment, and mean household income in Gadsden County, the Tallahassee MSA, and the State of Florida to forecast based aircraft at the Airport. Choosing one of the nine potential socioeconomic rates as preferred would be hard to justify. However, growth of based aircraft using the mean household income reflects a substantial increase by 2039.

Based on current observed Airport activity, the mean household income methodology may over forecast demand at the Airport. The historical increase of based aircraft gives a strong indication that based aircraft will continue to increase; however, it is unlikely based aircraft will increase by over 100 percent over the 20-year planning horizon. As such, the mean household income methodology is not the preferred methodology for forecasting based aircraft at the Airport.

As mentioned previously, when there is a lack of factors to drive decision making, it can be difficult to identify a justified, single socioeconomic variable to forecast based aircraft demand at the Airport over the 20-year planning horizon. As such, this analysis determined a growth rate by averaging the socioeconomic growth rates from the Tallahassee MSA and State of Florida employment. The resulting average growth rate of 1.41 percent was applied to the 79 based aircraft in 2019 which projects 105 based aircraft by 2039, an increase of 26 based aircraft. Table 28 presents the preferred based aircraft methodology which will be used to determine facility needs at Quincy Municipal Airport over the planning horizon.

Table 28. Preferred Based Aircraft Methodology

Year	Based Aircraft
2019	79
2024	85
2029	91
2039	105
CAGR 2019-2039	1.41%

Sources: Airport Management, Woods and Poole Economics, Inc., Kimley-Horn Analysis

3.4 BASED AIRCRAFT FLEET MIX FORECAST

As reported and validated from Airport management, the based aircraft fleet is solely single-engine piston aircraft. It is anticipated that single-engine piston aircraft will remain the primary based aircraft type through the planning horizon. Table 29 summarizes based aircraft fleet mix over the planning horizon.

Table 29. Based Aircraft Fleet Mix Projection

Year	Single-piston	Multi-piston	Jet	Turboprop	Helicopter	Total
2019	79	0	0	0	0	79
2024	85	0	0	0	0	85
2029	91	0	0	0	0	91
2039	105	0	0	0	0	105

Sources: Airport Management, Kimley-Horn Analysis

3.5 AIRCRAFT OPERATIONS FORECASTS

As with the preferred based aircraft methodology, annual aircraft operations forecasts are examined to employ the most appropriate methodology to project annual aircraft operations at the Airport from 2019 to 2039. Several factors impact an airport's annual aircraft operations, including the airport's based aircraft, local demographics, national economic and aviation-related trends, proximity to other airports, operational capability, existing condition of facilities, and business needs. Table 30 through 37 provide projections for annual aircraft operations based on multiple variables at the Airport over a 20-year period beginning in 2019:

- TAF Methodology
- FAD Methodology
- Socioeconomic Variables
  - Population
  - Employment
  - Mean Household Income
- FASP 2035 Methodology
- Operations per Based Aircraft Methodology
- FAA Aerospace National Hours Flown Methodology

3.5.1 TERMINAL AREA FORECAST METHODOLOGY

As with based aircraft, the TAF contains historical data and projections for airports included in the NPIAS. The TAF reports that annual aircraft operations at the Airport will remain the same from 2019 to 2039. The TAF methodology assumes annual aircraft operations at the Airport will grow at the same rate as reported in the TAF. Results of the TAF methodology are presented in Table 30.

Table 30. Terminal Area Forecast Methodology – Annual Aircraft Operations

Year	Air Carrier	Air Taxi / Commuter	Itinerant GA	Itinerant Military	Local GA	Local Military	Total
Historical							
2015	0	0	2,184	0	4,056	0	6,240
2016	0	0	2,184	0	4,056	0	6,240
2017	0	0	2,184	0	4,056	0	6,240
2018	0	0	2,184	0	4,056	0	6,240
Projected							
2019	0	0	2,184	0	4,056	0	6,240
2024	0	0	2,184	0	4,056	0	6,240
2029	0	0	2,184	0	4,056	0	6,240
2039	0	0	2,184	0	4,056	0	6,240

Sources: Terminal Area Forecast, 2018, Kimley-Horn Analysis

3.5.2 FLORIDA AVIATION DATABASE METHODOLOGY

As mentioned previously, the FAD is used by FDOT and reports facility statistics related to based aircraft and aircraft operations. The FAD methodology assumes annual aircraft operations at the Airport will increase at the same rate as the FAD operations forecast, which applied a 1.0 percent growth rate. Using the same growth rate of 1.0 percent that was used to project operations in the FAD, operations are projected to increase to 7,610 by 2039. Results of the FAD methodology are presented in Table 31.

Table 31. Florida Aviation Database Methodology – Annual Aircraft Operations

Year	Operations
2019	6,240
2024	6,560
2029	6,890
2039	7,610
CAGR	1.0%

Sources: Florida Aviation Database, Kimley-Horn Analysis, July 2019

3.5.3 SOCIOECONOMIC VARIABLES

Socioeconomic data formed the basis of several methodologies used to determine projections of aircraft operations. The following sections project operational activity at the Airport using population, employment, and mean household income from, Gadsden County, the Tallahassee MSA, and the State of Florida. As with based aircraft forecasts, mean household income data obtained from Woods and Poole Economics, Inc. is reported in current year dollars (2019). Below are the socioeconomic variables that will be reviewed part of the operations forecast.

- Population Variable
- Employment Variable
- Mean Household Income Variable

3.5.3.1 POPULATION VARIABLE

The population variable assumes that annual operations at the Airport will increase at the same rate as the population of Gadsden County, the Tallahassee MSA, and the State of Florida.

Using the Gadsden County population variable, annual operations are projected to increase from 6,240 in 2019 to 6,710 in 2039, which reflects a CAGR of 0.36 percent. When applying the Tallahassee MSA population variable, total operations are projected to increase from 6,240 in 2019 to 7,720 in 2039, a CAGR of 1.07 percent. Using the State of Florida population variable, total operations are projected to increase from 6,240 in 2019 to 8,130 in 2039, a CAGR of 1.33 percent. Results of this methodology is shown in Table 32.

Table 32. Population Variable – Annual Aircraft Operations

Socioeconomic – Population						
Year	Gadsden County		Tallahassee MSA		State of Florida	
	Population	Operations	Population	Operations	Population	Operations
2019	47,321	6,240	397,734	6,240	21,320,443	6,240
2024	48,383	6,380	421,089	6,610	22,858,936	6,690
2029	49,387	6,510	445,172	6,980	24,477,523	7,160
2039	50,850	6,710	491,987	7,720	27,768,100	8,130
CAGR 2019-2039	0.36%		1.07%		1.33%	

Note: Operations projections rounded to the nearest ten
Sources: Woods and Poole Economics, Inc., Kimley-Horn Analysis

3.5.3.2 EMPLOYMENT VARIABLE

The employment variable assumes that between 2019 and 2039, the number of annual aircraft operations will increase at the same rate as the growth of employment for Gadsden County, the Tallahassee MSA, and the State of Florida.

Using Gadsden County employment, total operations are projected to increase from 6,240 in 2019 to 7,620 in 2039, which reflects a CAGR of 1.00 percent. Using the Tallahassee MSA's employment, total operations are projected to increase from 6,240 in 2019 to 7,970 in 2039, a CAGR of 1.23 percent. Using the State of Florida's employment, total operations are projected to increase from 6,240 in 2019 to 8,550 in 2039, a CAGR of 1.59 percent. Results of employment forecasts are summarized in Table 33.

Table 33. Employment Variable – Annual Aircraft Operations

Socioeconomic – Employment						
Year	Gadsden County		Tallahassee MSA		State of Florida	
	Employment	Operations	Employment	Operations	Employment	Operations
2019	19,538	6,240	237,765	6,240	12,000,776	6,240
2024	20,752	6,630	255,338	6,700	13,103,305	6,810
2029	21,878	6,990	272,295	7,150	14,221,620	7,390
2039	23,858	7,620	303,554	7,970	16,452,946	8,550
CAGR 2019-2039	1.00%		1.23%		1.59%	

Note: Operations projections rounded to the nearest ten
Sources: Woods and Poole Economics, Inc., Kimley-Horn Analysis

3.5.3.3 MEAN HOUSEHOLD INCOME VARIABLE

The mean household income variable assumes that based aircraft at the Airport will increase at the same rate as mean household income in Gadsden County, the Tallahassee MSA, and the State of Florida. Results of mean household income forecasts are summarized in Table 34, reported in current year dollars (2019).

Using the Gadsden County mean household income variable, total operations are projected to increase from 6,240 in 2019 to 15,830 in 2039, which reflects a CAGR of 4.76 percent. Using the Tallahassee MSA mean household income variable, total operations are projected to increase from 6,240 in 2019 to 15,320 in 2039, a CAGR of 4.59 percent. Using the State of Florida mean household income, total operations are projected to increase from 6,240 in 2019 to 16,280 in 2039, a CAGR of 4.91 percent.

Table 34. Mean Household Income Variable – Annual Aircraft Operations

Socioeconomic – Mean Household Income (MHI)						
Year	Gadsden County		Tallahassee MSA		State of Florida	
	MHI*	Operations	MHI*	Operations	MHI*	Operations
2019	$82,880	6,240	$94,487	6,240	$118,567	6,240
2024	$101,089	7,610	$113,672	7,510	$144,708	7,620
2029	$128,903	9,710	$143,430	9,470	$185,353	9,750
2039	$210,208	15,830	$231,960	15,320	$309,382	16,280
CAGR 2019-2039	4.76%		4.59%		4.91%	

Note: Operations projections rounded to the nearest ten
Sources: Woods and Poole Economics, Inc., Kimley-Horn Analysis
**In current year dollars*

3.5.4 FLORIDA AVIATION SYSTEM PLAN 2035 METHODOLOGY

The FASP evaluated multiple methodologies to forecast operations at the statewide level and chose the FAA Aerospace Forecast methodology as its preferred. The FASP 2035 used a CAGR of 0.15 percent applied to the total number of annual operations identified at the Airport in 2019. The FASP 2035 methodology assumes that annual aircraft operations will increase at the same rate as projected in the FASP 2035 (0.15 percent). Using this methodology, annual aircraft operations are projected to increase at the Airport from 6,240 in 2019 to 6,430 in 2039. Table 35 displays the results as reported in the FASP.

Table 35. FASP 2035 Methodology – Annual Aircraft Operations

Year	Operations
2019	6,240
2024	6,290
2029	6,330
2039	6,430
CAGR 2019-2039	0.15%

Note: Operations projections rounded to the nearest ten
Sources: FASP 2035, Kimley-Horn Analysis

3.5.5 OPERATIONS PER BASED AIRCRAFT METHODOLOGY

Operations per Based Aircraft (OPBA) is a methodology used to calculate an average ratio of annual airport operations to total based aircraft. The OPBA in 2019 was calculated by dividing the number of total annual operations (6,240) by the number of based aircraft at the Airport (79). This resulted in an average of 79 OPBA. To forecast operations through the planning horizon using this methodology, the OPBA (79) in 2019 was held constant through 2039 and multiplied by the number of based aircraft determined from the preferred based aircraft methodology. As shown in Table 36, using this methodology, it is estimated that by 2039 the Airport will experience 8,260 annual operations.

Table 36. OPBA Methodology – Annual Aircraft Operations

Year	2J9 Based Aircraft	2J9 Operations	2J9 OPBA
2019*	79	6,240	79
2024	85	6,700	79
2029	91	7,180	79
2039	105	8,260	79
CAGR 2019-2039	1.41%		

**2019 based aircraft and operations base year data was used to calculate OPBA in 2019*
Sources: Woods and Poole Economics, Inc., Kimley-Horn

3.5.6 FAA AEROSPACE NATIONAL HOURS FLOWN METHODOLOGY

The FAA Aerospace National Hours Flown methodology assumes that aircraft operations will increase at the same rate as the U.S. GA national hours flown. According to the *FAA Aerospace Forecast Fiscal Years 2019-2039*, U.S. GA national hours flown are projected to increase by 0.78 percent annually through 2039. As shown in Table 37, the 0.78 percent national growth rate was applied to the 6,240 aircraft operations in 2019 and held constant throughout the 20-year planning horizon. This methodology projects 7,290 total operations in 2039.

Table 37. FAA Aerospace National Hours Flown Methodology – Annual Aircraft Operations

Year	National Hours Flown	Operations
2019	25,943	6,240
2024	26,802	6,490
2029	27,713	6,740
2039	30,311	7,290
CAGR 2019-2039	0.78%	

Sources: FAA Aerospace Forecast Fiscal Years 2019-2039

3.5.7 ANNUAL AIRCRAFT OPERATIONS PREFERRED METHODOLOGY

In total, eight methodologies were examined to forecast aircraft operations as the Airport. The methodologies resulted in a range from 6,240 aircraft operations (TAF) to 16,280 aircraft operations (Socioeconomic – Mean Household Income) by 2039.

The TAF, FASP 2035, FAD, and FAA Aerospace National Hours Flown all project growth at an extremely low rate, ranging from zero to one percent. These methodologies are not indicative of operational levels at the Airport given the exponential based aircraft increase over the last decade.

Socioeconomic variables were examined, but as previously mentioned, it can be difficult to select one single variable. While the populations of the Tallahassee MSA and the State of Florida project moderate growth, aircraft operations reported from conversations with the Airport may not be accurately represented in this methodology. The employment variable results in a moderate operation increase; however, the projected growth rate does not reflect current and future levels of aviation activity at the Airport. Using the mean household income socioeconomic variable, the Airport is projected to have 16,280 annual operations by 2039, which is an overrepresentation of aviation activity at the Airport.

The OPBA methodology was selected as the preferred methodology. Based on the amount of local activity and the number of based aircraft, it was determined that based aircraft will have the most impact on operations now and into the future. Furthermore, since this master plan has determined that using a 1.41 percent growth rate for based aircraft alludes to steady and smooth growth over the planning horizon, it can be assumed that aircraft operations would grow at the same rate. This methodology suggests that the Airport will continue to experience approximately 79 OPBA while steadily increasing its number of based aircraft by 2039, as shown in Table 38.

Table 38. Preferred Annual Aircraft Operations Methodology

Year	2J9 Based Aircraft	2J9 Operations	2J9 OPBA
2019*	79	6,240	79
2024	85	6,700	79
2029	91	7,180	79
2039	105	8,260	79
CAGR 2019-2039		1.41%	

**2019 based aircraft and operations base year data was used to calculate OPBA in 2019*
Sources: Woods and Poole Economics, Inc., Kimley-Horn Analysis

3.6 FORECAST OF LOCAL/ITINERANT OPERATIONS

Based on Airport management observations, the Airport experienced an approximate 60-percent local and 40-percent itinerant activity split in 2019. It is anticipated that the 60-percent local, 40-percent itinerant annual operational split will remain constant over the planning horizon. As such, it is projected that by 2039, the Airport will experience approximately 4,950 annual local operations and 3,300 annual itinerant operations as shown in Table 39.

Table 39. Operations Forecast – Local/Itinerant Split

Year	Total Operations	Local Operations	% Local Operations	Itinerant Operations	% Itinerant Operations
Preferred Operations Forecast					
2019	6,240	3,740	60%	2,500	40%
2024	6,700	4,020	60%	2,680	40%
2029	7,180	4,310	60%	2,870	40%
2039	8,260	4,960	60%	3,300	40%

Sources: Airport management, Kimley-Horn Analysis, Woods and Poole Economics, Inc.

3.7 FORECAST OF MILITARY OPERATIONS

According to data reported by the FAA 5010 master record and observations by Airport management, the Airport did not conduct military operations in 2019. However, based on conversations with the Airport, military operations have occurred in the past and are expected to continue irregularly over the planning horizon. Military operations are not a substantial driver for operations at the Airport and are typically based on national security needs which are difficult to anticipate.

3.8 FORECAST OF DAYTIME/NIGHTTIME OPERATIONS

Communities surrounding an airport generally perceive noise as louder during the night than the day. Therefore, estimations of daytime and nighttime operations are determined to anticipate potential noise. For the purposes of noise evaluation, the FAA defines night operations as those occurring between the hours of 10:00 p.m. and 7:00 a.m. local time. According to Airport management observations,

approximately 95 percent of operations occur during the day with the remaining five percent at night. Because the Airport does not have an instrument approach procedure, the day/nighttime split estimated by Airport management is logical. This daytime vs. nighttime operational split is assumed to remain constant throughout the planning period and is summarized in Table 40.

Table 40. Operations Forecast – Daytime/Nighttime Split

Year	Total Operations	Daytime Operations	% Daytime	Nighttime Operations	% Nighttime
Preferred Operations Forecast					
2019	6,240	5,930	95%	310	5%
2024	6,700	6,360	95%	340	5%
2029	7,180	6,820	95%	360	5%
2039	8,260	7,850	95%	410	5%

Sources: Airport management, Kimley-Horn Analysis, Woods and Poole Economics, Inc.

3.9 FORECAST OF TOUCH-AND-GO OPERATIONS

A touch-and-go operation is defined as an operation by an aircraft that lands and departs on a runway without stopping or exiting the runway. This type of operation is typically associated with flight training. Touch-and-go operations are difficult to forecast at an airport where there is no ATCT or historical record to reference. Because the Airport does not currently have a full-time, on-airport flight school, touch-and-go operations are projected to account for a fraction of its annual operations. As shown in Table 41, touch-and-go operations are estimated as 10 percent of current annual operations at the Airport. This percentage of total annual operations isn't anticipated to change and therefore held constant through the planning period. By 2039, it is anticipated that the airport will experience approximately 830 touch-and-go operations.

Table 41. Operations Forecast – Touch-and-Go

Year	Total Operations	% Touch-and-Go	Touch-and-Go Operations
Preferred Operations Forecast			
2019	6,240	10%	620
2024	6,700	10%	670
2029	7,180	10%	720
2039	8,260	10%	830

Sources: Airport management, Kimley-Horn Analysis, Woods and Poole Economics, Inc.

3.10 PEAKING CHARACTERISTICS AND PEAK OPERATIONS PROJECTIONS

Although the Airport receives a relatively low volume of operations, the Airport does have some inflated levels of seasonal activity and has increased operations when the Airport hosts special events, such as annual fly-ins. For this analysis, the periods used are as follows:

- Peak Month – the calendar month when peak volumes of aircraft operations occur
- Peak Month Average Day (PMAD) – the average day in the peak month; derived by dividing the peak month operations by the number of days in the month

The average peak month and PMAD operations projected for the Airport are summarized in Table 42.

Table 42. Peaking Characteristics Forecast

Year	Total Operations	Peak Month (April)	Peak Month Average Day
Preferred Operations Forecast			
2019	6,240	2,060	70
2024	6,700	2,210	70
2029	7,180	2,370	80
2039	8,260	2,720	90

Sources: Woods and Poole Economics, Inc., Kimley-Horn Analysis

3.11 CRITICAL AIRCRAFT

Facility planning for GA airports is impacted by existing and anticipated levels of aviation-related demand and the size and type of aircraft that currently operate and are projected to operate at an airport. As outlined in FAA AC 150/5300-13A, Change 1 – Airport Design, the FAA classifies airports by an Airport Reference Code (ARC) which subsequently prescribes the overall planning and design criteria for those airports. The ARC is assigned based on the size and operational characteristics of the most demanding aircraft that generally records at least 500 annual operations at that airport. This is referred to as the airport's "critical aircraft" or "design aircraft" and can include either a specific aircraft model or a grouping of similar aircraft with similar characteristics that are considered collectively. The ARC classification system is based on groupings of aircraft types relative to their operating performance and geometric characteristics. The ARC classification is comprised of an alpha-numeric identifier representing the Aircraft Approach Category (AAC) and the Aircraft Design Group (ADG). The AAC reflects the approach speed of the aircraft, and the ADG reflects the aircraft's wingspan and tail height. Quincy Municipal Airport is classified as an ARC A-I. The classifications are summarized in Table 43.

Aircraft with approach speeds included in Categories A and B are typically smaller piston-engine aircraft, whereas C, D, and E are normally larger turboprop or turbine powered aircraft. Similarly, the wingspan and tail height of small, piston-engine aircraft normally correspond to Design Group I. Typical aircraft in Design Group II would be a Beechcraft King Air, Cessna Citation, or smaller Gulfstream business jet. Design Group III would include larger corporate jets such as Gulfstream G500/550 and air carrier aircraft such as the DeHavilland Dash-8 and Boeing B-737. Design Group IV and V would represent larger narrow-body and wide-body air carrier aircraft such as Boeing B-757 and B-747, respectively. Design Group VI would include the largest of aircraft, such as an Airbus A-380 or a C-5 military transport aircraft.

Table 43. FAA Aircraft Categories and Design Standards

Aircraft Approach Category (AAC)		Airplane Design Group (ADG)		
Category	**Approach Speed**	**Group**	**Wingspan (feet)**	**Tail Height (feet)**
A	Less than 91	I	Less than 49	Less than 20
B	91 to 120	II	49 to 78	21 to 29
C	121 to 140	III	79 to 117	30 to 44
D	141 to 165	IV	118 to 170	45 to 59
E	166 or greater	V8	171 to 213	60 to 65
		VI	214 up to but less than 262	66 up to but less than 80

Sources: FAA Advisory Circular 150/5300-13A, Change 1 – Airport Design

The Cessna 172 was identified as the critical aircraft in the Airport's previous Airport Layout Plan (ALP) update in 2005. The 2005 ALP also determined that by the end of its planning period (2030), the Airport's critical aircraft would change to the Beech King Air C90 (B-II). However, after further review of the FAA Traffic Flow Management System Counts (TFMSC) and current observations reported from Airport management, operational activity from the Airport has not been experienced at a level to warrant an increased ARC. The TFMSC provides filed flight plan counts by airport over a given period. Though the data collected is not a full representation of all aircraft that operate at the Airport, it provides a good account of various types of aircraft that operate at the Airport. Data for the Airport was pulled between January 2018 and September 2019, detailing 87 percent of operations are from A-I aircraft and 13 percent are from a mix of A-II, B-I, and B-II aircraft. From this analysis and based on fleet mix projections, it is anticipated that the Airport's critical aircraft will remain the Cessna 172 throughout the 20-year planning horizon.

3.12 FORECAST SUMMARY

Based aircraft and operations at Quincy Municipal Airport are anticipated to continue growing throughout the 20-year planning period. Table 44 summarizes the projections of aviation demand for the preferred forecast methodology. Please note, though this foreast was completed before the COVID-19 pandemic, operations and activity at the airport were not impacted and therefore, the forecasts were not updated to accommodate the pamdemic.

Table 44. Forecast Summary

Category	Year			
	2019	2024	2029	2039
Preferred Forecast Methodology				
Local	3,740	4,020	4,310	4,950
Itinerant	2,500	2,680	2,870	3,300
Annual Operations	6,240	6,700	7,180	8,260
Single-Engine Piston	79	85	91	105
Multi-Engine Piston	0	0	0	0
Jet	0	0	0	0
Helicopter	0	0	0	0
Other	0	0	0	0
Based Aircraft	79	85	91	105

Sources: Airport management, Kimley-Horn Analysis, Woods and Poole Economics, Inc.

3.13 FAA TAF COMPARISON

FAA Airports District Offices (ADOs) or Regional Airports Divisions are responsible for master plan forecast review and approvals. When reviewing a sponsor's forecast, the FAA must ensure that the forecast is based on reasonable planning assumptions, uses current data, and is developed using appropriate forecast methods. A component of the review process is to determine if the proposed forecast is consistent with the TAF.

For all classes of airports, forecasts of based aircraft and total operations are considered consistent with the TAF if they differ by less than 10 percent in the five-year forecast period and less than 15 percent in the 10-year forecast period. If the forecast is not consistent with the TAF, differences must be resolved if that forecast is to be used for FAA decision making (i.e., justification of funding assistance). This may involve revisions to the airport's sponsor's submitted forecasts, adjustments to the TAF, or both.

As shown in Table 45, based aircraft forecasts are higher than those reported in the FAA TAF. The difference is attributed primarily to the number of based aircraft recorded by Airport management compared to the number reported in the FAA TAF. According to the most recent version of the FAA TAF issued February 2019, there were 59 based aircraft at Quincy Municipal Airport in 2019. This figure is projected to remain flat throughout the 20-year planning period. An inventory conducted by airport management in October 2019 identified 79 based aircraft, a difference of 34 percent from the TAF. It should be noted that there is currently demand from aircraft owners and operators for additional hangar space at the Airport, beyond the growth already realized in the last few years. Based on socioeconomic variables used to forecast based aircraft, it is estimated that the airport will experience 97 based aircraft by 2034, a 64 percent difference from the TAF. If the TAF were updated based on Airport management counts, the forecasts would remain within the TAF comparison thresholds. It should also be noted that the Airport has planned for the construction of additional hangars and commitments already exist to ensure full occupancy of these hangars.

Total annual operations at the Airport are the same for base year 2019. The preferred total operations projections, however, show a difference in total aircraft operations increasing to approximately 23 percent by 2034. This different in total aircraft operations projections is attributed to moderate growth in itinerant operations, growth in local operations conducted by the projected 97 based aircraft compared to only 59 projected in the FAA TAF in 2034, and the zero-growth methodology utilized in the TAF regarding total operations.

Based on a thorough inventory of facilities at Quincy Municipal Airport, the existing demand for additional storage, a significant increase in based aircraft at the Airport in recent years, and a stable local/regional economy, it is believed that the forecasts of aviation activity that are presented below are both reasonable and achievable. Table 45 reported the forecasts of total based aircraft and total annual operations compared to the FAA TAF.

On December 9, 2019, this inventory chapter was provided to the FAA's Orlando ADO for review and approval. On January 15, 2020, the forecast was found to be consistent with the TAF and the Airport's preferred forecast was approved for use (Figure 28).

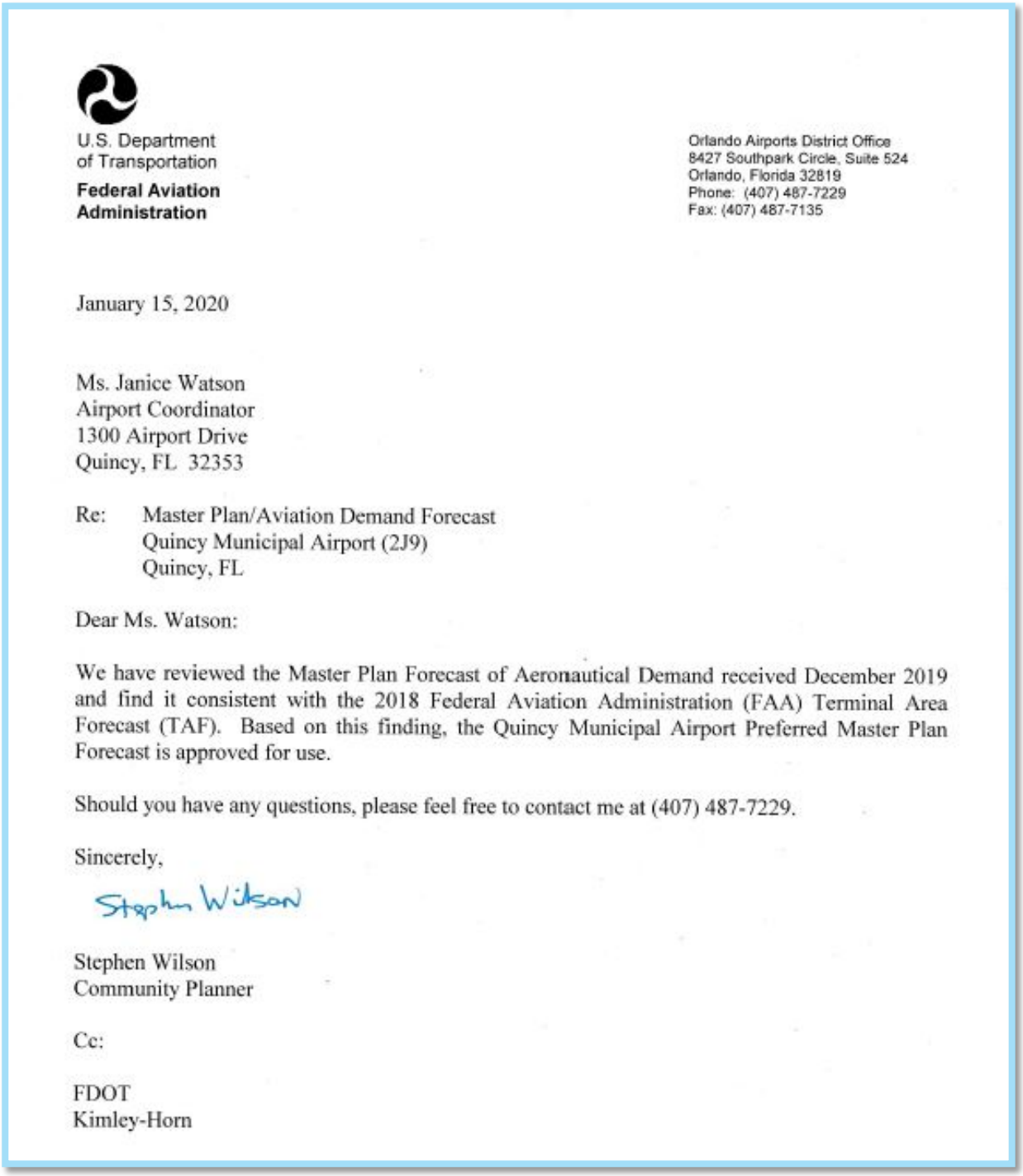
Table 45. Preferred 2J9 Forecast and FAA TAF Comparison

Based Aircraft	Year	2J9 Forecast	TAF	2J9/TAF % Difference
Base year	2019	79	59	34%
Base year + 5 years	2024	85	59	44%
Base year + 10 years	2029	91	59	54%
Base year + 15 years	2034	97	59	64%
Itinerant Operations	**Year**	**2J9 Forecast**	**TAF**	**2J9/TAF % Difference**
Base year	2019	2,500	2,184	14%
Base year + 5 years	2024	2,680	2,184	23%
Base year + 10 years	2029	2,870	2,184	31%
Base year + 15 years	2034	3,080	2,184	41%
Local Operations	**Year**	**2J9 Forecast**	**TAF**	**2J9/TAF % Difference**
Base year	2019	3,740	4,056	-8%
Base year + 5 years	2024	4,020	4,056	-1%
Base year + 10 years	2029	4,310	4,056	6%
Base year + 15 years	2034	4,620	4,056	14%

Total Operations	Year	2J9 Forecast	TAF	2J9/TAF % Difference
Base year	2019	6,240	6,240	0%
Base year + 5 years	2024	6,700	6,240	7%
Base year + 10 years	2029	7,180	6,240	15%
Base year + 15 years	2034	7,700	6,240	23%

Sources: Terminal Area Forecast, 2019, Kimley-Horn Analysis

Figure 28. FAA Forecast Approval Letter



U.S. Department
of Transportation
Federal Aviation
Administration

Orlando Airports District Office
8427 Southpark Circle, Suite 524
Orlando, Florida 32819
Phone: (407) 487-7229
Fax: (407) 487-7135

January 15, 2020

Ms. Janice Watson
Airport Coordinator
1300 Airport Drive
Quincy, FL 32353

Re: Master Plan/Aviation Demand Forecast
Quincy Municipal Airport (2J9)
Quincy, FL

Dear Ms. Watson:

We have reviewed the Master Plan Forecast of Aeronautical Demand received December 2019 and find it consistent with the 2018 Federal Aviation Administration (FAA) Terminal Area Forecast (TAF). Based on this finding, the Quincy Municipal Airport Preferred Master Plan Forecast is approved for use.

Should you have any questions, please feel free to contact me at (407) 487-7229.

Sincerely,

Stephen Wilson

Stephen Wilson
Community Planner

Cc:

FDOT
Kimley-Horn

Source: FAA Orlando ADO, January 2020

4 FACILITY REQUIREMENTS

This chapter provides a discussion and technical analysis of airfield demand and capacity, as well as facility requirements for Quincy Municipal Airport. The purpose of this chapter is to compare existing airside and landside facilities to the projected level of activity that was forecast as part of this master plan. This chapter will also provide recommendations and identify enhancements that may be needed to meet aviation demand and/or FAA design standards at the Airport. For recommendations that are more complex, or have multiple solutions, an evaluation of alternative development scenarios will be provided in a later chapter. The following sections analyze facility requirements related to:

- Airfield Demand and Capacity
- Airside Facilities
- Airspace Protection
- Landside Facilities

4.1 AIRFIELD DEMAND AND CAPACITY

Airfield capacity refers to the maximum number of aircraft operations (take-offs and landings) an airfield can accommodate in a specified amount of time, such as annually or hourly. The purpose of an airfield capacity analysis is to determine if the existing airfield facilities, specifically the number of runways and their alignment, are sufficient to meet existing and future forecasted demand or if capacity changes are needed for these facilities. FAA AC 150/5060-5 – Airport Capacity and Delay (AC 150/5060-5) explains how to compute airport capacity and aircraft delay for airport planning and design. AC 150/5060-5 indicates that with a single, bidirectional runway and a preponderant fleet mix of aircraft less than 12,500 pounds, Quincy Municipal Airport can accommodate up to 230,000 total annual operations.

