East Texas
Regional Airport
Airport Master Plan




FINAL
AIRPORT MASTER PLAN

for

EAST TEXAS REGIONAL AIRPORT
Longview, Texas

Prepared for

Gregg County, Texas

by

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Approved by Gregg County on January 30, 2019

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EAST TEXAS
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Preface

The Airport Master Plan for East Texas Regional Airport was undertaken over a one-year period beginning in September 2017 and presented to the Gregg County Commissioner's Court in January 2019. The final airport layout plan drawings were subsequently forwarded to the Federal Aviation Administration (FAA) for their review and approval. The Airport Master Plan provides development objectives for a 20-year planning period and details the rationale for the future airfield configuration, hangar development, on-airport land use, and future capital requirements.

Since the last plan was completed in 2007, the airport has continued to experience demand for additional aircraft storage hangars, and over 100,000 square feet of additional storage space has been constructed over the past decade. In addition, the terminal building has been updated over the past five years to meet the existing and future needs of the current scheduled airline. In the following years, it will be necessary to provide development areas for additional conventional storage hangars, taxiway extensions to serve airfield needs, and roadway extensions into new development areas.

The planning effort was a cooperative effort between the East Texas Regional Airport (Gregg County) staff and the following representative groups (and citizen representatives) who served on a Planning Advisory Committee throughout the course of the study:

- American Eagle/Envoy Air
- City of Longview Planning and Zoning Department
- East Texas Council of Governments
- Federal Aviation Administration—Airport Traffic Control Tower
- Gladewater Economic Development
- Kilgore Chamber of Commerce
- Kilgore Economic Development Corporation
- KRS Jet Center
- LeTourneau University – Abbott Aviation Center
- Longview Chamber of Commerce
- Longview Economic Development
- Maxwell Aviation
- Stebbins Aviation
- White Oak Economic Development Corporation

A series of public workshops were conducted during the year-long planning effort. These workshops allowed interested persons (including local media) to become informed of the ongoing process. Each of the workshops were held in the terminal building lobby. The location and times were advertised through the local media and all reports were published on a study website hosted by Gregg County. Advice and assistance provided by the aforementioned groups and citizens was invaluable, and the consultants would like to acknowledge their input and support throughout the planning process.

Chapter One

Inventory

EAST TEXAS REGIONAL AIRPORT



CHAPTER ONE

Inventory

The initial step in the preparation of the master plan update for East Texas Regional Airport (GGG or Airport) is the collection of information pertaining directly to or influencing the Airport and the area it serves. The information summarized in this chapter will be used in subsequent analyses within this study and includes:

- Background information related to the Longview/Gregg County region, including descriptions of the local geography, regional climate, and surface transportation systems.
- Physical inventories and descriptions of current facilities and services offered at the Airport. The analysis will include airfield and landside infrastructure and services, as well as local and regional airspace, competing airport facilities, air traffic control, and aircraft operating procedures.
- East Texas Regional Airport's role in regional and national aviation systems. Development at the Airport since the completion of the previous master plan will also be discussed.
- Socioeconomic data will be analyzed. These sectors typically offer an indication of future trends that could influence commercial and general aviation activity at the Airport.
- A review of existing local and regional plans and studies will be utilized later in the process to determine their potential influence on the development and implementation of the Airport Master Plan.
- A review of existing environmental conditions and sensitivities, on or near the Airport, to be factored into the recommended development plan.

The information outlined in this chapter provides a foundation for all subsequent chapters. Much of the information was obtained through on-site inspections of the Airport and personal interviews with airport staff and tenants, including FAA Airport Traffic Control Tower personnel.

REGIONAL SETTING

As depicted on **Exhibit 1A**, the East Texas Regional Airport is located in the southeastern corner of Gregg County. In fact, the airport is situated less than one mile north of the Rusk County line and approximately three miles southwest of the Harrison County line. The southern boundary of the city limits of Longview is located approximately three miles north of the airport, while the City of Kilgore is situated approximately ten miles west of the airport. Longview is the largest city and the major business center for the region. East Texas Regional Airport is located on approximately 1,300 acres of property in an unincorporated portion of Gregg County.

REGIONAL TRANSPORTATION NETWORK

The airport is situated just south of U.S. Interstate 20 which connects Shreveport, Louisiana, 50 miles to the east with Dallas, Texas, 125 miles to the west. The City of Tyler is also located on I-20 approximately 35 miles to the west. Two other U.S. interstates, I-30 located less than 60 miles north and I-49 less than 60 miles east, provide high-speed routes to the region. Moreover, the proposed North American Free Trade Agreement (NAFTA) Superhighway (I-69) is planned for construction east of the area. This highway will link Canada with Mexico and will traverse major metropolitan areas such as St. Louis and Little Rock to the north and Houston to the south.

The airport is afforded local access from Texas State Highways (S.H.) 149 (also U.S. Highway 259 to the north), 322, and 349. S.H. 149/U.S. Highway 259 links with S.H. 322 approximately two miles north of the airport, providing the airport with a link to the City of Longview. S.H. 149 continues south a few miles east of the airport. S.H. 322 originates from S.H. 149 north of the airport, then extends south along the western boundary of the airport. S.H. 349 traverses the northern portion of the airport and links the cities of Easton to the east and Kilgore to the west.

CLIMATE

Weather conditions are important to the planning and development of an airport. Temperature is an important factor in determining runway length requirements, while wind direction and speed are used to determine optimum runway orientation. The need for navigational aids and lighting is determined by the percentage of time that visibility is impaired due to cloud coverage or other conditions. **Table 1A** summarizes the maximum temperatures for the Airport over a 30-year period (the National Climatic Data Center releases this summary once every decade). Wind summaries for the most current 10-year period (collected on the Airport property) will be summarized in Chapter Three. Prevailing winds are from the south. The area wind speeds generally are higher during late winter and springtime, with declining winds during mid-to-late summer months. On average, the area experiences sunshine as low as 50 percent of the time during January to a high of 75 percent during July. Annually, the area averages 20 percent of days free of clouds.

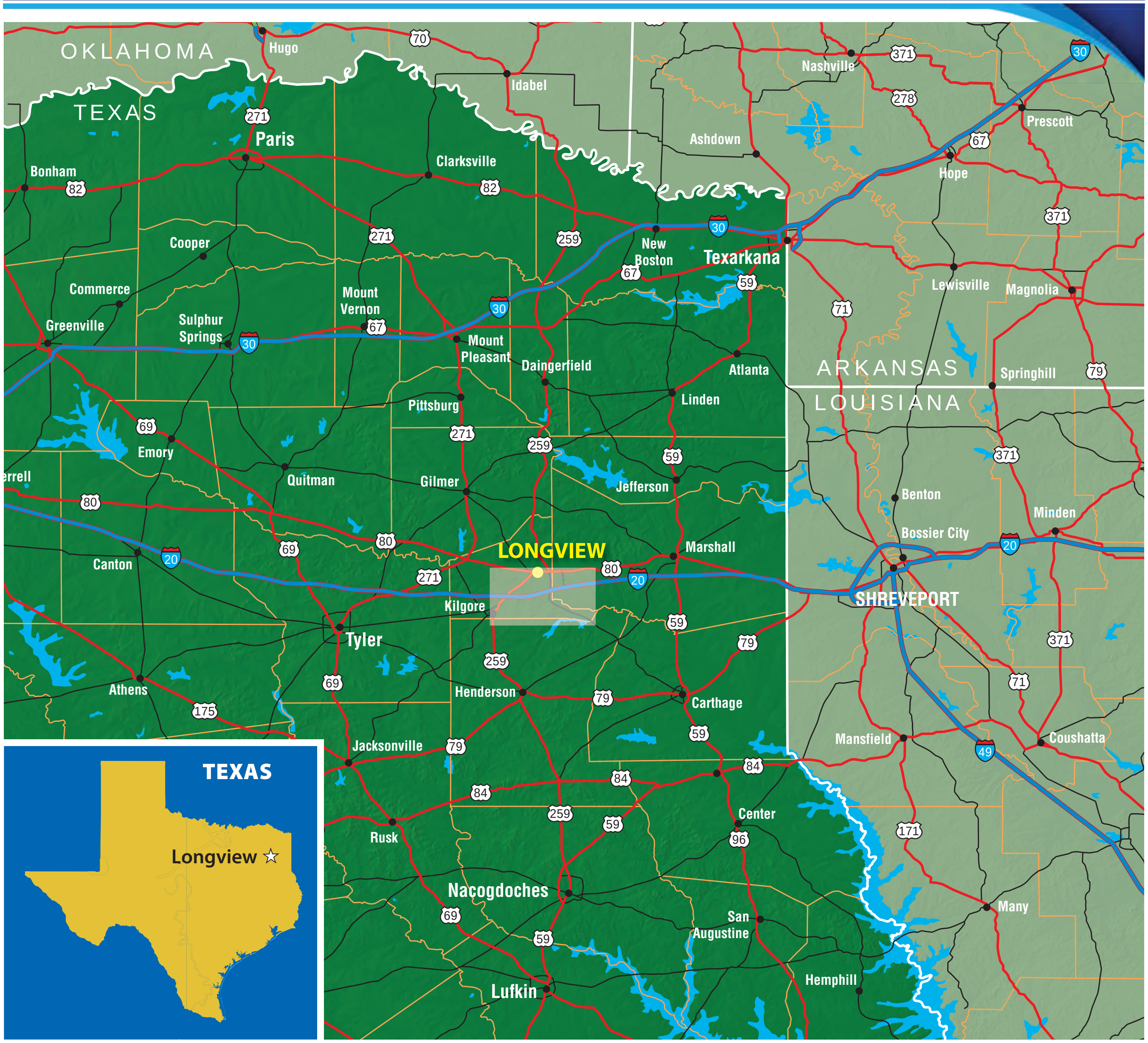

Exhibit 1A
LOCATION/VICINITY MAP

TABLE 1A Maximum Temperatures East Texas Regional Airport	
Month	**Monthly Normals (1981-2010)**
January	57.3
February	61.7
March	69.1
April	76.3
May	83.6
June	89.8
July	93.4
August	94.0
September	87.7
October	78.0
November	67.5
December	58.5
Annual	76ºF (average)
Source: National Climatic Data Center	

AIRPORT HISTORY

The work to develop an airport in Gregg County was initiated in 1935 by a group of local citizens. In 1940, a positive county vote supported the issuance of $200,000 in county bonds to be used to acquire land (originally 800 acres) and construct the airport. The estimated construction cost was $540,000, so additional funds were needed. A Works Projects Administration (WPA) grant for more than $500,000 was received and work was initiated.

With the support of the Civil Aeronautics Commission, the County completed the Airport in 1945. The Airport and the terminal building were officially dedicated on July 15, 1947. The grand opening ceremony was attended by then Attorney General Price Daniel, who later became Governor of Texas, as well as 15,000 residents. Opening day events included the landing of the first two airplanes from Mid-Continent Airlines.

Less than one year later, in February 1948, Delta Airlines began providing service to the airport with four daily flights. Originally, two flights were destined to Dallas, and two to Shreveport, with service continuing to New Orleans and Atlanta. Mid-Continent Airlines also initiated four daily flights.

Over the next two decades, several improvements to the airport were made. The county invested more than $250,000 for the addition of runway lights, paved aprons, improved clear zones, and air conditioning services to the terminal building. The Federal Aviation Administration (FAA) also made improvements to the airport with the addition of an instrument landing system (ILS), approach lights, a VORTAC, and a flight service station.

The Gregg County Airport, as it was originally known, underwent significant improvements in the 1970s. In 1970, Runway 13-31 was extended to 10,000 feet to allow training for American Airlines flight crews. Gregg County holds the distinction of being the first civilian airport in the State of Texas and the Southwestern United States to have a 10,000-foot runway. In 1972, the FAA initiated the Federal Aviation Regulation (F.A.R.) Part 139 Certification Program for airports providing regularly scheduled commercial services. Gregg County Airport was the first in the state to have dual certified aircraft rescue firefighters and certified police officers. A new airport traffic control tower (ATCT) and a new aircraft rescue and firefighting (ARFF) station were completed in 1976.

In the 1980s and early 1990s, additional improvements were made. In 1985, Gregg County Commissioners appropriated funds to construct and renovate the terminal building. The current terminal was completed in 1988 and bears the name of Henry Atkinson, who was a Gregg County Judge at that time. With

20,108 square feet of floor space, the structure was twice the size of the previous terminal. Additional land was acquired, Runways 13-31 and 18-36 were rehabilitated, Taxiways M and O were constructed, and the terminal apron was improved. Other miscellaneous projects completed during this period included reconstruction of the lighting vault, taxiway resurfacing, security fencing installation, and marking and signage improvements.

Table 1B presents FAA grant funding for projects since 2006. Over the past few years, the most significant projects included the passenger terminal updates, new service roads, and lighting upgrades.

TABLE 1B
Historical Capital Improvement Project Grants Funded by FAA (2006-2016)

Fiscal Year	Grant Project(s) Description	FAA Grant
2006	Construct service road; improve airport drainage; rehabilitate Runway 18/36; rehabilitate taxiway	$5,705,250
2007	Acquire ARFF vehicle; acquire snow removal equipment; improve RSA for Runway 13-31; rehabilitate Runway 13-31; security enhancements	$6,500,000
2008	Construct apron	$258,394
2008	Construct apron	$741,606
2008	Rehabilitate taxiway	$3,257,250
2009	Rehabilitate taxiway	$144,100
2009	Rehabilitate taxiway	$400,000
2009	Expand apron; rehabilitate Runway 13-31; rehabilitate Runway 18-36 lighting; rehabilitate taxiway	$3,424,621
2010	Miscellaneous airport improvements	$500,000
2010	Miscellaneous airport improvements; Wildlife Hazard Assessments	$571,250
2011	Miscellaneous airport improvements	$461,555
2011	Miscellaneous airport improvements; expand terminal building	$538,445
2012	Expand terminal building	$3,856,843
2013	Construct service road	$2,925,207
2014	Construct service road	$4,433,305
2015	Rehabilitate taxiway lighting	$870,375
2016	Rehabilitate taxiway lighting	$1,563,286
2016	Improve airport drainage	$2,194,195
11-YEAR PROJECT TOTALS		**$38,241,839**

Note: Data generated at fiscal year-end and does not reflect any subsequent grant amendments.

AIRPORT ADMINISTRATION

East Texas Regional Airport was dedicated and opened for operations at its existing location on July 15, 1947. The Airport is certified as a Class I Airport under Code of Federal Regulations (CFR) 14, Part 139 (Part 139), which prescribes the rules governing the certification and operation of land airports.

The airport is owned by Gregg County and operated by the County Commissioner's Court. The Airport is under direct control and daily management by a professional Airport Director appointed by the Court. The Airport Director is supported by a professional staff charged with operations, maintenance, and administration. The County Sheriff is charged with security and ARFF.

THE AIRPORT'S SYSTEM ROLE

Airport planning exists on many levels: local, regional, state, and national. Each level has a different emphasis and purpose. The airport master plan typically serves as the primary local airport planning document. Other local, regional, and state planning studies previously conducted pertaining to the airport have been reviewed and are summarized below.

FEDERAL PLANNING

The role of the federal government in the development of airports cannot be overstated. Many of the nation's existing airports were either initially constructed by the federal government, or their development and maintenance was partially funded through various federal grant-in-aid programs to local communities. In large measure, the system of airports existing today is due, in part, to the existence of federal policy that promotes the development of civil aviation. As part of a continuing effort to develop a national airport system to meet the needs of civil aviation and promote air commerce, the United States Congress has continually maintained a national plan for the development and maintenance of airports.

The current national airport system plan is the National Plan of Integrated Airport Systems (NPIAS). A primary purpose of the NPIAS is to identify the airports that are important to national transportation and includes all commercial service airports, all reliever airports, and selected general aviation airports. Nearly 3,400 airports are identified in the NPIAS.

East Texas Regional Airport is classified as a primary commercial service airport in the NPIAS. This classification does not restrict or prevent its use by general aviation or military aircraft; rather, it is intended to reflect the airport's capacity to provide the highest level of public services and accommodations for some of the largest, most sophisticated aircraft in the commercial and general aviation fleet. This classification is also used as a funding category for the distribution of federal aid.

An additional classification of the airport is provided to indicate the number of revenue-generating passengers that may be found in each metropolitan area served by the airport. The percentage of revenue-producing passengers in each metropolitan area (referred to as a “hub”) is determined by dividing the number of annual passenger enplanements at the airport into the number of annual enplanements nationwide. This percentage then falls within a predetermined hub classification: large, medium, small, or non-hub.

East Texas Regional Airport is classified as a non-hub air passenger market. Commercial service airports that enplane less than 0.05 percent of all commercial passenger enplanements but more than 10,000 annual enplanements are categorized as non-hub primary airports. There are 247 non-hub primary airports that together account for three percent of all enplanements. The current NPIAS has identified $18.34 million in short-term development needs for GGG.

14 CFR Part 139 Certification

An airport must have an Airport Operating Certificate (AOC) if it is serving air carrier aircraft with more than nine seats or serving unscheduled air carrier aircraft with more than 30 passenger seats. 14 CFR Part 139 (Part 139) describes the requirements for obtaining and maintaining an AOC. This includes meeting various Federal Aviation Regulations (FARs).

Airports are classified in the following categories based on the type of air carrier operations served:

- **Class I Airport** – an airport certificated to serve scheduled operations of large air carrier aircraft that can also serve unscheduled passenger operations of large air carrier aircraft and/or scheduled operations of small air carrier aircraft. East Texas Regional Airport is a Class I airport.

- **Class II Airport** – an airport certificated to serve scheduled operations of small air carrier aircraft and the unscheduled passenger operations of large air carrier aircraft. A Class II airport cannot serve scheduled large air carrier aircraft.

- **Class III Airport** – an airport certificated to serve scheduled operations of small air carrier aircraft. A Class III airport cannot serve scheduled or unscheduled large air carrier aircraft.

- **Class IV Airport** – an airport certificated to serve unscheduled passenger operations of large air carrier aircraft. A Class IV airport cannot serve scheduled large or small air carrier aircraft.

Part 139 (which implemented provisions of the *Airport and Airway Development Act of 1970*, as amended on Nov. 27, 1971) set standards for: the marking and lighting of areas used for operations; firefighting and rescue equipment and services; the handling and storing of hazardous materials; the identification of obstructions; and safety inspection and reporting procedures. It also required airport operators to have an FAA-approved Airport Certification Manual (ACM).

The ACM defines the procedures to be followed in the routine operation of the airport and for response to emergency situations. The ACM is a working document that is updated annually. It reflects the current condition and operation of the airport and establishes responsibility, authority, and procedures. There are required sections for the ACM, covering administrative detail and procedural detail. Each section independently addresses the: who (primary/secondary), what, how, and when as it relates to each element.

The administrative sections of the ACM cover such elements as the organizational chart, operational responsibilities, maps, descriptions, weather sensors, access, and cargo. The procedural elements cover such items as paved and unpaved areas, safety areas, lighting and marking, communications and navigational aids, airport rescue and firefighting, handling of hazardous material, utility protection, public protection, self-inspection program, ground vehicle control, obstruction removal, wildlife management, and construction supervision. East Texas Regional Airport has a current, approved ACM.

LOCAL AIRPORT PLANNING

The Airport Master Plan and ALP are the primary local planning documents. Guidelines for the development of airport master plans and the ALP are provided in FAA AC 150/5070-6B, *Airport Master Plans*. The AC identifies the following functions of a master planning study:

a. The airport master plan is the sponsor's conceptual design for the long-term development of the airport. Master plans are prepared to support the modernization or expansion of existing airports or the creation of new airports.

b. The goal of a master plan is to provide the framework needed to guide future airport development that will cost-effectively satisfy aviation demand, while also addressing relevant environmental and socioeconomic issues.

c. Each master plan should meet the following objectives:

    1) Justify the plan through technical, economic and environmental investigation of concepts and alternatives.
    2) Provide an effective graphic presentation of the future development of the airport and anticipated land use in the vicinity of the airport.
    3) Establish a realistic schedule for the implementation of the development proposed in the plan, particularly the short-term capital improvement program.
    4) Propose an achievable financial plan to support the implementation schedule.
    5) Provide sufficient project definition and detail for subsequent environmental evaluations that may be required before the project is approved.
    6) Present a plan that adequately addresses the issues and satisfies local, state, and federal regulations.

7) Document policies and future aeronautical demand to support municipal or local deliberations on spending, debt, land use controls, and other policies necessary to preserve the integrity of the airport and its surroundings.
8) Set the stage and establish the framework for a continuing planning process. Such a process should monitor key conditions and permit changes in plan recommendations as required.

The products of the master planning process vary with the complexity of the study and may include a variety of supporting studies and add-ons. However, all products will fall within one of two basic types: Airport Master Plans or ALP Updates.

Master Plan Reviews by the FAA

The recommendations contained in an airport master plan represent the views, policies, and development plans of the airport sponsor and do not necessarily represent the views of the FAA. Acceptance of the master plan by the FAA does not constitute a commitment on the part of the United States to participate in any development depicted in the plan, nor does it indicate that the proposed development is environmentally acceptable in accordance with appropriate public law. The FAA reviews all elements of the master plan to ensure that sound planning techniques have been applied. However, the FAA only approves the following elements of airport master plans:

1) ***Forecasts of Demand*** – The master plan forecast should be reviewed to ensure that the underlying assumptions and forecast methodologies are appropriate. Paragraph 704.h of this guidance (AC 150/5070-6B, *Airport Master Plans*) should be used to determine consistency of the master plan forecast levels and the *Terminal Area Forecast* (TAF). Inconsistencies between the master plan forecast and TAF must be resolved, and the forecast approved, before proceeding with subsequent planning work.

2) ***Airport Layout Plan*** – All airport development at federally obligated airports must be done in accordance with an FAA-approved ALP. Furthermore, proposed development must be shown on an approved ALP to be eligible for AIP funding. FAA approval of the ALP indicates that the existing facilities and proposed development depicted on the ALP conforms to the FAA airport design standards in effect at the time of the approval or that an approved modification to standard has been issued. Such approval also indicates that the FAA finds the proposed development to be safe and efficient.

In many regards, an airport master plan can be considered a feasibility study of what may be possible or desired as part of the long term vision for an airport. Included in a master plan are multiple alternative development scenarios, each of which may be feasible; however, implementation of which will require FAA approval. While a single long term vision is included in a master plan, it can be revised in the future by updating the ALP or by updating the master plan.

AVIATION ACTIVITY

Records of airport operational activity are essential for determining required facilities (types and sizes), as well as eligibility for federal funding. Airport staff and the FAA record key operational statistics including aircraft operations and enplaned passengers. Analysis of historical activity levels aids in determining trends which will enhance the airport's ability to meet facility demands in a timely manner. The following sections detail specific operational activities.

AIRCRAFT OPERATIONS

Aircraft operational statistics at East Texas Regional Airport are recorded by the ATCT that is operated by the FAA between 6:00 a.m. and 10:00 p.m. daily. The ATCT counts aircraft operations, which are defined as either a takeoff or a landing. Aircraft operations are reported in four general categories: air carrier, air taxi, military, and general aviation. Air carrier operations are performed by commercial airline aircraft with greater than 50 seats. Air taxi operations are generally associated with commuter aircraft, but also include "for-hire" general aviation aircraft.

Operations are further sub-categorized as either itinerant or local. Itinerant operations are those made by aircraft which arrive from or depart to destinations outside the local operating area. Local operations are associated primarily with touch-and-go or pilot training activity. **Table 1C** presents a summary of operations since 2000.

TABLE 1C
Historical Aircraft Operations by Type
East Texas Regional Airport (2000-2016)

	Itinerant					Local			
Year	Air Carrier	Air Taxi	GA	Military	Subtotal	GA	Military	Subtotal	Total
2000	53	4,452	27,359	2,297	34,161	47,599	6,442	54,041	88,202
2001	57	4,209	28,540	3,063	35,869	43,696	7,816	51,512	87,381
2002	24	3,208	32,144	2,469	37,845	48,954	5,271	54,225	92,070
2003	253	2,830	30,389	1,855	35,327	49,995	4,434	54,429	89,756
2004	34	2,489	28,188	2,230	32,941	47,347	4,665	52,012	84,953
2005	31	2,520	31,402	2,656	36,609	54,061	6,379	60,440	97,049
2006	31	2,758	33,834	2,772	39,395	56,741	5,804	62,545	101,940
2007	68	3,285	29,542	1,840	34,735	49,004	3,344	52,348	87,083
2008	120	3,394	29,320	1,664	34,495	53,856	1,798	55,654	90,149
2009	65	2,494	26,052	1,295	29,906	51,904	1,445	53,349	83,255
2010	411	1,849	27,523	2,806	32,589	47,988	4,338	52,326	84,915
2011	1,124	1,388	25,564	2,527	30,603	37,599	3,618	41,217	71,820
2012	154	3,552	23,686	2,918	30,310	34,204	4,054	38,258	68,568
2013	454	8,478	18,182	2,657	29,771	31,473	2,614	34,087	63,858
2014	39	10,821	16,087	2,773	29,720	30,829	2,492	33,321	63,041
2015	75	9,964	16,140	2,349	28,528	26,465	1,797	28,262	56,790
2016	50	9,433	15,094	3,540	28,117	22,897	1,878	24,775	52,892
2017	13	8,501	14,067	3,741	26,322	21,419	1,810	23,229	49,551

Source: FAA

PASSENGER ACTIVITY

Passenger traffic is collected and analyzed by recording the number of passengers who arrive (deplane) or depart (enplane) commercial service aircraft. Passenger enplanement records are utilized to determine terminal building space capacities, automobile parking requirements, automobile access capacities, etc. Also, the FAA provides annual entitlement funds based upon the level of enplanements reached at the airport. Passenger levels on each flight are recorded by the airlines and reported to the airport and the FAA monthly. **Table 1D** presents historical enplanement levels at East Texas Regional Airport since 2000.

TABLE 1D
Annual Airline Enplaned Passengers (2000-2016)
East Texas Regional Airport

Year	Enplaned
2000	33,452
2001	29,350
2002	25,306
2003	23,010
2004	23,886
2005	23,328
2006	24,962
2007	26,076
2008	24,495
2009	24,035
2010	20,682
2011	20,348
2012	18,278
2013	20,430
2014	21,504
2015	20,142
2016	21,643
2017	19,297

Source: Bureau of Transportation Statistics.

East Texas Regional Airport has been served by commercial airlines for more than four decades. Over the last several years, American Eagle (operated by Envoy Air) is the sole commercial airline at East Texas Regional Airport, providing two daily round-trip flights on 50-passenger regional jets to/from Dallas-Fort Worth International Airport (DFW). This connection allows travelers the opportunity to travel from GGG to nearly any point in the country as well as the world. The airline's current flight schedule is presented in **Table 1E**.

TABLE 1E
American Eagle Flight Schedule (September 2017)
East Texas Regional Airport

Flight #	Departure	Arrival	Aircraft	Frequency
AMERICAN DEPARTURES: EAST TEXAS REGIONAL TO DFW				
3471	1:52 p.m.	2:57 p.m.	Regional Jet	Daily
3273	6:53 p.m.	7:56 p.m.	Regional Jet	Daily
AMERICAN ARRIVALS: DFW TO EAST TEXAS REGIONAL				
3265	12:35 p.m.	1:27 p.m.	Regional Jet	Daily
3273	5:40 p.m.	6:28 p.m.	Regional Jet	Daily

Source: American Eagle schedule. Arrival and departure times subject to change.

AIRFIELD FACILITIES

Airfield facilities include runways, taxiways, airport lighting, and navigational aids. A depiction of airfield facilities at the airport is provided on the aerial photograph on **Exhibit 1B**, while **Table 1F** summarizes airfield facility data.

TABLE 1F Airside Facilities Data East Texas Regional Airport	Runway 13-31	Runway 18-36
Runway Length (feet)	10,000	6,109
Runway Width (feet)	150	150
Runway Surface	Asphalt	Asphalt
Surface Treatment	Grooved	Grooved
Runway Load Bearing Strength (pounds) Single Wheel Loading Dual Wheel Loading Dual Tandem Wheel Loading	 95,000 155,000 288,000	 95,000 155,000 280,000
Runway Lighting	HIRL	MIRL
Approach Aids Approach Slope Indicators Approach Lighting System	 PAPI-4L (31) MALSR (13)	 PAPI-4L/4R (18, 36) None
Pavement Markings Runway Taxiway, Taxilanes, Apron Taxiway Lighting	 Precision Centerline MITL	 Precision Centerline MITL
Instrument Approach Aids	ILS or LOC (13) VOR/DME or TACAN (13, 31) RNAV (GPS) (13,31,18,36) VOR-A (Circling)	
Weather Reporting	ASOS (903.643-4029) ATIS (119.65 Mhz)	

HIRL & MIRL – High and Medium Intensity Runway Lights
MITL – Medium Intensity Taxiway Lights
PAPI – Precision Approach Path Indicator
REIL – Runway End Identification Lights
MALSR – Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights
ILS – Instrument Landing System
VOR – Very High Frequency Omnidirectional Range
DME (Civilian) and TACAN (military) – Distance measuring equipment
GPS – Global Positioning System
ASOS – Automated Surface Observation System
RNAV – Area Navigation
ATIS – Airport Traffic Information Service

RUNWAYS

East Texas Regional Airport is served by two runways. Primary Runway 13-31 is 10,000 feet long, 150 feet wide, and oriented in a northwest-southeast manner. Secondary Runway 18-36, oriented in a north-south manner, is 6,109 feet long and 150 feet wide. Both runways are constructed of asphalt and the pavement surfaces have been grooved to aid in drainage and wheel traction.

Exhibit 1B
EXISTING AIRFEILD FACILITIES

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Both runways are relatively flat. Runway 13-31 has slight elevation changes, with the north end of the runway being the high point at 357 feet mean sea level (MSL) and the south end at 354 feet MSL. The low point of the runway is approximately 3,500 feet south of the north end and is 345 feet MSL. The elevation of Runway 18-36 generally increases from 354 feet MSL at the north end to a high of 365 feet MSL at the south end of the runway.

Each runway has been constructed to accommodate similar load bearing strengths. Single wheel loading (SWL) refers to the design of certain aircraft landing gears which have a single wheel on each main landing gear strut. Dual wheel loading (DWL) refers to the design of certain aircraft landing gears which have two wheels on each main landing gear strut. Dual tandem wheel loading (DTWL) refers to the aircraft landing gear struts with a tandem set of dual wheels on each main landing gear strut. The runways have been strength-rated at: 95,000 SWL and 155,000 DWL for both runways, and 280,000 DTWL for Runway 18-36 and 288,000 DTWL for Runway 13-31.

TAXIWAYS

The existing taxiway system at East Texas Regional Airport, as illustrated on **Exhibit 1B**, consists of parallel, connecting, access, and entrance/exit taxiways. Parallel taxiways are designed to route aircraft to and from the runway and parking areas while allowing the runway to remain operational. Entrance and exit taxiways generally link the runway with the parallel taxiway, providing additional capacity and efficiency to the runway system. Connector taxiways are those that link apron areas and other movement areas to taxi routes. The following discussion details all taxiways at East Texas Regional Airport.

Taxiway A is a 75-foot wide, partial parallel taxiway to Runway 13-31. Taxiway A extends from the main general aviation and commercial aprons to the north end of Runway 13-31 (Runway 13 threshold).

Taxiway B is 75 feet wide and serves as the parallel taxiway to Runway 13-31 for most of its length. Located on the southwestern side of Runway 13-31, Taxiway B extends from the main apron south across Runway 18-36, to the south end of Runway 13-31 (Runway 31 threshold). The northern portion of Taxiway B extends southeasterly to exit Taxiway C, then runs parallel to Runway 13-31 for the remainder of the southern portion. It is separated from Runway 13-31 by 400 feet (centerline to centerline) for a portion of its length, and extends to 750 feet of separation as it intersects with the terminal apron.

Taxiways C, D, E, and L are 75-foot wide right angle exit taxiways providing egress from Runway 13-31 to parallel Taxiway B or A (Taxiway L exits onto ramp at Taxiway A).

Taxiway G is a parallel taxiway serving the west side of Runway 18-36. This 75-foot wide taxiway extends from the south end of the runway (Runway 36 threshold) to a point past the intersection with Taxiway N, at which point it becomes an apron edge taxiway (non-movement area). It is separated from Runway 18-36 by 500 feet (centerline to centerline).

Taxiway M serves as a parallel taxiway for the east side of Runway 18-36, as well as an exit/by-pass taxiway at the southern end of the runway linking west to Taxiway G. The portion of taxiway located between the Runway 36 threshold and Taxiway G is 75 feet wide (exit and by-pass portion), while the portion serving as the east side parallel taxiway is 50 feet wide.

Taxiway N is a 75-foot wide connector taxiway linking Taxiway G to the LeTourneau University ramp. Taxiway N was originally the airport's third runway, Runway 4-22. In the early 2000s, Runway 4-22 was closed as an active runway, narrowed to 75 feet wide, and improved to serve as a taxiway.

Taxiway K is a 50-foot wide connector taxiway linking Taxiway M with Taxiway N at the LeTourneau University ramp.

AIRFIELD LIGHTING

Airfield lighting systems extend an airport's usefulness into periods of darkness and/or poor visibility. A variety of lighting systems are installed at the airport for this purpose. These lighting systems, categorized by function, are summarized as follows:

Identification Lighting**:** The location of an airport at night is universally indicated by a rotating beacon. A rotating beacon projects two beams of light, one white and one green, 180 degrees apart. The rotating beacon at the airport is located ten feet northeast of the electrical vault which is immediately north of the terminal building.

Runway and Taxiway Lighting/ Signage**:** Runway and taxiway edge lighting utilizes light fixtures placed near the pavement edge to define the lateral limits of the pavement. This lighting is essential for safe operations during night and/or times of low visibility, to maintain safe and efficient access to and from the runway and aircraft parking areas. Runway 13-31 is equipped with high intensity runway lighting (HIRL), while Runway 18-36 is equipped with medium intensity runway lighting (MIRL). It should be noted that the MITL on Runway 18-36 is turned off and the runway closed during times when the ATCT is closed. All taxiways are equipped with medium intensity taxiway lights (MITL). The intensity of the runway and taxiway lighting can be controlled by the ATCT. Approach lighting leading to the Runway 13 threshold can also be activated by pilots using pilot-controlled lighting using tower frequency 119.2.

The Airport also has a runway/taxiway signage system in compliance with Part 139 and the latest FAA Advisory Circulars. Part 139 governs the operation of land airports serving certificated air carrier activities. Installation of runway/taxiway signage is an essential component of a surface movement guidance control system necessary for the safe and efficient operation of an airport. The signage system installed at East Texas Regional Airport includes runway and taxiway designations, holding positions, routing/directional, runway end and exits, and runway distance remaining signs.

***Visual Approach Lighting*:** Four-box precision approach path indicators (PAPI-4L/R) serve Runways 13, 31, and 36. PAPI-4s consist of a four-box configuration of lights near the runway threshold to aid pilots in landing. These lights enable pilots to determine whether they are above or below the designed descent path to the runway.

***Runway End Identification Lighting*:** Runway end identification lights (REILs) provide rapid and positive identification of the approach end of the runway. REILs are typically used on runways with no other approach lighting systems. The REIL system consists of two synchronized flashing lights, located laterally on each side of the runway threshold facing the approaching aircraft. REILs are not installed on any runways at the Airport.

Approach Lighting Systems: Runway 13 is equipped with a medium intensity approach lighting system with runway alignment indicator lights (MALSR). This system provides visual guidance to landing aircraft by radiating light beams in a directional pattern so the pilot can align the aircraft with the extended centerline of the runway. The system enhances operations during inclement weather or nighttime conditions.

PAVEMENT MARKINGS

Pavement markings aid in the movement of aircraft along airport surfaces and identify closed or hazardous areas on the airport. The precision markings on Runways 13-31 and 18-36 identify the runway centerline, pavement edge, designation, touchdown point, threshold, and aircraft holding positions. Taxiway and apron taxilane centerline markings are provided to assist aircraft using these airport surfaces. Pavement markings also identify aircraft parking positions at the terminal.

LANDSIDE FACILITIES

Landside facilities are the ground-based facilities that support the aircraft and pilot/passenger handling functions. These facilities typically include the terminal building, aircraft storage/maintenance hangars, aircraft parking aprons, and support facilities such as fuel storage, automobile parking, roadway access, and aircraft rescue and firefighting. Landside facilities are identified on **Exhibit 1C**.

PASSENGER TERMINAL COMPLEX

The original terminal building at East Texas Regional Airport was constructed in 1947. More than 40 years later in 1988, a new terminal facility was completed and dedicated. Within the past five years, the facility was updated. The facility provides more than 20,000 square feet of useable space.

A layout of the terminal building is depicted on **Exhibit 1D**. Facilities on the first floor of the terminal building include a public waiting lobby, baggage claim area, restrooms, car rental area (Avis/Budget), a concession area with vending machines, airline ticket counters, TSA screening, secure departure area, mechanical equipment areas, and passenger circulation areas. The second floor of the facility houses airport administrative offices and a conference room.

Public access to and from the terminal area is by way of Terminal Circle Road, which intersects with S.H. 322 (Gardiner Mitchell Parkway) to the west of the terminal complex. Terminal Circle Road provides a two-lane, one-way access loop road which circles the main automobile parking (Lot A). Guidance signage provides directions to vehicular traffic for parking lot options and other businesses in the area. A segregated parking area is provided for rental car parking (Lot B) north of the main terminal lot.

TERMINAL APRON

The terminal apron is located on the east side of the terminal building and serves scheduled commercial traffic activities. The commercial apron has pavement boundary markings to segregate its use from other general aviation and/or military traffic. The apron is constructed of concrete pavement and measures approximately 175 x 400 feet (7,800 square yards).

GENERAL AVIATION SERVICES

The airport is home to two fixed base operators (FBO) and other specialty operators. Each operation is described in the following paragraphs and labeled on the exhibits.

Stebbins Aviation operates out of a conventional hangar and office facility at the north end of the main ramp, adjacent to the passenger terminal area. They provide a range of services to general aviation operators and fueling services to military aircraft.

KRS Jet Center operates from three hangars on the south ramp and provides aircraft fueling and hangar storage.

LeTourneau University provides a collegiate aviation program from facilities on the north side of the airfield; the ramp and hangar are accessed from Taxiways N and K.

Aerosmith Aviation, Inc. is a specialty operator that provides aircraft completion services. Aerosmith operates from three conventional hangars on the south ramp.

Maxwell Aviation Services, Inc. is a maintenance provider located on the east side of the airfield, near the ATCT. This operator is a factory authorized Mooney aircraft service center.

Exhibit 1C
EXISTING LANDSIDE FACILITIES

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LEGEND

- Non-Eligible Area
- Lobby and Baggage Claim
- Holding Room/Secure Area
- Restrooms
- Services
- Airlines Ticketing Offices

Source: East Texas Regional Airport

Exhibit 1D
TERMINAL LAYOUT

Gregg Aircraft Services provides maintenance services to general aviation from a hangar on the main ramp, while **PHI, LLC** provides emergency medical services from the west side of the airfield.

HANGAR STORAGE FACILITIES

A variety of hangar storage facilities are available at East Texas Regional Airport, including conventional hangars, executive hangars, and T-hangars. Some of the conventional hangars are also used for aircraft maintenance. Many of the storage and/or maintenance hangars also have adjoining office space.

Most of the storage hangars on the airport are located on the west side of the airfield and house aviation businesses or corporate aircraft operators. The total storage area has been estimated at 270,000 square feet.

Several facilities with storage capacity are also located on the east side of the airfield, and these facilities have been estimated at 68,500 square feet.

Hangar facilities are identified on **Exhibit 1C**.

SUPPORT FACILITIES

Automobile Parking

Public parking for the airline terminal complex is located within the terminal circle loop (Lot A). This parking lot provides 234 spaces.

Rental car parking is provided in Lot B, which has capacity for 138 vehicles.

Each aviation business and many individual hangars also provide for automobile parking adjacent to their facility.

Fuel Storage

Fuel is stored and dispensed by aviation businesses on the airport. As previously mentioned, Stebbins Aviation and KRS Jet Center are full service FBOs at GGG, providing fueling services to aircraft. Several other operators provide fuel services to their customers.

Stebbins maintains three fuel storage tanks, two 12,000-gallon capacity units for 100LL and Jet A fuel storage, and one 15,000-gallon capacity tank for Jet A storage. KRS maintains two aboveground fuel storage tanks immediately southeast of their hangar facility. One tank has a 12,000-gallon capacity and is used to store 100LL, while the second is a 15,000-gallon capacity tank for Jet A storage. Aerosmith

Aviation Inc. maintains one 12,000-gallon capacity aboveground tank for Jet A self-fueling operations. Maxwell Aviation owns and operates a 6,000-gallon aboveground fuel storage tank for 100LL. In addition to those listed, there are other airport businesses that maintain their own fuel supply.

Aircraft Rescue and Firefighting

East Texas Regional Airport operates as a certificated air carrier airport and is required by Part 139 to provide aircraft rescue and firefighting (ARFF) services. The ARFF station is located immediately south of the terminal building.

The specific requirements for types of equipment are dependent upon the number of departures by aircraft within specific length categories. East Texas Regional Airport currently operates as an Index “A” facility, based on an average of two or more scheduled departures per day by an air carrier using regional jet aircraft. ARFF services are provided for 15 minutes prior to and following all commercial airline operations.

East Texas Regional Airport is equipped with three vehicles dedicated for firefighting operations, all owned by Gregg County. The airport’s primary ARFF vehicle is a 2009 Oshkosh T-1500, equipped to carry 1,500 gallons of water and 210 gallons of firefighting foam. The airport’s secondary ARFF vehicle is a 1996 Oshkosh T-1500. The airport also operates a 2007 Ford F-550 rescue vehicle with skid. Both Oshkosh vehicles also carry 450 pounds of dry chemical.

Snow Removal

Under rules governed by Part 139 certification, the airport must be capable of clearing snow and ice from the airport in a timely manner. The Snow and Ice Control Plan indicates that snow removal operations will start when snow begins to accumulate on the movement surface, and the runways will be closed for aircraft use if accumulation reaches more than 1/2 inch of slush or two inches of dry snow. Runway 13-31, Taxiway A from Runway 13-31 to the ramp, parallel Taxiway B, Taxiways C, D, E, L, the terminal ramp, and ARFF ramp are all Priority 1 for clearing operations. Access roads, auto parking lots, and service areas are considered low-priority areas.

Airport Fencing

The airport is bounded on all sides by chain-link fencing of six-foot or eight-foot height. The fencing is topped with three-strand intruder wire. The fencing is required to secure the airport for commercial service operations and to prohibit wildlife from entering the airfield. There are 13 electric, keypad access gates installed at specific points for access to the airfield, usable by authorized personnel only; 12 operated by the airport and one by the FAA ATCT. Signs are displayed on gates, fencing, buildings, and any location that would permit inadvertent entry into the aircraft movement area by unauthorized persons or vehicles.

AIRPORT UTILITIES

The availability of utilities is important in the consideration of airport development opportunities. East Texas Regional Airport is currently served by the following:

- Water – City of Longview
- Sanitary Sewer – City of Longview, City of Elderville, and individual septic
- Electricity – Southwestern Electric Power Company (SWEPCO) and Rusk County Electric Cooperative.
- Natural Gas – Atmos Energy

The airport is provided water by the City of Longview water system which includes a 12-inch looped water line surrounding the entire airport. The 12-inch line, in conjunction with fire pumps located in the high-service pump station at the intersection of S.H. 322 and F.M. 349, provides fire protection to the airport.

The airport is served by two electric utility companies, with SWEPCO serving the northern portion of the airport and Rusk County Electric Cooperative serving all buildings south of Taxiway N and some buildings near the ARFF facility. Emergency generators are available to serve the ATCT, ILS, airfield lighting vault, and the industrial area sewer lift stations.

Sanitary sewer from the airport is treated in one of three ways: City of Longview, City of Elderville, or individual septic systems. The undeveloped industrial area is served by a series of lift stations, force mains, and gravity mains to the City of Longview's Wastewater Treatment Plant on F.M. 1845. Waste from the west side of the terminal complex flows through an 8-inch gravity sewer main to the City of Elderville's Wastewater Treatment Plant. The facilities south of Taxiway N along the west side of Runway 13-31 are served by individual septic systems.

Natural gas is made available to the airport via a 4-inch gas line that extends along S.H. 322 and F.M. 349. The service provider for natural gas at the airport is Atmos Energy.

AIRPORT INDUSTRIAL AIRPARK/FOREIGN TRADE ZONE

In the late 1990s, a decision was made to utilize excess property on the airport for revenue generating purposes. A plan was conceived to redevelop the northeastern portion of the airport for an industrial airpark. To provide airside access, Runway 4-22 was closed and converted into Taxiway N. The park has nearly 300 acres of development space and is designated as a foreign-trade zone (FTZ).

An FTZ is a site within the United States, in or near a U.S. Customs port of entry, where foreign and domestic merchandise is generally considered to be in international commerce. Foreign or domestic merchandise may enter this enclave without a formal Customs entry or the payment of Customs duties or government excise taxes. If the final product is exported from the United States, no U.S. Customs duty or excise tax is levied. If, however, the final product is imported into the United States, Customs duty and excise taxes are due only at the time of transfer from the foreign-trade zone and formal entry into the U.S. The duty paid is the lower of that applicable to the product itself or its component parts. Thus, zones provide opportunities to realize Customs duty savings by zone users. In addition, zone procedures provide one of the most flexible methods of handling domestic and imported merchandise.

AIRPORT ECONOMIC IMPACTS

The airport's annual economic impacts were estimated in 2010 by the University of North Texas, Center for Economic Development and Research. General aviation activities were estimated to generate $46.4 million in economic activity with salary, wages, and benefits contributing $11.7 million (based upon an employment level of 366). Combining commercial activities with general aviation, the annual economic activity was estimated at $73 million, with salary, wages, and benefits contributing $22.2 million (based upon an employment level of 648).

ANNUAL GREAT TEXAS BALLOON RACE

In July 2017, the East Texas Regional Airport sponsored the 40th Annual Great Texas Balloon Race. This event draws an estimated 30,000 visitors to the region each year, and has been hosted by the airport since 1990. This annual three-day event provides an opportunity for 50 sport and special-shaped hot air balloons to compete for the Texas State Championship. Over a four-year period from 2012 through 2015, the local area hosted the Balloon Federation of America's National Championship competition.

AREA LAND USE

Much of land adjacent to the airport is rural, unincorporated land that is left undeveloped. The area is sparsely populated with rural residential, commercial, and industrial properties. Most of the commercial and industrial development is located along S.H. 322, 149, and F.M. 349.

The airport is owned and operated by Gregg County and lies within unincorporated land. The only incorporated area adjoining the airport is the City of Lakeport on the north side of the airport along F.M. 349. The City of Lakeport is largely undeveloped, with sparse residential subdivisions and light industrial/commercial uses.

Lake Cherokee, located to the south of the airport, serves as the primary water supplier for the City of Longview. A private water developer provides leases for residential improvements on lots around the lake. Elderville, a community to the south and southwest of the airport, mostly contains residential subdivisions and rural residences. A store and church are located at the intersection of S.H. 322 and F.M. 2011.

NAVIGATIONAL AIDS

Navigational aids are electronic devices that transmit radio frequencies which pilots of properly equipped aircraft can translate into point-to-point guidance and position information. The types of electronic navigational aids available for aircraft flying to or from the airport include an ILS, a very high frequency omnidirectional range (VOR), and the global positioning system (GPS).

The ILS approach is designed to identify an approach path's exact alignment. ILS systems are installed to allow approaches during periods of poor visibility. East Texas Regional Airport has one published ILS approach to Runway 13.

ILS systems provide three functions: 1) guidance, provided vertically by a glide slope beacon and horizontally by a localizer beacon; 2) range, furnished by marker beacons; and 3) visual alignment, supplied by the approach lighting system and runway edge lights.

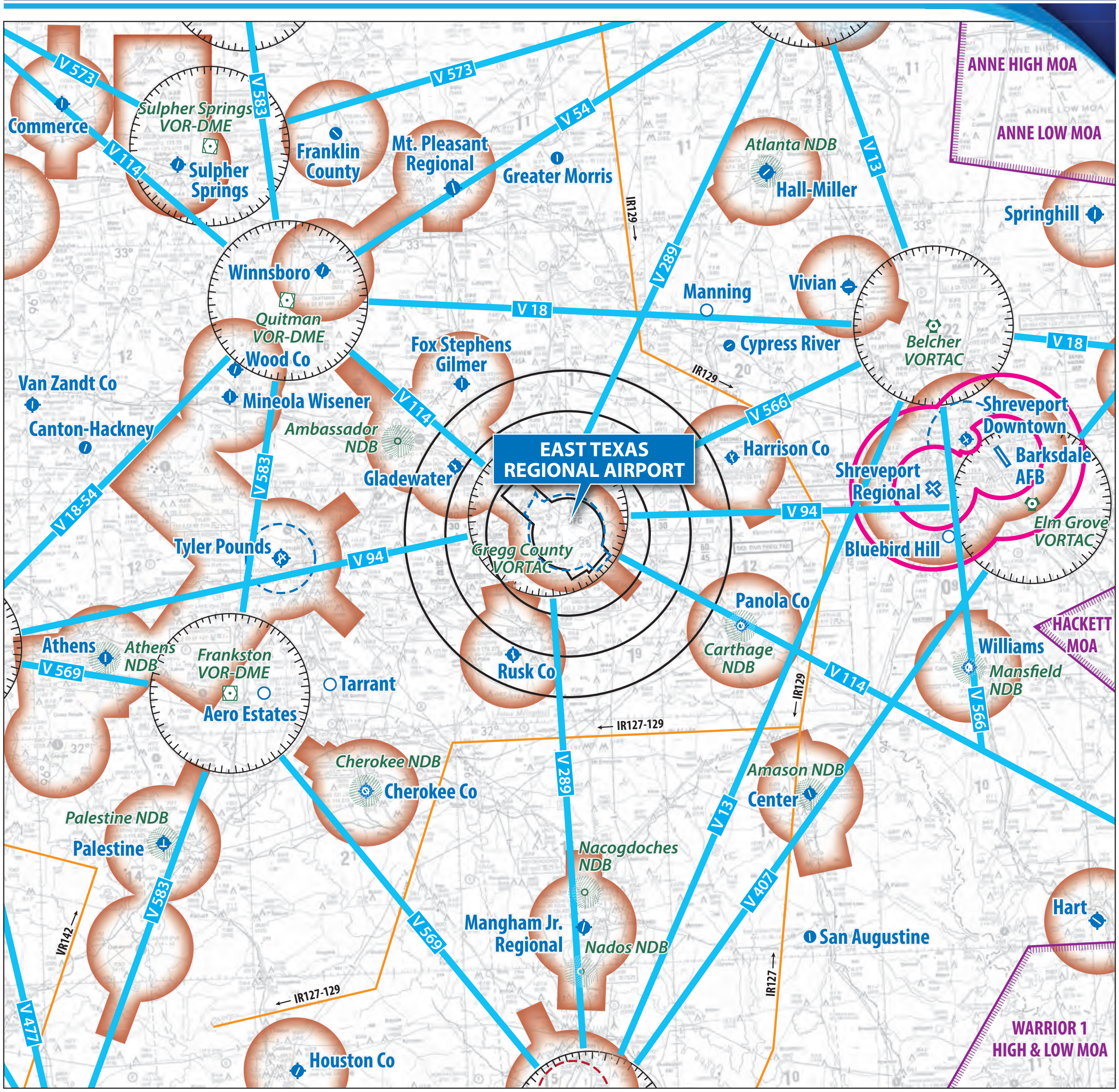
The VOR provides azimuth readings to pilots of properly equipped aircraft by transmitting a radio signal at every degree to provide 360 individual navigational courses. Frequently, distance measuring equipment (DME) is combined with a VOR facility to provide distance as well as direction information to the pilot. In addition, military tactical air navigation aids (TACANs) and civil VORs are commonly combined to form a VORTAC. A VORTAC provides distance and directional information to civil and military pilots. The Gregg County VORTAC is located approximately three miles northwest of the airport and broadcasts on VHF frequency 112.30. **Exhibit 1E**, a map of the regional airspace system, depicts the location of this VORTAC.

GPS is an additional navigational aid for pilots enroute to the airport. GPS was initially developed by the United States Department of Defense for military navigation around the world. GPS has been utilized more in civilian aircraft in recent years. GPS uses satellites placed in orbit around the globe to transmit electronic signals which properly equipped aircraft use to determine altitude, speed, and other navigational information. GPS allows pilots to directly navigate to any airport in the country without using a specific navigational facility. GPS approaches are available to all runways.

Instrument Approach Procedures

When the visibility and cloud ceilings deteriorate to a point where visual flight can no longer be conducted, aircraft must follow published instrument approach procedures to locate and land at the airport.

The Runway 13 ILS approach provides the airport with the lowest approach visibility minimums. Utilizing this approach, a properly equipped aircraft and qualified pilot can land at the airport with 200-foot cloud ceilings and one-half mile visibility, commonly referred to as Category I (CAT I) minimums. The ILS Runway 13 approach can also be utilized as a localizer only, or circling approach. A circling approach allows the approach to be flown to another runway end. Utilized as a localizer only approach, the minimums



LEGEND

- Airports with other than hard-surfaced runways
- Airports with hard-surfaced runways 1,500' to 8,069' in length
- Airports with hard-surfaced runways greater than 8,069' or some multiple runways less than 8,069'
- VORTAC
- VOR-DME
- Non-Directional Radiobeacon (NDB)
- Compass Rose
- Terminal Radar Service Area
- Class C Airspace
- Class D Airspace
- Class E Airspace
- Class E Airspace with floor 700' above surface
- Military Training Routes
- Victor Airways
- Alert Area and MOA - Military Operations Area

Source: Dallas, Memphis, and Houston Sectional Charts, US Department of Commerce, National Oceanic and Atmospheric Administration, September 14, 2017

Exhibit 1E
VICINITY AIRSPACE

increase to 500-foot cloud ceilings for all aircraft. Visibility minimums vary by aircraft approach speeds, as noted in **Table 1G**.

Several additional instrument approaches are available at East Texas Regional Airport. Runways 13 and 31 are served by VOR/DME or TACAN approaches, and all four runways are served by area navigation (RNAV) approaches using global positioning. The airport is also served by a VOR-A circling approach which can be utilized for any runway end. Details of the published instrument approaches are provided in **Table 1G**.

TABLE 1G
Instrument Approach Data
East Texas Regional Airport

	WEATHER MINIMUMS BY AIRCRAFT TYPE					
	Category A/B		Category C		Category D	
	CH	VIS	CH	VIS	CH	VIS
ILS Runway 13 Approach						
Straight-In (ILS)	200	0.5	200	0.5	200	0.5
Straight-In (Localizer)	500	0.5	500	1.0	500	1.0
Circling	500	1.0	500	1.5	600	2.0
VOR/DME or TACAN Runway 13 Approach						
Straight-In	500	0.5	500	1.0	500	1.25
Circling	500	1.0	500	1.5	600	2.0
VOR/DME or TACAN Runway 31 Approach						
Straight-In	400	1.0	400	1.0	400	1.25
Circling	500	1.0	500	1.50	600	2.0
RNAV (GPS) Runway 13 Approach						
LPV DA	300	0.5	300	0.5	300	0.5
LNAV/VNAV DA	400	0.75	400	0.75	400	0.75
LNAV MDA	400	0.5	400	0.75	400	1.0
Circling	500	1.0	500	1.5	600	2.0
RNAV (GPS) Runway 31 Approach						
LPV DA	300	0.75	300	0.75	300	0.75
LNAV/VNAV DA	400	1.25	400	1.25	400	1.25
LNAV MDA	500	1.0	500	1.25	500	1.25
Circling	500	1.0	500	1.5	600	2.0
RNAV (GPS) Runway 18 Approach						
LPV DA	300	0.875	300	0.875	300	0.875
LNAV/VNAV DA	300	1.0	300	1.0	300	1.0
LNAV MDA	400	1.0	400	1.0	400	1.0
Circling	500	1.0	500	1.5	600	2.0
RNAV (GPS) Runway 36 Approach						
LNAV MDA	400	1.0	400	1.0	400	1.25
Circling	500	1.0	500	1.5	600	2.0
VOR-A Approach						
Circling	500	1.0	500	1.5	600	2.0

Source: FAA *Terminal Procedures, South Central U.S.*, September 2017 Edition.

Weather Reporting Aids

East Texas Regional Airport is equipped with an Automated Surface Observation System (ASOS). The ASOS provides automated aviation weather observations 24 hours per day and can be reached via telephone at (903) 643-4029. The system updates weather observations every minute, continuously reporting significant weather changes as they occur. The ASOS reports cloud ceiling, visibility, temperature, dew point, wind direction and speed, altimeter setting (barometric pressure), density altitude (airfield elevation corrected for temperature), precipitation identification, and freezing rain occurrence.

The airport has a remote communications outlet (RCO), which provides a radio connection with the Fort Worth Flight Service Station (FSS). The FSS provides an array of services, including opening/closing of flight plans, enroute weather, and notices to airmen (NOTAMs).

AIRSPACE, AIR TRAFFIC CONTROL, AND AREA AIRPORTS

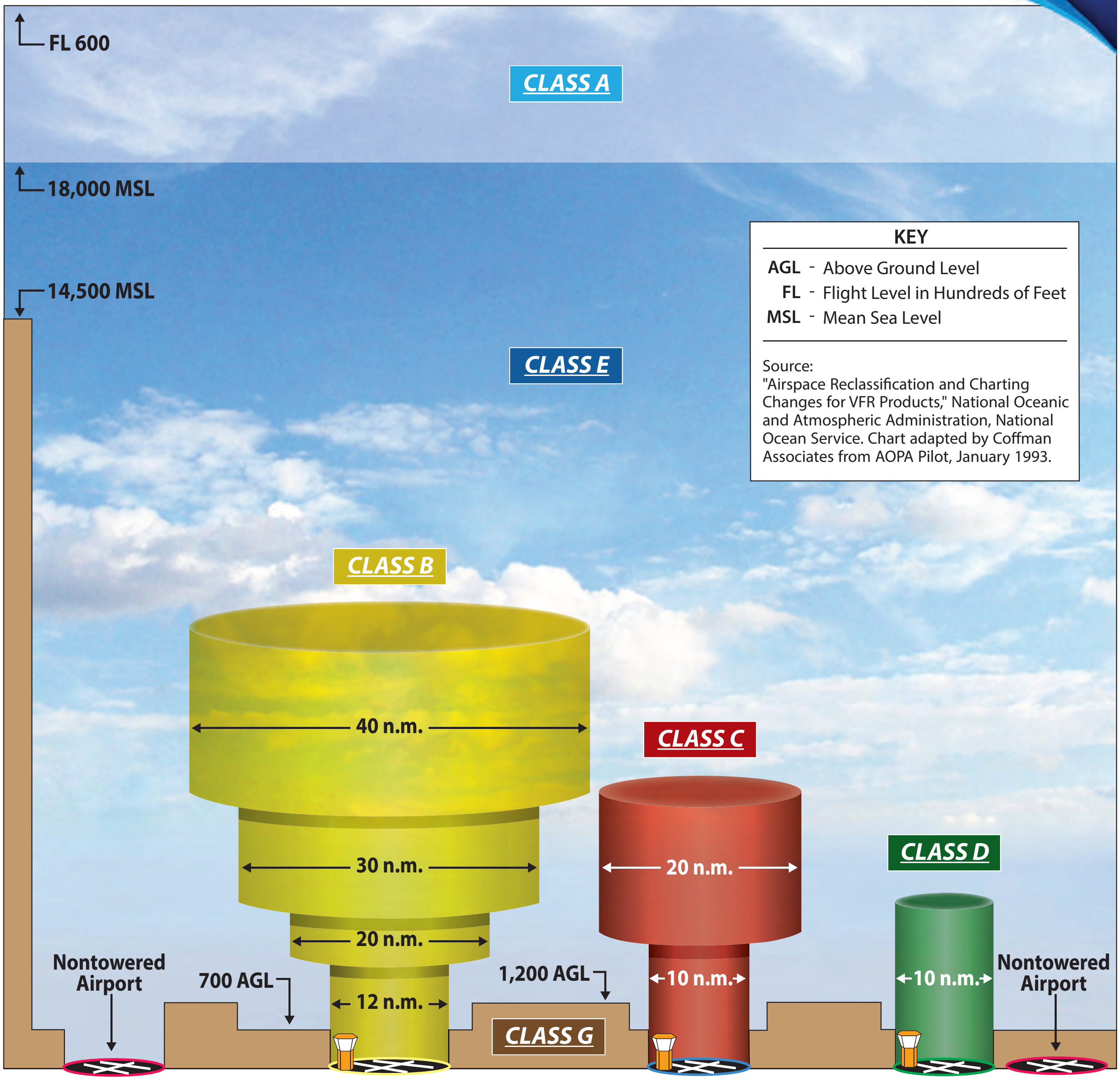
VICINITY AIRSPACE

To ensure a safe and efficient airspace environment for all aspects of aviation, the FAA has established an airspace structure that regulates and establishes procedures for aircraft using the National Airspace System. The U.S. airspace structure provides two basic categories of airspace, controlled and uncontrolled, and identifies them as Classes A, B, C, D, E, and G. A generalized depiction of airspace classifications is illustrated on **Exhibit 1F**.

Class A airspace is controlled airspace and includes all airspace from 18,000 feet MSL to Flight Level 600 (approximately 60,000 feet MSL). Class B airspace is controlled airspace surrounding high-capacity commercial service airports. Class C airspace is controlled airspace surrounding lower-activity commercial service airports and some military airports. Class D airspace is controlled airspace surrounding airports with an airport traffic control tower. All aircraft operating within Classes A, B, C, and D airspace must be in contact with the air traffic control facility responsible for that airspace.

Class E airspace is controlled airspace that encompasses all instrument approach procedures and low altitude federal airways. Only aircraft conducting instrument flights are required to be in contact with air traffic control when operating in Class E airspace. Aircraft conducting visual flights in Class E airspace are not required to be in radio communications with air traffic control facilities. Visual flight can only be conducted if minimum visibility and cloud ceilings exist. Class G airspace is uncontrolled airspace that does not require contact with an air traffic control facility.