Based on the selected and approved forecast, the Airport is projected to have 8,260 total annual operations by 2039. While helpful in understanding what magnitude of operations that a runway/airport can accommodate, annual operations are not necessarily the most accurate method for understanding airfield capacity constraints. AC 150/5060-5 provides analysis that further specifies that the maximum hourly capacity for the Airport's airfield is 98 operations during Visual Flight Rule (VFR) conditions and 59 during Instrument Flight Rule (IFR) conditions. This analysis shows that the existing airfield provides more than sufficient capacity throughout the planning period. A summary of this information is provided in Table 46.

Table 46. Airfield Capacity

Factor	2019	2024	2029	2039
Annual Operations	6,240	6,700	7,180	8,260
Annual Service Volume (ASV)	230,000	230,000	230,000	230,000
Demand/Capacity Ratio (%)	2.71%	2.91%	3.12%	3.59%

Source: Kimley-Horn Analysis, 2019

4.2 AIRSIDE FACILITIES

Airside facilities accommodate the take-off and landing of aircraft as well as the movement of those aircraft throughout the Airport. On July 20, 2020, the FAA released a draft iteration of its Airport Design AC (150/5300-13B). It is anticipated that this AC will be published late 2021. Therefore, the airside facility requirements presented herein will contemplate the current and future Airport Design AC. A review of applicable airport design standards is recommended once AC 150/5300-13B is published. To better understand the function and ability of Quincy Municipal Airport's airside facilities, this section includes analysis of the following:

- Approach Capability
- Airport and Runway Classifications
- Runway System
- Taxiway System
- Apron System
- Lighting, Markings, and NAVAIDs
- Summary of Airside Facility Needs

4.2.1 APPROACH CAPABILITY

The ability of an approaching aircraft to land at an airport is predicated on weather conditions, the pilot's level of training, the type of navigation equipment both in the aircraft and at the Airport, and the approach procedures established by the FAA. Under Visual Meteorological Conditions (VMC), which are defined by a cloud ceiling greater than 1,000 feet above ground level (AGL) and visibility conditions equal to or greater than three statute miles, pilots may approach an airport using only visual standards or cues.

Visual standards or cues are basic flight maneuvers that can be performed by all pilots at all public-use airports. Under Instrument Meteorological Conditions (IMC), which are defined by a cloud ceiling lower than 1,000 feet AGL and/or visibility conditions less than three-statute miles, properly trained pilots with adequately equipped aircraft can follow FAA-published instrument approach procedures (IAPs) to land at an airport.

The FAA classifies standard IAPs, and the runways supporting those procedures, based on the type of electronic navigation guidance and the lowest approach minimums (visibility and decision height/height above threshold) provided by that procedure. The classifications include Non-Precision (NP), Precision (P), and Approach Procedures with Vertical Guidance (APV). NP approaches provide only lateral guidance from either ground based or satellite based Global Positioning System (GPS) NAVAIDs. P instrument approaches provide both lateral and vertical guidance and are traditionally supported by multiple ground-based NAVAIDs collectively called an Instrument Landing System (ILS).

An ILS includes a localizer (providing lateral guidance), a glideslope (providing vertical guidance), and an approach lighting system (providing close-in visual guidance). APV are a relatively recent outcome of the FAA's Next Generation Air Transportation System (NextGen) program. APV uses GPS technology to provide ILS-like approach capability without the need for traditional ground-based ILS NAVAID equipment. However, these approaches require additional equipment in the aircraft and additional pilot training.

Quincy Municipal Airport does not currently have any IAPs; rather, pilots rely on a visual approach when landing at the Airport. Based on conversations with the Airport Authority, tenants, and airport users, the Airport has expressed interest in reinstating the NP instrument approach that was rescinded in 2011, within the 20-year planning horizon. It should be noted that the expressed interest in reinstating the NP approach could be a facility improvement to increase safety at the Airport. To implement an IAP at the Airport, the Airport would need to complete an Airports GIS (AGIS) survey and submit the survey to NOAA/NGS for review and integration into the FAA's Obstacle Authoritative Source (OAS). Furthermore, and related to IAP implementation, the Airport would consider two options:

- **Option 1** is to remove or trim trees to allow for a straight-in RNAV (GPS) approach to the runway ends that do not rely on ground-based navigation.
- **Option 2** is to implement a RNAV (GPS) circling only approach solution that is not dependent on tree removal. The approach would be limited to daytime use only because of the 20:1 approach penetrations.

As part of this master plan, a detailed analysis was performed with the goal being to reinstate an NP instrument approach at Quincy Municipal Airport. It was determined that a straight-in instrument approach cannot be installed. As of this writing, development of a RNAV (GPS) circling approach is ongoing and awaiting a flight check from the FAA before it can be published and reinstated. Therefore, for the remainder of this master plan, it will be assumed that an RNAV (GPS) circling approach is available at the Airport and will serve both runway ends.

4.2.2 AIRPORT AND RUNWAY CLASSIFICATIONS

The FAA classifies airports and runways by their current and planned operational capabilities. These classifications are used to determine the appropriate FAA design and airspace protection standards to which the airfield facilities should be developed.

4.2.2.1 CRITICAL AIRCRAFT AND AIRPORT REFERENCE CODE

As mentioned above, when classifying airports and runways, the FAA uses current and planned operational capabilities. These classifications are described below and, along with the aircraft classifications defined in Chapter 2, are used to determine the appropriate FAA standards, per AC 150/5300-13A, to which the airfield facilities must be designed and built.

As noted in the "Forecast" chapter, an Airport Reference Code (ARC) is an airport designation that represents the Aircraft Approach Category (AAC) and Airplane Design Group (ADG) of the most demanding aircraft that the airfield is intended to accommodate on a regular basis. The ARC is used for planning and design only and does not limit the aircraft that may be able to operate safely at an airport. The FAA also identifies a Critical Aircraft, which is defined as the most demanding airplane or group of airplanes that utilize a runway on a regular basis. A "regular basis" is considered at least 500 takeoffs or landings per year.

Based on an analysis of historical operations at Quincy Municipal Airport using the FAA's Traffic Flow Management System Count database (TFMSC), the most demanding aircraft that regularly operates at the Airport is the Cessna 172. With an approach speed of 62 knots and a wingspan of 36 feet, the ARC for the Cessna 172 is A-I.

Therefore, consistent with FAA guidance, the Critical Aircraft anticipated to use Airport facilities over the planning horizon are those with an AAC and ADG of A-I. The ARC for Quincy Municipal Airport is anticipated to remain A-I throughout the planning horizon and all subsequent analysis will be based on A-I design standards.

4.2.2.2 RUNWAY DESIGN CODE

The Runway Design Code (RDC) is used to signify the design standards to which each specific runway will be planned and built. This classification has three components: AAC, ADG, and the highest approach visibility minimums that either end of the runway is planned to provide. Within these classifications, instrument approach visibility minimums are expressed in runway visual range (RVR) values of 1200, 1600, 2400, 4000, and 5000 feet, as presented in Table 47. An airport's ARC will be consistent with the highest RDC of any of its runways. As noted in Table 47, runways with circling approaches are considered Visual Runways. Therefore, the RDC for the Airport's Runway 14-32 is A-I-VIS, and this is the RDC for the Airport as a whole.

Table 47. Runway Visual Ranges

RVR (ft.)	Corresponding Visibility Category
VIS	Visual conditions (including instrument circling)
5000	Not lower than one mile
4000	Lower than one mile but not lower than ¾ mile
2400	Lower than ¾ mile but not lower than ½ mile (CAT-I-ILS)
1600	Lower than ½ mile but not lower than ¼ mile (CAT-II-ILS)
1200	Lower than ¼ mile (CAT-III-ILS)

Source: FAA AC 150/5300-13A, Airport Design

4.2.2.3 APPROACH AND DEPARTURE REFERENCE CODES

Approach and Departure Reference Codes (APRC and DPRC, respectively) describe the *current* operational capabilities of a runway and adjacent taxiways where no special operating procedures are necessary. In contrast, the RDC is based on *planned* development and has no operational application.

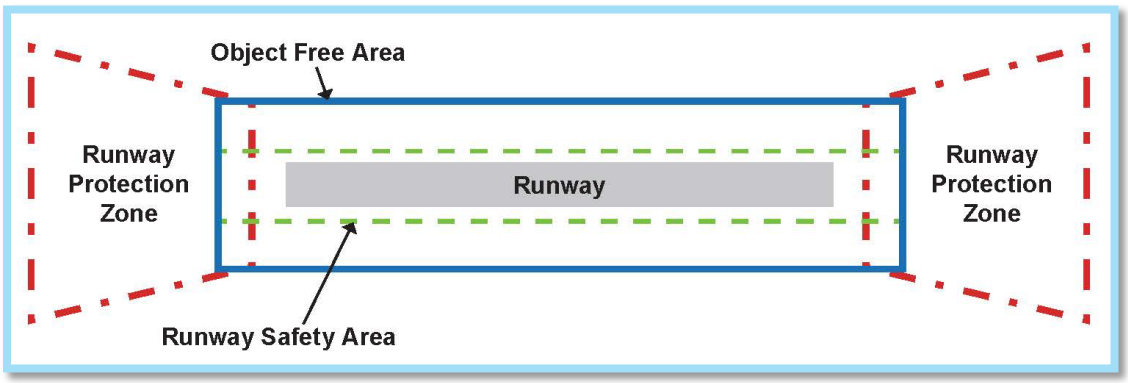
Like the RDC, the APRC is composed of three components: AAC, ADG, and visibility minimums. However, the APRC indicates which aircraft can operate on taxiways adjacent to a runway under particular meteorological conditions. The APRC classification is also used to identify several critical design standards including runway lighting and marking, threshold siting criteria, obstacle free zones, and other FAA obstacle identification surfaces. The APRC for Runway 14-32 is A-I-VIS.

The DPRC represents those aircraft that can take off from a runway while any aircraft are present on adjacent taxiways, under particular meteorological conditions with no special operational procedures necessary. It is similar to the APRC, but is composed of two components, AAC and ADG. The DPRC for Runway 14-32 is A-I. The APRC and DPRC may change over time as improvements are made to the runway, future taxiway, and NAVAIDs.

4.2.2.4 RUNWAY DIMENSIONAL STANDARDS

FAA AC 150/5300-13A identifies dimensional standards for runway-related separations that are essential to provide clearance from potential hazards affecting routine aircraft ground movements and protect people from incompatible land uses in the immediate approach and departure areas. Dimensional standards for these separations are determined by the RDC and relate to separation distances for taxiway hold lines, parallel taxiways, aircraft parking areas, object free areas, safety areas, as well as many other safety critical areas. The following sections describe the A-I safety and runway protection areas as they apply to Runway 14-32. These are also conceptually depicted in Figure 29.

Figure 29. Runway Safety and Protection Areas



Source: FAA AC 150/5300-13A, Change 1, Airport Design

4.2.2.4.1 Runway Safety Area

The Runway Safety Area (RSA) is a defined surface surrounding the runway designed to reduce the risk of damage to aircraft in the event of an undershoot, an overshoot, or excursion from the runway. As indicated by AC 150/5300-13A, an RSA must be:

- Cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations.
- Drained by grading or storm sewers to prevent water accumulation.
- Capable, under dry conditions, of supporting snow removal equipment, Aircraft Rescue and Fire Fighting (ARFF) equipment, and the occasional passage of aircraft without causing damage to the aircraft.
- Free of objects, except for objects that need to be in the RSA because of their function. Objects higher than three inches above grade must be constructed, to the extent practical, on frangible-mounted structures of the lowest practical height with the frangible point no higher than three inches above grade. Other objects, such as manholes, should be constructed at grade and capable of supporting the loads noted above. In no case should their height exceed three inches above grade.

RSA standards cannot be modified. A continuous evaluation of all practicable alternatives for improving each sub-standard RSA is required until it meets all standards for grade, compaction, and object frangibility. FAA Order 5200.8 explains the process for conducting this evaluation.

For A-I runways with visibility minimums of either visual or not lower than one mile, such as Runway 14-32 at Quincy Municipal Airport, the dimensions of the RSA are 120 feet wide and 240 feet beyond the threshold. The Airport currently has an easement with a different property owner on runway end 14 which

covers all safety areas. Figure 30 depicts the RSA at the Airport (note: Table 48 contains depictions of all of the Runway Dimensional Standards and is provided at the end of this section). Based on the Airport meeting the current and future A-I design standards, there are no RSA improvement recommendations included in this master plan and ALP.

4.2.2.4.2 Runway Object Free Area

The Runway Object Free Area (ROFA) is an area centered on the runway centerline that must be cleared of all above-ground objects that protrude above the RSA edge elevation. For new runways, terrain should not protrude above the nearest point of the RSA within a distance from the edge of the RSA equal to one-half the most demanding wingspan of the RDC of the Runway. If not practicable to apply this standard to existing runways, the FAA provides guidance in the AC 150/5300-13A. There is an exception for objects that must be in the ROFA for air navigation or aircraft ground maneuvering purposes (fixed by function). Objects that must remain in the ROFA are constructed on frangible mounts to minimize potential damage to aircraft in the event of an errant mishap.

For Runway 14-32, the ROFA is 400 feet wide and extends 240 feet prior to the threshold and 240 feet beyond the departure end of the runway. Two objects that are not fixed by function exist within the ROFA, both on the southwesterly side of the runway: 1) the primary wind cone and 2) a dirt service road. Consideration should be given to remove these objects from the ROFA in the alternatives phase of this master plan. Figure 30 depicts the ROFA at the Airport (note: Table 48 contains depictions of all of the Runway Dimensional Standards and is provided at the end of this section).

4.2.2.4.3 Runway Obstacle Free Zone

The Runway Obstacle Free Zone (ROFZ) is defined by the FAA as a volume of airspace centered above the runway centerline that extends 200 feet beyond each end of the runway surface. This area prohibits taxiing or parked aircraft and object penetrations, except for frangible visual NAVAIDs that need to be in the ROFZ because of their functions.

- For operations by small aircraft
  - 300 feet for runways with lower than ¾ statute mile approach visibility minimums
  - 250 feet for operations on other runways with approach speeds of 50 knots or more
  - 120 feet for operations on other runways with approach speeds of less than 50 knots
- 400 feet for operations by large aircraft

ROFZ width is determined by the size and approach speed of the critical aircraft. For Quincy Municipal it is assumed that the runway may be used by large aircraft. As such, the ROFZ for Runway 14-32 is 400 feet wide and is as wide as the ROFA. Therefore, the same objects that impact the ROFA are ROFZ deficiencies. Figure 30 depicts the ROFZ at the Airport (note: Table 48 contains depictions of all of the Runway Dimensional Standards and is provided at the end of this section).

4.2.2.4.4 Runway Protection Zone

A Runway Protection Zone (RPZ) is a trapezoidal area beginning 200 feet from the threshold and is centered on the extended runway centerline. The RPZ is a safety and land use restricted area meant to enhance the protection of people and property on the ground. Airports should seek to maintain control over the RPZs through fee-simple acquisition, avigation easement, or use restrictions/agreements. For airports with displaced thresholds and declared distances, separate approach and departure RPZs *may* be needed. Quincy Municipal Airport has displaced thresholds; therefore, the approach and departure RPZs are not in the same location.

As previously stated, airports should make every effort to keep RPZs within airport property through fee-simple acquisition or an avigation easement. Maintaining control of RPZs mitigates incompatible land use within the protection zone. However, some land uses are compatible within an RPZ, including:

- Farming that meets the design standards
- Irrigation channels that meet the requirements of AC 150/5200-33 and FAA/USDA manual, *Wildlife Hazard Management at Airports*
- Airport service roads, as long as they are not public roads and are directly controlled by the airport operator
- Underground facilities, as long as they meet other design criteria, such as RSA requirements, as applicable
- Unstaffed NAVAIDs and facilities, such as equipment for airport facilities that are considered fixed-by-function in regard to the RPZ

According to the FAA's interim guidance on RPZ land use compatibility, incompatible land use within an RPZ includes:

- Buildings and structures (examples include, but are not limited to: residences, schools, churches, hospitals, or other medical care facilities, commercial/industrial buildings, etc.)
- Recreational land use (examples include, but are not limited to: golf courses, sports fields, amusement parks, other places of public assembly, etc.)
- Transportation facilities. Examples include, but are not limited to:
  - Rail facilities – light or heavy, passenger or freight
  - Public roads/highways
  - Vehicular parking facilities
- Fuel storage facilities (above and below ground)
- Hazardous material storage (above and below ground)
- Wastewater treatment facilities
- Above-ground utility infrastructure (e.g., electrical substations), including any type of solar panel installations

For A-I runways, the dimensions of the RPZ vary depending on visibility minimums. For visual runways, and runways with minimums of not lower than one mile, such as Quincy Municipal Airport, the inner width of the approach and departure RPZs are 500 feet, the outer widths are 700 feet, and the lengths are 1,000 feet. This equates to 13.77 acres of land use protection. The RPZs on Runway 14-32 extend beyond the Airport property boundary. Figure 30 depicts the RPZs at the Airport (note: Table 48 contains depictions of all of the Runway Dimensional Standards and is provided at the end of this section). It is recommended

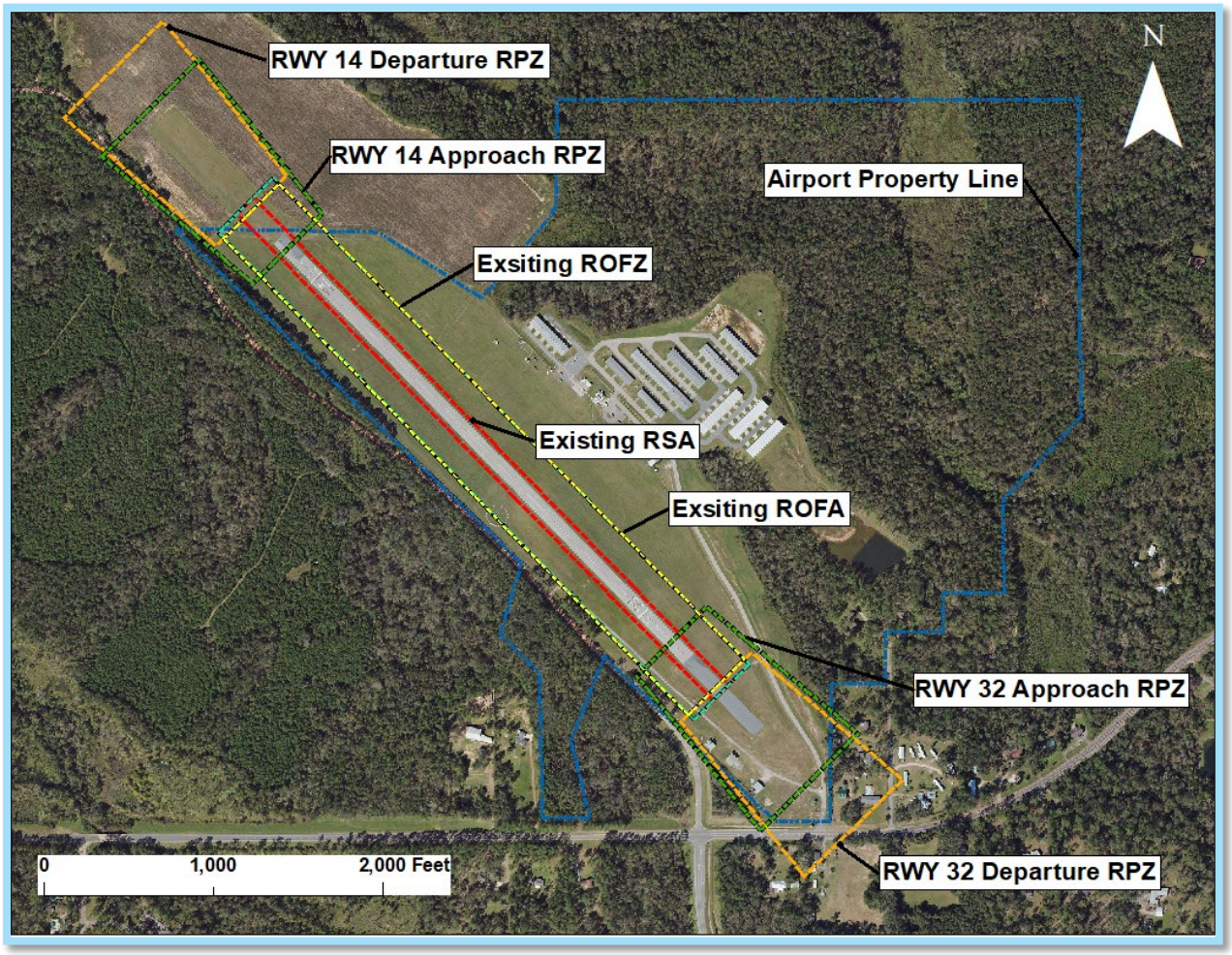
that the Airport work to own, through an avigation easement, the properties that fall within the existing and future RPZs.

There are currently incompatible land uses within the RPZ on runway end 32:

- Maintenance shed and old airport buildings
- State Road 12 and C&E Farm Road
- Residential buildings off airport property

Quincy Municipal Airport's existing dimensional standards along with the FAA design standards for a A-I runway with visual approach minimums are summarized in Table 48. There are no changes proposed to these standards in FAA AC 150/5300-13B.

Figure 30. Runway Protection Zone



Sources: Kimley-Horn Analysis, 2020

Table 48. Runway Dimensional Standards

Design Standard	Runway 14-32		
	Existing Conditions	A-I (Visual)	A-I (Not lower than one mile)
Runway Design			
Width	75’	60’	60’
Shoulder Width*	0’	10’	10’
Runway Protection			
RSA Length Beyond Departure End	240’	240’	240’
RSA Width	120’	120’	120’
ROFA Length Beyond Departure End	240’	240’	240’
ROFA Width	400’	400’	400’
ROFZ Length Beyond Runway End	200’	200’	200’
ROFZ Width	400’	400’	400’
Approach/Departure RPZ Length	1,000’	1,000’	1,000’
Approach/Departure RPZ Inner Width	500’	500’	500’
Approach/Departure RPZ Outer Width	700’	700’	700’

**Turf, aggregate-turf, soil cement, lime, or bituminous stabilized soil are recommended adjacent to runways accommodating ADG I aircraft.*

Source: FAA AC 150/5300-13A, Change 1 – Airport Design, Kimley-Horn Analysis

4.2.3 RUNWAY SYSTEM

The dominant feature on any airport is its runway(s). The pavement, orientation, dimensions, and associated lighting; NAVAIDs; and surrounding safety areas determine which aircraft, and under which conditions, those aircraft can be operated in a safe, efficient, and FAA-compliant manner. The following sections evaluate the physical and operational characteristics of Runway 14-32 at Quincy Municipal Airport.

Based on discussions with the Airport, it has been noted that there is some desire to officially designate an Alternative Operating Area to accommodate some of the recreational activity that occurs at the Airport. An Alternative Operating Area will be further analyzed in the “Alternatives Analysis” chapter, though it is not anticipated to be included in the final recommendations of this plan.

4.2.3.1 RUNWAY ORIENTATION

A runway is ideally oriented with the prevailing wind since operating with a headwind increases lift and stability. FAA planning standards indicate that the primary runway should be capable of operating under allowable wind conditions at least 95 percent of the time. The 95 percent wind coverage is based on the crosswind (i.e., wind speed and direction vector compared to the aircraft's direction of flight) not exceeding the following:

- 10.5 knots (12 miles per hour [mph]) for small single-engine and light-twin aircraft (Quincy Municipal Airport)
- 13 knots (15 mph) for the larger and heavier turboprop and medium jet type aircraft
- 16 knots (18.4 mph) for the larger corporate/military jet and narrow-body commercial type aircraft

Larger aircraft have a higher tolerance for crosswinds than smaller aircraft due to their size, weight, and operational speed. Availability of a crosswind runway is highly desirable when crosswinds exceed the allowable tolerance for the aircraft categories using the airport. Without a crosswind runway, arriving aircraft may need to divert to an alternate airport or maintain a holding pattern until wind conditions improve.

Wind data were obtained from Tallahassee International Airport (TLH), as it is the nearest facility with weather information available from an Automated Surface Observing System (ASOS) at the time of this report. As mentioned earlier in this report, Quincy Municipal Airport AWOS was not reporting data, so data from TLH must be used. Wind coverage for Quincy Municipal Airport (using TLH data) is presented in Table 49 with percent wind coverage for all aircraft types under all weather, IFR, and VFR conditions.

Table 49. Runway 14-32 Wind Coverage

Weather Class	10.5 knots (%)	13 knots (%)	16 knots (%)
All Weather	97.0	98.75	99.68
IFR	97.09	98.41	99.42
VFR	96.95	98.59	99.73

Sources: Federal Aviation Administration Windrose File Generator, September 2020

As shown, wind coverage for Runway 14-32 is above the 95 percent FAA threshold under all weather conditions using a 10.5 percent crosswind component. While the distance between TLH and Quincy Municipal Airport are relatively short (22 miles), weather patterns and wind conditions can still differ. With the understanding that weather patterns and wind conditions can differ between TLH and Quincy Municipal Airport, the Airport should research upgrading their system to provide weather data that is representative of the Airport.

4.2.3.2 RUNWAY LENGTH

The existing Quincy Municipal Airport runway is 2,974 feet long with displaced thresholds on each end. Previous planning efforts from the Airport's 2005 ALP identified the Airport Authority's desire to extend the runway to an ultimate length of 3,500 feet. FAA AC 150/5325-4B – Runway Length Requirements for Airport Design, prescribes the following design objective:

The recommended length for the primary runway is determined by considering either the family of airplanes having similar performance characteristics or a specific airplane needing the longest runway. In either case, the choice should be based on airplanes that are forecast to use the runway on a regular basis.

The Airport's elevation is roughly at sea level, and the mean maximum temperature of the hottest month in Quincy is 90 degrees Fahrenheit (32 degrees Celsius). Using this information and the information in Table 50, the takeoff distance for a Cessna 172, the critical aircraft the Airport, was determined to be 1,070 feet. Aircraft operators will often use the distance calculation to clear a 50-foot obstacle as their runway length requirement. Thus, the current length of Runway 14-32 is long enough to accommodate the takeoff distances of a Cessna 172.

Table 50. Cessna 172 – Takeoff Distance

Press Alt in Feet	0°C		10°C		20°C		30°C		40°C	
	Ground Roll Ft	Total Ft to Clear 50 ft Obstacle	Ground Roll Ft	Total Ft to Clear 50 ft Obstacle	Ground Roll Ft	Total Ft to Clear 50 ft Obstacle	Ground Roll Ft	Total Ft to Clear 50 ft Obstacle	Ground Roll Ft	Total Ft to Clear 50 ft Obstacle
S.L.	860	1,465	925	1,575	995	1,690	1,070	1,810	1,150	1,945
1,000	940	1,600	1,010	1,720	1,090	1,850	1,170	1,990	1,260	2,135
2,000	1,025	1,755	1,110	1,890	1,195	2,035	1,285	2,190	1,380	2,355
3,000	1,125	1,925	1,215	2,080	1,310	2,240	1,410	2,420	1,515	2,605
4,000	1,235	2,120	1,335	2,295	1,440	2,480	1,550	2,685	1,660	2,880
5,000	1,355	2,345	1,465	2,545	1,585	2,755	1,705	2,975	1,825	3,205
6,000	1,495	2,605	1,615	2,830	1,745	3,075	1,875	3,320	2,010	3,585
7,000	1,645	2,910	1,785	3,170	1,920	3,440	2,065	3,730	2,215	4,045
8,000	1,820	3,265	1,970	3,575	2,120	3,880	2,280	4,225	2,450	4,615

Source: Cessna 172 Skyhawk Information Manual

4.2.3.3 RUNWAY WIDTH

Runway 14-32 is currently 75 feet wide. The FAA design standard for runway width is based on the RDC of the runway. The standard width for a A-I runway, regardless of the approach visibility minimums, is 60 feet. The existing runway width will therefore sufficiently accommodate the critical aircraft that is anticipated to regularly use the Airport throughout the planning period. The Airport will also not need to increase the width of Runway 14-32 once it establishes an instrument approach procedure with visibility minimums of not lower than one mile.

4.2.3.4 RUNWAY PAVEMENT STRENGTH

Runway pavement is critical to the operational ability of an airport. Ensuring that the runway conditions are adequate for use requires an analysis of the current pavement design and its relationship to three primary aircraft operational factors:

- Operating weight of aircraft anticipated to use the Airport

- Landing gear type and geometry
- Volume of annual aircraft operations by type

Pavement strength is not the same as maximum allowable weight limit. Aircraft weighing more than the certified or estimated strength can operate on a runway on an infrequent basis; however, frequent activity by heavier aircraft can reduce the useful life of the pavement. Also, FAA regulations state that all federally obligated airports (airports that have accepted FAA funding and the associated grant assurances) must remain open to the public and cannot restrict an aircraft from using the runway due only to its weight exceeding the published pavement strength rating. The pilot of the aircraft decides which airports to use based on their determination that the Airport can support their aircraft in a safe manner.

Runway 14-32 is an asphalt runway with a pavement strength of 20,000 pounds for a single-wheel configuration aircraft. Asphalt runways are typically designed for a 20-year lifespan, but can last longer depending on use, weather, and regular maintenance. To assist airports in planning and programming for runway rehabilitation and repair projects, FDOT and the FAA conduct the Florida Statewide Airfield Pavement Management Program (SAPMP) to determine the conditions of participating airports throughout the state. According to the SAPMP, Runway 14-32 has a PC) of 58, putting it in the range of "fair."[5] With this PCI, it is recommended that the Airport mill and overlay Runway 14-32 to bring the pavement condition to a range of "satisfactory" to "good." Quincy Municipal is currently in the process of designing a runway rehabilitation project, which will be discussed further in the "Alternatives and Capital Improvement Plan" sections.

4.2.4 PRESERVATION OF ALTERNATIVE OPERATING AREA/TURF RUNWAY

During this master plan, it was requested that an alternative operating area be explored as a possible development option that would be preserved for development in the future. This alternative operating area would exist between the existing paved runway and a future parallel taxiway and would function as a turf runway. Pilots would use it to facilitate soft landings to minimize wear on an aircraft.

Because it was not within the scope of this master plan to officially designate this alternative operating area, the exact location and dimensions of the alternative operating have not been determined. However, the required width of the turf runway would be the same as a paved runway: 60 feet for an ARC of A-I. For the purposes of this analysis, a runway length of 2,000 feet is assumed. The turf runway centerline could be set 125 feet from the Runway 14-32 centerline, keeping the RSAs of the two runways from overlapping. To eliminate overlapping ROFAs, 400 feet would be required between the Runway 14-32 and the turf runway centerlines, which is not possible to achieve with the current airport configuration. Turf runways are

[5] The PCI ranges in the SAPMP are as follows:

86-100: Good

65-85: Satisfactory to good

40-64: Poor to fair

Below 40: Poor

normally not compatible with IAPs; therefore, the turf runway would only be available for visual approaches.

In the concluding phases of this master plan, the potential turf runway was carefully considered by the FAA and FDOT. The turf runway would not meet several airport design separation standards. Therefore, collectively, the FAA and FDOT determined that inclusion of an alternate operating area or turf runway should not be recommended in the master plan. Analysis of potential alternate operating areas is included to document the analysis performed during this master plan and the final FAA and FDOT determination.

4.2.5 TAXIWAY SYSTEM

Taxiway systems provide safe access to and from runways and landside areas. Taxiways are designed according to the Taxiway Design Group (TDG). The system should be designed and reviewed to ensure there are no "hot spots" that could lead to runway incursions and that adequate access is provided to all areas between runway and landside.[6] Currently, there are no taxiways at Quincy Municipal Airport; however, the Airport provides taxilanes that allow aircraft to move about the hangar area safely.

With no taxiway currently at the Airport, aircraft must use the turf area between the landside and airside areas to and from Runway 14-32. From a safety standpoint, the Airport would benefit from a paved taxiway to allow aircraft to move from airside to landside facilities, which would help increase safety and efficiency. The previous ALP identified a need for a full-length parallel taxiway. Without a paved taxiway, pilots who are unfamiliar with the Airport could get stuck in the ditch located near runway end 32, especially during dawn and dusk when visibility is low. A full-length parallel taxiway is encouraged to and from the runway thresholds to achieve the lowest possible instrument approach minimums. Construction of a parallel taxiway, while advisable, is not a requirement for publication of an IAP with visibility minimums greater than or equal to one mile. This master plan and the associated ALP recommend that the Airport design and construct a full-length parallel taxiway during the 20-year planning period to provide enhanced safety in operations at the Airport.

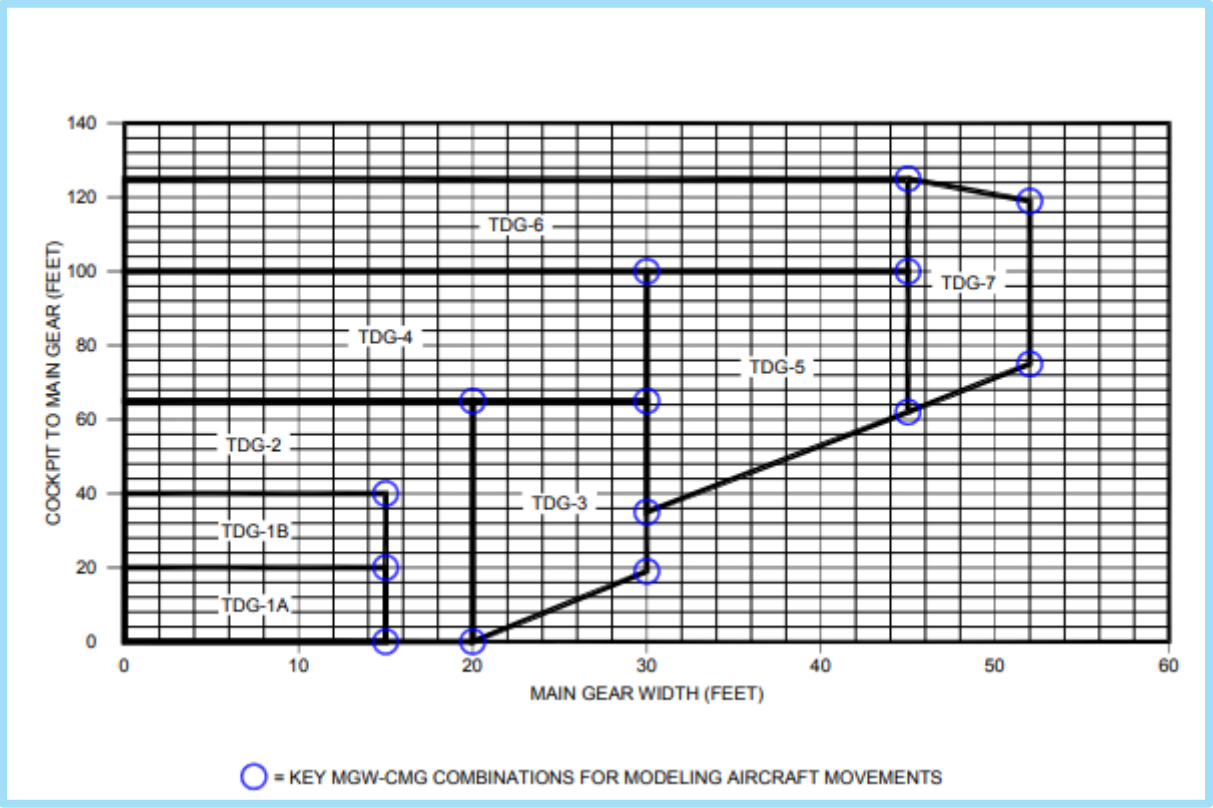
[6] A "hot spot" is a location on an airport movement area with a history of potential risk of collision or runway incursions.

4.2.5.1 TAXIWAY DIMENSIONAL STANDARDS

Like runway design standards, FAA AC 150/5300-13A, Change 1 – Airport Design identifies dimensional standards pertaining to taxiways and taxiway-related separations that are intended to provide operational clearance between aircraft as well as fixed and moveable objects. These standards are based on both the ADG and TDG of the most demanding aircraft intended to use the facilities on a regular basis. The TDG is established by the overall Main Gear Width (MGW) and the Cockpit to Main Gear Distance (CMG) of the Airport's critical aircraft.

The Cessna 172 is classified as a TDG-1A with an MGW of 8.50 feet and a CMG of 5.42 feet. As previously noted, Quincy Municipal Airport does not have a parallel taxiway; therefore, taxiway dimensional standards are not currently an issue. Figure 31 presents TDG measurements as identified by the FAA.

Figure 31. Taxiway Design Group Measurements



Sources: FAA AC 150/5300-13A, Change 1 – Airport Design

While the Draft AC 150/5300-13B does have changes to TDG classifications, there are no changes to the classification of the Cessna 172; it remains a TDG-1A aircraft.

4.2.5.2 RUNWAY SEPARATION STANDARDS

There are additional standard separation distances required between the runway centerline and other airport facilities as established by the FAA to ensure operational safety on the airfield. These include:

- **Runway Centerline to Parallel Taxiway Centerline**: For A-I runways, the separation distance is 225 feet. Currently, Quincy Municipal Airport does not have a parallel taxiway.

- **Runway Centerline to Holding Position**: For A-I runways, the standard distance is 200 feet, which corresponds with the width of the ROFA and ROFZ.
- **Runway Centerline to Edge of Aircraft Parking Area**: For A-I runways, the minimum standard separation distance is 200 feet. The existing distance at Quincy Municipal Airport between the runway centerline and aircraft parking area is approximately 530 feet. This distance will accommodate operational needs through the planning period. According to Airport staff, fixed-wing and rotorcraft park on the grass infield between Runway 14-32 and the existing apron area. To maintain compliance with FAA design separation standards, aircraft parking on the grass infield should be no further than 150 feet from the edge of the existing apron pavement. To increase the safety of operations at the Airport, aircraft should avoid parking on the grass infields unless all paved apron parking spaces are occupied. In the future, additional separation will be required to ensure parked aircraft remain clear of Taxiway Object Free Areas (TOFAs). Parked aircraft should also remain clear of approach and departure surfaces, the ROFZ, and NAVAID critical areas.

Based on analysis of these dimensional standards, Quincy Municipal Airport has adequate space to construct a full-length parallel taxiway that can accommodate the requisite separation criteria for both runway centerline to parallel taxiway centerline as well as runway centerline to holding position. Quincy Municipal Airport's existing dimensional standards along with the FAA design standards for an A-I runway with visual approach minimums are summarized in Table 51.

Table 51. Runway Separation Standards

Runway Centerline to	Runway 14-32	
	Existing Conditions	A-I FAA Standards
Runway Separations		
Holding Position	0	200'
Parallel Taxiway/Taxilane Centerline	0	225'
Aircraft Parking Area	530'	200'

Sources: FAA AC 150/5300-13A Change 1, Kimley-Horn Analysis, 2019

4.2.6 APRON SYSTEM

Apron areas are intended to accommodate based and itinerant aircraft parking. Itinerant aircraft typically require a greater area for shorter amounts of time. Typically, based aircraft require a smaller area for longer amounts of time as this represents their storage or base location at an airport. From this study, it has been determined that existing and future based aircraft would benefit from additional conventional and T-hangar space, while itinerant aircraft will use apron space.

Currently, Quincy Municipal Airport does not have any paved apron space for itinerant aircraft to park, other than grass tie-down areas. Based on transient forecasts, it is recommended that the Airport provide a paved apron space for transient users. This paved apron space should be designed for a Cessna 172 and could be located near the existing fuel system. The paved apron space would best serve users with a total of 18 tie-down spots, 10 on the west paved apron and eight on the east. This apron would cover approximately 80,000 square feet and is further illustrated in the ALP.

4.2.7 LIGHTING, MARKINGS, AND NAVIGATIONAL AIDS (NAVAIDS)

Lightings, markings, and NAVAIDs increase operational safety in all weather conditions, especially during nighttime and low visibility conditions.

4.2.7.1 LIGHTING

Runway 14-32 is currently equipped with low intensity runway lighting (LIRL). This runway edge light system is used to outline the edge of the runway during periods of darkness or low-visibility conditions. The light system is classified according to the intensity and brightness the system can produce. Once the Airport is able to implement an Instrument Approach Procedure (IAP), the runway may need to be equipped with medium intensity runway lighting (MIRL). The airport is currently undergoing a design project for a runway rehabilitation that includes improvements to the airfield lighting system.

4.2.7.2 MARKINGS

Quincy Municipal Airport currently does not have IAPs, but one is in development. Pilots must rely on a visual approach to safely land at the Airport. Runways that use visual approach procedures require markings which include a landing designator and a centerline. Runway markings at the Airport are basic in nature and are in fair conditions during the planning period. As mentioned previously, with the ongoing work to establish an IAP, the Airport may want to consider adding threshold bars. The airport is currently undergoing a design project for a runway rehabilitation that includes improvements to the runway markings.

4.2.7.3 NAVAIDS

The Airport's rotating beacon is located on a pole near the landside facilities and will serve the Airport throughout the planning period. Runway 14-32 is equipped with a two-light Precision Approach Indicator (PAPI), located at each end of the runway. The PAPIs are in good condition and will be adequate throughout the planning period. Once the IAP is in place, the PAPIs will need to be adjusted to 0.20 degrees of the flight procedure.

At the time of this report, the Automated Weather Observing System (AWOS) was not reporting data for the Airport. The closest system, used in the report's analysis, is at Tallahassee International Airport (TLH). Without the AWOS, actual wind direction and speed are unknown at the Airport; although TLH is approximately 22 miles from Quincy Municipal Airport, the wind direction and speed are not an accurate representation of those at the Airport.

FAA Order 6560.20C details the siting criteria for sensor placement at airports for weather reporting systems to ensure that observations are representative of the meteorological conditions affecting the Airport. The preferred siting of the cloud height, visibility, and wind sensors is adjacent to the runway 1,000 feet to 3,000 feet from the primary runway threshold and between 500 and 1,000 feet from the runway centerline. The wind sensor requires a 500-foot clear area where all obstructions must be at least 15 feet lower than the height of the sensor. Currently, the AWOS at Quincy Municipal Airport is located immediately adjacent to a hangar and may not accurately capture the true weather patterns that would be experienced by a pilot operating at the Airport. It is suggested that the Airport consider new locations for the AWOS to ensure accurate data is reported.

4.2.8 SUMMARY OF AIRSIDE NEEDS

The following summarizes the airside needs at Quincy Municipal Airport:

- Implement IAP for Runway 14-32
- Mill and overlay Runway 14-32
- Design and construct full-length parallel taxiway with connections on each runway end
- Design and construct paved apron system
- Adjust PAPIs to 0.20 degrees once IAP is established
- Update runway lighting from LIRL to MIRL
- Add threshold markings when the IAP is established
- Relocate objects within the ROFA and ROFZ along with removal of airport owned buildings within the RPZ

4.3 AIRSPACE PROTECTION

The safe and efficient operation of aircraft requires that certain areas on and near an airport remain clear of objects that could present a hazard to air navigation. Airports that are listed in the NPIAS, receive federal funding through the Airport Improvement Program (AIP), and are considered "federally obligated" are subject to FAA Grant Assurances 20 (Hazard Removal and Mitigation) and 21 (Compatible Land Use). These assurances require airport sponsors to take appropriate actions to protect the surrounding airspace from incompatible land uses and mitigate hazardous obstacles to air navigation.

Additionally, any airport that accepts FDOT funding must adhere to their 24 grant assurances. Specific to airspace protection, FDOT grant assurances 4 (Hazard Removal and Mitigation), 5 (Airport Compatible Land Use), and 6 (Consistency with Local Government Plans) all align with federal grant assurances to ensure that airports develop in a safe manner. Further, Chapter 333 – Airport Zoning, Florida Statues (FS) stipulates that all municipalities with an airport hazard located in their jurisdiction, or where an airport hazard may be established, must adopt and enforce airport airspace and land use zoning protection regulations.

The FAA has established two primary sets of airspace protection standards. These include Title 14 Code of Federal Regulations (CFR), Part 77 – Safe, Efficient Use, and Preservation of The Navigable Airspace and Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS). While similar in nature and purpose, these standards have specific applications relative to approach procedures and minimums, usable runway length, AIP funding, and compatible land use planning.

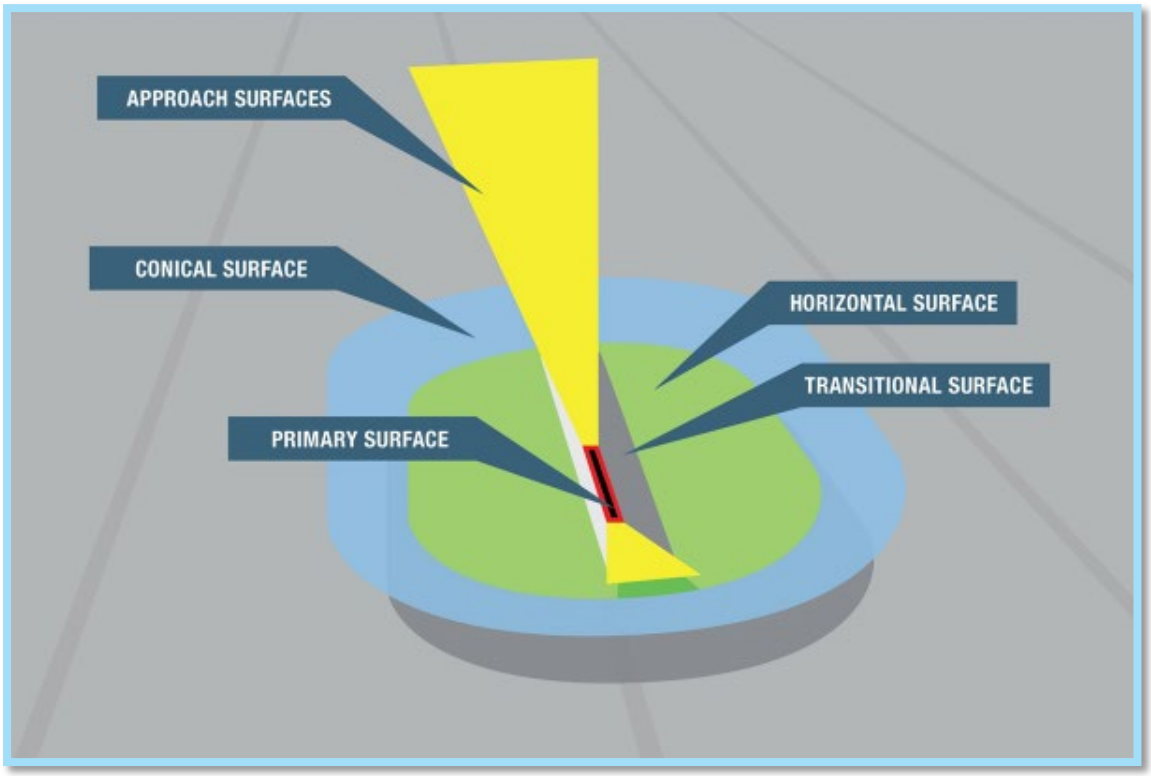
The following sections thus identify existing and ultimate airspace conditions at Quincy Municipal Airport per CFR Part 77 requirements. This section includes:

- Part 77 Requirements
- Chapter 333, FS Requirements
- Summary of Airspace Needs

4.3.1 PART 77 REQUIREMENTS

Per Part 77, "imaginary surfaces" around the airfield are established for identifying potential hazards to air navigation. These standards are most applicable to promoting compatible land use and limiting the height of objects on and near an airport. These surfaces can vary in size, shape, and slope depending on the available approach procedures on each runway end. Figure 32 depicts FAA Part 77 Imaginary Surfaces.

Figure 32. Part 77 Imaginary Surfaces



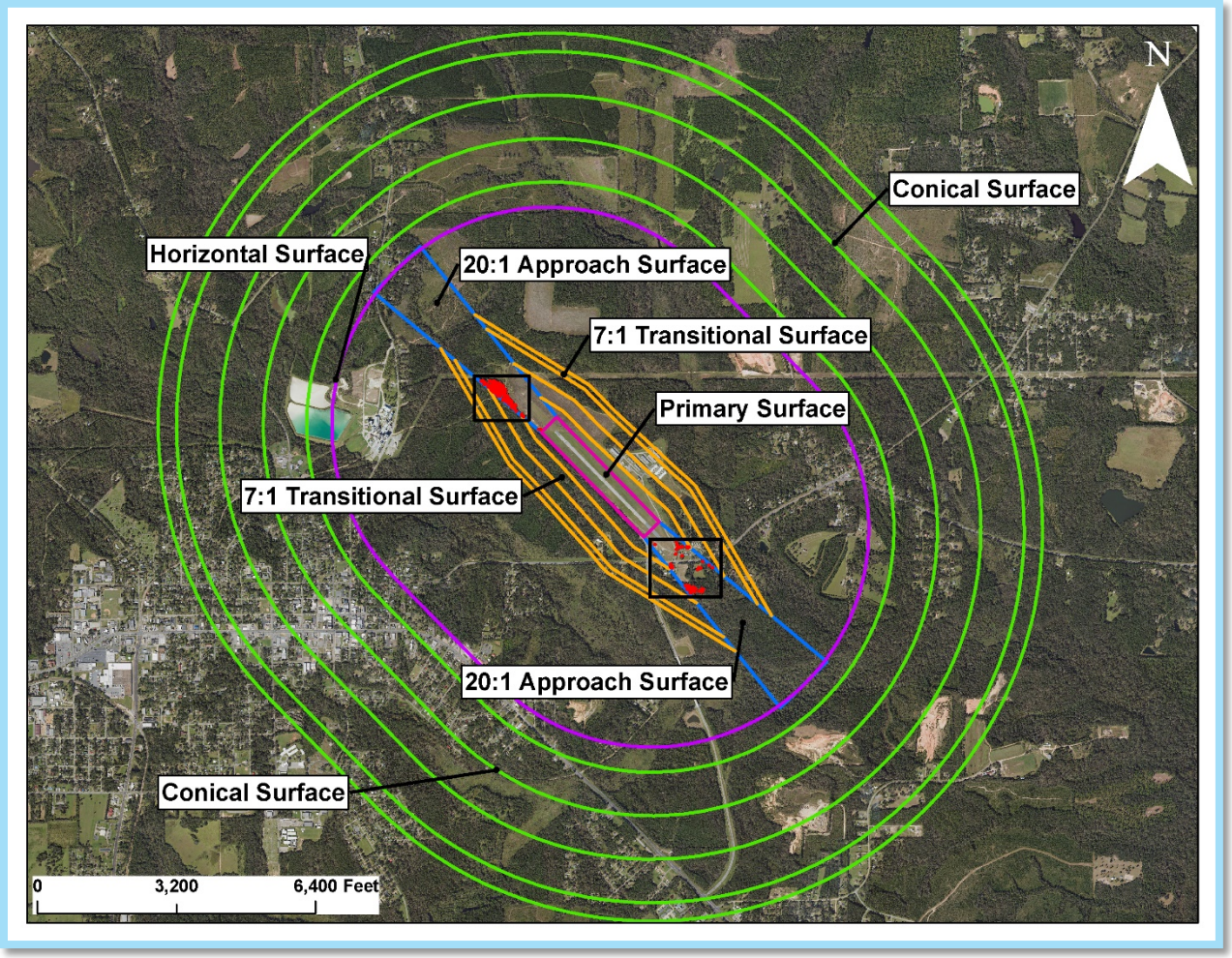
Source: Kimley-Horn Analysis, 2020

Penetrations to these imaginary surfaces, either manmade or natural, are defined as obstructions. The FAA must evaluate obstructions to determine if they present a hazard to air navigation. If obstructions are determined to be a hazard, it must be removed or altered to mitigate its danger to safe air navigation. If obstructions cannot be removed, many can be mitigated through appropriate marking and/or lighting to notify pilots of their presence. If not mitigated appropriately, obstacles could adversely affect approach and departure minimums and/or operational procedures.

Imaginary surfaces at Quincy Municipal Airport are based on future circling approach capabilities to Runway 14-32, by large aircraft. Runways with only circling approaches are defined as visual runways in both AC 150/5300-13A and Part 77. Therefore, both runway ends are codified as B(V) approaches in the future. All references to a surface's slope are expressed in horizontal feet by vertical feet. For example, a 20:1 slope rises one foot vertically for every 20 feet horizontally. Any future changes in runway length or centerline alignment would shift these surfaces commensurately. All the surfaces noted below are for a larger than utility runway visual runway, which includes circling approaches, and is a change from current Part 77 categories noted in FAA's Airport Data Information Portal (ADIP). Changes in approach type can drastically alter the dimensions of each of the Part 77 surfaces. For additional reference, the anticipated

future Part 77 surfaces for Quincy Municipal are shown in Figure 33. As shown, the obstructions noted, are for the future B(V) surfaces.

Figure 33. Part 77 Surfaces



Source: Kimley-Horn Analysis, 2020

4.3.1.1 PRIMARY SURFACE

The primary surface is longitudinally centered on an airport's runway(s). The elevation of any point on the surface is the same as the elevation of the nearest point on the runway centerline. For Runway 14-32, this surface is 500 feet wide and extends 200 feet beyond the runway ends of the pavement.

4.3.1.2 APPROACH SURFACE

The approach surface is longitudinally centered on an airport's runway centerline(s) and extends outward and upward from the end of the primary surface. An approach surface is applied to each end of each runway, with the inner width being the same as that of the primary surface. The other dimensions of the approach surface are based upon the approach capability of that specific runway end. For Runway 14-32 (a visual, larger-than-utility runway), the inner width of the approach surface is 500 feet and it expands uniformly to

an outer width of 1, 500 feet. The approach surface extends for a horizontal distance of 5,000 feet at a slope of 20:1.

Based on aerial photogrammetry conducted by Quantum Spatial, there are current obstructions, identified as trees and buildings, in the approach surfaces of Runway 14-32 . It is recommended that these obstructions be cleared and approach areas be regularly maintained.

4.3.1.3 TRANSITIONAL SURFACE

The transitional surface extends outward and upward from the sides of the primary surface and from the sides of the approach surfaces at a slope of 7:1 up the height of the horizontal surface.

4.3.1.4 HORIZONTAL SURFACE

For visual runways, the horizontal surface is a horizontal plane 150 feet above an airport's established elevation. The perimeter is constructed by swinging arcs of specified radii from the center of each end of the primary surface of each runway and connecting the adjacent arcs by lines tangent to those arcs. At Quincy Municipal Airport, the horizontal surface extends 5,000 feet from the ends of the primary surface, at an elevation of 371 feet above mean sea level (MSL).

4.3.1.5 CONICAL SURFACE

The conical surface extends outward and upward from the periphery of the horizontal surface. This surface extends at a slope of 20:1 for a horizontal distance of 4,000 feet.

4.3.1.6 BUILDING RESTRICTION LINE

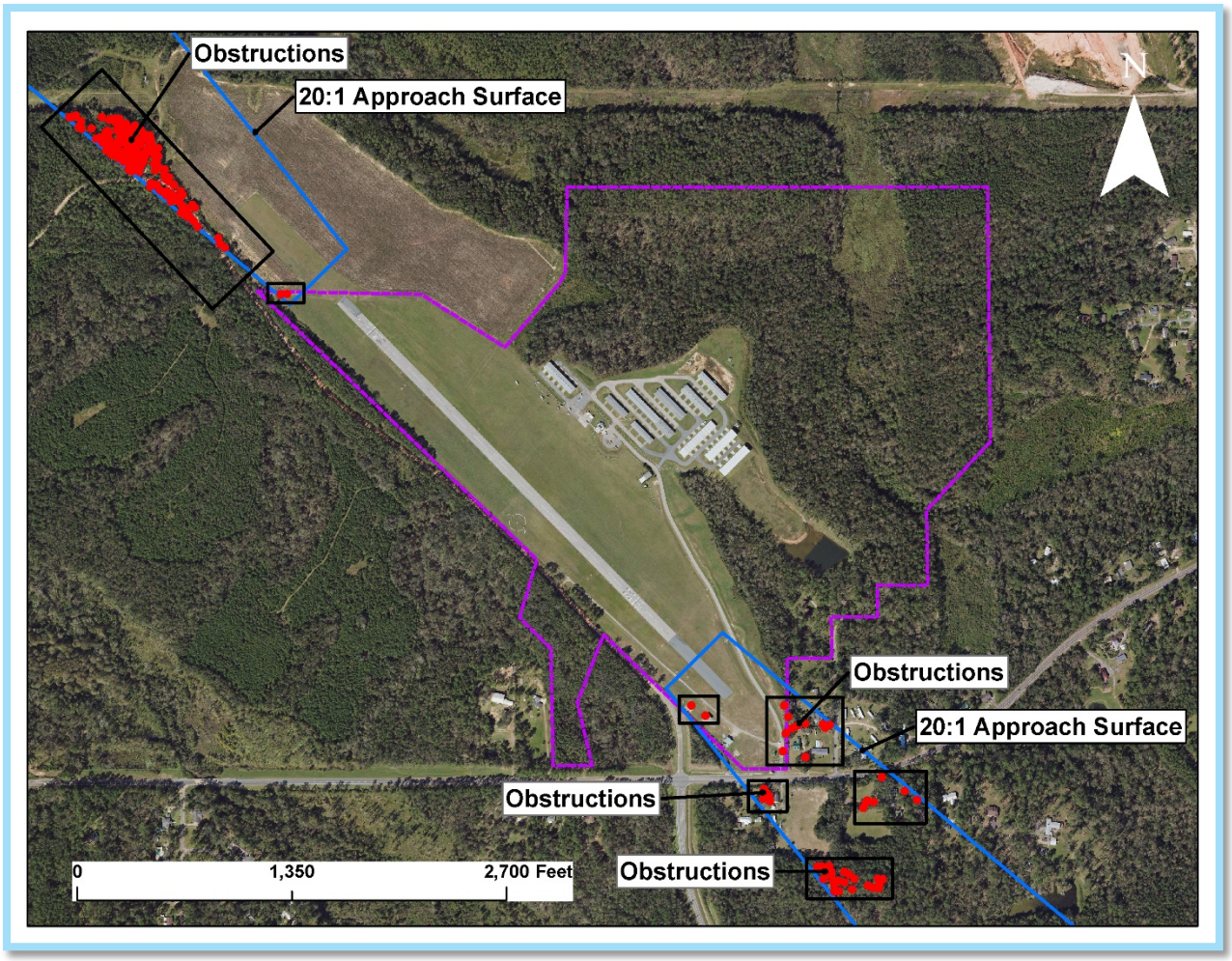
The building restriction line (BRL) indicates where airport buildings must not be located, limiting building proximity to aircraft movement areas. The BRL should be set beyond the RPZs, the ROFZs, the ROFAs, NAVAID critical areas, and areas required for TERPS. The location of the BRL is dependent upon the selected allowable structure height. A typical allowable structure height is 35 feet and is calculated based on the Part 77 Imaginary Surfaces. The BRL is located at the point where the transitional surface reaches a height of 35 feet above the elevation of the nearest point of the runway. Based on a primary surface width of 500 feet (250 feet from each side of the runway centerline), Quincy Municipal Airport's BRL is located 495 feet from, and runs parallel to, the runway centerline on both sides of the runway. Actual structure heights at the BRL will depend upon the site elevation relative to the nearest point of the runway elevation.

If needed, the assumptions of the BRL could be modified to a vertical height of 20 or 25 feet to remove inconsistencies with current and future development. This modified vertical height is commensurate with appropriate hangar building heights for an airport like Quincy Municipal Airport.

4.3.1.7 PART 77 AREAS OF CONCERN

Using aerial photogrammetry combined with the FAA Digital Obstacle File data, an evaluation of obstructions to the Part 77 surfaces for a future B(V) approach at Quincy Municipal Airport was performed. Noted areas of concern are depicted in Figure 34 in red and are primarily vegetation penetrations to the approach surfaces on both ends of the runway. More details on the obstructions within these areas of concern and recommended mitigation measures are presented in the airspace sheets of the ALP Drawing Set. In general, obstructions within Airport property should be field-verified and removed.

Figure 34. B(V) Approach Part 77 Obstructions



Source: Kimley-Horn Analysis, 2020

4.3.2 CHAPTER 333, FLORIDA STATUTE OBSTRUCTIONS

The responsibility for protecting airports from incompatible land uses falls under federal, state, and local jurisdiction. The State of Florida provides regulatory guidance through Chapter 333, FS which discusses adopting, administering, and enforcing airport zoning regulations for each jurisdiction that has an airport hazard area within its geographical limit. Chapter 333, FS enforces such acts as requiring a permit for building inside the airport hazard area if the development has been deemed an obstruction by the FAA and if the development is within a 10-nautical-mile radius of the airport reference point. Moreover, the statute requires the adoption of airport zoning regulations for a number of factors and must address the following characteristics at minimum:

- Landfills and Hazardous Wildlife Attractants
- Educational and Residential Development
- Runway Protection Zones (RPZs)

The local government authority is critical in effective airport land use compatibility zoning. Local governments implement and enforce airport zoning regulations, as mandated by the state. Strong coordination between local government officials and airport sponsors is vital to properly codify, implement, and enforce airport zoning regulations required by Chapter 333, FS. In 2017, the State updated the requirements of Chapter 333, FS and required local governments to update their zoning regulations to reflect the changes. It is understood that Quincy has not completed this update at this time, so it is recommended that they do so in order to be compliant with State law.

The following sections will discuss the importance of ensuring Quincy Municipal Airport is free of hazardous and wildlife attractants, landfills, and obstructions in the RPZs.

4.3.2.1 LANDFILLS AND HAZARDOUS WILDLIFE ATTRACTANTS

Forested areas, large tracts of open land, bodies of water, wetlands, stormwater management facilities, landfills, and croplands near an airport can encourage wildlife to enter the airfield or approach and departure airspace. These habitats can provide food, water, and shelter for a variety of species, which can pose a threat to aircraft safety and cause serious damage to aircraft and injury to persons both on the ground and in the air.

FAA AC 150/5200-33C, *Hazardous Wildlife Attractants on or Near Airports*, strongly recommends that a 5,000-foot-minimum separation between wildlife attractants and the airfield be maintained for airports that do not sell Jet-A fuel and normally serve piston -powered aircraft. This AC further recommends that a five-mile separation be provided within the approach and departure areas. The development of a wildlife hazard management plan (WHMP) is recommended for all public-use airports and is required for all public CS airports operating under an FAA Part 139 certificate that are near attractants that cannot be relocated or must remain closer-than-desired to the airfield. These plans must be prepared by a certified wildlife biologist in accordance with guidelines established by the FAA and USDA and identify methods of altering and/or maintaining facilities so that they are not as attractive to the local and transient wildlife.

Hazardous wildlife attractants within the immediate approach and departure areas of a runway are of concern. Hazardous wildlife attractants of concern are open bodies of water, as they can attract large waterfowl such as ducks and geese. Landfills are also a wildlife attractant, as they attract a large volume of scavenging bird. Additionally, according to FDOT's Airport & Airspace Land Use Compatibility Guidebook, agricultural areas may be considered wildlife attractants due to the presence of livestock and the availability of food sources for wildlife. Agricultural areas also can kick up dust during harvesting seasons causing obstructions to air navigation.

Chapter 333, FS stipulates the airport zoning ordinance requirements in Florida. Specific to wildlife attractants, Chapters 333.03(2)(a) and (b) detail requirements related to landfills. These subsections stipulate that airport zoning regulations must address the prohibition of construction of new landfills within 10,000 feet of any runway used by turbine aircraft or within 5,000 feet of any runway used only by non-turbine aircraft, as well as the provision that existing landfills that attract or sustain bird movements in the approach or departure paths of aircraft must incorporate bird management initiatives to minimize the hazard to aircraft.

While there is vegetation that surrounds the Airport property, it is recommended that the Airport actively monitor wildlife activity that may be in the area and monitor aircraft/bird-strike incidents within a Wildlife Hazard Assessment (WHA). While a WHMP is not an FAA requirement for Quincy Municipal Airport, the

City may wish to proactively develop such a plan upon completion of a WHA to reduce potential hazards as aircraft activity increases.

4.3.2.2 EDUCATIONAL AND RESIDENTIAL DEVELOPMENT

In order to protect against incompatible land uses immediately surrounding an airport, Chapter 333, FS includes a provision aimed at preventing residential and educational land uses from being located immediately surrounding an airport. Airport authorities, other governing bodies, or airport owners who operate a public-use airport and have conducted a noise study in accordance with Title 14 CFR Part 150 or have established noise contours pursuant to another public study approved by the FAA must abide by the incompatible-use guidelines as established in those noise studies (e.g., Title 14 CFR Part 150, Appendix A or an alternative FAA-approved public study), except if such uses are specifically contemplated by a study with appropriate mitigation or similar techniques.

For airport authorities or other governing bodies operating a public-use airport who have not conducted a noise study, they are prohibited from constructing residential and educational facilities, with the exception of aviation school facilities, within an area contiguous to the airport measuring one-half the length of the longest runway on either side of and at the end of each runway centerline.