As shown on **Exhibit 1E**, East Texas Regional Airport is in Class D airspace surrounded by Terminal Radar Service Area (TRSA) airspace. TRSAs are simply Class D airspace surrounded by airspace in which radar coverage is provided. A TRSA is airspace that does not fit the requirements of Class C airspace, but is too busy to be just Class D airspace. In TRSA airspace, traffic sequencing is handled by radar approach



DEFINITION OF AIRSPACE CLASSIFICATIONS

CLASS A	Generally airspace above 18,000 feet MSL up to and including FL 600.
CLASS B	Generally multi-layered airspace from the surface up to 10,000 feet MSL surrounding the nation's busiest airports.
CLASS C	Generally airspace from the surface to 4,000 feet AGL surrounding towered airports with service by radar approach control.
CLASS D	Generally airspace from the surface to 2,500 feet AGL surrounding towered airports.
CLASS E	Generally controlled airspace that is not Class A, Class B, Class C, or Class D.
CLASS G	Generally uncontrolled airspace that is not Class A, Class B, Class C, Class D, or Class E.

Exhibit 1F
AIRSPACE CLASSIFICATION

together with the local ATCT. In these areas, radar assists the tower outside its Class D airspace. Radio participation in the TRSA is voluntary, though recommended, and the airspace within the TRSA maintains its original class designation, or Class D as is the case with GGG. In addition to safety alerts, traffic advisories, radar vectoring, and sequencing provided to visual flight rules (VFR) aircraft receiving basic radar services, TRSA services provide separation between participating VFR aircraft as well as participating VFR aircraft and instrument flight rules (IFR) aircraft.

The inner portion of the TRSA at GGG is the Class D airspace ring which extends outward approximately five miles with slight extensions to account for the approaches to Runways 13 and 31. This airspace is controlled under Class D rules/regulations from the surface to 6,000 feet MSL. The three rings of the TRSA are like Class C and B airspace in that their three-dimensional structure could be described as an upside-down wedding cake, but as mentioned, communications are not required. The inner ring of the TRSA has a surface floor of 1,700 feet MSL and a ceiling of 6,000 feet MSL. The middle ring has a floor of 3,000 feet MSL with a ceiling of 6,000 feet MSL. The outer ring has a floor of 4,500 feet MSL, also extending up to 6,000 feet MSL.

The GGG Class D airspace reverts to Class G airspace when the tower is closed (10 p.m. to 6 a.m.). The airport is also surrounded by Class E airspace which serves to provide controlled airspace for IFR aircraft transitioning to and from GGG. The Class E airspace buffers the airport's Class D airspace.

For aircraft arriving or departing the regional area using VOR facilities, a system of Federal Airways, referred to as Victor Airways, has been established. Victor Airways are corridors of airspace eight miles wide that extend upward from 1,200 feet AGL to 18,000 feet MSL and extend between VOR navigational facilities. As shown on **Exhibit 1E**, Victor Airways in the area emanate from several VORTAC and VOR/DME facilities in the region. Four Victor Airways link the Longview VORTAC to other regional facilities, as depicted on the exhibit: V 289 to the south and northeast, V 94 to the southwest and east, V 114 to the northwest and southeast, and V 566 to the northeast.

AIRPORT TRAFFIC CONTROL TOWER

The ATCT is located south and east of the intersection of Taxiways B and N. The ATCT operates between 6:00 a.m. and 10:00 p.m. daily and broadcasts on 119.2 MHz. Tower personnel provide an array of control services including tower control, approach/departure clearances, ground control, and clearance delivery. The tower is supplemented by ASR-8 radar. As mentioned earlier, the airport is located under a TRSA. As such, in addition to safety alerts, traffic advisories, radar vectoring, and sequencing provided to VFR aircraft receiving basic radar services, TRSA services provide separation between participating VFR and IFR aircraft.

Tower personnel also provide an airport traffic information service (ATIS) which is a recorded message, updated hourly, and broadcast on 119.65 MHz. ATIS generally provides pilots with the airport's recent weather conditions and any NOTAMs filed for the day that are pertinent to East Texas Regional Airport or its environs. During periods when the tower is closed, pilots can broadcast their intentions on the common traffic advisory frequency (CTAF) on 119.2 MHz, or receive airport advisories on UNICOM (122.95 MHz).

Enroute air traffic control services are provided by the Fort Worth Air Route Traffic Control Center (ARTCC). The Fort Worth Flight Service Station (FSS) provides additional traffic service to pilots operating near the airport. FSS provides pilots with weather information, airport advisory service, flight planning processing, and communication with other air traffic control facilities.

AREA AIRPORTS

A review of the airports within the region has been made to identify and distinguish the other facilities available. Public-use airports within the vicinity of East Texas Regional Airport are illustrated on **Exhibit 1E**. Information pertaining to each airport was obtained from FAA Form 5010-1, Airport Master Record. The airports which have the most impact and influence on East Texas Regional Airport are described in **Table 1H**.

East Texas Regional Airport is one of four commercial service airports in the region. Tyler Pounds Regional Airport located 35.1 nm west, Shreveport Regional Airport located 45 nm east, and Texarkana Regional – Webb Field Airport located 73.7 miles northeast are served by regularly scheduled commercial carriers. These airports shape the competitive market for airline passengers in the region.

Tyler Pounds Regional Airport is the nearest airport (35.1 nm west) to GGG providing regularly scheduled passenger airline commercial services. The airport is served by American Eagle, connecting to DFW with five daily non-stop flights on regional jets.

Shreveport Regional Airport is located 45 miles east of GGG and is served by five airlines providing 40 daily flights to seven destinations. The airport is designated as a non-hub by the FAA.

Texarkana Regional – Webb Field Airport has limited service provided by American Eagle to DFW

TABLE 1H
Area Airports in the Vicinity of East Texas Regional Airport (GGG)

Airport	Primary Runway	Other Runway	Based Aircraft	Annual Ops. (est.)	Distance/Direction From GGG
COMMERCIAL SERVICE AIRPORTS IN THE REGION					
Tyler Pounds Regional (TYR)	13-31 5,200' x 150' Asphalt	4-22 7,802' x 150' Asphalt	157	40,880	35.1 nm W
Shreveport Regional (SHV)	14-32 8,350' x 200' Asphalt	6-24 6,202' x 150' Asphalt	62	37,960	45 nm E
Texarkana Regional – Webb Field (TXK)	4-22 6,601' x 150' Asphalt	13-31 5,200' x 100' Asphalt	52	25,550	73.7 nm NNE
GENERAL AVIATION AIRPORTS within 30 nm					
Gladewater Municipal (O7F)	14-32 3,299' x 75' Asphalt	17-35 2,300 x 50' Asphalt	55	17,520	15.8 nm WNW
Rusk County (RFI)	16-34 4,006' x 75' Asphalt	12-30 3,002' x 75' Asphalt	38	12,410	16.2 nm SSW
Harrison County (ASL)	15-33 5,002' x 100' Asphalt	2-20 3,299' x 60' Asphalt	18	16,060	22.0 nm ENE
Fox Stephens Field – Gilmer Municipal (JXI)	18-36 4,000' x 60' Asphalt	None	42	17,520	22.4 nm NNW
Panola County – Sharpe Field (4F2)	17-35 4,000' x 75' Asphalt	None	12	10,950	24.4 nm ESE
Cypress River (24F)	5-23 3,200' x 60' Asphalt	None	8	3,200	29.9 nm NE

Source: AirNav/5010 Data.

SOCIOECONOMIC CHARACTERISTICS

For an airport master plan, socioeconomic characteristics are collected and examined to derive an understanding of the dynamics of growth within the study area. This information is essential in determining aviation service level requirements, as well as forecasting the number of based aircraft and aircraft activity at the airport. Aviation forecasts are typically related to the population base, economic strength of the region, and the ability of the region to sustain a strong economic base over an extended period.

POPULATION

The size and structure of the local communities and the service area that the airport supports are important factors to consider when planning airport facilities. These factors provide an understanding of the economic base that is needed to determine future airport requirements. Historical population totals for regional cities, counties, the Longview metropolitan statistical area (MSA), the State of Texas, and the United States are presented in **Table 1J**. Historical data from 1980-2010 was obtained from the U.S. Census Bureau, and the Woods & Poole Complete Economic and Demographic Data Source (CEDDS) for 2017.

According to data obtained from the U.S. Census Bureau, Gregg County has experienced a 23 percent increase in population over the past 30 years and continues to provide over 50 percent of the total population in the Longview MSA.

The Longview MSA population increased by 21 percent over the same period.

TABLE 1J
Historical Population

Area	1980	1990	2000	2010
Regional Cities				
Longview	62,762	70,311	73,344	80,455
Henderson	n/a	11,139	11,273	13,712
Kilgore	10,968	11,066	11,301	12,975
Marshall	n/a	23,682	23,935	23,523
Counties				
Gregg	99,487	104,948	111,379	122,020
Rusk	51,203	42,348	47,372	53,340
Upshur	26,178	20,822	35,291	39,380
Camp	9,275	9,904	11,549	12,410
Harrison	52,265	57,483	62,110	65,700
Marion	10,360	9,984	10,941	10,500
Panola	20,724	22,035	22,756	23,780
Large Areas				
Longview MSA	176,868	168,118	194,042	214,730
State of Texas	14,229,191	16,986,510	20,851,820	25,244,360
United States	226,545,805	248,709,873	281,421,906	309,346,810

Source: U.S. Census; Woods and Poole Complete Economic and Demographic Data Source (CEDDS) 2017.

EMPLOYMENT

Analysis of a community's employment base can provide valuable insight to the overall well-being of the community. In most cases, the community make-up and health is significantly impacted by the availability of jobs, variety of employment opportunities, and types of wages provided by local employers.

Employment by sector for the Longview MSA was analyzed as it provides a regional perspective for employment trends for the region. The MSA contains Gregg, Rusk, and Upshur Counties, as well as the City of Marshall. The data presented in **Table 1K** was obtained from Woods and Poole Economics.

TABLE 1K
Employment by Sector
Longview MSA

SECTOR	1980	1990	2000	2010
Farm Employment, Agricultural Services, Other	3,673	4,151	4,714	3,590
Mining	7,522	7,184	5,893	11,110
Construction	7,077	6,656	8,129	11,740
Manufacturing	12,158	12,003	13,577	11,310
Transport, Communication, Public Utility	5,525	4,726	6,040	5,820
Wholesale Trade	4,099	4,057	4,328	4,840
Retail Trade	14,024	16,618	21,668	13,680
Finance, Insurance, and Real Estate	4,772	5,217	7,182	9,510
Services	15,585	23,857	31,387	47,970
Federal Civilian Government	545	632	592	680
Federal Military Government	509	657	496	470
State and Local Government	9,171	11,269	13,750	11,690
Total Employment	**84,660**	**97,027**	**117,756**	**132,410**

Source: Woods & Poole *Complete Economic and Demographic Data Source* (CEDDS) 2017

The Longview MSA employment increased by 56 percent over the 30-year period, with the most significant increase in the services category. Over one-third of total employment is captured in this category.

Locally, the City of Longview is the center of commerce for the area. Longview is home to a diverse range of businesses and is known for its manufacturing workforce. It is important to note that businesses in the City of Longview are investing not only in their business, but in the community as well. Internationally known companies have achieved high productivity and low-cost operations in the region. Telecommunications companies, heavy equipment suppliers, and medical services continue to attract new employees.

Longview, Kilgore, and Northeast Texas are well known for their highly skilled and talented workforce. **Table 1L** provides a listing of the largest employers in the Longview MSA employing 250 or more employees, as reported by the Longview EDC in December 2016.

TABLE 1L Largest Employers in the Area	
Company Name	**Employees**
Christus Good Shepherd Health System - Medical Services	2,529
Eastman Chemical – Chemicals	1,491
Longview Independent School District - Public Schools	1,229
Wal-Mart – Retail	1,060
Longview Regional Medical Center - Medical Services	1,032
Trinity Rail, LLC - Railway Cars	972
City of Longview - Government	860
Pine Tree Independent School District - Public Schools	673
Diagnostic Clinic of Longview - Medical Services	662
Gregg County – Government	550
Convergys – Telecommunications	530
Nationstar – Telecommunications	500
Crosby Group - Forged Load Binders	417
Union Pacific – Transportation	402
Joy Global – Heavy Equipment	400
LeTourneau University - Education	386
Stemco, LLC - Truck Equipment	354
AAON Coil Products, Inc. - Heat Transfer Coils	291
Neiman Marcus National Service Center - Distribution	278
S4 Communications - Telecommunications	250
Source: Longview EDC, December 2016.	

ENVIRONMENTAL INVENTORY – EAST TEXAS REGIONAL AIRPORT

The Environmental Inventory addresses existing conditions at the airport and its environs. This inventory identifies relevant environmental resources that should be considered during preparation of the Airport Master Plan. The inventory is organized using the resource categories contained in FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* (2015).

AIR QUALITY

The United States (U.S.) Environmental Protection Agency (EPA) established National Ambient Air Quality Standards (NAAQS) based on health risks for six pollutants:

- Carbon monoxide (CO)
- Nitrogen dioxide (NO_2)
- Sulfur dioxide (SO_2)
- Lead (Pb)
- Ozone (O_3)

- Two classifications of particulate matter (PM): PM measuring 10 micrometers or less in diameter (PM_{10}), and PM measuring 2.5 micrometers or less in diameter ($PM_{2.5}$)

An area with ambient air concentrations exceeding the NAAQS for a criteria pollutant is said to be a nonattainment area for the pollutant's NAAQS, while an area where ambient concentrations are below the NAAQS is considered an attainment area. The U.S. EPA requires that areas designated as nonattainment demonstrate how they will attain the NAAQS by an established deadline. To accomplish this, states are required to prepare State Implementation Plans (SIPs). SIPs are typically a comprehensive set of reduction strategies and emissions budgets designed to bring the area into attainment.

The Airport is in Gregg County, Texas. According to the U.S. EPA's *Green Book – National Area and County-Level Multi-Pollutant Information*, Gregg County is in attainment for all federal criteria pollutants.[1] Attainment designation varies by NAAQS criteria pollutant, as shown in **Exhibit 1G**.

BIOLOGICAL RESOURCES

U.S. Fish and Wildlife Service (USFWS) is charged with overseeing the requirements of the *Endangered Species Act* (ESA), specifically Section 7, which sets forth requirements for consultation to determine if a proposed action "may affect" a federally endangered or threatened species. If an agency determines that an action "may affect" a federally protected species, then Section 7(a)(2) requires the agency to consult with USFWS to ensure that any action the agency authorizes, funds, or carries out is not likely to jeopardize the continued existence of any federally-listed endangered or threatened species, or result in the destruction or adverse modification of critical habitat. If a species has been listed as a candidate species, Section 7(a)(4) states that each agency must confer with USFWS.

Additional federal laws protecting fish, wildlife, and plants include the *Migratory Bird Treaty Act* (MBTA), which prohibits activities that would harm migratory birds, their eggs, or nests, and the *Bald and Golden Eagle Protection Act* (BaGEPA), which prohibits the take (defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb") of bald and golden eagles, including their parts, nests, or eggs, without a permit. Executive Order (E.O.) 13312, *Invasive Species* aims to prevent the introduction of invasive species because of a proposed action. (E.O. 11990, *Protection of Wetlands* is discussed under the *Water Resources* section of this report.)

A USFWS Information for Planning and Consultation (IPaC) report indicates that there are three protected species potentially occurring at the Airport. The Texas Parks and Wildlife Department (TWPD) also maintains a list of federal-, state-, and candidate-listed species in Texas.[2] **Table 1N** lists federal- and state-listed protected species with potential of occurring on Airport property. At both the federal and the state level, there are no designated critical habitats on airport property.

[1] U.S. EPA data current as of September 30, 2017 (https://www3.epa.gov/airquality/greenbook/anayo_tx.html)
[2] Texas Parks and Wildlife Department (http://tpwd.texas.gov/gis/rtest/) (Gregg County data updated December 30, 2016)

POLLUTANT		PRIMARY/ SECONDARY	AVERAGING TIME	LEVEL	FORM
Carbon Monoxide (CO)		primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Lead (Pb)		primary and secondary	Rolling 3 month average	0.15 μg/m^3 (1)	Not to be exceeded
Nitrogen Dioxide (NO_2)		primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	1 year	53 ppb (2)	Annual Mean
Ozone (O_3)		primary and secondary	8 hours	0.070 ppm (3)	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution (PM)	$PM_{2.5}$	primary	1 year	12.0 μg/m^3	Annual mean, averaged over 3 years
		secondary	1 year	15.0 μg/m^3	Annual mean, averaged over 3 years
		primary and secondary	24 hours	35 μg/m^3	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24 hours	150 μg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)		primary	1 hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

UNITS OF MEASURE: **ppm** - parts per million by volume **ppb** - parts per billion by volume **μg/m^3** - micrograms per cubic meter of air

1) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 μg/m^3 as a calendar quarter average) also remain in effect.

(2) The level of the annual NO_2 standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

(3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O_3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.

(4) The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a SIP call under the previous SO_2 standards (40 CFR 50.4(3)). A SIP call is an Environmental Protection Agency (EPA) action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required National Ambient Air Quality Standards (NAAQS).

Source: https://www.epa.gov/criteria-air-pollutants/naaqs-table.

Exhibit 1G
NATIONAL AMBIENT AIR QUALITY STANDARDS

TABLE 1N Federal and State Protected Species East Texas Regional Airport			
Species Name	**Scientific Name**	**Federal Status**	**State Status**
Least Tern[1]	*Sterna antillarum*	Endangered	Endangered
Piping Plover	*Charadrius melodus*	Threatened	Threatened
Red Knot	*Calidris canutus rufa*	Threatened	N/A

[1] Listed Federally as "Least Tern (*Sterna antillarum*); Listed State as Interior Least Tern (*Sterna antillarum anthalassos*) – these represent the same species of bird. Sources: U.S. Fish and Wildlife Service Information for Planning and Consultation (accessed Sept. 2017); Texas Parks & Wildlife Department (Gregg County database updated Dec. 30, 2016; accessed Sept. 2017).

Table 1P lists bird species protected under the MBTA and *Bald and Golden Eagle Protection Act* that may be affected by construction activities at the Airport; it is not an exhaustive list of every bird species potentially found at this location.

TABLE 1P Birds Protected Under the *Migratory Bird Treaty Act* and *Bald and Golden Eagle Protection Act* East Texas Regional Airport		
Protected Species	**Scientific Name**	**Breeding Season**
American golden-plover	*Pluvalis dominica*	Breeds elsewhere
American kestrel	*Falco sparverius Paulus*	Apr 1 – Aug 31
Bewick's wren	*Thryomanes bewickii ssp. bewickii*	Apr 15 – Aug 20
Eastern whip-poor-will	*Caprimulgus vociferous*	May 1 – Aug 20
Henslow's sparrow	*Ammodramus henslowii*	Breeds elsewhere
Kentucky warbler	*Oporornis formosus*	Apr 20 – Aug 20
Lesser yellowlegs	*Tringa flavipes*	Breeds elsewhere
Prairie warbler	*Dendroica discolor*	May 1 – Jul 31
Prothonotary warbler	*Protonotaria citrea*	Apr 1 – Jul 31
Red-headed woodpecker	*Melanerpes erythrocephalus*	May 10 – Sep 10
Semipalmated sandpiper	*Calidris pusilla*	Breeds elsewhere
Wood thrush	*Hylocichla mustelina*	May 10 – Aug 31

Source: U.S. Fish and Wildlife Service Information for Planning and Consultation (accessed Sept. 2017)

CLIMATE

The EPA's *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2015*, found that the transportation sector, which includes aviation, accounted for 27 percent of U.S. greenhouse gas (GHG) emissions in 2015. Of this, aviation contributed 160.7 million metric tons (MMT) of carbon dioxide equivalent

(CO_2e), or nearly nine percent of all transportation emissions.[3, 4] Transportation sources include cars, trucks, ships, trains, and planes. Most of the GHG emissions from transportation are CO_2 emissions resulting from the combustion of petroleum-based products in internal combustion engines. Relatively small amounts of methane (CH_4), hydrofluorocarbon (HFC) and nitrous oxide (N_2O) are emitted during fuel combustion.

Carbon dioxide equivalent, or CO_2e, is used to describe different greenhouse gases (GHG) in a common unit. For any quantity and type of GHG, CO_2e represents the amount of CO_2 that would have the equivalent global warming potential.

From 1990 to 2015, total transportation emissions increased. The upward trend is largely due to increased demand for travel; however, much of this travel was done in passenger cars and light-duty trucks. In addition to transportation-related emissions, **Figure 1A** shows all GHG emissions sources in the U.S. in 2015.

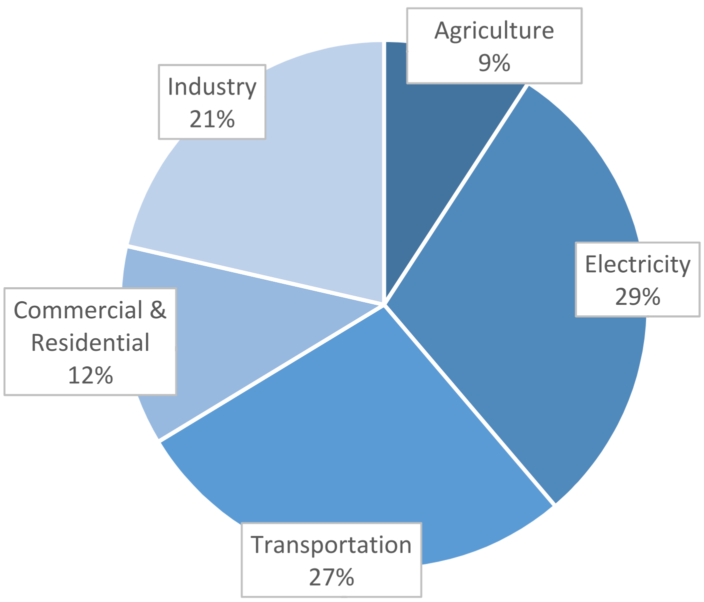


FIGURE 1A 2015 SOURCES OF GREENHOUSE GAS EMISSIONS IN THE U.S.
SOURCE: U.S. EPA (2017)

Increasing concentrations of GHGs can affect global climate by trapping heat in the Earth's atmosphere. Scientific measurements have shown that Earth's climate is warming, with concurrent impacts, including warmer air temperatures, rising sea levels, increased storm activity, and greater intensity in precipitation events. This climate change is a global phenomenon that can also have local impacts (Intergovernmental Panel on Climate Change, 2014). GHGs, such as water vapor (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and ozone (O_3), are both naturally occurring and anthropogenic (man-made).

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[3] Aviation activity consists of emissions from jet fuel and aviation gasoline consumed by commercial aircraft, general aviation, and military aircraft.

[4] Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2015, Table 2-13 (available: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2015)

Research has also shown a direct correlation between fuel combustion and GHG emissions. GHGs from anthropogenic sources include CO_2, CH_4, N_2O, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). CO_2 is the most important anthropogenic GHG because it is a long-lived gas that remains in the atmosphere for up to 100 years.

Local climate patterns, including temperature, wind, and cloud cover, are discussed earlier in the chapter.

COASTAL RESOURCES

Federal activities involving or affecting coastal resources are governed by the *Coastal Barriers Resource Act*, the *Coastal Zone Management Act*, and E.O. 13089, *Coral Reef Protection*. The Airport is approximately 200 miles north of the nearest ocean, thus causing no potential impacts to marine quality.

DEPARTMENT OF TRANSPORTATION (DOT) ACT: SECTION 4(f)

Section 4(f) of the DOT Act, which was recodified and renumbered as Section 303(c) of Title 49 United States Code (USC), states that the Secretary of Transportation shall not approve any program or project that requires the use of any publicly owned land from a historic site, public park, recreation area, or waterfowl or wildlife refuge of national, state, regional, or local importance unless there is no feasible and prudent alternative to the use of such land, and the project includes all possible planning to minimize harm resulting from the use.

The term "use" includes not only the physical taking of such lands, but "constructive use" of such lands. "Constructive use" of lands occurs when "a project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired" (Title 23 CFR, Section 771.135).

There are no historic properties, recreation areas, wildlife refuges, or wilderness areas within five miles of the Airport. The closest public park is Joshua Park, located approximately two miles south of the Airport.

FARMLANDS

The *Farmland Protection Policy Act* (FPPA) is intended to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. For FPPA, farmland includes prime farmland, unique farmland, prime farmland if drained, and land of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can also be forest land, pastureland, or other land, but not water or urban built-up land.

The Natural Resources Conservation Service (NRCS) Web Soil Survey is a common source of information for soil types within mapped areas. According to the tool, 280.2 acres (22.9%) of Airport property are considered prime farmland (see **Exhibit 1H**) and the remaining 942.3 acres (77.1%) are not prime farmland.

The primary soil series on Airport property include the Kullit-Urban land complex (one to three percent slopes) and Kullit very fine sandy loam (one to three percent slopes). Kirvin very fine sandy loam (two to five percent slopes), Kirvin gravelly fine sandy loam (three to eight percent slopes), and Cuthbert fine sandy loam (eight to 25 percent slopes) each account for a significant, but lesser area of the Airport.[5]

HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION

Federal, state, and local laws, including the *Resource Conservation Recovery Act* (RCRA) and the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA), as amended (also known as the Superfund), regulate hazardous materials use, storage, transport, and disposal. These laws may extend to past and future landowners of properties containing these materials. Disturbing areas that contain hazardous materials or contaminants can cause significant impacts to soil, surface water, groundwater, air quality, and the organisms using these resources.

According to the EPA's Environmental Justice Screening (EJSCREEN) and Mapping Tool, there are no Superfund[6] sites or brownfields[7] near the Airport. There are two facilities near the Airport that are known to release toxic chemicals, listed below and shown on **Exhibit 1H**. These facilities are required to report to the EPA's Toxics Release Inventory (TRI).

1) Multi-Chem Group (185 Johnny Clark Road): This facility is classified in the North American Industry Classification System (NAICS) as "other chemical and allied products merchant wholesalers." This facility handles and releases ethylene glycol, certain glycol ethers, toluene, 1, 2, and 4, -trimethylbenzene, methanol, xylene, and ethylbenzene. The environmental impacts are primarily to air quality. In addition to reporting to the TRI, this facility must report to the Resource Conservation and Recovery Act (RCRA) program.
2) Omni Industrial Solutions, Inc. (106 LTR Park Drive): This facility is classified by the NAICS as "all other miscellaneous chemical product and preparation manufacturing." This facility is known to process and release toluene, xylene, methanol, and ethylene glycol. The environmental impacts are primarily to air quality.

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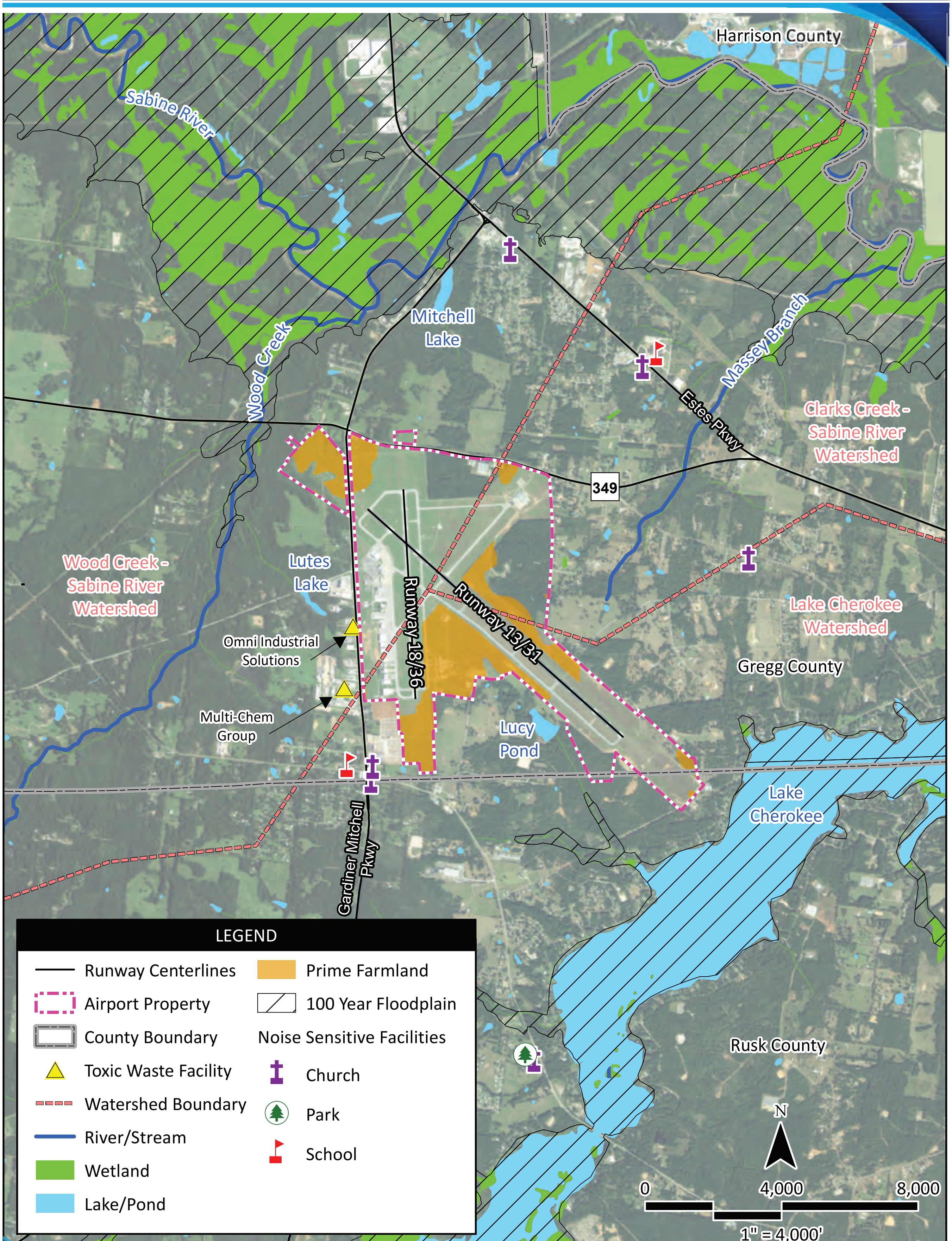
[5] Storm Water Pollution Prevention Plan (Sphere 3 Environmental, revised March 2014)
[6] A brownfield is a property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutants, or contaminant (U.S. EPA).
[7] A Superfund site is any land in the U.S. that has been contaminated by hazardous waste and identified by the EPA as a candidate for cleanup as it poses a human health risk and/or the environment (U.S. Department of Health and Human Services).



Sources: US Department of Agriculture-Natural Resources Conservation Services Web Soil Survey, Environmental Protection Agency, Federal Emergency Management Agency, ESRI Basemap Imagery (2016).

Exhibit 1H
ENVIRONMENTAL SENSITIVITIES

The EPA's EJSCREEN and Mapping Tool show that there are two additional toxic release facilities near the Airport: Performance Friction Products and the Longview Gas Plant. However, the Performance Friction Products facility has been permanently closed, and the address associated with the Longview Gas Plant is an empty area of land, indicating the facility either moved or the address is incorrect. Therefore, these two facilities are not considered to be nearby toxic waste facilities to the Airport.

According to a list of active municipal solid waste landfills that the Texas Commission on Environmental Quality (TCEQ) maintains, the closest landfill is Pine Hill Farms Landfill (permit ID 1327B), located at 1102 Pine Hill Landfill Road in Kilgore, Texas, approximately 7.5 miles northwest of the Airport.[8]

HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Determination of a project's environmental impact to historic and cultural resources is made under guidance in the *National Historic Preservation Act* (NHPA) *of 1966*, as amended, the *Archaeological and Historic Preservation Act* (AHPA) *of 1974*, the *Archaeological Resources Protection Act* (ARPA), and the *Native American Graves Protection and Repatriation Act* (NAGPRA) *of 1990*, among others. Impacts can occur when a proposed project causes an adverse effect on a property which has been identified (or is unearthed during construction) as having historical, architectural, archaeological, or cultural significance.

As mentioned above, there are no sites listed on the NRHP within five miles of the Airport.

Per the EPA's EJSCREEN, the nearest Indian/Native American feature is land owned by the Choctaw Nation of Oklahoma, approximately 120 miles north of the Airport. The dataset that identifies Indian/Native American features represents locations of American Indian Tribal lands in the lower 48 states. The areas include all lands associated with Federally recognized tribal entities, including Federally recognized reservations, off-reservation trust lands, and Census Oklahoma Tribal statistical areas. This data is used to monitor the proximity of environmental hazards on or near Tribal lands.

LAND USE

Existing land uses around the Airport are discussed earlier in this chapter in the Area Land Use section.

NATURAL RESOURCES AND ENERGY SUPPLY

Energy usage at the Airport includes the consumption of aviation fuel (Jet A and 100LL), gasoline and diesel fuel for vehicles and maintenance equipment, natural gas, and electricity. Utility providers and

[8] https://www.tceq.texas.gov/assets/public/permitting/waste/msw/msw-landfills-active.pdf

fuel storage details are discussed in greater detail in the Airport Utilities and Fuel Storage sections of this chapter.

NOISE AND COMPATIBLE LAND USE

Federal land use compatibility guidelines are established under 14 CFR 150, *Airport Noise Compatibility Planning*. Per 14 CFR Part 150, residential land uses and schools are noise-sensitive land uses that are not considered compatible with a 65 decibel (dB) Day-Night Average Sound Level (DNL).[9] Other noise-sensitive land uses (such as religious facilities, hospitals, or nursing homes), if located within a 65 dB DNL contour, are generally compatible when an interior noise level reduction of 25 dB is incorporated into the design and construction of the structure. Special consideration also needs to be given to noise-sensitive areas within Section 4(f) properties where the land use compatibility guidelines in 14 CFR Part 150 do not account for the value, significance, and enjoyment of the area in question (FAA 2015).

As mentioned earlier in the chapter, most of the land near the Airport is rural, unincorporated land that is undeveloped; however, there are rural residential properties along all sides of the Airport property line. Residences increase in density south of the Airport where there are many homes along the shoreline of Lake Cherokee, as well as to the northeast in the City of Lakeport.

In addition to residences, there are three religious facilities near the Airport: Lakeview Baptist Church (0.10 miles south); Trinity Church (1.20 miles northeast); and Chalk Hill Assembly of God (1.75 miles southeast). There are no schools or medical facilities near the Airport. These are shown on **Exhibit 1H**.

SOCIOECONOMIC IMPACTS, ENVIRONMENTAL JUSTICE, AND CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS

This resource category relates to the socioeconomics of the community surrounding an airport, any potential environmental justice areas,[10] and a focus on children's well-being as it relates to environmental health and safety risks.

According to the U.S. Census Bureau, the Airport is in Census Tract 9800; however, this census tract currently has no data available. The closest available data is for the Lakeport Census County Division

[9] Noise-sensitive land uses are generally residences, places of worship, hospitals and health care facilities, and educational facilities. Places of worship are defined as permanently established facilities intended solely for use as places of worship and not meant to be converted to other potential uses. For a hospital and/or health care facility to be considered a noise-sensitive medical facility, it must provide for overnight stays or provide for longer recovery periods, where rest and relaxation are key considerations for use of the facility. Schools are facilities that provide full time use for instruction and training to students.
[10] Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

(CCD),[11] which encompasses the area around the City of Lakeport, adjacent to the northeast airport property boundary. There are 5,169 people living in the Lakeport CCD for whom poverty status has been determined. **Table 1Q** shows poverty status by age, race, Hispanic or Latino origin, and employment status. In addition to the demographics in **Table 1Q**, the EPA's EJSCREEN mapping tool indicates that there is no public housing or subsidized properties near the Airport.

TABLE 1Q
Poverty Status by Age, Race, Hispanic or Latino Origin, and Employment
Lakeport Census County Division

	Population Below Poverty Level
Age	
Under 18 years	403 (7.8%)
18 to 64 years	616 (12.0%)
65 years and over	109 (2.1%)
Race	
White alone	551 (10.7%)
Black or African American alone	571 (11.0%)
American Indian and Alaska Native alone	4 (0.08%)
Asian alone	0 (0.0%)
Native Hawaiian or other Pacific Islander alone	0 (0.0%)
Some other race alone	14 (0.3%)
Two or more races	36 (0.7%)
Hispanic or Latino Origin	
Hispanic or Latino origin (of any race)	675 (13.0%)
White Alone, not Hispanic or Latino	2,632 (50.9%)
Employment Status[1]	
Employed	179 (3.5%)
Male	*108 (2.1%)*
Female	*71 (1.4%)*
Unemployed	5 (.1%)
Male	*2 (.04%)*
Female	*3 (.06%)*
Population Total[2]	**5,169 (100%)**

[1] Civilian labor force 16 years and older
[2] For whom poverty status is determined
Source: U.S. Census Bureau, 2011-2015 American Community Survey Five-Year Estimates (Table S1701: Poverty Status in the Last 12 Months)

[11] A Census County Division (CCD) is a subdivision of a county used by the Census Bureau to present statistical data. A CCD is a relatively permanent statistical area delineated cooperatively by the Census Bureau, state, and local government authorities.

TABLE 1R Minority Population Lakeport Census County Division	
White alone	3,291 (63.7%)
Black or African American alone	1,824 (35.3%)
American Indian and Alaska Native alone	4 (.08%)
Asian alone	0 (0.0%)
Native Hawaiian and other Pacific Islander alone	0 (0.0%)
Some other race alone	14 (0.27%)
Two or more races	36 (0.70%)
Total Population	**5,169 (100%)**
Source: U.S. Census Bureau, 2011-2015 American Community Survey Five-Year Estimates (Table B02001: Total Population)	

Table 1R represents the minority populations residing in the Lakeport CCD regardless of poverty status.

As previously discussed, there are residential land uses near the Airport, as well as Ned E. Williams Elementary School located 3.5 miles away on Highway 149. The closest public park is two miles away. The closest landfill is 7.5 miles northwest of the Airport.

VISUAL RESOURCES

Visual effects deal broadly with the extent to which the proposed action or alternative(s) would either: 1) produce light emissions that create annoyance or interfere with activities (Light Emissions); or 2) contrast with, or detract from, the visual resources and/or the visual character of the existing environment (Visual Resources and Visual Character).

Neither Gregg County or the City of Lakeport have comprehensive plans or codes of ordinances that provide municipal lighting guidelines or the protection of scenic resources. Given the remote location of the airport, and the lack of development surrounding it, it is unlikely the airport would interfere with any scenic resources or emit lighting that would interfere with neighboring communities.

WATER RESOURCES

Water resources in view are shown on **Exhibit 1H** and include the following types:

Wetlands: Certain drainages (both natural and human-made) that are considered “waters of the U.S.” come under the purview of the U.S. Army Corps of Engineers (USACE) under Sections 401 and 404 of the *Clean Water Act*; wetlands are also protected. In addition, E.O. 11990, *Protection of Wetlands* provides definitions and calls for safeguarding wetlands. Wetlands typically exhibit three characteristics: hydrology, hydrophytes (plants able to tolerate various degrees of flooding or frequent saturation), and poorly drained or “hydric” soils.

According to the USDA-NRCS Web Soil Survey, there are no hydric soils anywhere on Airport property. Based on the best available information from the USFWS, there are not wetlands on Airport property.

Floodplains: E.O. 11988, *Floodplain Management* directs federal agencies to act to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by the floodplains. The limits of base floodplains are determined by Flood Insurance Rate Maps (FIRMs) prepared by Federal Emergency Management Agency (FEMA).

Based on FIRM panel 48401C0125C from September 29, 2010, there is a 100-year floodplain along the entirety of Lake Cherokee, as well as some of the tributaries of Lake Cherokee that flow north closer to the Airport.

Based on FIRM panel 48183C0190F dated September 3, 2014, there is a 100-year floodplain south and southwest the Airport along Sabine River and Wood Creek.

Surface Waters: Surface waters include rivers, streams, creeks, lakes, and reservoirs. The primary uses of surface water are for drinking water and other public uses, irrigation, and for industrial purposes (i.e., cooling electricity-generating equipment at a power plant).

Surface waters near the Airport include:

- Lake Cherokee
- Lutes Lake
- Lucy Pond
- Wood Creek
- Sabine River
- Mitchell Lake
- Massey Branch

The nearest water resource that is impaired is the Sabine River. The Sabine River is listed in the Texas Water Quality Inventory as Segment ID 0505 and is classified as a freshwater stream above Toledo Bend Reservoir. This segment is listed for bacterial contamination as *Category 5a*, specifying Total Maximum Daily Loads[12] (TMDLs) have not yet been determined by TCEQ.[13]

The Airport maintains a Storm Water Pollution Prevention Plan (SWPPP) (revised March 2014) that operates under a Texas Pollutant Discharge Elimination System (TPDES) Multi Sector General Permit. The Airport's storm water drains to 12 outfalls on and around Airport property. The Airport has both grass and concrete storm water drainageways throughout the airport. Runoff from areas around the northwestern hangars flows north toward two unnamed tributaries to Mitchell Lake before entering Sabine River. Runoff from the northeastern portion of the airport flows into Massey Branch and then into the Sabine River. Runoff from the southeastern, south, and southwestern portions of the Airport flow into Lake Cherokee, which impounds Cherokee Bayou. Cherokee Bayou flows east, eventually meeting the Sabine River. Runoff from the west side of the Airport flows west to tributaries of Wood Creek and then north to the Sabine River.

[12] A TMDL is the calculation of the maximum amount of a pollutant allowed to enter a waterbody so that the waterbody will meet and continue to meet water quality standards for that particular pollutant. A TMDL determines a pollutant reduction target and allocates load reductions necessary to the source(s) of the pollutant (EPA).
[13] Storm Water Pollution Prevention Plan (Sphere 3 Environmental, revised March 2014)

Watersheds: Watersheds are made up of all surface waters (lakes, streams, etc.) and groundwater that drain to a common place, such as a reservoir, mouth of a bay, or stream channel. Larger watersheds contain multiple smaller watersheds, or subwatersheds.

The Airport is in the Texas-Gulf Region 12 watershed. The drainage that occurs in this region discharges into the Gulf of Mexico and includes the area from Sabine Pass to the Rio Grande basin Boundary. More specifically, the Airport is in the Middle Sabine watershed (Hydrologic Unit Code 8 [HUC8] 12010002) that encompasses parts of Texas and Louisiana in an area of 2,760 square miles.[14]

The EPA's My WATERS Mapper provides narrower watershed information, which indicates the Airport is trisected by three watersheds: Wood Creek-Sabine River (HUC12: 120100020601); Clarks Creek-Sabine River (HUC12: 120100020603), and Lake Cherokee (HUC12: 12010020606).

The wastewater treatment process and facility, as well as the potable water system, are discussed earlier in the chapter.

Groundwater: The nearest sole source aquifer, which is an aquifer that has been designated by the EPA as the primary source of drinking water for an area, is the Chicot Aquifer System, approximately 100 miles southeast of the Airport. Generally, a sole source aquifer provides a minimum of 50 percent of the drinking water that is consumed in the area overlying the aquifer.

Wild and Scenic Rivers: Wild and scenic rivers refer to designations within the National Park Services' Nationwide Rivers Inventory. Public Law 90-542 states that such rivers are free flowing and possess "outstanding remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values".[15] The closest river feature included in the National River Inventory is Sabine River, 6.5 miles northeast of the Airport.

SUMMARY

The information discussed in this inventory chapter provides a foundation upon which the remaining elements of the planning process will be constructed. This information will provide guidance, along with additional analysis and data collection, for the development of forecasts of aviation demand and facility requirements.

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[14] U.S. Geological Survey, Hydrologic Unit Map (https://water.usgs.gov/GIS/huc_name.html#Region12)
[15] www.rivers.org

DOCUMENT SOURCES

As mentioned earlier, a variety of different sources were utilized in the inventory process. The following listing reflects a partial compilation of these sources. This does not include data provided by airport management as part of their records, nor does it include airport drawings and photographs which were referenced for information. On-site inventory and interviews with staff tenants also contributed to the inventory effort.

Airport Master Plan for East Texas Regional Airport, Coffman Associates, Inc., 2007.

Airport/Facility Directory, South Central U.S., U.S. Department of Transportation, Federal Aviation Administration, National Aeronautical Charting Office, September 2017 Edition.

National Plan of Integrated Airport Systems (NPIAS), U.S. Department of Transportation, Federal Aviation Administration, 2017-2021.

U.S. Terminal Procedures, South Central U.S., U.S. Department of Transportation, Federal Aviation Administration, National Aeronautical Charting Office.

Dallas Fort Worth Aeronautical Chart, U.S. Department of Transportation, Federal Aviation Administration, National Aeronautical Charting Office.

A number of Internet sites were also used to collect information for the inventory chapter. These include the following:

East Texas Regional Airport:
http://www.flyGGG.com

Airport Industrial Park
http://www.easttexasairpark.com

Gregg County
http://www.co.gregg.tx.us

Longview Economic Development Corporation
http://www.longviewedc.com/index.html

City of Longview
http://www.ci.longview.tx.us

FAA 5010 Data:
http://www.airnav.com

U.S. Census Bureau:
http://www.census.gov

Texas State Data Center and Office of the State Demographer
http://txsdc.utsa.edu

Chapter Two

Forecasts

EAST TEXAS REGIONAL AIRPORT



CHAPTER TWO

Forecasts

An important factor in facility planning involves a definition of demand that may reasonably be expected to occur during the useful life of the facility's key components. For East Texas Regional Airport, this involves projecting potential aviation demand for a 20-year timeframe. In this report, forecasts of passenger enplanements, annual operations, and based aircraft will serve as the basis for facility planning.

The resulting forecast may be used for several purposes, including facility needs assessments, airfield capacity evaluation, and environmental evaluations. The forecasts will be reviewed and approved by the Federal Aviation Administration (FAA) to ensure that they are reasonable projections of aviation activity. The intent is to permit Gregg County (as the airport sponsor) to make the necessary planning adjustments to ensure the facility meets projected demands in an efficient and cost-effective manner.

Because aviation activity can be affected by many influences at the local, regional, and national levels, it is important to remember that forecasts are to serve only as guidelines, and planning must remain flexible enough to respond to unforeseen facility needs.

NATIONAL AVIATION TRENDS

Each year, the FAA updates and publishes a national aviation forecast. Included in this publication are forecasts for the large air carriers, regional/commuter air carriers, general aviation, and FAA workload measures. The forecasts are prepared to meet budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and the public. The current edition when this chapter was prepared was *FAA Aerospace Forecasts – Fiscal Years 2017-2037*, published in March 2017. The FAA primarily uses the economic performance of the United States as an indicator of future aviation industry growth. Similar economic analyses are

applied to the outlook for aviation growth in international markets. The following discussion is summarized from the FAA's latest long-range planning document.

Per the *FAA Aerospace Forecasts*, as the economy recovers from the most serious economic downturn and the subsequent slow recovery since the Great Depression, aviation will continue to grow over the long run. Fundamentally, demand for aviation is driven by economic activity. As economic growth picks up, so will growth in aviation activity. The steep decline in the price of oil in 2015-16 is a catalyst for a short-lived uptick in passenger growth; however, growth is anticipated to be somewhat muted, primarily due to the uncertainty that surrounds the U.S. and global economies.

U.S. economic performance in 2016 continued to be mixed, with modest growth in real GDP and real incomes, a slowly falling unemployment rate, and oil prices and consumer inflation remaining in check. Despite slow economic growth at home and abroad, 2016 was a good year for U.S. aviation. Stable demand, falling yields, and falling costs added up to a record year of profits for the U.S. airline industry. U.S. economic growth is projected to average 2.1 percent per year, with rates ranging from 1.8 to 2.5 percent. The long-term stability of U.S. economic growth depends on sustained growth in the workforce and capital stock, along with improved productivity and competitiveness.

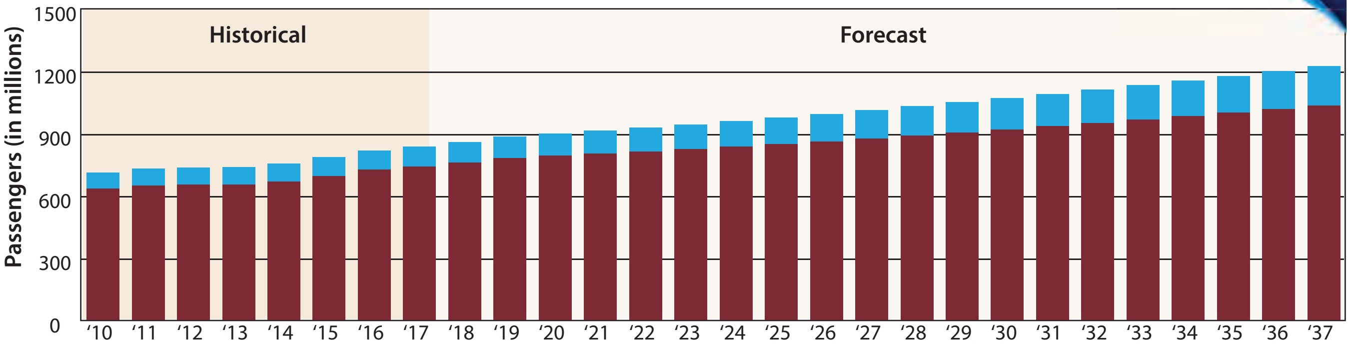
System traffic in revenue passenger miles (RPMs) is projected to increase by 2.4 percent between 2017 and 2037. The number of seats per aircraft is getting bigger, especially in the regional market, where the FAA expects the number of 50-seat regional jets to fall to just a handful by 2023, replaced by 70-90 seat aircraft. The reduction in domestic capacity over the past decade has not been shared equally between the mainline carriers and their regional counterparts. To better match demand to capacity, the mainline carriers contracted out "thin" routes to their regional counterparts because they could provide lift at a lower cost, or simply removed the capacity altogether.

Over the forecast period, domestic enplanements are projected to grow at an average annual rate of 1.7 percent, with regional carriers growing at 1.6 percent. **Exhibit 2A** presents the annual historical and forecast enplanement totals for both mainline and regional air carriers—both domestic and international.

FAA TERMINAL AREA FORECAST – EAST TEXAS REGIONAL AIRPORT

On an annual basis, the FAA publishes the Terminal Area Forecast (TAF) for each airport included in the NPIAS. The TAF is a generalized forecast of airport activity used by FAA for internal planning purposes. It is available to airports and consultants to use as a point of comparison for development of local forecasts. **Table 2A** presents the Terminal Area Forecast for East Texas Regional Airport, which was published by the FAA in January 2018.

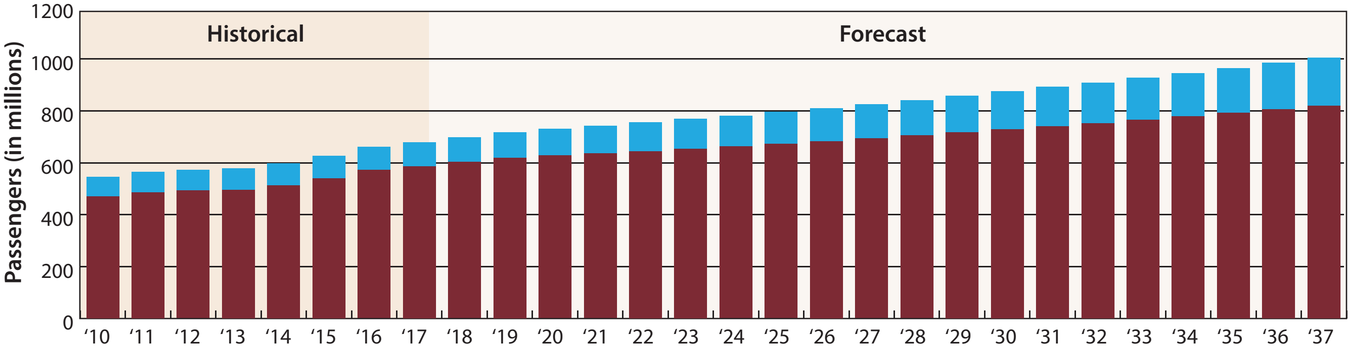
U.S. AIR CARRIER PASSENGER ENPLANEMENTS



SOURCE	2017	2022	2027	2037	AAGR 2017-2037
Domestic Revenue Enplanements	742	815	877	1,037	1.7%
International Revenue Enplanements	96	115	137	190	3.4%
TOTAL	838	931	1,014	1,227	1.9%

Note: All figures measured in millions

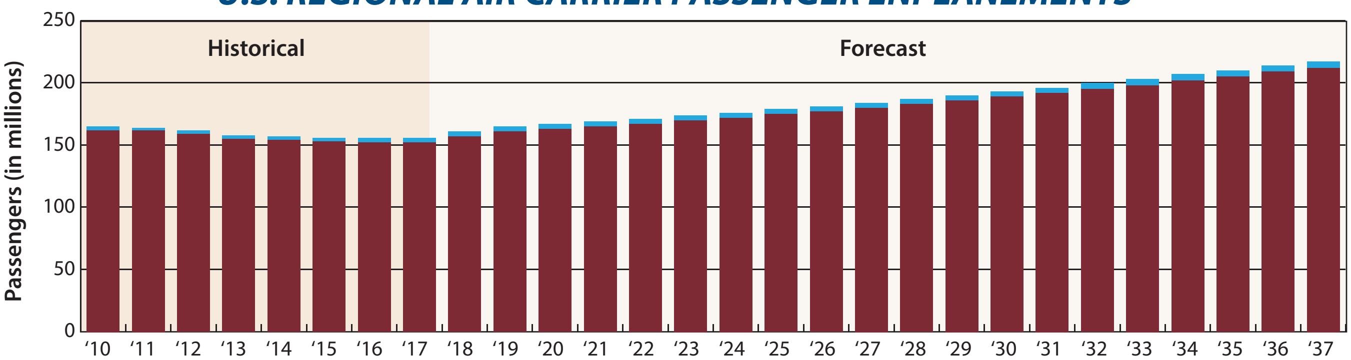
U.S. MAINLINE AIR CARRIER PASSENGER ENPLANEMENTS



SOURCE	2017	2022	2027	2037	AAGR 2017-2037
Domestic Revenue Enplanements	589	648	697	825	1.7%
International Revenue Enplanements	92	111	133	185	3.5%
TOTAL	681	759	830	1,009	2.0%

Note: All figures measured in millions

U.S. REGIONAL AIR CARRIER PASSENGER ENPLANEMENTS



SOURCE	2017	2022	2027	2037	AAGR 2017-2037
Domestic Revenue Enplanements	152	167	180	212	1.6%
International Revenue Enplanements	4	4	4	5	1.6%
TOTAL	155	171	184	217	1.6%

Note: All figures measured in millions. Totals may not equal due to rounding.
Source: FAA Aerospace Forecast - Fiscal Years 2017-2037

Exhibit 2A
COMMERCIAL AIR CARRIER FORECASTS

TABLE 2A
FAA Terminal Area Forecast
East Texas Regional Airport

	HISTORICAL			FORECAST			
	2000	2010	2015	2017	2022	2027	2037
OPERATIONS							
Itinerant							
Air Carrier	50	229	61	27	27	27	27
Air Taxi/Commuter	4,362	2,003	10,148	8,497	8,686	8,902	9,353
GA	27,934	27,239	16,288	14,136	13,788	13,883	14,073
Military	2,550	2,310	2,192	3,848	3,848	3,848	3,848
Total Itinerant	34,896	31,781	28,689	26,488	26,349	26,660	27,301
Local							
GA	48,188	51,911	27,787	20,020	21,455	22,245	23,911
Military	6,716	3,218	1,753	1,798	1,798	1,798	1,798
Total Local	54,904	55,129	29,540	21,818	23,253	24,043	25,709
Total Operations	89,800	86,910	58,229	48,306	49,602	50,703	53,010
ENPLANEMENTS	34,376	22,533	19,871	21,262	21,783	22,317	23,428
BASED AIRCRAFT	88	90	103	110	122	136	166

Source: FAA Terminal Area Forecast, issued January 2018. Fiscal Year data.

COMMERCIAL SERVICE

In Fall 2017, scheduled air service at East Texas Regional Airport was being provided by American Eagle (operated by Envoy Air). American Eagle provides service to/from Dallas-Ft. Worth International Airport with two daily flights. The Airport has continued to pursue additional air service since the current passenger catchment area is clearly being underserved.

To determine the types and sizes of facilities necessary to properly accommodate present and future airline activity, two elements of air service must be forecast: annual enplaned passengers and annual aircraft operations. Of these, the number of annual enplaned passengers is the most basic indicator of demand for commercial service activity. From a forecast of annual enplanements, operations and peak period activity can be projected based on the specific characteristics of passenger demand at GGG.

TABLE 2B
Annual Enplaned Passengers (2000-2017)
East Texas Regional Airport (GGG)

Year	Total Enplanements
2000	34051
2001	29766
2002	25321
2003	28986
2004	23795
2005	23437
2006	25353
2007	26333
2008	24835
2009	24944
2010	21830
2011	21112
2012	18787
2013	20870
2014	21867
2015	20968
2016	22480
2017	19297*

Source: Air Carrier Activity Information System (ACAIS) 2000-2016
*Provided by Airport

Passenger Enplanements

Historical passenger enplanements as reported in the Air Carrier Activity Information System (ACAIS) are presented in **Table 2B**. As shown in the table, passenger enplanements at GGG have fluctuated from a high of 33,452 in 2000 to a low of 18,278 in 2012. Preliminary figures for 2017 (which were provided by the Airport) reflect a slight decline over the previous year.

Due to the fluctuation in the number of enplanements, time-series and regression analyses were not performed as they would not provide reliable results. Rather, other forecasting techniques were used to develop new enplanement projections: market share (based upon projected U.S. passenger growth) and travel propensity factors (based upon Longview MSA population-passenger relationships).

As shown in **Table 2C**, the airport's market share of U.S. domestic regional passenger enplanements declined from 0.042% in 2000 to 0.011% in 2012, and has since increased slightly. Based upon this, a constant market share projection was developed. This projection applies the 0.013% market share to the forecast of U.S. domestic regional enplanements. This constant ratio projection yields 27,600 annual enplanements by the year 2037.

TABLE 2C
Market Share Enplanements Forecasts
East Texas Regional Airport (GGG)

CY	GGG Enplanements	U.S. Domestic Regional Enplanements	GGG Market Share of U.S.
2000	34,051	79,700,000	0.0427%
2001	29,766	88,800,000	0.0335%
2002	25,321	98,900,000	0.0256%
2003	28,986	110,100,000	0.0263%
2004	23,795	122,700,000	0.0194%
2005	23,437	136,600,000	0.0172%
2006	25,353	152,200,000	0.0167%
2007	26,333	156,200,000	0.0169%
2008	24,835	159,100,000	0.0156%
2009	24,944	154,000,000	0.0162%
2010	21,830	161,600,000	0.0135%
2011	21,112	161,700,000	0.0131%
2012	18,787	159,000,000	0.0118%
2013	20,870	155,500,000	0.0134%
2014	21,867	154,000,000	0.0142%
2015	20,968	153,000,000	0.0137%
2016	22,480	152,000,000 E	0.0148%
2017	19,297	152,000,000 E	0.0127%
Constant Market Share Projection			
2022	21,700	167,000,000	0.013%
2027	23,400	180,000,000	0.013%
2037	27,600	212,000,000	0.013%

Source: Historical Enplanements at GGG – ACAIS; Historical and Forecast U.S. Domestic Regional Enplanements – FAA Aerospace Forecasts, Fiscal Years 2017-2037 (March 2017).

A second method used to forecast enplanements examined the ratio between the number of enplanements and the population of the Longview MSA. This ratio of enplanements to area population is referred to as the travel propensity factor (TPF) and is presented in **Table 2D**.

As shown in the table, the TPF has declined from a high of 0.172 in 2000 to a low of 0.088 in 2017. The forecast that was developed assumes that the TPF will remain static at 0.09. The Longview MSA population is projected to increase by 23 percent over the planning period.

TABLE 2D
Enplanements Per Capita (TPF) Forecast
East Texas Regional Airport (GGG)

Year	GGG Passenger Enplanements	Longview MSA Population	Travel Propensity Factor
2000	33,452	194,042	0.172
2010	20,682	214,730	0.096
2015	20,142	217,780	0.092
2017	19,297	220,030	0.088
Constant TPF Projection			
2022	21,100	234,800	0.09
2027	22,000	244,700	0.09
2037	24,300	270,300	0.09

Sources: ACAIS and 2017 Woods & Poole Economics.

For planning purposes, a mid-range forecast is generally chosen if it provides a reasonable growth rate. The selected planning forecast is mid-range of the market share and population-based travel propensity factor forecasts: 21,400 enplanements by 2022, 22,700 enplanements by 2027, and 26,000 enplanements by 2037. This represents an average annual growth rate of 1.5 percent. Of course, efforts by Gregg County to enhance air service through an added flight may provide higher growth rates through the planning period. It has been assumed that the airline will transition to 70-seat aircraft as the 50-seat aircraft are retired. **Table 2E** summarizes the passenger enplanement forecasts, with a comparison to the FAA TAF forecast.

TABLE 2E
Summary of Passenger Enplanement Forecasts
East Texas Regional Airport

	2017	2022	2027	2037
FAA Terminal Area Forecast (published January 2018) (For Comparison Only)		21,983	22,317	23,428
Market Share--U.S. Domestic Regional Enplanements		21,700	23,400	27,600
Travel Propensity Factor—Longview MSA Population		21,100	22,000	24,300
Selected Planning Forecast	19,297	21,400	22,700	26,000

Fleet Mix and Operations Forecast

The fleet mix defines many key parameters in airfield and terminal planning, including runway length and width, taxiway width, terminal space and apron requirements, and peak demands on parking requirements. Changes in equipment, airframes, and engines have always had a significant impact on airlines and airport planning. There are many ongoing programs by the manufacturers to improve performance characteristics. These programs are focusing on improvements in fuel efficiency, noise suppression, and the reduction of air emissions. A fleet mix projection for GGG has been developed by reviewing the aircraft serving the airport and orders the airlines have placed with manufacturers for new aircraft.

GGG is currently receiving scheduled commercial service from American Eagle (operated by Envoy Air), operating 50-passenger regional jets. Regional airlines are continuing to transition to regional jets with higher seating capacities, although current airline scope clauses are limiting many regional carriers to aircraft with a maximum of 76 seats. The local fleet mix is expected to continue to reflect this transition to larger aircraft over the next two decades.

The fleet mix assumptions have been used to calculate the average seats per departure, and the projected enplanements per departure were derived based upon a static boarding load factor of 0.65 through the planning period. While the load factor in 2017 was at 0.57, airlines continue to demand high load factors in the current operating environment. If the carrier is unable to achieve a high load factor on a consistent basis, the equipment will be relocated. **Table 2F** summarizes the fleet mix operations forecast. The decline in airline operations is attributable to the higher level of enplanements per departure (i.e., larger aircraft in the fleet).

TABLE 2F
Airline Fleet Mix and Operations Forecast
East Texas Regional Airport

		FORECAST		
Fleet Mix Seating Capacity	**2017**	**2022**	**2027**	**2037**
51-100 seats (50 average) (ERJ-145, CRJ 200)	100%	20%	0%	0%
51-90 seats (70 average) (CRJ 700/900, EMB 170/190)	0%	80%	100%	100%
Totals	100%	100%	100%	100%
Average Seats per Departure	50	66	70	75
Boarding Load Factor	0.57	0.65	0.65	0.65
Enplanements per Departure	28.4	43	46	49
Annual Enplanements	19,297	21,400	22,700	26,000
Annual Departures	680	500	490	530
Annual Operations	1,360	1,000	980	1,060

FAA GENERAL AVIATION FORECASTS

The FAA forecasts the fleet mix and hours flown for single engine piston aircraft, multi-engine piston aircraft, turboprops, business jets, piston and turbine helicopters, light sport, experimental, and others (gliders and balloons). The FAA forecasts "active aircraft," not total aircraft. An active aircraft is one that is flown at least one hour during the year. From 2010 through 2013, the FAA undertook an effort to have all aircraft owners re-register their aircraft. This effort resulted in a 10.5 percent decrease in the number of active general aviation aircraft, mostly in the piston category.

After growing rapidly for most of the decade, the demand for business jet aircraft slowed over the past few years, as the industry was hard hit by the 2008-2009 economic recession. Nonetheless, the FAA forecast calls for growth through the long-term, driven by higher corporate profits and continued concerns about safety, security, and flight delays. Overall, business aviation is projected to outpace personal/recreational use.

In 2016, the FAA estimated there were 143,355 piston-powered aircraft in the national fleet. The total number of piston-powered aircraft in the fleet is forecast to decline by 0.8 percent from 2016-2037, resulting in 121,905 by 2037. This includes -0.9 percent annually for single engine pistons and -0.5 percent for multi-engine pistons.

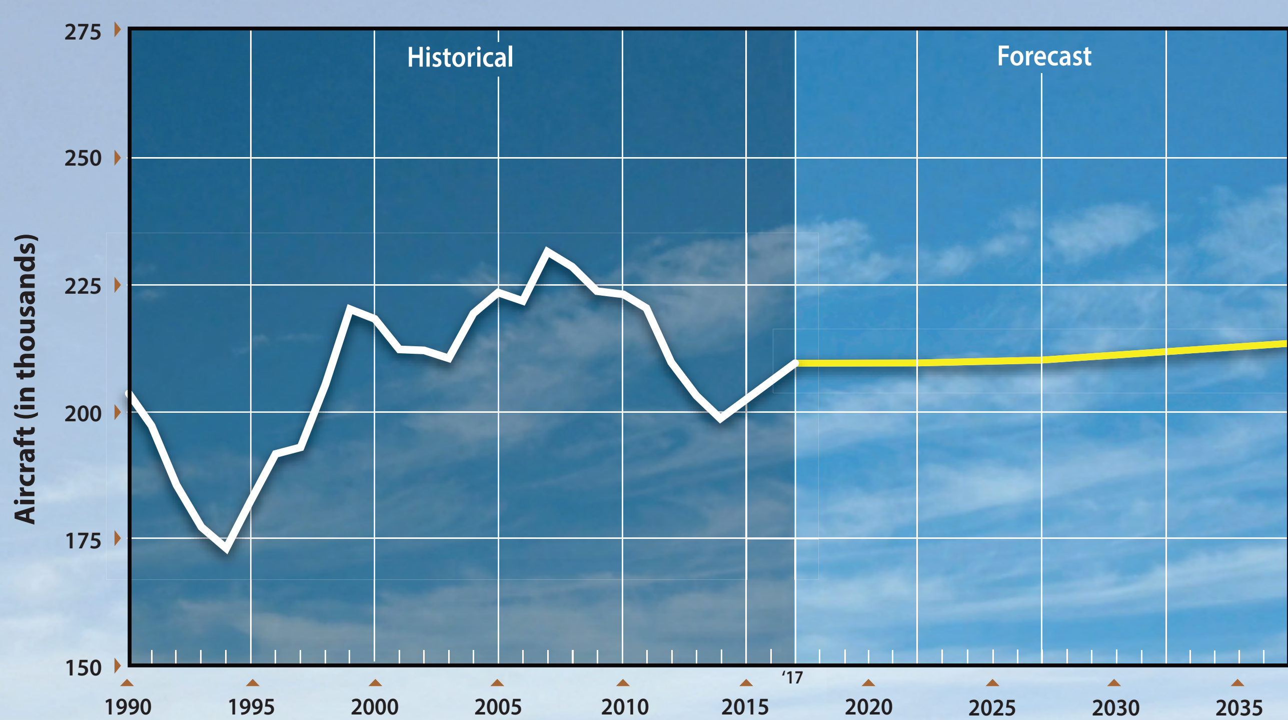
Total turbine aircraft are forecast to return to growth and have an annual growth rate of 1.9 percent through 2037. The FAA estimates there were 30,595 turbine-powered aircraft in the national fleet in 2016, and there will be 45,305 by 2037. This includes annual growth rates of 1.4 percent for turboprops, 2.3 percent for business jets, and 1.8 percent for turbine helicopters.

While comprising a much smaller portion of the general aviation fleet, experimental aircraft, typically identified as home-built aircraft, are projected to grow annually by 1.0 percent through 2037. The FAA estimates there were 28,475 experimental aircraft in 2016, and these are projected to grow to 35,310 by 2037. Sport aircraft are forecast to grow 4.1 percent annually through the long term, growing from 2,530 in 2016 to 5,885 by 2037. **Exhibit 2B** presents the historical and forecast U.S. active general aviation aircraft.

The FAA also forecasts total operations based upon activity at control towers across the U.S. Operations are categorized as air carrier, air taxi/commuter, general aviation, and military. General aviation operations, both local and itinerant, declined significantly because of the 2008-2009 recession and subsequent slow recovery. Through 2037, total general aviation operations are forecast to grow 0.3 percent annually. Air taxi/commuter operations are forecast to decline by 3.4 percent through 2026, and then increase slightly through the remainder of the forecast period. Overall, air taxi/commuter operations are forecast to decline by 0.9 percent annually from 2016 through 2037.

U.S. Active General Aviation Aircraft

	2017	2022	2027	2037	AAGR*
FIXED WING					
Piston					
Single Engine	125,760	120,600	115,245	105,550	-0.9%
Multi-Engine	13,155	12,965	12,705	11,970	-0.5%
Turbine					
Turboprop	9,285	9,115	9,755	12,585	1.4%
Turbojet	14,100	15,845	17,745	22,040	2.3%
ROTORCRAFT					
Piston	3,380	3,605	3,835	4,385	1.3%
Turbine	7,510	8,195	8,925	10,680	1.8%
EXPERIMENTAL					
	28,970	30,895	32,345	35,310	1.0%
SPORT AIRCRAFT					
	2,685	3,480	4,285	5,885	4.1%
OTHER					
	4,955	4,955	4,965	5,015	0.1%
TOTAL	**209,800**	**209,655**	**209,805**	**213,420**	**0.1%**



* AAGR - Average Annual Growth Rate 2017 - 2037

Notes: An active aircraft is one that has a current registration and was flown at least one hour during the calendar year.

Source: FAA Aerospace Forecasts, Fiscal Years 2017-2037.

Exhibit 2B: U.S. ACTIVE GENERAL AVIATION AIRCRAFT FORECAST

General Aviation Shipments and Revenue

As previously discussed, the 2008-2009 economic recession has had a negative impact on general aviation aircraft production, and the industry was slow to recover. Aircraft manufacturing declined for three straight years from 2008 through 2010 and more recently in 2015-16. According to the General Aviation Manufacturers Association (GAMA), there is optimism that aircraft manufacturing will stabilize and return to growth. **Table 2G** presents historical data related to general aviation aircraft shipments.

Worldwide shipments of general aviation airplanes remained relatively flat in 2016. A total of 2,262 units were delivered around the globe, as compared to 2,331 units in 2015. Worldwide general aviation billings declined by 14 percent in 2016.

TABLE 2G
Annual General Aviation Airplane Shipments
Manufactured Worldwide and Factory Net Billings

Year	Total	Single Engine Piston	Multi-Engine Piston	Turboprop	Jet	Net Billings ($millions)
1994	1,132	544	77	233	278	3,749
1995	1,251	605	61	285	300	4,294
1996	1,437	731	70	320	316	4,936
1997	1,840	1043	80	279	438	7,170
1998	2,457	1508	98	336	515	8,604
1999	2,808	1689	112	340	667	11,560
2000	3,147	1,877	103	415	752	13,496
2001	2,998	1,645	147	422	784	13,868
2002	2,677	1,591	130	280	676	11,778
2003	2,686	1,825	71	272	518	9,998
2004	2,963	1,999	52	319	592	11,918
2005	3,590	2,326	139	375	750	15,156
2006	4,054	2,513	242	412	887	18,815
2007	4,277	2,417	258	465	1,137	21,837
2008	3,974	1,943	176	538	1,317	24,846
2009	2,283	893	70	446	874	19,474
2010	2,024	781	108	368	767	19,715
2011	2,120	761	137	526	696	19,042
2012	2,164	817	91	584	672	18,895
2013	2,353	908	122	645	678	23,450
2014	2,454	986	143	603	722	24,499
2015	2,331	946	110	557	718	24,129
2016	2,262	890	129	582	661	20,719

Source: General Aviation Manufacturers Association 2016 Statbook

Business Jets: General aviation manufacturers delivered 661 business jets in 2016, as compared to 718 units in 2015. Like 2015, demand was stronger in 2016 for large-cabin business jets than it was for medium and light business jets.

Turboprops: In 2016, 582 turboprop airplanes were delivered to customers around the world, a slight increase from the 557 delivered in 2015. Overall, the turboprop market has experienced significant gains since 2010.

Pistons: Piston deliveries remained flat, declining from 1,056 units during 2015 to 1,019 in 2016. The piston segment continued to fare best for unit deliveries among the three segments by which GAMA tracks the airplane manufacturing industry. This is due in part by deliveries to flight schools in emerging markets.

Deliveries of business jets, by type and aircraft reference code (wingspan/approach speed), has been attached in **Appendix B** for each year between 1997 and 2016. While the aircraft delivery information is compiled by GAMA, Coffman Associates has organized the deliveries by aircraft design category. The general trend throughout this 20-year summary is towards business jets with greater wingspans and higher approach speeds.

Many airports have seen an upward trend in activity by business jets. There are numerous factors that have led to this trend, including the growth of fractional aircraft ownership and a desire by frequent travelers to save time by avoiding security at commercial service terminals. East Texas Regional Airport is no exception, with the total number of business jets based on the airfield more than doubling over the past 10 years.

Table 2H presents growth trends in fractional aircraft ownership at the national level. With fractional ownership, a buyer owns part of an aircraft's time, but leaves management of the aircraft to a third party. As with most sectors of general aviation, a decline in the number of fractional share owners and aircraft in use declined following the economic recession.

In addition to fractional ownership, traditional private aviation charter activity continues to flourish at East Texas Regional Airport in addition to newer membership-based jet card systems. Several local companies operate as traditional charter companies on the airfield.

TABLE 2H
Fractional Share Owners and Number of Aircraft in Use

Year	Number of Share Owners	Number of Aircraft in Use
1994	158	NA
1995	285	NA
1996	548	NA
1997	957	NA
1998	1,551	NA
1999	2,607	NA
2000	2,810	574
2001	3,601	689
2002	4,244	780
2003	4,516	826
2004	4,765	870
2005	4,828	945
2006	4,863	984
2007	5,168	1,030
2008	5,179	1,094
2009	4,881	1,037
2010	4,862	1,027
2011	4,677	920
2012	4,350	905
2013	4,365	869
2014	4,402	823
2015	4,369	837
2016	4,145	882

Source: *GAMA/JETNET LLC*

GENERAL AVIATION FORECASTS – EAST TEXAS REGIONAL AIRPORT

General aviation is defined as that portion of civil aviation which encompasses all portions of aviation, except commercial operations. To determine the types and sizes of facilities that should be planned to accommodate general aviation activity, certain elements of this activity must be forecast. These indicators of general aviation demand include: based aircraft, aircraft fleet mix, and annual operations.

The number of based aircraft is the most basic indicator of general aviation demand. By first developing a forecast of based aircraft, the growth of aviation activities at the airport can be projected. Aircraft basing at the airport is somewhat dependent upon the nature and degree of aircraft ownership in the local service area. As a result, aircraft registrations in the area were reviewed and forecast first.

Registered Aircraft Forecasts

Data was collected on the history of aircraft ownership in Gregg County since 2006. As mentioned earlier, Gregg County serves as the primary general aviation service area for GGG. This information is presented in **Table 2J**. It is noticeable that registrations declined in 2017 following several years of growth. This is mostly attributable to a decline in single engine piston aircraft.

A projection of county registrations was developed as a comparison to U.S. active aircraft. The market share has steadily declines over the past two years; therefore, a share projection of 0.11% was applied to the FAA forecast of U.S. active aircraft and yields a registered aircraft forecast reflecting the limited growth in active aircraft assumed by the FAA.

TABLE 2J
Gregg County Market Share of U.S. Registered Aircraft

Year	U.S. Active Aircraft	Gregg County Registered Aircraft	Market Share of U.S.
2006	221,942	179	0.081%
2007	231,606	183	0.079%
2008	228,664	182	0.080%
2009	223,876	195	0.087%
2010	223,370	213	0.095%
2011	220,453	219	0.099%
2012	209,034	229	0.109%
2013	199,927	230	0.115%
2014	204,408	238	0.116%
2015	210,031	241	0.115%
2016	209,905	241	0.115%
2017	209,800 E	224	0.107%
SHARE PROJECTION FORECAST			
2022	209,655	231	0.11%
2027	209,805	231	0.11%
2037	213,420	235	0.11%

Source: FAA Aerospace Forecasts FY 2017-2037; Gregg County Registered from FAA Aircraft Registration Database.

Like enplanement projections, county registered aircraft can be linked with the local population base in forecasting. The forecast examined the historical registered aircraft as a ratio of 1,000 residents in the Longview MSA, as presented in **Table 2K**.

As shown in **Table 2K**, the 2017 estimated population for the MSA was 220,030, which equates 1.02 registered aircraft per 1,000 residents. This is an increase from 2000, when there were 0.84 registered aircraft per residents, but lower than the 2015 figure of 1.11.

A constant ratio projection of 1.02 registered aircraft per 1,000 residents was developed and yields 275 registered aircraft by 2037.

TABLE 2K
Gregg County Registered Aircraft per 1,000 Residents

Year	Longview MSA Population	Gregg County Registered Aircraft	Aircraft per 1,000 Residents
2000	194,110	162	0.84
2010	214,730	213	1.00
2015	217,780	241	1.11
2017	220,030	224	1.02
CONSTANT SHARE PROJECTION			
2022	234,800	240	1.02
2027	244,700	250	1.02
2037	270,300	275	1.02

The selected planning forecast for registered aircraft in the county yields 235 registered aircraft by 2022; 240 registered aircraft by 2027; and 255 registered aircraft by 2037. This represents a slightly less than one percent average annual growth rate. **Table 2L** summarizes the results of the analysis.

TABLE 2L
Gregg County Registered Aircraft Forecast Summary

	2017	2022	2027	2037
MARKET SHARE OF U.S. ACTIVE AIRCRAFT				
Constant Share (0.11%)	224	231	231	235
PER CAPITA (1,000 MSA RESIDENTS)				
Constant Share (at 1.02)	224	240	250	275
SELECTED FORECAST	**224**	**235**	**240**	**255**

Based Aircraft Forecasts

Having selected a forecast of the registered aircraft for Gregg County, historical based aircraft records at East Texas Regional Airport were reviewed to examine the potential change in market share. The based aircraft figures were obtained from airport records, which reflect a based aircraft level of 105 in 2017. This is an increase of 22 aircraft since 2006 and nearly the same market share.

The market share projection for based aircraft is summarized in **Table 2M**.

TABLE 2M Based Aircraft Market Share of Gregg County Projections			
Year	**GGG Based Aircraft**	**Gregg County Registered Aircraft**	**Market Share**
2006	83	179	46%
2017	105	224	47%
CONSTANT SHARE PROJECTION			
2022	110	235	47%
2027	113	240	47%
2037	120	255	47%
Source: Based aircraft from airport records.			

Based Aircraft Fleet Mix

According to airport records, the current fleet mix consists of the following: 51 single-engine piston aircraft, 13 multi-engine piston aircraft, 17 turboprop aircraft, 22 jets, and two helicopters. While the number of single-engine piston aircraft have changed little since 2006, the number of turboprops and jets have more than doubled.

The forecast mix of based aircraft was determined by comparing existing and forecast U.S. general aviation fleet trends to the current based aircraft fleet mix. The trend in general aviation is toward a greater percentage of larger, more sophisticated aircraft as part of the national fleet mix. This is reflected in an increasing percentage of jets and turboprop aircraft in the mix at East Texas Regional Airport. The number of single engine and multi-engine piston aircraft is expected to decline, consistent with national trends. The general aviation fleet mix projections for the airport are presented in **Table 2N**.

TABLE 2N Based Aircraft Fleet Mix East Texas Regional Airport								
	Existing		**FORECAST**					
Aircraft Type	**2017**	**%**	**2022**	**%**	**2027**	**%**	**2037**	**%**
Single-Engine (P)	51	49%	47	43%	41	36%	26	22%
Multi-Engine (P)	13	12%	12	11%	11	10%	10	8%
Turboprop	17	16%	21	18%	26	23%	36	30%
Jet	22	21%	27	25%	31	27%	41	34%
Helicopter	2	2%	3	3%	4	4%	7	6%
Totals	105	100%	110	100%	113	100%	120	100%
Source: Based aircraft fleet mix collected from airport tenant records.								

General Aviation Operations Forecast

General aviation operations are classified as either local or itinerant. A local operation is a take-off or landing performed by an aircraft that operates within sight of the airport, or which executes simulated approaches or touch-and-go operations at the airport. Itinerant operations are those performed by aircraft with a specific origin or destination away from the airport. Generally, local operations are characterized by training operations. Typically, itinerant operations increase with business and commercial use, since business aircraft are operated on a higher frequency.

To develop an updated forecast, the FAA's projections for annual general aviation operations at towered airports were examined, along with East Texas Regional Airport's annual general aviation operations and market share. According to airport records, there were a total of 35,486 general aviation operations in 2017. As shown in **Table 2P**, this represents 0.139 percent of general aviation operations at towered airports. The market share has declined since 2010.

A constant market share forecast of 0.14 percent yields 37,900 annual general aviation operations by the year 2037.

Local operations account for 60 percent of total operations, which is higher than the national average. This is attributable to the level of training activity on the airfield. Forecasts have assumed similar splits between local and itinerant traffic.

TABLE 2P
GA Operations Projections as Market of US ATCT Operations
East Texas Regional Airport

	GGG ATCT Reported Operations				
Year	**Itinerant**	**Local**	**Total**	**GA Operations at Towered Airports**	**GGG Market Share**
2010	27,523	47,988	75,511	26,580,000	0.284%
2011	25,564	37,599	63,163	25,965,000	0.243%
2012	23,686	34,204	57,890	26,130,000	0.222%
2013	18,182	31,473	49,655	25,806,000	0.192%
2014	16,087	30,829	46,916	25,654,000	0.183%
2015	16,140	26,465	42,605	25,578,000	0.167%
2016	15,094	22,897	37,991	25,536,000 E	0.167%
2017	14,067	21,419	35,486	25,600,000 E	0.139%
CONSTANT SHARE PROJECTION					
2022	14,400	21,700	36,100	25,995,000	0.14%
2027	14,700	22,000	36,700	26,402,000	0.14%
2037	15,200	22,700	37,900	27,262,000	0.14%

Source: FAA air traffic activity.

Other Air Taxi Operations Forecast

Air taxi activity is independently recorded by the airport traffic control tower (ATCT). Locally, most of air taxi operations recorded at the tower are performed by the commercial airline. However, this category also includes "for-hire" general aviation operators, and can also include operations by Part 135 operators and Part 121 operators (less than 60 seats).

Since the commercial airline operations have been covered in a previous section of this chapter, the remaining portion of the air taxi category has been estimated by removing the commuter operations from the annual air taxi ATCT counts. **Table 2Q** presents historical and forecast of the remaining air taxi operations at East Texas Regional Airport, based upon the five-year average.

TABLE 2Q
Air Taxi (excluding commuter) Operations Forecast
East Texas Regional Airport

Year	GGG "Other" Air Taxi	US Towered Airport Air Taxi Operations (thousands)	Market Share
2013	7,086	8,803	0.00805%
2014	9,459	8,440	0.01121%
2015	8,576	7,895	0.00863%
2016	8,049	7,580 E	0.01062%
2017	7,154	7,381 E	0.0097%
FORECAST			
2022	5,230	5,451	0.0096%
2027	5,420	5,649	0.0096%
2037	6,000	6,257	0.0096%

Source: GGG air taxi operations from ATCT counts; Forecasts from FAA Aerospace Forecasts 2017-2037.

Military Operations Forecast

Historical military operations at East Texas Regional Airport were obtained from ATCT records and are presented in **Table 2R**. Stebbins Aviation maintains a fueling contract with the military, so the airport captures many military training flights, including the T-38 Talon. In 2017, itinerant activity represented 67 percent of total military operations. The forecast assumes a constant activity level, based upon the current level of itinerant and local activity.

TABLE 2R Military Operations Forecast East Texas Regional Airport			
Year	Itinerant	Local	Total
2012	2,918	4,054	6,972
2013	2,657	2,614	5,271
2014	2,773	2,492	5,265
2015	2,349	1,797	4,146
2016	3,540	1,878	5,418
2017	3,741	1,810	5,551
FORECAST			
2022	3,700	1,800	5,500
2027	3,700	1,800	5,500
2037	3,700	1,800	5,500
Source: ATCT counts			

PEAKING CHARACTERISTICS

Many airport facility needs are related to the level of activity during peak periods for both operations and enplanements. The periods used in developing facility requirements for this study are as follows:

Peak Month – The calendar month when peak activity occurs.
Design Day – The average day in the peak month.
Busy Day – The busy day of a typical week in the peak month.
Design Hour – The peak hour within the design day.

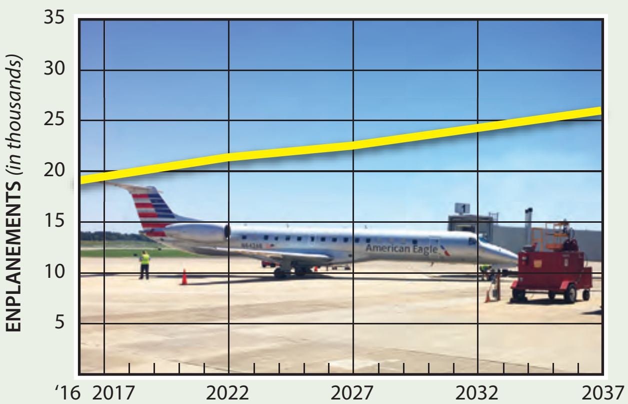
It is important to realize that only the peak month is an absolute peak within the year. Each of the other periods will be exceeded at various times during the year. However, each provides reasonable planning standards that can be applied without overbuilding or being too restrictive.

A review of tower reports over the past six years shows that the peak month for operations has averaged 10.77 percent of total annual operations. This factor is carried to the plan years. The design day is simply the peak month divided by the number of days in that month, with the busy day calculated as 30 percent higher than the design day. The design hour is calculated at 15 percent of the busy day. **Table 2S** presents the peaking characteristics for the Airport.

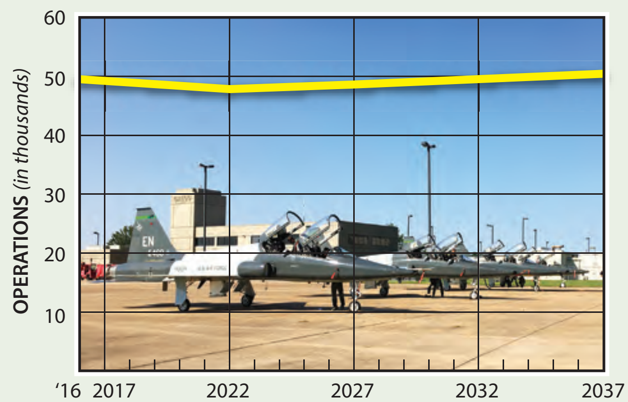
The 20-year forecasts for East Texas Regional Airport have been summarized in **Exhibit 2C**.

CATEGORY	2017	FORECASTS 2022	2027	2037
ANNUAL ENPLANEMENTS				
Airport Total	**19,297**	**21,400**	**22,700**	**26,000**
ANNUAL OPERATIONS				
Itinerant				
Air Carrier/Air Taxi	8,514	6,230	6,400	7,060
Military	3,741	3,700	3,700	3,700
General Aviation	14,067	14,400	14,700	15,200
Total Itinerant	***26,322***	***24,330***	***24,800***	***25,960***
Local				
General Aviation	21,419	21,700	22,000	22,700
Military	1,810	1,800	1,800	1,800
Total Local	***23,229***	***23,500***	***23,800***	***24,500***
Total Operations	**49,551**	**47,830**	**48,600**	**50,460**
BASED AIRCRAFT				
Single Engine Piston	51	47	41	26
Multi-Engine Piston	13	12	11	10
Turboprop	17	21	26	36
Jets	22	27	31	41
Helicopters	2	3	4	7
Total Based Aircraft	**105**	**110**	**113**	**120**

ENPLANEMENTS FORECAST



OPERATIONS FORECAST



BASED AIRCRAFT FORECAST

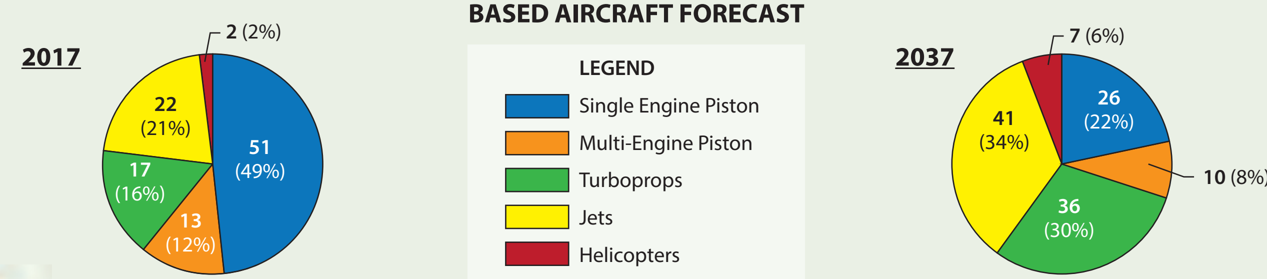


TABLE 2S
Peak Operations Forecast
East Texas Regional Airport

	2017	2022	2027	2037
Annual Operations	49,551	47,830	48,600	50,460
Peak Month	5,237	5,150	5,230	5,430
Busy Day	227	223	227	235
Design Day	175	172	174	181
Design Hour	34	33	34	35

Source: Coffman Associates analysis of ATCT data.

AIRCRAFT/AIRPORT/RUNWAY CLASSIFICATION

The FAA has established several aircraft classification systems that group aircraft types based on their performance (approach speed in landing configuration) and design characteristics (wingspan and landing gear configuration). These classification systems are used to determine the appropriate airport design standards for specific airport elements, such as runways, taxiways, taxilanes, and aprons.

AIRCRAFT CLASSIFICATION

The selection of appropriate FAA design standards for the development and location of airport facilities is based primarily upon the characteristics of the aircraft which are currently using or are expected to use an airport. The critical design aircraft is used to define the design parameters for an airport. The design aircraft may be a single aircraft type or, more commonly, is a composite aircraft representing a collection of aircraft with similar characteristics. The critical design aircraft is defined by three parameters: Aircraft Approach Category (AAC), Airplane Design Group (ADG), and Taxiway Design Group (TDG). *FAA AC 150/5300-13A, Airport Design*, describes the following airplane classification systems, the parameters of which are presented on **Exhibit 2D**.

Aircraft Approach Category (AAC): A grouping of aircraft based on a reference landing speed (VREF), if specified, or if VREF is not specified, 1.3 times stall speed (VSO) at the maximum certificated landing weight. VREF, VSO, and the maximum certificated landing weight are those values as established for the aircraft by the certification authority of the country of registry.

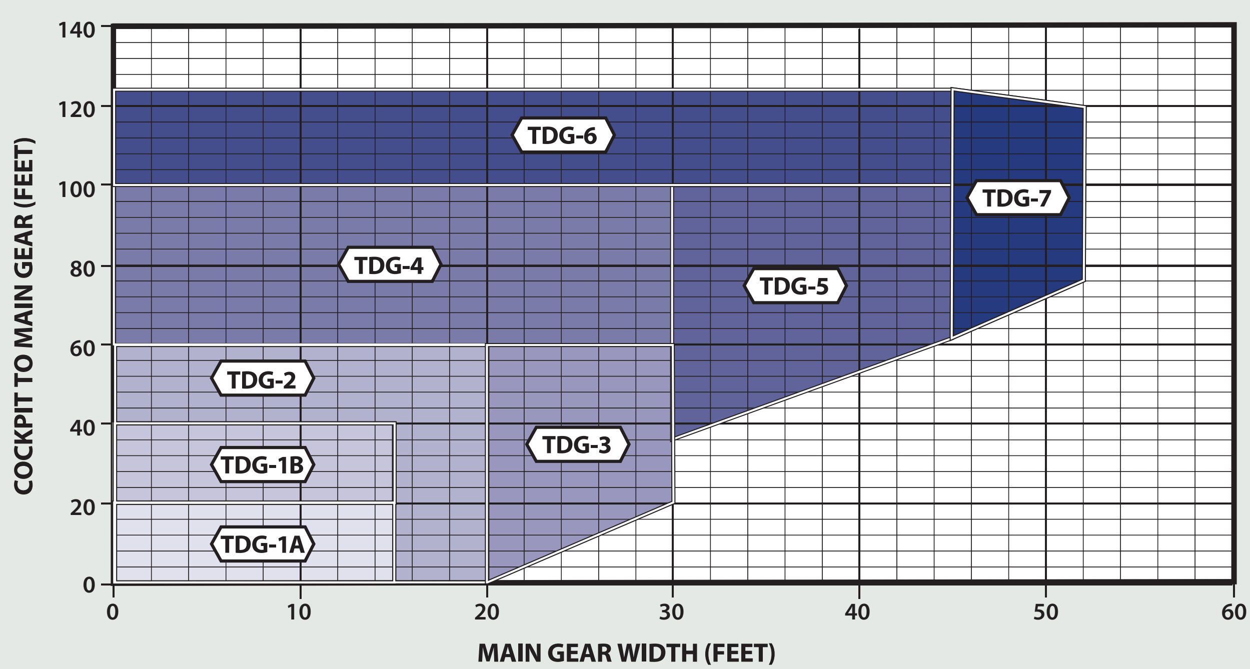
The AAC generally refers to the approach speed of an aircraft in landing configuration. The higher the approach speed, the more restrictive the applicable design standards. The AAC, depicted by a letter A through E, is the aircraft approach category and relates to aircraft approach speed (operational characteristic). The AAC generally applies to runways and runway-related facilities, such as runway width, runway safety area (RSA), runway object free area (ROFA), runway protection zone (RPZ), and separation standards.

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

AIRPLANE DESIGN GROUP (ADG)		
Group #	**Tail Height (ft)**	**Wingspan (ft)**
I	<20	<49
II	20-<30	49-<79
III	30-<45	79-<118
IV	45-<60	118-<171
V	60-<66	171-<214
VI	66-<80	214-<262

VISIBILITY MINIMUMS	
RVR (ft)	**Flight Visibility Category (statute miles)**
VIS	3-mile or greater visibility minimums
5,000	Not lower than 1-mile
4,000	Lower than 1-mile but not lower than ¾-mile
2,400	Lower than ¾-mile but not lower than ½-mile
1,600	Lower than ½-mile but not lower than ¼-mile
1,200	Lower than ¼-mile

TAXIWAY DESIGN GROUP (TDG)



KEY

APV: Approach Procedure with Vertical Guidance
PA: Precision Approach
RVR: Runway Visual Range
TDG: Taxiway Design Group

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

Airplane Design Group (ADG): The ADG, depicted by a Roman numeral I through VI, is a classification of aircraft which relates to aircraft wingspan or tail height (physical characteristic). When the aircraft wingspan and tail height fall in different groups, the higher group is used. The ADG influences design standards for taxiway safety area (TSA), taxiway object free area (TOFA), taxilane object free area, apron wingtip clearance, and various separation distances.

Taxiway Design Group (TDG): A classification of airplanes based on outer-to-outer Main Gear Width (MGW) and Cockpit to Main Gear (CMG) distance. The TDG relates to the undercarriage dimensions of the design aircraft. The taxiway design elements determined by the application of the TDG include the taxiway width, taxiway edge safety margin, taxiway shoulder width, taxiway fillet dimensions, and, in some cases, the separation distance between parallel taxiways/taxilanes. Other taxiway elements, such as the taxiway safety area (TSA), taxiway/taxilane object free area (TOFA), taxiway/taxilane separation to parallel taxiway/taxilanes or fixed or movable objects, and taxiway/taxilane wingtip clearances are determined solely based on the wingspan (ADG) of the design aircraft utilizing those surfaces. It is appropriate for taxiways to be planned and built to different TDG standards based on expected use.

Exhibit 2E presents the aircraft classification of the most common jet aircraft in operation today.

AIRPORT AND RUNWAY CLASSIFICATION

These classifications, along with the aircraft classifications defined previously, are used to determine the appropriate FAA design standards to which the airfield facilities are to be designed and built.

Airport Reference Code (ARC): An airport designation that signifies the airport's highest Runway Design Code (RDC), minus the third (visibility) component of the RDC. The ARC is used for planning and design only and does not limit the aircraft that may be able to operate safely on the airport. The current ALP for the Airport, which will be updated as part of this planning effort, identifies an ARC of C-IV.

Runway Design Code (RDC): A code signifying the design standards to which the runway is to be built. The RDC is based upon planned development and has no operational component. The AAC, ADG, and runway visual range (RVR) are combined to form the RDC of a particular runway. The RDC provides the information needed to determine certain design standards that apply. The first component, depicted by a letter, is the AAC and relates to aircraft approach speed (operational characteristics). The second component, depicted by a Roman numeral, is the ADG and relates to either the aircraft wingspan or tail height (physical characteristics), whichever is most restrictive. The third component relates to the visibility minimums expressed by RVR values in feet of 1,200 (⅛-mile); 1,600 (¼-mile); 2,400 (½-mile); 4,000 (¾-mile); and 5,000 (1-mile). The RVR values approximate standard visibility minimums for instrument approaches to the runways.

Approach Reference Code (APRC): A code signifying the current operational capabilities of a runway and associated parallel taxiway with regard to landing operations. Like the RDC, the APRC is composed of

A-I

- Beech Baron 55
- **Beech Bonanza**
- Cessna 150
- Cessna 172
- Cessna Citation Mustang
- Eclipse 500/550
- Piper Archer
- Piper Seneca

B-I

- Beech Baron 58
- Beech King Air 100
- Cessna 402
- **Cessna 421**
- Piper Navajo
- Piper Cheyenne
- Swearingen Metroliner
- Cessna Citation I

B-II *less than 100,000 lbs.*

- **Super King Air 200**
- Cessna 441
- DHC Twin Otter

B-I, B-II *over 12,500 lbs.*

- Super King Air 350
- Beech 1900
- Jetstream 31
- Falcon 10, 20, 50
- Falcon 200, 900
- **Citation II,** III, IV, V
- Saab 340
- Embraer 120

A-III, B-III

- DHC Dash 7
- **DHC Dash 8**
- DC-3
- Convair 580
- Fairchild F-27
- ATR 72
- ATP

C-II, D-II

- Beech 400
- **Lear 45**, 55, 60
- Israeli Westwind
- HS 125-400, 700

C-II, D-II

- Cessna Citation III,VI,VIII,X
- Gulfstream II, III, IV
- Canadair 600
- **ERJ**-135, 140, **145**
- CRJ-200/700
- Lear 75

C-III, D-III

- ERJ-170, 190
- CRJ 700, 900
- Boeing Business Jet
- B-737-300 Series
- MD-80, DC-9
- BAe 146-200
- A319, A320
- **Gulfstream V**
- Global Express

C-IV, D-IV

- B-757
- B-767
- **C-130**
- DC-8-70
- MD-11

C-V, D-V

- B-747-400
- B-777
- **B-787**
- A-330, A-340

Note: Aircraft pictured is identified in bold type.

Exhibit 2E
OPERATIONAL FLEET MIX

the same three components: the AAC, ADG, and RVR. The APRC describes the current operational capabilities of a runway under meteorological conditions where no special operating procedures are necessary, as opposed to the RDC which is based upon planned development with no operational component. The APRC for a runway is established based upon the minimum runway-to-taxiway centerline separation.

Departure Reference Code (DPRC): A code signifying the current operational capabilities of a runway and associated parallel taxiway with regard to take-off operations. 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 operating conditions. The DPRC is similar to the APRC, but is composed of two components: ACC and ADG. A runway may have more than one DPRC depending on the parallel taxiway separation distance.

CRITICAL DESIGN AIRCRAFT

The selection of appropriate FAA design standards for the development and location of airport facilities is based primarily upon the characteristics of the aircraft which are currently using or are expected to use an airport. The critical design aircraft is used to define the design parameters for an airport. The design aircraft may be a single aircraft or a composite aircraft representing a collection of aircraft classified by the three parameters: AAC, ADG, and TDG. In the case of an airport with multiple runways, a design aircraft is selected for each runway.

The first consideration is the safe operation of aircraft likely to use an airport. Any operation of an aircraft that exceeds design criteria of an airport may result in either an unsafe operation or a lesser safety margin; however, it is not the usual practice to base the airport design on an aircraft that uses the airport infrequently.

The critical design aircraft is defined as the most demanding aircraft type, or grouping of aircraft with similar characteristics, that make regular use of the airport. Regular use is 500 annual operations, excluding touch-and-go operations. Planning for future aircraft use is of importance since the design standards are used to plan separation distances between facilities. These future standards must be considered now to ensure that short term development does not preclude the reasonable long-range potential needs of the airport. Therefore, if the critical design aircraft is anticipated to change within the next five years, that aircraft (or family of aircraft) should be used as the current critical design aircraft.

AIRPORT CRITICAL DESIGN AIRCRAFT

The FAA maintains the Traffic Flow Management System Count (TFMSC) database which documents aircraft operations at most NPIAS airports. Information is added to the TFMSC database when pilots file flight plans and/or when flights are detected by the National Airspace System, usually via radar. The database includes documentation of commercial traffic (air carrier and air taxi), general aviation, and military aircraft. Due to factors such as incomplete flight plans and limited radar coverage, TFMSC data does not account for all aircraft activity at an airport by a given aircraft type. Most VFR and some non-enroute IFR traffic is excluded. Therefore, it is likely that there are more operations at an airport than are captured by this methodology. TFMSC data that was available for activity at East Texas Regional Airport has been organized by Coffman Associates and attached in **Appendix C**. The data for the latest 12-month period was utilized for this analysis.

The Airport experiences activity by a full range of turbine aircraft, including some of the largest in the national fleet. In addition, the Airport has activity by commercial type aircraft in higher design categories. Activity by these larger commercial type aircraft has typically been associated with non-scheduled charter flights or flight diversions.

The TFMSC recorded 3,083 operations by turbine aircraft in ADG I, 4,809 in ADG II, and 138 in ADG III through V. The critical aircraft is the ERJ-145 (existing) and EMB-175 (future). The ERJ-145 is an ADG C-II aircraft and the EMB-175 is an ADG C-III aircraft.

Table 2T presents a forecast for turbine operations. As noted in the table, the Airport currently exceeds the operations threshold for those in ADG II. In the future, the Airport is anticipated to regularly exceed the 500 operations threshold for aircraft in ADG III, due to the transition of regional aircraft to ADG III within the short-term period. Therefore, the projected critical design aircraft for the Airport is best described as C-III-3.

TABLE 2T
Turbine Operations Forecast by Design Category
East Texas Regional Airport

	Existing Turbine Operations[1]		Forecast Turbine Operations			
Design Categories	**2017**	**Percent**	**Short Term**	**Inter. Term**	**Long Term**	**Percent**
Approach Category A/B	5,103	63%	6,070	7,200	9,900	60%
Approach Category C	2,211	28%	2,530	3,000	4,130	30%
Approach Category D[2]	716	9%	1,520	1,800	2,470	10%
Total	8,030	100%	10,120	12,000	16,500	100%
Airplane Design Group I	3,083	38%	3,040	3,600	4,950	30%
Airplane Design Group II	4,809	60%	6,070	7,200	9,900	60%
Airplane Design Group III/IV/V	138	2%	1,010	1,200	1,650	10%
Total	8,030	100%	10,120	12,000	16,500	100%

[1]Traffic Flow Management System Count (TFMSC) - FAA activity database.
[2]Military training.

Runway Design Code

Each runway is assigned an RDC. The RDC relates to specific FAA design standards that should be met in relation to each runway. The RDC takes into consideration the AAC, ADG, and the RVR. In most cases, the critical design aircraft will also be the RDC for the primary runway.

Runway 13-31 RDC

Runway 13-31 is the longer of the two runways and is designed to accommodate the critical design aircraft. This runway is 10,000 feet long and 150 feet wide. This runway has a CAT-I instrument approach providing for visibility minimums as low as ½-mile. Therefore, the RDC for Runway 13-31 is C-III-2400.

Runway 18-36 RDC

Runway 18-36 is the secondary runway at the Airport and is used by most of the aircraft based on the west side of the airfield. The approach procedures to the runway provide RNAV GPS (LPV) instrument approaches with visibility minimums of 7/8-mile and cloud ceiling minimums of 300 feet on Runway 18. Therefore, the current and future RDC for Runway 18-36 is C-II-4000.

Critical Aircraft Summary

Several classification systems combine to form the nomenclature which identifies the various airport design standards. As noted previously, the AAC is represented by the letters A-E and it relates to the aircraft approach speed. The ADG is represented by the Roman numerals I-VI and it represents the aircraft wing span or tail height, whichever is more restrictive. The TDG is represented by a number 1-7 and it relates to certain taxiway design standards. The RVR is a representation of the lowest instrument approach visibility minimum at an airport and it is represented by an approximate measurement in feet.

The overall airport reference code for the Airport is C-II, which is best represented by the commercial jets and based business jets. Annual operations (excluding touch-and-go training operations) exceed the threshold for critical aircraft determination.

The approach and departure reference codes describe the operational capabilities of a runway and adjacent taxiways where no special operating procedures are necessary. Because runway-to-taxiway separation standards are a direct function of the critical design aircraft and the instrument approach visibility minimums, the APRC and DPRC represent the most restrictive RDC that could be implemented based on these criteria. The taxiways (or portions thereof) parallel to both runways are at a minimum of 400 feet from the runway centerlines. Therefore, the APRC is C-IV-2400 for Runway 13-31 and C-IV-4000 for Runway 18-36. The DPRC is C-IV for both runways. For the Airport, this means that aircraft in ARC C-IV can operate at the same time on the runway and the taxiway based on existing taxiway separation. Other factors could limit this activity, such as runway length and pavement strength; however, the APRC and DPRC do not consider these variables. The future APRC and DPRC may change if the runway to parallel taxiway separation distance is planned to change.

SUMMARY

This chapter has outlined the various activity levels by demand indicators that might reasonably be anticipated over the planning period. Based aircraft are forecast to increase from 105 in 2017 to 120 in 2037, for an average annual growth rate of less than one percent. The number of turbine aircraft in the fleet mix is anticipated to double over the planning period. Total annual operations are forecast to remain relatively flat, growing from 49,551 in 2017 to 50,460 in 2037.

Enplanements are important because current federal law provides an annual entitlement grant amount of $1 million when airports enplane more than 10,000 passengers in a calendar year. Currently, passenger enplanements at the Airport are averaging 20,000 annual enplanements, with limited growth anticipated through the planning period.

Many factors, including reliability of service, potential subsidies to the airline(s), flight schedule, destinations, competition from other transportation modes (highways), the community economic base, and the higher propensity for a traveler to drive to a more distant airport, among others, all impact enplanement potential.

The current and future critical design aircraft will remain the commercial jets and business jets with similar characteristics falling in ADG C-III-3. Therefore, the runway design code for Runway 13-31 is C-III-2400. The RDC for Runway 18-36 is C-II-4000.

The next step in the planning process is to assess the capabilities of the existing facilities to determine what upgrades may be necessary to meet future demands. The range of forecasts developed here will be taken forward in the next chapter as planning horizon activity levels that will serve as milestones or activity benchmarks in evaluating facility requirements.

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

Federal Aviation Administration
Southwest Region, Airports Division
Texas Airports District Office

FAA-ASW-650
10101 Hillwood Pkwy
Fort Worth, Texas 76177

March 13, 2018

Roy Miller
Airport Director
269 Terminal Circle
Longview, TX 75603

East Texas Regional Airport (GGG)
Aviation Forecast Approval

Mr. Miller:

The Federal Aviation Administration (FAA), Texas Airports District Office has reviewed the aviation forecast for the East Texas Regional Airport (GGG) airport master plan draft, February 2018. The FAA approves these forecasts for airport planning purposes, including Airport Layout Plan (ALP) development. The FAA approval is based on the following:

1. The difference between the FAA Terminal Area Forecast (TAF) and East Texas Regional Airport's forecast for total enplanements, based aircraft, and operations is within the 10 percent and 15 percent allowance for the 5 and 10 year planning horizons.
2. The forecast is based on current data and appropriate methodologies

Based on the approved forecast, the FAA also approves the Embraer ERJ-145 (AAC-C, ADG-II) for the existing critical aircraft and and the Embraer EMB-175 (AAC-C, ADG-III) for the future critical aircraft.

The approval of the forecast and critical aircraft does not automatically constitute a commitment on the part of the United States to participate in any development recommended in the master plan or shown on the ALP. All future development will need to be justified by current activity levels at the time of proposed implementation. Further, the approved forecasts may be subject to additional analysis or the FAA may request a sensitivity analysis if the data is to be used for environmental or Part 150 noise planning purposes.

If you have any questions about this forecast approval, please call me at (817) 222-5663.

Sincerely,

Anthony Mekhail
Program Manager, Texas Airports District Office

Enclosure: TAF Summary Report for East Texas Regional Airport (GGG)

East Texas Regional Airport Master Plan Update
Comparing Airport Planning and TAF Forecasts

	Year	Airport Forecast	2017 TAF	AF/TAF (% Difference)
Passenger Enplanements				
Base yr.	2017	19,297	21,262	-9.2%
Base yr. + 5yrs.	2022	21,400	21,783	-1.8%
Base yr. + 10yrs.	2027	22,700	22,317	1.7%
Base yr. + 15yrs.	2037	26,000	23,428	11.0%
Commercial Operations				
Base yr.	2017	8,514	8,477	0.4%
Base yr. + 5yrs.	2022	6,230	8,686	-28.3%
Base yr. + 10yrs.	2027	6,400	8,902	-28.1%
Base yr. + 15yrs.	2037	7,060	9,353	-24.5%
Total Operations				
Base yr.	2017	49,551	48,306	2.6%
Base yr. + 5yrs.	2022	47,830	49,602	-3.6%
Base yr. + 10yrs.	2027	48,600	50,703	-4.1%
Base yr. + 15yrs.	2037	50,460	53,010	-4.8%

Chapter Three

Facility Requirements

EAST TEXAS REGIONAL AIRPORT

CHAPTER THREE

Facility Requirements

The objective of this section is to identify, in general terms, the adequacy of the existing airport facilities and outline what facilities may be needed to accommodate future demands. Having established these facility needs, alternatives for providing these facilities will be evaluated in the following chapter.

Recognizing that facility needs are based upon demand (rather than a point in time), the requirements may be expressed in short, intermediate, and long range planning horizons which correlate generally to 2022, 2027, and 2037 projections as developed in the previous chapter. This chapter will examine several components of the airport and their respective capacities to determine future facility needs over the planning period. The identified deficiencies will then be examined in the alternatives evaluation.

AIRFIELD CAPACITY

An airport's airfield capacity is expressed in terms of its annual service volume (ASV) and is a reasonable estimate of the maximum number of operations that can be accommodated in a year. ASV accounts for annual differences in runway use, aircraft mix, and weather conditions. The airport's annual service volume was examined utilizing FAA Advisory Circular (AC) 150/5060-5, *Airport Capacity and Delay*.

FACTORS AFFECTING ANNUAL SERVICE VOLUME

Many factors are included in the calculation of an airport's annual service volume. These include airfield characteristics, meteorological conditions, aircraft mix, and demand characteristics (aircraft operations). These factors are described in the following paragraphs.

Airfield Characteristics

The layout of the runways and taxiways directly affects an airfield's capacity. This not only includes the location and orientation of the runways, but the percentage of time that a runway or combination of runways is in use. Additional airfield characteristics include the length, width, load bearing strength, and instrument approach capability of each runway at the airport, all of which determine the type of aircraft that may operate on the runway and if operations can occur during poor weather conditions.

- **Runway Configuration**

The existing runway configuration at East Texas Regional Airport consists of primary Runway 13-31 and intersecting Runway 18-36. A precision instrument approach is available to Runway 13. Airfield capacity is reduced during low visibility (instrument) conditions.

- **Runway Use**

Runway use is normally dictated by wind conditions. The direction of takeoffs and landings is generally determined by the speed and direction of wind. It is generally safest for aircraft to depart and land into the wind, avoiding a crosswind or tailwind components during these operations. Prevailing winds favor the use of Runway 18-36 in all-weather conditions and Runway 13-31 in low visibility conditions.

- **Exit Taxiways**

Exit taxiways have a significant impact on airfield capacity since the number and location of exits directly determines the occupancy time of an aircraft on the runway. The airfield capacity analysis gives credit to exits located within a prescribed range from a runway's threshold. This range is based upon the mix index of the aircraft that use the runway. The exits must be at least 750 feet apart to count as separate exits. Under these criteria, Runway 13-31 receives the best exit rating, while Runway 18-36 receives a lower rating.

- **Meteorological Conditions**

Weather conditions have a significant effect on airfield capacity. Airfield capacity is usually highest in clear weather, when flight visibility is at its best. Airfield capacity is diminished as weather conditions deteriorate and cloud ceilings and visibility are reduced. As weather conditions deteriorate, the spacing of aircraft must increase to provide allowable margins of safety. The increased distance between aircraft reduces the number of aircraft which can operate at the airport during any given period. Consequently, this reduces overall airfield capacity.

There are three categories of meteorological conditions, each defined by the reported cloud ceiling and flight visibility. Visual Flight Rule (VFR) conditions exist whenever the cloud ceiling is greater than 1,000 feet above ground level and visibility is greater than three statute miles. VFR flight conditions permit pilots to approach, land, or take-off by visual reference, and to see and avoid other aircraft.

Instrument Flight Rule (IFR) conditions exist when the reported cloud ceiling is less than 1,000 feet above ground level and/or visibility is less than three statute miles. Under IFR conditions, pilots must rely on instruments for navigation and guidance to the runway. Safe separations between aircraft must be assured by following air traffic control rules and procedures. This leads to increased distances between aircraft, which diminishes airfield capacity.

Poor Visibility Conditions (PVC) exist when cloud ceilings are less than 500 feet above ground level and visibility is less than one mile.

According to wind data collected for the 10-year period beginning in January 2007 and extending through December 2016, VFR conditions at East Texas Regional Airport exist 85.70 percent of the time, IFR conditions 8.52 percent of the time, and PVC conditions 5.78 percent of the time. The two-runway orientation provides 99.03 percent coverage in all-weather conditions and 98.59 percent coverage in IFR conditions at 10.5 knot crosswind conditions.

- **Aircraft Mix**

Aircraft mix refers to the speed, size, and flight characteristics of aircraft operating at the airport. As the mix of aircraft operating at an airport increases to include larger aircraft, airfield capacity begins to diminish. This is due to larger separation distances that must be maintained between aircraft of different speeds and sizes.

Aircraft mix for the capacity analysis is defined in terms of four aircraft classes. Classes A and B consist of single and multi-engine aircraft weighing less than 12,500 pounds. Aircraft within these classifications are primarily associated with general aviation operations, but this classification also includes some air taxi aircraft. Class C consists of multi-engine aircraft weighing between 12,500 pounds and 300,000 pounds. This is a broad classification that includes business jets, turboprops, military aircraft, and large commercial airline aircraft. Class D includes all aircraft over 300,000 pounds and includes all wide-bodied jumbo jets. The TFMSC data for 2016 was used to estimate the percentage of operations in each classification.

For the capacity analysis, the percentage of Class C and D aircraft operating at the airport is critical in determining the annual service volume, as these classes include the larger and faster aircraft in the operational mix. The existing and projected operational fleet mix for East Texas Regional Airport is summarized in **Table 3A**. Consistent with projections prepared in the previous chapter, the operational fleet mix at the airport is expected to increase its percentage of Class C aircraft as business and corporate use of general aviation aircraft increases at the airport. The percentage of Class C aircraft is higher during IFR conditions, as some general aviation operations are suspended during poor weather conditions.

TABLE 3A
Aircraft Operational Mix
East Texas Regional Airport

Weather	Year	A & B	C	D
VFR (Visual)	Existing	95%	5%	<0.1%
	Short Term	95%	5%	0.0%
	Intermediate Term	94%	6%	0.0%
	Long Term	93%	7%	0.0%
IFR (Instrument)	Existing	12%	88%	<0.1%
	Short Term	11%	89%	0.0%
	Intermediate Term	10%	90%	0.0%
	Long Term	10%	90%	0.0%

Demand Characteristics

Operations, not only the total number of annual operations, but the way they are conducted, have an important effect on airfield capacity. Peak operational periods, touch-and-go operations, and the percent of arrivals impact the number of annual operations that can be conducted at the airport.

- **Peak Period Operations**

For the airfield capacity analysis, average daily operations during the peak month is calculated based upon data recorded by the airport traffic control tower. These peak operational levels were previously calculated for existing and forecast levels of operations. Typical operational activity is important in the calculation of an airport's annual service level, as "peak demand" levels occur sporadically. The peak periods used in the capacity analysis are representative of normal operational activity and can be exceeded at various times through the year.

- **Touch-and-Go Operations**

A touch-and-go operation involves an aircraft making a landing and an immediate takeoff without coming to a full stop or exiting the runway. These operations are normally associated with general aviation training operations and are included in local operations data recorded by the airport traffic control tower.

Touch-and-go activity is counted as two operations, as there is an arrival and a departure involved. A high percentage of touch-and-go traffic normally results in a higher operational capacity because one landing and one take-off occurs within a shorter time than individual operations. Due to the number of training operations at the airport, touch-and-go operations were assumed to account for 50 percent of annual operations throughout the forecast period.

- **Percent Arrivals**

Under most circumstances, the lower the percentage of arrivals, the higher the hourly capacity. Except in unique circumstances, the aircraft arrival-departure split is typically 50-50. Traffic information at East Texas Regional Airport indicated no major deviations from this pattern.

CALCULATION OF ANNUAL SERVICE VOLUME

The preceding information was used in conjunction with the airfield capacity methodology developed by the FAA to determine airfield capacity for East Texas Regional Airport.

Hourly Runway Capacity

The first step in determining ASV involves the computation of the hourly capacity of each runway configuration in use. The percentage of use of each runway configuration in VFR and IFR weather, the amount of touch-and-go training activity, and the number and locations of runway exits become important factors in determining the hourly capacity of each runway configuration.

As the mix of aircraft operating at an airport changes to include an increasing percentage of Class C and D aircraft, the hourly capacity of the runway system is also reduced. This is because larger aircraft require longer utilization of the runway for takeoffs and landings, and because the greater approach speeds of the aircraft require increased separation. There was no significant variation in this analysis, and the weighted hourly capacity remains constant.

Annual Service Volume

Once the weighted hourly capacity is known, the annual service volume can be determined. ASV is calculated by the following equation:

Annual Service Volume = C x D x H
C = Weighted hourly capacity
D = Ratio of annual demand to average daily demand during the peak month
H = Ratio of average daily demand to peak hour demand during the peak month

ASV has been calculated assuming the existing runway configuration can be used by all the aircraft using (and expected to use) the airport. Following this formula, the current annual service volume for East Texas Regional Airport has been estimated at 107,000 operations.

Delay

As the number of aircraft operations approaches the airfield's capacity, increasing amounts of delay to aircraft operations begin to occur to arriving and departing aircraft in all weather conditions. Arriving aircraft delays result in aircraft holding outside of the airport traffic area, while departing aircraft delays result in aircraft holing at the runway end until they can safely takeoff.

Currently, total annual delay at the airport is estimated at 264 hours (0.3 minutes per aircraft). If no capacity improvements are made, annual delay can be expected to reach 602 hours (0.6 minutes per aircraft) by the long-term planning horizon. Delays five to ten times average could be experienced by individual aircraft.

Conclusion

Table 3B provides a comparison of the annual service volume at existing and forecast operational levels for the existing configuration. The 2016 level of operations uses 49 percent of the annual service volume. In 20 years, the percentage is projected to reach 62 percent of the ASV.

TABLE 3B
Annual Service Volume Summary
East Texas Regional Airport

	Annual Operations	Weighted Hourly Capacity	Annual Service Volume	Percent Capacity
EXISTING CONFIGURATION				
Existing (2016)	52,892	67	107,000	50%
Short Term (2022)	57,880	67	97,000	52%
Intermediate Term (2027)	57,980	68	96,000	53%
Long Term (2037)	60,240	68	97,000	55%

FAA Order 5090.3B, *Field Formulation of the National Plan of Integrated Airport Systems* (NPIAS), indicates that improvements for airfield capacity should be considered when operations reach 75 percent of the annual service volume.

RUNWAY LENGTH REQUIREMENTS

Runway length requirements have been developed using the FAA's computer program for determining runway length. This program groups general aviation aircraft by category and by anticipated stage length needs.

Local site-specific data for elevation, temperature, and runway gradient are used in the calculations. **Table 3C** summarizes the FAA's generalized recommended runway lengths for East Texas Regional Airport.

TABLE 3C
Runway Length Requirements
East Texas Regional Airport

AIRPORT AND RUNWAY DATA	
Airport elevation	365 feet
Mean daily maximum temperature of the hottest month	94.0° F
Maximum difference in runway centerline elevation	15 feet
Length of haul for airplanes of more than 60,000 pounds	1000 miles
RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN	
Small airplanes with less than 10 passenger seats	
95 percent of these small airplanes	3,300 feet
100 percent of these small airplanes	3,900 feet
Small airplanes having greater than 10 passenger seats	4,300 feet
Large airplanes of 60,000 pounds or less	
75 percent of large airplanes at 60 percent useful load	4,900 feet
75 percent of large airplanes at 90 percent useful load	7,200 feet
100 percent of large airplanes at 60 percent useful load	5,900 feet
100 percent of large airplanes at 90 percent useful load	9,200 feet

Reference: FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*.

As shown in the table, local conditions call for a runway length of 3,300-3,900 feet to accommodate small airplanes. The FAA recommends a minimum runway length of 4,900 feet for large airplanes, with lengths as great as 9,200 feet when covering 100 percent of the fleet at 90 percent useful load. The previous master plan had considered as much as a 1,200-foot extension (to 7,309 feet) on Runway 18-36. Any runway extension will require adequate justification based upon aircraft type and frequency. Therefore, additional analysis was undertaken for specific aircraft types operating at GGG.

Based upon data available from the FAA, there were an estimated 8,228 operations (takeoffs and landings) by turbine aircraft at East Texas Regional Airport between September 2016 and August 2017. The required take-off and landing lengths for maximum load and range (adjusted for temperature and elevation) for many of the turbine aircraft utilizing the airport are presented in **Table 3D**. The takeoff distance requirements reflect maximum gross weight for the aircraft. For situations when the runway length requirement exceeds the available runway length at the given design temperature, aircraft operators may be required to reduce payload.

TABLE 3D
Runway Length Requirements – Individual Aircraft Performance

Aircraft Type	Required Take-off Length (feet)	Required Landing Length (feet)
Canadair Regional Jet 200	6,800	6,800
Canadair Regional Jet 700	7,000	5,100
Canadair Regional Jet 900	7,200	7,300
Cessna Citation CJ2*	4,200	4,200
Cessna Citation V*	4,500	4,000
Cessna Citation X	6,400	4,800
Dassault Falcon 2000	6,600	3,700
American Eagle Embraer 140/145*	8,200	6,300
Embraer 170/175	7,000	5,900
Embraer 190/195	7,900	5,800
Gulfstream G-IV*	6,800	4,600
Hawker 400XP	4,800	4,100
Hawker 800XP	6,300	3,300
Learjet 60	6,800	4,800
Learjet 70*	6,900	4,900

Source: Aircraft Manufacturers. Elevation: 365 ft. MSL, 94.0ºF, Wet Runway, Maximum Load and Range.
*Based

Based upon the FAA's design software and the individual aircraft performance data, Runway 13-31 meets the requirements for all aircraft types currently operating (or projected) at the airport. However, Runway 18-36 is limited for several aircraft types at full load and range.

RUNWAY WIDTH

The width of each of the existing runways was also examined to determine the need for facility improvements. Currently, both runways at East Texas Regional Airport are 150 feet wide. This width is adequate for the current and projected future aircraft mix. Therefore, no additional runway width is required to serve aircraft expected to operate at the airport through the planning period.

RUNWAY PAVEMENT STRENGTH

The most important feature of airfield pavement is its ability to withstand repeated use by aircraft of significant weight. The current strength ratings are sufficient for the fleet of aircraft currently serving and expected to serve the airport in the future.

It should be noted that the pavement strength rating is not the maximum weight limit. Aircraft weighing more than the certified strength can operate on the runway on an infrequent basis. However, heavy aircraft operations can shorten the lifespan of airport pavements.

RUNWAY LINE OF SIGHT AND GRADIENT

FAA has instituted various line of sight requirements to facilitate coordination among aircraft and between aircraft and vehicles that are operating on active runways. This allows departing and arriving aircraft to verify the location and actions of other aircraft and vehicles on the ground that could create a conflict.