Since the Airport does not have a noise study completed, residential and educational uses should be prohibited in an area contiguous to the airport measuring one-half the length of the runway on both sides of and at the end of the runway centerline

4.3.2.3 RUNWAY PROTECTION ZONES

As discussed in the Runway Dimensional Standards section of this chapter, incompatible land uses should be addressed if they penetrate the runway protection zones (RPZs) on either end of a runway. The current RPZs at the Airport have three incompatible land uses (two on airport buildings, on airport dirt service road, and residential buildings off airport property) on runway end 32 that should be mitigated to keep the safety of those on the ground and in the air. Chapter 333, FS provides guidance on the restriction of new incompatible uses, activities, or substantial modifications to existing incompatible uses within runway protection zones.

Quincy Municipal Airport should continue to work with the City and surrounding property owners to keep the RPZs clear of any new incompatible land uses.

4.3.3 SUMMARY OF AIRSPACE NEEDS

The following summarizes the airspace needs from an analysis conducted for Part 77 and Chapter 333, FS:

- Vegetation mitigation of known current or potential future obstructions that are within Airport property
- Discuss the removal or trimming of vegetation obstructions that are outside of Airport property with surrounding property owners
- Work with City/County to update land use regulations for Chapter 333 compliance

4.4 LANDSIDE FACILITIES

This section describes landside facilities that are essential to the daily operations of the Airport. These facilities contribute to effectively meeting the airport users' needs and include:

- Aircraft Storage
- Airport Access, Automobile Parking, and Security
- General Maintenance Facilities
- Utilities
- Fuel Storage
- Terminal
- Summary of Landside Needs

4.4.1 AIRCRAFT STORAGE

Based aircraft at Quincy Municipal Airport are stored in private conventional hangars, shade hangars, and T-hangars. Transient aircraft visiting the Airport can only be stored on the designated grass infields using tie-downs. These storage facilities are described in more detail below.

- **Conventional Hangar.** Conventional hangars are typically a single large space that can house multiple aircraft in protective storage, and usually contain a large door through which aircraft can pass. The Airport currently utilizes conventional hangars, which are fully occupied, for its based aircraft. The conventional hangars house aircraft that are operated by or in conjunction with the owner/operator of the hangar. In some instances, conventional hangars are utilized by fixed-base operations (FBO) for business purposes.
- **Shade Hangar.** Shade hangars are generally open-air storage units that provide individual storage spaces for aircraft. Shade hangars provide moderate protection from the sun and rain, though aircraft are largely left open to the elements. Shade hangars are generally less expensive than T-hangar or conventional hangar units and are most generally used for transient aircraft.
- **T-Hangar.** T-hangars are an individual storage unit for smaller aircraft, usually a single-engine or light twin aircraft classified under the Airplane Design Group (ADG). The "T" designation corresponds to the overall shape of the unit, which is similar to a "T". The Airport also provides T-hangars for its tenants, which are generally grouped into linear buildings containing multiple units in a row.
- **Aircraft Tie-Down.** An aircraft tie-down is typically an on-apron parking space that includes fixed points, typically concrete, where an aircraft can be secured using straps or cables. There can also be tie-downs on grass or non-apron areas. Although tie-downs do not provide covered protection from weather elements, they do prevent an aircraft from moving and minimize damage attributed to high winds. The Airport also provides designated tie-down locations on the grassy area between the terminal area and runway.

It is anticipated that based aircraft will continue to be stored in conventional, shade, and T-hangars and that transient aircraft will be stored on tie-downs. As previously noted, based aircraft are forecasted to continue to grow over the 20-year planning period to a total of 105. Considering this growth of based aircraft and conversations with the Airport, additional hangars are anticipated to greatly benefit the Airport. Though the

airport currently has shade hangar facilities, it is anticipated that all future hangars will be either conventional or T-hangar units, with a large majority of them being T-hangars.

To better assess the requirements for future development of aircraft storage facilities, Table 52 presents general planning assumptions utilized for aircraft storage. The footprints shown include area that would be necessary for maneuvering aircraft within storage areas.

Table 52. Aircraft Storage Area Planning Assumptions

Aircraft Type	Desired Storage Type	Footprint (SF)
Single-Engine	Paved tie-down	7,900
	T-Hangar	2,000
	Conventional Hangar	1,340
Multi-Engine	Paved tie-down	7,900
	T-Hangar	2,500
	Conventional Hangar	2,000
Turboprop/Jet (small)	Paved tie-down	21,950
	Conventional Hangar	3,000
Helicopter	Paved tie-down	1,250
	Conventional Hangar	750

Source: Kimley-Horn Analysis, 2020

Table 53 summarizes the projected based aircraft fleet mix as identified in the "Forecast" chapter.

Table 53. Based Aircraft Fleet Mix Projections

Category	Year			
	2019	2024	2029	2039
Single-Engine Piston	79	85	91	105
Multi-Engine Piston	0	0	0	0
Jet	0	0	0	0
Helicopter	0	0	0	0
Other	0	0	0	0
Based Aircraft	79	85	91	105

Source: Kimley-Horn Analysis, 2020

4.4.1.1 AIRCRAFT STORAGE NEEDS FOR BASED AIRCRAFT

As described in the "Forecast" chapter of this master plan, the number of based aircraft at the Airport is projected to increase from 79 (in 2019) to 105 during the 20-year planning horizon. With that anticipated increase, the Airport must plan for additional aircraft storage needs to accommodate aviation demand. Airport records indicate that all 79 single-engine pistons in 2019 were stored in either conventional or T-hangars, and it is anticipated that this will continue over the planning horizon. For planning purposes, it is

assumed that, for the 2024 and 2029 forecast years, demand will be split evenly between box hangars and T-hangars and that for forecast year 2039, all demand will be for T-hangars only.

Table 54 presents based aircraft storage needs using the preferred based aircraft fleet mix forecasts and the aircraft storage area planning assumptions. In 2019, all existing hangars were full; therefore, none of the hangars are available, and the hangars meet current based aircraft demand. Stated need by year represents the cumulative based aircraft storage facility requirements.

Table 54. Based Aircraft Storage Facility Requirements

	T-Hangar (SF)	Conventional (SF)	Apron (SF)
2019			
Available	0	0	0
2019 Need	0	0	0
Deficit/Surplus	0	0	0
2024			
Available	0	0	0
2024 Need	6,000	4,020	0
Deficit/Surplus	(6,000)	(4,020)	0
2029			
Available	0	0	0
2029 Need	12,000	8,040	0
Deficit/Surplus	(12,000)	(8,040)	0
2039			
Available	0	0	0
2039 Need	40,000	8,040	0
Deficit/Surplus	(40,000)	(8,040)	0

Source: Kimley-Horn Analysis, 2020

4.4.1.2 AIRCRAFT STORAGE NEEDS FOR TRANSIENT AIRCRAFT

Transient aircraft storage needs are determined based on projected peak day transient operations, an assessment of the number of transient aircraft on the ground at any one time, the projected percentage of pilots that would desire access to overnight storage, and the overall footprint of the aircraft types.

General planning assumptions were made to determine transient aircraft storage needs by 2039. These assumptions include:

- 10 percent of transient aircraft will stay at Quincy Municipal Airport overnight.
- The peak month (April) for operations will be used for planning purposes.
- All overnight single-engine transient aircraft will utilize grass tie-downs.

- Overnight transient aircraft are all single-engine aircraft.
- There are no repeat daily operations from transient aircraft.

Table 56 presents the storage needs by type of transient aircraft based on the planning assumptions established over the planning period.

Table 55. Transient Aircraft Storage Facility Requirements

	Tie-Downs (SF)
Available	55,300
2019 Need	55,300
Deficit/Surplus	0
2024 Need	55,300
Deficit/Surplus	0
2029 Need	63,200
Deficit/Surplus	7,900
2039 Need	71,100
Deficit/Surplus	15,800

Source: Kimley-Horn Analysis, 2020

4.4.2 AIRPORT ACCESS, AUTOMOBILE PARKING, AND SECURITY

Currently, Airport users enter via Airport Road from State Road 12. The main Airport entrance has access that leads directly to the terminal building and aircraft storage. Future landside development is likely to occur in a similar area to where existing hangar facilities are located, while airside development is likely to occur immediately adjacent to the existing runway. These factors, paired with expected activity growth as discussed in the "Forecast" chapter, does not warrant the need for additional Airport access points.

No public transportation or alternative forms of transportation, such as shuttles, buses, or courtesy cars, are available at the Airport. Automobile parking is available to users adjacent to the terminal building and allows Airport users to easily access hangar facilities located behind the terminal building. As Airport users increase over the 20-year planning period, alternative forms of transportation may be necessary to meet user demand. The Airport is encouraged to provide a courtesy car for Airport users.

In 2018, FDOT conducted a security assessment focused on physical security characteristics at Quincy Municipal Airport. From this assessment, the Airport received various security project recommendations. The security assessment recommended that the Airport remove vegetation that has encroached upon areas around the perimeter fence, causing the fence to become damaged in need of repair. The assessment also recommended improved access control at the main, and only, access point to the airport by consistently securing the electric vehicle gate. Although not mentioned in the security assessment, the Airport is encouraged to secure access to the runway from non-aviation activity, as users currently have direct access to each runway end.

4.4.3 GENERAL MAINTENANCE FACILITIES

The maintenance shed was located within the RPZ and, since the inventory of this Master Plan was completed, has been removed.

4.4.4 UTILITIES

Currently, the City of Quincy and TDS Telecom provide utilities to the Airport. Based on projected growth, additional utilities will not be required; however, the Airport should consider expanding infrastructure should it acquire new property or begins to develop on undeveloped areas. Based on projected growth, additional T-hangars will be needed and are discussed in this report to meet Airport demands. New hangars will necessitate expanded utilities.

4.4.5 FUEL STORAGE

The Airport currently offers 24-hour, self-fueling service with one 12,000 gallon above ground tank of 100 low-lead (LL) fuel. Fuel sales in 2018 were lower than anticipated because the Airport was undergoing a replacement of its fuel system. Based on projected aircraft operations and the replacement of the Airport's fuel system, the current fuel tank capacity is adequate to support current and future aviation demand. The Airport does not foresee itself serving any other aircraft type than its current critical aircraft (Cessna 172), so any other fuel type would not be necessary. From this analysis, there are no recommendations regarding fuel storage.

4.4.6 TERMINAL

The Airport currently has a GA terminal that is owned by the QGAA. The terminal was modified/updated in 2008 and has a restroom, pilot lounge, conference room, and a flight planning room for Airport users.

To forecast future terminal expansion, the Airport Cooperative Research Program (ACRP) provides guidance for GA terminal size needs. The following formula is used to calculate and provide a planning size for the terminal: (Peak-hour operations) x (2.5) x (150 sf). Using this formula and considering the current square footage of approximately 2,160, as peak-hour operations increase through the planning period, by 2039 the building square footage would need to increase to approximately 3,000. This means that the Airport would need an additional 840 square feet of space to accommodate its growing peak-hour operations. Since the terminal was last modified/updated in 2008, can accommodate current users, and has the above amenities included, there are no immediate recommendations for the terminal.

4.4.6.1 SUMMARY OF LANDSIDE NEEDS

The following summarizes landside facility needs:

- Provide alternative transportation for Airport users
- Provide a courtesy car for Airport users
- Secure access to Runway 14-32 from non-aviation activity
- Relocate tractor shed out of the RPZ and approach surface
- Expand utilities when developing new aircraft storage facilities
- Provide aircraft with additional storage space
- Provide transient aircraft with additional tie-downs

4.4.7 SUMMARY OF FACILITY REQUIREMENTS

Table 56 summarizes the needed facility requirements identified in this master plan as well as an associated priority level. High-, medium-, and low-priority items correspond with the near- (0-5 year), mid- (5-10 year), and long-term (10-20 year) improvements, respectively.

Table 56. Summary of Facility Requirements

Need	Priority
Airside	
Implement IAP	High
Mill and overlay Runway 14-32	High
Design and construct full-length parallel taxiway	High
Remove objects from the ROFA and ROFZ	High
Adjust PAPIs to 0.20 degrees	Medium (contingent on IAP project)
Update runway lighting to MIRL	Medium (contingent on runway rehabilitation project)
Add threshold markings when IAP is in place	Low (contingent on runway rehabilitation project)
Remove incompatible land uses from the RPZ	Low
Airspace Protection	
Vegetation mitigation of known obstructions in approach surfaces	Medium
Discuss with surrounding owners to remove vegetation	Low
Work with City/County to update land use regulations for Chapter 333 compliance	Low
Landside	
Additional aircraft storage (Box and T-Hangars)	High
Design and construct paved apron space for transient users	Medium
Secure access to Runway 14-32 from non-aviation activity	Medium
Relocate maintenance (tractor) shed	Medium
Expand utilities when developing new aircraft storage facilities	Medium
Provide alternative means of transportation	Low
Provide a courtesy car for airport users	Low
Other	
Update Airport Master Plan and/or ALP with Narrative Report	Medium

Source: Kimley-Horn Analysis, 2020

5 ALTERNATIVES ANALYSIS

Based on the anticipated demand as defined in the "Facility Requirements" chapter, this chapter presents the proposed alternatives required to accommodate this activity. To accomplish this, there were three primary focus areas for the alternatives development: potential establishment of the alternative operating area, airside alternatives evaluation, and landside alternative evaluation.

Ultimately, a Recommended Development Plan is described which will serve as the basis of the ALP Set and the remainder of this master plan for the Quincy Municipal Airport. To support this analysis, the following sections are included:

- Airside Facilities
- Landside Facilities
- Recommended Development Plan

5.1 AIRSIDE FACILITIES

The following facilities have been identified as airside facility requirements:

- Implement IAP
  - Complete – awaiting final FAA flight check and publication, scheduled for charting in October of 2021
- Mill and overlay Runway 14-32
  - Design complete, construction began February of 2021, scheduled to be completed in May of 2021
- Design and construct full-length parallel taxiway
  - Project initiated, environmental and design phases underway
- Remove objects from the ROFA and ROFZ
  - Ongoing
- Adjust PAPIs to within 0.20 degrees of the instrument approach procedure
  - Will be completed as part of the runway overlay project once the approach is instated
- Update runway lighting to MIRL
  - Will be completed as part of runway overlay project
- Add threshold markings when IAP is in place
  - Will be completed as part of runway overlay project
- Remove incompatible land uses from the RPZ
  - Ongoing

Mitigation and object removal from the ROFA and ROFZ, as well as RPZ compliance, will be further discussed in the following sections.

The following sections will provide additional detail on the identified airfield facility recommendations,

5.1.1 IMPLEMENT INSTRUMENT APPROACH PROCEDURE

As described earlier in this master plan, an IAP has been developed for the airport. This is a circling, GPS-based approach procedure and is awaiting final flight checks by the FAA prior to publication, which is scheduled for October 7, 2021. This approach was originally scheduled to be published in October of 2020, but was delayed due to flight check restrictions associated with COVID-19. Once the procedure is available,

the PAPI orientation can also be validated. Because the project is already underway, there are no alternatives presented for these projects.

5.1.2 MILL AND OVERLAY OF RUNWAY 14-32

The airport is in the process of a construction project to mill and overlay Runway 14-32. Included in this project is updating the runway lighting to MIRL and updating the runway markings. Additionally, this project includes upgrades to the PAPIs at the Airport, so the adjustment of the PAPIs to 0.20 degree will also be accommodated as part of this effort. Construction is scheduled to be completed by May of 2021. Because the project is already underway, there are no alternatives presented for these projects.

5.1.3 FULL-LENGTH PARALLEL TAXIWAY ALTERNATIVES

A total of two full-length parallel taxiway alternatives were developed and evaluated as part of this master plan. These are described in greater detail in the following sections. For reference, the taxiway design standards used for all three of the alternatives are listed in Table 57.

Table 57. Taxiway Dimensional Standards

Design Standard	Requirement
ADG I	
Taxiway Safety Area (TSA)	49’
Taxiway Object Free Area (TOFA)	89’
Taxilane Object Free Area (TLOFA)	79’
Taxiway Centerline to Fixed or Movable Object	44.5’
Taxilane Centerline to Fixed or Movable Object	39.5’
Taxiway Wingtip Clearance	20’
Taxilane Wingtip Clearance	15’
TDG 1A	
Taxiway/Taxilane Width	25’
Taxiway Edge Safety Margin (TESM)	5’

Taxiway Shoulder Width*	10’

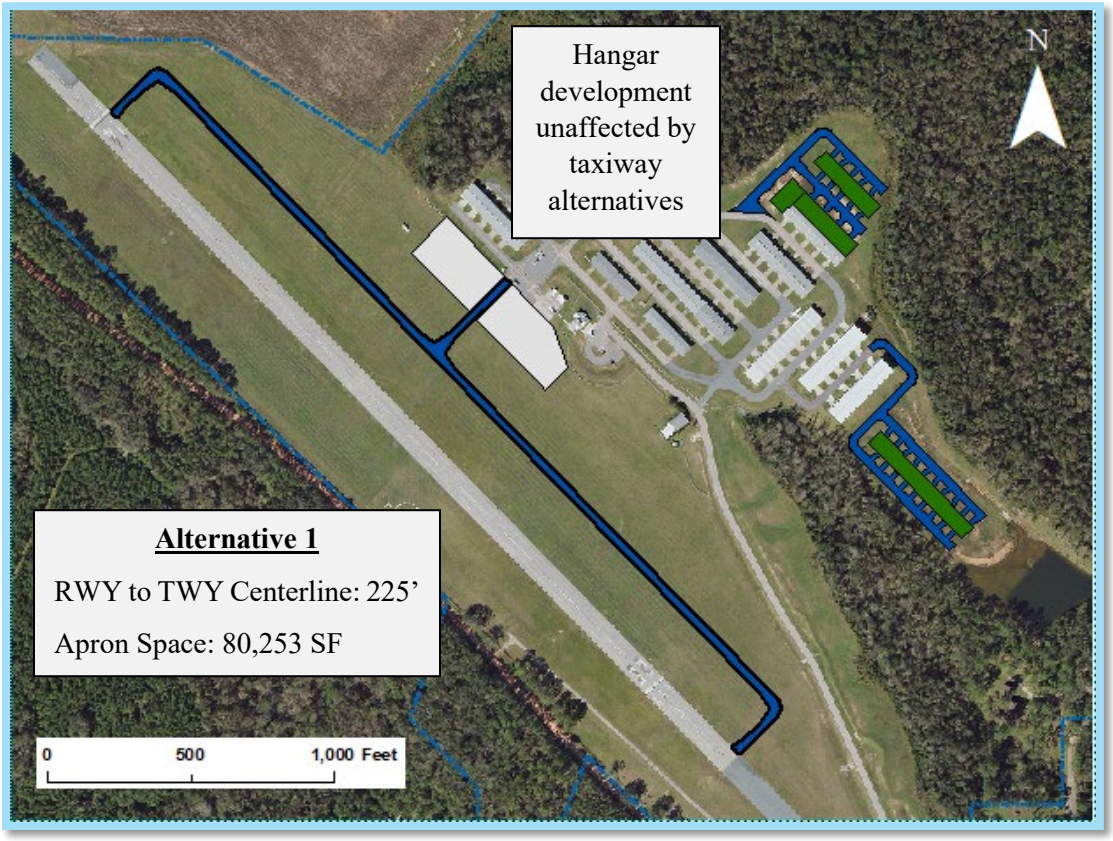
Source: FAA AC 150/5300-13A, Change 1 – Airport Design
**Turf, aggregate-turf, soil cement, lime, or bituminous stabilized soil are recommended adjacent to runways accommodating ADG I aircraft.*

5.1.3.1 TAXIWAY ALTERNATIVE 1

Taxiway Alternative 1 provides a 25-foot-wide parallel taxiway with a 225-foot runway centerline to taxiway centerline separation. This runway to taxiway separation is consistent with the FAA design standards defined in AC 150/5300-13A. Two connecting taxiways are provided: one entrance/exit taxiway is just north of the Runway 14 displaced threshold, and the second entrance/exit taxiway is at the end of Runway 32. The northerly connector is sited to keep the 89-foot TOFA clear of the airport property line and to provide a standard, 90-degree, connection with Runway 14-32. Also shown on this alternative is a taxiway connector to the landside facilities. Figure 35 depicts Taxiway Alternative 1.

As shown, Alternative 1 provides a standard taxiway layout which aligns directly with the most current FAA AC on airport design. However, Alternative 1 does not allow for any potential consideration of an alternative operating area being designated in the future.

Figure 35. Taxiway Alternative 1



Source: Kimley-Horn Analysis, 2020

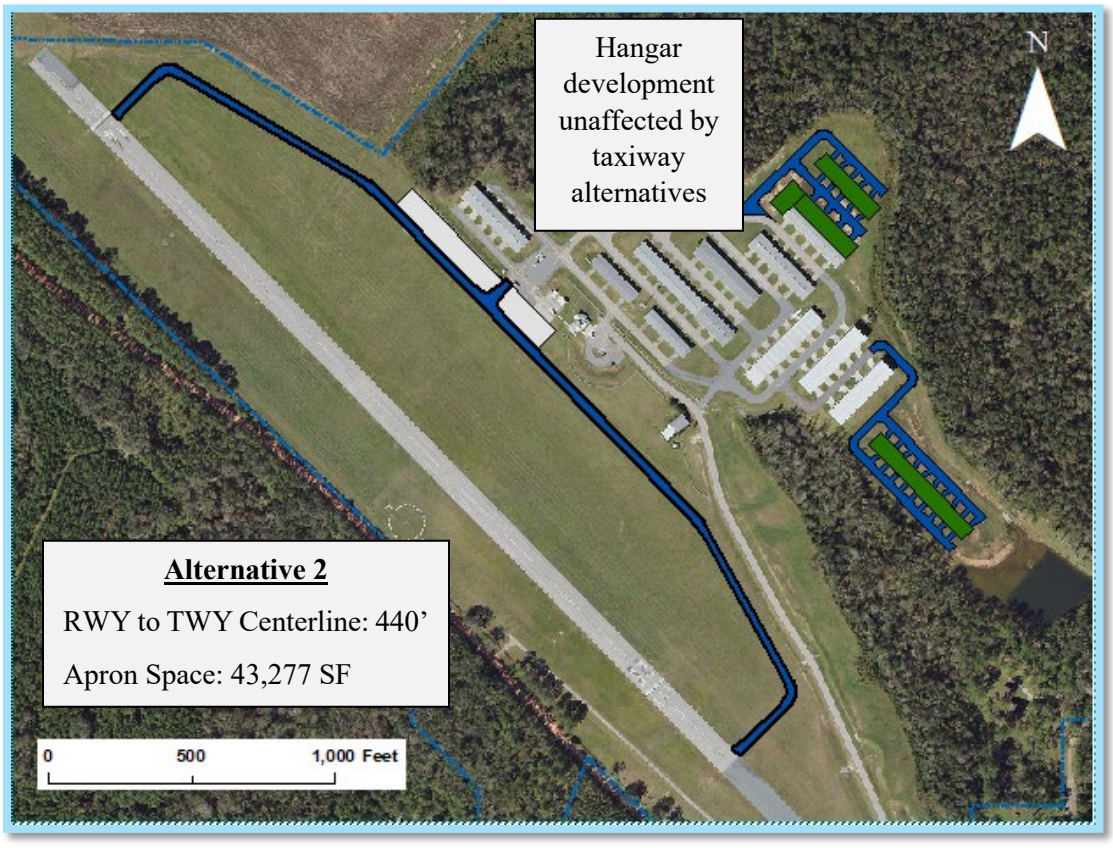
5.1.3.2 TAXIWAY ALTERNATIVE 2

In this Alternative, the 25-foot-wide parallel taxiway is pushed as close to the landside development as possible. Alternative 2 was developed as part of evaluation for the alternative operating area with more separation from Runway 14-32; however, deconflicting the ROFAs is not possible. Taxiway Alternative 2 places the parallel taxiway centerline 440 feet from the Runway 14-32 centerline. Same as the preceding alternative, two taxiway connectors are included. At the Runway 14 end, the connector is approximately intersected with the displaced threshold. The portion of the parallel taxiway from the connector taxiway southeasterly towards the landside development is aligned with the airport property line and at an angle to the runway. The runway hold line on the northerly end is very close to the taxiway turn, which may not allow the aircraft to be perpendicular to the runway for better pilot visibility.

At the Runway 32 end, the taxiway connects to the end of the runway. A portion of the parallel taxiway is aligned with Airport Road and is located so that the TOFA does not include a future perimeter fence. Taxiway Alternative 2 is shown in Figure 36.

Alternative 2 would provide the greatest ability for the Airport to develop an alternative operating area in the future if desired by the Airport. While it is a non-standard design, if an alternative operating area is developed, it would allow for proper separations and adherence to FAA standards. Based on discussions with the Airport, FDOT, and the FAA, this alternative will not be recommended as part of this master plan.

Figure 36. Taxiway Alternative 2



Source: Kimley-Horn Analysis, 2020

5.1.4 CLEARING OBJECTS FROM THE ROFA AND ROFZ

As was noted in the previous chapter, two objects are present within the ROFA and ROFZ: the primary wind cone and a dirt service road. Mitigation of these objects is discussed in the following sections.

5.1.4.1 PRIMARY WIND CONE

The primary wind cone at Quincy Municipal Airport is located at the center of the segmented circle and is approximately 185 feet from the runway centerline. This places the wind cone, which is not frangible or permissible inside the ROFA, approximately 15 feet into the ROFA and ROFZ.

As the primary wind cone will be located at the center of the segmented circle, the segmented circle and wind cone are required to be relocated. Because the segmented circle is flush with the ground, it can be located within the ROFA and ROFZ.

The segmented circle performs two functions: it aids the pilot in locating airports, and it provides a centralized location for such indicators and signal devices as may be required on a particular airport. It should be located in a position to afford maximum visibility to pilots in the air and on the ground.[7] The existing segmented circle at Quincy Municipal Airport includes Landing Strip and Traffic Pattern Indicators. The relocated segmented circle should also include these indicators.

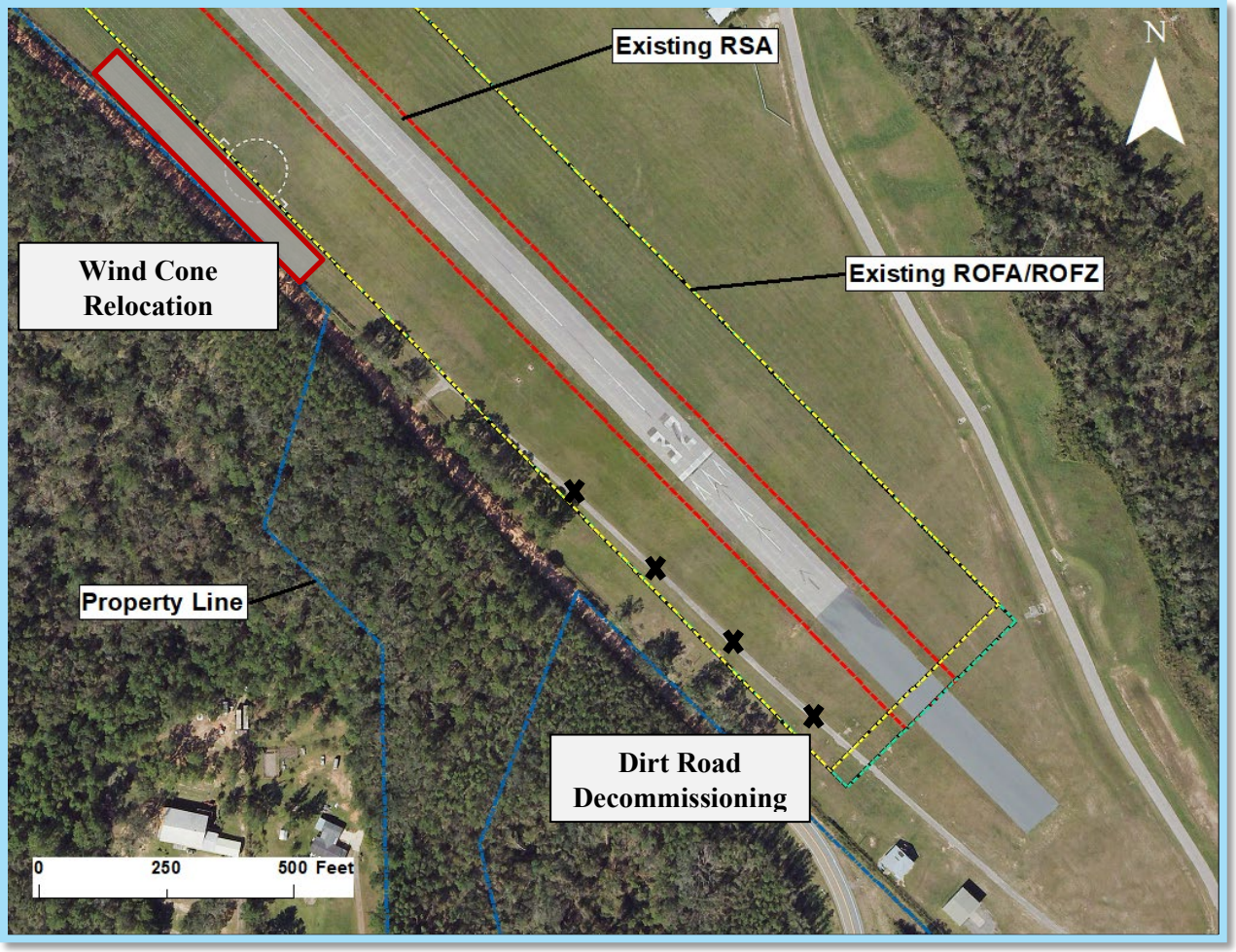
It is recommended that the segmented circle and corresponding wind cone be relocated 25 feet southwesterly, outside of the ROFA and ROFZ. This relocation removes the wind cone assembly and an eight-foot-long wind cone from the ROFA and ROFZ. This shifting of the segmented circle may place it too close to the trees and the airport property line. If this is the case, the size of the segmented circle can be reduced from 100 feet in diameter to 75 feet. It is not recommended to relocate these facilities to the opposite side of the runway, in between the runway and future parallel taxiway. The proposed primary wind cone relocation is shown in Figure 37.

5.1.4.2 DIRT SERVICE ROAD

The dirt service road once provided access to the airport from C&E Farm Road. The gate that was present is no longer there, and access to the airport from C&E Farm Road is no longer available. As the dirt service road is no longer in use, nor is it needed for airport operations or maintenance, it can be removed without consideration for alternate access. Therefore, the portion of the dirt service road within the ROFA and ROFZ should be removed. This can be done by planting turf and encouraging growth of native grasses present at the Airport. Removal and turfing of the service road is preferred over abandonment to discourage vehicles from inadvertently entering the ROFA. The proposed dirt service road closure is shown in Figure 37.

[7] FAA Advisory Circular 150/5340-5D Segmented Circle Airport Marker System

Figure 37. Clearing ROFA and ROFZ – Wind Cone Relocation and Dirt Road Decommissioning



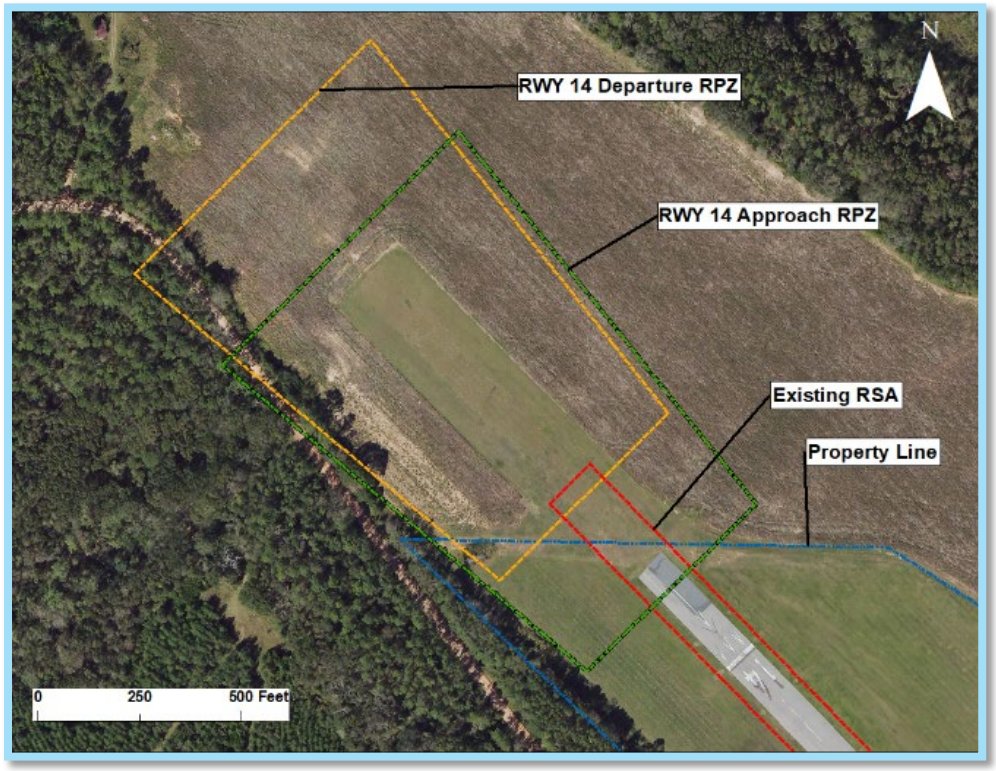
Source: Kimley-Horn Analysis, 2020

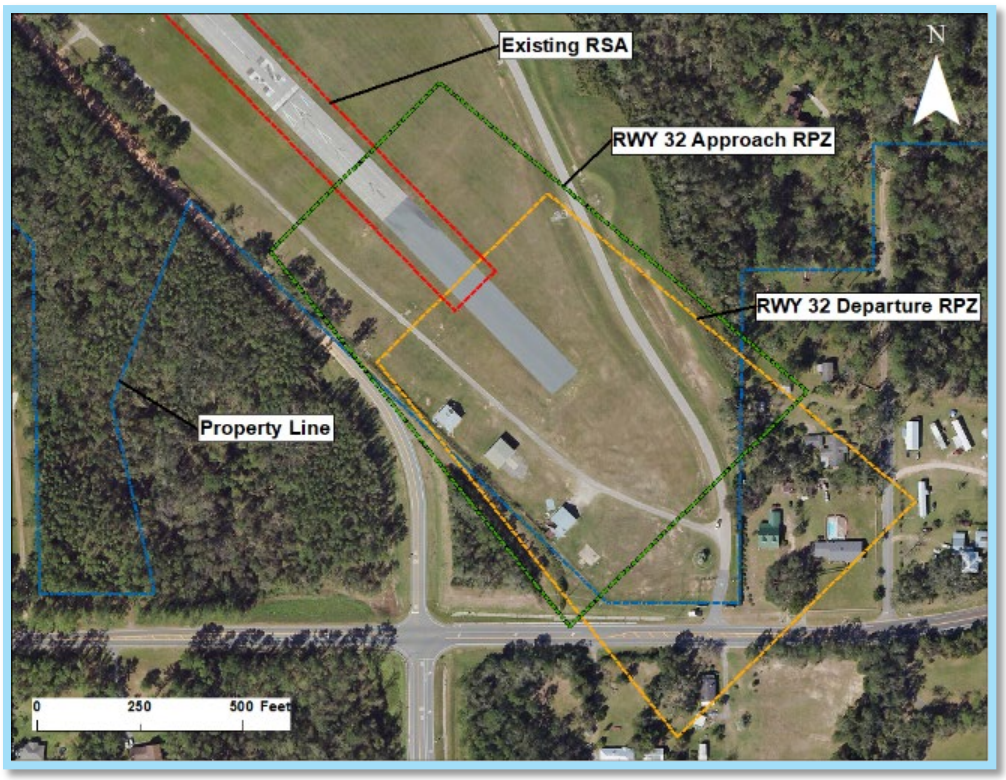
5.1.5 REMOVE INCOMPATIBLE LAND USES FROM THE RPZs

As was noted in the "Facility Requirements" chapter, there are incompatible land uses within the Runway 32 RPZs. Most of these are off airport property; however, there are two buildings remaining within the RPZ that are on-airport property. These buildings should be removed, and their tenants and uses relocated elsewhere on the airport.

The QGAA should continue to seek opportunities to remove incompatible land uses that are present outside of airport property or acquire a controlling interest in these properties. Ideally, all land within the RPZ would be owned by the Airport in fee title. However, avigation easements also present an opportunity to enable the airport some control over the land within the RPZ and possibly limit further incompatible land uses from being developed within the RPZ. Figures 38 and 39 provide an overview of proposed RPZ incompatibility mitigation.

Figures 38 and 39. Remove Incompatible Land Uses from the RPZs





Source: Kimley-Horn Analysis, 2020

5.2 LANDSIDE FACILITIES

As was summarized at the end of the "Facility Requirements" chapter, the following landside facilities are required:

- Additional aircraft storage
- Design and construct paved apron space for transient users
- Secure access to Runway 14-32 from non-aviation activity
- Relocate the maintenance (tractor) shed (the maintenance shed was identified as an incompatible land use within the RPZ. The structure has been removed since the inventory of this master plan began)
- Expansion of utilities when developing new aircraft storage facilities
- Provide alternative means of transportation
- Provide a courtesy car for airport uses

The last two items in the bulleted list do not result in any physical changes to the airport. Provisions for an alternative means of transportation may include adding a public transit or a shuttle at the airport to enable pilots to access off-airport destinations. Presently, no transit services are provided at the airport. Additionally, or alternatively, a courtesy car can be purchased by the QGAA and parked in the vehicle parking lot adjacent to the terminal building.

5.2.1 ADDITIONAL AIRCRAFT STORAGE

An additional 26 hangars are required to meet anticipated 2039 demand. Of these, six box hangars and 20 T-hangars are required. No additional based aircraft tie-down storage is required. Opportunities for based aircraft storage facilities at Quincy Municipal Airport are limited. While the airport encompasses a large area of undeveloped land, most of this land is within freshwater forested/shrub wetland areas and also within the Special Flood Hazard Area Zone A.

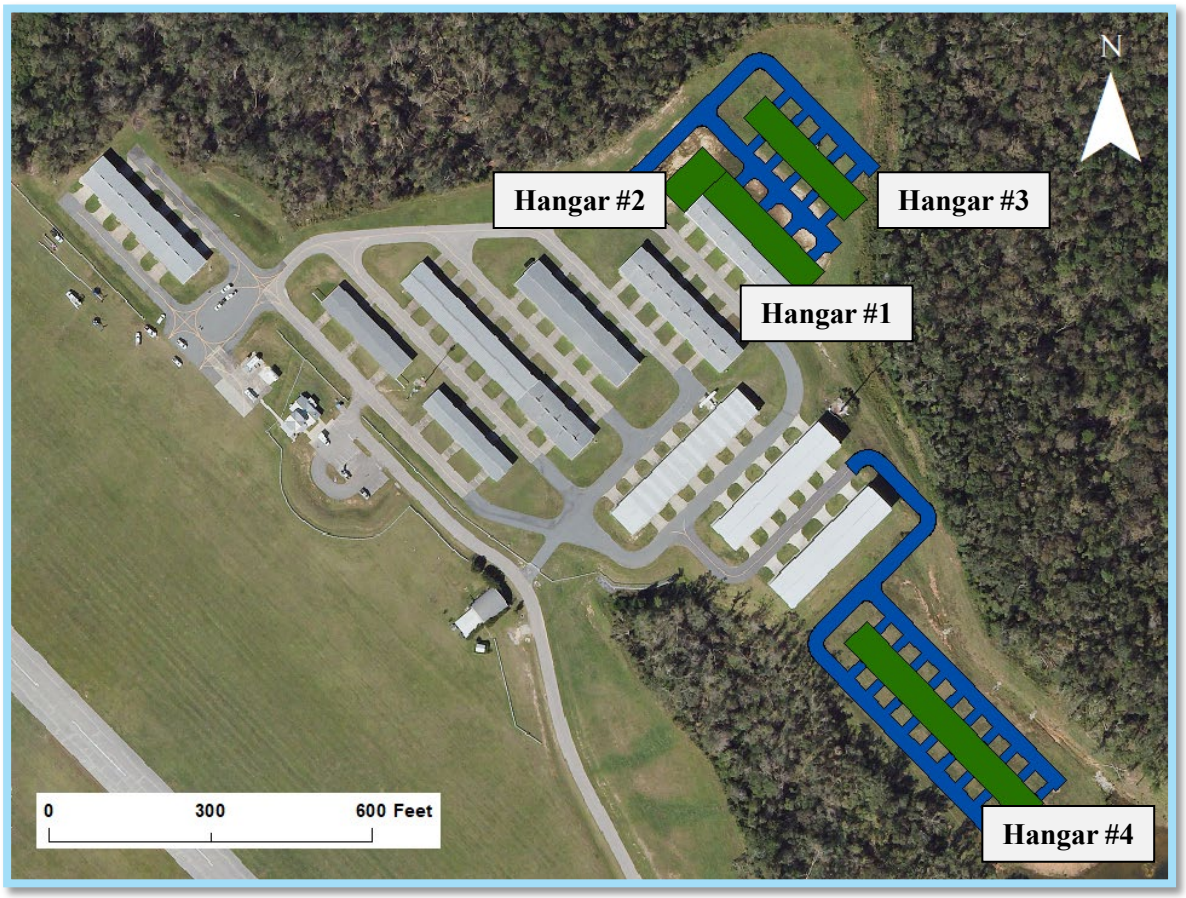
The location of the future hangar development shown in Figure 40. In total four hangar buildings are proposed:

- Hangar #1 – The hangars adjacent to the northern most conventional hangars are to be box hangars (under construction)
- Hangar #2 – The endcap hangar adjacent to the northern most conventional hangars is to be a box hangar
- Hangar #3 – The secondary row of hangars at the northern end of the landside development are to be T-hangars
- Hangar #4 – The southernmost row of hangars are to be T-hangars

Due to elevation changes in many of these areas, longer and less-direct taxiways are required to reduce the amount of fill material and overall project costs. There is an ADS-B tower, owned by the FAA, that prohibits a more direct, or secondary access, to the Hangar #4 row of T-hangars.

Concurrent with hangar development, utility infrastructure, in the form of electricity and water for fire protection, must be extended to these facilities. Upgrades may be required to the lateral and feeder lines currently serving the landside facilities to accommodate the additional demand.

Figure 40. Future Hangar Development



Source: Kimley-Horn Analysis, 2020

5.2.2 TRANSIENT APRON SPACE

The amount of transient apron space available is directly tied to the location of the full parallel taxiway. Transient space available for each Taxiway Alternative was depicted in Figure 35 and Figure 36. The resulting tie-down spaces are summarized in Table 58.

Table 58. Available Transient Apron Space

Transient Tie-Downs	Taxiway Alternative 1	Taxiway Alternative 2
Number of Tie-Downs	18	8
Apron Area (SF)	80,253 SF	43,277 SF

Source: Kimley-Horn Analysis, 2020

In addition to the paved transient apron areas, grass tie-down areas are still available southeast of the terminal building.

With each alternative, there are also some differences in circulation on the transient apron and access to the fuel island.

Taxiway Alternative 1. One taxiway directly connecting landside facilities to the parallel taxiway. Two taxilanes providing circulation for the fuel island, with one serving as secondary access to the hangar facilities. One taxilane bisecting the transient apron, providing access to the transient tie-downs.

Taxiway Alternative 2. One taxiway directly connecting landside facilities to the parallel taxiway. One taxilane providing access to the fuel island, which could also be used to access the hangar facilities. This alternative creates a "dead-end" taxilane from the hangar facilities to the fuel island area. No discrete taxilane is available for transient tie-down access; transient tie-downs are accessed directly from the parallel taxiway.

5.2.3 SECURE ACCESS TO RUNWAY 14-32

Currently the airport does not have a complete perimeter fence. A perimeter fence should be constructed to not only secure the airport from non-aviation activity, but also as a means to manage wildlife intrusion. There currently is a fence along State Route 12 and C&E Farm Road. The perimeter fence should be extended along Airport Road and have gates in the hangar area secured with a controlled access system. While the wooded area provides a physical barrier of sorts to the airport, a perimeter fence should be erected to deter wildlife from entering the aircraft operations area. A fence along the northern portion of the runway should not be constructed within the ROFA, ROFA, or RSA. The area north of the airport is farmland and secluded, minimizing risks of non-aviation activity from entering the airport. Wildlife management is still a concern in this area.

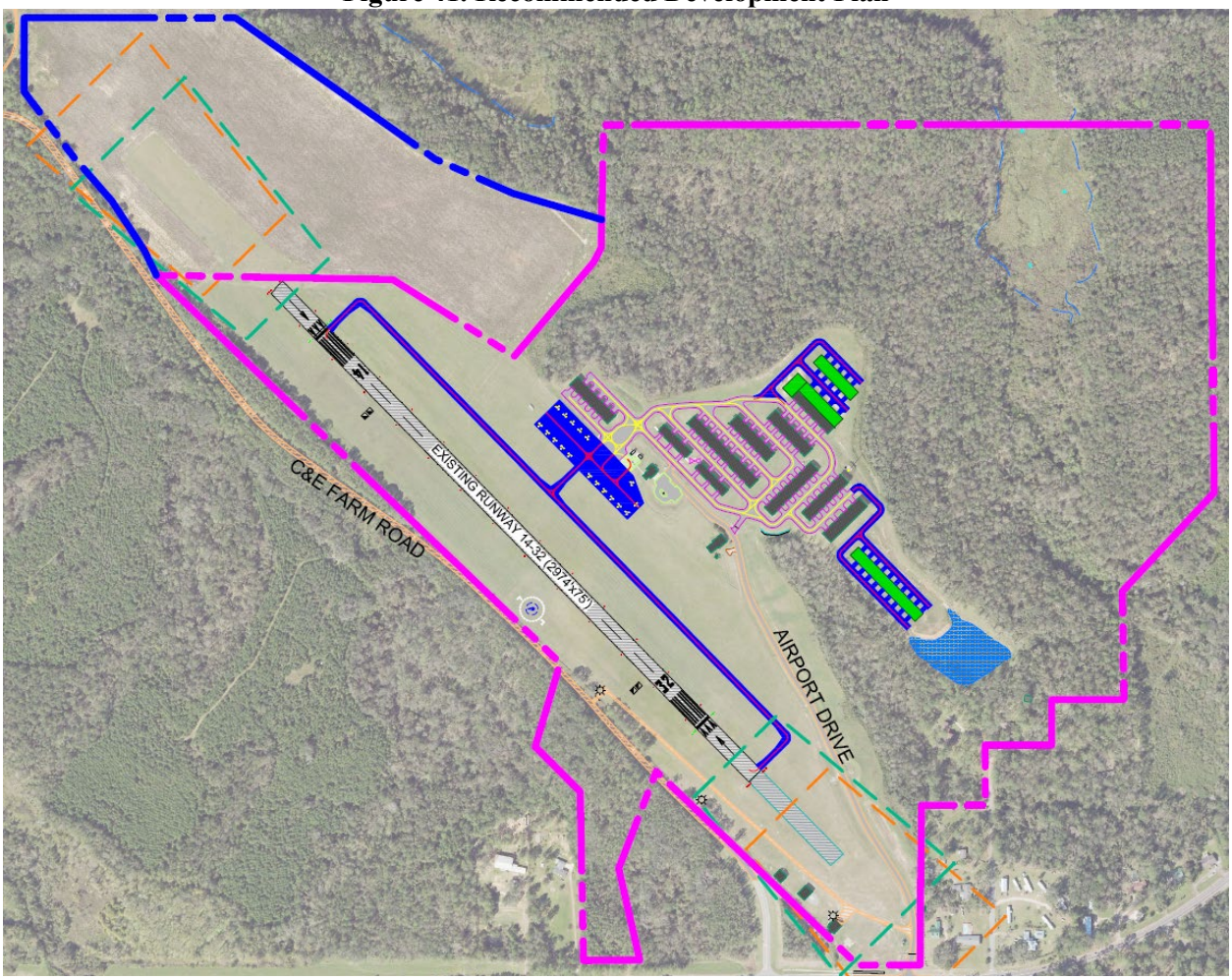
5.3 RECOMMENDED DEVELOPMENT PLAN

The Recommended Development Plan is shown in Figure 41. Please note, due to size and scale limitations, some details may be difficult to read. Please review the associated future layout sheet provided as part of the ALP for a more detailed evaluation of the Recommended Development Plan.

The basis of the Recommended Development Plan is Taxiway Alternative 1. This was agreed upon by the QGAA, the FAA, and FDOT as the Recommended Development Plan for this master plan. Other additions to Taxiway Alternative 1, such as clearing the ROFA and ROFZ, are included in the Recommended Development Plan. Key points of the Recommended Development Plan are:

- Full-parallel taxiway set 225 feet from the runway (centerline to centerline distance)
- Eight paved transient tie-downs (43,277 square feet) and provisions for unpaved transient tie-down spots southeast of the terminal building
- Five box hangars and 30 T-hangars
- Relocation of the wind cone and segmented circle 25 feet to the southwest
- Closure and removal of the dirt service road at the ROFA boundary
- Removal of the remaining two on-airport buildings within the Runway 32 RPZs
- Extension of the perimeter fence along Airport Road and around the hangar area

Figure 41. Recommended Development Plan



Source: Kimley-Horn Analysis, 2020

6 IMPLEMENTATION AND FINANCIAL PLAN

Analyses documented in previous chapters of this master plan evaluated the Airport's facility needs based on existing infrastructure and forecasts of aviation demand. These facility needs were presented as various development alternatives, which culminated in a Recommended Development Plan. The Recommended Development Plan identified all improvements recommended to be implemented within the 20-year planning horizon. In addition to these improvements, the QGAA previously identified other recommended projects in its Airport Capital Improvement Program (ACIP), which are incorporated into the master plan. To provide an overview of the implementation plan, this chapter:

- Identifies individual projects to implement the Recommended Development Plan
- Identifies anticipated NEPA and permitting needs
- Identifies estimates of probable cost for recommended projects
- Defines project phasing and airport development schedule
- Presents a 10-year draft Capital Improvement Program
- Provides a cursory financial feasibility analysis

6.1 INDIVIDUAL PROJECTS AND PHASING

Consistent with the rest of the master plan, individual projects and phasing are identified for the short-term (0 to 5 years), mid-term (6- to 10-years), and long-term (11 to 20 years). The phasing of projects is shown consistent with projected traffic levels and attainment of these levels. It cannot be overemphasized that where development is recommended based upon demand or traffic levels (such as hangars), it is ***actual***, not forecasted, demand that dictates timing of construction. However, for planning purposes, a schedule is provided and is based upon the forecasts of traffic presented in Chapter 3.

It is also important to point out the schedule of improvements proposed in this plan is contingent upon the availability of federal and state funds, as well as investment from the private sector. While improvements are scheduled for specific years in this report, programming of the Aviation Grant Program by FDOT and the Airport Improvement Program by the FAA will determine the timing of many projects.

Lastly, all necessary environmental documentation, clearance, and permits must be obtained before improvements are made to the Airport. Therefore, implementation of projects will also depend on the timing of environmental permitting and clearance, as well as attainment of activity levels. A summary graphic owith all phases of development is provided in Figure 42.

6.1.1 PHASE I

Phase I includes near-term projects to be implemented in the zero- to five-year time frame (FY 2019 – 2024). Non-infrastructure projects such as planning studies and engineering design are not shown, but are included in the estimates of probable costs, presented in a subsequent chapter. The following projects are included in Phase I.

- **Implement IAP.** The procedure has been designed and is awaiting final flight checks from the FAA before being published.
- **Mill and Overlay Runway 14-32 and Update Runway Lighting.** This has been designed and is currently under construction. Included within this project will be the updates to the runway

markings to include threshold markings. As part of this project, the PAPIs will be adjusted to within 0.20 degrees of the instrument approach procedure.

- **Design and Construct Full-Length Parallel Taxiway.** This project is to design and construct a full-length parallel taxiway 225 feet from the runway (runway centerline to taxiway centerline separation). This project is currently underway.
- **Remove objects from the ROFA and ROFZ.** This project removes objects within the ROFA and ROFZ. Specifically, the project will relocate the segmented circle and wind cone 25 feet to the southwest and close and remove the dirt service road within the ROFA on the west side of the Airport.
- **Remove on-airport buildings within the RPZ.** There are two remaining on-airport buildings within the Runway 32 RPZs. This project removes the buildings and associated foundations, restoring the area to flat, mowed grass.
- **Construct based aircraft storage facilities.** To accommodate anticipated based aircraft demand, an additional 10,020 square feet of based aircraft storage is included in Phase I. This includes three box and three T-hangars.

6.1.2 PHASE II

Phase II includes near-term projects to be implemented in the six- to 10-year time frame (FY 2025 – 2029). The following projects are included in Phase II.

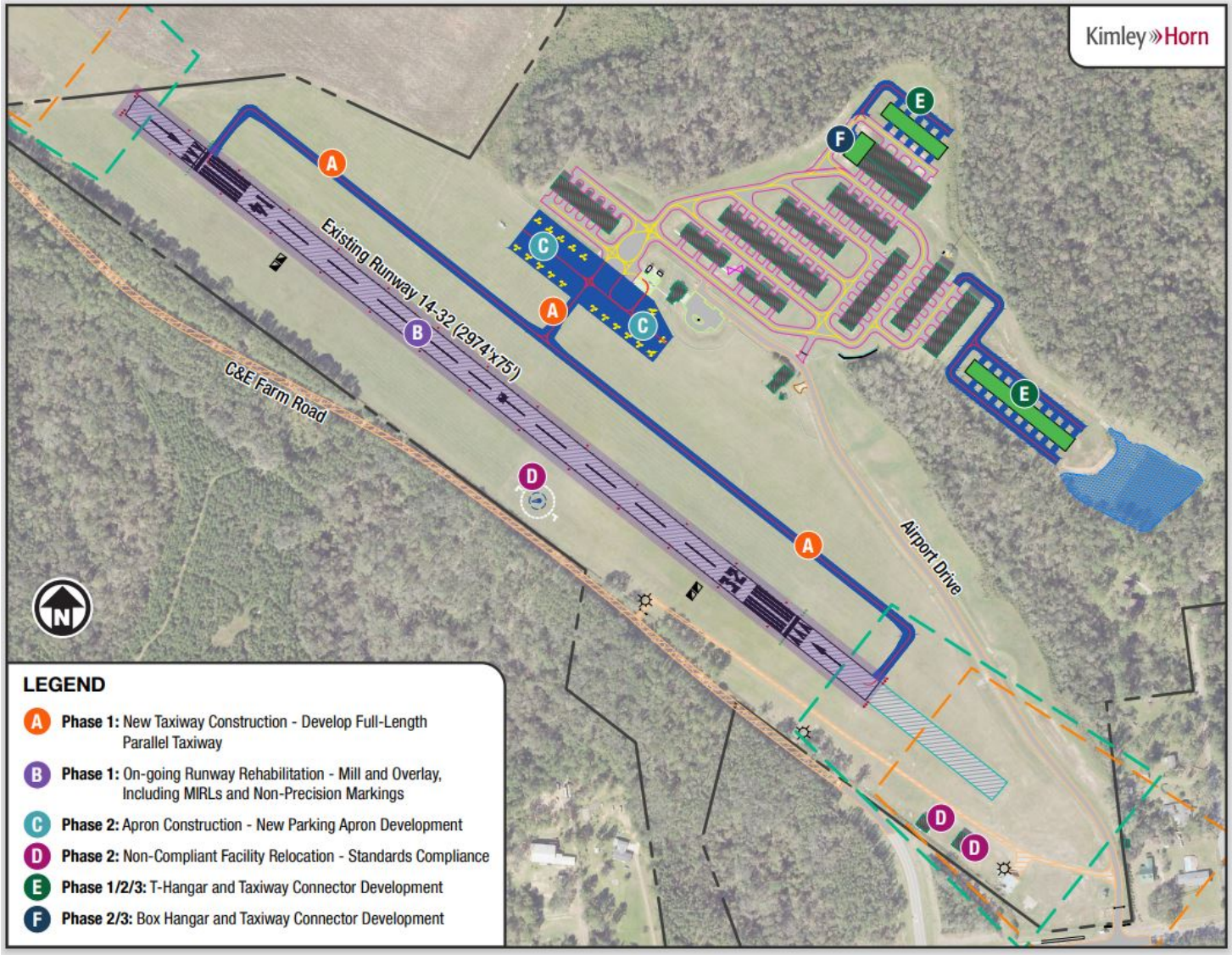
- **Extend perimeter fence.** Presently, the airport is only partially fenced. This project extends the perimeter fence along Airport Road and around the hangar area to reduce the potential for wildlife intrusion and enhance airport perimeter security.
- **Construct based aircraft storage facilities.** To accommodate anticipated based aircraft demand, an additional 20,040 square feet of based aircraft storage is included in Phase II. This includes six box and six T-hangars.
- **Pave transient tie-down apron.** Currently, transient aircraft park on the grass area near the terminal and along the fence. A paved apron to accommodate transient aircraft is included in the master plan. The transient apron shall be sized to accommodate eight to nine aircraft and encompass between 63,200 and 71,100 square feet. The paved apron area will be in the same grass location that is currently utilized by transient aircraft.

6.1.3 PHASE III

Phase III includes near-term projects to be implemented in the 11- to 20-year time frame (FY 2030 – 2039). The following projects are included in Phase III.

- **Construct based aircraft storage facilities.** To accommodate anticipated based aircraft demand, an additional 48,040 square feet of based aircraft storage is included in Phase III. This includes six box and 20 T-hangars.
- **Remove incompatible land uses from the RPZ.** A long-term goal of this master plan is to remove the incompatible land uses within the Runway 32 RPZs. While this is listed as a long-term goal, it is recommended that the QGAA continuously seek to remove land uses throughout the planning period. It is recognized that multiple private entities have property interests within the RPZs, and it is recommended that the QGAA continuously monitor for opportunities to acquire interests in these properties, preferably in fee title.

Figure 422. Recommended Development Plan



Source: Kimley-Horn Analysis, 2021

6.2 ENVIRONMENTAL STRATEGY

It is important to have a strategy for obtaining required environmental approvals under NEPA for projects included in the Recommended Development Plan. It is anticipated that, for certain projects, FAA approval of the ALP will be conditional upon environmental review. Other NEPA-related environmental considerations may include drainage and impacts to sensitive habitat or hazardous waste sites on Airport property. There are three types of environmental review:

- **Categorical Exclusion (CatEx).** There is a category of actions which do not individually or cumulatively have a significant effect on the human environment, and therefore, neither an

Environmental Assessment (EA) nor an Environmental Impact Statement (EIS) is required. The typical timeframe to document a CatEx and receive FAA approval is two to six months.

- **Environmental Assessment.** A public document that an airport sponsor prepares to provide sufficient evidence to determine whether a proposed action would require preparation of an EIS or a finding of no significant impact (FONSI). The average completion timeframe is six months to two years.
- **Environmental Impact Statement.** A public document required for airport development actions that may "significantly affect the quality of the human environment." The EIS describes the impacts on the environment as a result of a proposed action, the impacts of alternatives, and plans to mitigate impacts. The average completion timeframe is two to three years.

The projects included in the Recommended Development Plan that are anticipated to require environmental review are presented in Table 59.

Table 59. Potential Environmental Review Requirements

Project	Anticipated Environmental Action[1]
Phase I	
Design and Construct Full Length Parallel Taxiway	CatEx
Remove objects from the ROFA and ROFZ	CatEx
Remove on-airport buildings within the RPZ	CatEx
Construct based aircraft storage facilities	CatEx
Phase II	
Extend perimeter fence	CatEx
Construct based aircraft storage facilities	CatEx
Pave transient tie-down apron	CatEx
Phase III	
Construct based aircraft storage facilities	CatEx
Remove incompatible land uses from the RPZ	CatEx/EA[2]

Source: Kimley-Horn Analysis, 2021

Notes: 1. Final determination of the likely environmental action will require coordination with the FAA. 2 Land acquisition greater than three acres will require an EA

6.3 FUNDING PLAN

Funding at Quincy Municipal Airport primarily comes through FDOT's aviation grant program as well as the FAA's Airport Improvement Program. Due to the Airport being located in an economically disadvantaged area, funding provided by FDOT is eligible at up to 100 percent of the total project cost, thus

not requiring a local match. Funds provided by the FAA necessitate a 10-percent match. The following sections provide an overview of the funding plan for the Airport, culminating in a 10- to 20-year CIP that outlines projects and anticipated funding levels and sources.

6.3.1 ASSUMPTIONS

For the purposes of this funding plan, it is assumed that the Airport will continue to utilize funding from both FDOT and the FAA. For FAA funding, the Airport will draw down non-primary entitlement funding at least every three years to ensure that the maximum amount of funding is utilized. Similarly, this funding plan assumes that the Airport will continue to utilize grant funding made available by FDOT and request projects annually through the Joint Automated Capital Improvement Program (JACIP), which are anticipated to be provided at 100 percent. It is also assumed that both funding sources will continue to be available, similar to how they are now, over the next 10 years, with no major decreases in funding availability.

6.3.1.1 AIRPORT IMPROVEMENT PROGRAM GRANTS

At the time of writing, the Airport has two current and active FAA Airport Improvement Program grants. One is for the development of this master plan and the other is for installation of runway lights as part of a larger runway rehabilitation project. The Airport has opted to not accept FAA funding for the next two fiscal years to allow for funding to 'roll-over' and allow for a larger project to be completed in fiscal year (FY) 2022/2023.

6.3.1.2 STATE GRANTS

Quincy Municipal currently has two open grants with FDOT, including one for the rehabilitation of the runway and another for the design and environmental components of a new taxiway development. Over the next six years, the Airport has a project identified each year that will be funded utilizing FDOT grants. In total, these grants account for over $5 million in airport development.

6.3.1.3 QCAA/LOCAL FUNDING

The Airport will provide local matches for FAA funded projects. Due to the Airport being eligible for 100 percent grants funding through the Rural Economic Development Initiative, FDOT-funded projects are not are not anticipated to ned local funds.

6.3.1.4 TENANT OR THIRD-PARTY FUNDING

As available, private funds may be utilized for airport development. There are currently no known requests for this type of private development.

6.4 CAPITAL IMPROVEMENT PROGRAM

Based on the above, Table 60 provides an overview of the 10-year CIP for Quincy Municipal Airport.

Table 60. Quincy Municipal Airport 10-Year CIP

Phase	Project Description	FAA Funding	FDOT Funding	Local	Total
I - Ongoing	Design and Environmental – Runway Rehabilitation and Perimeter Taxiway	$0.00	$700,000	$0.00	$700,000
I - Ongoing	Construction – New runway lighting	$271,017	$0.00	$0.00	$271,017
I - Ongoing	Construction – Runway rehabilitation	$0.00	$1,250,000	$0.00	$1,250,000
I	Construction – Perimeter taxiway	$0.00	$1,100,000	$0.00	$1,100,000
I	Design and Environmental – Existing taxiway rehabilitation and new taxiway construction	$300,000	$0.00	$0.00	$300,000
I	Construction – 10-unit T-hangar and taxiway connections	$0.00	$800,000	$0.00	$800,000
I/II	Design and Environmental – Paved aircraft parking apron	$150,000	$0.00	$0.00	$150,000
II	Construction – Paved aircraft parking apron	$0.00	$800,000	$0.00	$800,000
I/II/III	Design and Environmental – Sitework, wetland mitigation, and structural design to bring future taxiway up to grade	$0.00	$550,000	$0.00	$550,000
III	Airport Master Plan/Layout Plan Update	$150,000	$0.00	$0.00	$150,000
I/II/III	Construction – Hangar taxiway rehabilitation	$150,000	$700,000	$0.00	$850,000

APPENDIX A

Quincy Municipal Airport (2J9) Master Plan

Quincy Gadsden Airport Authority

Monday, March 18, 2019

Agenda

- Introductions
- Airport master planning purpose and process
- Airport vision
- Airport master plan goals and objectives
- Airport overview
- Airport inventory and forecast
- Schedule and next steps

Master Plan Purpose

Master Plan Purpose

- Define a phased development concept over a 20-year planning horizon
  - Will include interim phases based on the Quincy Gadsden Airport Authority Board's priorities
- Framework to guide future airport development
  - Meet FAA and State standards
  - Cost-effective, while satisfying aviation demand
  - Consider potential environmental and socioeconomic impacts
  - Justify and facilitate funding
- FAA Master Plan Circular recommends an update every 5 years
  - This is Quincy Municipal Airport's first full Master Plan

Guiding Questions for Long Term Visions

- What do you see as the ultimate build out of the airport?
- How will development be phased?
- Any significant changes in the last few years?
- Any significant changes upcoming?
- Any constraints that may affect development?
- How does the local market affect this?