Line of sight standards for an individual runway are based on whether there is a parallel taxiway available. If a parallel taxiway is available (as it is on both runways), thus facilitating faster runway exit times, then any point five feet above the runway centerline must be mutually visible, with any other point five feet above the runway centerline that is located at a distance of less than half the length of the runway. If a parallel taxiway is not available, then these points must be mutually visible over the length of the entire runway.

Both runways meet the line of sight standard.

The runway gradient is the maximum allowable slope for a runway. For Runway 13-31, the standard is no more than 1.5 percent. The runway slopes upward from the southeast end to the northwest end at a grade of 0.02 percent.

The maximum allowable gradient for Runway 18-36 is also 1.5 percent. The runway slopes upward from the north end to the south end. The gradient is 0.18 percent.

Both runways meet the gradient standard, which should be maintained.

TAXIWAY DESIGN STANDARDS

The design standards associated with taxiways are determined by the taxiway design group (TDG) and the airplane design group (ADG) of the critical design aircraft that would potentially use that taxiway. **Table 3E** presents the taxiway design standards to be applied at the Airport.

TABLE 3E Taxiway Design Standards		
STANDARDS BASED ON WINGSPAN (ADG)	**ADG II**	**ADG III**
Taxiway Protection		
Taxiway Safety Area (TSA) width	79’	118'
Taxiway Object Free Area (TOFA) width	131’	186'
Taxilane Object Free Area width	115’	162'
Taxiway Separation		
Taxiway Centerline to:		
Parallel Taxiway/Taxilane	105’	152'
Fixed or Movable Object	65.5’	93'
Taxilane Centerline to:		
Parallel Taxilane	97’	140'
Fixed or Movable Object	57.5’	81'
Wingtip Clearance		
Taxiway Wingtip Clearance	26’	34'
Taxilane Wingtip Clearance	18’	22'
STANDARDS BASED ON TDG	**TDG 2**	**TDG 3**
Taxiway Width Standard	35’	50'
Taxiway Edge Safety Margin	7.5’	10'
Taxiway Shoulder Width	15’	20'

ADG: Airplane Design Group
TDG: Taxiway Design Group
Source: FAA AC 150/5300-13A, Airport Design

Taxiway Width Standards

The design aircraft for the Airport and for primary Runway 13-31 falls in classification D-III-3; therefore, the taxiways that may potentially support aircraft within TDG-3 should be at least 50 feet wide.

Any potential changes to the width of existing taxiways will be considered in the Alternatives chapter. Any new taxiways should be planned at standard widths.

Other Taxiway Design Considerations

FAA AC 150/5300-13A, *Airport Design*, provides guidance on taxiway design that has a goal of enhancing safety by providing a taxiway geometry that reduces the potential for runway incursions. A runway incursion is defined as, “any occurrence at an airport involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and takeoff of aircraft.”

The following is a list of the taxiway design guidelines and the basic rationale behind each recommendation:

1. **Taxi Method**: Taxiways are designed for "cockpit over centerline" taxiing, with pavement being sufficiently wide to allow a certain amount of wander. On turns, sufficient pavement should be provided to maintain the edge safety margin from the landing gear. When constructing new taxiways, upgrading existing intersections should be undertaken to eliminate judgmental over-steering, which is when the pilot must intentionally steer the cockpit outside the marked center-line to assure the aircraft remains on the taxiway pavement.

2. **Steering Angle**: Taxiways should be designed such that the nose gear steering angle is no more than 50 degrees, the generally accepted value to prevent excessive tire scrubbing.

3. **Three-Node Concept**: To maintain pilot situational awareness, taxiway intersections should provide a pilot a maximum of three choices of travel. Ideally, these are right and left angle turns and a continuation straight ahead.

4. **Intersection Angles**: Design turns to be 90 degrees wherever possible. For acute angle intersections, standard angles of 30, 45, 60, 120, 135, and 150 degrees are preferred.

5. **Runway Incursions**: Design taxiways to reduce the probability of runway incursions.
   - *Increase Pilot Situational Awareness*: A pilot who knows where he/she is on the airport is less likely to enter a runway improperly. Complexity leads to confusion. Keep taxiway systems simple using the "three node" concept.
   - *Avoid Wide Expanses of Pavement*: Wide pavements require placement of signs far from a pilot's eye. This is especially critical at runway entrance points. Where a wide expanse of pavement is necessary, avoid direct access to a runway.
   - *Limit Runway Crossings*: The taxiway layout can reduce the opportunity for human error. The benefits are twofold – through simple reduction in the number of occurrences, and through a reduction in air traffic controller workload.
   - *Avoid "High Energy" Intersections*: These are intersections in the middle third of runways. By limiting runway crossings to the first and last thirds of the runway, the portion of the runway where a pilot can least maneuver to avoid a collision is kept clear.
   - *Increase Visibility*: Right angle intersections, both between taxiways and runways, provide the best visibility. Acute angle runway exits provide for greater efficiency in runway usage, but should not be used as runway entrances or crossing points. A right angle turn at the end of a parallel taxiway is a clear indication of approaching a runway.
   - *Avoid "Dual Purpose" Pavements*: Runways used as taxiways and taxiways used as runways can lead to confusion. A runway should always be clearly identified as a runway and only a runway.
   - *Indirect Access*: Do not design taxiways to lead directly from an apron to a runway. Such configurations can lead to confusion when a pilot typically expects to encounter a parallel taxiway.
   - *Hot Spots*: Confusing intersections near runways are more likely to contribute to runway incursions. These intersections must be redesigned when the associated runway is subject to reconstruction or rehabilitation. Other hot spots should be corrected as soon as practicable.

6. **Runway/Taxiway Intersections**:
   - *Right Angle*: Right angle intersections are the standard for all runway/taxiway intersections, except where there is a need for a high-speed exit. Right angle taxiways provide the best visual perspective to a pilot approaching an intersection with the runway to observe aircraft in both the left and right directions. They also provide optimal orientation of the runway holding position signs so they are visible to pilots.
   - *Acute Angle*: Acute angles should not be larger than 45 degrees from the runway centerline. A 30-degree taxiway layout should be reserved for high-speed exits. The use of multiple intersecting taxiways with acute angles creates pilot confusion and improper positioning of taxiway signage.
   - *Large Expanses of Pavement*: Taxiways must never coincide with the intersection of two runways. Taxiway configurations with multiple taxiway and runway intersections in a single area create large expanses of pavement, making it difficult to provide proper signage, marking, and lighting.

7. **Taxiway/Runway/Apron Incursion Prevention**: Apron locations that allow direct access into a runway should be avoided. Increase pilot situational awareness by designing taxiways in such a manner that forces pilots to consciously make turns. Taxiways originating from aprons and forming a straight line across runways at mid-span should be avoided.
   - *Wide Throat Taxiways*: Wide throat taxiway entrances should be avoided. Such large expanses of pavement may cause pilot confusion and makes lighting and marking more difficult.
   - *Direct Access from Apron to a Runway*: Avoid taxiway connectors that cross over a parallel taxiway and directly onto a runway. Consider a staggered taxiway layout that forces pilots to make a conscious decision to turn.
   - *Apron to Parallel Taxiway End*: Avoid direct connection from an apron to a parallel taxiway at the end of a runway.

FAA AC 150/5300-13A, *Airport Design,* states that, "existing taxiway geometry should be improved whenever feasible, with emphasis on designated hot spots. To the extent practicable, the removal of existing pavement may be necessary to correct confusing layouts."

The Alternatives chapter will examine possible taxiway geometry changes that would improve pilot situational awareness and reduce potential pilot confusion. Any changes will consider the reasonableness of each alternative in terms of cost and benefit.

Taxilane Design Considerations

Taxilanes are distinguished from taxiways in that they do not provide access to or from the runway system directly. Taxilanes typically provide access to hangar areas. As a result, taxilanes can be constructed to varying design standards depending on the type of aircraft utilizing the taxilane. For example, a taxilane leading to a T-hangar area only needs to be designed to accommodate those aircraft typically accessing a T-hangar.

The taxilanes at the Airport are those pavements between hangars. Any future taxilanes will be considered in the Alternatives chapter and will be planned to the appropriate design standard.

INSTRUMENT NAVIGATIONAL AIDS AND APPROACH LIGHTING

Instrumentation for runways is important when weather conditions are less than visual (greater than three-mile visibility and 1,000-foot cloud ceilings). Published instrument approaches are available to all four runways.

The Airport has a precision Instrument Landing System (ILS) (CAT-I) instrument approach to Runway 13. This approach provides for visibility minimums as low as ½-mile and cloud ceilings down to 200 feet. The combination of a glide slope antenna, localizer antenna, and approach lighting system form the ILS. The ILS provides near all-weather capability for the Airport.

The area navigation (RNAV) approaches to all runways are providing visibility minimums as low as ¾-mile and 300-foot cloud ceilings (refer to Table 1G for details on published approaches).

Approach lighting systems provide the basic means to transition from instrument flight to visual flight for landing. Runway 13 is equipped with a medium intensity approach lighting system with runway alignment indicator lights (MALSR).

To provide pilots with visual guidance information during landings to the runway, electronic visual approach aids are commonly provided at airports. Currently, Runways 31, 18, and 36 are equipped with four-light precision approach path indicators (PAPI-4).

AIRFIELD MARKING, LIGHTING AND SIGNAGE

Runway markings are designed according to the type of instrument approach available on the runway. Each of the two runways have precision instrument markings. Runway 13-31 is equipped with high intensity edge lighting, while Runway 18-36 is equipped with medium intensity edge lighting.

TERMINAL BUILDING AND AUTO PARKING REQUIREMENTS

The existing terminal building at East Texas Regional Airport is a two-story building, originally constructed in 1947 and renovated in 1988 and recently updated. While the gross building area is approximately 20,000 square feet, the functional areas on the first floor which are used for passenger processing functions are only two-thirds of the total area (with additional area on the second floor used for administration offices). Gross estimates of future terminal building needs in the functional areas can be useful in providing a general overview of the existing facility's adequacy in meeting demand.

The requirements for the various terminal complex functional areas were examined with the guidance of FAA Advisory Circular 150/5360-13, *Planning and Design Guidelines for Airport Terminal Facilities*. **Table 3F** summarizes the terminal area space needs for the projected enplanement levels. Only functional areas on the first floor are reflected in this analysis. As reflected in the table, future terminal area needs only increase modestly through the planning period based upon the selected enplanements planning forecast. The only short term needs involve bag make-up area and bag claim lobby to accommodate a transition to a larger regional jet. Other functional areas in the terminal may need modest expansion in the long term, subject to security area and general circulation needs (although a reconfiguration of existing space may be adequate to meet future needs).

Aircraft gate positions are adequate through the plan period when consideration is given to the anticipated fleet aircraft. In addition to the parking positions in front of the terminal, additional hard stand positions are available to overnighting (RON) aircraft on the ramp.

Future auto parking requirements have been estimated based upon growth in passenger enplanements and are not expected to create any significant demands. However, land area is available adjacent to the existing parking lot for expansion (if required). The available curb frontage will also meet the requirements of peak passenger traffic.

TABLE 3F
Terminal Building and Parking Requirements
East Texas Regional Airport

		Projected Short Term/Long Term Requirements	
Functional Area (s.f.)	**Existing Facility**	**Short Term**	**Long Term**
Ticket Lobby/Counter Area	1,700	1,700	1,700
Airline Operations/Bag Make-up	1,000	1,200	1,500
Holdroom Area	2,900	2,900	2,900
Bag Claim Lobby	1,200	1,400	1,500
Vending/Concessions (1st Floor)	200	200	300
Restrooms (1st Floor)	1,300	1,300	1,300
Rental Car Office/Queue Area	300	300	600
Security Stations/Queuing Area	2,700	2,700	2,700
General Public Circulation Area	1,800	2,000	2,500
Total Terminal Functional Areas	**13,100**	**13,700**	**15,000**
Total Parking Spaces	**346**	**350**	**400**

Source: Terminal Building Plan and Aerial Photography.

AIRCRAFT STORAGE, MAINTENANCE, FUELING AND APRON REQUIREMENTS

The demand for aircraft storage hangar area is based upon the forecast number and mix of aircraft expected to be based at East Texas Regional Airport in the future. Over the past decade, 100,000 square feet of conventional hangar storage area has been added on the Airport. It has been assumed that most aircraft that are based at the Airport year-round prefer to be stored in either individual hangars or shared conventional hangars. Future requirements are calculated using 1,200 square feet per single engine piston aircraft, 3,000 square feet per multi-engine piston aircraft, and 5,000 square feet for each turbo-prop, jet and helicopter in the fleet mix. While the exact area of existing conventional hangars used in maintenance activities could not be verified, it has been estimated at 15 percent of the overall conventional area demand.

Future hangar requirements for the airport are summarized in **Table 3G**. As shown in the table, additional hangar area will be required throughout the planning period. The landside alternatives evaluation will examine the options available for hangar development at the airport and determine the best location for each type of hangar facility.

TABLE 3G
Hangar and Apron Requirements
East Texas Regional Airport

	Currently Available	Short Term Need	Intermediate Term Need	Long Term Need
Aircraft To Be Hangared	105	110	113	120
Single Engine Piston	51	47	41	26
Multi-Engine, Jet, Helicopter	54	63	72	94
Hangar Area Requirements (s.f.)				
T-Hangar Area	57,000	56,400	49,200	31,200
Executive/Conventional/FBO Area	288,000	294,000	344,000	459,000
Maintenance Area	50,000	54,000	62,000	80,000
Total Hangar Area (s.f.)	**395,000**	**404,400**	**455,200**	**570,200**

Parking aprons should provide for the locally based aircraft that are not stored in hangars, itinerant or transient aircraft, as well as for those aircraft used for air taxi and training activity. Each of the FBOs have tie-down positions available near their facilities to handle a mix of small and large aircraft, although the south ramp is limited by the movement area for Taxiway G. LeTourneau University has a separate tie-down apron that can handle approximately 20 aircraft, while Maxwell Aviation Services has a separate apron next to their facility. In total, the Airport has been estimated to have 30,000 square yards of paved tie-down ramp, with additional paved movement areas adjacent to hangars.

For planning purposes, 30 percent of the based aircraft total will be used to determine the parking apron requirements of local aircraft, due to some aircraft requiring both hangar storage and parking apron space. Since most of locally based aircraft are stored in hangars, the area requirement for parking of locally based aircraft is smaller than for transient aircraft. Therefore, a planning criterion of 650 square yards per aircraft was used to determine the apron requirements for local aircraft.

Transient aircraft parking needs must also be considered when determining apron requirements. A planning criterion of 800 square yards was used for single and multi-engine itinerant aircraft and 1,600 square yards for itinerant jets. Total aircraft parking apron requirements are presented in **Table 3H**. While the total number of tie-down positions is expected to be sufficient through the planning period, an increase in apron area is projected. This can be attributed to the fact that the current square footage per aircraft parking position is much lower than the planning standards used for the forecasts.

Consideration should be given to relocation/replacement of any existing underground fuel tanks. The current capacity should be increased (when consideration is given to replacement) if the Airport/FBO is unable to maintain an adequate 14-day reserve of AvGas or Jet A on the airfield.

All-weather perimeter roads on the airfield provide for the segregation of authorized vehicles from operational areas; therefore, during the alternatives evaluations, perimeter roads should be considered if proposed development impacts the alignment of existing perimeter roads.

TABLE 3H
General Aviation Aircraft Parking Apron Requirements
East Texas Regional Airport

	Currently Available	Short Term	Intermediate Term	Long Term
Single, Multi-Engine Transient Aircraft Positions	**N/A**	10	15	20
Apron Area (s.y.)	**30,000**	8,000	12,000	16,000
Transient Jet Aircraft Positions		6	8	10
Apron Area (s.y.)		10,000	13,000	16,000
Locally-Based Aircraft Positions		36	40	50
Apron Area (s.y.)		23,000	26,000	33,000
Total Positions		**52**	**63**	**80**
Total Apron Area (s.y.)		**41,000**	**51,000**	**65,000**

SUMMARY

This chapter has outlined facility requirements for East Texas Regional Airport for a 20-year planning period, as well as some of the planning criteria that will need to be examined in the following chapter for taxiway and taxilane locational placement.

At its current length of 10,000 feet, Runway 13-31 meets the needs of all commercial and business operators currently utilizing East Texas Regional Airport. In the future, some aircraft may require additional runway length to operate under desired load and range conditions on Runway 18-36. However, the need for an extension on Runway 18-36 will be aircraft-specific and require FAA-approved justification.

With recent remodeling of the terminal building, the Airport is well positioned to meet the needs of scheduled passenger traffic and charter activity. The aircraft parking ramp will meet the needs of the commercial carriers, and the auto parking lot has adequate capacity to meet growth in passenger demands, even with some market recapture.

Hangar requirements for locally based aircraft are projected to increase over the planning period and consideration will need to be given to the best locations for various users. Generally, smaller individual hangars are segregated from larger commercial hangars and areas are chosen to provide the greatest flexibility for expansion.

The following chapter will consider various airside and landside layouts.

Chapter Four

Airport Alternatives

EAST TEXAS REGIONAL AIRPORT

CHAPTER FOUR

Alternatives

In the previous chapter, airside and landside facilities required to satisfy the demand through the long range planning period were identified. The next step in the planning process is to evaluate reasonable ways these facilities can be provided. There can be numerous combinations of design alternatives, but the alternatives presented here are those with the perceived greatest potential for implementation.

Any development proposed for a Master Plan is evolved from an analysis of projected needs for a set period of time. Though the needs were determined by utilizing industry accepted statistical methodologies, unforeseen future events could impact the timing of the needs identified. The master planning process attempts to develop a viable concept for meeting the needs caused by projected demands for the next 20 years. However, no plan of action should be developed which may be inconsistent with the future goals and objectives of Gregg County, which has a vested interest in the development and operation of the Airport.

The development alternatives for East Texas Regional Airport can be categorized into two functional areas: the **airside** (runways, navigational aids, taxiways, etc.) and **landside** (hangars, apron, and terminal area). Within each of these areas, specific capabilities and facilities are required or desired. In addition, the utilization of airport property to provide revenue support for the airport and to benefit the economic development and well-being of the region must be considered.

Each functional area interrelates and affects the development potential of the others. Therefore, all areas are examined individually and then coordinated as a whole to ensure that the final plan is functional, efficient, and cost-effective. The total impact of all these factors on the existing Airport must be evaluated to determine if the investment in East Texas Regional Airport will meet the needs of the community, both during and beyond the 20-year planning period.

The alternatives considered are compared using environmental, economic, and aviation factors to determine which of the alternatives will best fulfill the local aviation needs. With this information, as well as input from various airport stakeholders, a final airport concept can evolve into a realistic development plan.

AIRPORT DEVELOPMENT OBJECTIVES

It is the goal of this effort to produce a balanced development plan to best serve forecast aviation demands. However, before defining and evaluating specific alternatives, airport development objectives should be considered. As owner and operator, Gregg County provides the overall guidance for the operation and development of the Airport. It is of primary concern that the Airport is marketed, developed, and operated for the betterment of the community and its users. With this in mind, the following development objectives have been defined for this planning effort:

- To determine the projected facility needs of airport users through the year 2037, by which to support airport development alternatives.
- To recommend improvements that will enhance the airport's safety capabilities to the maximum extent possible.
- To recommend improvements that will enhance airport capacity to the maximum extent.
- To produce current and accurate airport base maps and Airport Layout Plans (ALP).
- To establish a schedule of development priorities and a program for the improvements proposed in the Master Plan.
- To prioritize the airport capital improvement program and develop a detailed financial plan.
- To develop a robust and productive public involvement throughout the planning process.

REVIEW OF THE PREVIOUS AIRPORT MASTER PLAN

The last Master Plan was adopted by Gregg County in June 2007, and included data gathered and analyzed during 2006. **Table 4A** is a summary of the major findings addressed in the *2007 Airport Master Plan*.

TABLE 4A
Summary of Capital/Program Conclusions from 2007 Airport Master Plan
East Texas Regional Airport

Facility/Program	Conclusion
Runways	Replace runway lights and signage. Structural overlay of Runway 13-31 and shoulder improvements. Seal coat Runway 18-36/Upgrade approach to Runway 18. Extend Runway 18-36 (south) if justified by critical aircraft.
Taxiways	Reconstruct Taxiway M (partial). Reconstruct Taxiway G and realign Taxiway L. Construct partial parallel taxiway east of Runway 13-31. Rehabilitate Taxiway N. Construct hangar access taxiways.
Airfield Navigational Aids	Relocate navigational aids upon relocation of Runway 13 threshold. Install approach lighting for Runway 18 approach (if required).
Airfield Markings	Remark Runway 13-31 upon displacement of landing threshold.
Transient Aircraft Parking	Provide for expanded transient apron/rehabilitation as required.
Based Aircraft Apron/Tie-downs	Provide for expanded local apron as required.
Based Aircraft Hangars	Limited in-fill available on west side. Provide for east side expansion.
Aircraft Fueling	Reserve area for fuel farm expansion in current location.
Helicopter Facilities	Maintain existing parking positions on west side.
Maintenance Facilities	Reserve area for facility expansion near current facility.
ARFF Facilities	Program capital funds for replacement vehicles.
Landside Development	Short Term – Terminal building remodeling and parking lot redesign and expansion. Executive hangars, drainage improvements, perimeter road.
	Intermediate – Executive hangars, roadway and utility extensions, parking expansion, and equipment replacement.
	Long Term – Apron and roadway extensions, hangar expansion.
Airport Access	Access to be extended into new development areas.
Pavement Maintenance	Short Term – Rehabilitation of airport access roads and GA apron.
	Intermediate/Long Term – Rehabilitation of airfield pavements.
Land Acquisition/Easements	Land acquisition/easements identified for approach protection.

ARFF: Aircraft Rescue and Firefighting
GA: General aviation
Source: 2007 Airport Master Plan, Coffman Associates.

RUNWAYS

The *2007 Airport Master Plan* concluded that Runway 13-31 met the requirements of aircraft in the current operational fleet, although the establishment of proper safety area on the northwest end of the runway required an 800-foot landing displacement on Runway 13 and the publication of declared distances (i.e., usable runway available for landing and takeoff) for this runway. This was accomplished following the completion of the planning effort. The project involved relocation of landing aids and lighting and remarking of the runway.

It was recommended that the approach to Runway 18 be upgraded with the installation of an instrument approach landing system that would require the installation of an approach lighting system to obtain runway visibility minimums below ¾-mile. Since then, an area navigation (RNAV) approach has been published to Runway 18 providing visibility minimums below one-mile without the need for the installation of an approach lighting system. However, this has created the need to establish a larger runway protection zone in the approach to Runway 18 and the need to enlarge the current avigation easement area north of F.M. 349. This area will need to be identified on updated ALP drawings included in the capital program after this planning effort.

It was noted in the last planning effort that a small number of aircraft may experience payload and/or stage length limitations when operating on Runway 18-36. Therefore, it was concluded that long range planning should consider a potential length of 7,300 feet on Runway 18-36. The extension was proposed on the south end of the runway and would require additional land acquisition and aviation easement purchases. The conclusion reached in the previous chapter of this planning update is that this extension is no longer justified with the transition to more efficient takeoff performance business aircraft that base on the west side and use this runway. All commercial airline aircraft (identified as the critical aircraft on the airfield in previous chapters) operate on Runway 13-31.

TAXIWAYS

Several recommendations were made regarding the taxiway system at the Airport. A partial parallel taxiway was planned at a runway separation distance of 400 feet on the east side of Runway 13-31. This taxiway was shown to provide access to additional hangar development that was proposed in the industrial airpark property. While additional hangars have not been developed in the industrial airpark as of this date (March 2018), the LeTourneau University aviation program contributes considerable training activity on the airfield, and the addition of runway exits and a partial parallel taxiway would benefit air traffic efficiencies on the airfield. However, an extension of this taxiway west of Taxiway N (as originally proposed) will conflict with the current location of the glide slope antenna which was relocated when the landing threshold on Runway 13 was displaced. Furthermore, a runway crossing at Taxiway D would create a "high energy" runway crossing in the middle third of the runway, and this should be avoided to reduce the potential for runway incursions. A crossing at Taxiway E would fall outside of the "high energy" area.

Other taxiways were considered during the planning effort but were not included in the final master plan concept. The only other new construction (other than the need for new hangar access taxiways) was recommended between the thresholds of Runways 13 and 18, and the realignment of Taxiways A and L, which were realigned to provide right-angled entrances onto the runway. Each of these projects have been completed. Taxiway H was also removed at the intersection of the two runways to avoid potential runway incursions.

AIRFIELD NAVIGATIONAL AIDS

With relocation of the landing threshold on Runway 13, it was necessary to relocate the approach lighting system and the glide slope antenna. While other improvements were recommended for the other runway approaches to provide instrument capability, the only upgrades have been achieved through the publication of new area navigation approaches (as noted earlier). Runway and taxiway lighting was rehabilitated on the airfield over the past decade.

LANDSIDE DEVELOPMENT

The *2007 Airport Master Plan* considered some in-filling of conventional hangars on the west side, the development of a new hangar/apron area on the west side (south of the Martin hangar), small executive/T-hangar development on the east side of Runway 18-36, and hangar development in the industrial airpark area east of Runway 13-31. Most near-term development was assumed on the west side, and most long term hangar development was tied to development of new areas on the east side of the airfield. In conjunction with this potential development on the east side, new access roads were proposed to access the new development areas.

New airport perimeter roads were constructed on the west and east sides of the airfield and drainage improvements were completed as recommended in the plan.

Terminal remodeling/expansion with a redesigned public parking lot was also undertaken over the past decade, consistent with the plan recommendations. The remodeled and expanded terminal is projected to meet the passenger needs throughout the planning period and meet the needs of airline equipment transitions over time.

PAVEMENT MAINTENANCE

Rehabilitation of runway and taxiway pavements have been on-going since completion of the last plan and will need to continue with completion of this planning update. The rehabilitation work on the runways was completed a decade ago, and both runways are expected to require rehabilitation within the next few years. Therefore, the Airport will need to pursue a pavement maintenance management program following completion of the master plan update to outline specific timing of improvements.

NO ACTION/RELOCATION ALTERNATIVES

Gregg County is charged with managing the Airport for the economic betterment of the community and region. Previous strategic planning undertaken for the Airport has identified several strengths of the region, including: availability of labor force, interstate access, utility supply (water and low-cost electricity), and the quality of life in the Longview area. To pursue a "no action" alternative for the Airport effectively reduces the quality of services being provided to the general public and affects the region's ability to support commercial and general aviation needs. Past studies have also documented that the Airport provides substantial economic benefit to the region through on-airport economic activity, capital projects, employment and earnings, and air visitors.

The Airport also serves as a vital link in the overall national airport system, which is important for both economic development and national security. The "no action" alternative is also inconsistent with the long term goals of the Federal Aviation Administration (FAA) and the Texas Department of Transportation (TxDOT), which are to enhance local and interstate commerce. Therefore, an overall "no action" alternative is not considered further in this planning effort.

Likewise, this study will not consider the "relocation of services" to another airport or development of a "new airport site" as viable alternatives. The development of a new commercial service airport is a very complex and expensive option. A new site will require greater land area, duplication of investment in airport facilities, installation of supporting infrastructure that is already available at the existing site, and greater potential for negative impacts to natural, biological, and cultural resources.

AIRSIDE PLANNING ALTERNATIVES

Generally, airside issues relate to those elements that contribute to the safe and efficient transition of aircraft and passengers from air transportation to the landside facilities at the Airport. This includes the established design standard for the Airport and runways, the instrument approach capability, the capacity of the airfield, the length and strength of the runways, and the layout of the taxiways. Each of these elements was introduced in the previous chapters and is summarized as follows:

- The Airport's current critical design aircraft fall within the Airport Approach Category/Airplane Design Group (AAC/ADG) C-II category, represented by the commercial aircraft and business jets currently using the Airport. Future planning should not preclude the future capability of the Airport to accommodate ARC C-III. However, as presented in Chapter Two, the approach and departure reference codes (APRC and DPRC) describe the operational capabilities of the runways and adjacent taxiways where no special operating procedures are necessary. Therefore, the APRC and DPRC represent the most restrictive Runway Design Code (RDC) which can be implemented based upon instrument approach visibility minimums and runway-taxiway separations. The APRC is D-IV-2400 for Runway 13-31 and D-IV-4000 for Runway 18-36. The DPRC is D-IV for both runways.
- The 13-31/18-36 runway orientation provides 99.03 percent wind coverage in all-weather conditions and 98.59 percent coverage in IFR conditions. The annual operations on the airfield currently represent 50 percent of annual service volume (capacity), and safety would be enhanced with the addition of properly positioned runway exits at several locations.

- Every effort should be made to preserve the instrument landing system (and current visibility minimums) to Runway 13 while maintaining the improved area navigation (RNAV) approaches to other runways—without the need to install additional on-field navigational aids or approach lighting systems.
- All taxiway geometry should be improved whenever feasible, consistent with FAA Advisory Circular 150/5300-13A, *Airport Design*, September 28, 2012, as amended. Many of the taxiway design considerations (presented in Chapter Three) will enhance safety by providing taxiway geometry that reduces the potential for runway incursions.

Table 4B presents a summary of the primary airside and landside planning issues to be considered. Not all airside or landside elements will require a detailed alternatives analysis. The alternatives analysis is reserved for presenting viable solutions to specific problems. For those airside or landside elements where only one solution is reasonable or where no alternative is necessary, an explanatory narrative will be provided.

TABLE 4B
Airside and Landside Planning Considerations

- Placement of properly spaced exits on Runway 13-31 for aircraft exiting either side of the runway.
- Avoidance of crossing intersections in "high energy" sections of the runways.
- Protection of navigational aids and critical areas (e.g., ILS glide slope, remote transmitter and weather equipment) on the east side of Runway 13-31.
- Designation of west ramp as a non-movement area with the relocation of Taxiway G from the south end of Runway 18-36 to Taxiway B.
- Correct taxiway geometry consistent with FAA Advisory Circular 150/5300-13A, *Airport Design*, September 28, 2012, as amended (e.g., intersections, crossings, and apron access) to avoid potential for runway incursions.
- Align hangar access taxiways to allow potential aviation development based upon future hangar/tenant requirements maintaining cost efficiency and flexibility.
- Maintain control tower line-of-sight to all movement areas and primary airfield development areas.
- Identify all areas available for non-aviation related revenue support.
- Preserve areas for airport maintenance, fueling, terminal parking and ARFF.

RUNWAY 13-31 CONSIDERATIONS

Runway 13-31 meets the needs of all commercial and business aircraft currently using the Airport and projected to use the facility through the planning period. Runway exits are evenly spaced along the west side but are limited on the east side to Taxiways N, M, and A. When aircraft land on Runway 31 they must roll out 6,600 feet before exiting at Taxiway N when needing to access the LeTourneau University ramp, or exit (as traffic landing on Runway 31 must also do) along the west side at Taxiways E, D, or C and cross over to the east side on Taxiway N. The east side has been planned for additional hangar development in the past and will continue to be shown for development in this planning effort (discussion provided in subsequent section of this chapter). Therefore, additional exits and a partial parallel taxiway would benefit traffic on Runway 13-31 which must access the east side.

Since the FAA recommends that "high energy" intersections be avoided in the middle third of the runway, direct crossings should be avoided at Taxiways C and D. Taxiways N and E fall outside of the "high energy" section; therefore, a crossing can be created at Taxiway E with an intermediate exit midway between Taxiways E and N.

However, development along the east side of Runway 13-31 will be limited until infrastructure is extended into the area. The *2007 Airport Master Plan* concept reflected aviation-related development along the east side of the runway throughout the airport industrial airpark, with nearly full build-out of the parcel. A portion of this area is currently used for navigational aids and weather equipment. Clear zones surrounding some of the navigational aids preclude co-locating aviation-related facilities in the same area. The most efficient areas for aviation-related development (using existing taxiways) will be adjacent to Taxiway K and east of Taxiway N, with roadway access from F.M. 349 or Jerry Lucy Road. Remaining areas within the airport industrial airpark can be assigned to activities not requiring taxiway access.

The layout presented in **Exhibit 4A** reflects the current/planned runway protection zones (RPZs) for Runway 13-31, glide slope critical areas associated with the current instrument approach on Runway 13 and building setback requirements (based upon a 35-foot tall structure). The RPZ is defined by the FAA to provide an area clear of obstructions and incompatible land uses to enhance the protection of people and property on the ground. The RPZs differ for approach and departure operations and for the landing displacement on Runway 13. The approach RPZ is further defined by the published visibility minimums to the runway (reference **Table 1G** for current approach data). It should be noted that while most of the RPZ areas fall within existing airport property, a few areas on each end of Runway 13-31 are located outside of existing property and should be protected with an avigation easement (as noted on **Exhibit 4A**). While the FAA recommends that all land within the RPZ be under airport ownership, avigation easements (in lieu of fee simple title) are considered sufficient to ensure control of designated airspace within the RPZ.

Also noted on **Exhibit 4A** is the runway visibility zone (RVZ) which is defined by the two intersecting runways. Any point five feet above runway centerline and in the RVZ must be mutually visible with any other point five feet above the centerline (and inside the RVZ) of the crossing runway. The shape of the RVZ is defined by the FAA in Advisory Circular 150/5300-13A, *Airport Design*, September 28, 2012, as amended. The only object noted inside the RVZ is the Maxwell Aviation Services hangar, which is below runway centerline elevation. However, if it is found that any portion of the building obstructs the line-of-sight based upon the preceding criteria, it will be noted on the Airport Layout Plan drawings (a final product of this study).

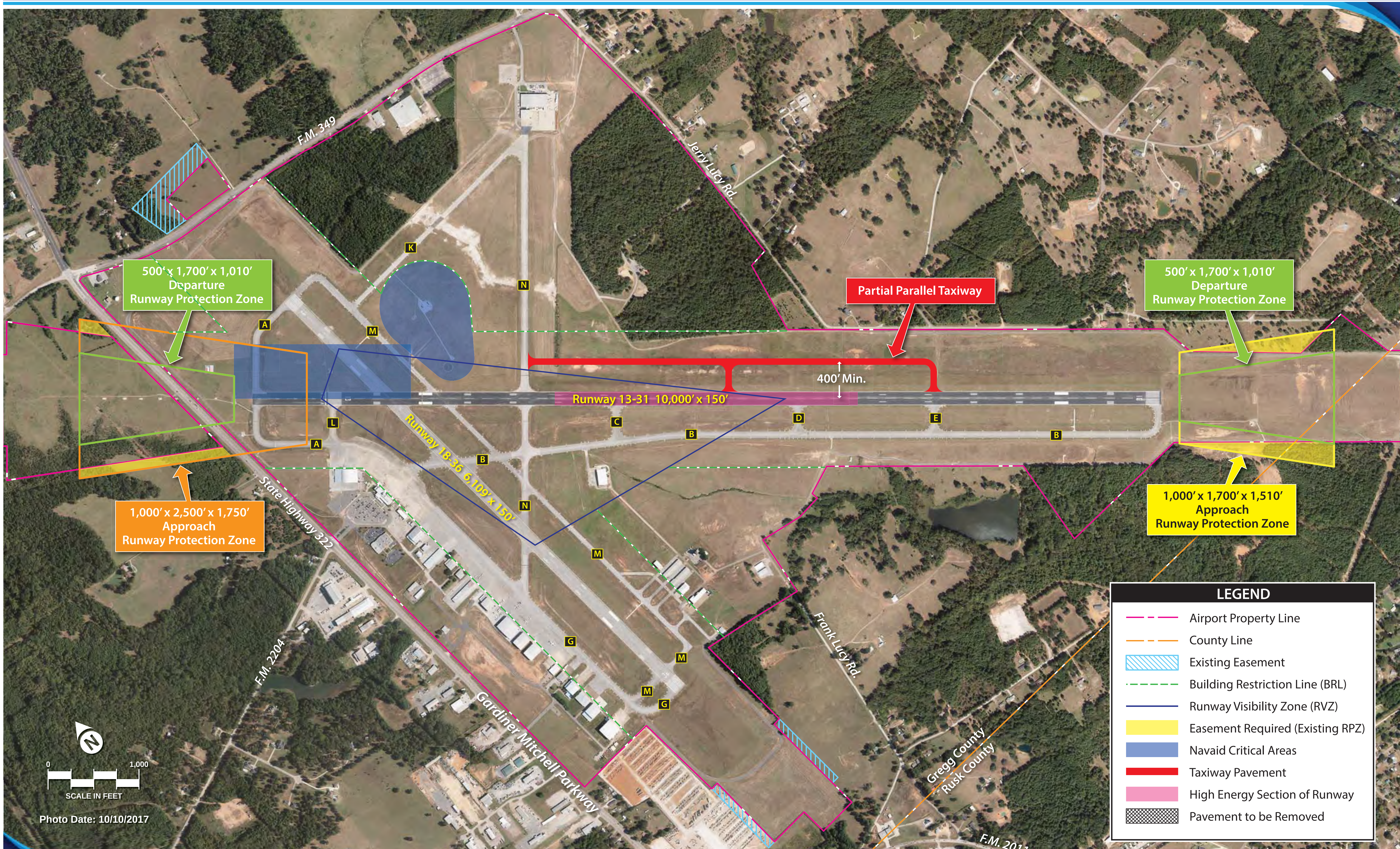


Exhibit 4A
RUNWAY 13-31 CONSIDERATIONS

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Line-of-sight from the control tower to Taxiway B (towards the southeast end of the runway) has frequently been obscured in the past by trees (outside of the existing airport property) due to the limited elevation of the tower and the tower's distance from the centerline of the runway. Tree topping will remain a high priority to the southeast end of the runway, and building heights along Taxiway M may be limited to maintain line-of-sight.

RUNWAY 18-36 CONSIDERATIONS

Runway 18-36 meets the needs of all business aircraft based at the Airport and itinerant aircraft doing business in the area. As noted in the previous chapter, any further extension of this runway will need to be justified by critical aircraft stage length requirements and with the approval of the FAA. Therefore, it has been assumed in the alternatives analysis that, through the planning period, the runway will remain at its existing length.

However, since the runway now has published instrument approaches (which it did not have when the *2007 Airport Master Plan* was undertaken), consideration needs to be given to the impact of lowering the visibility minimums on aircraft approaches even further. Current FAA rules require a primary surface width of 500 feet when visibility minimums are greater than or equal to ¾-mile (the lowest minimums on Runway 18 are currently ⅞-mile). If visibility minimums are reduced below ¾-mile, then the primary surface width increases to 1,000 feet. This in turn affects the set-back requirements of taxiways and aircraft parking areas.

During the inventory of existing conditions (Chapter One), it was noted that a portion of Taxiway G (from the south end of the runway to where it intersects with Taxiway N) was a movement area (marked as such and controlled from the tower), with the remainder becoming an apron edge taxiway or non-movement area. The set-back from the movement area portion of the taxiway creates severe restrictions on aircraft movements and parking areas on the ramp. Since the existing separation of the taxiway/taxilane from the runway is 500 feet, it is possible to consider a relocation of the parallel taxiway to a point only 300-400 feet from the runway centerline. The two options have been reflected on **Exhibit 4B**.

The first option considers a continuation of current instrument conditions and published minimums (as low as ¾-mile). The RPZs at each end reflect both approach and departure conditions. On the south end, the approach and departure RPZs are the same size. However, on the north end, the approach RPZ is larger than the departure RPZ. The entirety of the RPZ on the south end is protected by current airport property or easement. On the north end, while the entire departure RPZ is protected, only a portion of the approach RPZ is fully protected with current airport property or easement. Furthermore, if Taxiway G is relocated from the ramp edge, FAA design standards specify it can be relocated to as close as 300 feet from runway centerline (as shown on **Exhibit 4B**).

The second option considers a potential lowering of the published minimums on Runway 18 to below ¾-mile. This enlarges the RPZ for approaches on Runway 18 and requires a minimum separation of the parallel Taxiway G to 400 feet. This would provide 100 feet of separation from the parallel taxilane, which is five feet less than the current design standard for ADG II and may necessitate the remarking of the taxilane centerline. The recommended distance from the taxilane centerline to a fixed object is 57.5 feet. This in turn would net an additional 30-35 feet of usable ramp and allow for the entire ramp to become a non-movement area. Since the RPZ on the Runway 18 approach is bisected by a public road (F.M. 349), a more detailed FAA evaluation would be required to consider alternatives for removing a non-compatible situation if the visibility minimums were to be lowered below ¾-mile.

Taxiway Considerations

In addition to the parallel taxiways discussed previously, there remain several other taxiway considerations based upon current FAA design recommendations. These include limiting runway crossings in the middle third or "high energy" sections of the runways, limiting access directly from an apron onto a runway, and avoidance of confusing taxiway intersections near runways. Several hotspots were identified in the *2007 Airport Master Plan* and subsequently corrected. However, changes in FAA design standards in the past decade have recommended that additional consideration be given to a number of these situations, which can increase the chances of runway incursions on the airfield. The following have been noted:

- Taxiway B provides direct access from Runway 18-36 onto the commercial ramp and crosses Runway 18-36 in the "high energy" section of the runway. While relocation of Taxiway B to totally avoid a "high energy" crossing is not possible, its entrance onto the commercial ramp can be minimized if Taxiway B is realigned with Taxiway A at a separation from the Runway 13-31 centerline of 500 feet. This will require the realignment of a 3,000-foot section of the taxiway (from Taxiway L to Taxiway C). This alternative was initially examined in the *2007 Airport Master Plan* but was not retained in the final concept. It was introduced as an improvement that would alleviate potentially confusing intersections at Taxiway M with Taxiway B and the confluence of Taxiways B, N, and M. It has not been retained in this evaluation, since it does not remove the taxiway from the "high energy" section of Runway 18-36 or eliminate the connection between the commercial ramp and the runway.

- Taxiway N provides direct access from Runway 18-36 onto the west ramp and crosses Runway 18-36 in the "high energy" section of the runway. To avoid the potential for a runway incursion, direct runway access from the ramp can be avoided with the construction of Taxiway G in an alignment that is segregated from the ramp. Entrances to the ramp from the parallel taxiway can be placed to avoid direct access to the runway as noted on **Exhibit 4B**.

- Taxiways B, N and M intersect near midfield and were identified in the *2007 Airport Master Plan* as a confusing intersection. While relocation of Taxiway B (as discussed previously) provides an option, it is also possible to abandon a segment of Taxiway N between Taxiway B and Runway 18-36. This will eliminate the "high energy" crossing of Runway 18-36. However, it will also

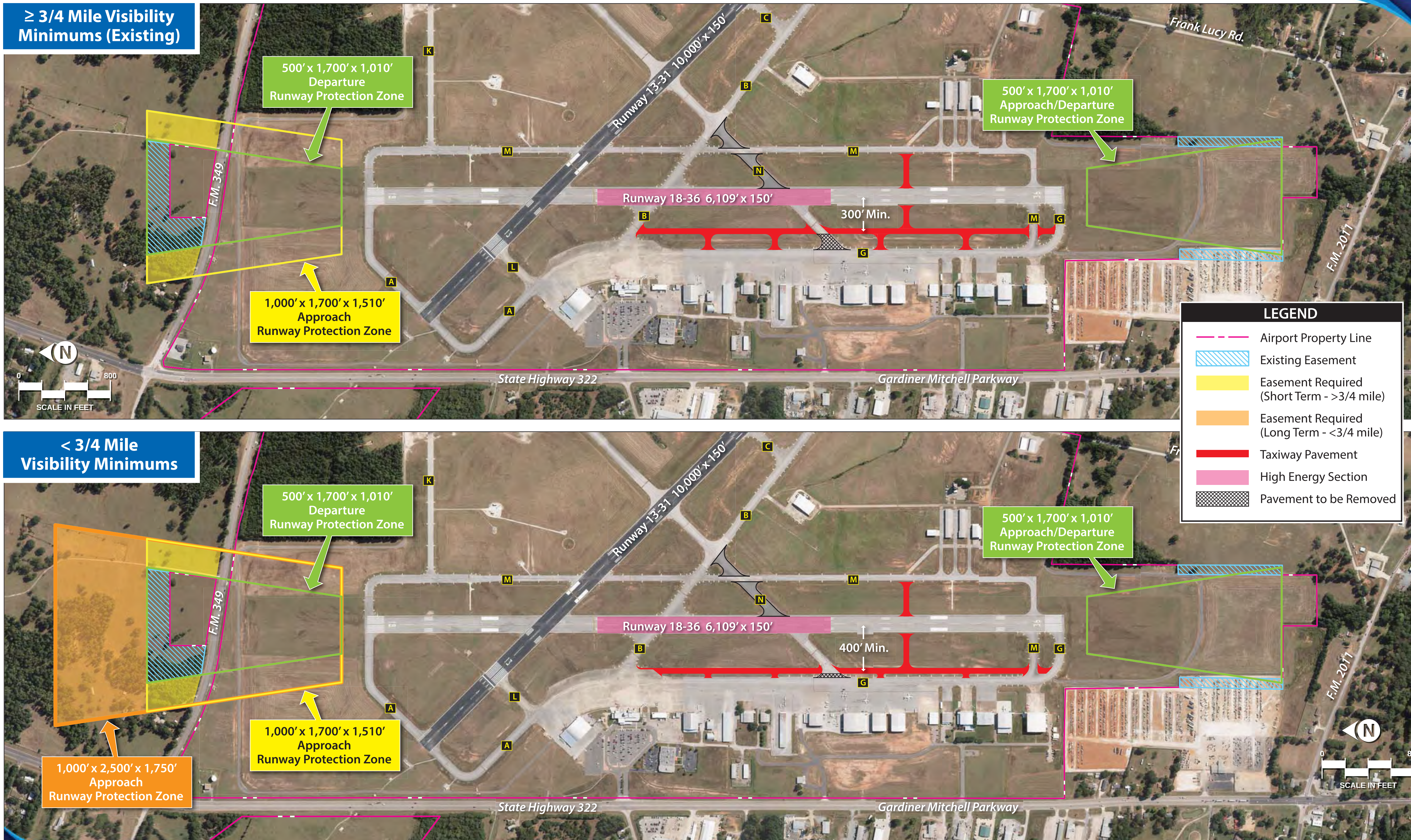

Exhibit 4B
RUNWAY 18-36 CONSIDERATIONS

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extend taxi times for aircraft attempting to access the west ramp from Taxiway B. A potential option is to provide a runway crossing farther south on Runway 18-36, outside of the "high energy" section, as noted on **Exhibit 4B**.

Instrument Navigational Aids

As identified in the previous chapter, the ILS approach on Runway 13 and the MALSR approach lighting system will need to be retained for all-weather capabilities when visibility minimums are below ¾-mile. Improvements in the global positioning system (GPS) approaches to each of the other runways followed the *2007 Airport Master Plan*, with the Runway 18 and 31 RNP/LPV approaches receiving lower than 1-mile visibility minimums. These instrument landing improvements did not require approach lighting or added equipment on the airfield. The potential lowering of minimums below ¾-mile on Runway 18 was presented as an alternative on **Exhibit 4B**. The impact is two-fold: 1) the size of the RPZ increases from 49 to 79 acres, and 2) glide slope, localizer, and a MALSR lighting system (similar to the existing system on Runway 13) is required.

All-Weather Perimeter Service Roads

Vehicle service roads are significant at 14 CFR Part 139 commercial service airports. As noted in Chapter One (Table 1B), the Airport constructed perimeter service roads within the past five years to provide improved access on the airfield. However, based upon the final development concept in this planning effort, new roads (or realigned perimeter roads) may be required. Such roads provide access to critical operational areas for airport staff, security, and aircraft rescue and firefighting teams. Vehicle service roads also provide a means for unimpeded access to potential accident areas on the airfield, while reducing the possibility of a runway incursion. On a daily basis, airport staff is required to perform inspections of the Airport, and service roads provide the necessary access to accomplish this task.

There are several FAA documents providing guidelines defining the function and location of perimeter service roads.

FAA AC 150/5210-20, *Ground Vehicle Operations on Airports*, defines vehicle service roads as "a designated roadway for vehicles in a non-movement area." Paragraph 7 of the AC states: "Airport operators should keep vehicular and pedestrian activity on the airside of the airport to a minimum…Vehicles should use service roads or public roads in lieu of crossing movement areas whenever possible."

FAA AC 150/5300-13A, *Airport Design*, states in Paragraph 318(a), "It is recommended that the entire [Runway Safety Area] RSA and RPZ be accessible to rescue and firefighting vehicles such that no part of the RSA or RPZ is more than 330 feet (100 m) from either an all-weather road or a paved operational surface."

FAA Order 5190.6B, *FAA Airport Compliance Manual*, states in Appendix R, Paragraph VII (I) (1) that an airport should "Look for opportunities to enhance safety, such as reducing runway crossings (ex., adding perimeter service roads, etc.)"

FAA Order 5280.5C, *Airport Certification Program Handbook*, Paragraph 421, Section 139.329(a)(1) states that a Part 139 certificate holder is responsible for "Limiting access to movement areas and safety areas to only those pedestrian and ground vehicles necessary for airport operations. Unless required to support a specific operational requirement on the airport, vehicles and equipment should use perimeter access [service] roads whenever possible" (FAA 2006).

FAA Order 5100.38D, *Airport Improvement Handbook*, Table P-3 provides several functions for airport service roads, including (FAA 2014):

- ARFF access to a runway or RSA;
- Airport operations and maintenance;
- Separation of ground vehicles and aircraft;
- Airport security;
- Incidental access to FAA-owned facilities; and
- Temporary construction access.

FAA Order 6940.1, *Access Roads to FAA Facilities*, Paragraph 3, states, in part, that, "At no time shall an access road be constructed parallel to a runway closer than 200-feet edge to edge and 100-feet edge to edge when parallel to a taxiway…."

The specific location of all-weather perimeter service roads parallel to the runway system will be dependent upon the final recommended concept. The perimeter service roads should be planned to meet the FAA specifications to the greatest degree feasible.

The "No Action" Option

To "no action" option keeps the Airport in its existing condition, without improvement to existing airside facilities, at a time when operations and the number of active aircraft based at the airport are continuing to increase. The forecasting effort in Chapter Two verified that the airport's level of based aircraft has increased by 25 percent in the past decade, with the number of turbine-powered aircraft doubling. This indicates a desire by operators to base at this facility. It is also creating the demand for additional hangar construction, which is reflected in the 100,000 square feet of new conventional hangars constructed over the past decade. The "no action" option fails to meet the needs of commercial and general aviation operators on the airfield. Since the *2007 Airport Master Plan* was completed and adopted by Gregg County, the Airport has received over $38 million in grants to expand and improve terminal facilities, rehabilitate the runways, improve airfield drainage, construct perimeter roads, acquire a new ARFF vehicle, rehabilitate taxiways and lighting, and enhance airport security. A "no action" option would ignore the needs of existing and future aircraft operators and would not meet federally mandated standards for operations and maintenance.

LANDSIDE PLANNING ALTERNATIVES

Hangar Expansion - West

The first area identified for additional hangar development is on the west side, immediately west of the existing KRS hangars and north of Corporate Road. A taxiway from the main ramp will provide access into the area, which can handle a mix of small, medium, and large corporate hangars. Dovel Road will need to be crossed; therefore, gated access will be required for through traffic. However, it is possible to design a layout which will allow vehicular access to all hangars without the need to cross the access taxiway. A series of alternatives have been developed for this area.

The first alternative has been presented in **Exhibit 4C**. The area has been designed to ADG II design standards, which specify the taxilane widths (35 feet) and object free areas (115 feet in width) shown on the exhibit. The largest hangar (22,500 square feet) has been identified by the Airport for possible short-term occupancy by KRS. This hangar has the potential to be built with greater depth, but the width of the hangar will be limited by the current location of the KRS hangars and Dovel Road. Other hangars have been located on the exhibit for layout and evaluation purposes. It should be noted that the object free area (OFA) as shown prohibits aircraft from parking in front of the hangar—once out of the hangar, the aircraft would need to proceed onto the taxilane.

Except for the 22,500-square foot hangar, the remaining hangars are 5,600-7,500 square feet in size, with minimal building separation to maximize the available size of the parcel. A limited amount of vehicular parking space is provided with each hangar. An access road is provided parallel to Gardiner Mitchell Parkway, and connecting Corporate Road with Skyway Road. This road will serve all hangars on the very west side of the parcel, while Dovel Road will serve the interior parcels. A larger hangar/office structure is shown at the corner of Dovel Road and Corporate Road, with added vehicular parking. Total hangar space in this alternative is 106,500-127,500 square feet.

The second alternative is presented in **Exhibit 4D** and depicts a series of 15,000-square foot hangars (in addition to the 22,500-square foot hangar closest to KRS). Each of the hangars are spaced 100-feet apart and provide vehicular parking between the hangars. All of the 15,000-square foot hangars will have vehicular access from the public road connecting Skyway Road with Corporate Road. One hangar at the south end will have access from Corporate Road. Only the 22,500-square foot hangar will have vehicular access from Dovel Road. The total hangar space in this alternative is 97,500 square feet. All hangars will have the added capability of parking aircraft on the ramp in front of each hangar without penetrating the taxilane object free area (TOFA).

The third alternative has been presented in **Exhibit 4E**. While this alternative depicts a series of 15,000-square foot hangars, it includes an area on the south end of the parcel for an aviation-related development (without taxiway access) at the corner of Corporate Road and Dovel Road. The total hangar space in the alternative is the same as the second alternative, but the spacing between hangars has been reduced to 75 feet, limiting the amount of vehicular parking between hangars. As with the other two alternatives, an access road has been provided between Skyway Road and Corporate Road to serve the hangars that back up to Gardiner Mitchell Parkway.

Hangar Expansion – East

The existing hangar development on the east side of the airfield is accessed from Taxiway M and located immediately west of the control tower. Since the tower must maintain line-of-sight to the airfield movement areas along Taxiway M, the height of hangars in this area has been limited (but a clear line-of-sight from the control has been maintained). The building line that has been established for hangars in this area has been set at 750 feet from the centerline of Runway 18-36, which would be necessary to clear a transitional surface on a 7:1 slope if the building height was 35 feet above the elevation of the runway and the instrument approach to either end of the runway had visibility minimums below ¾-mile. If the instrument approach is as low as ¾-mile (but not below), then the critical clearance surfaces move 250 feet closer to the runway. The primary surface edges, building restrictions, and apron/tie-down opportunities have been noted on **Exhibit 4F**. Additional area is available north of the existing hangar structures but will be limited by dropping terrain in the area. It is noted that additional hangars may also be in-filled around existing structures. Approximately 200 feet is potentially available for parking apron and tie-downs in front of the current building line.

Hangar Expansion – Northeast (Industrial Airpark Area)

Several areas on the northeast side provide excellent opportunities for additional hangar development, as noted on **Exhibit 4G**. The first area is fronted by Taxiway K, with the existing service road providing access from F.M. 349. The potential hangar development area provides a linear arrangement with hangar depth of 100 feet, with variable door widths depending on hangar size. Auto parking can be provided between the hangars. Since the Annual Great Texas Balloon Race stages activities along Taxiway K each year, it would be preferable to stage hangar development from the west end, proceeding easterly. The area provides the capacity for an estimated 100,000 square feet of hangar space, with supporting vehicular parking areas.

The second area is immediately south of LeTourneau University and can support a fixed base operation (FBO) or other large hangar development. It is anticipated that this development area should be fronted by a large apron to support locally based and itinerant aircraft. Since a significant airfield drainage/detention basin is located closer to the intersection of Taxiway N and Runway 13-31, the development should remain closer to the LeTourneau University complex with access potential from Jerry Lucy Road.