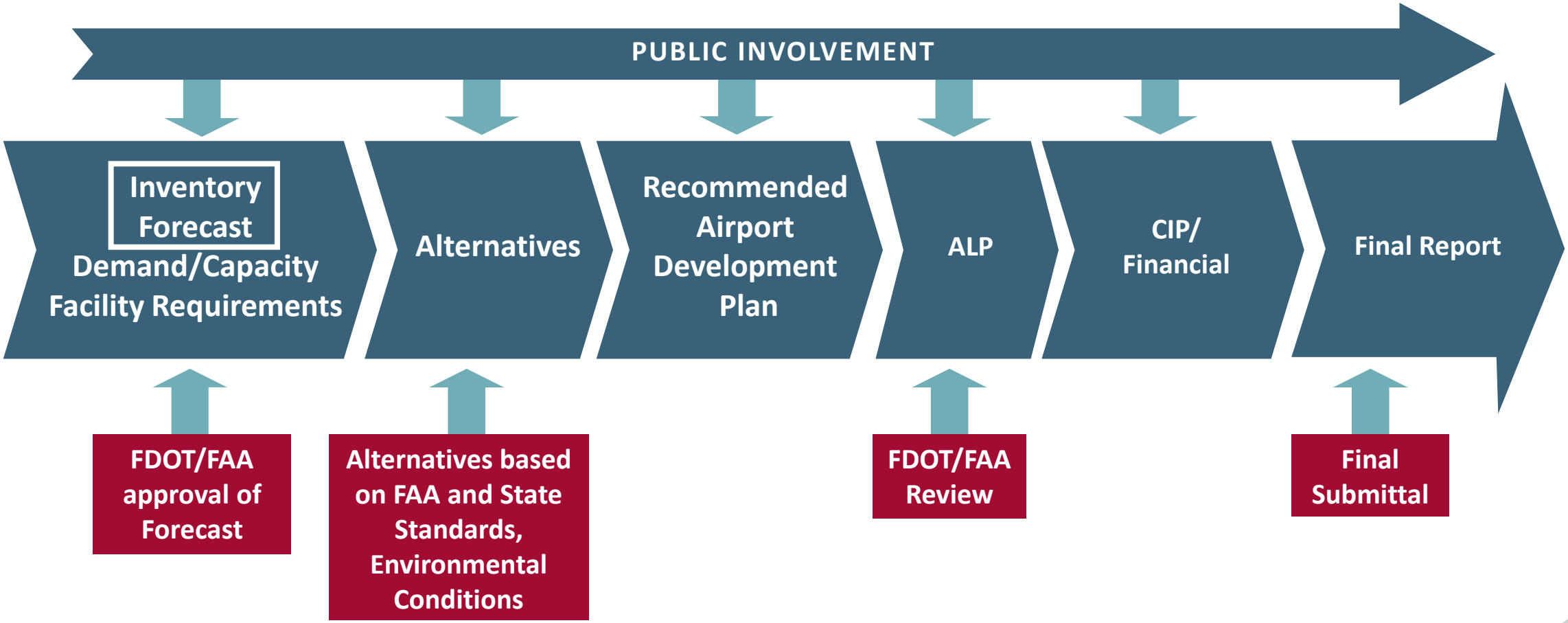
Quincy Municipal Airport Vision

- General Aviation Heaven
- General aviation facility that continues to support the needs of the region
- Steady increase in the number of based aircraft
- Remaining a general aviation facility during the planning period

Master Plan Goals and Objectives

- Identify and understand current operations and activity at the airport
- Identify existing conditions
  - Airport facilities and surrounding socioeconomic climate
- Anticipate future airport usage
- Provide facilities necessary to accomplish role in the local, regional, and national transportation system, as well as allow for revenue generating development
- Remain compliant with FAA and State standards and ADA guidance
- Identify environmental concerns
- Evaluate development alternatives
- Enhance the airport's safety and improve financial self-sufficiency

Planning Process



Inventory

Inventory

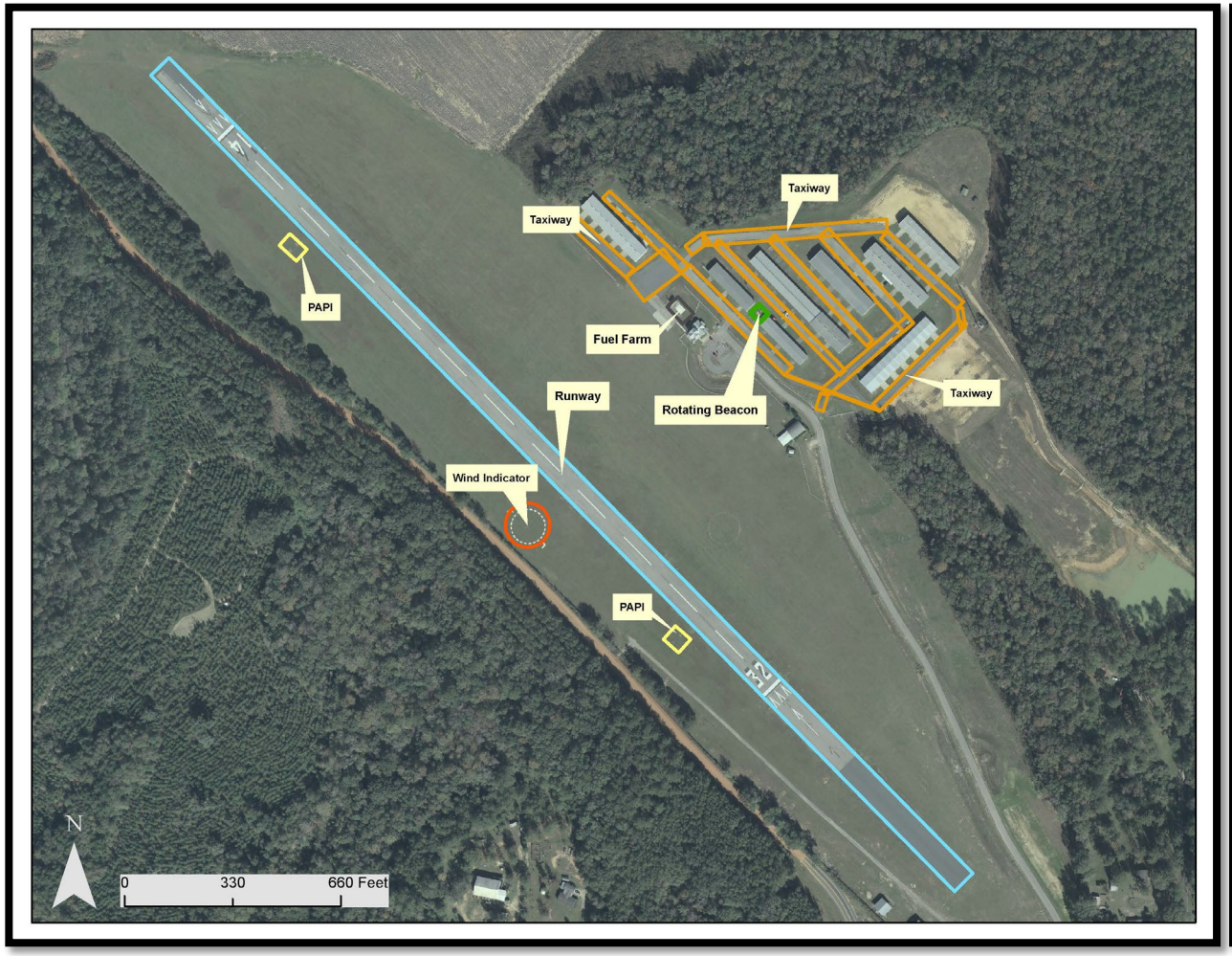
- Compilation of baseline data for subsequent analysis
- Provides an understanding of the existing conditions of the Airport, community, and region
- Conducted through on-site visits, discussion with Airport representatives, and review of documentation
- Includes: history, location and access, activity, existing facilities, airspace, area land use, and socioeconomic data

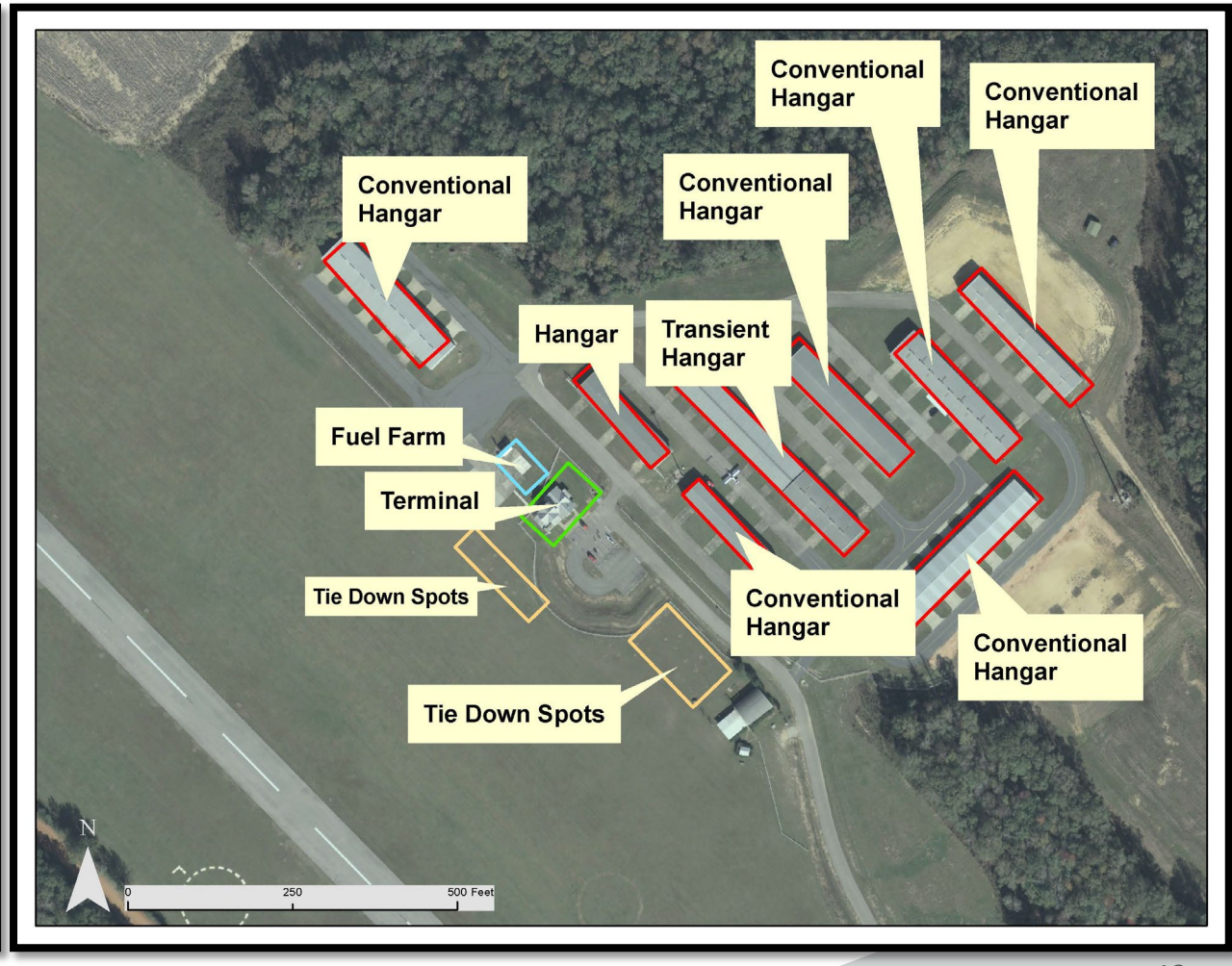
Existing Facilities

- 212 acres
- Runway 14/32, 2,964 feet by 75 feet
- Two precision approach path indicators (PAPI) at each runway end
- Rotating beacon and wind indicator
- 11 existing hangar units
- Tie down positions on grass
- Self service fuel (100LL)
- General aviation terminal

Airport Facilities

Airfield and Landside Facilities





Airport Facilities

Runway 14/32

Airport Facilities

Site Visit January 2019

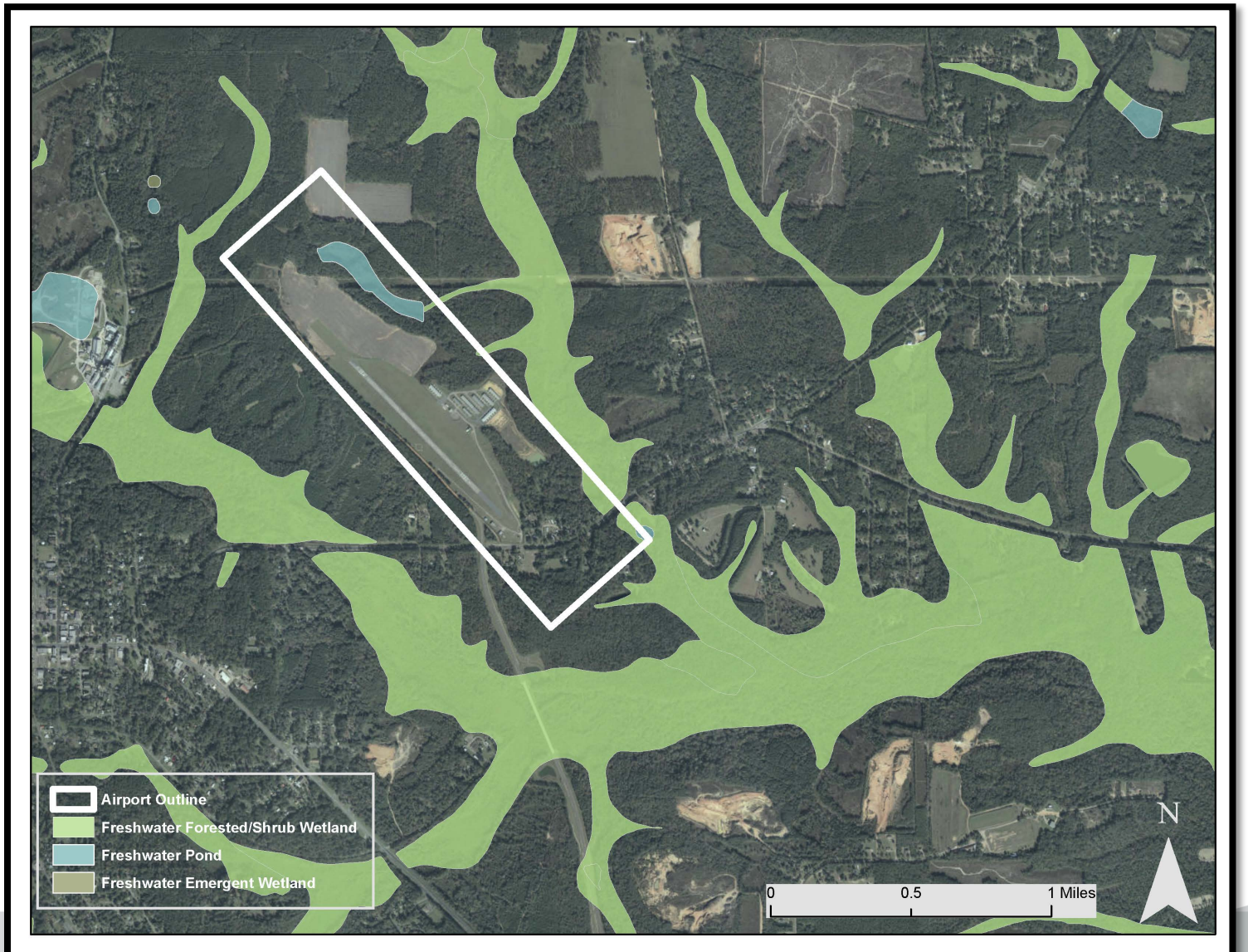
Left to right: Fuel farm, Taxiway, PAPIs

Airport Facilities, cont.

Site Visit January 2019

Left to right: General Aviation Terminal, Rotating Beacon

National Inventory of Wetlands



Activity

HISTORICAL AIRCRAFT OPERATIONS FROM FLORIDA AVIATION DATABASE

Year	Itinerant Operations			Local Operations	Total Operations
	Air Taxi	General Aviation	Military	General Aviation	
2008	0	2,184	0	4,056	6,240
2009	0	2,184	0	4,056	6,240
2010	0	2,184	0	4,056	6,240
2011	0	2,184	0	4,056	6,240
2012	0	2,184	0	4,056	6,240
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AirportIQ, 5010 Master Record operations for 2018:

- Itinerant General Aviation: 2,184
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- Air Taxi: 0
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BASED AIRCRAFT FROM FLORIDA AVIATION DATABASE

*Basedaircraft.com (FAA database) list only 27 based aircraft

Year	Single Engine - Piston
2008	52
2009	65
2010	65
2011	65
2012	65
2013	60
2014	49
2015	59
2016	49
2017	49

Forecasting

Forecast

- Projections of future aviation activity based on historical activity
  - Considers aviation and socioeconomic trends within the Airport's service area and throughout the nation
- Provides foundation for effective decision making related to future development
  - Determines the type, size, and timing for new facilities to meet future aviation demand
- Helps justify financial investments in improvements
- Approved by FDOT/FAA

Forecast Methodologies to Consider

- Based aircraft methodologies
  - Socioeconomic Data
    - Population
    - Employment
    - Median Household Income
  - Florida Aviation System Plan (FASP) 2035
  - FAA Aerospace Fleet Projection Mix
  - Terminal Area Forecast (TAF)
- Operations methodologies
  - Socioeconomic Data
    - Population
    - Employment
    - Median Household Income
  - Florida Aviation System Plan (FASP) 2035
  - Terminal Area Forecast (TAF)
  - FAA Aerospace National Hours Flown

Alternatives

Alternatives

- Explore options to meet future user needs and facility requirements
- Consider on and off airport land uses and environmental factors
- Reflect airport and community priorities
- Meet Federal and State standards
- Identify the preferred development concept
  - Taxiways
  - Additional Hangars
  - Reinstate Approach

Quincy, Florida
2J9
Quincy Municipal Airport

Next Steps

Schedule

- 12-15 months remaining
  - Dependent on FDOT/FAA review

Questions and Contacts

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  - Zach.DeVeau@Kimley-Horn.com
  - 850-553-3530

- Chris Bratton
  - Chris.Bratton@Kimley-Horn.com
  - 850-553-3538

Quincy Municipal Airport (2J9) Master Plan

Project Review Committee

Tuesday, July 9, 2019

Agenda

- Project review committee role
- Master planning purpose and process
- Master plan goals and objectives
- Airport vision
- Inventory
- Forecast
- Alternatives
- Next steps

Project Review Committee Role

Project Review Committee Role

- Assist in long-term visioning
- Prove objective evaluation and input into the planning process
- Review study documentation
- Ensure the overarching goals and vision of the master plan are met
- Participate in review meetings and discussions

Guiding Questions for Long Term Visions

- What do you see as the ultimate build out of the airport?
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Master Plan Purpose & Process

Master Plan Purpose

- Define a phased development concept over a 20-year planning horizon
  - Will include interim phases based on the Quincy Gadsden Airport Authority Board's priorities
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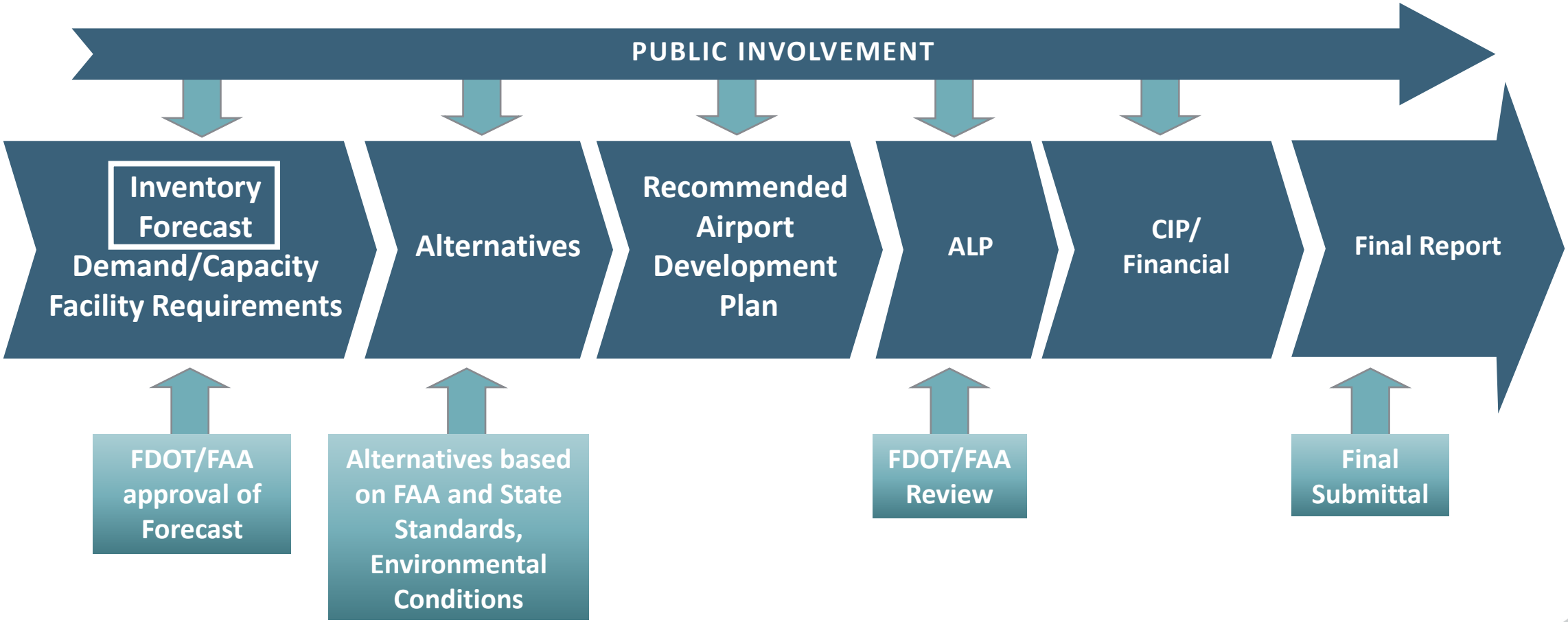

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Master Plan Goals and Objectives

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Quincy, Florida
2J9
Quincy Municipal Airport

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Quincy Municipal Airport Vision

"General Aviation Heaven"

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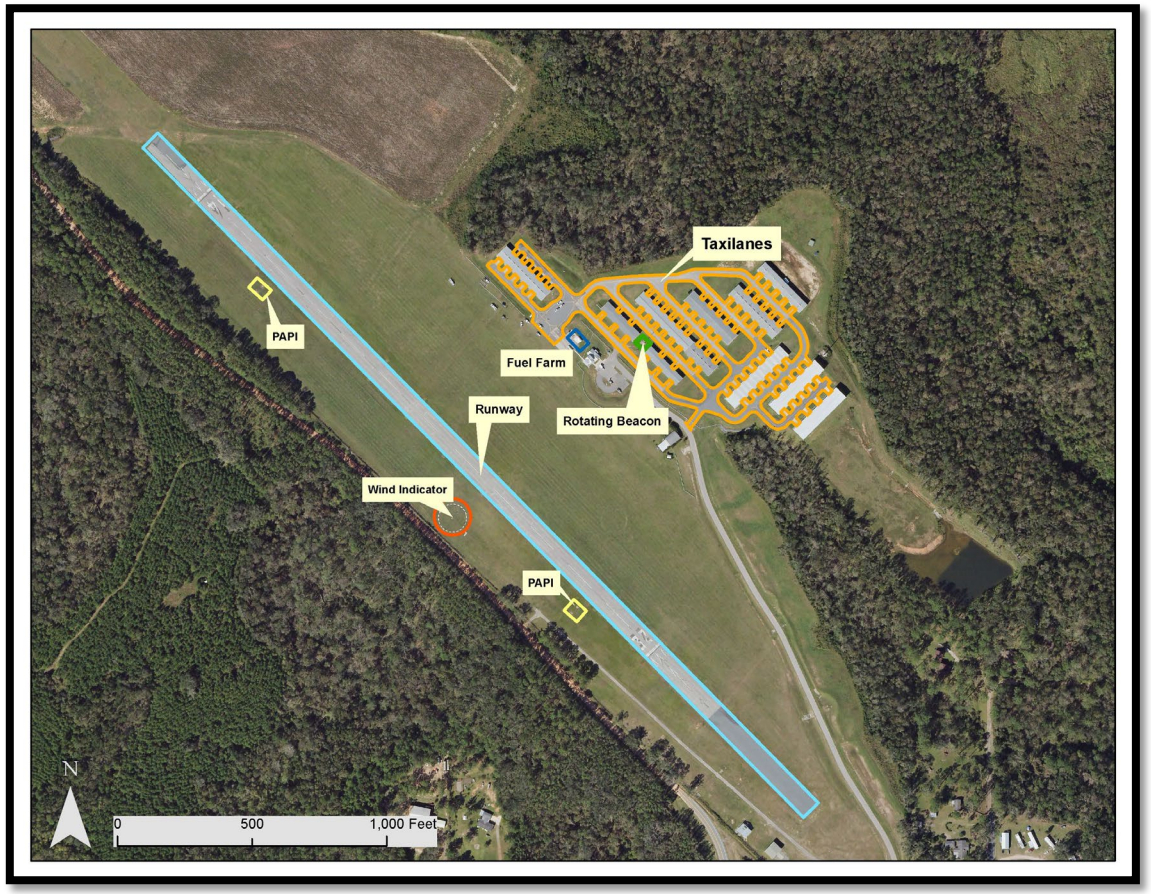
Airfield and Landside Facilities



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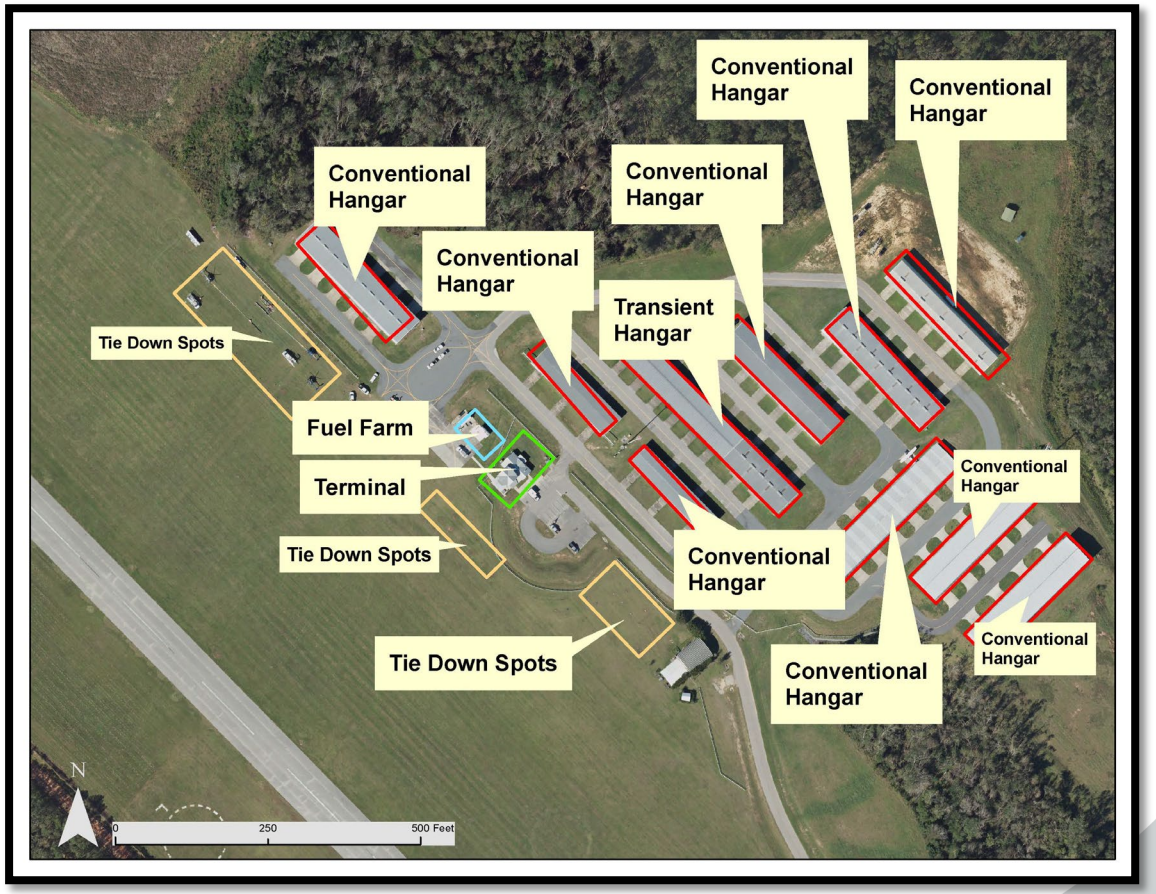

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Self service fuel (100LL)
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Runway 14/32

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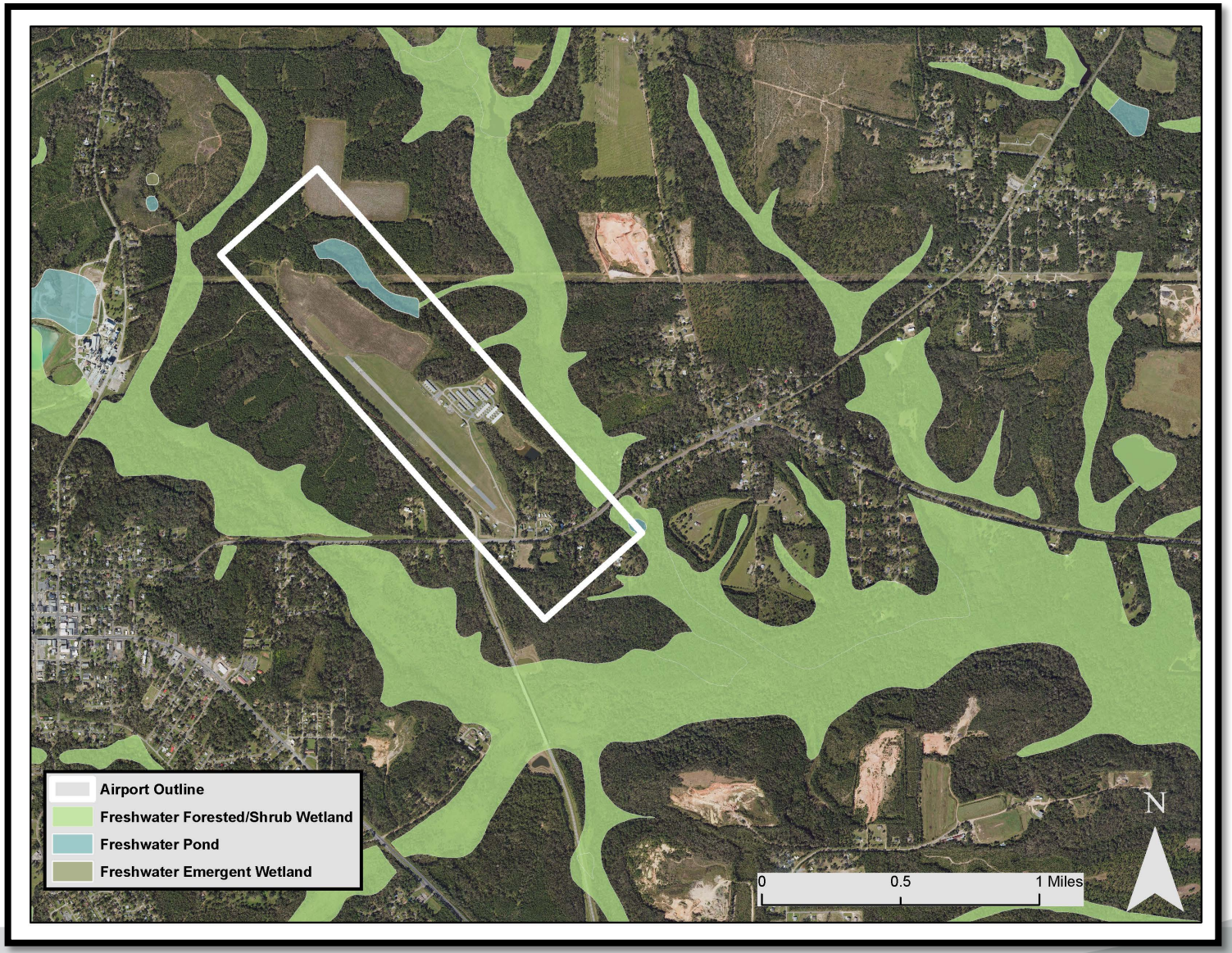

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  - Socioeconomic Data
    - Population
    - Employment
    - Median Household Income
  - Florida Aviation System Plan (FASP) 2035
  - Terminal Area Forecast (TAF)
  - FAA Aerospace National Hours Flown

Forecast – Based Aircraft

- Preferred Methodology
  - Average growth rate based on averaging employment growth rates from Tallahassee Metropolitan Statistical Area (1.25 percent) and State of Florida (1.61 percent)
  - Resulting average growth rate is 1.43 percent, which is applied to the number of based aircraft

Year	Based Aircraft
2018	93
2028	107
2033	115
2038	124
CAGR 2018-2038	1.43%

Forecast – Aircraft Operations

- Preferred Methodology
  - Operations per based aircraft (OPBA)
    - Calculates an average ratio of annual airport operations (6,240) to total based aircraft (93)
    - Average of 67 OPBA multiplied by the number of based aircraft determined from the preferred based aircraft methodology

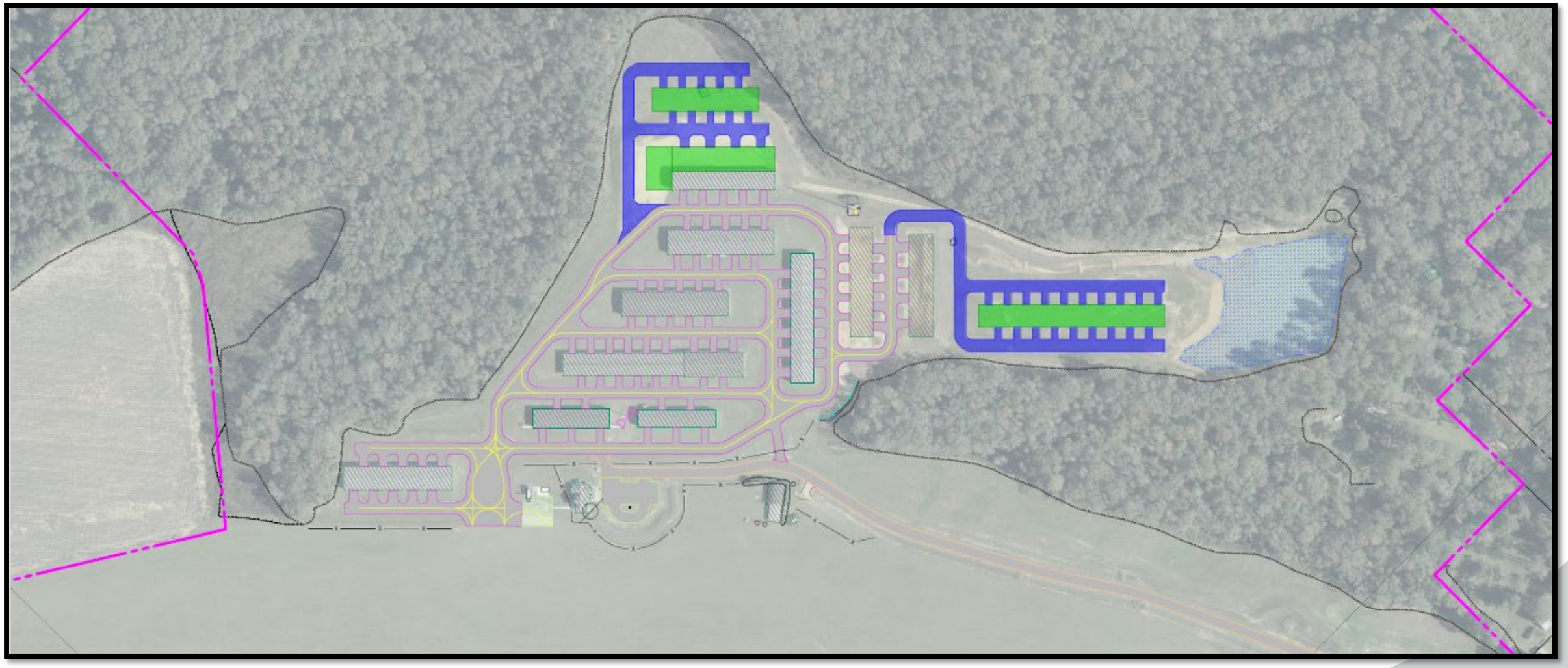
Year	2J9 OPBA	2J9 Based Aircraft	2J9 Operations
2018	67	93	6,231
2028	67	107	7,169
2033	67	115	7,705
2038	67	124	8,308
CAGR 2018-2038		1.43%	

Alternatives

Alternatives

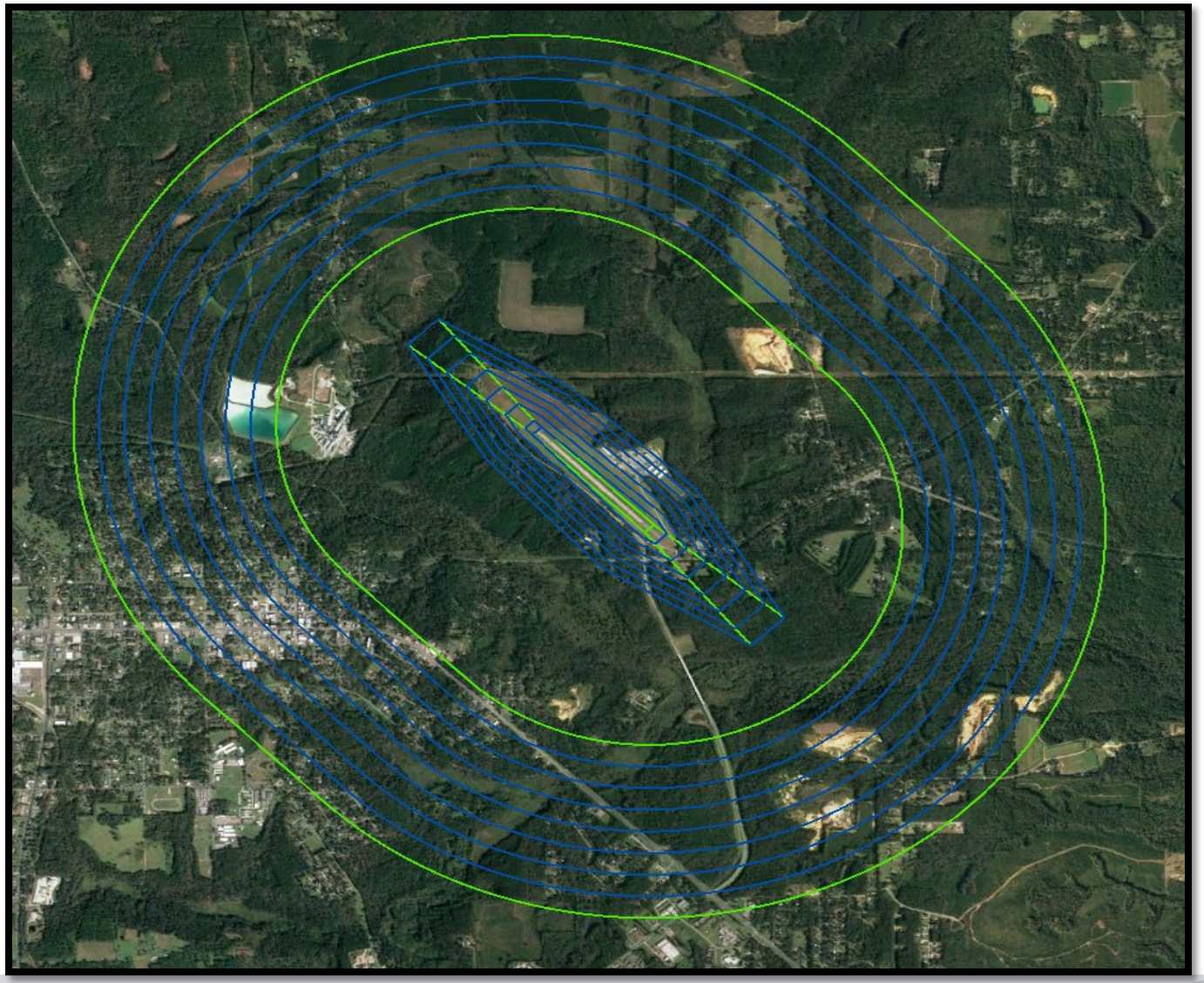
- Explore options to meet future user needs and facility requirements
- Consider on and off airport land uses and environmental factors
- Reflect airport and community priorities
- Meet Federal and State standards
- Identify the preferred development concept
  - Additional Hangars
  - Aprons
  - Reinstate Approach
  - Taxiways

33 Additional Hangars



Aprons

Reinstate GPS Approach



Quincy, Florida
2J9
Quincy Municipal Airport

Next Steps

Next Steps

- FDOT/FAA review of Inventory
- FDOT/FAA review and approval of Forecast
- Demand and Capacity Analysis
- Facility Requirements
- Development of Alternatives

Questions and Contacts

- Janice Watson
  - quincyairport@tds.net
- Zach DeVeau
  - Zach.DeVeau@Kimley-Horn.com
  - 850-553-3530
- Chris Bratton
  - Chris.Bratton@Kimley-Horn.com
  - 850-553-3538

Quincy Municipal Airport (2J9) Master Plan

Instrument Flight Procedure Assessment

September 5, 2019

2J9 Flight Procedure History

- Reception of the Seminole VOR (an FAA owned facility) was noted by flight inspection as insufficient to support the current VOR approach to 2J9.
- Multiple attempts to improve the VOR reception were attempted including tree cutbacks, but failed to resolve the issue.
- An FDC NOTAM was issued for the VOR-A approach that prevents use of the 2J9 VOR approach during all conditions.
- 2009 RNAV Approach Procedures Implemented for Rwy 14/32 utilizing basic LNAV straight-in line of minima
- In 2011, the RNAV procedures were permanently rescinded after it was determined that (off-airport) trees in the approach surface could not be mitigated.

Pathways to IAP Implementation

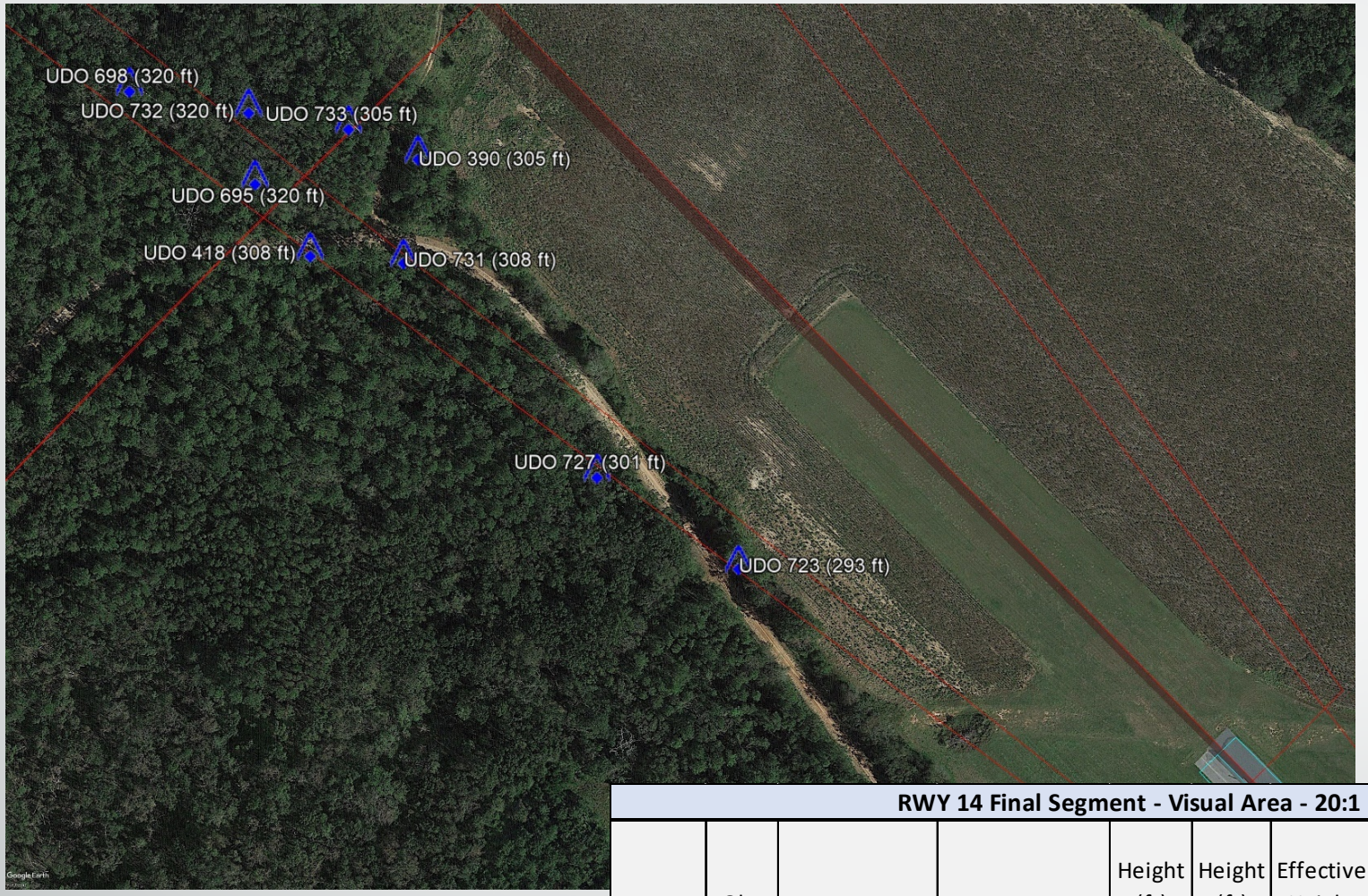
- Complete submission of AGIS Survey to NOAA/NGS for QA review and integration into the FAA's Obstacle Authoritative Source (OAS). Then….
- Option #1: Remove or trim trees to allow for straight-in RNAV (GPS) approaches to the runway ends that do not rely on ground-based navigation

  OR…

- Option #2: Implement a RNAV (GPS) Circling only approach solution that is not dependent on tree removal. The approach would be limited to daytime use only as a result of the 20:1 approach penetrations.

Runway 14 VGS Tree Penetrations

RWY 14 Final Segment - VGS (LNAV) - Penetrating Obstacles										
Name	Obs Type	Latitude	Longitude	Height (ft) AMSL	Height (ft) AGL	Distance to Centerline (ft)	Distance to THR (ft)	Surface Height (ft) AMSL	Amount of Penetration (ft)	Required GPA
UDO 731	TREE	N30° 36' 10.07"	W084° 33' 52.15"	308	88	330.28	1617.27	291.69	16.31	4.63
UDO 732	TREE	N30° 36' 12.15"	W084° 33' 54.59"	320	99	335.38	1916.32	304.81	15.19	4.45
UDO 390	TREE	N30° 36' 11.53"	W084° 33' 51.92"	305	85	212.42	1708.41	295.69	9.31	4.24
UDO 733	TREE	N30° 36' 11.95"	W084° 33' 53.04"	305	85	252.4	1807.72	300.05	4.95	4.00



Runway 14 20:1 Penetrations

RWY 14 Final Segment - Visual Area - 20:1 Penetrating Obstacles										
Name	Obs Type	Latitude	Longitude	Height (ft) AMSL	Height (ft) AGL	Effective Height (ft)	Distance to Centerline (ft)	Distance to THR (ft)	20:1 Surface Height (ft) AMSL	20:1 Amount of Penetration (ft)
UDO 723	TREE	N30° 36' 05.76"	W084° 33' 46.76"	293	72	293	299.45	776.21	259.51	33.49
UDO 727	TREE	N30° 36' 07.06"	W084° 33' 49.05"	301	80	301	350.21	1010.02	271.2	29.8
UDO 695	TREE	N30° 36' 11.15"	W084° 33' 54.49"	320	99	320	399.37	1638.66	302.63	17.37
UDO 731	TREE	N30° 36' 10.07"	W084° 33' 52.15"	308	88	308	330.28	1417.27	291.56	16.44
UDO 732	TREE	N30° 36' 12.15"	W084° 33' 54.59"	320	99	320	335.38	1716.32	306.52	13.48
UDO 418	TREE	N30° 36' 10.17"	W084° 33' 53.66"	308	87	308	416.89	1516.53	296.53	11.47
UDO 390	TREE	N30° 36' 11.53"	W084° 33' 51.92"	305	85	305	212.42	1508.41	296.12	8.88
UDO 698	TREE	N30° 36' 12.45"	W084° 33' 56.50"	320	99	320	432.9	1854.92	313.45	6.55
UDO 733	TREE	N30° 36' 11.95"	W084° 33' 53.04"	305	85	305	252.4	1607.72	301.09	3.91

Runway 32 VGS Tree Penetrations

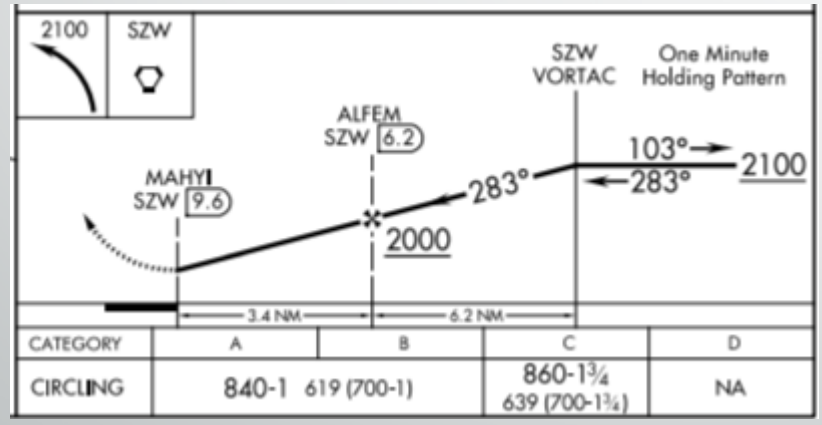
RWY 32 Final Segment - VGS (LNAV) - Penetrating Obstacles										
Name	Obs Type	Latitude	Longitude	Height (ft) AMSL	Height (ft) AGL	Distance to Centerline (ft)	Distance to THR (ft)	Surface Height (ft) AMSL	Amount of Penetration (ft)	Required GPA
UDO 681	TREE	N30° 35' 37.70"	W084° 33' 06.79"	267	46	207.75	1118.29	256.59	10.41	4.57
UDO 816	TREE	N30° 35' 36.32"	W084° 33' 03.83"	275	55	294.22	1399.18	268.92	6.08	4.14
UDO 688	TREE	N30° 35' 37.00"	W084° 33' 06.50"	264	43	176.22	1186.72	259.59	4.41	4.09
UDO 834	TREE	N30° 35' 27.69"	W084° 33' 04.39"	295	74	351.69	1987.23	294.73	0.27	3.78

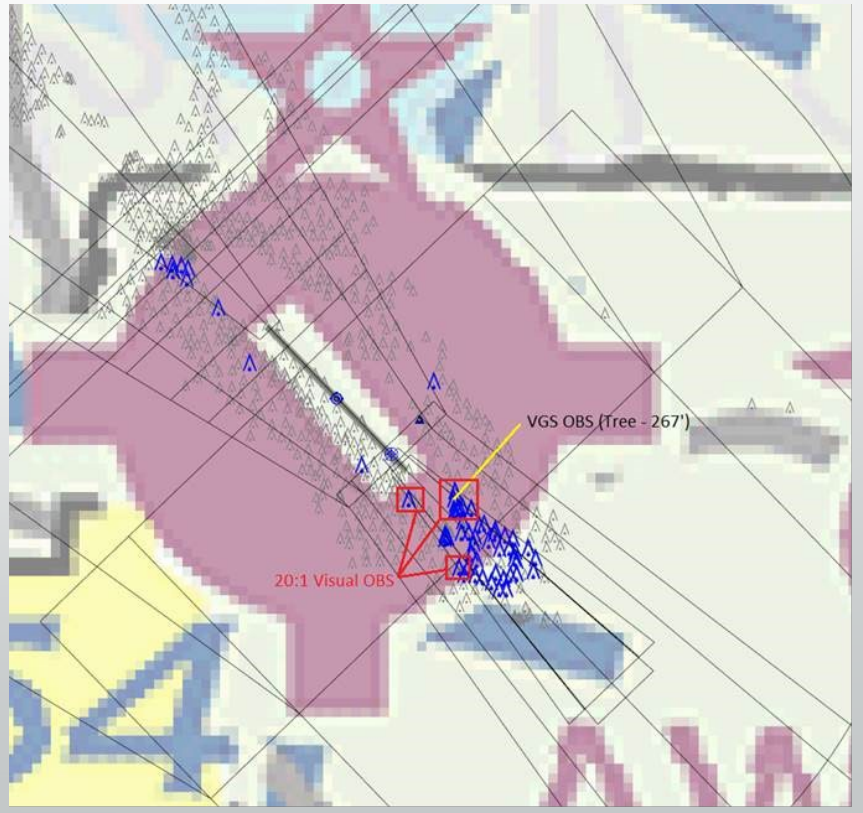
Runway 32 20:1 Tree Penetrations

RWY 32 Final Segment - Visual Area - 20:1 Penetrating Obstacles									
Name	Obs Type	Latitude	Longitude	Height (ft) AMSL	Height (ft) AGL	Distance to Centerline (ft)	Distance to THR (ft)	20:1 Surface Height (ft) AMSL	20:1 Amount of Penetration (ft)
UDO 681	TREE	N30° 35' 37.70"	W084° 33' 06.79"	267	46	207.75	918.29	253.41	13.59
UDO 816	TREE	N30° 35' 36.32"	W084° 33' 03.83"	275	55	294.22	1199.18	267.46	7.54
UDO 688	TREE	N30° 35' 37.00"	W084° 33' 06.50"	264	43	176.22	986.72	256.84	7.16
UDO 278	TREE	N30° 35' 38.90"	W084° 33' 06.61"	254	34	303.86	842.61	249.63	4.37
UDO 562	TREE	N30° 35' 27.68"	W084° 33' 05.90"	293	72	446.54	1695.63	292.28	0.72

Previous & Proposed Procedure Minimums

Procedure	Nav Type	CAT A	CAT B	CAT C
Previous RNAV (GPS) RWY 14	LNAV	840-1 (619)	840-1 (619)	840-1 3/4 (619)
Previous RNAV (GPS) RWY 32	LNAV	700-1 (479)	700-1 (479)	700-1 3/4 (479)
Previous RNAV (GPS) RWY 14/32	Circling	840-1 (619)	840-1 (619)	860-1 3/4
Proposed RNAV-A Circling	CIrcling	860-1 (635)	860-1 (635)	1020- 2 1/2 (795)





Next Steps

- Determine whether any pending tree mitigation work will be performed or deferred to a later time.
- Submit IAP request through Instrument Flight Procedures (IFP) Gateway.
- Develop RNAV-A procedure concept in FAA TARGETS to deliver to FAA.

Meeting Agenda

Attendees:	Stephen Wilson – Federal Aviation Administration (FAA) Chastity Clark – Federal Aviation Administration Zach DeVeau – Kimley-Horn (KH) Connor Chambliss – Kimley-Horn
Date:	November 19, 2019
Subject:	Quincy Municipal Airport (2J9) Update Meeting

Master Plan Forecast

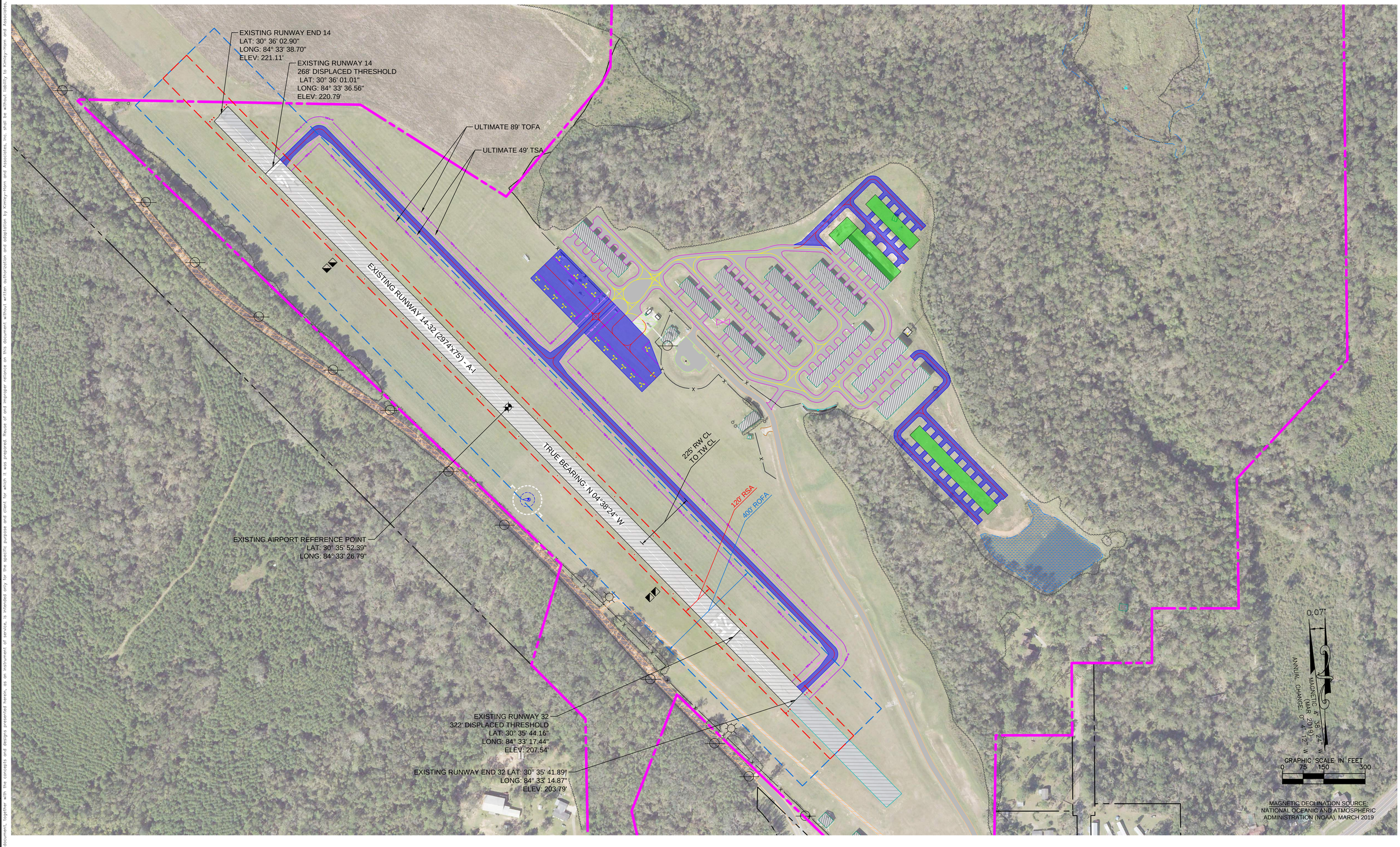
- Based Aircraft Forecast
  - Basedaircraft.com – 27 (22 validated)
  - 5010 Master Record – 37
  - Florida Aviation Database – 49
  - Terminal Area Forecast - 59
  - Airport Management – 79
- Growth rate is based on Tallahassee due to majority of tenants living in Tallahassee and basing aircraft at 2J9
- Discussion of submitted draft Forecast

Environmental Assessment (EA)

- NEPA documentation for proposed taxiway(s)
- Based on current information, CATEX w/ FONSI appears most appropriate
- Review of past environmental documentation (attached)

Taxiway Alternatives

- Alternative 1
  - Standard runway centerline to taxiway centerline separation.
- Alternative 2
  - Modification of Standards (MOS) to allow for an ultimate condition turf runway between existing runway and taxiway alternative.
- Alternative 3
  - Modification of Standards (MOS) to increase runway centerline to taxiway centerline separation.



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SCALE	AS SHOWN
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DRAWN BY	CC
CHECKED BY	ZD

QUINCY MUNICIPAL AIRPORT MASTER PLAN UPDATE

PREPARED FOR

QUINCY-GADSDEN AIRPORT AUTHORITY

TAXIWAY ALTERNATIVE 1

SHEET NUMBER 1 / 3

EXISTING RUNWAY END 14
LAT: 30° 36' 02.90"
LONG: 84° 33' 38.70"
ELEV: 221.11'

EXISTING RUNWAY 14
268' DISPLACED THRESHOLD
LAT: 30° 36' 01.01"
LONG: 84° 33' 36.56"
ELEV: 220.79'

ULTIMATE 89' TOFA

ULTIMATE 49' TSA

EXISTING RUNWAY 14-32 (2914'X75') - A-I

ULTIMATE TURF RUNWAY 14L-32R (1900'X60') - A-I SMALL

170' RSA
TO RSA
35' ROFA
OVERLAP

TRUE BEARING: N 04°38'24" W

290' RW CL
TO RW CL

150' RW CL
TO TW CL

120' RSA

400' ROFA

120' RSA

250' ROFA

EXISTING AIRPORT REFERENCE POINT
LAT: 30° 35' 52.39"
LONG: 84° 33' 26.79"

EXISTING RUNWAY 32
322' DISPLACED THRESHOLD
LAT: 30° 35' 44.16"
LONG: 84° 33' 17.44"
ELEV: 207.54'

EXISTING RUNWAY END 32 LAT: 30° 35' 41.89"
LONG: 84° 33' 14.87"
ELEV: 203.79'

0.07°

ANNUAL CHANGE: 0° 4' 12" W

MAGNETIC NORTH (MAR 2019)

38° 24" W

GRAPHIC SCALE IN FEET
0 75 150 300

MAGNETIC DECLINATION SOURCE:
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA), MARCH 2019

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QUINCY MUNICIPAL AIRPORT MASTER PLAN UPDATE

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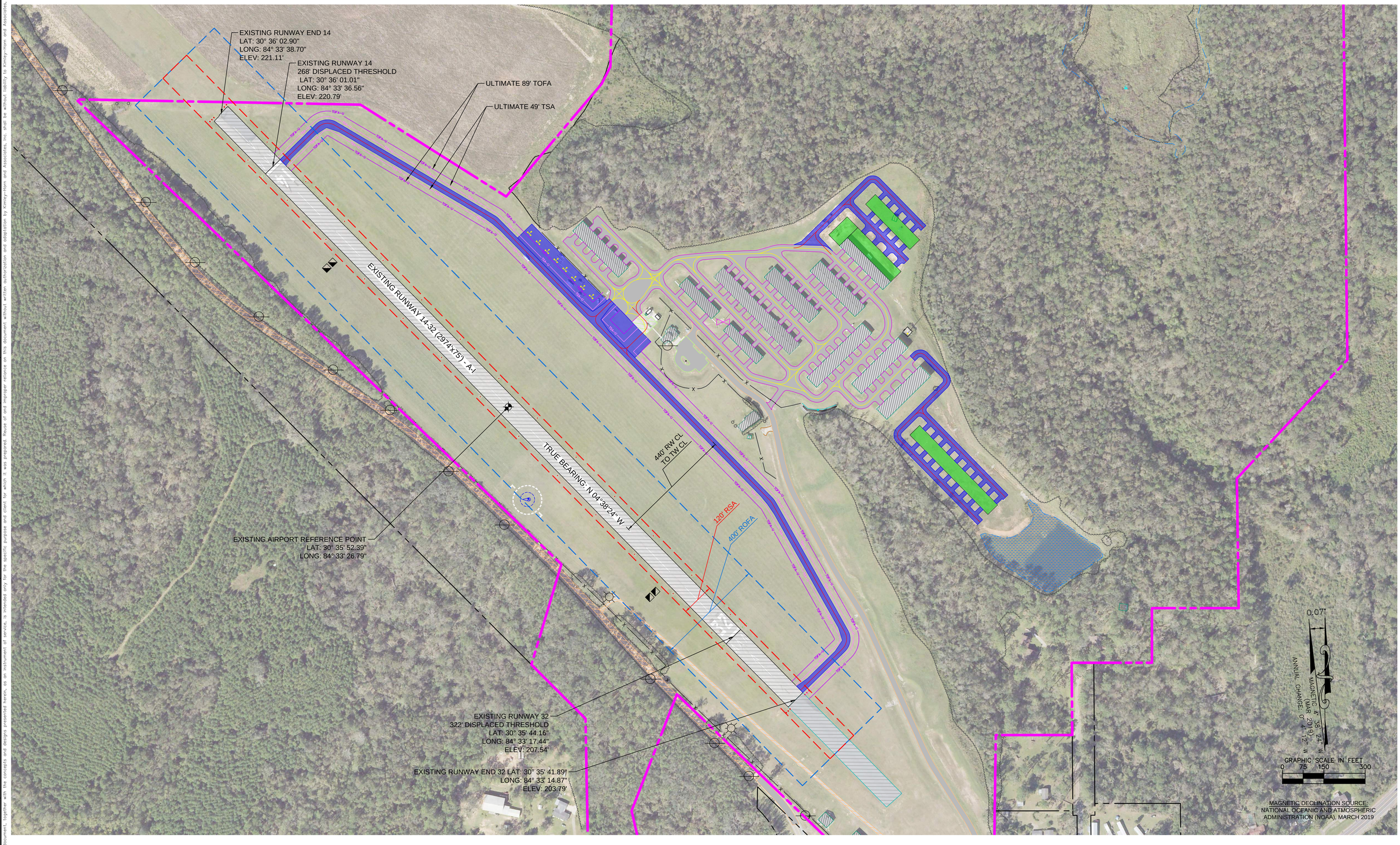
TAXIWAY ALTERNATIVE 2

SHEET NUMBER
2 / 3



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QUINCY MUNICIPAL AIRPORT MASTER PLAN UPDATE

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QUINCY-GADSDEN AIRPORT AUTHORITY

TAXIWAY ALTERNATIVE 3

SHEET NUMBER 3 / 3

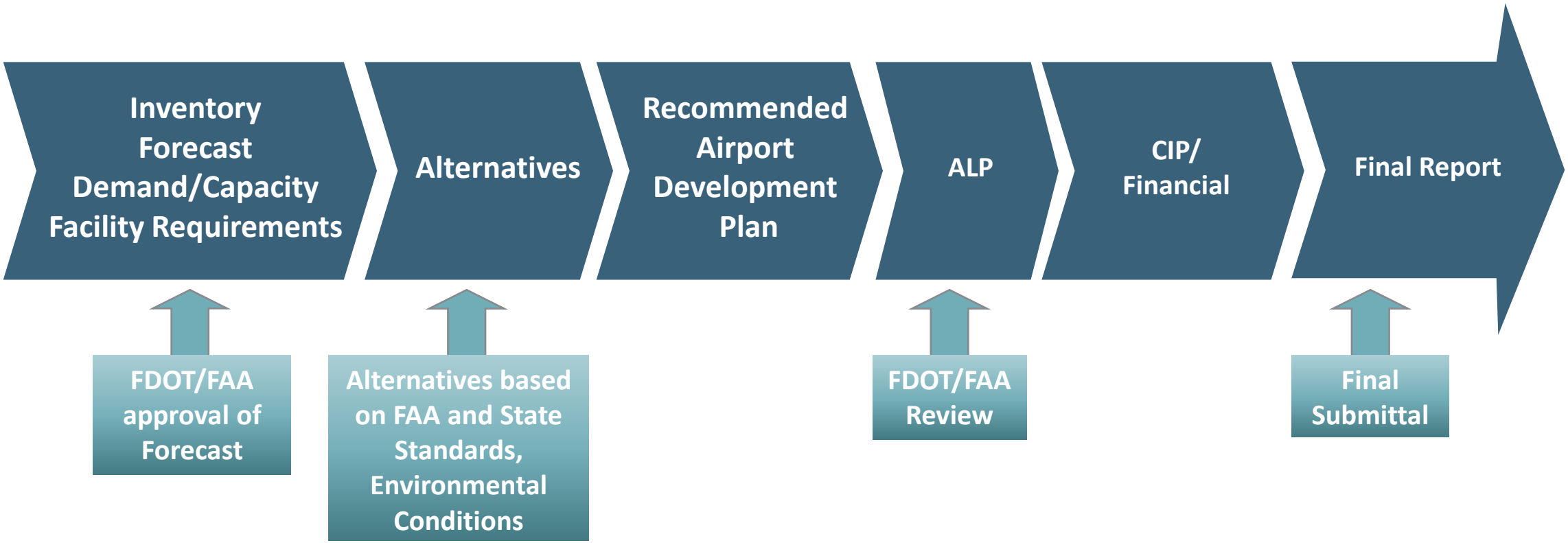
APPENDIX B

Quincy Municipal Airport (2J9) Master Plan

Agenda

- Master Plan Goals and Objectives
- Inventory and Forecast
- Alternatives
- Development Plan
- Status Updates

Planning Process



Master Plan Goals and Objectives

- Identify and understand current operations and activity at the airport
- Identify existing conditions
  - Airport facilities and surrounding socioeconomic climate
- Anticipate future airport usage
- Provide facilities necessary to accomplish role in the local, regional, and national transportation system, as well as allow for revenue generating development
- Remain compliant with FAA and State standards and ADA guidance
- Identify environmental concerns
- Evaluate development alternatives
- Enhance the airport's safety and improve financial self-sufficiency

Inventory & Forecasts

Inventory

- Compilation of baseline data for subsequent analysis
- Provides an understanding of the existing conditions of the Airport, community, and region
- Conducted through on-site visits, discussion with Airport representatives, and review of documentation
- Includes: history, location and access, activity, existing facilities, airspace, area land use, and socioeconomic data

Airport Facilities

Left to right: Fuel farm, Taxilane, PAPIs

Airport Facilities, cont.