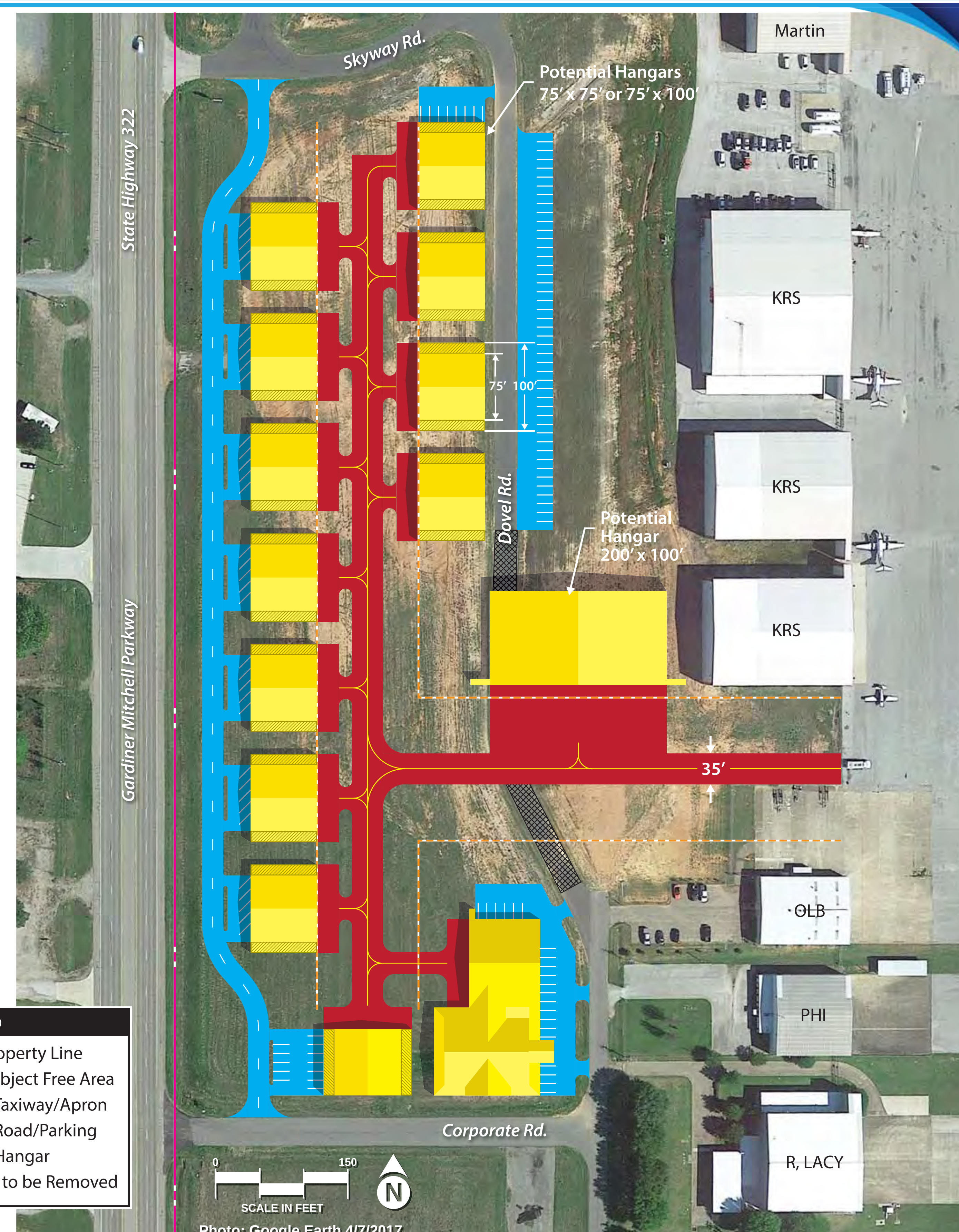

Exhibit 4C
LANDSIDE ALTERNATIVE 1

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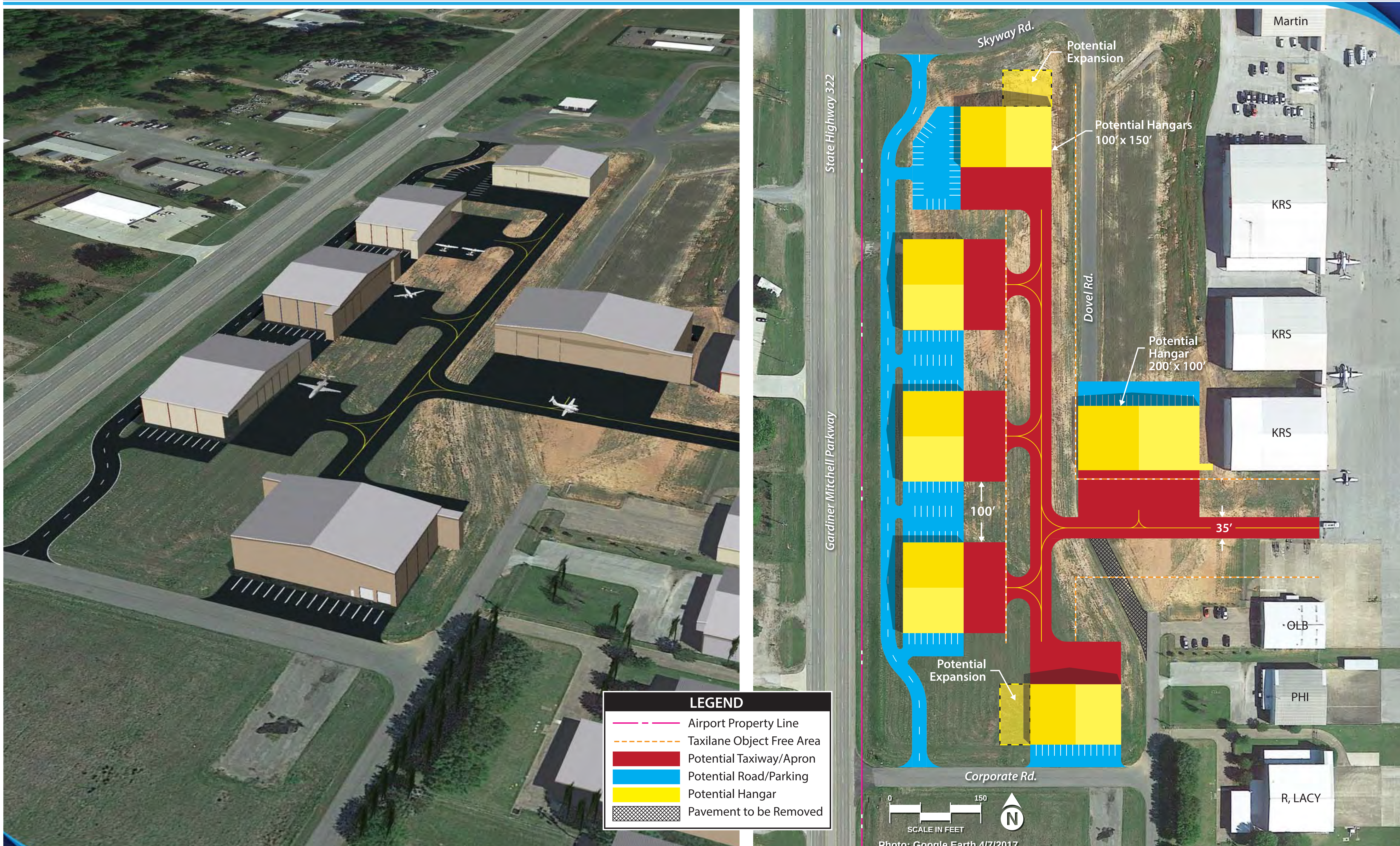
Skyway Rd.
Potential Expansion
Potential Hangars 100' x 150'
State Highway 322
Gardiner Mitchell Parkway
Dovel Rd.
Martin
KRS
KRS
KRS
Potential Hangar 200' x 100'
100'
35'
OLB
PHI
R, LACY
Potential Expansion
Corporate Rd.
0
150
SCALE IN FEET
N
Photo: Google Earth 4/7/2017
LEGEND
Airport Property Line
Taxilane Object Free Area
Potential Taxiway/Apron
Potential Road/Parking
Potential Hangar
Pavement to be Removed

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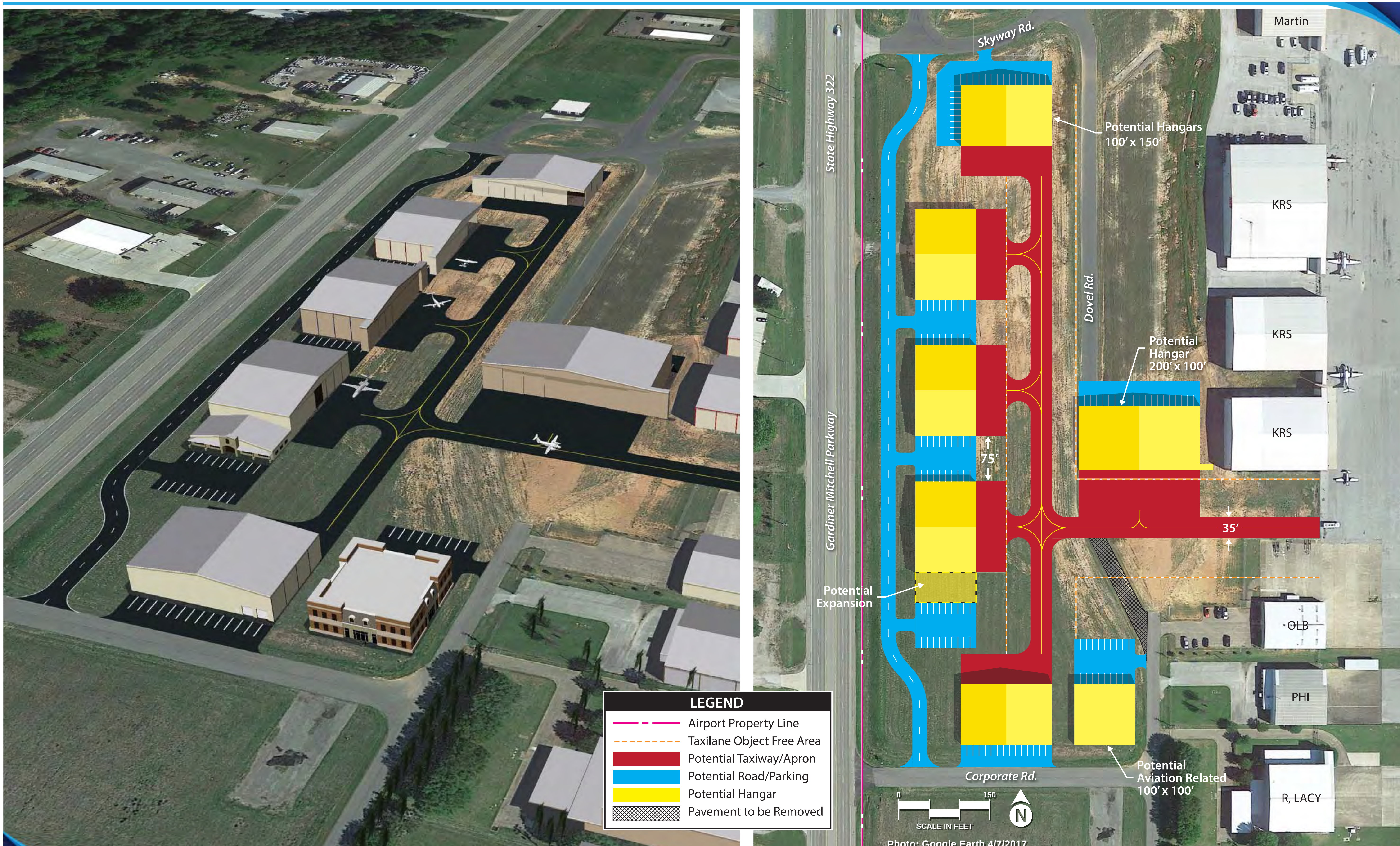

Exhibit 4E
LANDSIDE ALTERNATIVE 3

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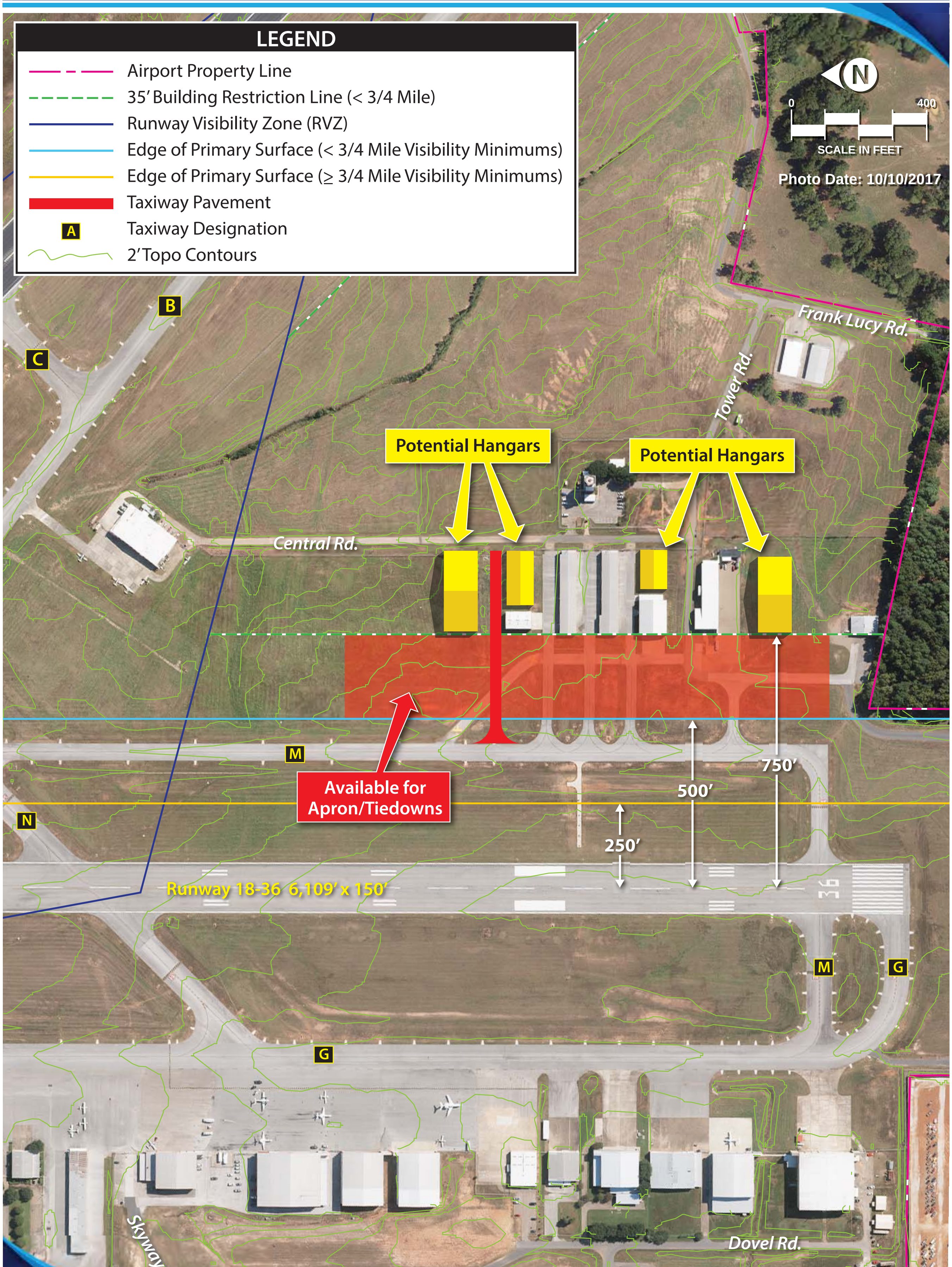

LEGEND
Airport Property Line
35' Building Restriction Line (< 3/4 Mile)
Runway Visibility Zone (RVZ)
Edge of Primary Surface (< 3/4 Mile Visibility Minimums)
Edge of Primary Surface (≥ 3/4 Mile Visibility Minimums)
Taxiway Pavement
A Taxiway Designation
2' Topo Contours
N
0
400
SCALE IN FEET
Photo Date: 10/10/2017
B
C
Frank Lucy Rd.
Tower Rd.
Potential Hangars
Potential Hangars
Central Rd.
M
Available for Apron/Tiedowns
750'
500'
250'
N
Runway 18-36 6,109' x 150'
M
G
G
Skyway
Dovel Rd.

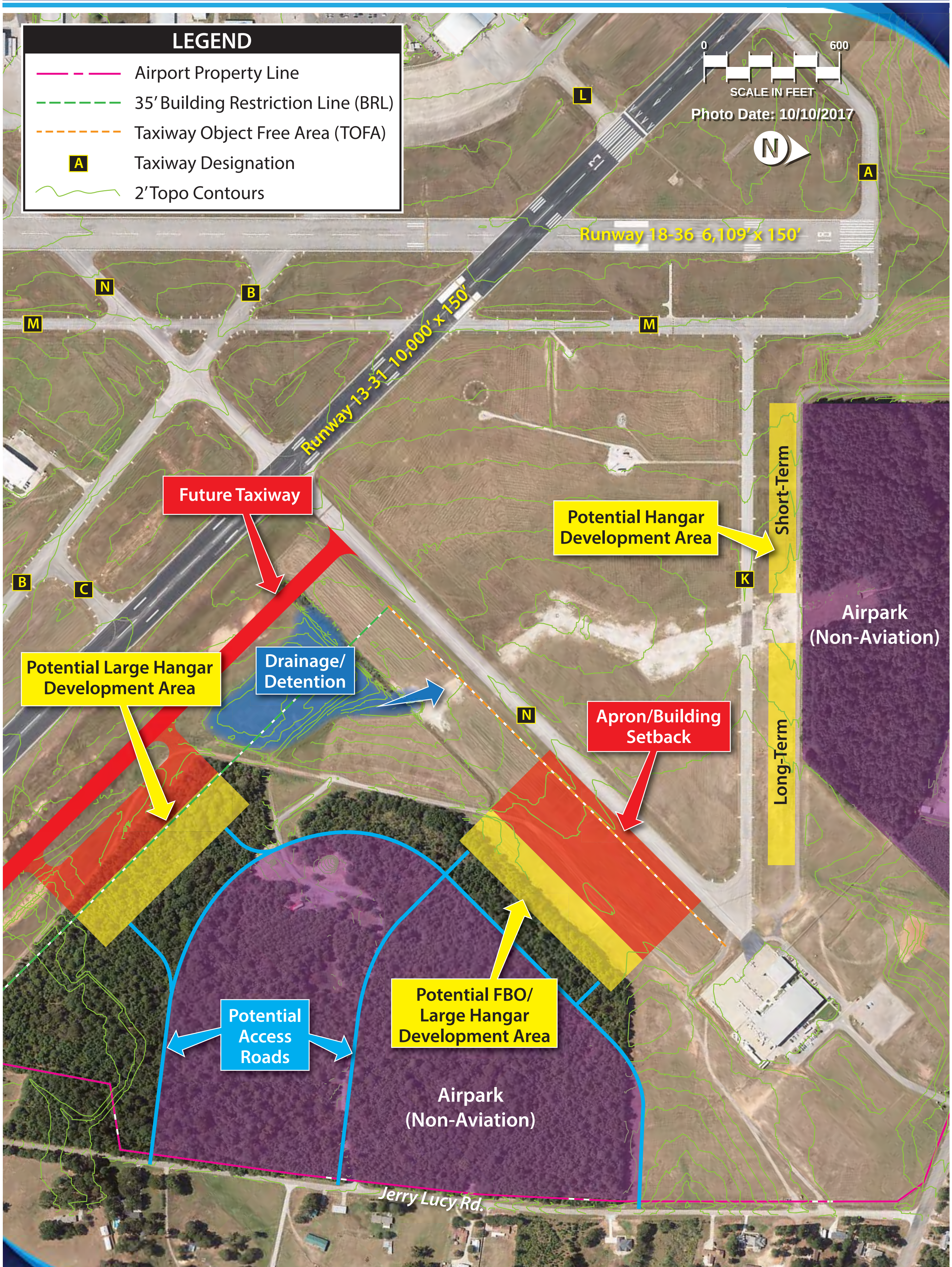


Exhibit 4G
INDUSTRIAL AIRPARK AREA

The hangars should be set back 350-400 feet from the TOFA to allow for drainage, entrance taxiways, and apron area. A portion of existing wooded area will need to be cleared to provide adequate area for hangar and vehicular parking areas. While new roadway construction will be necessary, an existing road can be upgraded to provide access from Jerry Lucy Road or be used to complete a loop road (as noted on **Exhibit 4G**).

A third area is noted along the proposed partial parallel taxiway, parallel to Runway 13-31. This potential hangar development area could also be developed for large hangars, although the building heights will need to remain under the transitional surfaces extending from the edge of the runway's primary surface (500 feet from runway centerline). The building restriction line on **Exhibit 4G** provides for a 35-foot building height (750 feet from the runway centerline). If the maximum hangar height were to be as high as 45 feet, the required setback from the runway centerline would need to be 815 feet. Several of the larger hangars on the west ramp exceed 40 feet in height.

A large portion of the industrial airpark parcel remains available for non-aviation related revenue support—both along Jerry Lucy Road and F.M. 349. The following section will address the potential tenants that might want to locate in the industrial airpark area.

DEVELOPMENT OF NON-AVIATION PROPERTIES

Gregg County has remained very active with the marketing of the industrial airpark and foreign trade zone (FTZ) since its inception in the late 1990s. The airpark has excellent access from F.M. 349 and is designated as a foreign trade zone.

The Airport provides the region with several functions: scheduled commercial air service; air freight; storage, maintenance, and fueling support for general aviation aircraft; medical and law enforcement air support; and development sites for the commercial/ industrial sector. While proximity or access to airport services may be desirable for some commercial/industrial firms, many of the potential tenants of the airpark may not have an aviation connection. However, the FTZ designation enhances its attractiveness to the potential tenant market.

The County can support a wide variety of discretionary uses on the Airport, including: airport-related commercial service businesses, aviation-oriented businesses, aviation/aerospace manufacturers, and non-aviation commercial/industrial uses.

AIRPORT-RELATED COMMERCIAL SERVICE BUSINESSES

The Airport can offer locational advantages for commercial businesses that neither support the airport operations nor provide services to users of the Airport, such as motels, restaurants, car rental agencies, service stations, and small executive offices that provide services and facilities for business travelers. In many locations, these businesses are accommodated in off-Airport locations, especially where air transportation plays a relatively minor role in the overall commercial activity of the area. The location of the Airport within several miles of Interstate 20 makes it suitable for many of these uses.

AVIATION-ORIENTED BUSINESSES

East Texas Regional Airport has played a key role in providing a location for this type of business. These firms generally require direct access to the airfield, although some firms (such as parts suppliers and avionics repair shops) often operate from locations not directly accessible to the airfield. However, through-the-fence operations should not normally be allowed, or the County should enact an ordinance to regulate such proposals.

There is also a wide variety of companies that prefer to locate on airports because they are related to aviation through their products, markets, or operations. These include many firms that operate their own aircraft in addition to using commercial air services.

AVIATION/AEROSPACE MANUFACTURERS

Consolidation of the industry in recent years has created fewer options for aviation/aerospace manufacturers. With the recent resurgence of general aviation aircraft manufacturing, several of these companies have opened new manufacturing plants, although these facilities are frequently located in areas with an aviation-oriented labor base. Many manufacturers of specialized parts or components do not require sites on an airport, but their aviation orientation makes it a preferred location.

NON-AVIATION COMMERCIAL/INDUSTRIAL USES

Current County efforts to attract non-aviation industrial and commercial uses in the Airport Industrial Airpark reflect a continuing effort to create strong business and employment opportunities near the Airport and a favorable climate for other aviation-related businesses.

LAND ACQUISITION CONSIDERATIONS

As part of the alternatives analysis, consideration was given to ultimate property needs for the Airport, while considering natural boundaries. In the *2007 Airport Master Plan* additional property had been recommended on the south end of Runway 18-36 to support a runway extension and larger RPZ. This is not supported with the current planning effort. Additional property acquisition was also recommended in the approach to Runway 31. This is also not supported by current planning efforts, although a small portion of the approach RPZ (not owned by the County or covered by avigation easement) should be protected with an avigation easement.

Likewise, with the change in the visibility minimums on the approach to Runway 18 and the displacement of the landing threshold on Runway 13, a portion of the existing RPZs north of F.M. 349 and west of Gardiner Mitchell Parkway are not currently covered by avigation easements. All other areas proposed for future development are owned by Gregg County.

In formulating future airport land use development alternatives, it will be necessary to consider the impact of FAA regulations on land acquired with FAA grants, the conditions under which Gregg County accepts federal grants, and the best use of available property in terms of location, facilities available, functional capabilities, and revenue potential.

Unlike development grants, assurances remain in effect permanently for land acquired with the Federal Aid to Airports Program (FAAP), Airport Development Aid Program (ADAP), or Airport Improvement Program (AIP), which are federal airport aid programs which have been used to acquire property for East Texas Regional Airport. It will be necessary to designate in this planning effort all property for aviation-related and non-aviation related development, to ensure that non-aviation related parcels do not reduce the Airport's ability to meet aeronautical need.

SUMMARY

The purpose of the alternatives discussion is to present a variety of solutions to specific issues on the airside and landside which have emerged during the master planning process. The alternatives should be considered by the Planning Advisory Committee and the Gregg County representatives at the next scheduled meeting. Then, based upon feedback received by the consultant, a master plan concept will be developed which combines a composite of the airside and landside alternatives that have been considered. Following the presentation of a master plan concept, detailed cost estimates and phasing schedules will be developed, and updated ALP drawings will be prepared for subsequent FAA reviews utilizing the recently developed mapping.

Chapter Five

Recommended Master Plan Concept




EAST TEXAS REGIONAL AIRPORT



CHAPTER FIVE

Recommended Master Plan Concept

The airport master planning process for East Texas Regional Airport has evolved through the development of forecasts of aviation demand, an assessment of facility needs, and an evaluation of airport development alternatives. The planning process has included the development of four sets of draft working papers which were presented to the Planning Advisory Committee (PAC) in coordination meetings beginning in September 2017. The PAC represented a cross-section of airport tenants, users, and government agencies. This group has provided valuable input into the planning process and contributed to the final master plan recommendations.

In the previous chapter, several development alternatives were considered for future airside and landside development. These alternatives have been refined and merged into a final development concept, as presented in **Exhibit 5A**. The following narrative will provide an overview of the recommendations, while Chapter Six will provide a proposed schedule for development priorities, estimated costs, and potential funding. The airport layout drawings and environmental overview will be presented in appendices to this document.

Since the Airport is classified by the FAA as a primary commercial service non-hub airport, it is included in the *National Plan of Integrated Airport Systems (NPIAS),* allowing the Airport to qualify for development grants under the Airport Improvement Program (AIP)—a grant program funded exclusively by user fees and user taxes. As a condition of grant acceptance, Gregg County must adhere to various grant assurances, which include maintaining the facility safely and efficiently in accordance with specific conditions and mandates. With acceptance of each grant, Gregg County is obligated to maintain the facility for a minimum of (at least) another 20 years. Chapter One in this report provided an overview of the grants received by Gregg County over the past ten years.

AIRSIDE RECOMMENDATIONS

The airside recommendations include improvements related to the runway and taxiway system. Operations at the Airport are projected to remain relatively flat through the 20-year forecast period, while commercial passengers are projected to increase modestly from 19,297 in 2017 to 26,000 by 2037. Commercial service is expected to transition into slightly larger regional jets over the timeframe of this plan. However, this service will not require a longer runway to accommodate their operations.

LeTourneau University is expected to continue to provide a collegiate aviation program from facilities on the north side of the airfield, and local companies basing a growing number of turbine aircraft will continue to provide demand for new hangar/office facilities (as evidenced by demand created over the past decade). This has led to a continuing examination of improved operational efficiencies for the runway and taxiway system.

RUNWAY CONFIGURATION

The existing runway system consists of Runway 13-31 (the primary) and Runway 18-36. Runway 13-31 is 10,000 feet long, 150 feet wide, and provides 94.44 percent wind coverage in all-weather conditions. It has a full-length parallel taxiway and multiple exits located along its entire length. The precision instrument approach on Runway 13 provides properly equipped aircraft with landing capabilities down to a 200-foot cloud ceiling and ½-mile visibility. The Runway 13 landing approach is also equipped with a medium intensity approach lighting system (MALSR). An area navigation (RNAV) approach is also available to each runway approach. The runway meets the needs of all commercial and business operators currently using the Airport.

Runway 18-36 is 6,109 feet long, 150 feet wide, and provides secondary crosswind capabilities. It has an instrument approach using area navigation with landing capabilities down to 300-foot cloud ceiling and ⅞-mile visibility on Runway 18 but is not equipped with approach lighting. An area navigation approach is also available to Runway 36 with landing capabilities down to 400-foot cloud ceiling and 1-mile visibility. This runway meets the needs of most business operators currently using the Airport.

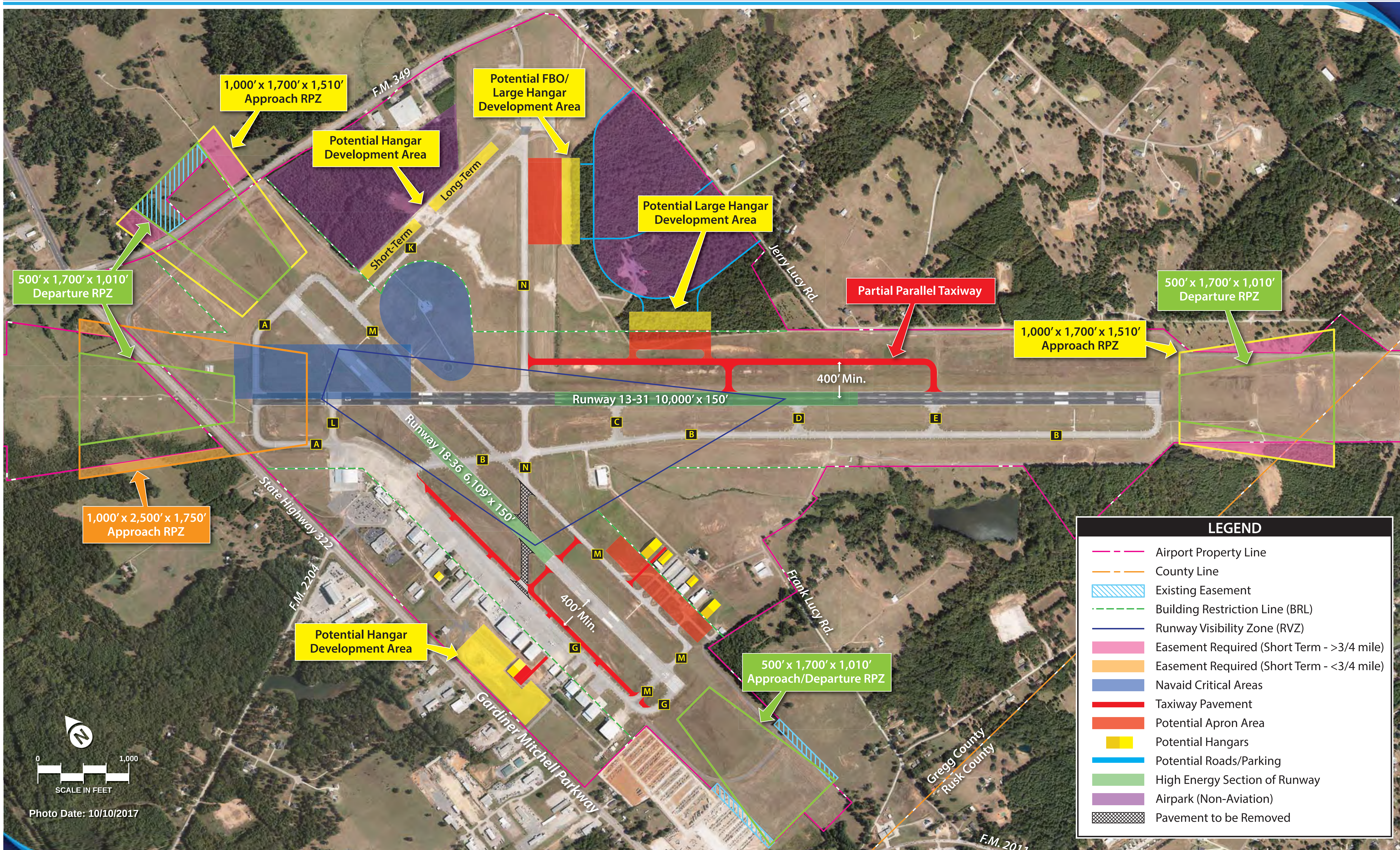


Exhibit 5A
RECOMMENDED MASTER PLAN CONCEPT

The runway analysis undertaken for this study has indicated that the airfield will be better served by a partial parallel taxiway on the east side of Runway 13-31 with the relocation of parallel Taxiway G on the west side of Runway 18-36 (to remove an active taxiway from the edge of the ramp). Following the PAC meeting in April 2018 to present the airfield development alternatives, the location of a preferred crossing taxiway on Runway 18-36 (between Taxiways M and G) was located 2,000 feet from the Runway 36 threshold, and the segment of Taxiway N between Taxiways M and G was designated for future closure. This has been shown to remove an active taxiway crossing inside the high energy section (middle third) of Runway 18-36. Several entrance taxiways between the relocated Taxiway G and ramp have been noted on the plan to avoid direct access from the runway onto the ramp area.

RUNWAY DIMENSIONAL STANDARDS

The FAA has established design criteria to define the physical dimensions of runways and taxiways, as well as the imaginary surfaces surrounding them which protect the safe operation of aircraft at the airport. These design standards also define the separation criteria for the placement of landside facilities.

As discussed previously, the design criteria primarily center on the airport's critical design aircraft. The critical aircraft is the most demanding aircraft or family of aircraft which currently (or are projected to) conduct 500 or more itinerant operations per year at the airport. Factors included in airport design are an aircraft's wingspan, approach speed, tail height, and undercarriage width. The FAA has established the Runway Design Code (RDC) to relate these design aircraft factors to airfield design standards. The most restrictive RDC is also considered the overall Airport Reference Code (ARC).

Analysis conducted in Chapter Two concluded that the current RDC for Runway 13-31 falls in C-II, defined by the ERJ-145 jet which is used in commercial service by American Eagle. However, the future transition of commercial service to the EMB-175 will place the runway in C-III. The existing and future RDC for Runway 18-36 falls in C-II, due to the current mix of business jets based on the airfield. The existing and future airfield design standards are presented in **Table 5A**.

TABLE 5A
Airfield Design Standards
East Texas Regional Airport

	Airport Reference Code		
Design Standard	**Runway 13-31 Existing C-II (in ft.)**	**Runway 13-31 Ultimate C-III (in ft.)**	**Runway 18-36 Existing/Ultimate C-II (in ft.)**
RUNWAYS			
Runway Length (Existing)	10,000	10,000	6,109
Runway Width (Existing)	150	150	150
Runway Shoulder Width	10	25	10
Runway Safety Area			
Width	500	500	500
Length Beyond End	1,000	1,000	1,000
Length Prior to Threshold	600	600	600

TABLE 5A (Continued)
Airfield Design Standards
East Texas Regional Airport

	Airport Reference Code		
Design Standard	**Runway 13-31 Existing C-II (in ft.)**	**Runway 13-31 Ultimate C-III (in ft.)**	**Runway 18-36 Existing/Ultimate C-II (in ft.)**
Runway Object Free Area			
Width	800	800	800
Length Beyond End	1,000	1,000	1,000
Length Prior to Threshold	600	600	600
Runway Obstacle Free Zone			
Width	400	400	400
Length Beyond End	200	200	200
Precision Obstacle Free Zone			
Width	800	800	N/A
Length Beyond End	200	200	N/A
Runway Blast Pad			
Width	120	200	120
Length	150	200	150
Runway Centerline to:			
Holding Position	250	250	250
Parallel Taxiway	400	400	400
Parallel Runway	700	700	700
TAXIWAYS			
Taxiway Width (Existing)	50	50	35
Taxiway Safety Area Width	79	118	79
Taxiway Object Free Area Width	131	186	131
Taxiway Centerline to:			
Fixed or Movable Object	65.5	93	65.5
Parallel Taxilane	105	152	105
Taxilane Centerline to:			
Fixed or Movable Object	57.5	81	57.5
Parallel Taxilane	97	140	97
RUNWAY PROTECTION ZONES – APPROACH (see note)			
Category I (1/2-mile)			
Inner Width	1,000	1,000	N/A
Length	2,500	2,500	N/A
Outer Width	1,750	1,750	N/A
Not lower than 3/4-mile			
Inner Width	1,000	1,000	1,000
Length	1,700	1,700	1,700
Outer Width	1,510	1,510	1,510

Note: All departure protection zones are 500 ft. (inner width), 1,700 ft. (length), and 1,010 ft. (outer width).
N/A – Not Applicable
Source: FAA Advisory Circular 150/5300-13A, *Airport Design*, as amended.

TAXIWAYS

Several new taxiways are planned on the airfield to either improve operations or correct existing taxiways to FAA-recommended geometry standards.

A partial parallel taxiway has been recommended on the east side of Runway 13-31. Extending a total length of 4,500 feet from Taxiway E to Taxiway N, the taxiway is intended to serve aircraft using the LeTourneau University aviation program facilities and potential hangar development which has been proposed in this plan on the east side.

Relocation of Taxiway G has been recommended to separate the active taxiway from the apron on the west side of Runway 18-36, and several entrance taxiways have been recommended between the ramp and the relocated taxiway. The existing section of Taxiway N between Taxiway M and the ramp will be closed to avoid direct access from the ramp onto the runway within the high-energy section of the runway. With relocation of Taxiway G, the ramp edge taxilane will become a non-movement area (not controlled by the tower). The taxiway has been shown at a separation distance of 400 feet from the centerline of Runway 18-36 to preserve the option of an improvement in the instrument approach capability of Runway 18 (lowering of visibility minimums below ¾-mile), although the existing approach is considered adequate for this planning update.

A crossing taxiway has been recommended outside of the high-energy section of Runway 18-36, to be placed 2,000 feet from the south end of the runway. This taxiway is designed to alleviate the potential for runway incursions on Runway 18-36 (due to Taxiway N being located inside the high-energy section of the runway). With construction of the crossing taxiway, the portion of Taxiway N that crosses the runway in the high-energy section can be removed.

Additional taxilanes have been recommended on both the west and east sides of Runway 18-36 to serve future hangar development. While limited in-filling is available on the east side, a larger development area is proposed on the west side, as shown on **Exhibit 5A**. However, future hangar development will need to be initiated on the east side of Runway 13-31 to meet future demand. The area shown along Taxiway K will serve smaller hangars, while the area adjacent to Taxiway N will serve large hangars and/or fixed base operations. An additional area for large hangar development has been noted along the proposed parallel taxiway on the east side of the runway. Each of these areas will have additional expansion capability beyond the planning period.

AIRCRAFT PARKING APRONS

While airfield elements, such as safety areas, must meet design standards associated with the applicable RDC, landside elements can be designed to accommodate specific categories of aircraft. For example, a taxilane into a T-hangar area only needs to meet the object free area (OFA) width standard for smaller single and multi-engine piston aircraft expected to utilize the taxilane, not those standards for the larger transport jets representing the overall critical aircraft for the airport. The existing ramp and taxilanes on the west side of Runway 18-36 and in the airpark area on the east side of Runway 13-31 should meet the standards for aircraft with wingspans less than 79 feet. The taxilanes on the east side of Runway 18-36 need to meet the standards for aircraft with wingspans less than 49 feet.

LANDSIDE RECOMMENDATIONS

The primary goal of the landside recommendations is to provide adequate areas for commercial and general aviation-related development (even beyond the 20-year planning period) in a manner which will work in conjunction with planned changes in the ultimate airfield configuration. To the extent possible, areas which are served by existing infrastructure will be initially developed to minimize development costs and maximize revenue to the airport. Vehicular access must serve all of these areas efficiently while maintaining a secure airfield.

HANGAR DEVELOPMENT

Hangar demand in the short-term timeframe is expected to be met with limited in-filling potential on the east and west sides of Runway 18-36 and in the new development area adjacent to Gardiner Mitchell Parkway, which will be accessed with a new taxilane from the west ramp. While this area has the potential to meet the short-term demands for aircraft basing at the Airport, other areas need to be established on the airfield for hangars of varying sizes, especially large hangars with transient apron requirements and supported by larger vehicular parking demands. The best available area in the near-term for this type of development has been depicted on **Exhibit 5A** in the airpark area adjacent to Taxiway N (east of the LeTourneau University facilities).

TERMINAL AREA DEVELOPMENT

The recent terminal building renovation is expected to meet the needs of scheduled passenger traffic during the plan period.

VEHICULAR ACCESS AND CIRCULATION

Future hangar development layouts needing vehicular parking have been noted on **Exhibit 5A**. Access to the commercial terminal is provided directly from Gardiner Mitchell Parkway, while secondary access to hangars and businesses on the west side is provided by Skyway Road, Corporate Road, and Dovel Road. Access to the hangars on the east side of Runway 18-36 is provided from F.M. 2011, Frank Lucy Road, Tower Road, and Central Road.

LAND USE CONSIDERATIONS

Identifying existing and planned land uses, both on and off the airport, is an important consideration. By understanding the issues related to land use in the area, Gregg County and local jurisdictions can take proactive steps to protect the Airport from incompatible land uses. There are three basic categories of land use to consider:

On-Airport Land Use
Off-Airport Land Use Compatibility
Height and Hazard Zoning

ON-AIRPORT LAND USE

The objective of on-airport land use planning is to coordinate uses of airport property in a manner that is both functional with the design of the airport and compatible with the airport environs. There are two primary considerations for on-airport land use planning. First is to secure those areas essential to the safe and efficient operation of the airport. Second is to determine compatible land uses for the balance of the property which would be most advantageous to the airport and the community.

The FAA views airport property as either aeronautical or non-aeronautical. Aeronautical use is defined as all activities that involve or are directly related to the operation of aircraft. Essentially, aeronautical uses are those that require access to the runway and taxiway system. Non-aeronautical uses are those that do not need runway and taxiway access. For example, a business that manufactures aircraft component parts but delivers those parts by ground would be non-aeronautical in nature.

East Texas Regional Airport encompasses 1,300 acres. For on-airport land use planning purposes, the property can be classified as the airfield operations area, the aviation-related development area, and the non-aviation/revenue support area. **Exhibit 5B** presents the suggested on-airport land use map for the Airport based on the recommended master plan concept.

Airfield Operations (AO)

The airfield operations area is that portion of airport property that encompasses the major airside elements such as runways, taxiways, runway safety area, runway object free area, runway obstacle free zone, runway protection zone, taxiway safety area, taxiway object free area, navigational aids and their critical areas, and the runway visibility zone. It has been expanded to also include the areas that are essential for airfield drainage (open drainageways and detention areas) or are not conducive to development based upon terrain.

Aviation-Related Development (AD)

The aviation-related development area is defined as those areas that must be reserved for development that needs access to the airfield operations area. In general, current and future aircraft access must be preserved in these areas.

Typical uses permitted in the aviation-related development area includes:

Commercial airline terminal
Cargo/freight terminal
Fixed base operator(s)
Specialized aviation service operations
Aircraft maintenance providers
Aircraft equipment sales/rental offices
Aircraft fueling services
Aircraft hangars (with vehicle parking lots)
Flight training facilities

Certain non-aviation related uses may be permissible within the aviation-related development area provided they are temporary (five years or less) in nature and can be removed in a timely manner to allow for aviation development.

Generally, those areas adjacent to the runways and taxiways are identified for current and future aviation development. Enough property should be reserved to accommodate future taxiways, aprons, hangar development, and vehicle parking lots. Typically, this is approximately 1,200 feet from the centerline of a runway or taxiway. Property in proximity to existing aprons is also reserved for aviation development.

Non-Aviation/Revenue Support (RS)

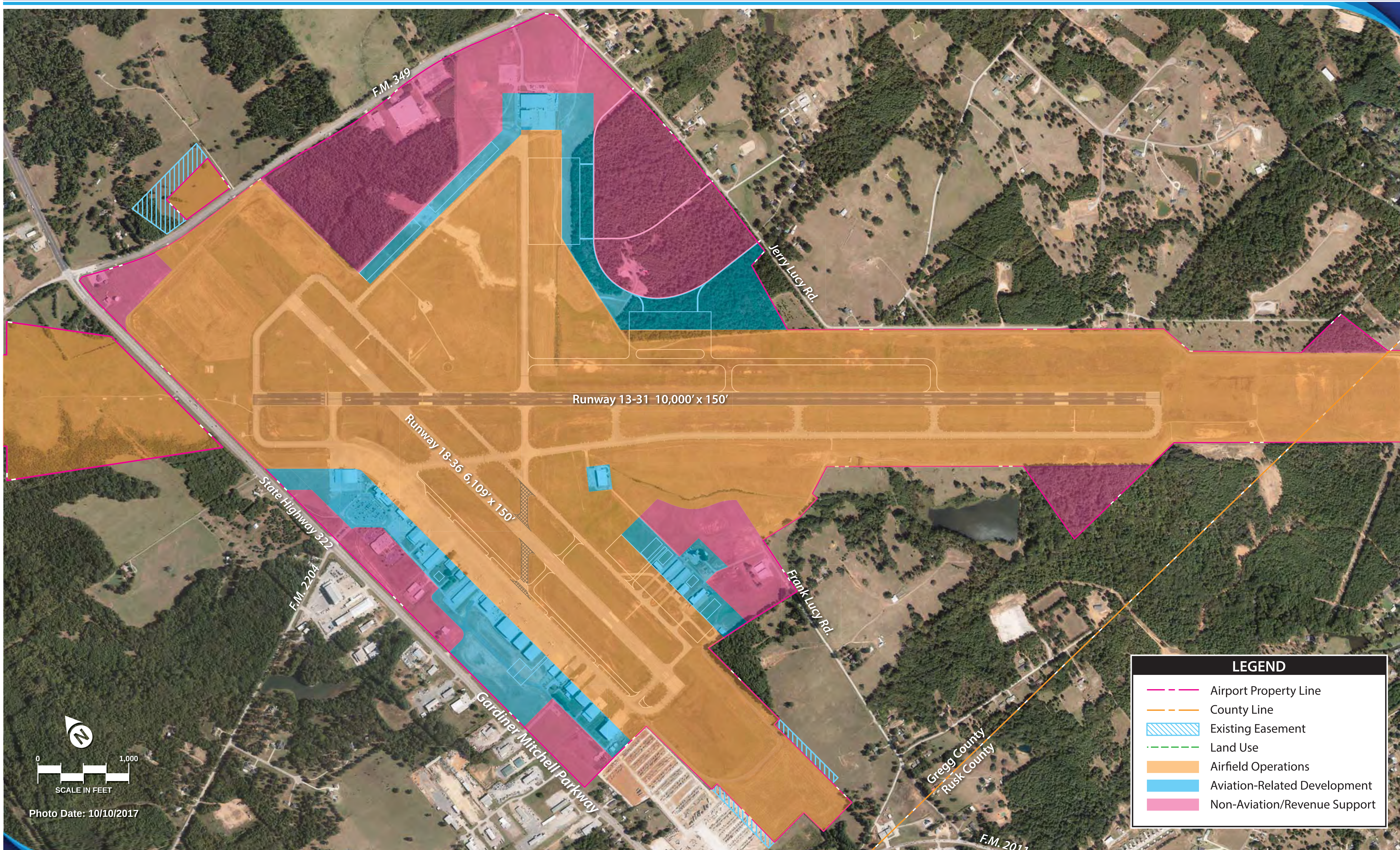
The non-aviation/revenue support classification includes all potential development that is compatible with airport activities but is unlikely to require access to the runway and taxiway system. Several areas have been identified on **Exhibit 5B** for non-aviation/revenue support.

Typical non-aviation/revenue support land uses may include:

Research facilities
Testing laboratories
Facilities for the manufacturing, processing, and/or assembly of products.
Warehouses
Vocational schools
Eating and drinking establishments

The Airport has accepted grants for capital improvements from the FAA. As such, Gregg County has agreed to certain grant assurances. Grant assurances related to land use assures that airport property will be reserved for the benefit of the airport and the community. If the sponsor wishes to sell (release) airport land or lease airport land for a non-aeronautical purpose (land use change), they must petition the FAA for approval. The Airport Layout Plan and the Airport Property Map must then be updated to reflect the sale or land use change of the identified property.

Airport sponsors are obligated to pursue policies that contribute to the self-sufficiency of the airport. The FAA will consider requests to use aviation land for non-aviation revenue producing purposes in


F.M. 349
Jerry Lucy Rd.
Runway 13-31 10,000' x 150'
Runway 18-36 6,109' x 150'
State Highway 322
F.M. 2204
Frank Lucy Rd.
Gardiner Mitchell Parkway
Gregg County
Rusk County
F.M. 2011
0
1,000
SCALE IN FEET
Photo Date: 10/10/2017
LEGEND
Airport Property Line
County Line
Existing Easement
Land Use
Airfield Operations
Aviation-Related Development
Non-Aviation/Revenue Support

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pursuit of this goal under certain circumstances. These requests fall into two general categories: concurrent use and interim use.

If aeronautical land is to remain in use for its primary purpose but also be used for compatible revenue producing non-aeronautical purposes, this is considered a concurrent use. An example of a concurrent use is farming of low-growing crops within an RPZ.

The FAA may consent to the interim use (not more than five years) of aeronautical land for non-aeronautical revenue producing purposes. Interim use represents a temporary arrangement; therefore, it must be anticipated that the interim use will end and the land will be returned to aeronautical use. If the proposed non-aeronautical use will involve granting a long-term lease or constructing improvements, it will be difficult, if not impossible, to recover the land on short notice if it is needed for aeronautical purposes.

Both concurrent and interim uses must not degrade the aeronautical utility of the land. Typically, improved aeronautical land/facilities are not eligible for non-aeronautical uses. Neither concurrent nor interim uses require a formal FAA release of property or a land use change; however, FAA approval of the non-aeronautical use is required.

OFF-AIRPORT LAND USE COMPATIBILITY

Land use compatibility is the responsibility of the airport sponsor and must be pursued in order to comply with FAA grant assurances. In effect since 1964, Grant Assurance 21, *Compatible Land Use*, implementing Title 49 United States Code (U.S.C.) § 47107 (a) (10), requires, in part, that the sponsor:

"…take appropriate action, to the extent reasonable, including the adoption of zoning laws, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft."

Grant Assurance 20, *Hazard Removal and Mitigation*, states that the airport sponsor:

"…will take appropriate action to assure that such terminal airspace as is required to protect instrument and visual operations to the airport (including established minimum flight altitudes) will be adequately cleared and protected by removing, lowering, relocating, marking, lighting, or otherwise mitigating existing airport hazards and by preventing the establishment or creation of future airport hazards."

In all cases, the FAA expects a sponsor to take appropriate actions to the extent reasonably possible to minimize incompatible land uses. FAA Order 5190.6B, *Airport Compliance Manual*, provides guidance on land use compatibility and other airport compliance issues.

The FAA provides further guidance in Advisory Circular (AC) 150/5200-33, *Hazardous Wildlife Attractants on or Near Airport*s. The distance between the airport movement areas and wildlife attractants should be at least 10,000 feet for airports serving turbine-powered aircraft and should include approach and departure airspace to a distance of five miles. Examples of potential wildlife attractants (particularly for birds) include landfills, waste water treatment facilities, lakes, and wetlands.

HEIGHT AND HAZARD LAND USE ZONING

In addition to avigation easements which have been acquired by Gregg County to limit tree heights in runway approaches, Gregg and Rusk Counties have also worked together to ensure that land uses near the airport are compatible in nature by implementing height and hazard zoning. Since the approaches to Runways 31 and 36 extend over Rusk County, Section 17.12 of the zoning code limits the maximum height of objects 500 feet either side of runway centerline and extending two miles from the runway end to no higher than 1/20 of the distance of the object to the landing surface. Additional compatibility planning, compatible land use zoning, and hazard zoning guidance for airports in Texas has been published by the Texas Department of Transportation, Aviation Division. The guidance is flexible enough to account for planned changes in the future layout of the Airport. Nonetheless, it is good practice for the airport sponsor to review the local zoning ordinances to be sure it still applies to the new master plan layout. The Airport Airspace Drawing, which is included as part of the Airport Layout Plan drawing set, may be the basis for an updated height and hazard zoning ordinance, should that be needed.

SUMMARY

The recommended master plan concept has been developed with significant input from the PAC, which included representation from Gregg County, the FAA Airport Traffic Control Tower, LeTourneau University, local airport businesses, community representatives, and airport users. This plan provides the necessary development to accommodate and satisfy the anticipated growth over the next 20 years (and beyond).

The airport currently meets design standards for its existing and future critical aircraft (that grouping of similar aircraft types that account for 500 or more annual itinerant operations). Furthermore, the existing runway configuration provides approach and departure operational capabilities of higher design category aircraft, without the need for special operational conditions.

The next chapter of the Master Plan will present both a short term capital improvement program (CIP) and a 20-year long term CIP. Strategies for funding the recommended improvements and a reasonable schedule for undertaking the projects will be presented.

Chapter Six

Financial Plan/Capital Improvements



CHAPTER SIX

Financial Plan/ Capital Improvements

The Financial Plan is organized into two sections. The first is discussion of the various capital improvement funding sources on the federal level. The second section presents the airport development schedule and cost summaries in graphic and narrative form.

CAPITAL IMPROVEMENT FUNDING SOURCES

There are several sources of funding used to finance airport development at commercial service airports: federal grants, passenger facility charges (PFCs), and local revenue sources (government and/or private). Access to these sources of financing vary widely with most sponsoring agencies maintaining adequate reserves to match federal grants or to fund modest improvements. For small commercial service airports, the PFCs provide limited assistance since the fee is seldom adjusted by the U.S. Congress (capped the past 18 years at $4.50 per enplaning passenger). Gregg County, as the owner and operator of East Texas Regional Airport, has received over $38 million in federal grants over the past decade to maintain and improve the facility. Only $11 million of this amount was received through entitlement funding, with the remaining amount obtained through discretionary funding by the Federal Aviation Administration (FAA).

The Capital Improvement Plan (CIP) has been phased to meet demand while taking into consideration the funding requirements. This phasing will need to be adjusted on an annual basis to account for funding availability and unforeseen maintenance or airport safety considerations. The following paragraphs outline key sources of funding potentially available for capital improvements at East Texas Regional Airport. Every effort should be made to take each potential source listed (or others that may become available) into consideration for funding airport improvements.

FEDERAL GRANTS

Through federal legislation over the years, various grant-in-aid programs have been established to develop and maintain a system of public use airports across the United States. The purpose of this system and its federally based funding is to maintain national defense and to promote interstate commerce. The most recent multi-year legislation affecting federal funding was enacted on February 17, 2012 and was titled, the *FAA Modernization and Reform Act of 2012 (P.L. 112-095)*. This bill was the first long-term authorization of federal civil aviation programs since 2007 and was finally enacted after 23 short-term extensions. Since expiration of this legislation in 2015, Congress has once again passed a series of short-term extensions, with the latest extension set to expire on September 30, 2018. While the House of Representatives has passed legislation (H.R. 4) authorizing funding for the FAA for five years (through 2023) and the Senate has its own FAA reauthorization bill (S. 1405), debate on a final bill has not yet begun (as of June 2018).

Some airport projects (generally non-revenue producing) are eligible for FAA funding through the Airport Improvement Program (AIP), which provides entitlement funds for airports based, in part, on their annual enplaned passengers and pounds of landed cargo weight. Additional AIP funds, designated as discretionary, may also be used for eligible projects, based on the FAA's national priority system. Although the AIP has been reauthorized several times and the funding formulas have been periodically revised to reflect changing national priorities, the program has remained essentially the same. Public use airports that serve civil aviation, like East Texas Regional Airport, may receive AIP funding for eligible projects, as described in FAA's *Airport Improvement Program Handbook*. However, the main advantage of the AIP program is that it provides funds for capital projects without the financial burden of debt financing, although local airport sponsors are required to provide a local match.

The last reauthorization legislation authorized the AIP at $3.35 billion annually for fiscal years 2012 through 2015 (and H.R. 4 has proposed an extension through 2023 at this same funding level). Eligible airports, which include those in the *National Plan of Integrated Airport Systems* (NPIAS), such as East Texas Regional Airport, can apply for airport improvement grants. **Table 6A** presents the approximate distribution of the AIP funds. Currently, East Texas Regional Airport is eligible to apply for grants which may be funded through several categories, as outlined in the following paragraphs.

TABLE 6A
Federal AIP Funding Distribution

Funding Category	Percent of Total	Funds*
Apportionment/Entitlement		
Passenger Entitlements	29.19%	$977,865,000
Cargo Entitlements	3.00%	$100,500,000
Alaska Supplemental	0.65%	$21,775,000
State Apportionment for Nonprimary Entitlements	10.35%	$346,725,000
State Apportionment Based on Area and Population	9.65%	$323,275,000
Carryover	10.77%	$360,795,000
Small Airport Fund		
Small Hubs	1.67%	$55,945,000
Non-hubs	6.68%	$223,780,000
Nonprimary (GA and Reliever)	3.34%	$111,890,000
Discretionary		
Capacity/Safety/Security/Noise	11.36%	$380,560,000
Pure Discretionary	3.79%	$126,965,000
Set Asides		
Noise	8.40%	$281,400,000
Military Airports Program	0.99%	$33,165,000
Reliever	0.16%	$5,360,000
Totals	100.00%	$3,350,000,000

* FAA *Modernization and Reform Act of 2012*
AIP: Airport Improvement Program
Source: FAA Order 5100.38D, Airport Improvement Program Handbook

Funding for AIP-eligible projects is undertaken through a cost-sharing arrangement in which the FAA share varies by airport size – generally 75 percent for large and medium hub airports and 90 percent for all other airports. Since the early days of federal participation in airport infrastructure projects, Congress has provided a higher federal share at airports with more than five percent of their geographic acreage comprised of public lands and nontaxable Indian lands. For states that qualify, the federal share is increased depending on the airport classification. In exchange for receiving federal grants for airport improvement, the airport sponsor is required to meet various grant assurances which include many operational and maintenance requirements.

The source for AIP funds is the Aviation Trust Fund. The Aviation Trust Fund was established in 1970 to provide funding for aviation capital investment programs (aviation development, facilities and equipment, and research and development). The Aviation Trust Fund also finances the operation of the FAA. It is funded by user fees, including taxes on airline tickets, aviation fuel, and various aircraft parts.

Apportionment (Entitlement) Funds

The AIP provides funding for eligible projects at airports through an apportionment (entitlement) program. Primary commercial service airports (such as East Texas Regional Airport) receive a guaranteed minimum level of federal assistance each year, based on their enplaned passenger levels and Congressional appropriation levels. A primary airport is defined as any commercial service airport enplaning at least 10,000 passengers annually.

East Texas Regional Airport is projected to continue to receive approximately $1.0 million annually from this source. The airport does not qualify for air cargo entitlement funds and is not projected to receive funds from this source.

Small Airport Fund

If a large or medium hub commercial service airport chooses to institute a PFC for funding of capital improvement projects, then their apportionment is reduced. A portion of the reduced apportionment goes into the small airport fund. The small airport fund is reserved for primary commercial service airports in the small hub and non-hub categories, as well as general aviation airports. As a non-hub commercial service airport, East Texas Regional Airport is eligible for funding from this source.

Discretionary Funds

In a number of cases, airports face major projects that will require funds in excess of the airport's annual entitlement. Thus, additional funds from discretionary apportionments under AIP become desirable. The primary feature about discretionary funds is that they are distributed on a priority basis. These priorities are established by the FAA, utilizing a priority code system. Under this system, projects are ranked by their purpose. Projects ensuring airport safety and security are ranked as the most important priorities, followed by maintaining current infrastructure development, mitigating noise and other environmental impacts, meeting design standards, and increasing system capacity. East Texas Regional Airport is eligible to compete for funding in this category and has received funding from this source on many past projects (including many of the projects that were previously listed in Table 1B).

Set-Aside Funds

Portions of AIP funds are set-asides designed to achieve specific funding minimums for noise compatibility planning and implementation, select former military airfields which are included in the military airport program, and select reliever airports. It is not anticipated that East Texas Regional Airport will be eligible for funding from this source.

FAA Facilities and Equipment (F&E) Program

The Airway Facilities Division of the FAA administers the Facilities and Equipment (F&E) Program. This program provides funding for the installation and maintenance of various navigational aids and equipment of the national airspace system. Under the F&E program, funding is provided for FAA Airport Traffic Control Towers (ATCTs), enroute navigational aids, on-airport navigational aids, and approach lighting systems.

Facilities at East Texas Regional Airport that are eligible to receive funding from the F&E program include the ATCT and various navaids (including the instrument landing system).

Special FY 2018 Supplemental Appropriation

Included in the recent Consolidated Omnibus Appropriations Act of 2018 (P.L. 115-141) was a one-time appropriation of $1 billion to be expended by 2020. The Secretary of Transportation has been directed to give priority consideration to nonprimary airports classified as Regional, Local, or Basic (that are not located within a metropolitan statistical area [MSA]) and to primary airports classified as small or non-hubs. Approximately 1,100 airports fall within the nonprimary category (as previously defined), while 310 airports fall within the primary small and non-hub categories, including East Texas Regional Airport. The federal funding participation rate for grants to nonprimary airports will be 100 percent, while the participation rate for grants to primary small and non-hub airports will remain at 90 percent. The FAA will update the list of airports meeting priority consideration for these grants and start issuance of the grants in FY 2019.

The eligibility and justification for the project will remain pursuant to existing AIP discretionary eligibility rules, with priority given to the ability of the project to enhance the long-term economic sustainability of the airport. Priority will also be given to the airport's track record in project delivery and grant management (including a lack of compliance issues).

PASSENGER FACILITY CHARGES

The *Aviation Safety and Capacity Expansion Act of 1990* contained a provision for airports to levy PFCs for the purposes of preserving, enhancing, or making a significant contribution to airport safety, capacity, security, or to reduce or mitigate noise impacts, improve local air quality, enhance competition, or reduce current or anticipated congestion. PFC revenue may be used on a "pay-as-you-go" basis or leveraged to pay debt service on bonds or other debt used to pay for PFC-eligible projects.

14 Code of Federal Regulations (CFR), Part 158, dated May 29, 1991, establishes the regulations that must be followed by airports choosing to levy PFCs. Passenger facility charges may be imposed by public agencies controlling a commercial service airport with at least 2,500 annual passengers with scheduled

service. Authorized agencies were allowed to impose a charge of $1.00, $2.00, or $3.00 per enplaned passenger. Legislation (*AIR-21*) passed in 2000 allowed the cap to increase to $4.50 (with an $18 limit on the total PFCs a passenger can be charged on a round trip), which remains the current cap level. Prior approval is required from the Department of Transportation (DOT) before an airport is allowed to levy a PFC. The DOT must find that the projected revenues are needed for specific, approved projects. Although FAA is required to approve the collection and use of PFCs, the program permits local collection of PFC revenue through the airlines operating at an airport.

Any AIP-eligible project, whether development or planning related, is eligible for PFC funding. Gates and related areas for the movement of passengers and baggage are eligible, as are on-airport ground access projects. Any project approved must preserve or enhance safety, security, or capacity; reduce/mitigate noise impacts; or enhance competition among carriers.

PFCs may be used only on approved projects. However, PFCs can be utilized to fund 100 percent of a project. They may also be used as matching funds for AIP grants or to augment AIP-funded projects. PFCs can be used for debt service and financing costs of bonds for eligible airport development. These funds may also be commingled with general revenue for bond debt service. Before submitting a PFC application, the airport must give notice and an opportunity for consultation with airlines operating at the airport.

PFCs are to be treated similar to other airport improvement grants, rather than as airport revenues, and are administered by the FAA. Airlines retain up to 11 cents per passenger for collecting PFCs. It should also be noted that only revenue passengers pay PFCs. Non-revenue passengers, such as those using frequent flier rewards or airline personnel, are counted as enplanements but do not generate PFCs. East Texas Regional Airport has imposed a $4.50 PFC to fund projects and collects approximately $90,000 annually from this source. Currently, legislation in the House and Senate has not included a provision for increasing the PFC above $4.50. However, national airport organizations continue to lobby the U.S. Congress to increase the fee.

STATE FUNDING PROGRAMS

The State of Texas participates in the FAA's Block Grant Program, which administers and distributes development grants to general aviation airports. However, this program does not extend to primary commercial service airports; therefore, state funding assistance is not available to East Texas Regional Airport.

LOCAL FUNDING

The balance of project costs, after consideration has been given to grants, must be funded through local resources. A goal for any airport is to generate enough revenue to cover all operating and capital expenditures. For most airports, this is not always possible and other financing methods may be needed.

There are several local financing options to fund future development, including airport revenues, issuance of bonds, and leasehold financing. These strategies can be used to fund the local matching share or complete a project if grant funding cannot be arranged.

Airport Revenues

The Airport Maintenance Fund maintained by Gregg County includes revenue from property taxes and general government categories. Property tax revenue accounts for a majority of the annual operating revenue. The general government category includes revenue from the terminal security agreement, water and sewer services, terminal building rentals, hangar and other ground rentals, rent and commissions, and fuel flowage fees. As additional ground is leased for hangars or other aviation-related commercial/industrial activity, rental income should continue to improve. However, the ability of excess airport revenues to fund capital projects is dependent on net revenue exceeding annual operating expenditures, which include the costs for airport security, administration, operations, and maintenance.

Leasehold Financing

Leasehold financing refers to a developer or tenant financing improvements under a long-term ground lease. The advantage of this arrangement is that it relieves the airport sponsor of the responsibility of having to raise capital funds for the improvement. As an example, a fixed base operator might consider constructing hangars and charging fair market lease rates while paying the airport for a ground lease. A fuel farm can be undertaken in the same manner, with the developer of the facility paying the airport a fuel flowage fee. This type of financing has been used to fund most new hangar construction at East Texas Regional Airport and is expected to continue through the plan period. The most important consideration is obtaining the fair market rental rate for land parcels with utility connections and/or taxiway access.

AIRPORT DEVELOPMENT SCHEDULES AND COST SUMMARIES

Now that the specific needs and improvements for the airport have been established, the next step is to determine a realistic schedule and the associated costs for implementing the plan. The implementation plan considers the interrelationships among the projects in the recommended alternative in order to determine a sequence to minimize conflicts and establish a master schedule.

This section will examine the overall cost of each item in the recommended development alternative and present a development schedule. The implementation plan covers the same years as the forecasts in the planning effort. An airport CIP, programmed by years, has been developed to cover the first five years of the plan. The remaining projects will be grouped into intermediate- (years 6-10) and long- (years 11-20) term planning horizons. More detailed information is provided for the five-year horizon, with less detail provided for the longer planning periods. By utilizing planning horizons instead of specific years for intermediate- and long-term development, the airport will have greater flexibility to adjust capital needs as demand dictates. **Table 6B** summarizes the key milestones for each of the three planning horizons.

TABLE 6B
Planning Horizon Activity Levels
East Texas Regional Airport

	BASE YEAR	PLANNING HORIZONS		
	2017	Short-Term	Inter-Term	Long-Term
Enplaned Passengers	**19,297**	**21,400**	**22,700**	**26,000**
Itinerant Operations				
Air Carrier/Air Taxi	8,514	6,230	6,400	7,060
General Aviation	14,067	14,400	14,700	15,200
Military	3,741	3,700	3,700	3,700
Total Itinerant Operations	26,322	24,330	24,800	25,960
Local Operations				
General Aviation	21,419	21,700	22,000	22,700
Military	1,810	1,800	1,800	1,800
Total Local Operations	23,229	23,500	23,800	24,500
Total Airport Operations	49,551	47,830	48,600	50,460
Peak Operations				
Peak Month	5,237	5,150	5,230	5,430
Busy Day	227	223	227	235
U.S. Active Aircraft	209,800	209,655	209,805	213,420
Registered Aircraft – Gregg County	224	235	240	255
Based Aircraft - GGG	105	110	113	120

Source: Master Plan, Chapter Two

A key aspect of this planning document is the use of demand-based planning milestones. The short-term planning horizon contains items of highest need and/or priority. These items should be considered for development based on actual demand levels within the next five years. As short-term horizon activity levels are reached, it will then be time to program for the intermediate-term based upon the next activity milestones. Similarly, when the intermediate-term milestones are reached, it will be time to program for the long-term activity milestones.

Several development items included in the recommended alternative will need to follow demand indicators which essentially establish triggers for key improvements. For example, the recommended alternative includes construction of new hangar aprons and taxilanes. Based aircraft will be the indicator for additional hangar needs. If based aircraft growth occurs as projected, additional hangars and apron will need to be constructed to meet the demand. If growth slows or does not occur as projected, hangar pavement projects can be delayed. As a result, capital expenditures will be undertaken as needed, which leads to a responsible use of capital assets. Some development items do not depend on demand, such as pavement maintenance. A pavement study is being undertaken (outside of the master plan) to establish pavement maintenance priorities. The results may create the need to adjust pavement maintenance projects identified in the following paragraphs.

Not all potential projects considered in the recommended alternative will need to follow specific demand milestones. Many projects are necessary to maintain existing facilities and to meet FAA design standards for safety. These projects need to be programmed in a timely manner regardless of changes in demand indicators.

As a master plan is a conceptual document, implementation of these capital projects will require environmental documentation prior to design and construction. Each project will only be undertaken after further refinement of their design and costs through specific project implementation process activities associated with architectural and engineering analyses. Moreover, some projects may require associated infrastructure improvements such as utilities. Some projects may also require agency coordination activities as well as public coordination activities that carry the public involvement process into the project implementation phase.

The cost estimates presented in this chapter have been increased by 15-25 percent to allow for contingencies that may arise on the project. Capital costs presented here should be viewed only as estimates subject to further refinement during design. Nevertheless, these estimates are considered sufficiently accurate for planning purposes. The cost estimates are in 2018 dollars and should be increased accordingly for the actual year of implementation.

Table 6C presents the proposed CIP for East Texas Regional Airport. The first funding column presents an estimate of the total cost of the project. The second funding column presents that portion of the project that is likely eligible for FAA funding through the AIP, which may include a combination of entitlement and discretionary funding sources. The third funding column considers the airport's matching share responsibility. The matching share is eligible for funding through PFCs or other local funding sources.

Short-Term Projects (2019-2023)

Several projects in the first few years of the plan deal with infrastructure development in the southwest general aviation area (taxiway extensions, apron, and roads), while later years deal with pavement preservation on the runway system and construction of new taxiways identified in the master plan. The new taxiway construction includes a new parallel taxiway G (separated from the apron edge) and a partial parallel taxiway between Taxiways N and E to serve operations on Runway 13-31. As noted in **Table 6C**, discretionary funds will be required to complete the taxiway projects. Adequate entitlement funds are expected to remain available to fund pavement preservation projects. Additional small hangar construction is anticipated on the east side of Runway 18-36 and along Taxiway K, with the first hangars constructed closest to Taxiway M and extending east. Since these are private hangars located inside a secure area, they will require carded access for tenants. If demand for large hangar construction (with supporting apron for itinerant aircraft parking and public parking) is required in the short-term, it has been recommended in the area next to Taxiway N (closest to LeTourneau University facilities). To provide adequate space for apron, the hangars should be set back 300 feet from Taxiway N. Hangar construction in this area will require a road extension for vehicular access from Jerry Lucy Road. This will provide the first segment of a loop roadway which will eventually serve other aviation-related and industrial park development as depicted on the master plan concept.

Intermediate-Term Projects (2024-2028)

Several projects included in the intermediate term can be phased to meet the needs of based aircraft activity. Apron expansions are included on both the east side of Runway 18-36 and adjacent to Taxiway N. Small hangars can be constructed in either the southwest general aviation area, along Taxiway K, or remaining parcels on the east side of Runway 18-36. Large hangars should be developed along Taxiway N and include vehicular parking lots. However, the drainage and stormwater detention area at the corner of Taxiway N and Runway 13-31 will limit the site's build-out and necessitate the need to ultimately place large hangar development adjacent to Runway 13-31 as noted on the master plan concept.

Additional pavement preservation projects are included during the intermediate term, and additional airfield maintenance equipment is expected to require replacement.

Long-Term Projects (2029-2038)

The long-term projects include the expansion of itinerant apron with the development of aircraft storage hangars, pavement preservation, extension of roadways to serve future aviation development areas, upgrades to LED runway and taxiway lighting, and new aircraft rescue and firefighting (ARFF) equipment. It has been assumed that all new hangar construction will be undertaken by private developers on leased airport property. However, the construction of taxilanes between the hangars or public-use apron is included as an AIP-eligible project.

Exhibit 6A graphically presents the phased master plan projects. The CIP presented in **Table 6C** establishes a list of potential projects over the next 20 years, along with potential funding requirements. The key activities and responsibilities for implementation will vary from project to project, but will need to include environmental processing activities, sponsor-specific project implementation activities associated with design and construction, and coordination with FAA personnel.

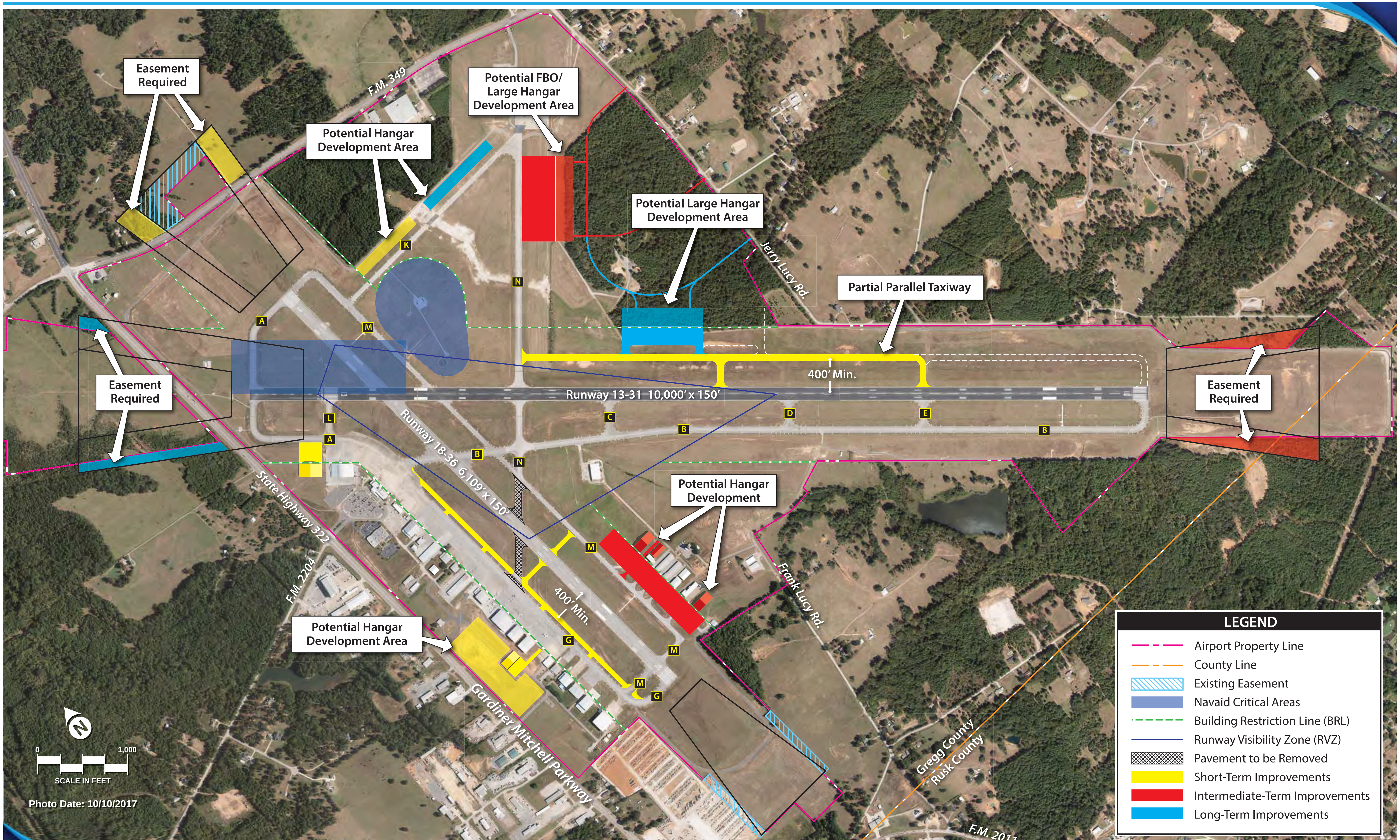

Exhibit 6A
DEVELOPMENT STAGING

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TABLE 6C
East Texas Regional Airport
Airport Capital Improvement Program - Airport Master Plan
Fiscal Years 2019-2038

FISCAL YEAR	PROJECT	QUANTITY	TOTAL COST	FEDERAL SHARE	LOCAL SHARE
2019	Construct Phase 2 Apron Southwest GA Area	LS	$1,000,000	$900,000	$100,000
2019	Construct Phase 3 Apron Southwest GA Area	LS	$900,000	$810,000	$90,000
Subtotal (FY 2019)			**$1,900,000**	**$1,710,000**	**$190,000**
2020	Design Taxiway G (new location)	LS	$400,000	$360,000	$40,000
Subtotal (FY 2020)			**$400,000**	**$360,000**	**$40,000**
2021	Construct Taxiway G - New Alignment	24,000 SY	$4,800,000	$4,320,000	$480,000
2021	Sealcoat Runway 13-31	LS	$1,000,000	$900,000	$100,000
2021	Sealcoat Runway 18-36	LS	$700,000	$630,000	$70,000
Subtotal (FY 2021)			**$6,500,000**	**$5,850,000**	**$650,000**
2022	Design Partial Parallel Taxiway (Between Taxiways E and N)	LS	$400,000	$360,000	$40,000
2022	Easement Acquisition (Approach Protection) - Phase 1	±15 AC	$300,000	$270,000	$30,000
Subtotal (FY 2022)			**$700,000**	**$630,000**	**$70,000**
2023	Construct Partial Parallel Taxiway (Between Taxiways E and N)	30,000 SY	$6,000,000	$5,400,000	$600,000
2023	Easement Acquisition (Approach Protection) - Phase 2	±15 AC	$300,000	$270,000	$30,000
Subtotal (FY 2023)			**$6,300,000**	**$5,670,000**	**$630,000**
SHORT-TERM (2019-2023) PROJECT TOTALS			**$15,800,000**	**$14,220,000**	**$1,580,000**
FY 2024-2028	Design/Construct Parking Apron (Northeast) Phase 1	30,000 SY	$3,500,000	$3,150,000	$350,000
	Clear and Grub/Tree Removal - Phase 1	35 AC	$525,000	$472,500	$52,500
	Construct Access Road for Large Hangar Development - Phase 1	1,000 LF	$2,000,000	$1,800,000	$200,000
	Taxiway Extensions for New Hangars	LS	$1,000,000	$900,000	$100,000
	Easement Acquisition (Approach Protection) - Phase 3	±15 AC	$300,000	$270,000	$30,000
	Utility Extensions - Airpark	60 AC	$2,000,000	$0	$2,000,000
	Equipment Replacement - Airfield	LS	$2,000,000	$1,800,000	$200,000
	Pavement Rehabilitation - Runway 13-31 and taxiways	330,000 SY	$19,800,000	$17,820,000	$1,980,000
INTERMEDIATE-TERM (2024-2028) PROJECT TOTALS			**$31,125,000**	**$26,212,500**	**$4,912,500**
FY 2029-2038	Design/Construct Parking Apron (Northeast) Phase 2	40,000 SY	$4,500,000	$4,050,000	$450,000
	Clear and Grub/Tree Removal - Phase 2	25 AC	$375,000	$337,500	$37,500
	Extend Access Road for Large Hangar Development - Phase 2	2,000 LF	$4,000,000	$3,600,000	$400,000
	Easement Acquisition (Approach Protection) - Phase 4	±15 AC	$150,000	$135,000	$15,000
	Taxiway Extensions for New Hangar Construction	LS	$1,000,000	$900,000	$100,000
	Ramp Expansion (Large Hangars-Runway 13-31)	30,000 SY	$3,500,000	$3,150,000	$350,000
	Roadway/Utility Extensions	LS	$2,000,000	$1,800,000	$200,000
	Pavement Rehabilitation - Runway 18-36 and taxiways	136,000 SY	$8,200,000	$7,380,000	$820,000
	Equipment Replacement - Airfield	LS	$2,000,000	$1,800,000	$200,000
LONG-TERM (2029-2038) PROJECT TOTALS			**$25,725,000**	**$23,152,500**	**$2,572,500**
GRAND TOTAL			**$72,650,000**	**$63,585,000**	**$9,065,000**

LS – Lump Sum
SY – Square Yard
AC – Acres
LF – Linear Feet

Appendix A

Glossary of Terms

EAST TEXAS REGIONAL AIRPORT

Glossary of Terms

A

ABOVE GROUND LEVEL: The elevation of a point or surface above the ground.

ACCELERATE-STOP DISTANCE AVAILABLE (ASDA): See declared distances.

ADVISORY CIRCULAR: External publications issued by the FAA consisting of nonregulatory material providing for the recommendations relative to a policy, guidance and information relative to a specific aviation subject.

AIR CARRIER: An operator which: (1) performs at least five round trips per week between two or more points and publishes flight schedules which specify the times, days of the week, and places between which such flights are performed; or (2) transports mail by air pursuant to a current contract with the U.S. Postal Service. Certified in accordance with Federal Aviation Regulation (FAR) Parts 121 and 127.

AIRCRAFT: A transportation vehicle that is used or intended for use for flight.

AIRCRAFT APPROACH CATEGORY: A grouping of aircraft based on 1.3 times the stall speed in their landing configuration at their maximum certificated landing weight. The categories are as follows:

- Category A: Speed less than 91 knots.
- Category B: Speed 91 knots or more, but less than 121 knots.
- Category C: Speed 121 knots or more, but less than 141 knots.
- Category D: Speed 141 knots or more, but less than 166 knots.
- Category E: Speed greater than 166 knots.

AIRCRAFT OPERATION: The landing, takeoff, or touch-and-go procedure by an aircraft on a runway at an airport.

AIRCRAFT OPERATIONS AREA (AOA): A restricted and secure area on the airport property designed to protect all aspects related to aircraft operations.

AIRCRAFT OWNERS AND PILOTS ASSOCIATION: A private organization serving the interests and needs of general aviation pilots and aircraft owners.

AIRCRAFT RESCUE AND FIRE FIGHTING: A facility located at an airport that provides emergency vehicles, extinguishing agents, and personnel responsible for minimizing the impacts of an aircraft accident or incident.

AIRFIELD: The portion of an airport which contains the facilities necessary for the operation of aircraft.

AIRLINE HUB: An airport at which an airline concentrates a significant portion of its activity and which often has a significant amount of connecting traffic.

AIRPLANE DESIGN GROUP (ADG): A grouping of aircraft based upon wingspan. The groups are as follows:

- Group I: Up to but not including 49 feet.
- Group II: 49 feet up to but not including 79 feet.
- Group III: 79 feet up to but not including 118 feet.
- Group IV: 118 feet up to but not including 171 feet.
- Group V: 171 feet up to but not including 214 feet.
- Group VI: 214 feet or greater.

AIRPORT AUTHORITY: A quasi-governmental public organization responsible for setting the policies governing the management and operation of an airport or system of airports under its jurisdiction.

AIRPORT BEACON: A navigational aid located at an airport which displays a rotating light beam to identify whether an airport is lighted.

AIRPORT CAPITAL IMPROVEMENT PLAN: The planning program used by the Federal Aviation Administration to identify, prioritize, and distribute funds for airport development and the needs of the National Airspace System to meet specified national goals and objectives.

AIRPORT ELEVATION: The highest point on the runway system at an airport expressed in feet above mean sea level (MSL).

AIRPORT IMPROVEMENT PROGRAM: A program authorized by the Airport and Airway Improvement Act of 1982 that provides funding for airport planning and development.

AIRPORT LAYOUT DRAWING (ALD): The drawing of the airport showing the layout of exis. ng and proposed airport facilities.

AIRPORT LAYOUT PLAN (ALP): A scaled drawing of the existing and planned land and facilities necessary for the operation and development of the airport.

AIRPORT LAYOUT PLAN DRAWING SET: A set of technical drawings depicting the current and future airport conditions. The individual sheets comprising the set can vary with the complexities of the airport, but the FAA-required drawings include the Airport Layout Plan (sometimes referred to as the Airport Layout Drawing (ALD), the Airport Airspace Drawing, and the Inner Portion of the Approach Surface Drawing, On-Airport Land Use Drawing, and Property Map.

AIRPORT MASTER PLAN: The planner's concept of the long-term development of an airport.

AIRPORT MOVEMENT AREA SAFETY SYSTEM: A system that provides automated alerts and warnings of potential runway incursions or other hazardous aircraft movement events.

AIRPORT OBSTRUCTION CHART: A scaled drawing depicting the Federal Aviation Regulation (FAR) Part 77 surfaces, a representation of objects that penetrate these surfaces, runway, taxiway, and ramp areas, navigational aids, buildings, roads and other detail in the vicinity of an airport.

AIRPORT REFERENCE CODE (ARC): A coding system used to relate airport design criteria to the operational (Aircraft Approach Category) to the physical characteristics (Airplane Design Group) of the airplanes intended to operate at the airport.

AIRPORT REFERENCE POINT (ARP): The latitude and longitude of the approximate center of the airport.

AIRPORT SPONSOR: The entity that is legally responsible for the management and operation of an airport, including the fulfillment of the requirements of laws and regulations related thereto.

AIRPORT SURFACE DETECTION EQUIPMENT: A radar system that provides air traffic controllers with a visual representation of the movement of aircraft and other vehicles on the ground on the airfield at an airport.

AIRPORT SURVEILLANCE RADAR: The primary radar located at an airport or in an air traffic control terminal area that receives a signal at an antenna and transmits the signal to air traffic control display equipment defining the location of aircraft in the air. The signal provides only the azimuth and range of aircraft from the location of the antenna.

AIRPORT TRAFFIC CONTROL TOWER (ATCT): A central operations facility in the terminal air traffic control system, consisting of a tower, including an associated instrument flight rule (IFR) room if radar equipped, using air/ground communications and/or radar, visual signaling and other devices to provide safe and expeditious movement of terminal air traffic.

AIR ROUTE TRAFFIC CONTROL CENTER: A facility which provides en route air traffic control service to aircraft operating on an IFR flight plan within controlled airspace over a large, multi-state region.

AIRSIDE: The portion of an airport that contains the facilities necessary for the operation of aircraft.

AIRSPACE: The volume of space above the surface of the ground that is provided for the operation of aircraft.

AIR TAXI: An air carrier certificated in accordance with FAR Part 121 and FAR Part 135 and authorized to provide, on demand, public transportation of persons and property by aircraft. Generally operates small aircraft "for hire" for specific trips.

AIR TRAFFIC CONTROL: A service operated by an appropriate organization for the purpose of providing for the safe, orderly, and expeditious flow of air traffic.

AIR ROUTE TRAFFIC CONTROL CENTER (ARTCC): A facility established to provide air traffic control service to aircraft operating on an IFR flight plan within controlled airspace and principally during the en route phase of flight.

AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER: A facility operated by the FAA which is responsible for the central flow control, the central altitude reservation system, the airport reservation position system, and the air traffic service contingency command for the air traffic control system.

AIR TRAFFIC HUB: A categoriza. on of commercial service airports or group of commercial service airports in a metropolitan or urban area based upon the proportion of annual national enplanements existing at the airport or airports. The categories are large hub, medium hub, small hub, or non-hub. It forms the basis for the apportionment of entitlement funds.

AIR TRANSPORT ASSOCIATION OF AMERICA: An organization consisting of the principal U.S. airlines that represents the interests of the airline industry on major aviation issues before federal, state, and local government bodies. It promotes air transportation safety by coordinating industry and governmental safety programs and it serves as a focal point for industry efforts to standardize practices and enhance the efficiency of the air transportation system.

ALERT AREA: See special-use airspace.

ALTITUDE: The vertical distance measured in feet above mean sea level.

ANNUAL INSTRUMENT APPROACH (AIA): An approach to an airport with the intent to land by an aircraft in accordance with an IFR flight plan when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude.

APPROACH LIGHTING SYSTEM (ALS): An airport lighting facility which provides visual guidance to landing aircraft by radiating light beams by which the pilot aligns the aircraft with the extended centerline of the runway on his final approach and landing.

APPROACH MINIMUMS: The altitude below which an aircraft may not descend while on an IFR approach unless the pilot has the runway in sight.

APPROACH SURFACE: An imaginary obstruction limiting surface defined in FAR Part 77 which is longitudinally centered on an extended runway centerline and extends outward and upward from the primary surface at each end of a runway at a designated slope and distance based upon the type of available or planned approach by aircraft to a runway.

APRON: A specified portion of the airfield used for passenger, cargo or freight loading and unloading, aircraft parking, and the refueling, maintenance and servicing of aircraft.

AREA NAVIGATION: The air navigation procedure that provides the capability to establish and maintain a flight path on an arbitrary course that remains within the coverage area of navigational sources being used.

AUTOMATED TERMINAL INFORMATION SERVICE (ATIS): The continuous broadcast of recorded non-control information at towered airports. Information typically includes wind speed, direction, and runway in use.

AUTOMATED SURFACE OBSERVATION SYSTEM (ASOS): A reporting system that provides frequent airport ground surface weather observation data through digitized voice broadcasts and printed reports.

AUTOMATIC WEATHER OBSERVATION STATION (AWOS): Equipment used to automatically record weather conditions (i.e. cloud height, visibility, wind speed and direction, temperature, dew point, etc.)

AUTOMATIC DIRECTION FINDER (ADF): An aircraft radio navigation system which senses and indicates the direction to a non-directional radio beacon (NDB) ground transmitter.

AVIGATION EASEMENT: A contractual right or a property interest in land over which a right of unobstructed flight in the airspace is established.

AZIMUTH: Horizontal direction expressed as the angular distance between true north and the direction of a fixed point (as the observer's heading).

B

BASE LEG: A flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline. See "traffic pattern."

BASED AIRCRAFT: The general aviation aircraft that use a specific airport as a home base.

BEARING: The horizontal direction to or from any point, usually measured clockwise from true north or magnetic north.

BLAST FENCE: A barrier used to divert or dissipate jet blast or propeller wash.

BLAST PAD: A prepared surface adjacent to the end of a runway for the purpose of elimina. ng the erosion of the ground surface by the wind forces produced by airplanes at the initiation of takeoff operations.

BUILDING RESTRICTION LINE (BRL): A line which identifies suitable building area locations on the airport.

C

CAPITAL IMPROVEMENT PLAN: The planning program used by the Federal Aviation Administration to identify, prioritize, and distribute Airport Improvement Program funds for airport development and the needs of the National Airspace System to meet specified national goals and objectives.

CARGO SERVICE AIRPORT: An airport served by aircraft providing air transportation of property only, including mail, with an annual aggregate landed weight of at least 100,000,000 pounds.

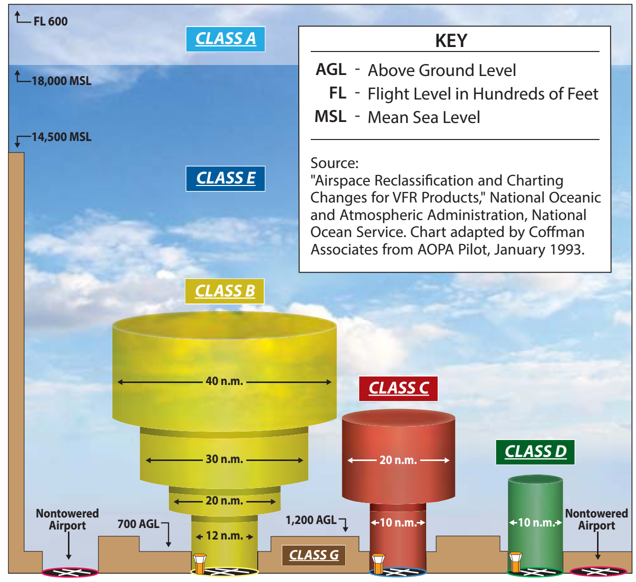
CATEGORY I: An Instrument Landing System (ILS) that provides acceptable guidance information to an aircraft from the coverage limits of the ILS to the point at which the localizer course line intersects the glide path at a decision height of 200 feet above the horizontal plane containing the runway threshold.

CATEGORY II: An ILS that provides acceptable guidance information to an aircraft from the coverage limits of the ILS to the point at which the localizer course line intersects the glide path at a decision height of 100 feet above the horizontal plane containing the runway threshold.

CATEGORY III: An ILS that provides acceptable guidance information to a pilot from the coverage limits of the ILS with no decision height specified above the horizontal plane containing the runway threshold.

CEILING: The height above the ground surface to the location of the lowest layer of clouds which is reported as either broken or overcast.

CIRCLING APPROACH: A maneuver initiated by the pilot to align the aircraft with the runway for landing when flying a predetermined circling instrument approach under IFR.



CLASS A AIRSPACE: See Controlled Airspace.

CLASS B AIRSPACE: See Controlled Airspace.

CLASS C AIRSPACE: See Controlled Airspace.

CLASS D AIRSPACE: See Controlled Airspace.

CLASS E AIRSPACE: See Controlled Airspace.

CLASS G AIRSPACE: See Controlled Airspace.

CLEAR ZONE: See Runway Protection Zone.

COMMERCIAL SERVICE AIRPORT: A public airport providing scheduled passenger service that enplanes at least 2,500 annual passengers.

COMMON TRAFFIC ADVISORY FREQUENCY: A radio frequency identified in the appropriate aeronautical chart which is designated for the purpose of transmitting airport advisory information and procedures while operating to or from an uncontrolled airport.

COMPASS LOCATOR (LOM): A low power, low/medium frequency radio-beacon installed in conjunction with the instrument landing system at one or two of the marker sites.

CONICAL SURFACE: An imaginary obstruction-limiting surface defined in FAR Part 77 that extends

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from the edge of the horizontal surface outward and upward at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

CONTROLLED AIRPORT: An airport that has an opera. ng airport traffic control tower.

CONTROLLED AIRSPACE: Airspace of defined dimensions within which air traffic control services are provided to instrument flight rules (IFR) and visual flight rules (VFR) flights in accordance with the airspace classification. Controlled airspace in the United States is designated as follows:

- **CLASS A**: Generally, the airspace from 18,000 feet mean sea level (MSL) up to but not including flight level FL600. All persons must operate their aircraft under IFR.

- **CLASS B**:
Generally, the airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports. The configuration of Class B airspace is unique to each airport, but typically consists of two or more layers of air space and is designed to contain all published instrument approach procedures to the airport. An air traffic control clearance is required for all aircraft to operate in the area.

- **CLASS C**: Generally, the airspace from the surface to 4,000 feet above the airport elevation (charted as MSL) surrounding those airports that have an operational control tower and radar approach control and are served by a qualifying number of IFR operations or passenger enplanements. Although individually tailored for each airport, Class C airspace typically consists of a surface area with a five nautical mile (nm) radius and an outer area with a 10 nautical mile radius that extends from 1,200 feet to 4,000 feet above the airport elevation. Two-way radio communication is required for all aircraft.

- **CLASS D**: Generally, that airspace from the surface to 2,500 feet above the air port elevation (charted as MSL) surrounding those airports that have an operational control tower. Class D airspace is individually tailored and configured to encompass published instrument approach procedure. Unless otherwise authorized, all persons must establish two-way radio communication.

- **CLASS E**: Generally, controlled airspace that is not classified as Class A, B, C, or D. 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. Class E airspace encompasses all Victor Airways. Only aircraft following instrument flight rules are required to establish two-way radio communication with air traffic control.

- **CLASS G**: Generally, that airspace not classified as Class A, B, C, D, or E. Class G airspace is uncontrolled for all aircraft. Class G airspace extends from the surface to the overlying Class E airspace.

CONTROLLED FIRING AREA: See special-use airspace.

CROSSWIND: A wind that is not parallel to a runway centerline or to the intended flight path of an aircraft.

CROSSWIND COMPONENT: The component of wind that is at a right angle to the runway centerline or the intended flight path of an aircraft.

CROSSWIND LEG: A flight path at right angles to the landing runway off its upwind end. See "traffic pattern."

D

DECIBEL: A unit of noise representing a level relative to a reference of a sound pressure 20 micro newtons per square meter.

DECISION HEIGHT/ DECISION ALTITUDE: The height above the end of the runway surface at which a decision must be made by a pilot during the ILS or Precision Approach Radar approach to either continue the approach or to execute a missed approach.

DECLARED DISTANCES: The distances declared available for the airplane's takeoff runway, takeoff distance, accelerate-stop distance, and landing distance requirements. The distances are:

- **TAKEOFF RUNWAY AVAILABLE (TORA):** The runway length declared available and suitable for the ground run of an airplane taking off.

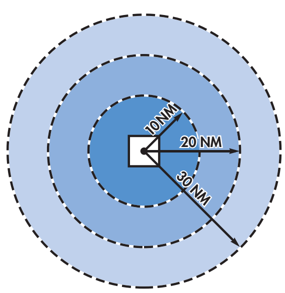
- **TAKEOFF DISTANCE AVAILABLE (TODA):** The TORA plus the length of any remaining runway and/or clear way beyond the far end of the TORA.
- **ACCELERATE-STOP DISTANCE AVAILABLE (ASDA):** The runway plus stopway length declared available for the accelera. on and deceleration of an aircraft aborting a takeoff.
- **LANDING DISTANCE AVAILABLE (LDA):** The runway length declared available and suitable for landing.

DEPARTMENT OF TRANSPORTATION: The cabinet level federal government organization consisting of modal operating agencies, such as the Federal Aviation Administration, which was established to promote the coordination of federal transportation programs and to act as a focal point for research and development efforts in transportation.

DISCRETIONARY FUNDS: Federal grant funds that may be appropriated to an airport based upon designation by the Secretary of Transportation or Congress to meet a specified national priority such as enhancing capacity, safety, and security, or mitigating noise.

DISPLACED THRESHOLD: A threshold that is located at a point on the runway other than the designated beginning of the runway.

DISTANCE MEASURING EQUIPMENT (DME): Equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid.



DNL: The 24-hour average sound level, in Aweighted decibels, obtained after the addition of ten decibels to sound levels for the periods between 10 p.m. and 7 a.m. as averaged over a span of one year. It is the FAA standard metric for determining the cumulative exposure of individuals to noise.

DOWNWIND LEG: A flight path parallel to the landing runway in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg. Also see "traffic pattern."

E

EASEMENT: The legal right of one party to use a portion of the total rights in real estate owned by another party. This may include the right of passage over, on, or below the property; certain air rights above the property, including view rights; and the rights to any specified form of development or activity, as well as any other legal rights in the property that may be specified in the easement document.

ELEVATION: The vertical distance measured in feet above mean sea level.

ENPLANED PASSENGERS: The total number of revenue passengers boarding aircraft, including originating, stop-over, and transfer passengers, in scheduled and nonscheduled services.

ENPLANEMENT: The boarding of a passenger, cargo, freight, or mail on an aircraft at an airport.

ENTITLEMENT: Federal funds for which a commercial service airport may be eligible based upon its annual passenger enplanements.

ENVIRONMENTAL ASSESSMENT (EA): An environmental analysis performed pursuant to the National Environmental Policy Act to determine whether an action would significantly affect the environment and thus require a more detailed environmental impact statement.

ENVIRONMENTAL AUDIT: An assessment of the current status of a party's compliance with applicable environmental requirements of a party's environmental compliance policies, practices, and controls.

ENVIRONMENTAL IMPACT STATEMENT (EIS): A document required of federal agencies by the National Environmental Policy Act for major projects are legislative proposals affecting the environment. It is a tool for decision-making describing the positive and negative effects of a proposed action and citing alternative actions.

ESSENTIAL AIR SERVICE: A federal program which guarantees air carrier service to selected small cities by providing subsidies as needed to prevent these cities from such service.

F

FEDERAL AVIATION REGULATIONS: The general and permanent rules established by the execu. ve departments and agencies of the Federal Government for aviation, which are published in the Federal Register. These are the aviation subset of the Code of Federal Regulations.

FEDERAL INSPECTION SERVICES: The provision of customs and immigration services including passport inspection, inspection of baggage, the collection of duties on certain imported items, and the inspections for agricultural products, illegal drugs, or other restricted items.

FINAL APPROACH: A flight path in the direction of landing along the extended runway centerline. The final approach normally extends from the base leg to the runway. See "traffic pattern."

FINAL APPROACH AND TAKEOFF AREA (FATO). A defined area over which the final phase of the helicopter approach to a hover, or a landing is completed and from which the takeoff is initiated.

FINAL APPROACH FIX: The designated point at which the final approach segment for an aircraft landing on a runway begins for a non-precision approach.

FINDING OF NO SIGNIFICANT IMPACT (FONSI): A public document prepared by a Federal agency that presents the rationale why a proposed action will not have a significant effect on the environment and for which an environmental impact statement will not be prepared.

FIXED BASE OPERATOR (FBO): A provider of services to users of an airport. Such services include, but are not limited to, hangaring, fueling, flight training, repair, and maintenance.

FLIGHT LEVEL: A measure of altitude used by aircraft flying above 18,000 feet. Flight levels are indicated by three digits representing the pressure altitude in hundreds of feet. An airplane flying at flight level 360 is flying at a pressure altitude of 36,000 feet. This is expressed as FL 360.

FLIGHT SERVICE STATION: An operations facility in the national flight advisory system which utilizes data interchange facilities for the collection and dissemination of Notices to Airmen, weather, and administrative data and which provides pre-flight and in-flight advisory services to pilots through air and ground based communication facilities.

FRANGIBLE NAVAID: A navigational aid which retains its structural integrity and stiffness up to a designated maximum load, but on impact from a greater load, breaks, distorts, or yields in such a manner as to present the minimum hazard to aircraft.

G

GENERAL AVIATION: That portion of civil aviation which encompasses all facets of aviation except air carriers holding a certificate of convenience and necessity, and large aircraft commercial operators.

GENERAL AVIATION AIRPORT: An airport that provides air service to only general aviation.

GLIDESLOPE (GS): Provides vertical guidance for aircraft during approach and landing. The glideslope consists of the following:

1. Electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as ILS; or

2. Visual ground aids, such as VASI, which provide vertical guidance for VFR approach or for the visual portion of an instrument approach and landing.

GLOBAL POSITIONING SYSTEM (GPS): A system of 48 satellites used as reference points to enable navigators equipped with GPS receivers to determine their latitude, longitude, and altitude.

GROUND ACCESS: The transportation system on and around the airport that provides access to and from the airport by ground transportation vehicles for passengers, employees, cargo, freight, and airport services.

H

HELIPAD: A designated area for the takeoff, landing, and parking of helicopters.

HIGH INTENSITY RUNWAY LIGHTS: The highest classification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

HIGH-SPEED EXIT TAXIWAY: A long radius taxiway designed to expedite aircra. turning off the runway after landing (at speeds to 60 knots), thus reducing runway occupancy time.

HORIZONTAL SURFACE: An imaginary obstruction-limiting surface defined in FAR Part 77 that is specified as a portion of a horizontal plane surrounding a runway located 150 feet above the established airport elevation. The specific horizontal dimensions of this surface are a function of the types of approaches existing or planned for the runway.

I

INITIAL APPROACH FIX: The designated point at which the initial approach segment begins for an instrument approach to a runway.

INSTRUMENT APPROACH PROCEDURE: A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually.

INSTRUMENT FLIGHT RULES (IFR): Procedures for the conduct of flight in weather conditions below Visual Flight Rules weather minimums. The term IFR is often also used to define weather conditions and the type of flight plan under which an aircraft is operating.

INSTRUMENT LANDING SYSTEM (ILS): A precision instrument approach system which normally consists of the following electronic components and visual aids:

1. Localizer.
2. Glide Slope.
3. Outer Marker.
4. Middle Marker.
5. Approach Lights.

INSTRUMENT METEOROLOGICAL CONDITIONS: Meteorological conditions expressed in terms of specific visibility and ceiling conditions that are less than the minimums specified for visual meteorological conditions.

ITINERANT OPERATIONS: Operations by aircraft that are not based at a specified airport.

K

KNOTS: A unit of speed length used in navigation that is equivalent to the number of nautical miles traveled in one hour.

L

LANDSIDE: The portion of an airport that provides the facilities necessary for the processing of passengers, cargo, freight, and ground transportation vehicles.

LANDING DISTANCE AVAILABLE (LDA): See declared distances.

LARGE AIRPLANE: An airplane that has a maximum certified takeoff weight in excess of 12,500 pounds.

LOCAL AREA AUGMENTATION SYSTEM: A differential GPS system that provides localized measurement correction signals to the basic GPS signals to improve navigational accuracy integrity, continuity, and availability.

LOCAL OPERATIONS: Aircraft operations performed by aircraft that are based at the airport and that operate in the local traffic pattern or within sight of the airport, that are known to be departing for or arriving from flights in local practice areas within a prescribed distance from the airport, or that execute simulated instrument approaches at the airport.

LOCAL TRAFFIC: Aircraft operating in the traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from the local practice areas, or aircraft executing practice instrument approach procedures. Typically, this includes touch and-go training operations.

LOCALIZER: The component of an ILS which provides course guidance to the runway.

LOCALIZER TYPE DIRECTIONAL AID (LDA): A facility of comparable utility and accuracy to a localizer, but is not part of a complete ILS and is not aligned with the runway.

LONG RANGE NAVIGATION SYSTEM (LORAN): Long range navigation is an electronic navigational aid which determines aircraft position and speed by measuring the difference in the time of reception of synchronized pulse signals from two fixed transmitters. Loran is used for en route navigation.

LOW INTENSITY RUNWAY LIGHTS: The lowest classificaı on in terms of intensity or brightness for lights designated for use in delineaı ng the sides of a runway.

M

MEDIUM INTENSITY RUNWAY LIGHTS: The middle classificaı on in terms of intensity or brightness for lights designated for use in delineaı ng the sides of a runway.

MICROWAVE LANDING SYSTEM (MLS): An instrument approach and landing system that provides precision guidance in azimuth, elevaı on, and distance measurement.

MILITARY OPERATIONS: Aircraı operaı ons that are performed in military aircraı .

MILITARY OPERATIONS AREA (MOA): See special-use airspace

MILITARY TRAINING ROUTE: An air route depicted on aeronauı cal charts for the conduct of military flight training at speeds above 250 knots.

MISSED APPROACH COURSE (MAC): The flight route to be followed if, aı er an instrument approach, a landing is not affected, and occurring normally:

1. When the aircraı has descended to the decision height and has not established visual contact; or
2. When directed by air traffic control to pull up or to go around again.

MOVEMENT AREA: The runways, taxiways, and other areas of an airport which are uı lized for taxiing/hover taxiing, air taxiing, takeoff, and landing of aircraı , exclusive of loading ramps and parking areas. At those airports with a tower, air traffic control clearance is required for entry onto the movement area.

N

NATIONAL AIRSPACE SYSTEM: The network of air traffic control facili. es, air traffic control areas, and navigational facilities through the U.S.

NATIONAL PLAN OF INTEGRATED AIRPORT SYSTEMS: The national airport system plan developed by the Secretary of Transportation on a biannual basis for the development of public use airports to meet national air transportation needs.

NATIONAL TRANSPORTATION SAFETY BOARD: A federal government organization established to investigate and determine the probable cause of transportation accidents, to recommend equipment and procedures to enhance transportation safety, and to review on appeal the suspension or revocation of any certificates or licenses issued by the Secretary of Transportation.

NAUTICAL MILE: A unit of length used in navigation which is equivalent to the distance spanned by one minute of arc in latitude, that is, 1,852 meters or 6,076 feet. It is equivalent to approximately 1.15 statute mile.

NAVAID: A term used to describe any electrical or visual air navigational aids, lights, signs, and associated supporting equipment (i.e. PAPI, VASI, ILS, etc.)

NAVIGATIONAL AID: A facility used as, available for use as, or designed for use as an aid to air navigation.

NOISE CONTOUR: A continuous line on a map of the airport vicinity connecting all points of the same noise exposure level.

NON-DIRECTIONAL BEACON (NDB): A beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine his or her bearing to and from the radio beacon and home on, or track to, the station. When the radio beacon is installed in conjunction with the Instrument Landing System marker, it is normally called a Compass Locator.

NON-PRECISION APPROACH PROCEDURE: A standard instrument approach procedure in which no electronic glide slope is provided, such as VOR, TACAN, NDB, or LOC.

NOTICE TO AIRMEN: A notice containing information concerning the establishment, condition, or change in any component of or hazard in the National Airspace System, the timely knowledge of which is considered essential to personnel concerned with flight operations.

O

OBJECT FREE AREA (OFA): An area on the ground centered on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircra. operations by having the area free of objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes.

OBSTACLE FREE ZONE (OFZ): The airspace below 150 feet above the established airport elevation and along the runway and extended runway centerline that is required to be kept clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance for aircraft landing or taking off from the runway, and for missed approaches.

ONE-ENGINE INOPERABLE SURFACE: A surface emanating from the runway end at a slope ratio of 62.5:1. Air carrier airports are required to maintain a technical drawing of this surface depicting any object penetrations by January 1, 2010.

OPERATION: The take-off, landing, or touch-and-go procedure by an aircraft on a runway at an airport.

OUTER MARKER (OM): An ILS navigation facility in the terminal area navigation system located four to seven miles from the runway edge on the extended centerline, indicating to the pilot that he/she is passing over the facility and can begin final approach.

P

PILOT CONTROLLED LIGHTING: Runway lighting systems at an airport that are controlled by activating the microphone of a pilot on a specified radio frequency.

PRECISION APPROACH: A standard instrument approach procedure which provides runway alignment and glide slope (descent) information. It is categorized as follows:

- **CATEGORY I (CAT I)**: A precision approach which provides for approaches with a decision height of not less than 200 feet and visibility not less than 1/2 mile or Runway Visual Range (RVR) 2400 (RVR 1800) with operative touchdown zone and runway centerline lights.

- **CATEGORY II (CAT II)**: A precision approach which provides for approaches with a decision height of not less than 100 feet and visibility not less than 1200 feet RVR.

- **CATEGORY III (CAT III)**: A precision approach which provides for approaches with minima less than Category II.

PRECISION APPROACH PATH INDICATOR (PAPI): A lighting system providing visual approach slope guidance to aircraft during a landing approach. It is similar to a VASI but provides a sharper transition between the colored indicator lights.

PRECISION APPROACH RADAR: A radar facility in the terminal air traffic control system used to detect and display with a high degree of accuracy the direction, range, and elevation of an aircraft on the final approach to a runway.

PRECISION OBJECT FREE AREA (POFA): An area centered on the extended runway centerline, beginning at the runway threshold and extending behind the runway threshold that is 200 feet long by 800 feet wide. The POFA is a clearing standard which requires the POFA to be kept clear of above ground objects protruding above the runway safety area edge elevation (except for frangible NAVAIDS). The POFA applies to all new authorized instrument approach procedures with less than 3/4 mile visibility.

PRIMARY AIRPORT: A commercial service airport that enplanes at least 10,000 annual passengers.

PRIMARY SURFACE: An imaginary obstruction limiting surface defined in FAR Part 77 that is specified as a rectangular surface longitudinally centered about a runway. The specific dimensions of this surface are a function of the types of approaches existing or planned for the runway.

PROHIBITED AREA: See special-use airspace.

PVC: Poor visibility and ceiling. Used in determining Annual Service Volume. PVC conditions exist when the cloud ceiling is less than 500 feet and visibility is less than one mile.

R

RADIAL: A navigational signal generated by a Very High Frequency Omni-directional Range or VORTAC station that is measured as an azimuth from the station.

REGRESSION ANALYSIS: A statistical technique that seeks to identify and quantify the relationships between factors associated with a forecast.

REMOTE COMMUNICATIONS OUTLET (RCO): An unstaffed transmitter receiver/facility remotely controlled by air traffic personnel. RCOs serve flight service stations (FSSs). RCOs were established to provide ground-to-ground communications between air traffic control specialists and pilots at satellite airports for delivering en route clearances, issuing departure authorizations, and acknowledging instrument flight rules cancellations or departure/ landing times.

REMOTE TRANSMITTER/RECEIVER (RTR): See remote communications outlet. RTRs serve ARTCCs.

RELIEVER AIRPORT: An airport to serve general aviation aircraft which might otherwise use a congested air-carrier served airport.

RESTRICTED AREA: See special-use airspace.

RNAV: Area navigation - airborne equipment which permits flights over determined tracks within prescribed accuracy tolerances without the need to overfly ground-based navigation facilities. Used en route and for approaches to an airport.

RUNWAY: A defined rectangular area on an airport prepared for aircraft landing and takeoff. Runways are normally numbered in relation to their magnetic direction, rounded off to the nearest 10 degrees. For example, a runway with a magnetic heading of 180 would be designated Runway 18. The runway heading on the opposite end of the runway is 180 degrees from that runway end. For example, the opposite runway heading for Runway 18 would be Runway 36 (magnetic heading of 360). Aircraft can takeoff or land from either end of a runway, depending upon wind direction.

RUNWAY ALIGNMENT INDICATOR LIGHT: A series of high intensity sequentially flashing lights installed on the extended centerline of the runway usually in conjunc. on with an approach lighting system.

RUNWAY DESIGN CODE: A code signifiying the design standards to which the runway is to be built.

RUNWAY END IDENTIFICATION LIGHTING (REIL): Two synchronized flashing lights, one on each side of the runway threshold, which provide rapid and positive identification of the approach end of a particular runway.

RUNWAY GRADIENT: The average slope, measured in percent, between the two ends of a runway.

RUNWAY PROTECTION ZONE (RPZ): An area off the runway end to enhance the protection of people and property on the ground. The RPZ is trapezoidal in shape. Its dimensions are determined by the aircraft approach speed and runway approach type and minima.

RUNWAY REFERENCE CODE: A code signifying the current operational capabilities of a runway and associated taxiway.

RUNWAY SAFETY AREA (RSA): A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.

RUNWAY VISIBILITY ZONE (RVZ): An area on the airport to be kept clear of permanent objects so that there is an unobstructed line of- site from any point five feet above the runway centerline to any point five feet above an intersecting runway centerline.

RUNWAY VISUAL RANGE (RVR): An instrumentally derived value, in feet, representing the horizontal distance a pilot can see down the runway from the runway end.

S

SCOPE: The document that identifies and defines the tasks, emphasis, and level of effort associated with a project or study.

SEGMENTED CIRCLE: A system of visual indicators designed to provide traffic pattern information at airports without operating control towers.

SHOULDER: An area adjacent to the edge of paved runways, taxiways, or aprons providing a transi. on between the pavement and the adjacent surface; support for aircraft running off the pavement; enhanced drainage; and blast protection. The shoulder does not necessarily need to be paved.

SLANT-RANGE DISTANCE: The straight line distance between an aircraft and a point on the ground.

SMALL AIRCRAFT: An aircraft that has a maximum certified takeoff weight of up to 12,500 pounds.

SPECIAL-USE AIRSPACE: Airspace of defined dimensions identified by a surface area wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities. Special-use airspace classifications include:

- **ALERT AREA**: Airspace which may contain a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft.
- **CONTROLLED FIRING AREA**: Airspace wherein activities are conducted under conditions so controlled as to eliminate hazards to nonparticipating aircraft and to ensure the safety of persons or property on the ground.
- **MILITARY OPERATIONS AREA (MOA)**: Designated airspace with defined vertical and lateral dimensions established outside Class A airspace to separate/segregate certain military activities from instrument flight rule (IFR) traffic and to identify for visual flight rule (VFR) traffic where these activities are conducted.
- **PROHIBITED AREA**: Designated airspace within which the flight of aircraft is prohibited.
- **RESTRICTED AREA**: Airspace designated under Federal Aviation Regulation (FAR) 73, within which the flight of aircraft, while not wholly prohibited, is subject to restriction. Most restricted areas are designated joint use. When not in use by the using agency, IFR/VFR operations can be authorized by the controlling air traffic control facility.
- **WARNING AREA:** Airspace which may contain hazards to nonparticipating aircraft.

STANDARD INSTRUMENT DEPARTURE (SID): A preplanned coded air traffic control IFR departure routing, preprinted for pilot use in graphic and textual form only.

STANDARD INSTRUMENT DEPARTURE PROCEDURES: A published standard flight procedure to be utilized following takeoff to provide a transition between the airport and the terminal area or en route airspace.

STANDARD TERMINAL ARRIVAL ROUTE (STAR): A preplanned coded air traffic control IFR arrival routing, preprinted for pilot use in graphic and textual or textual form only.

STOP-AND-GO: A procedure wherein an aircraft will land, make a complete stop on the runway, and then commence a takeoff from that point. A stop-and-go is recorded as two operations: one operation for the landing and one operation for the takeoff.

STOPWAY: An area beyond the end of a takeoff runway that is designed to support an aircraft during an aborted takeoff without causing structural damage to the aircraft. It is not to be used for takeoff, landing, or taxiing by aircraft.

STRAIGHT-IN LANDING/APPROACH: A landing made on a runway aligned within 30 degrees of the final approach course following completion of an instrument approach.

T

TACTICAL AIR NAVIGATION (TACAN): An ultrahigh frequency electronic air navigation system which provides suitably-equipped aircraft a continuous indication of bearing and distance to the TACAN station.

TAKEOFF RUNWAY AVAILABLE (TORA): See declared distances.

TAKEOFF DISTANCE AVAILABLE (TODA): See declared distances.

TAXILANE: The portion of the aircraft parking area used for access between taxiways and aircraft parking positions.

TAXIWAY: A defined path established for the taxiing of aircraft from one part of an airport to another.

TAXIWAY DESIGN GROUP: A classification of airplanes based on outer to outer Main Gear Width (MGW) and Cockpit to Main Gear (CMG) distance.

TAXIWAY SAFETY AREA (TSA): A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway.

TERMINAL INSTRUMENT PROCEDURES: Published flight procedures for conducting instrument approaches to runways under instrument meteorological conditions.

TERMINAL RADAR APPROACH CONTROL: An element of the air traffic control system responsible for monitoring the en-route and terminal segment of air traffic in the airspace surrounding airports with moderate to high levels of air traffic.

TETRAHEDRON: A device used as a landing direction indicator. The small end of the tetrahedron points in the direction of landing.

THRESHOLD: The beginning of that portion of the runway available for landing. In some instances the landing threshold may be displaced.

TOUCH-AND-GO: An operation by an aircraft that lands and departs on a runway without stopping or exiting the runway. A touch-and go is recorded as two operations: one operation for the landing and one operation for the takeoff.

TOUCHDOWN: The point at which a landing aircraft makes contact with the runway surface.

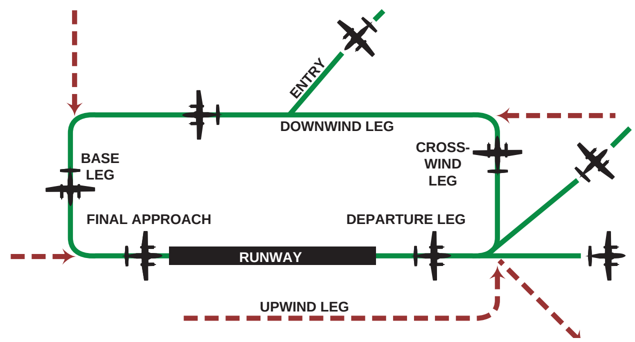
TOUCHDOWN AND LIFT-OFF AREA (TLOF): A load bearing, generally paved area, normally centered in the FATO, on which the helicopter lands or takes off.

TOUCHDOWN ZONE (TDZ): The first 3,000 feet of the runway beginning at the threshold.

TOUCHDOWN ZONE ELEVATION (TDZE): The highest elevation in the touchdown zone.

TOUCHDOWN ZONE (TDZ) LIGHTING: Two rows of transverse light bars located symmetrically about the runway centerline normally at 100- foot intervals. The basic system extends 3,000 feet along the runway.

TRAFFIC PATTERN: The traffic flow that is prescribed for aircraft landing at or taking off from an airport. The components of a typical traffic pattern are the upwind leg, crosswind leg, downwind leg, base leg, and final approach.



U

UNCONTROLLED AIRPORT: An airport without an air traffic control tower at which the control of Visual Flight Rules traffic is not exercised.

UNCONTROLLED AIRSPACE: Airspace within which aircraft are not subject to air traffic control.

UNIVERSAL COMMUNICATION (UNICOM): A nongovernment communication facility which may provide airport information at certain airports. Locations and frequencies of UNICOM's are shown on aeronautical charts and publications.

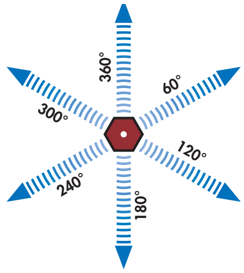
UPWIND LEG: A flight path parallel to the landing runway in the direction of landing. See "traffic pattern."

V

VECTOR: A heading issued to an aircraft to provide navigational guidance by radar.

VERY HIGH FREQUENCY/ OMNIDIRECTIONAL RANGE (VOR): A ground-based electronic navigation aid transmitting very high frequency navigation signals, 360 degrees in azimuth, oriented from magnetic north. Used as the basis for navigation in the national airspace system. The VOR periodically identifies itself by Morse Code and may have an additional voice identification feature.

VERY HIGH FREQUENCY OMNI-DIRECTIONAL RANGE/ TACTICAL AIR NAVIGATION (VORTAC): A naviga. on aid providing VOR azimuth, TACAN azimuth, and TACAN distance-measuring equipment (DME) at one site.



VICTOR AIRWAY: A control area or portion thereof established in the form of a corridor, the centerline of which is defined by radio navigational aids.

VISUAL APPROACH: An approach wherein an aircraft on an IFR flight plan, operating in VFR conditions under the control of an air traffic control facility and having an air traffic control authorization, may proceed to the airport of destination in VFR conditions.

VISUAL APPROACH SLOPE INDICATOR (VASI): An airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to landing by radiating a directional pattern of high intensity red and white focused light beams which indicate to the pilot that he is on path if he sees red/white, above path if white/white, and below path if red/red. Some airports serving large aircraft have three-bar VASI's which provide two visual guide paths to the same runway.

VISUAL FLIGHT RULES (VFR): Rules that govern the procedures for conducting flight under visual conditions. The term VFR is also used in the United States to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan.

VISUAL METEOROLOGICAL CONDITIONS: Meteorological conditions expressed in terms of specific visibility and ceiling conditions which are equal to or greater than the threshold values for instrument meteorological conditions.

VOR: See "Very High Frequency Omnidirectional Range Station."

VORTAC: See "Very High Frequency Omnidirectional Range Station/Tactical Air Navigation."

W

WARNING AREA: See special-use airspace.

WIDE AREA AUGMENTATION SYSTEM: An enhancement of the Global Positioning System that includes integrity broadcasts, differential corrections, and additional ranging signals for the purpose of providing the accuracy, integrity, availability, and continuity required to support all phases of flight.

Abbreviations

AC: advisory circular

ADF: automatic direction finder

ADG: airplane design group

AFSS: automated flight service station

AGL: above ground level

AIA: annual instrument approach

AIP: Airport Improvement Program

AIR-21: Wendell H. Ford Aviation Investment and Reform Act for the 21st Century

ALS: approach lighting system

ALSF-1: standard 2,400-foot high intensity approach lighting system with sequenced flashers (CAT I configuration)

ALSF-2: standard 2,400-foot high intensity approach lighting system with sequenced flashers (CAT II configuration)

AOA: Aircraft Operation Area

APV: instrument approach procedure with vertical guidance

ARC: airport reference code

ARFF: aircra. rescue and fire fighting

ARP: airport reference point

ARTCC: air route traffic control center

ASDA: accelerate-stop distance available

ASR: airport surveillance radar

ASOS: automated surface observation station

ATCT: airport traffic control tower

ATIS: automated terminal information service

AVGAS: aviation gasoline - typically 100 low lead (100LL)

AWOS: automatic weather observation station

BRL: building restriction line

CFR: Code of Federal Regulation

CIP: capital improvement program

DME: distance measuring equipment

DNL: day-night noise level

DWL: runway weight bearing capacity of aircraft with dual-wheel type landing gear

DTWL: runway weight bearing capacity of aircraft with dual-tandem type landing gear

FAA: Federal Aviation Administration

FAR: Federal Aviation Regulation

FBO: fixed base operator

FY: fiscal year

GPS: global positioning system

GS: glide slope

HIRL: high intensity runway edge lighting

IFR: instrument flight rules (FAR Part 91)

ILS: instrument landing system

IM: inner marker

LDA: localizer type directional aid

LDA: landing distance available

LIRL: low intensity runway edge lighting

LMM: compass locator at middle marker

LOM: compass locator at outer marker

LORAN: long range navigation

MALS: medium intensity approach lighting system with indicator lights

MIRL: medium intensity runway edge lighting

MITL: medium intensity taxiway edge lighting

MLS: microwave landing system

MM: middle marker

MOA: military operations area

MSL: mean sea level

NAVAID: navigational aid

NDB: nondirectional radio beacon

NM: nautical mile (6,076.1 feet)

NPES: National Pollutant Discharge Elimination System

NPIAS: National Plan of Integrated Airport Systems

NPRM: notice of proposed rule making

ODALS: omnidirectional approach lighting system

OFA: object free area

OFZ: obstacle free zone

OM: outer marker

PAC: planning advisory commi. ee

PAPI: precision approach path indicator

PFC: porous friction course

PFC: passenger facility charge

PCL: pilot-controlled lighting

PIW public information workshop

PLASI: pulsating visual approach slope indicator

POFA: precision object free area

PVASI: pulsating/steady visual approach slope indicator

PVC: poor visibility and ceiling

RCO: remote communications outlet

RRC: Runway Reference Code

RDC: Runway Design Code

REIL: runway end identification lighting

RNAV: area navigation

RPZ: runway protection zone

RSA: runway safety area

RTR: remote transmitter/receiver

RVR: runway visibility range

RVZ: runway visibility zone

SALS: short approach lighting system

SASP: state aviation system plan

SEL: sound exposure level

SID: standard instrument departure

SM: statute mile (5,280 feet)

SRE: snow removal equipment

SSALF: simplified short approach lighting system with runway alignment indicator lights

STAR: standard terminal arrival route

SWL: runway weight bearing capacity for aircraft with single-wheel tandem type landing gear

TACAN: tactical air navigational aid

TAF: Federal Aviation Administration (FAA) Terminal Area Forecast

TDG: Taxiway Design Group

TLOF: Touchdown and lift-off

TDZ: touchdown zone

TDZE: touchdown zone elevation

TODA: takeoff distance available

TORA: takeoff runway available

TRACON: terminal radar approach control

VASI: visual approach slope indicator

VFR: visual flight rules (FAR Part 91)

VHF: very high frequency

VOR: very high frequency omni-directional range

VORTAC: VOR and TACAN collocated

Appendix B

Worldwide Business Jet Shipments

EAST TEXAS
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APPENDIX B
Worldwide Business Jet Shipments

Aircraft	ADG	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Airbus																						
Airbus Corporate Jets (all models)	C-III+	0	0	0	0	5	2	0	0	9	11	13	11	13	15	10	9	6	5	4	1	114
Avcraft (prev. Fairchild)																						
Envoy 3	C-II	0	0	0	0	4	4	9	9	1	0	0	0	0	0	0	0	0	0	0	0	27
Boeing																						
Boeing Business Jets (all models)	C-III+	0	7	29	14	16	11	7	3	4	13	7	6	6	12	8	12	7	10	11	4	187
Bombardier Business Aircraft																						
Lear 31A	C-I	21	22	24	27	17	9	2	0	0	0	0	0	0	0	0	0	0	0	0	0	122
Learjet 40/XR	C-I	0	0	0	0	0	0	0	17	21	26	0	0	0	0	0	0	0	0	0	0	64
Learjet 45/XR	D-I	0	7	43	71	63	27	17	22	28	30	57	48	33	16	24	24	1	0	0	0	511
Learjet 60/XR	D-I	24	32	32	35	29	17	12	9	18	15	23	26	13	12	19	15	10	1	0	0	342
Learjet 70/75	D-I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	33	32	24	107
Challenger 300/350	C-II	0	0	0	0	0	0	1	28	50	55	51	59	33	29	37	48	55	54	68	62	630
Challenger 604/605	C-II	33	36	42	39	41	31	24	29	36	29	35	44	36	38	43	34	32	36	25	26	689
Global 5000/6000/Express	C-III	0	3	32	35	29	17	14	24	30	40	46	51	51	49	53	54	62	80	73	51	794
CL 850/870/890	C-II	0	0	0	0	0	0	0	0	5	18	12	17	7	6	6	4	2	0	1	0	78
Textron Aviation (Cessna)																						
510 Citation Mustang	B-I	0	0	0	0	0	0	0	0	0	1	45	101	125	73	43	38	20	8	8	10	472
525 Citation CJ1/CJ1+	B-I	63	64	59	56	61	30	22	20	18	25	34	20	14	3	2	0	0	0	0	0	491
525A Citation CJ2/CJ2+	B-II	0	0	0	8	41	86	56	27	23	37	44	56	21	17	15	19	15	2	0	0	467
525B Citation CJ3/CJ4	B-II	0	0	0	0	0	0	0	6	48	72	78	88	40	39	70	65	48	44	56	54	708
550 Citation Bravo	B-II	28	34	36	54	48	41	31	25	21	18	0	0	0	0	0	0	0	0	0	0	336
560 Citation Ultra	B-II	47	41	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	120
560 Citation Encore/Encore+	B-II	0	0	0	6	37	36	21	24	13	12	23	28	5	5	4	0	0	0	0	0	214
560 Citation Excel	B-II	0	15	39	79	85	81	48	23	0	0	0	0	0	0	0	0	0	0	0	0	370
560 Citation XLS/XLS+	B-II	0	0	0	0	0	0	0	32	64	73	82	80	44	22	27	31	31	22	21	19	548
650 Citation VII	B-II	8	11	14	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45

680 Citation Sovereign/+	B-II	0	0	0	0	0	0	0	9	46	57	65	77	33	16	19	22	13	28	18	11	414
680A Citation Latitude	B-II	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	42	58
750 Citation X/X+	C-II	28	30	36	37	34	31	18	15	14	12	17	16	7	3	3	6	0	9	6	4	326
Dassault Falcon Jet																					
Falcon 50EX	B-II	10	13	11	18	13	10	8	5	5	5	2	1	0	0	0	0	0	0	0	0	101
Falcon 900B/C	B-II	7	5	8	6	6	4	3	3	1	0	0	0	0	0	0	0	0	0	0	0	43
Falcon 900EX/DX/EX EASy/LX	C-II	16	15	16	23	21	17	10	15	18	20	28	23	18	24	12	7	11	8	0	0	302
Falcon 2000	B-II	18	14	34	26	35	35	12	11	6	6	1	0	0	0	0	0	0	0	0	0	198
Falcon 2000DX/EX/LX/EX EASy	C-II	0	0	0	0	0	0	16	29	21	30	33	27	27	30	20	22	23	31	0	0	309
Falcon 2000S/LXS/900LX/7X/9X	C-II	0	0	0	0	0	0	0	0	0	0	6	21	32	41	31	37	43	27	55	49	342
Eclipse/ONE Aviation																					
Eclipse 500/550	B-I	0	0	0	0	0	0	0	0	0	1	98	161	0	0	0	0	0	12	7	8	287
Embraer																					
Phenom 100/E	B-I	0	0	0	0	0	0	0	0	0	0	0	2	97	100	41	29	30	19	12	10	340
Phenom 300	B-II	0	0	0	0	0	0	0	0	0	0	0	0	1	26	42	48	60	73	70	63	383
Legacy 450/500/600/650	C-II	0	0	0	0	0	8	13	13	20	27	36	36	18	11	13	17	21	21	35	42	331
Lineage 1000/E190/Shuttles	C-III	0	0	0	0	0	0	0	0	0	0	0	0	6	8	3	5	8	3	3	2	38
Emivest (prev. Sino Swearingen)																					
SJ30-2	B-I	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	4
Gulfstream Aerospace																					
G100/150/200 (Astra/Galaxy)	C-II	6	14	10	17	30	24	24	22	26	42	59	69	19	24	21	11	23	33	34	27	535
G300/350/400/450 (Prev. G-IV)	D-II	22	32	39	37	36	29	21	24	26	28	33	32	30	31	35	0	0	0	0	0	455
G500/550/650 (Prev. G-V/G-VSP)	D-III	29	29	31	34	35	32	29	32	37	43	46	55	45	44	43	83	121	117	120	88	1093
Textron Aviation (Beechcraft)																					
Premier 1/A	B-I	0	0	0	0	18	29	29	37	30	23	54	31	16	11	11	3	0	0	0	0	292
Hawker 400XP	B-I	43	43	45	51	25	19	24	28	53	53	41	35	11	12	1	0	0	0	0	0	484
Hawker 750	C-I	0	0	0	0	0	0	0	0	0	0	0	23	13	5	7	0	0	0	0	0	48

Hawker 800XP/850XP	C-II	33	48	55	67	55	46	47	50	58	64	35	15	3	1	1	0	0	0	0	0	578
Hawker 900XP	C-II	0	0	0	0	0	0	0	0	0	0	32	50	35	28	22	17	0	0	0	0	184
Hawker 4000	C-II	0	0	0	0	0	0	0	0	0	0	0	6	20	16	10	12	6	0	0	0	70
Totals		436	515	667	752	784	676	518	591	750	887	1137	1315	874	767	696	672	666	676	675	597	14651

Aircraft Deliveries Categorized by Airplane Design Group (ADG)

ADG By Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
B-I	106	107	104	107	104	78	75	85	101	104	273	350	265	199	98	70	50	39	27	28	2370
B-II	118	133	174	209	265	293	179	165	227	280	295	330	144	125	177	185	167	169	181	189	4005
Total B-II and Smaller	**224**	**240**	**278**	**316**	**369**	**371**	**254**	**250**	**328**	**384**	**568**	**680**	**409**	**324**	**275**	**255**	**217**	**208**	**208**	**217**	6375
C-I	21	22	24	27	17	9	2	17	21	26	0	23	13	5	7	0	0	0	0	0	234
C-II	116	143	159	183	185	161	162	210	249	297	344	383	255	251	219	215	216	219	224	210	4401
C-III	0	10	61	49	50	30	21	27	43	64	66	68	76	84	74	80	83	98	91	58	1133
D-I	24	39	75	106	92	44	29	31	46	45	80	74	46	28	43	39	29	34	32	24	960
D-II	22	32	39	37	36	29	21	24	26	28	33	32	30	31	35	0	0	0	0	0	455
D-III	29	29	31	34	35	32	29	32	37	43	46	55	45	44	43	83	121	117	120	88	1093
Total C-I and Larger	**212**	**275**	**389**	**436**	**415**	**305**	**264**	**341**	**422**	**503**	**569**	**635**	**465**	**443**	**421**	**417**	**449**	**468**	**467**	**380**	8276
TOTAL	**436**	**515**	**667**	**752**	**784**	**676**	**518**	**591**	**750**	**887**	**1137**	**1315**	**874**	**767**	**696**	**672**	**666**	**676**	**675**	**597**	14651
Total B-II and Smaller (%)	51.4	46.6	41.7	42.0	47.1	54.9	49.0	42.3	43.7	43.3	50.0	51.7	46.8	42.2	39.5	37.9	32.6	30.8	30.8	36.3	43.5
Total C-I and Larger (%)	48.6	53.4	58.3	58.0	52.9	45.1	51.0	57.7	56.3	56.7	50.0	48.3	53.2	57.8	60.5	62.1	67.4	69.2	69.2	63.7	56.5

Source: GAMA 2016 Statbook and Coffman Associates analysis.