Left to right: General Aviation Terminal, Rotating Beacon

Activity

HISTORICAL AIRCRAFT OPERATIONS FROM FLORIDA AVIATION DATABASE

Year	Itinerant Operations			Local Operations	Total Operations
	Air Taxi	General Aviation	Military	General Aviation	
2008	0	2,184	0	4,056	6,240
2009	0	2,184	0	4,056	6,240
2010	0	2,184	0	4,056	6,240
2011	0	2,184	0	4,056	6,240
2012	0	2,184	0	4,056	6,240
2013	0	2,184	0	4,056	6,240
2014	0	2,184	0	4,056	6,240
2015	0	2,184	0	4,056	6,240
2016	0	2,184	0	4,056	6,240
2017	0	2,184	0	4,056	6,240
2018	0	2,184	0	4,056	6,240

AirportIQ, 5010 Master Record operations for 2018:

- Itinerant General Aviation: 2,184
- Itinerant Military: 0
- Air Taxi: 0
- Local General Aviation: 4,056
- Total operations: 6,240

BASED AIRCRAFT FROM FLORIDA AVIATION DATABASE

Year	Single Engine - Piston
2008	52
2009	65
2010	65
2011	65
2012	65
2013	60
2014	49
2015	59
2016	49
2017	49

Forecast

Forecast

- Projections of future aviation activity based on historical data
  - Considers aviation and socioeconomic trends within the Airport's service area and throughout the nation
- Provides foundation for effective decision making related to future development
  - Determines the type, size, and timing for new facilities to meet future aviation demand
- Helps justify financial investments in improvements
- Approved by FDOT/FAA

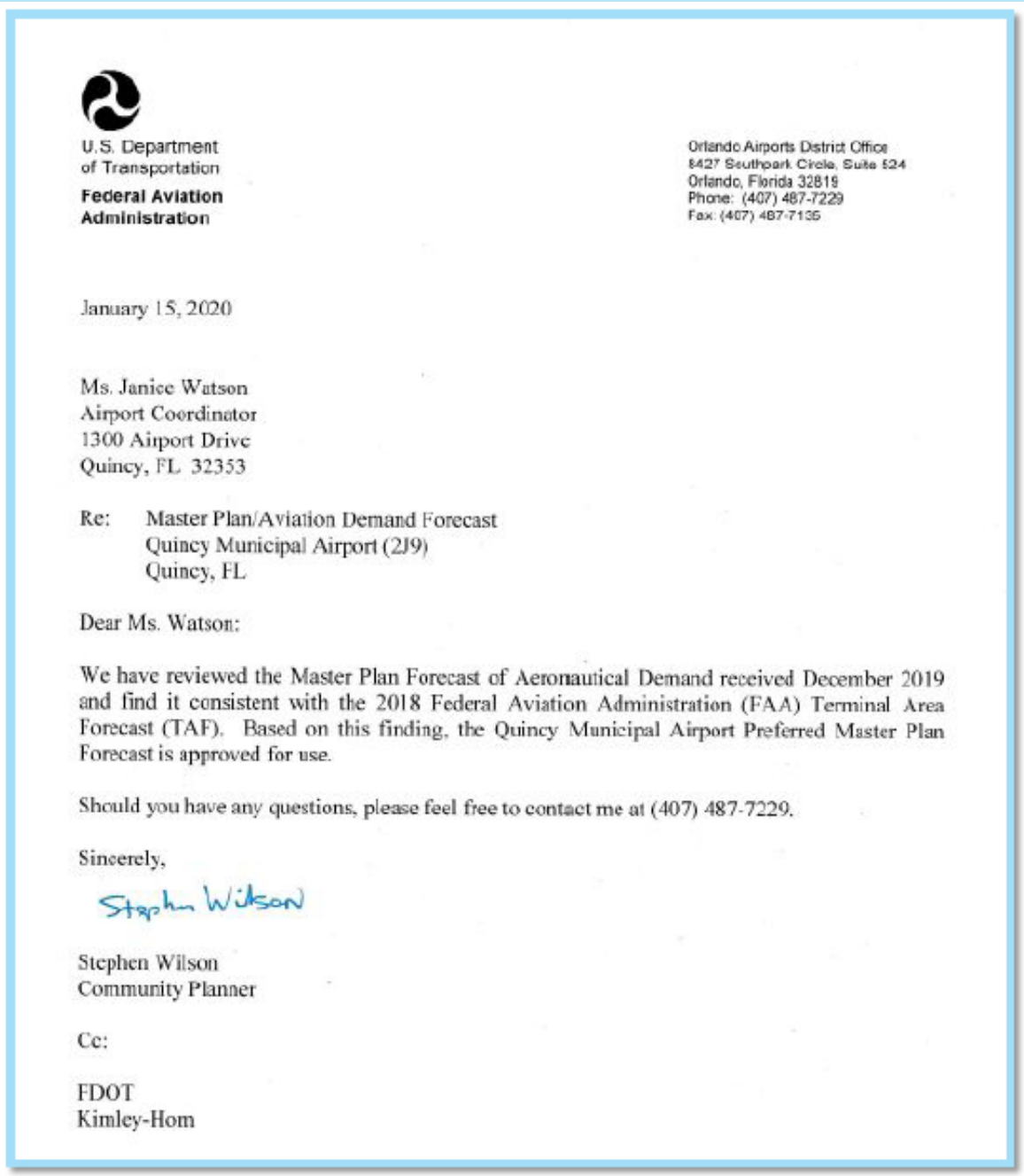
Forecasts

- Preferred Methodology
  - Average of the socioeconomic growth rates from the Tallahassee MSA and State of Florida employment
- Preferred Methodology
  - Operations per based aircraft (OPBA)
    - Calculates an average ratio of annual airport operations (6,240) to total based aircraft (79)

Year	Based Aircraft
2019	79
2024	85
2029	91
2039	105
CAGR 2019-2039	1.41%

Year	2J9 OPBA	2J9 Based Aircraft	2J9 Operations
2019	79	79	6,240
2024	79	85	6,700
2029	79	91	7,180
2039	79	105	8,260
CAGR 2019-2039		1.41%	

FAA Approval Letter



U.S. Department
of Transportation
Federal Aviation
Administration

Orlando Airports District Office
5427 Southpark Circle, Suite 524
Orlando, Florida 32819
Phone: (407) 487-7229
Fax: (407) 487-7135

January 15, 2020

Ms. Janice Watson
Airport Coordinator
1300 Airport Drive
Quincy, FL 32353

Re: Master Plan/Aviation Demand Forecast
Quincy Municipal Airport (2J9)
Quincy, FL

Dear Ms. Watson:

We have reviewed the Master Plan Forecast of Aeronautical Demand received December 2019 and find it consistent with the 2018 Federal Aviation Administration (FAA) Terminal Area Forecast (TAF). Based on this finding, the Quincy Municipal Airport Preferred Master Plan Forecast is approved for use.

Should you have any questions, please feel free to contact me at (407) 487-7229.

Sincerely,

Stephen Wilson

Stephen Wilson
Community Planner

Cc:

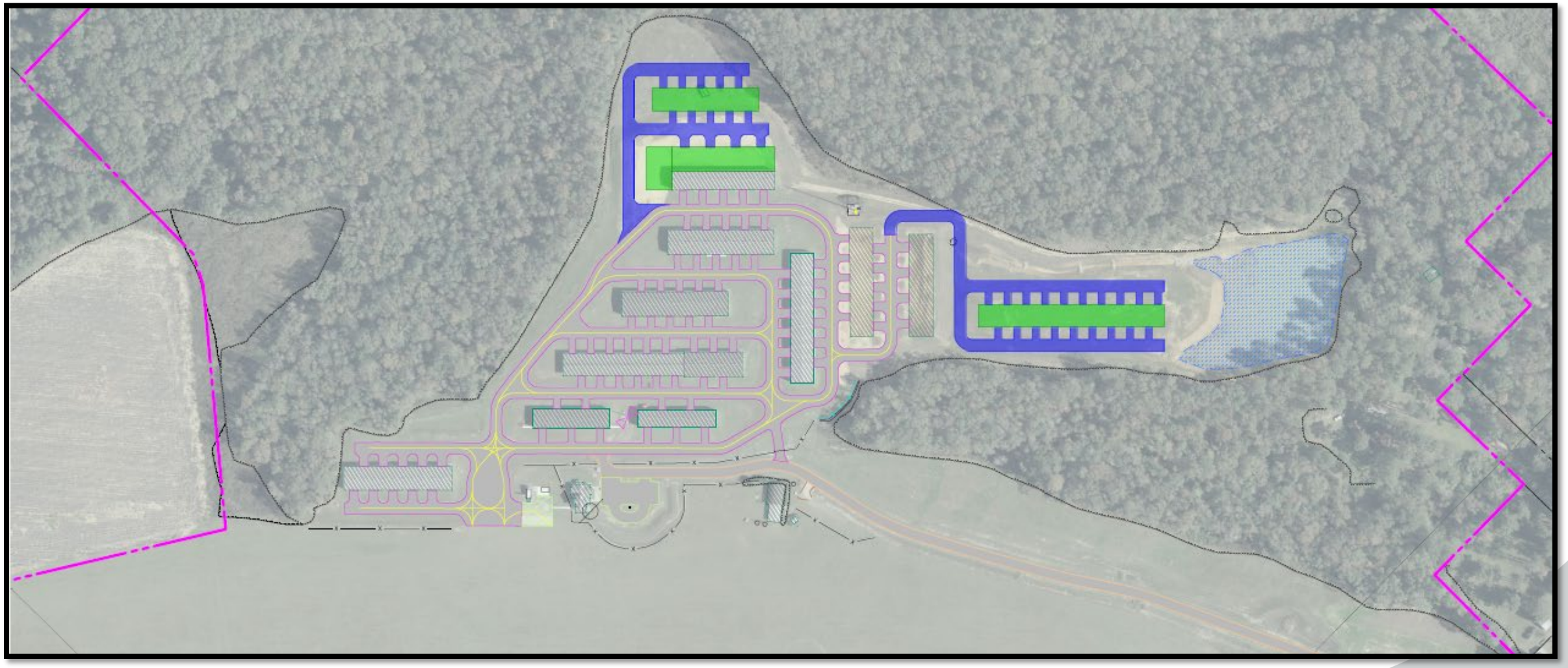
FDOT
Kimley-Horn

Alternatives

Alternatives

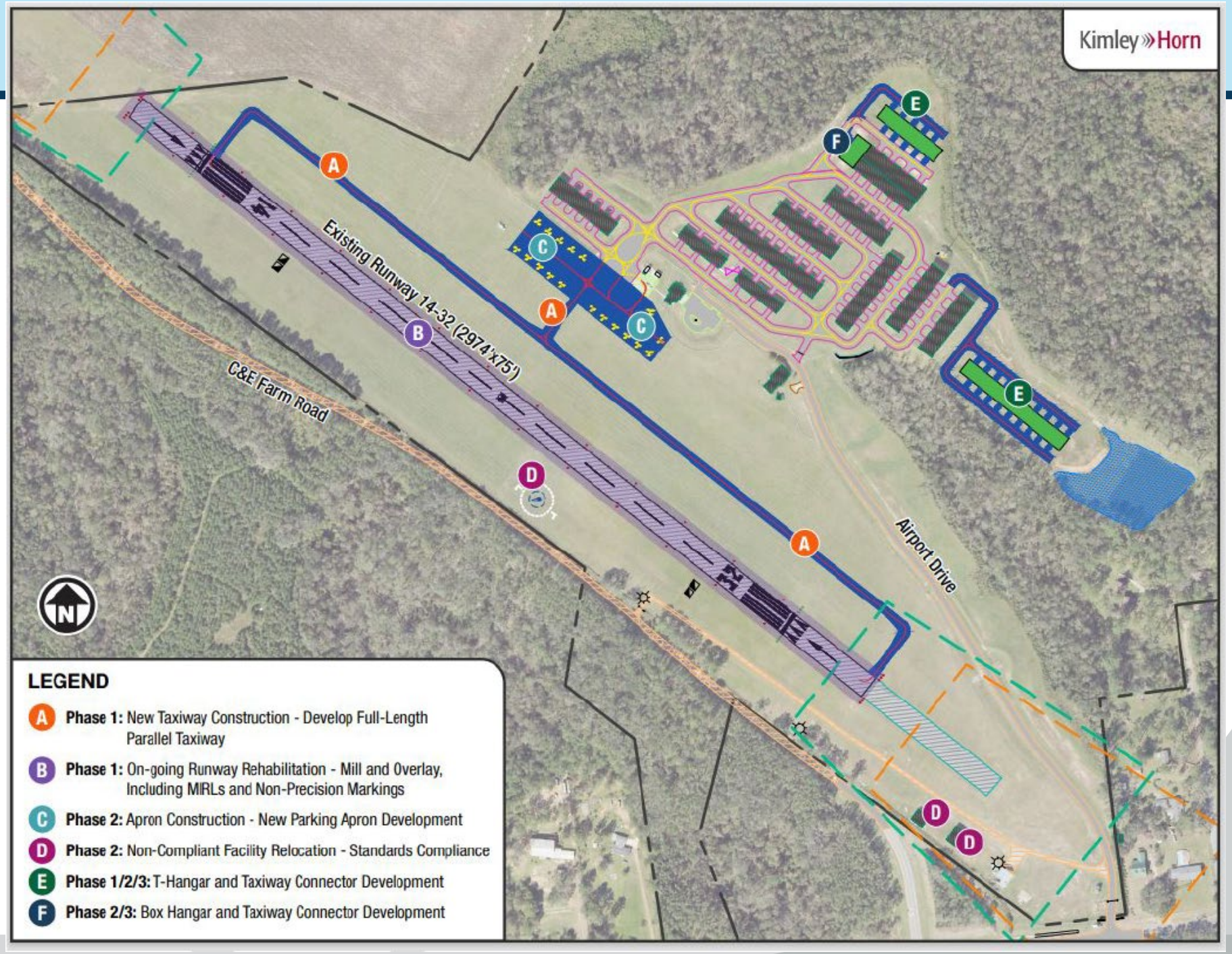
- Explore options to meet future user needs and facility requirements
- Consider on and off airport land uses and environmental factors
- Reflect airport and community priorities
- Meet Federal and State standards
- Identify the preferred development concept
  - Additional Hangars
  - Aprons
  - Taxiways
  - Reinstate Approach

33 Additional Hangars



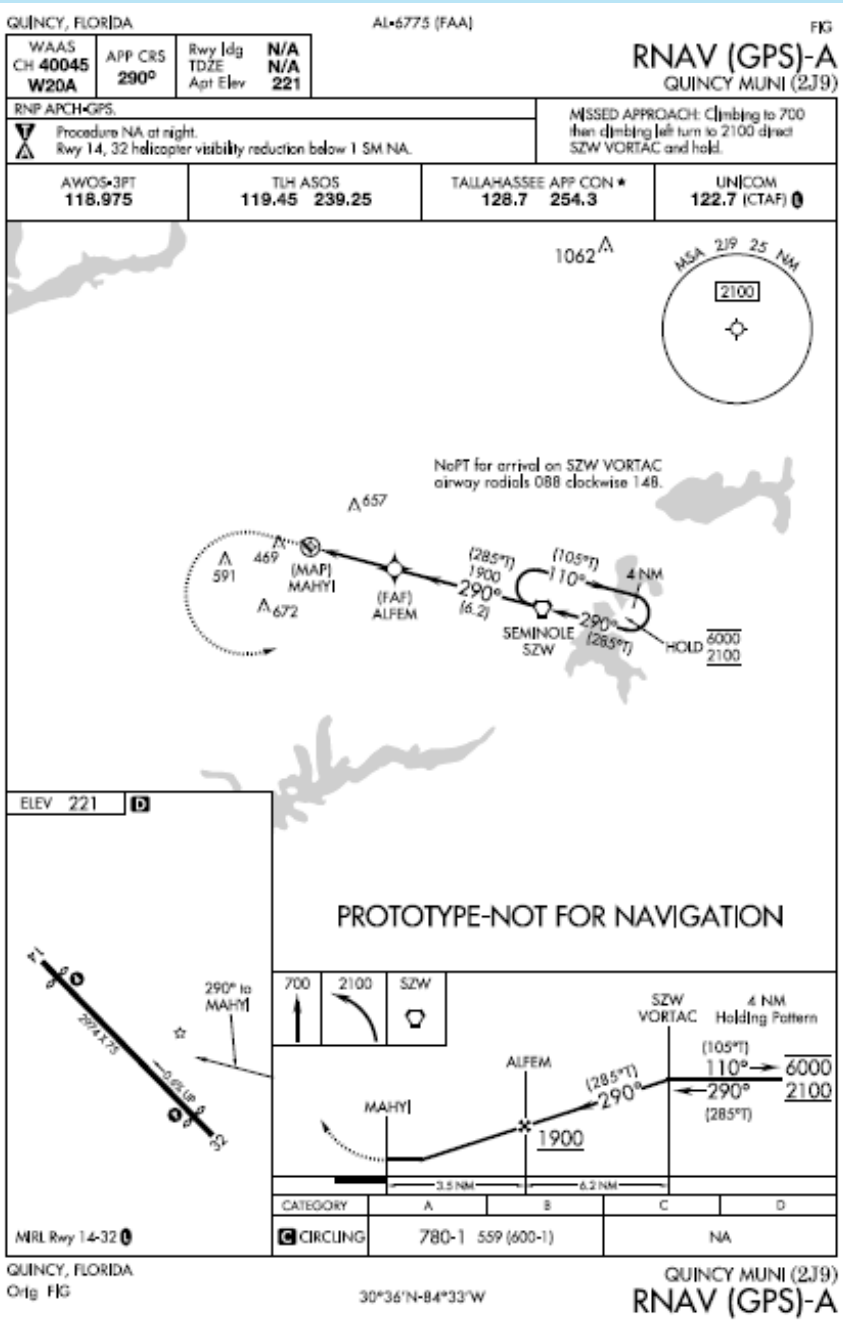
Aprons

Development Plan



Quincy, Florida
2J9
Quincy Municipal Airport

Status Updates



Reinstate GPS Approach

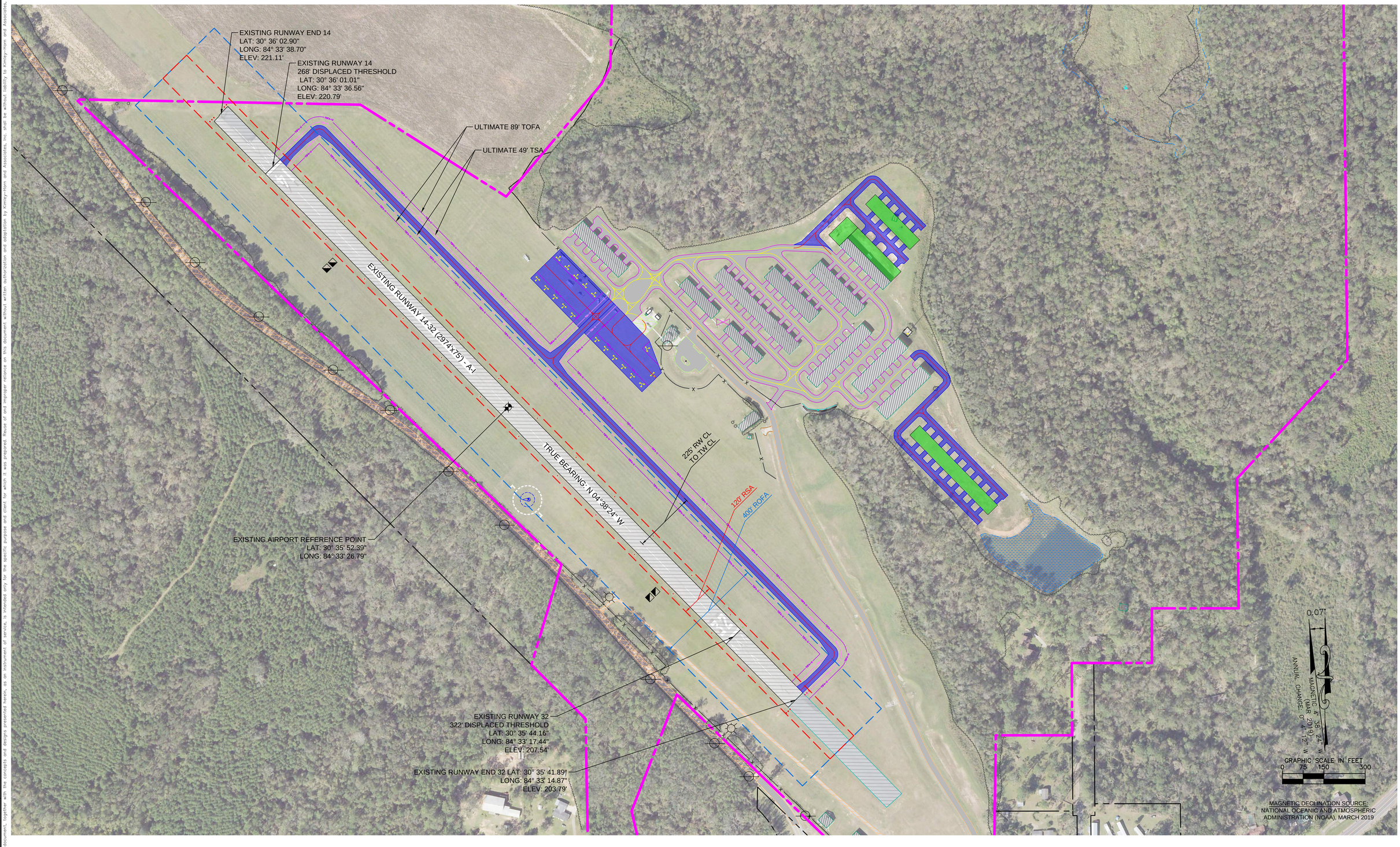
- Flight Inspection was completed on July 1st, 2021, and was satisfactory
- Environmental CATEX approved
- Prototype chart developed - provides a preview of the final procedure publication
- Procedure publication effective October 7th, 2021

Ongoing/Upcoming Project Status

- Taxiway
  - Environmental CATEX – approved and signed by FAA on July 29th, 2021
  - Design ongoing
  - Construction funded in FY 22 and 23 ($1,100,000)
- T-hangars
  - Phase I - Environmental, design, and construction funded in FY 24 for $800,000
  - Phase II - Environmental, design, and construction funded in FY 26 for $550,000 (will include supplemental FAA funding)
- Apron
  - Environmental, design, and construction funded in FY 25 for $800,000 (will include supplemental FAA funding)

Quincy, Florida
2J9
Quincy Municipal Airport

Thank You!



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QUINCY MUNICIPAL AIRPORT MASTER PLAN UPDATE

PREPARED FOR

QUINCY-GADSDEN AIRPORT AUTHORITY

TAXIWAY ALTERNATIVE 1

SHEET NUMBER 1 / 3

EXISTING RUNWAY END 14
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LONG: 84° 33' 38.70"
ELEV: 221.11'

EXISTING RUNWAY 14
268' DISPLACED THRESHOLD
LAT: 30° 36' 01.01"
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ELEV: 220.79'

ULTIMATE 89' TOFA

ULTIMATE 49' TSA

EXISTING RUNWAY 14-32 (2914'X75') - A-I

ULTIMATE TURF RUNWAY 14L-32R (1900'X60') - A-I SMALL

170' RSA
TO RSA
35' ROFA
OVERLAP

TRUE BEARING: N 04°38'24" W

290' RW CL
TO RW CL

150' RW CL
TO TW CL

120' RSA

400' ROFA

120' RSA

250' ROFA

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ELEV: 203.79'

0.07°

ANNUAL CHANGE: 0° 4' 12" W

MAGNETIC NORTH (MAR 2019)

38° 24" W

GRAPHIC SCALE IN FEET
0 75 150 300

MAGNETIC DECLINATION SOURCE:
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA), MARCH 2019

No.	REVISIONS	DATE	BY

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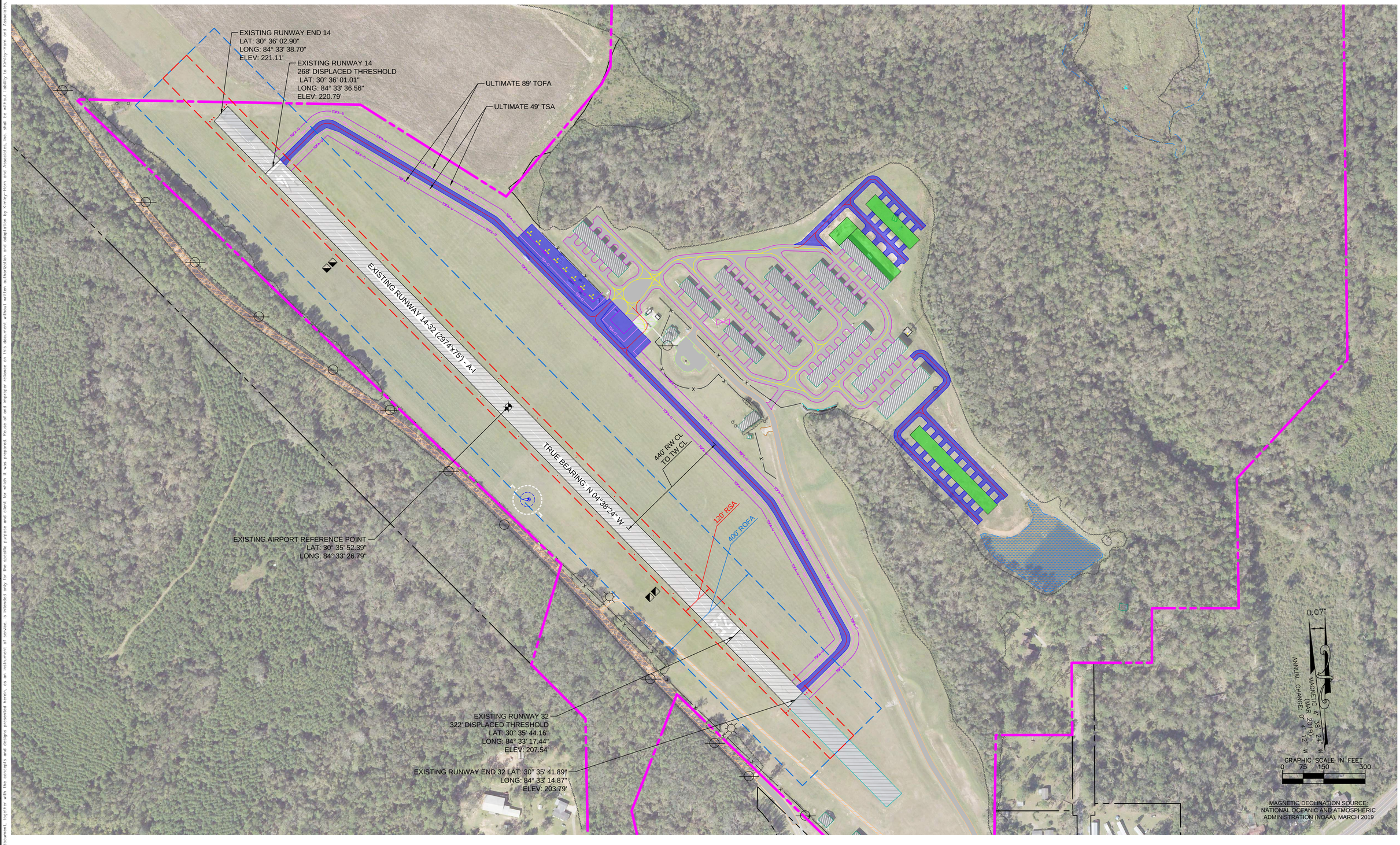
QUINCY MUNICIPAL AIRPORT MASTER PLAN UPDATE

PREPARED FOR
QUINCY-GADSDEN AIRPORT AUTHORITY

TAXIWAY ALTERNATIVE 2

SHEET NUMBER
2 / 3



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KHA PROJECT	142770002
DATE	11/18/2019
SCALE	AS SHOWN
DESIGNED BY	ZD
DRAWN BY	CC
CHECKED BY	ZD

QUINCY MUNICIPAL AIRPORT MASTER PLAN UPDATE

PREPARED FOR

QUINCY-GADSDEN AIRPORT AUTHORITY

TAXIWAY ALTERNATIVE 3

SHEET NUMBER 3 / 3