Appendix C

FAA Air Traffic Flow Management System Count, January 2017 - December 2017




EAST TEXAS
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APPENDIX C
FAA TRAFFIC FLOW MANAGEMENT SYSTEM COUNT, JANUARY 2017-DECEMBER 2017
EAST TEXAS REGIONAL AIRPORT

Arc Code	Aircraft	Jan 17	Feb 17	Mar 17	Arp 17	May 17	Jun 17	Jul 17	Aug 17	Sep 17	Oct 17	Nov 17	Dec 17	Totals
A-I	Eclipse 400/500	10	6	5	1	2	4	2	0	0	0	0	2	32
A-I	Epic Dynasty	0	0	0	0	0	0	2	0	0	0	0	0	2
A-I	Kodiak Quest	0	2	0	0	0	0	0	0	0	0	0	0	2
A-I	Lancair Evolution/Legacy	0	2	0	0	0	0	0	0	0	0	0	0	2
A-I	Mitsubishi MU-2	6	0	0	1	8	0	0	4	0	6	2	0	27
A-I	Piper Malibu/Meridian	4	5	12	2	7	5	7	6	7	10	2	8	75
TOTAL		20	15	17	4	17	9	11	10	7	16	4	10	140
A-II	Cessna 425 Corsair	0	2	0	1	3	0	4	7	5	4	4	6	36
A-II	Cessna Caravan	0	0	1	0	1	4	0	5	0	2	3	4	20
A-II	De Havilland Twin Otter	0	0	0	0	0	0	0	0	0	0	1	0	1
A-II	Pilatus PC-12	15	14	30	25	28	9	19	21	23	12	17	8	221
TOTAL		15	16	31	26	32	13	23	33	28	18	25	18	278
A-III	De Havilland Dash 7	0	0	0	0	0	0	0	0	0	0	4	2	6
TOTAL		0	0	0	0	0	0	0	0	0	0	4	2	6
B-I	Beechjet 400	27	17	36	24	18	26	34	33	43	30	33	38	359
B-I	Citation CJ1/CJ2	39	47	66	73	57	80	52	54	71	74	45	53	711
B-I	Citation I/SP	6	4	2	0	4	3	9	3	5	8	4	5	53
B-I	Citation M2	1	10	8	11	2	18	19	24	2	14	12	21	142
B-I	Citation Mustang	15	14	17	23	26	14	24	16	25	31	17	21	243
B-I	Falcon 10	3	0	1	0	0	0	0	0	1	0	0	0	5
B-I	Honda Jet	0	2	0	0	0	2	0	0	2	2	2	0	10
B-I	King Air 90/100	30	28	45	30	22	22	28	29	23	38	33	19	347
B-I	Phenom 100	0	2	2	4	2	6	2	6	4	4	10	0	42
B-I	Piaggio Avanti	0	0	2	0	2	0	0	2	0	4	0	0	10
B-I	Piper Cheyenne	2	2	0	0	0	0	2	2	2	8	0	2	20
B-I	Premier 1	4	4	2	0	1	0	1	0	0	0	2	0	14
B-I	Rockwell Sabre 40/60	2	4	12	0	0	2	0	0	0	0	0	0	20
B-I	Socata TBM 7/850/900	8	1	0	0	0	2	2	0	2	4	2	2	23
B-I	Swearingen Merlin	0	6	0	0	0	0	0	0	2	0	0	2	10
B-I	T-6 Texan	14	6	17	10	9	5	20	1	1	29	7	2	121
TOTAL		151	147	210	175	143	180	193	170	183	246	167	165	2,130

APPENDIX C (Continued)
FAA TRAFFIC FLOW MANAGEMENT SYSTEM COUNT, JANUARY 2017-DECEMBER 2017
EAST TEXAS REGIONAL AIRPORT

Arc Code	Aircraft	Jan 17	Feb 17	Mar 17	Arp 17	May 17	Jun 17	Jul 17	Aug 17	Sep 17	Oct 17	Nov 17	Dec 17	Totals
B-II	Aero Commander 680/900 Series	4	1	0	4	4	6	0	0	5	1	5	0	30
B-II	Beech 1900	0	2	0	0	0	2	0	0	0	0	0	0	4
B-II	Cessna Conquest	0	1	0	0	0	0	0	0	2	0	0	2	5
B-II	Citation CJ3/CJ4	10	17	10	21	7	28	12	12	14	12	9	7	159
B-II	Citation II/SP/Latitude	22	35	22	16	26	37	52	36	54	50	38	42	430
B-II	Citation V/VII/Sovereign	57	29	79	52	51	67	50	38	60	28	36	39	586
B-II	Citation XLS	10	6	4	12	2	14	6	6	4	11	3	6	84
B-II	Dornier 328	4	1	2	5	4	2	2	2	8	6	0	0	36
B-II	Embraer EMB-110/120	2	0	0	2	2	0	0	0	0	0	0	0	6
B-II	Falcon 20/50	0	2	2	0	0	0	2	2	0	2	0	3	13
B-II	Falcon 2000	0	6	0	4	4	2	2	4	4	5	1	0	32
B-II	Falcon 900	0	2	0	0	0	0	1	1	0	2	0	2	8
B-II	King Air 200/300/350	92	97	105	90	102	80	71	80	73	100	72	71	1,033
B-II	King Air F90	3	8	4	4	4	8	4	14	7	5	10	0	71
B-II	Phenom 300	1	3	2	15	3	0	8	5	1	2	2	8	50
TOTAL		205	210	230	225	209	246	210	200	232	224	176	180	2,547
B-III	De Havilland Dash 8 Series	0	0	0	1	1	0	0	0	0	0	0	0	2
TOTAL		0	0	0	1	1	0	0	0	0	0	0	0	2
C-I	BAe HS 125 Series	0	0	2	0	0	2	0	0	0	0	0	0	4
C-I	BAe Systems Hawk	0	0	2	0	0	2	0	0	0	8	0	0	12
C-I	Fuji T-1	0	0	0	0	0	0	0	0	0	1	0	0	1
C-I	Learjet 20 Series	0	0	0	0	0	0	0	0	0	0	2	0	2
C-I	Learjet 31	0	0	0	0	0	2	0	0	0	0	0	0	2
C-I	Learjet 40 Series	0	4	0	2	8	2	4	0	0	2	2	6	30
C-I	Learjet 50 Series	0	2	0	0	2	2	2	0	0	4	0	0	12
C-I	Learjet 60 Series	0	6	2	3	1	6	2	4	4	0	10	0	38
C-I	Westwind II	0	2	0	2	4	2	0	0	0	0	2	2	14
TOTAL		0	14	6	7	15	18	8	4	4	15	16	8	115

APPENDIX C (Continued)
FAA TRAFFIC FLOW MANAGEMENT SYSTEM COUNT, JANUARY 2017-DECEMBER 2017
EAST TEXAS REGIONAL AIRPORT

Arc Code	Aircraft	Jan 17	Feb 17	Mar 17	Arp 17	May 17	Jun 17	Jul 17	Aug 17	Sep 17	Oct 17	Nov 17	Dec 17	Totals
C-II	Bombardier CRJ 100/200/700	0	2	0	0	0	2	0	0	0	0	0	0	4
C-II	Challenger 300/600/604	4	11	7	6	12	4	10	13	4	6	21	9	107
C-II	Citation X	2	0	0	0	0	2	2	0	0	2	0	2	10
C-II	Embraer ERJ-135/140/145	113	105	117	100	112	110	108	116	116	114	128	115	1,354
C-II	Gulfstream 100/150	0	0	0	0	2	0	0	0	0	0	0	0	2
C-II	Gulfstream 200/280	0	0	2	4	0	2	2	3	5	2	2	2	24
C-II	Gulfstream G100	5	3	5	1	1	5	2	3	17	15	10	14	81
C-II	Gulfstream G-III	17	16	7	20	16	20	15	22	21	16	18	14	202
C-II	Hawker 800	4	0	4	4	6	2	0	0	2	4	3	11	40
C-II	Learjet 70 Series	19	10	11	13	19	13	14	6	15	13	14	13	160
TOTAL		164	147	153	148	168	160	153	163	180	172	196	180	1,984
C-III	Boeing 737 (200 thru 700 series)	0	0	4	0	0	0	4	0	0	0	0	0	8
C-III	P-3 Orion	0	0	0	0	0	0	0	0	0	0	2	0	2
TOTAL		0	0	4	0	0	0	4	0	0	0	2	0	10
C-IV	Boeing 707	0	0	0	2	0	0	0	0	0	0	0	0	2
C-IV	Boeing E-3 Sentry	0	0	0	0	3	0	0	0	2	0	0	0	5
C-IV	Boeing E-6 Mercury	0	0	0	2	0	0	2	0	2	0	0	0	6
C-IV	C-130 Hercules	2	3	9	3	12	6	5	4	2	2	6	9	63
TOTAL		2	3	9	7	15	6	7	4	6	2	6	9	76
C-V	Boeing P-8 Poseidon	2	0	0	2	2	0	0	2	0	2	14	2	26
TOTAL		2	0	0	2	2	0	0	2	0	2	14	2	26
D-I	F/A-18 Hornet	0	0	2	0	0	0	0	0	2	0	0	0	4
D-I	Learjet 35/36	0	2	2	2	4	0	0	0	0	0	6	0	16
D-I	T-38 Talon	65	20	35	44	49	107	121	79	78	38	24	18	678
TOTAL		65	22	39	46	53	107	121	79	80	38	30	18	698
D-III	Boeing 737 800/900	0	0	0	0	0	0	0	0	2	0	0	0	2
D-III	Gulfstream 500/600	4	0	4	4	0	0	2	2	0	0	0	0	16
TOTAL		4	0	4	4	0	0	2	2	2	0	0	0	18

Appendix D

Environmental Evaluation




EAST TEXAS REGIONAL AIRPORT

Analysis of the potential environmental impacts of recommended airport development projects, as discussed in this appendix and depicted previously on Exhibit 5A, is a key component of the Airport Master Plan process. The primary purpose of this Environmental Evaluation is to identify significance thresholds for the various resource categories contained in the Federal Aviation Administration (FAA) Order 1050.1F, *Environmental Impacts: Policies and Procedures*, Exhibit 4-1 and FAA Order 5050.4B, *National Environmental Policy Act* (NEPA) *Implementation Instructions for Airport Actions*, Table 7.1. The Environmental Evaluation then assesses the Master Plan Concept to determine whether proposed actions could individually or collectively significantly affect the quality of the environment.

Construction of any improvements depicted on the recommended development concept plan would require compliance with NEPA to receive federal financial assistance or to obtain a federal approval (i.e., a federal action). For projects not "categorically excluded" under FAA Order 1050.1F, compliance with NEPA is generally satisfied through the preparation of an Environmental Assessment (EA). An EA is prepared when the initial review of the proposed action indicates that it is not categorically excluded, involves at least one extraordinary circumstance, or the action is not one known normally to require an Environmental Impact Statement (EIS). If none of the potential impacts are likely to be significant, then the responsible FAA official prepares a Finding of No Significant Impact (FONSI), which briefly presents, in writing, the reasons why an action, not otherwise categorically excluded, would not have a significant impact on the human environment, and the approving official may approve it. Issuance of a FONSI signifies that FAA would not prepare an EIS and has completed the NEPA process for the proposed action.

In instances where significant environmental impacts are expected, an EIS may be required. An EIS is a clear, concise, and appropriately detailed document that provides agency decision-makers and the public with a full and fair discussion of significant environmental impacts of the proposed action and reasonable alternatives and implements the requirement in NEPA §102(2)(C) for a detailed written statement.

Potential Environmental Concerns

The Environmental Inventory, which summarizes the existing conditions within the airport's environs, can be found in Chapter One. **Table D1** summarizes potential environmental concerns associated with implementation of the recommended master plan development concept (see Exhibit 5A). Analysis under NEPA includes direct, indirect, and cumulative impacts. Direct impacts are those caused by the action that occur at the same time and place (see 40 CFR § 1508.8(a)). Examples of direct impacts include:

- Construction of a facility or runway in a wetland which results in the loss of a portion of the wetland; or
- Noise generated by the proposed action or alternative(s) which adversely affects noise- sensitive land uses.

Indirect impacts are those impacts caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable (see 40 Code of Federal Regulations [CFR] § 1508.8(b)). Indirect impacts may include growth-inducing impacts and other effects related to induced changes in the pattern of land use, population density or growth rate, and related impacts on air and water and other natural systems, including ecosystems (see 40 CFR § 1508.8(b)). Cumulative impacts are those that take into consideration the environmental impact of past, present, and future actions.

TABLE D1
Summary of Potential Environmental Concerns
East Texas Regional Airport

Environmental Impact Category	Significance Threshold/ Factors to Consider	Potential Concern
Air Quality	**Threshold: The action would cause pollutant concentrations to exceed one or more of the National Ambient Air Quality Standards (NAAQS), as established by the United States (U.S.) Environmental Protection Agency (EPA) under the *Clean Air Act*, for any of the time periods analyzed, or to increase the frequency or severity of any such existing violations.**	**Direct**. As seen on Exhibit 2C in Chapter Two, operations are anticipated to increase over the 20-year (through 2037) planning horizon of this master plan; however, the increase is less than 1,000 operations. There are relatively few capacity-increasing projects proposed, with the potential hangar development areas being the primary facilities that could grow the capacity of the airport. Lastly, Gregg County is in attainment for all federal criteria pollutants; however, Rusk County is in nonattainment for sulfur dioxide (2010).[1] Although there are limited capacity-increasing projects and operations are forecast to grow minimally, Rusk County's nonattainment status may require an emissions inventory, including construction emissions, to satisfy NEPA requirements (in addition to *Clean Air Act* requirements). [2, 3]

[1] EPA Green Book, Texas Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants (data current as of May 31, 2018). Available at: https://www3.epa.gov/airquality/greenbook/anayo_tx.html.
[2] FAA *Aviation Emissions and Air Quality Handbook* (January 2015).
[3] FAA *Aviation Emissions and Air Quality Handbook,* Figure 4-2 (Determine Need for the Assessment) and Figure 4-3 (Air Quality Assessment Decision Flow Diagram) (January 2015).

Biological Resources (including fish, wildlife, and plants)	**Threshold: The U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS) determines that the action would be likely to jeopardize the continued existence of a federally listed threatened or endangered species or would result in the destruction or adverse modification of federally designated critical habitat.** FAA has not established a significance threshold for non-listed species. However, factors to consider are if an action would have the potential for: • Long term or permanent loss of unlisted plant or wildlife species; • Adverse impacts to special status species or their habitats; • Substantial loss, reduction, degradation, disturbance, or fragmentation of native species' habitats or their populations; or • Adverse impacts on a species' reproductive rates, non-natural mortality, or ability to sustain the minimum population levels required for population maintenance.	*Federally-listed species*: **Potential**. There are three species protected by the *Endangered Species Act* with the potential to be affected by airport projects, including: • Least tern (bird, endangered); • Piping plover (bird, threatened); and • Red knot (bird, threatened).[4] <u>Habitat Present</u>. The Texas Ecosystem Analytical Mapper indicates that the majority of the land on and around the airport is made up of pineywoods, which are a temperate coniferous forest terrestrial ecoregion. The following habitats are also present on and around the airport: deciduous scrubland; row crops; urban uses (including airport property); and barren open land. In addition, there are several freshwater resources near the airport, including Lutes Lake, Peatown Branch, Wood Creek, Lake Cherokee, Massey Branch, Lucy Pond, Mitchell Lake, and the Sabine River. Peatown Branch and Wood Creek also have temporarily flooded hardwood forest. <u>Protected Species Habitat Preference</u>.[5] <u>Least Tern</u>: The least tern can be found along rivers with broad and exposed sandbars and lakes with nearby salt flats. <u>Piping Plover</u>. This bird prefers sandbars along major rivers, as well as gravel or sand flats next to alkali lakes. <u>Red Knot</u>: The red knot is primarily found on tidal flats and shores or coastal mudflats when migrating. Sometimes they are found on open, sandy beaches. It is possible that these federally protected species are present given the nearby water sources and accompanying shoreline conditions. Presence of any of the above-mentioned species with potential to occur on or near airport property should be evaluated prior to any development to ensure no harm to these protected species occur. Section 7 consultation with the USFWS under the *Endangered Species Act* may be required.

[4] U.S. Fish and Wildlife Service Information for Planning and Conservation report (accessed June 29, 2018).
[5] Audubon Bird Guide. Available at: https://www.audubon.org.

		Designated critical habitat: **None**. There is no designated critical habitat located on airport property. *Non-listed species:* **Direct**. Non-listed species of concern include those protected by the *Migratory Bird Treaty Act* and the *Golden and Bald Eagle Protection Act*. There are presently eight non-listed species of concern that could be impacted by activities at the airport, including the: American kestrel; bald eagle; Henslow's sparrow; Kentucky warbler; lesser yellowlegs; prothonotary warbler; red-headed woodpecker; and semipalmated sandpiper.[6] There are large concentrations of trees and water bodies around the airport that could provide roosting and/or foraging habitat for migratory birds protected under the *Migratory Bird Treaty Act* and *Golden and Bald Eagle Protection Act.* Conducting bird surveys prior to development may be required to identify mitigation for potential harm to nests and/or ground-dwelling birds.
Climate	FAA has not established a significance threshold for Climate; refer to FAA Order 1050.1F's Desk Reference and/or the most recent FAA *Aviation Emissions and Air Quality Handbook* for the most up-to-date methodology for examining impacts associated with climate change.	**Indirect**. An increase in greenhouse gas (GHG) emissions could occur over the 20-year planning horizon of the master plan. As discussed in **Air Quality**, there are some capacity- increasing projects proposed, including the additional hangar development, that could contribute to an increase in operations and associated emissions. Further, increased capacity at the airport from these additional hangars could result in added airport users who would require vehicles to get to and from the airport.
Coastal Resources	FAA has not established a significance threshold for Coastal Resources.	**None**. The airport is not located within a designated coastal zone.
***Department of Transportation* (DOT) *Act*: Section 4(f)**	**Threshold: The action involves more than a minimal physical use of a Section 4(f) resource or constitutes a "constructive use" based on an FAA determination that the aviation project would substantially impair the Section 4(f) resource. Resources that are protected by Section 4(f) are publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance; and publicly or privately-owned land from an historic site of national, state, or local significance. Substantial impairment occurs when the activities, features, or attributes of the resource that contribute to its significance or enjoyment are substantially diminished.**	**None**. There are no historic properties, recreation areas, wildlife refuges, or wilderness areas within five miles of the airport. The closest public park is Joshua Park, located approximately two miles south of the airport. Therefore, no Section 4(f) resources would be impacted by proposed development.

[6] Note that since the time of the Environmental Inventory (Chapter One), the number of non-listed species of concern with potential to occur on airport property has decreased (see Table 1P).

Farmlands	**Threshold: The total combined score on Form AD-1006, *Farmland Conversion Impact Rating*," ranges between 200 and 260.** Form AD-1006 is used by the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) to assess impacts under the *Farmland Protection Policy Act* (FPPA).	**None**. Based on the USDA NRCS Web Soil Survey, 280.2 acres (22.9 percent) of airport property are considered prime farmland, and the remaining 942.3 acres (77.1 percent) are not prime farmland. Airport property contains no soils considered unique farmland or land of statewide or local importance (see Exhibit 1H in Chapter One). Development proposed within the existing property limits of the airport would likely not be subject to regulation under the FPPA as this is an active airport that is previously developed and considered to be an urban land use. Therefore, it is unlikely that coordination with NRCS would be necessary since all development is proposed within existing airport property limits.
Hazardous Materials, Solid Waste, and Pollution Prevention	FAA has not established a significance threshold for Hazardous Materials, Solid Waste, and Pollution Prevention. However, factors to be considered are if an action would have the potential to: • Violate applicable federal, state, tribal, or local laws or regulations regarding hazardous materials and/or solid waste management; • Involve a contaminated site; • Produce an appreciably different quantity or type of hazardous waste; • Generate an appreciably different quantity or type of solid waste or use a different method of collection or disposal and/or would exceed local capacity; or • Adversely affect human health and the environment.	**None**. According to the U.S. EPA's Environmental Justice Screening (EJSCREEN) and Mapping Tool, there are no Superfund[7] sites or brownfields[8] near the airport. There are two facilities near the airport that are known to release toxic chemicals (see Exhibit 1H in Chapter One); however, these would not be impacted by any proposed development. The recommended development concept does not anticipate land uses that would produce an appreciably different quantity or type of hazardous waste. However, should this type of land use be proposed, further NEPA review and/or permitting would be required. Construction and demolition waste would be generated because of development proposed in the Master Plan. Construction and demolition waste, along with all other types of non-hazardous solid waste, would be hauled to the Pine Hill Farms Landfill, located approximately 7.5 miles northwest of the airport.[9]
Historical, Architectural, Archaeological, and Cultural Resources	FAA has not established a significance threshold for Historical, Architectural, Archaeological, and Cultural Resources. Factors to consider are if an action would result in a finding of "adverse effect" through the Section 106 process. However, an adverse effect finding does not automatically trigger preparation of an EIS (i.e., a significant impact).	**Potential**. As mentioned previously, there are no sites listed on the National Register of Historic Places (NRHP) within five miles of the airport. Therefore, proposed construction would not impact any known historical resources. There are areas of proposed development at the airport that are previously undisturbed; specifically, areas reserved for airpark (non-aviation) on

[7] A **brownfield** is a property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutants, or contaminant (U.S. EPA).
[8] A **Superfund** site is any land in the U.S. that has been contaminated by hazardous waste and identified by the EPA as a candidate for cleanup as it poses a human health risk and/or the environment (U.S. Department of Health and Human Services).
[9] TCEQ, Active Municipal Solid Waste Landfills in Texas, https://www.tceq.texas.gov/assets/public/permitting/waste/msw/msw-landfills-active.pdf (accessed June 29, 2018).

		the eastern side of the airport, as well as potential hangar developments on the east side of the airport, are currently undeveloped, forested areas. If these undisturbed areas of the airport should be subject to ground disturbance, a cultural resources survey may be necessary to determine the potential presence of historic artifacts. There are no tribal lands that would be impacted by construction as the closest such area is over 100 miles away from the airport.
Land Use	FAA has not established a significance threshold for Land Use. There are also no specific independent factors to consider. The determination that significant impacts exist is normally dependent on the significance of other impacts.	**None**. Much of the land adjacent to the airport is rural, unincorporated land that is left undeveloped. The area is sparsely populated with rural residential, commercial, and industrial properties. Most of the commercial and industrial development is located along State Highways (S.H.) 322 and 149 and Farm-to-Market (F.M.) 349. The airport is owned and operated by Gregg County and is considered primarily unincorporated land in Gregg County. The only incorporated area adjoining the airport is the City of Lakeport on the north side of along F.M. 349. The City of Lakeport is largely undeveloped, with sparse residential subdivisions and light industrial/commercial uses. Elderville, a community to the south and southwest of the airport, mostly contains residential subdivisions and rural residences. A store and church are located at the intersection of S.H. 322 and F.M. 2011. The development concept shows several areas of land that are proposed for an easement as they are within the runway protection zones (RPZ) for the runways at the airport. Specifically, Runway end 31 proposes an easement on either side of the runway within its RPZ. Runway end 13 has similar areas of land proposed for easement on both sides of the approach RPZ. Like Runway 13-31, the approach RPZ for Runway end 18 is proposed for an easement on both sides of the RPZ. All these areas proposed for easement are presently unpopulated and undeveloped. Therefore, there would be no impacts to the surrounding community as a result, nor would the existing use of the land proposed for easement be changed. There would be no impacts from these proposed easement areas.
Natural Resources and Energy Supply	FAA has not established a significance threshold for Natural Resources and Energy Supply. However, factors to consider are if an action would have the potential to cause demand to exceed available or future supplies of these resources.	**Potential**. Planned development projects at the airport could increase demands on energy utilities, water supplies and treatment, and other natural resources during construction and through the long-term planning period. These increases would be minimal as there are just five potential

		hangar developments proposed, as well as the possibility of two areas for an airpark.
Noise and Noise-Compatible Land Use	**Threshold: The action would increase noise by Day-Night Average Sound Level (DNL) 1.5 decibel (dB) or more for a noise-sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe.** Another factor to consider is that special consideration needs to be given to the evaluation of the significance of noise impacts on noise-sensitive areas within Section 4(f) properties where the land use compatibility guidelines in Title 14 Code of Federal Regulations (CFR) Part 150 are not relevant to the value, significance, and enjoyment of the area in question.	**None**. The airport's existing (2017) and ultimate (2037) DNL noise exposure contours are shown on **Exhibits D1** and **D2**, respectively. The contours include the 65, 70, and 75 DNL.[10] The FAA's threshold for compatibility with noise-sensitive land uses is the 65 DNL contour. The primary noise-sensitive uses around the airport are rural residential by the northeastern airport property line, along Jerry Lucy Road. In both the existing and future noise conditions, there are 10 residences in this area that fall within the 65 DNL noise contour. In addition, in both the existing and future noise condition, there is one home in the 65 DNL noise contour on the northwest of airport property along S.H. 322. Thus, there are 11 total homes that are impacted by noise in both the existing and future condition. There are no other noise-sensitive receptors within the 65, 70, or 75 DNL noise contours in either the current or future condition. Because these 11 homes are already within the 65 DNL noise contour, the implementation of the proposed master plan concept would not result in an impact (i.e., there would be no increase of 1.5 dB or more). The noise contours depict the noise environment remaining relatively the same due to the minimal operational increase forecast by 2037. The noise impacts for these homes would therefore not change from the existing condition, and thus the master plan would not result in a significant noise impact.
Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks		
Socioeconomic Impacts	FAA has not established a significance threshold for socioeconomics. However, factors to consider are if an action would have the potential to: • Induce substantial economic growth in an area, either directly or indirectly (e.g., through establishing projects in an undeveloped area); • Disrupt or divide the physical arrangement of an established community; • Cause extensive relocation when sufficient replacement housing is unavailable; • Cause extensive relocation of community businesses that would cause severe economic hardship for affected communities; • Disrupt local traffic patterns and substantially reduce the levels of service of roads	**None**. Proposed development projects would occur within existing airport property boundaries. Some on-airport projects could cause disruption of local traffic patterns as construction vehicles would be entering and exiting certain areas of the airport frequently during the construction phase. However, congestion caused by construction would be temporary in nature and not have long-term impacts. There is potential for increased economic activity given the additional hangar complexes and potential fixed base operator (FBO); however, these proposed improvements would likely not create a substantial change in the community's tax base.

[10] **Day-Night Average Sound Level** (DNL): The 24-hour average sound level, in decibels, for the period from midnight to midnight, obtained after the addition of ten decibels to sound levels for the periods between midnight and 7 a.m., and between 10 p.m. and midnight, local time. The symbol for DNL is Ldn (See 14 CFR § 150.7).

	serving the airport and its surrounding communities; or • Produce a substantial change in the community tax base.	
Environmental Justice	FAA has not established a significance threshold for Environmental Justice. However, factors to consider are if an action would have the potential to lead to a disproportionately high and adverse impact to an environmental justice population (i.e., a low-income or minority population) due to: • Significant impacts in other environmental impact categories; or • Impacts on the physical or natural environment that affect an environmental justice population in a way that FAA determines is unique to the environmental justice population and significant to that population.	**None**. The closest residences are adjacent to airport property; however, none of these are considered environmental justice populations. The closest public or subsidized housing developments are six miles north of the airport. Construction activity and long-term development would therefore not result in disproportionately high and/or adverse impacts to environmental justice populations.
Children's Environmental Health and Safety Risks	FAA has not established a significance threshold for Children's Environmental Health and Safety Risks. However, factors to consider are if an action would have the potential to lead to a disproportionate health or safety risk to children.	**None**. The nearest education facility is Sunny Side School, a preschool approximately six miles west of the airport. At this distance, disproportionate health or safety risks to children would not occur.
Visual Effects		
Light Emissions	FAA has not established a significance threshold for Light Emissions. However, a factor to consider is the degree to which an action would have the potential to: • Create annoyance or interfere with normal activities from light emissions; and • Affect the visual character of the area due to the light emissions, including the importance, uniqueness, and aesthetic value of the affected visual resources.	**Potential**. The only changes in lighting that would occur due to the implementation of the master plan concept would be the additional lighting associated with the proposed hangars and new taxiway pavement. These lighting additions would be within airport property boundaries; however, given the proximity of residences along Jerry Lucy Road on the northwest side of the airport, the partial parallel taxiway lighting could emit light beyond airport property limits. Further study at the time of the project's implementation may be necessary to determine the impact of the additional lighting. Light-sensitive species that hunt, migrate, or mate at night near the airport are likely already acclimated to airport lights. The change in lighting due to recommended master plan projects is not anticipated to cause undue stress.
Visual Resources/Visual Character	FAA has not established a significance threshold for Visual Resources/Visual Character. However, a factor to consider is the extent an action would have the potential to: • Affect the nature of the visual character of the area, including the importance, uniqueness, and aesthetic value of the affected visual resources; • Contrast with the visual resources and/or visual character in the study area; and • Block or obstruct the views of the visual resources, including whether these resources would still be viewable from other locations.	**None**. Full buildout of the proposed development concept would not change the visual character of the airport, nor are there any scenic resources near the airport that could be impacted by proposed development. Further, all development proposed is within existing property limits, and thus any changes would occur in areas already developed as an airport.

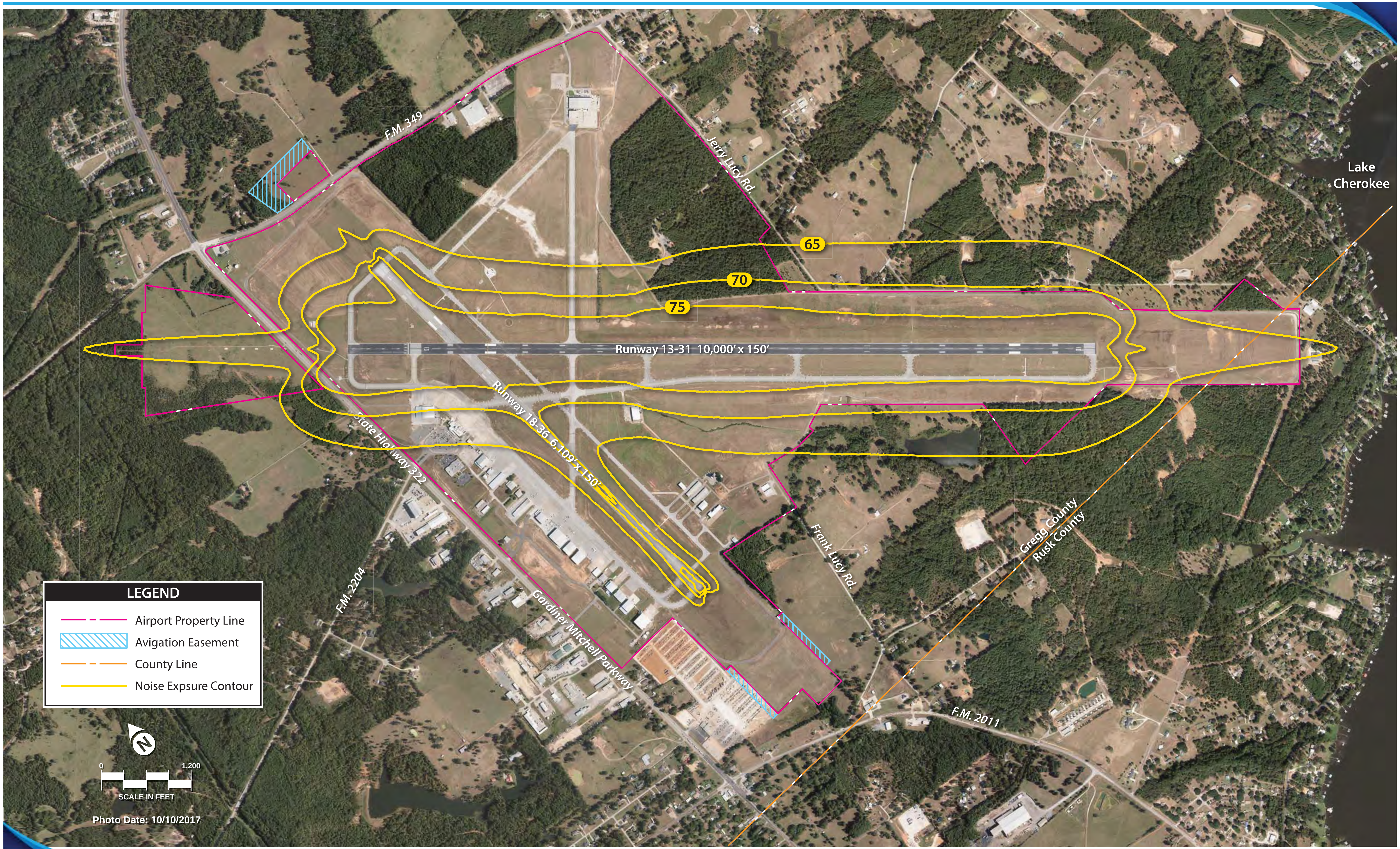
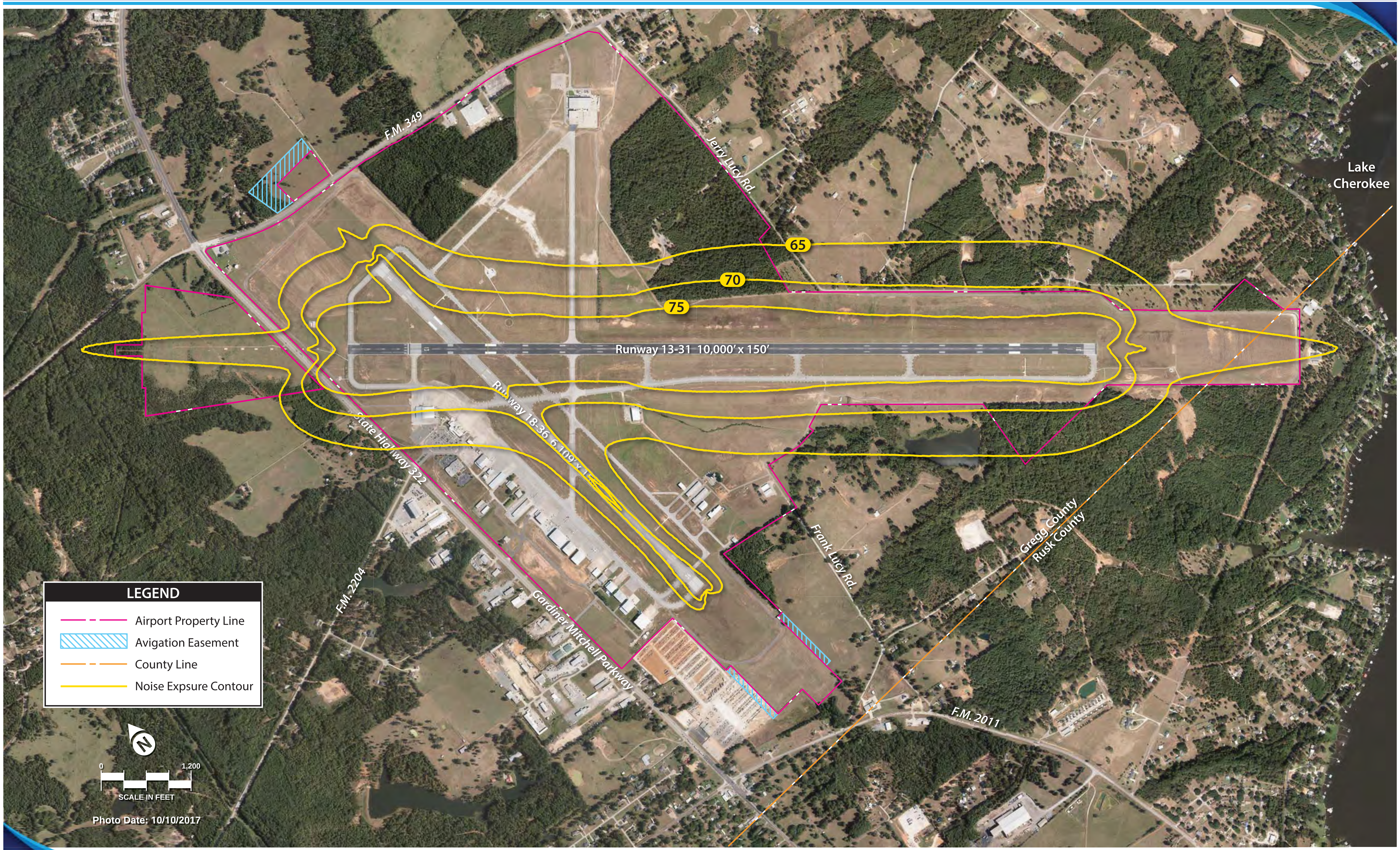


Exhibit D1
EXISTING NOISE EXPOSURE CONTOURS


F.M. 349
Jerry Lucy Rd.
Lake Cherokee
65
70
75
Runway 13-31 10,000' x 150'
Runway 18-36 6,109' x 1
State Highway 322
Frank Lucy Rd.
Gregg County
Rusk County
F.M. 2204
Gardiner Mitchell Parkway
F.M. 2011
LEGEND
Airport Property Line
Avigation Easement
County Line
Noise Expsure Contour
N
0
1,200
SCALE IN FEET
Photo Date: 10/10/2017

Water Resources (including Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)		
Wetlands	**Threshold: The action would:** **1. Adversely affect a wetland's function to protect the quality or quantity of municipal water supplies, including surface waters and sole source and other aquifers;** **2. Substantially alter the hydrology needed to sustain the affected wetland system's values and functions or those of a wetland to which it is connected;** **3. Substantially reduce the affected wetland's ability to retain floodwaters or storm runoff, thereby threatening public health, safety or welfare (the term welfare includes cultural, recreational, and scientific resources or property important to the public);** **4. Adversely affect the maintenance of natural systems supporting wildlife and fish habitat or economically important timber, food, or fiber resources of the affected or surrounding wetlands.** **5. Promote development of secondary activities or services that would cause the circumstances listed above to occur; or** 6. **Be inconsistent with applicable state wetland strategies.**	**None**. Per the USFWS National Wetlands Inventory, there are no wetlands on airport property.
Floodplains	**Threshold: The action would cause notable adverse impacts on natural and beneficial floodplain values. Natural and beneficial floodplain values are defined in Paragraph 4.k of DOT Order 5650.2, *Floodplain Management and Protection.***	**None**. There are two 100-year floodplains near the airport; however, neither would be impacted by proposed development. One floodplain is along the entirety of Lake Cherokee, to the south and southeast of the airport. The other floodplain is north and northwest of the airport along the Sabine River and Wood Creek. There are no floodplains on airport property; thus, all development proposed is not within or near a floodplain, resulting in no impacts to floodplains.
Surface Waters	**Threshold: The action would:** **1. Exceed water quality standards established by federal, state, local, and tribal regulatory agencies; or** **2. Contaminate public drinking water supply such that public health may be adversely affected.** Factors to consider are when a project would have the potential to: • Adversely affect natural and beneficial water resource values to a degree that substantially diminishes or destroys such values; • Adversely affect surface water such that the beneficial uses and values of such waters are appreciably diminished or can no longer be maintained and such impairment cannot be	**Indirect**. According to the airport's stormwater pollution prevention plan (SWPPP) (revised March 2014), the airport operates under a Texas Pollutant Discharge Elimination System (TPDES) Multi Sector General Permit. The airport's storm water drains to 12 outfalls on and around airport property. There are both grass and concrete storm water drainageways throughout the airport. Runoff from areas around the northwestern hangars flows north toward two unnamed tributaries to a private pond before entering Sabine River. Runoff from the northeastern portion of the airport flows into Massey Branch and then into the Sabine River. Runoff from the southeastern, south, and southwestern portions of the airport flow into Lake Cherokee, which impounds Cherokee Bayou. Cherokee Bayou flows east, eventually meeting

	avoided or satisfactorily mitigated; or • Present difficulties based on water quality impacts when obtaining a permit or authorization.	the Sabine River. Runoff from the west side of the Airport flows west to tributaries of Wood Creek and then north to the Sabine River. Some of the proposed projects, such as additional hangars and taxiways, would increase the amount of impervious surfaces at the airport. The proposed development could therefore result in additional runoff from the airport that would enter the surrounding water bodies. The nearest water resource that is impaired is the Sabine River to the north. The impairment is for bacterial contamination. Proposed development at the airport would not contribute to or worsen this impairment since the contamination is bacterial.
Groundwater	**Threshold: The action would:** **1. Exceed groundwater quality standards established by federal, state, local, and tribal regulatory agencies: or** **2. Contaminate an aquifer used for public water supply such that public health may be adversely affected.** Factors to consider are when a project would have the potential to: • Adversely affect natural and beneficial groundwater values to a degree that substantially diminishes or destroys such values; • Adversely affect groundwater quantities such that the beneficial uses and values of such groundwater are appreciably diminished or can no longer be maintained and such impairment cannot be avoided or satisfactorily mitigated; or • Present difficulties based on water quality impacts when obtaining a permit or authorization.	**None**. According to the Texas Water Development Board, the airport is not within a groundwater management area, nor does it lie atop any major or minor aquifers.
Wild and Scenic Rivers	FAA has not established a significance threshold for Wild and Scenic Rivers.	**None**. The closest river feature included in the National River Inventory is Sabine River, approximately 6.5 miles northeast of the airport. Proposed development on airport property would not impact this designated river segment.

AIRPORT RECYCLING, REUSE & WASTE REDUCTION

The *FAA Modernization and Reform Act of 2012* (FMRA), which amended Title 49, United States Code (USC), included several changes to the Airport Improvement Program (AIP). Two of these changes are related to recycling, reuse, and waste reduction at airports.

- Section 132 (b) of the FMRA expanded the definition of airport planning to include "developing a plan for recycling and minimizing the generation of airport solid waste, consistent with applicable State and local recycling laws, including the cost of a waste audit."

- Section 133 of the FMRA added a provision requiring airports that have or plan to prepare a master plan, and that receive AIP funding for an eligible project, to ensure that the new or updated master plan addresses issues relating to solid waste recycling at the airport, including:

    - The feasibility of solid waste recycling at the airport;
    - Minimizing the generation of solid waste at the airport;
    - Operation and maintenance requirements;
    - A review of waste management contracts; and,
    - The potential for cost savings or the generation of revenue.

Understanding the airport's waste stream requires an understanding of the types of waste typically generated at airports. Generally, waste from airports can be divided into eight categories, with additional types of municipal solid waste.[11]

1. **Municipal Solid Waste**, more commonly known as trash or garbage, consists of everyday items that are used and then discarded, like product packaging. The following subcategories are either combined with municipal solid waste or sorted separately depending on an airport's solid waste practices.
2. **Construction and Demolition Waste** (C&D) is considered non-hazardous trash resulting from land clearing, excavation, demolition, renovation or repair of structures, roads and utilities, including concrete, wood, metals, drywall, carpet, plastic, pipe, cardboard, and salvaged building components.
3. **Green Waste** is yard waste consisting of tree, shrub and grass clippings, leaves, weeds, small branches, seeds, and pods.
4. **Food Waste** includes unconsumed food products or waste generated and discarded during food preparation.
5. **Deplaned Waste** is waste removed from passenger aircrafts. Deplaned waste includes bottles, cans, newspaper, mixed paper (newspaper, napkins, paper towels), plastic cups, service ware, food waste, and food soiled paper/packaging.
6. **Lavatory Waste** is a special waste that is emptied through a hose and pumped into a lavatory service vehicle. The waste is then transported to a triturator[12] facility for pretreatment prior to discharge in the sanitary sewage system. Due to the chemical in lavatory waste, it can present environmental and human health risks if mishandled. Caution must be taken to ensure lavatory waste is not released to the public sanitary sewage system prior to pretreatment.

[11] Recycling, Reuse and Waste Reduction at Airports, FAA (April 24, 2013)
[12] A triturator facility turns lavatory waste into fine particulates for further processing.

7. **Spill Clean and Remediation Wastes** are also special wastes and are generated during cleanup of spills and/or the remediation of contamination from several types of sites on an airport.
8. **Hazardous Wastes** are governed by the *Resource Conservation and Recovery Act* (RCRA), as well as the regulations in 40 CFR Subtitle C, Parts 260 to 270. The EPA developed less stringent regulations for certain hazardous waste, known as universal waste, described in 40 CFR Part 237 – The Universal Waste Rule.

There are seven potential areas of an airport contributing to the waste stream, including terminals, airfields, aircraft maintenance hangars, cargo hangars, flight kitchens, offices, and airport construction projects. To create a comprehensive waste reduction and recycling plan for an airport, all potential inputs must be considered.

There are often few key staff members that are directly involved in the waste management system, making their support and participation critical. It is also crucial to gain the participation of tenants to ensure buy-in of the airport's recycling efforts. The airport must establish consistent internal procedures to ensure there are no unacceptable items contaminating recycling containers, or recyclables thrown in the trash. Clearly marked signage of what is and is not accepted placed near the solid waste and recycling containers is another significant part of a consistent, effective recycling system. Placing signs above recycling bins to indicate what can be recycled and what should be thrown away can help reduce recycling contamination.

SOLID WASTE AND RECYCLING RECOMMENDATIONS AND GOALS

The airport should ensure that the waste and recycling containers and dumpsters are appropriately sized to the existing operation, as well as on a collection schedule that picks up only when the containers are full. The airport could also consider providing training, education, and support to personnel, tenants, and others who conduct business at the airport to ensure that all materials are being recycled or disposed of properly to reduce garbage contamination in recycling bins. In-person meetings with tenants could be held to create mutual understanding of the airport's solid waste and recycling goals and how tenants play a vital role in the airport's overall success.

Table D2 outlines objectives that could help reduce waste generation and increase recycling efforts at the airport. To increase the effectiveness of tracking progress, a baseline state of all suggested metrics should be established to provide a comparison over time.

TABLE D2
Waste Management and Recycling Goals
East Texas Regional Airport

Goals	Objectives to Meet Goals	Metrics
Reduce amount of solid waste generated	Use online bill pay to eliminate monthly paper bills	No longer receiving monthly paper bills
	Conduct a waste audit to identify most common types of waste	Identification of most common solid waste
	Eliminate purchase of items that are not recyclable (i.e., Styrofoam, plastic bags)	Number of items purchased that are not recyclable
Increase amount of material recycled	Improve recycling tracking and data management	Monthly data reports
	Increase the number of recycling bins in public areas	Number of recycling bins available to the public
	Incorporate recycling requirements and/or recommendations into tenant lease agreements	Number of tenant contracts with recycling requirements and /or recommendations
	Expand recycling marketing & promotion efforts throughout public areas	Number of marketing & promotional materials
	Require contractors to implement strategies to reduce, reuse & recycle construction & demolition waste	Incorporation of waste reduction, reuse & recycling language into construction contracts

Appendix E

Airport Plans




EAST TEXAS
REGIONAL
AIRPORT

As part of a master plan, the Federal Aviation Administration (FAA) requires the development of several technical drawings detailing specific parts of an airport and its environs. The technical drawings are collectively referred to as the Airport Layout Plan (ALP) set. The drawings are created on a computer-aided drafting system (CAD) and serve as the official depiction of the current and planned condition of an airport. The drawings are delivered to the FAA for their review and approval. The FAA critiques the drawings from a technical perspective to be sure all applicable federal regulations are met.

The five primary functions of the ALP that define its purpose are:

1) An approved plan is necessary for the airport to receive financial assistance under the terms of the *Airport and Airway Improvement Act of 1982* (AIP), as amended, and to be able to receive specific Passenger Facility Charge funding. An airport must keep its ALP current and follow that plan, since those are grant assurance requirements of the AIP and previous airport development programs, including the *1970 Airport Development Aid Program* (ADAP) and *Federal Aid Airports Program* (FAAP) of 1946, as amended. While ALPs are not required for airports other than those developed with assistance under the federal programs, the same guidance can be applied to all airports.

2) An ALP creates a blueprint for airport development by depicting proposed facility improvements. The ALP provides a guideline by which the airport sponsor can ensure that development maintains airport design standards and safety requirements and is consistent with airport and community land use plans.

3) The ALP is a public document that serves as a record of aeronautical requirements, both present and future, and as a reference for community deliberations on land use proposals and budget resource planning.

4) The approved ALP enables the airport sponsor and the FAA to plan for facility improvements at the airport. It also allows the FAA to anticipate budgetary and procedural needs. The approved ALP will also allow the FAA to protect the airspace required for facility or approach procedure improvements.

5) The ALP can be a working tool for the airport sponsor, including its development and maintenance staff.

It should be noted that the FAA requires that any changes to the airfield (i.e., runway and taxiway system, etc.) be represented on the drawings. The landside configuration developed during this master planning process is also depicted on the drawings, but the FAA recognized that landside development is much more fluid and often dependent upon specific developer needs. Thus, an updated drawing set is not typically necessary for future landside alterations.

AIRPORT LAYOUT PLAN SET

The ALP set includes several technical drawings which depict various aspects of the current and future layout of the airport. The following is a description of the ALP drawings included with this Master Plan.

AIRPORT LAYOUT PLAN DRAWING

An official Airport Layout Plan drawing has been developed for East Texas Regional Airport, a draft of which is included in this appendix. The ALP drawing graphically presents the existing and ultimate airport layout plan. The ALP drawing will include such elements as the physical airport features, wind data tabulation, location of airfield facilities (i.e., runways, taxiways, navigational aids), and existing general aviation development. Also presented on the ALP are the runway safety areas, airport property boundary, and revenue support areas.

The computerized plan provides detailed information on existing and future facility layouts on multiple layers that permit the user to focus on any section of the airport at a desired scale. The plan can be used as base information for design and can be easily updated in the future to reflect new development and more detail concerning existing conditions as made available through design surveys.

14 CFR PART 77 AIRSPACE DRAWING

Title 14 Code of Federal Regulations (CFR) Part 77, *Objects Affecting Navigable Airspace*, was established for use by local authorities to control the height of objects near airports. The Part 77 Airspace Drawing included in this Master Plan is a graphic depiction of this regulatory criterion. The Part 77 Airspace Drawing is a tool to aid local authorities in determining if proposed development could present a hazard to aircraft using the airport. The Part 77 Airspace Drawing can be a critical tool for the airport sponsor's use in reviewing proposed development near the airport.

Gregg and Rusk Counties should do all in their power to ensure development near the airport stays below the Part 77 surfaces to protect the role of the airport. The following discussion will describe those surfaces that make up the recommended FAR Part 77 surfaces at East Texas Regional Airport.

The FAR Part 77 Airspace Drawing assigns three-dimensional imaginary surfaces associated with the airport. These imaginary surfaces emanate from the runway centerline(s) and are dimensioned according to the visibility minimums associated with the approach to the runway end and size of aircraft to operate on the runway. The imaginary surfaces are based on the planned future condition for the airport. The Part 77 imaginary surfaces include the primary surface, approach surface, transitional surface, horizontal surface, and conical surface. Each surface is described as follows.

Primary Surface

The primary surface is an imaginary surface longitudinally centered on the runway. The primary surface extends 200 feet beyond each runway end. The elevation of any point on the primary surface is the same as the elevation along the nearest associated point on the runway centerline. The primary surface for Runway 13-31 is 1,000 feet wide, as centered on the runway. The primary surface for Runway 18-36 is 500 feet wide, as centered on the runway.

Approach Surface

An approach surface is also established for each runway end. The approach surface begins at the end of the primary surface and is the same width as the primary surface. It extends upward and outward from the primary surface end and is centered along an extended runway centerline. The approach surface leading to each runway is based upon the type of instrument approach available (instrument or visual) or planned.

The approach surface for Runway 13 extends a horizontal distance of 10,000 feet at a 50:1 slope with an additional 40,000 feet at a slope of 40:1. The outer width of the approach surface is 16,000 feet. This approach surface is considered a precision instrument approach surface which is based on the existing instrument landing system (ILS). The approach surface for Runway 31 extends 10,000 feet at a slope of 32:1. The outer width of the approach surface is 4,000 feet. The approaches to Runways 18 and 36 also extend 10,000 feet at a slope of 32:1 due to the existing Area Navigation (RNAV) instrument approaches; however, since the visibility minimums are greater than ¾-mile, the outer width of the approach surfaces are only 3,500 feet.

Table E1 summarizes the approach slope dimensions.

TABLE E1 Part 77 Approach Surface Dimensions East Texas Regional Airport	Runway 13	Runway 31	Runway 18	Runway 36
Inner Width	1,000	500	500	500
Outer Width	16,000	4,000	3,500	3,500
Length	50,000	10,000	10,000	10,000
Slope Ratio[1]	50:1/40:1	34:1	34:1	34:1

[1]The 50:1 slope applies to the first 10,000 feet.
All units in feet.
Source: Part 77, Objects Affecting Navigable Airspace

Transitional Surface

Each runway has a transitional surface that begins at the outside edge of the primary surface at the same elevation as the runway. The transitional surface also connects with the approach surfaces of runways with a precision approach slope. The surface rises at a slope of 7:1, to a height of 150 feet above the highest runway elevation. At that point, the transitional surface is replaced by the horizontal surface.

Horizontal Surface

The horizontal surface is established at 150 feet above the highest elevation of the runway surface. Having no slope, the horizontal surface connects the transitional and approach surfaces to the conical surface at 10,000 feet from the end of the primary surfaces of each runway.

Conical Surface

The conical surface begins at the outer edge of the horizontal surface. The conical surface then continues for an additional 4,000 feet horizontally at a slope of 20:1. Therefore, at 4,000 feet from the horizontal surface, the elevation of the conical surface is 350 feet above the highest airport elevation.

INNER PORTION/APPROACH SURFACE DRAWINGS

The inner portion of the runway approach surface drawing presents the inner portion of the Part 77 approach surface to the runway ends. It also depicts the runway centerline profile with elevations. This drawing provides details that the Part 77 drawing does not.

The inner portion/approach surface profile drawings include identified penetrations to the approach surface. Penetrations to the approach surface are considered obstructions. The FAA will determine if any obstructions are also hazards which require mitigation. The FAA utilizes other design criteria, such as the threshold siting surface (TSS) and various surfaces defined in FAA Order 8260.3B, *Terminal Instrument Procedures* (TERPS), to determine if an obstruction is a hazard.

If an obstruction is a hazard, the FAA can take many steps to protect air navigation. The mitigation options range from removing the hazard to installing obstruction lighting to adjusting the instrument approach minimums.

DEPARTURE SURFACE DRAWING

For runways supporting instrument operations, a separate drawing depicting the departure surface is required. The departure surface, when clear, allows pilots to follow standard departure procedures. The departure surface emanates from the departure end of the runway to a distance of 10,200 feet. The inner width is 1,000 feet and the outer width is 6,466 feet. The slope of the departure surface is 40:1.

Obstacles frequently penetrate the departure surface. Where object penetrations exist, the departure procedure can be adjusted by:

a) Non-standard climb rates, and/or
b) Non-standard (higher) departure minimums.

Therefore, it is important for the airport sponsor to identify and remove departure surface obstacles whenever possible in order to enhance takeoff operations at the airport. The airport sponsor should also prevent any new obstacles from developing.

TERMINAL AREA DRAWING

The terminal area drawing is a larger scale plan view drawing of existing and planned aprons, buildings, hangars, parking lots, and other landside facilities. It is prepared in accordance with FAA Advisory Circular 150/5300-13A, *Airport Design*.

AIRPORT LAND USE DRAWING

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

In the development of an airport land use plan for East Texas Regional Airport, the airport property was segmented into several large general tracts. Each tract was analyzed for specific site characteristics, such as tract size and shape, land characteristics, and existing land uses. The availability of utilities and the accessibility to various transportation modes were also considered. Limitations and constraints to development, such as height and noise restrictions, runway visibility zones, and contiguous land uses were analyzed next. Finally, the compatibility of various land uses in each tract was analyzed.

The depiction of on-airport land uses on this drawing has been developed taking into consideration FAA land use compliance regulations. However, the depiction is only a recommendation and any plan to utilize any airport property for other than aviation purposes will require FAA review and approval on a case-by-case basis.

The Airfield Operations category includes the immediate runway and taxiway environment and includes the navaid critical areas, runway visibility zone, runway and taxiway safety areas, and the runway protection zones. The Airfield Operations area is reserved for facilities critical to the safe operations of aircraft on the runways and taxiways.

The Aviation-Related Development category reserves critical space adjacent to the Airfield Operations area for aviation-specific activity. This activity includes all facilities necessary for aviation-related functions, including hangars, terminal buildings, and fuel farms. Essentially any facilities to be developed in the Aviation-Related Development area must be intended for a function that supports the need for access to the runway and taxiway system. It should be noted that other uses compatible with airport operations may be located in the Aviation-Related Development area on a temporary basis, usually considered five years or less. Certain concurrent uses are also permissible, such as farming or gravel extraction, within a runway protection zone (RPZ), provided the area can simultaneously serve its primary aviation function.

The last category is the Non-Aviation/Revenue Support area. This category can include aviation facilities and non-aviation facilities. Typically, the revenue support areas would be intended to accommodate businesses that are compatible with airport activity (i.e., not noise-sensitive) and do not require access to the runway and taxiway system. Any land use that is compatible with airport activities can be located in this area through a long-term ground lease (subject to FAA approval).

AIRPORT PROPERTY MAP

The Airport Property Map provides information on property under airport control and is, therefore, subject to FAA grant assurances. The various recorded deeds that make up the airport property are listed in tabular format. The primary purpose of the drawing is to provide information for analyzing the current and future aeronautical use of land acquired with federal funds.

FAA ALP DISCLAIMER

The preparation of the ALP set has been supported, in part, through financial assistance from the FAA through the Airport Improvement Program (AIP). The contents do not necessarily reflect the official views or policy of the United States or FAA. Acceptance of the airport master plan does not in any way constitute a commitment on the part of the United States or FAA to participate in any development depicted on the ALP drawing, nor does it indicate that the proposed development is environmentally acceptable or would have justification in accordance with appropriate public laws.

AIRPORT LAYOUT PLANS

PREPARED FOR

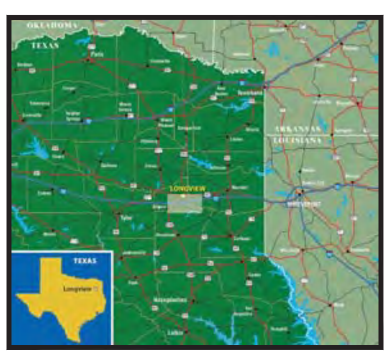
EAST TEXAS REGIONAL AIRPORT

GREGG COUNTY, Texas

LOCATION MAP

Not to Scale

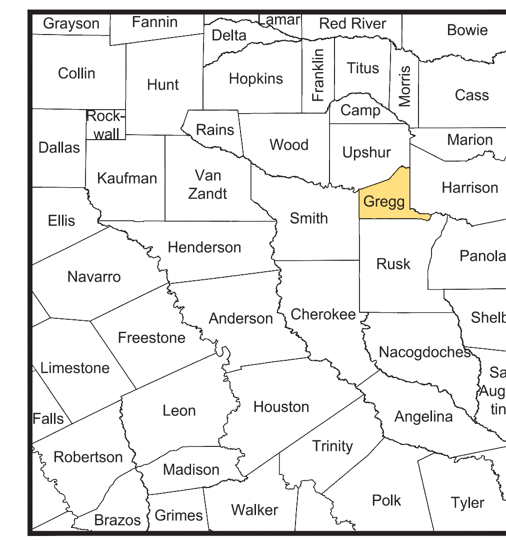
VICINITY MAP



Not to Scale

DRAWING INDEX

COUNTY MAP



Not to Scale

NO.	REVISIONS	DATE	BY	APP'D.
2	Copy and insert revision info into Sheet File on Anno Layer as needed	___	___	___
1	Copy and insert revision info into Sheet File on Anno Layer asneeded	___	___	___

"THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."

EAST TEXAS REGIONAL AIRPORT

TITLE SHEET

GREGG COUNTY, TEXAS

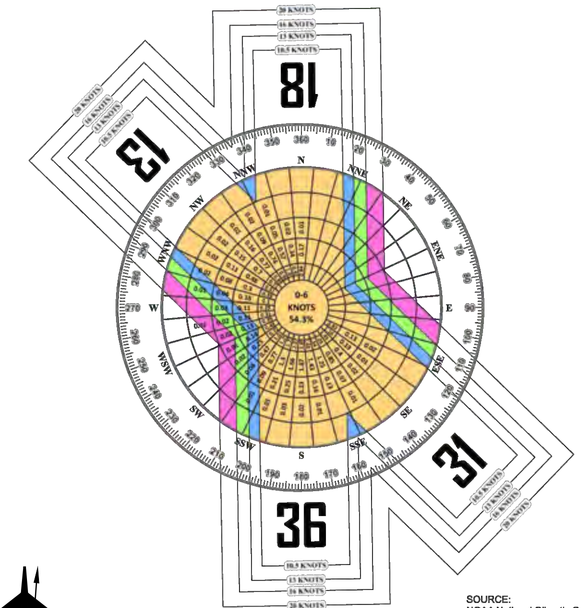
PLANNED BY: S. Wagner/P. Taylor
DETAILED BY: D. Przybycien
APPROVED BY: T. Kahmann

APRIL 2019 SHEET 1 OF 19

Coffman Associates
Airport Consultants
www.coffmanassociates.com

ALL WEATHER WIND COVERAGE

Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 13-31	94.44%	97.35%	99.41%	99.91%
Runway 18-36	96.99%	98.57%	99.59%	99.89%
All Runways	99.03%	99.68%	99.93%	99.98%



SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
East Texas Regional Airport
Longview, TX

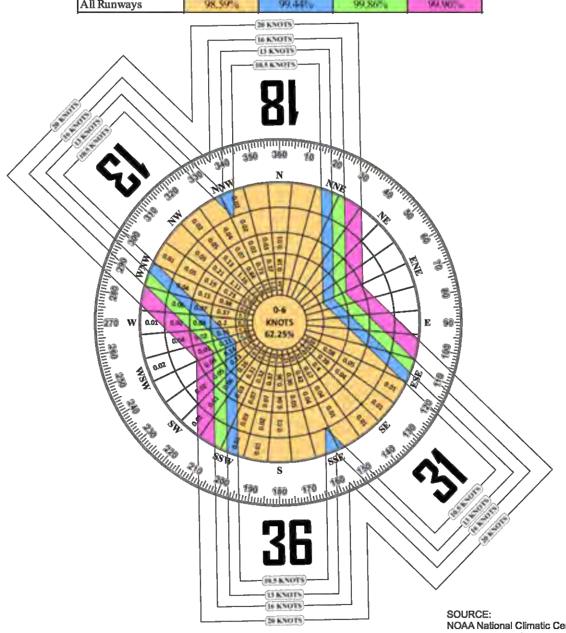
OBSERVATIONS:
105,983 All Weather Observations
Jan. 1, 2007 - Dec. 31 2016

NORTH

Magnetic Declination
01° 55' East
Annual Rate of Change
0° 7' West
(Source: NOAA, NCEI, October 2018)

IFR WIND COVERAGE

Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 13-31	96.97%	98.40%	99.55%	99.86%
Runway 18-36	95.85%	97.77%	99.20%	99.74%
All Runways	98.59%	99.44%	99.86%	99.90%



SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
East Texas Regional Airport
Longview, TX

OBSERVATIONS:
15,157 IFR Observations
Jan. 1, 2007 - Dec. 31 2016

RUNWAY DATA

RUNWAY DATA	RUNWAY 13-31				RUNWAY 18-36			
	EXISTING		ULTIMATE		EXISTING		ULTIMATE	
	13	31	13	31	18	36	18	36
APPROACH REFERENCE CODE	C-IV-2400		C-IV-2400		C-IV-4000		C-IV-4000	
DEPARTURE REFERENCE CODE	C-IV		C-IV		C-IV		C-IV	
RUNWAY DESIGN CODE	C-II-2400		C-III-2400		C-II-4000		C-II-4000	
PERCENT WIND COVERAGE (16 Knots)	99.41%		99.59		99.41%		99.59	
14 CFR PART 77 CATEGORY	50:1 / 40:1	34:1	50:1 / 40:1	34:1	34:1	34:1	34:1	34:1
APPROACH VISIBILITY MINIMUMS	1/2 Mile	3/4 Mile	1/2 Mile	3/4 Mile	7/8 Mile	1 Mile	7/8 Mile	1 Mile
APPROACH TYPE	Precision	Nonprecision	Precision	Nonprecision	Nonprecision	Nonprecision	Nonprecision	Nonprecision
TYPE OF AERONAUTICAL SURVEY REQUIRED FOR APPROACH	VGS	VGS	VGS	VGS	VGS	VGS	VGS	VGS
DEPARTURE SURFACE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
THRESHOLD SITING SURFACE	34:1	20:1	34:1	20:1	20:1	20:1	20:1	20:1
CRITICAL AIRCRAFT	Embraer ERJ 145		Embraer EMB 175		Gulfstream IV		Gulfstream IV	
WINGSPAN OF DESIGN AIRCRAFT	68.92'		93.92'		77.83'		77.83'	
UNDERCARRIAGE WIDTH OF DESIGN AIRCRAFT	15.72'		20.5'		17.9'		17.9'	
TAIL HEIGHT OF DESIGN AIRCRAFT	22.17'		32.33'		24.42'		24.42'	
MAXIMUM CERTIFIED TAKEOFF WEIGHT (LBS) OF DESIGN AIRCRAFT	53,131		82,673		74,600		74,600	
RUNWAY DIMENSIONS	10000' x 150'		10000' x 150'		6109' x 150'		6109' x 150'	
RUNWAY BEARING (TRUE)	131.72Â	311.5Â	131.72Â	311.5Â	176.73Â	356.73Â	176.73Â	356.73Â
RUNWAY END ELEVATION (MSL)	357.7'	353.9'	357.7'	353.9'	354.3'	365.5'	354.3'	365.5'
RUNWAY THRESHOLD DISPLACEMENT	800'	None	800'	None	None	None	None	None
DISPLACED THRESHOLD ELEVATION (MSL)	357.7'	N/A	357.7'	N/A	N/A	N/A	N/A	N/A
RUNWAY TOUCHDOWN ZONE ELEVATION (MSL)	357.7'	356.0'	357.7'	356.0'	356.0'	365.5'	356.0'	365.5'
RUNWAY EFFECTIVE GRADIENT (MAXIMUM)	0.04%		0.04%		0.2%		0.2%	
LINE OF SIGHT REQUIREMENT MET	No		No		Yes		Yes	
PAVEMENT DESIGN STRENGTH (in thousand lbs.)	95 (S), 175 (2S) 155 (D), 288 (2D)		95 (S), 175 (2S) 155 (D), 288 (2D)		95 (S), 175 (2S) 155 (D), 280 (2D)		95 (S), 175 (2S) 155 (D), 280 (2D)	
STRENGTH BY PCN	51/F/C/X/T		51/F/C/X/T		29/F/C/X/T		29/F/C/X/T	
RUNWAY SURFACE MATERIAL	Asphalt		Asphalt		Asphalt		Asphalt	
RUNWAY PAVEMENT SURFACE TREATMENT	Grooved		Grooved		Grooved		Grooved	
RUNWAY MARKING	Precision	Precision	Precision	Precision	Nonprecision	Nonprecision	Nonprecision	Nonprecision
RUNWAY SAFETY AREA LENGTH BEYOND RUNWAY END (STANDARD/ACTUAL)	1000'	1000'	1000'	1000'	1000'	1000'	1000'	1000'
RUNWAY SAFETY AREA WIDTH (STANDARD)	500'		500'		500'		500'	
RUNWAY OBJECT FREE AREA LENGTH BEYOND RUNWAY END (STANDARD)	1000'	1000'	1000'	1000'	1000'	1000'	1000'	1000'
RUNWAY OBJECT FREE AREA WIDTH	800'		800'		800'		800'	
RUNWAY OBSTACLE FREE ZONE LENGTH BEYOND RUNWAY END (STANDARD)	200'	200'	200'	200'	200'	200'	200'	200'
RUNWAY OBSTACLE FREE ZONE WIDTH	400'		400'		400'		400'	
RUNWAY PROTECTION ZONE	1000'x1750'x2500' (13) 1000'x1510'x1700' (31)		1000'x1750'x2500' (13) 1000'x1510'x1700' (31)		1000'x1510'x1700' (18) 500'x1010'x1700' (36)		1000'x1510'x1700' (18) 500'x1010'x1700' (36)	
DISTANCE FROM RUNWAY CENTERLINE TO HOLD BARS AND SIGNS	250'		253'		250'		250'	
RUNWAY CL TO PARALLEL TAXIWAY CL	400' and 500' (400' Standard)		400' and 500' (400' Standard)		400' and 500' (400' Standard)			
RUNWAY LIGHTING	HIRL		HIRL		MIRL		MIRL	
TAXIWAY DESIGN GROUP	TDG2		TDG3		TDG2		TDG2	
TAXIWAY AND TAXILANE WIDTH	75' (50' Standard)		50'- 75' (50' Standard)		50'-75' (35' Standard)		50'-75' (35' Standard)	
TAXIWAY SURFACE MATERIAL	Asphalt		Asphalt		Asphalt		Asphalt	
TAXIWAY OBJECT FREE AREA WIDTH	131'		186'		131'		131'	
TAXIWAY SAFETY AREA WIDTH	79'		118'		79'		79'	
TAXIWAY WING TIP CLEARANCE	26'		34'		26'		26'	
TAXIWAY CENTERLINE TO FIXED OR MOVEABLE OBJECT	65.5'		93'		65.5'		65.5'	
TAXIWAY SHOULDER WIDTH	15'		20'		15'		15'	
TAXIWAY EDGE SAFETY MARGIN	7.5'		10'		7.5'		7.5'	
TAXILANE OBJECT FREE AREA WIDTH	115'		162'		115'		115'	
TAXILANE CENTERLINE TO FIXED OR MOVEABLE OBJECT	57.5'		81'		57.5'		57.5'	
TAXIWAY MARKING	Centerline		Centerline		Centerline		Centerline	
TAXIWAY LIGHTING	MITL		MITL		MITL		MITL	
RUNWAY INSTRUMENT NAVIGATIONAL AIDS	ILS or LOC (13) GPS (13, 31, 18, 36) VOR DME (13, 31)		ILS or LOC (13) GPS (13, 31, 18, 36) VOR DME (13, 31)		GPS (18,36)		GPS (18,36)	
RUNWAY VISUAL AIDS	MALSR (13) PAPI-4L (31) Lighted Wind Cone (13,31)		MALSR (13) PAPI-4L (31) Lighted Wind Cone (13,31)		PAPI-4L4R (18, 36) Lighted Wind Cone (36)		PAPI-4L4R (18, 36) Lighted Wind Cone (36)	

AIRPORT DATA

OWNER: Gregg County	AIRPORT NPIAS CODE: Non-Hub, Primary CS
STATE: Texas	STATE SERVICE ROLE: Primary, CS
COUNTY: Gregg	MEAN MAX TEMPERATURE OF HOTTEST MONTH: 94ÁAugust

EAST TEXAS REGIONAL AIRPORT (GGG)		EXISTING	ULTIMATE
AIRPORT REFERENCE CODE		C-II	C-III
CRITICAL AIRCRAFT		Embraer ERJ 145	Embraer EMB 175
AIRPORT ELEVATION (NAVD 88)		365.5' MSL	365.5' MSL
AIRPORT REFERENCE POINT (NAD 83)	Latitude	32Á23' 02.45" N	32Á23' 02.45" N
	Longitude	94Á42' 41.35" W	94Á42' 41.35" W
AIRPORT INSTRUMENT APPROACH PROCEDURES		ILS or LOC (13) RNAV GPS (13,31,18,36) VOR/DME or TACAN (13,31) VOR-A (Circling)	ILS or LOC (13) RNAV GPS (13,31,18,36) VOR/DME or TACAN (13,31) VOR-A (Circling)
AIRPORT and TERMINAL NAVIGATIONAL AIDS		ATCT MALSR (13), PAPI-4 (31,18,36) REIL (13), Airport Beacon	ATCT MALSR (13), PAPI-4 (31,18,36) REIL (13), Airport Beacon
MISCELLANEOUS FACILITIES		ASOS-3 Lighted Wind Cones HIRL (13,31), MIRL (18,36) MITL, Segmented Circle	ASOS-3 Lighted Wind Cones HIRL (13,31), MIRL (18,36) MITL, Segmented Circle

ELECTRONIC AIRPORT NAVAID OWNERSHIP

NAVAID	OWNER
ILS	FAA
GS	FAA
MALSR	FAA
ASOS-3	FAA
BEACON	GREGG COUNTY
VORTAC	FAA
VOR A	FAA
VOR/DME	FAA
NDB	FAA
PAPI-4	FAA
MIRL	FAA

DECLARED DISTANCE

DECLARED DISTANCE	RUNWAY 13-31				RUNWAY 18-36			
	EXISTING		ULTIMATE		EXISTING		ULTIMATE	
	13	31	13	31	18	36	18	36
TAKE-OFF RUN AVAILABLE	10000'	10000'	10000'	10000'	6109'	6109'	6109'	6109'
TAKE-OFF DISTANCE AVAILABLE	10000'	10000'	10000'	10000'	6109'	6109'	6109'	6109'
ACCELERATE STOP DISTANCE AVAILABLE	10000'	9200'	10000'	9200'	6109'	6109'	6109'	6109'
LANDING DISTANCE AVAILABLE	9200'	9200'	9200'	9200'	6109'	6109'	6109'	6109'

EXISTING DECLARED DISTANCES FROM FAA AIRPORT FACILITY DIRECTORY

TAXIWAY DATA

	TAXIWAYS																						
	EXISTING										ULTIMATE												
AIRPLANE DESIGN GROUP	II	II	II	II	II	II	II	II	II	II	III	III	III	III	III	III	III	III	III	III	III	III	III
TAXIWAY DESIGNATION	A	B	C	D	E	G	K	L	M	N	A	B	C	D	E	F	G	H	J	K	L	M	N
TAXIWAY DESIGN GROUP	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	2, 3	3
TAXIWAY WIDTH	75	75	75	75	75	75	50	75	50, 75	75	75	75	75	75	50-75	50	50	50	50	50	75	50, 75	75
TAXIWAY SAFETY AREA (TSA) WIDTH	79	79	79	79	79	79	79	79	79	79	118	118	118	118	118	118	118	118	118	118	118	118	118
TAXIWAY OBJECT FREE AREA (TOFA) WIDTH	131	131	131	131	131	131	131	131	131	131	186	186	186	186	186	186	186	186	186	186	186	186	186
TAXIWAY CENTERLINE TO FIXED OR MOVEABLE OBJECT	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	93	93	93	93	93	93	93	93	93	93	93	93	93
TAXIWAY WING TIP CLEARANCE	26	26	26	26	26	26	26	26	26	26	34	34	34	34	34	34	34	34	34	34	34	34	34
TAXIWAY EDGE SAFETY MARGIN	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	10	10	10	10	10	10	10	10	10	10	10	10	10
TAXIWAY SHOULDER WIDTH	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
TAXIWAY LIGHTING	MITL	MITL	MITL	MITL	MITL	MITL	MITL	MITL	MITL	MITL	MITL	MITL	MITL	MITL	MITL	MITL	MITL	MITL	MITL	MITL	MITL	MITL	MITL

ALL MEASUREMENTS IN FEET

MODIFICATIONS TO FAA DESIGN STANDARDS

AIRSPACE CASE NO.	APPROVAL DATE	DESCRIPTION
NONE	N/A	N/A

OFZ PENETRATION TABLE

ID	DESCRIPTION	REMEDIATION
	NONE	

NO.	REVISIONS	DATE	BY	APP'D.

"THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."

EAST TEXAS REGIONAL AIRPORT

AIRPORT DATA SHEET

GREGG COUNTY, TEXAS

PLANNED BY: S. Wagner/P. Taylor
DETAILED BY: D. Przybycien
APPROVED BY: T. Kahmann

APRIL 2019 — SHEET 2 OF 19

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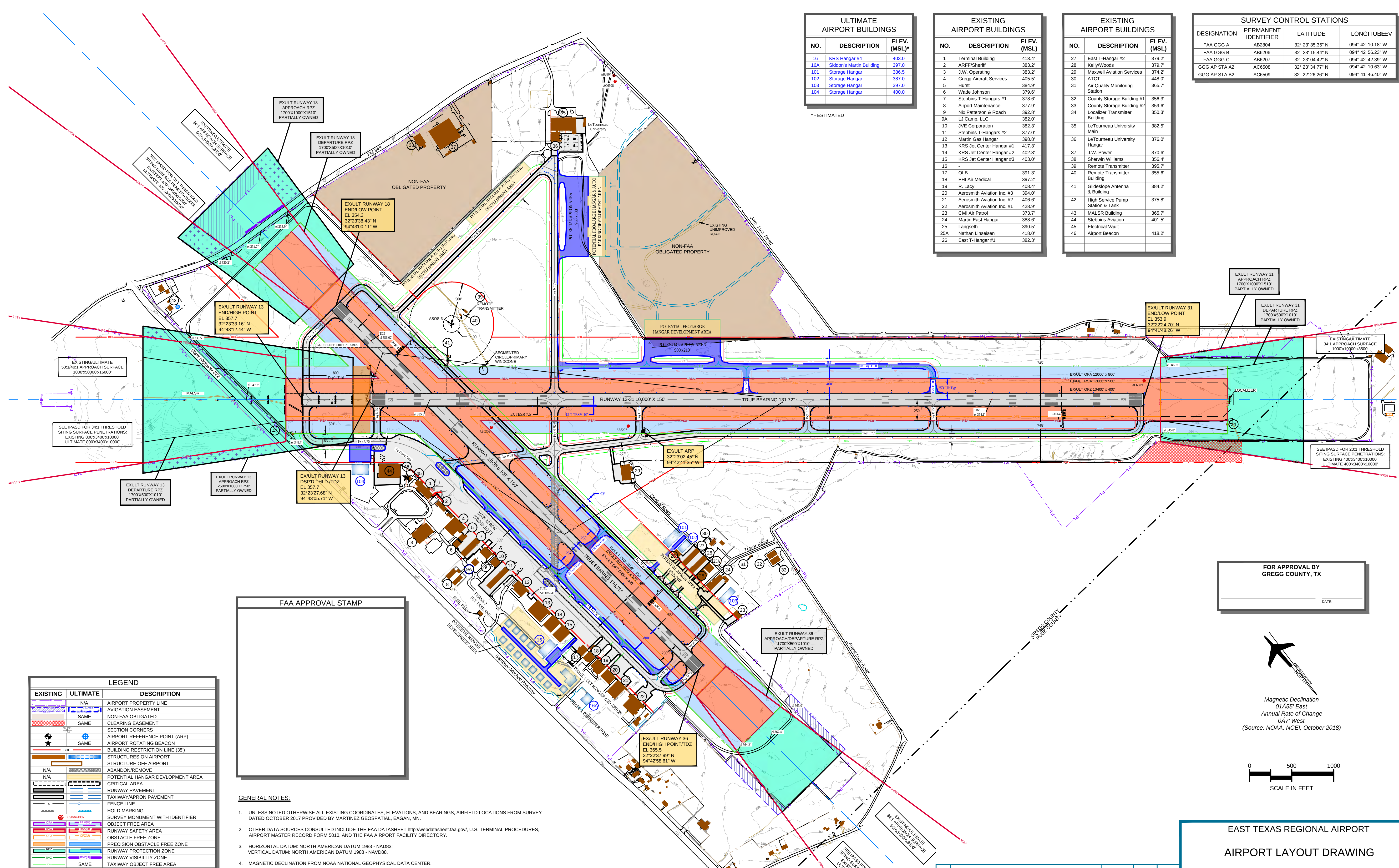

ULTIMATE AIRPORT BUILDINGS

NO.	DESCRIPTION	ELEV. (MSL)*
16	KRS Hangar #4	403.0'
16A	Siddon's Martin Building	397.0'
101	Storage Hangar	386.5'
102	Storage Hangar	387.0'
103	Storage Hangar	397.0'
104	Storage Hangar	400.0'

* - ESTIMATED

EXISTING AIRPORT BUILDINGS

NO.	DESCRIPTION	ELEV. (MSL)
1	Terminal Building	413.4'
2	ARFF/Sheriff	383.2'
3	J.W. Operating	383.2'
4	Gregg Aircraft Services	405.5'
5	Hurst	384.9'
6	Wade Johnson	379.6'
7	Stebbins T-Hangars #1	378.6'
8	Airport Maintenance	377.9'
9	Nix Patterson & Roach	392.8'
9A	LJ Camp, LLC	382.0'
10	JVE Corporation	382.3'
11	Stebbins T-Hangars #2	377.0'
12	Martin Gas Hangar	398.8'
13	KRS Jet Center Hangar #1	417.3'
14	KRS Jet Center Hangar #2	402.3'
15	KRS Jet Center Hangar #3	403.0'
16	-	
17	OLB	391.3'
18	PHI Air Medical	397.2'
19	R. Lacy	408.4'
20	Aerosmith Aviation Inc. #3	394.0'
21	Aerosmith Aviation Inc. #2	406.6'
22	Aerosmith Aviation Inc. #1	428.9'
23	Civil Air Patrol	373.7'
24	Martin East Hangar	388.6'
25	Langseth	390.5'
25A	Nathan Linseisen	418.0'
26	East T-Hangar #1	382.3'

EXISTING AIRPORT BUILDINGS

NO.	DESCRIPTION	ELEV. (MSL)
27	East T-Hangar #2	379.2'
28	Kelly/Woods	379.7'
29	Maxwell Aviation Services	374.2'
30	ATCT	448.0'
31	Air Quality Monitoring Station	365.7'
32	County Storage Building #1	356.3'
33	County Storage Building #2	359.6'
34	Localizer Transmitter Building	350.3'
35	LeTourneau University Main	382.5'
36	LeTourneau University Hangar	376.0'
37	J.W. Power	370.6'
38	Sherwin Williams	356.4'
39	Remote Transmitter	395.7'
40	Remote Transmitter Building	355.6'
41	Glideslope Antenna & Building	384.2'
42	High Service Pump Station & Tank	375.8'
43	MALSR Building	365.7'
44	Stebbins Aviation	401.5'
45	Electrical Vault	
46	Airport Beacon	418.2'

SURVEY CONTROL STATIONS

DESIGNATION	PERMANENT IDENTIFIER	LATITUDE	LONGITUDEELEV
FAA GGG A	AB2804	32° 23' 35.35" N	094° 42' 10.18" W
FAA GGG B	AB6206	32° 23' 15.44" N	094° 42' 56.23" W
FAA GGG C	AB6207	32° 23' 04.42" N	094° 42' 42.39" W
GGG AP STA A2	AC6508	32° 23' 34.77" N	094° 42' 10.63" W
GGG AP STA B2	AC6509	32° 22' 26.26" N	094° 41' 46.40" W

FOR APPROVAL BY GREGG COUNTY, TX

DATE:

FAA APPROVAL STAMP

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
	N/A	AIRPORT PROPERTY LINE
		AVIGATION EASEMENT
	SAME	NON-FAA OBLIGATED
	SAME	CLEARING EASEMENT
		SECTION CORNERS
		AIRPORT REFERENCE POINT (ARP)
	SAME	AIRPORT ROTATING BEACON
BRL		BUILDING RESTRICTION LINE (35')
		STRUCTURES ON AIRPORT
		STRUCTURE OFF AIRPORT
N/A		ABANDON/REMOVE
N/A		POTENTIAL HANGAR DEVLOPMENT AREA
		CRITICAL AREA
		RUNWAY PAVEMENT
		TAXIWAY/APRON PAVEMENT
		FENCE LINE
		HOLD MARKING
DESIGNATION		SURVEY MONUMENT WITH IDENTIFIER
OFA	OFA(U)	OBJECT FREE AREA
RSA	RSA(U)	RUNWAY SAFETY AREA
OFZ	OFZ(U)	OBSTACLE FREE ZONE
		PRECISION OBSTACLE FREE ZONE
RPZ		RUNWAY PROTECTION ZONE
RVZ	RVZ(U)	RUNWAY VISIBILITY ZONE
TOFA	SAME	TAXIWAY OBJECT FREE AREA
TSA	SAME	TAXIWAY SAFETY AREA
		TIE-DOWNS
		PAPI-4
		RUNWAY END IDENTIFIER LIGHTS (REIL)
		WINDSOCK
		LOCALIZER
3660	3660	TOPOGRAPHIC CONTOURS

GENERAL NOTES:

1. UNLESS NOTED OTHERWISE ALL EXISTING COORDINATES, ELEVATIONS, AND BEARINGS, AIRFIELD LOCATIONS FROM SURVEY DATED OCTOBER 2017 PROVIDED BY MARTINEZ GEOSPATIAL, EAGAN, MN.
2. OTHER DATA SOURCES CONSULTED INCLUDE THE FAA DATASHEET http://webdatasheet.faa.gov/, U.S. TERMINAL PROCEDURES, AIRPORT MASTER RECORD FORM 5010, AND THE FAA AIRPORT FACILITY DIRECTORY.
3. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83; VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88.
4. MAGNETIC DECLINATION FROM NOAA NATIONAL GEOPHYSICAL DATA CENTER.
5. BUILDING 29 IS AN OBSTACLE TO THE LINE OF SIGHT (LOS) WITHIN THE RUNWAY VISIBILITY ZONE (RVZ) AND WILL ULTIMATELY NEED TO BE REMOVED.
6. SEE INNER PORTION OF THE APPROACH SURFACE DRAWINGS FOR THRESHOLD SITING SURFACE PENETRATIONS.
7. SEE TERMINAL AREA DRAWINGS, SHEETS 16 AND 17 FOR BUILDING LIST AND DIMENSIONAL DETAILS.
8. STORAGE HANGARS 9A AND 25A WERE ADDED AFTER THE OCTOBER 2017 MAPPING. ELEVATIONS ARE ESTIMATES.

0 500 1000

SCALE IN FEET

NO.	REVISIONS	DATE	BY	APP'D.

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EAST TEXAS REGIONAL AIRPORT

AIRPORT LAYOUT DRAWING

GREGG COUNTY, TEXAS

PLANNED BY: S. Wagner/P. Taylor
DETAILED BY: D. Przybycien
APPROVED BY: T. Kahmann

APRIL 2019

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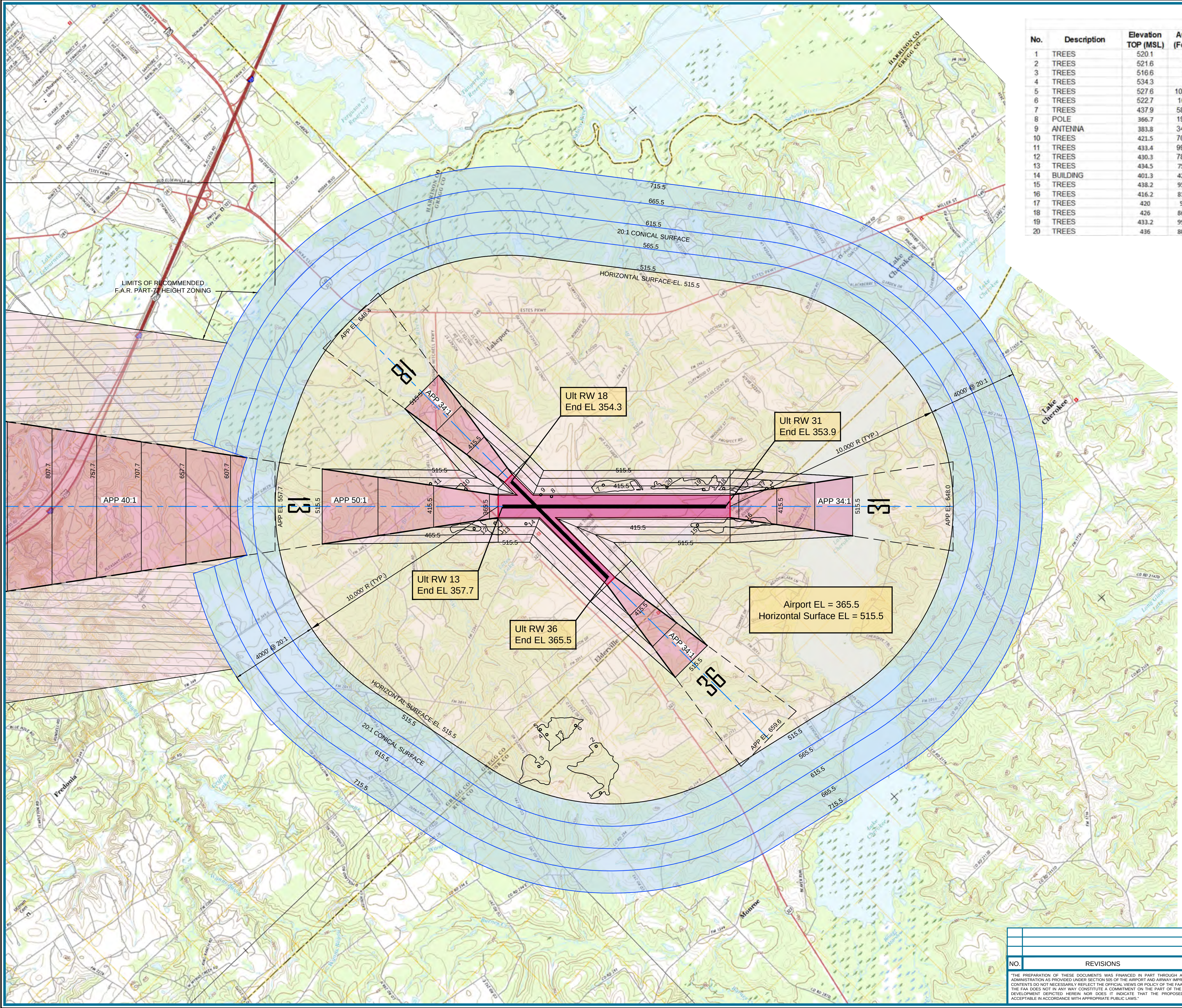

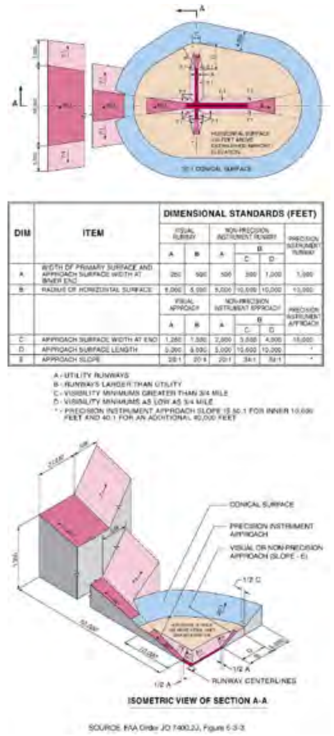

Magnetic Declination
01° 55' East
Annual Rate of Change
0° 7' West
(Source: NOAA, NCEI, October 2018)

0 2000 4000
SCALE IN FEET

OBSTRUCTION TABLE

No.	Description	Elevation TOP (MSL)	AGL (Feet)	Surface	Penetration (Feet)	Remediation
1	TREES	520.1	-	Horizontal	4.6'	Request Aeronautical Study
2	TREES	521.6	-	Horizontal	6.1'	Request Aeronautical Study
3	TREES	516.6	-	Horizontal	1.1'	Request Aeronautical Study
4	TREES	534.3	-	Horizontal	18.8'	Request Aeronautical Study
5	TREES	527.6	100.5'	Horizontal	12.1'	Request Aeronautical Study
6	TREES	522.7	106'	Horizontal	7.2'	Request Aeronautical Study
7	TREES	437.9	58.2'	7:1 Transitional Surface	23.1'	Remove All Trees / Request Aeronautical Study
8	POLE	366.7	19.1'	7:1 Transitional Surface	15'	To Remain Lighted
9	ANTENNA	383.8	34.4'	7:1 Transitional Surface	25.4'	To Remain Lighted
10	TREES	421.5	70.5'	7:1 Transitional Surface	26.8'	Remove All Trees / Request Aeronautical Study
11	TREES	433.4	99.4'	7:1 Transitional Surface	8.3'	Remove All Trees / Request Aeronautical Study
12	TREES	430.3	78.1'	7:1 Transitional Surface	2.5'	Remove All Trees / Request Aeronautical Study
13	TREES	434.5	75.7'	7:1 Transitional Surface	40.8'	Remove All Trees / Request Aeronautical Study
14	BUILDING	401.3	42.8'	7:1 Transitional Surface	4.7'	To Remain Lighted
15	TREES	438.2	95.5'	7:1 Transitional Surface	35.5'	Remove All Trees / Request Aeronautical Study
16	TREES	416.2	81.1'	7:1 Transitional Surface	26'	Remove All Trees / Request Aeronautical Study
17	TREES	420	98'	7:1 Transitional Surface	11.3'	Remove All Trees / Request Aeronautical Study
18	TREES	426	86.7'	7:1 Transitional Surface	30.2'	Remove All Trees / Request Aeronautical Study
19	TREES	433.2	99.2'	7:1 Transitional Surface	42.1'	Remove All Trees / Request Aeronautical Study
20	TREES	436	80.7'	7:1 Transitional Surface	30.6'	Remove All Trees / Request Aeronautical Study

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EAST TEXAS REGIONAL AIRPORT

AIRPORT AIRSPACE DRAWING I

GREGG COUNTY, TEXAS

PLANNED BY: S. Wagner/P. Taylor
DETAILED BY: D. Przybycien
APPROVED BY: T. Kahmann

APRIL 2019 SHEET 4 OF 19

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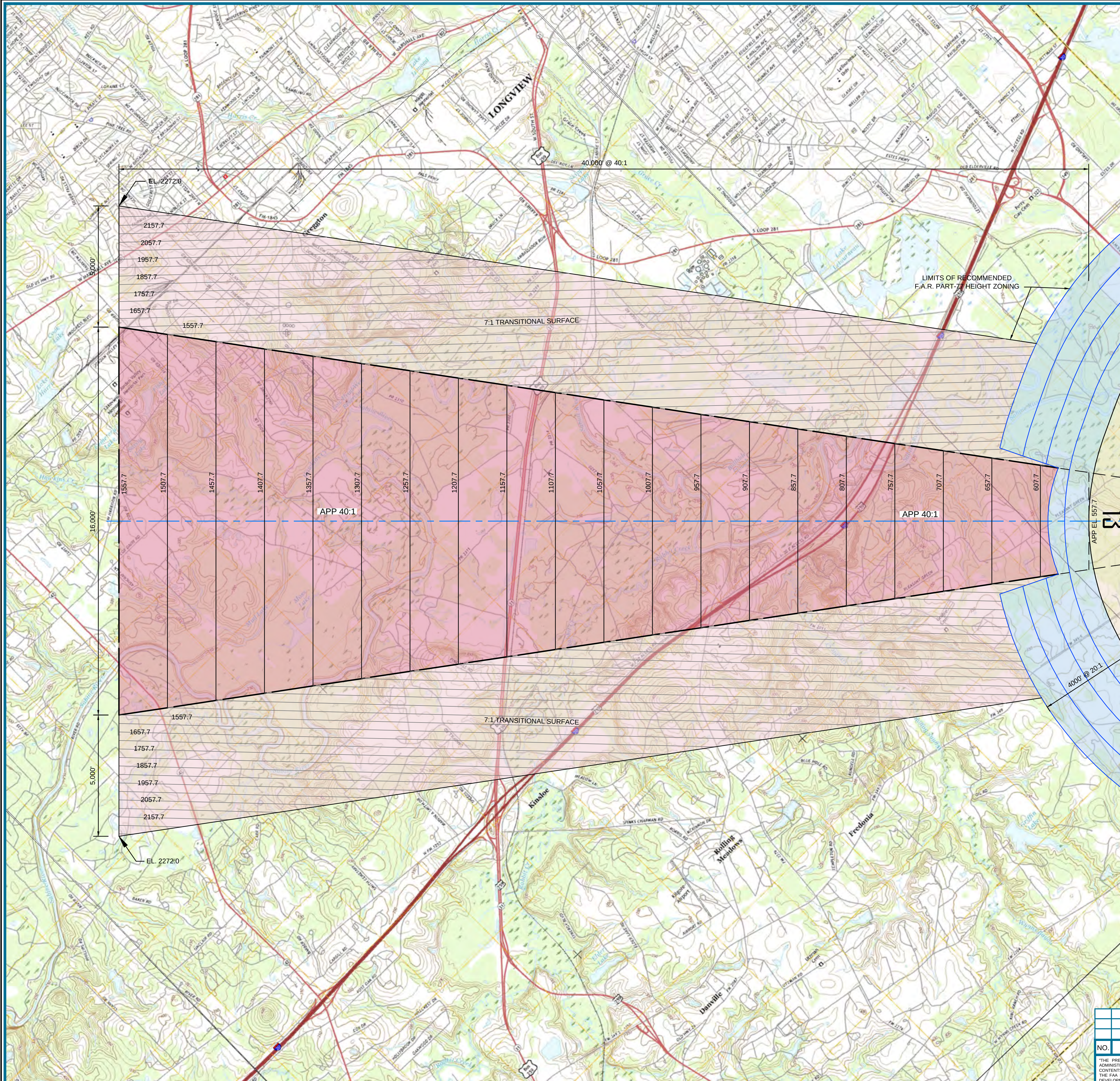
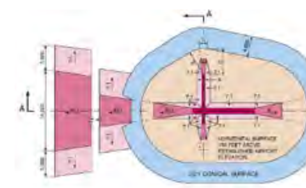


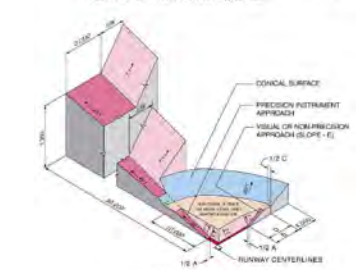
OBSTRUCTION TABLE

No.	Description	Elevation TOP (MSL)	AGL (Feet)	Surface	Penetration (Feet)	Remediation
-	None	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-



DIM	ITEM	DIMENSIONAL STANDARDS (FEET)					
		VISUAL RUNWAY		NON-PRECISION INSTRUMENT RUNWAY			PRECISION INSTRUMENT RUNWAY
		A	B	A	B C	B D	
A	WIDTH OF PRIMARY SURFACE AND APPROACH SURFACE WIDTH AT INNER END	250	500	500	500	1,000	1,000
B	RADIUS OF HORIZONTAL SURFACE	5,000	5,000	5,000	10,000	10,000	10,000
		VISUAL APPROACH		NON-PRECISION INSTRUMENT APPROACH			PRECISION INSTRUMENT APPROACH
		A	B	A	B C	B D	
C	APPROACH SURFACE WIDTH AT END	1,250	1,500	2,000	3,500	4,000	16,000
D	APPROACH SURFACE LENGTH	5,000	5,000	5,000	10,000	10,000	*
E	APPROACH SLOPE	20:1	20:1	20:1	34:1	34:1	*

A - UTILITY RUNWAYS
B - RUNWAYS LARGER THAN UTILITY
C - VISIBILITY MINIMUMS GREATER THAN 3/4 MILE
D - VISIBILITY MINIMUMS AS LOW AS 3/4 MILE
* - PRECISION INSTRUMENT APPROACH SLOPE IS 50:1 FOR INNER 10,000 FEET AND 40:1 FOR AN ADDITIONAL 40,000 FEET



ISOMETRIC VIEW OF SECTION A-A

SOURCE: FAA Order JO 7400.2J, Figure 6-3-9

Magnetic Declination
01° 55' East
Annual Rate of Change
0° 7' West
(Source: NOAA, NCEI, October 2018)

0 2000 4000
SCALE IN FEET

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EAST TEXAS REGIONAL AIRPORT

AIRPORT AIRSPACE DRAWING II

GREGG COUNTY, TEXAS

PLANNED BY: S. Wagner/P. Taylor
DETAILED BY: D. Przybycien
APPROVED BY: T. Kahmann

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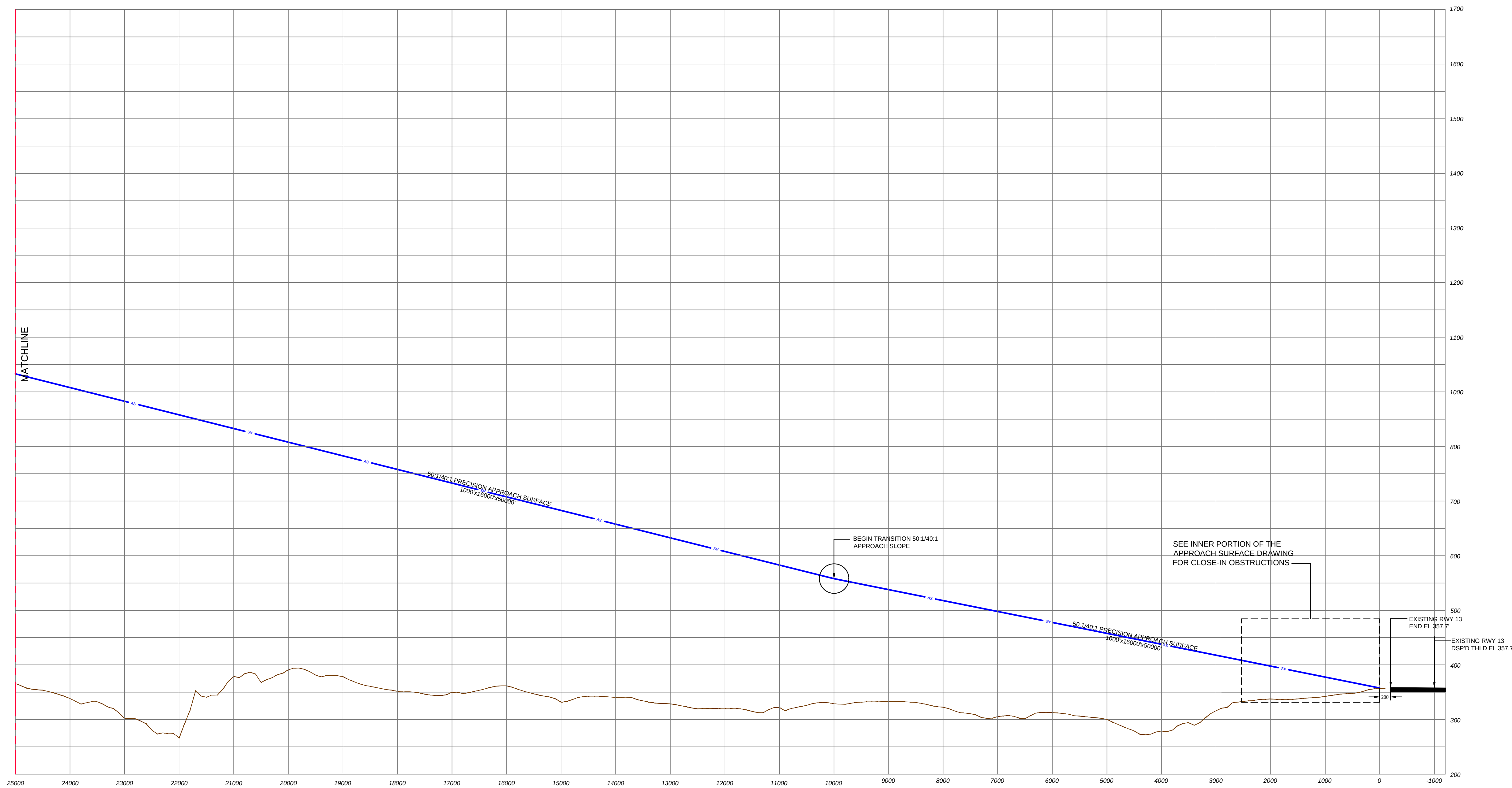

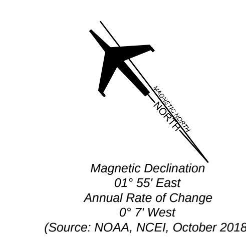

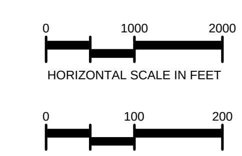

RUNWAY 13 OBSTRUCTION TABLE				
No.	Description	Top Elevation	Approach Penetration	Remediation
	See Inner Portion of the Approach Surface Drawing for Close-In Detail Information			

NO.	REVISIONS	DATE	BY	APP'D.

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EAST TEXAS REGIONAL AIRPORT

AIRPORT AIRSPACE PROFILE I
RUNWAY 13 APPROACH

GREGG COUNTY, TEXAS

PLANNED BY: S. Wagner/P. Taylor
DETAILED BY: D. Przybycien
APPROVED BY: T. Kahmann

APRIL 2019

SHEET 6 OF 19

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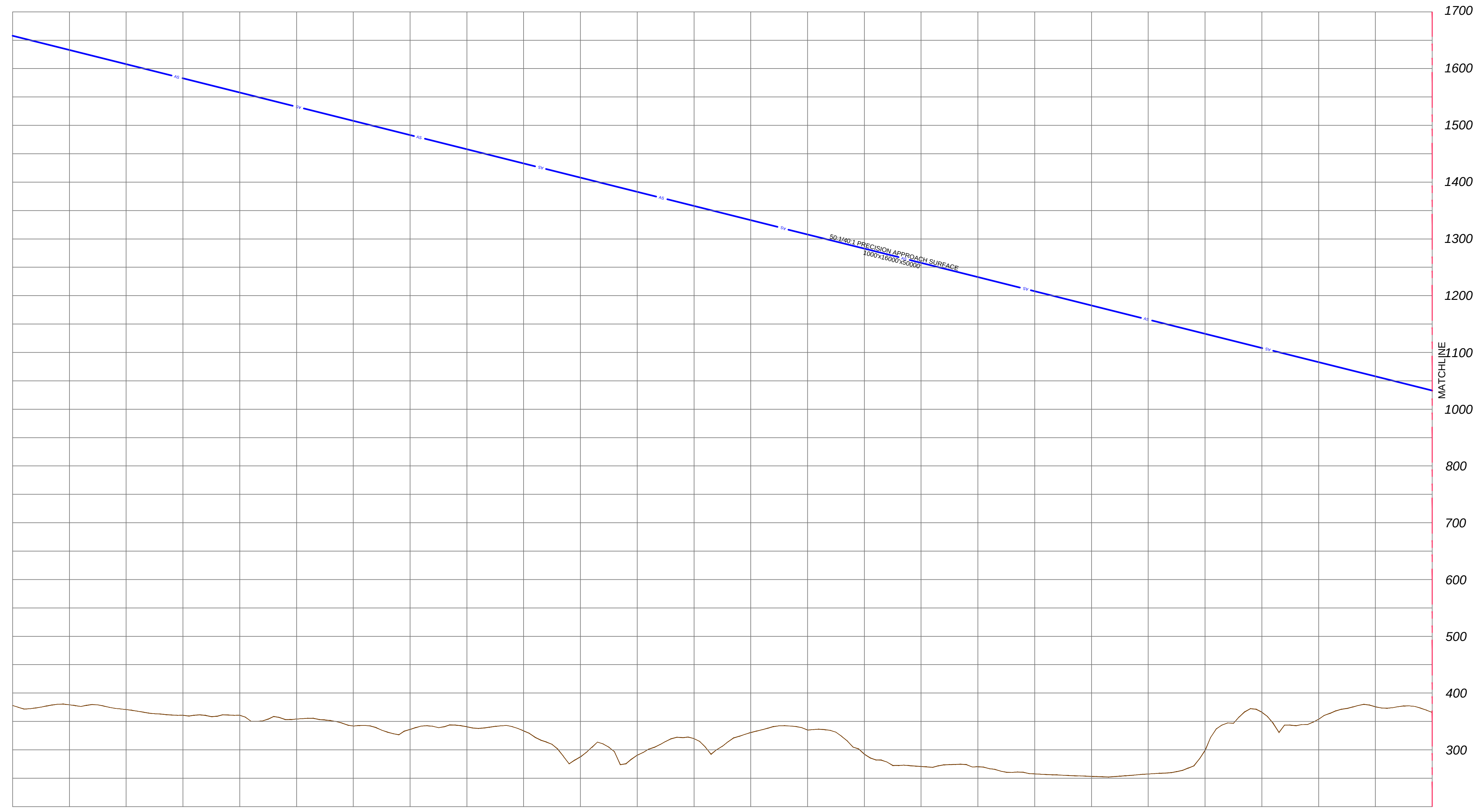

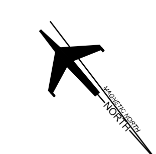

Magnetic Declination
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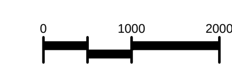
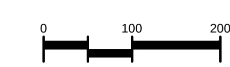
Annual Rate of Change
0° 7' West
(Source: NOAA, NCEI, October 2018)



HORIZONTAL SCALE IN FEET



VERTICAL SCALE IN FEET

RUNWAY 13 OBSTRUCTION TABLE

No.	Description	Top Elevation	Approach Penetration	Remediation
	NONE			

NO.	REVISIONS	DATE	BY	APP'D.

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EAST TEXAS REGIONAL AIRPORT

AIRPORT AIRSPACE PROFILE II
RUNWAY 13 APPROACH

GREGG COUNTY, TEXAS

PLANNED BY: S. Wagner/P. Taylor
DETAILED BY: D. Przybycien
APPROVED BY: T. Kahmann

APRIL 2019 SHEET 7 OF 19

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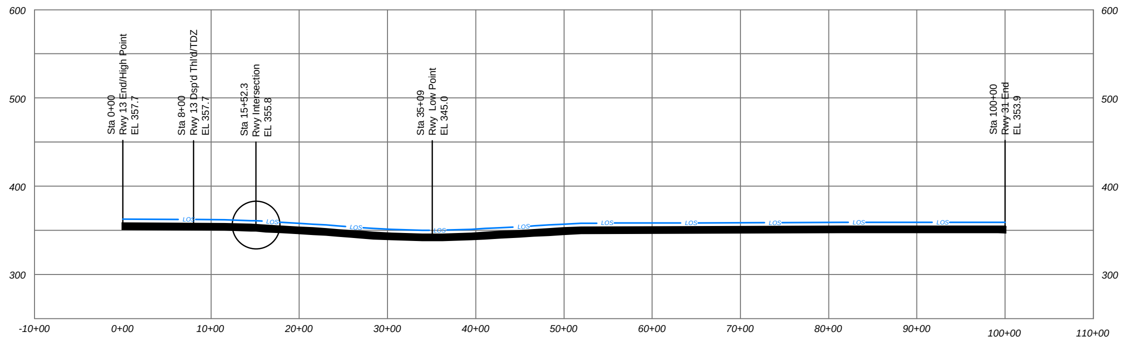
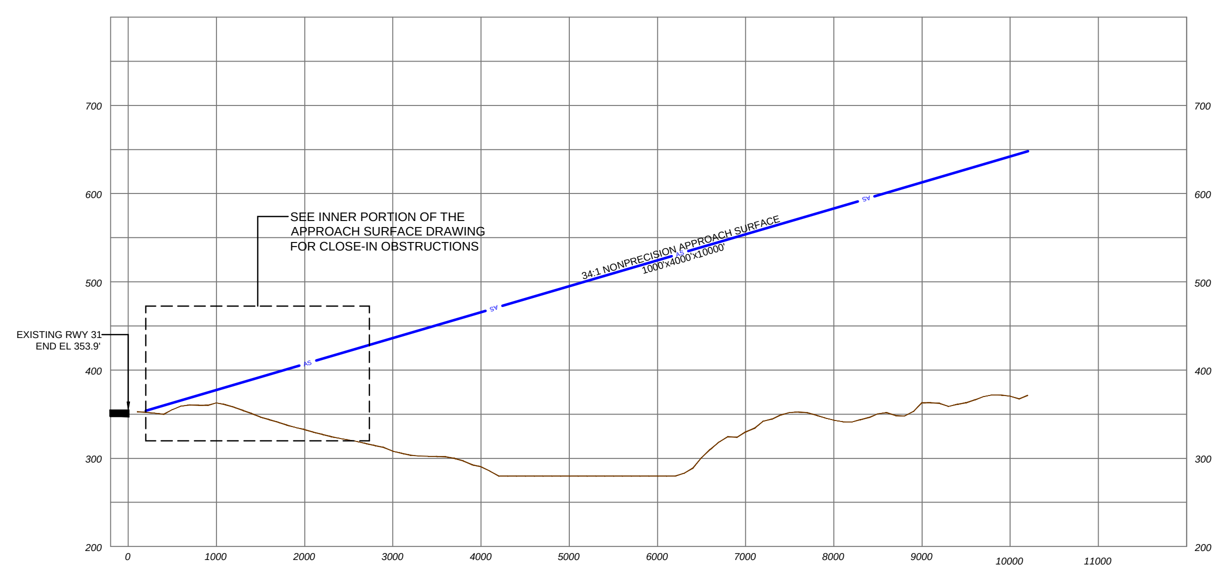
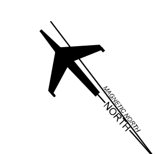
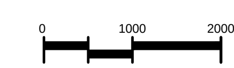




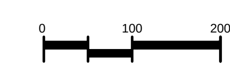
RUNWAY 31 OBSTRUCTION TABLE				
No.	Description	Top Elevation	Approach Penetration	Remediation
	See Inner Portion of the Approach Surface Drawing for Close-In Detail Information			



Magnetic Declination
01° 55' East
Annual Rate of Change
0° 7' West
(Source: NOAA, NCEI, October 2018)



HORIZONTAL SCALE IN FEET



VERTICAL SCALE IN FEET

NO.	REVISIONS	DATE	BY	APP'D.

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EAST TEXAS REGIONAL AIRPORT

AIRPORT AIRSPACE PROFILE III
RUNWAY 13-31 AND 31 APPROACH

GREGG COUNTY, TEXAS

PLANNED BY: S. Wagner/P. Taylor
DETAILED BY: D. Przybycien
APPROVED BY: T. Kahmann

APRIL 2019 SHEET 8 OF 19

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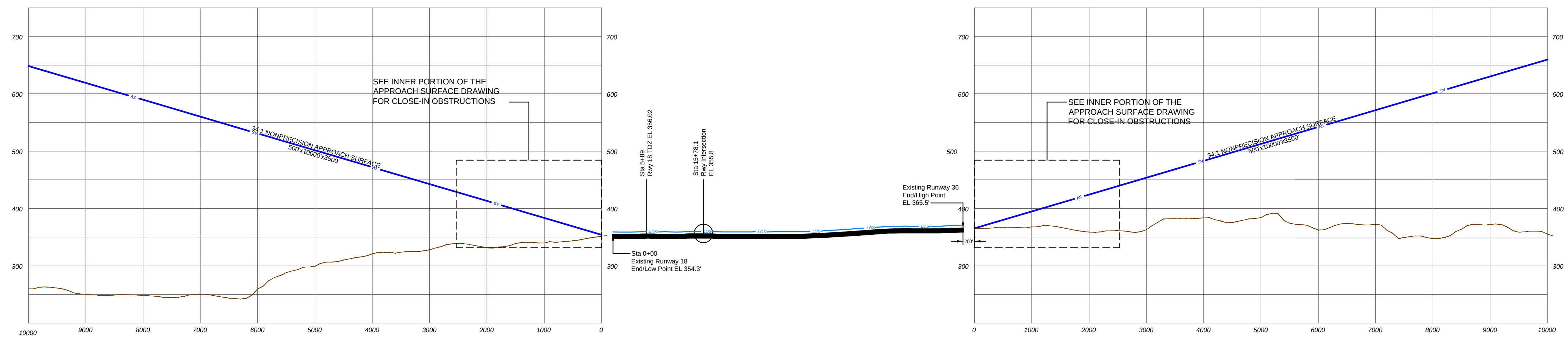
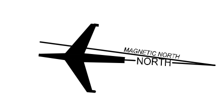


RUNWAY 36 OBSTRUCTION TABLE				
No.	Description	Top Elevation	Approach Penetration	Remediation
	See Inner Portion of the Approach Surface Drawing for Close-In Detail Information			

RUNWAY 36 OBSTRUCTION TABLE				
No.	Description	Top Elevation	Approach Penetration	Remediation
	See Inner Portion of the Approach Surface Drawing for Close-In Detail Information			



Magnetic Declination
01° 55' East
Annual Rate of Change
0° 7' West
(Source: NOAA, NCEI, October 2018)

0 1000 2000
HORIZONTAL SCALE IN FEET

0 100 200
VERTICAL SCALE IN FEET

NO.	REVISIONS	DATE	BY	APP'D.

EAST TEXAS REGIONAL AIRPORT

AIRPORT AIRSPACE PROFILE I
RUNWAY 18-36

GREGG COUNTY, TEXAS

PLANNED BY: S. Wagner/P. Taylor
DETAILED BY: D. Przybycien
APPROVED BY: T. Kahmann

APRIL 2019 SHEET 9 OF 19

Coffman Associates
Airport Consultants
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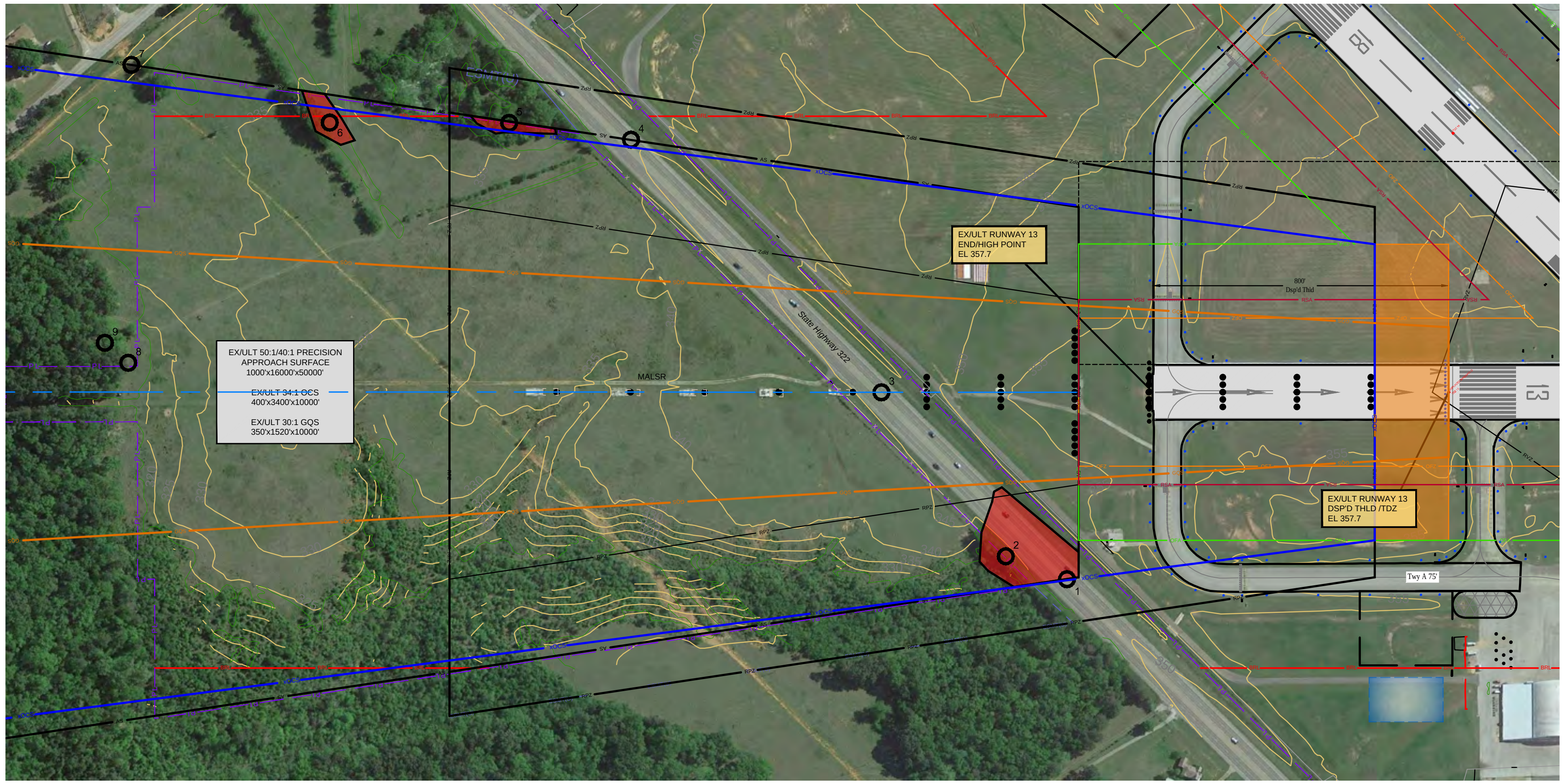


Obstruction Table

#	Feature	Elevation (ft. msl)	Approach Surface Penetration	OCS Penetration	Remediation
1	Gardner Mitchell Pkwy	364'	5.67'	N/A	Request Aeronautical Study
2	Tree	394.8'	33.16'	1.92'	Remove
5	Tree	414.1'	25.7'	N/A	Remove
6	Tree	400.1'	1.93'	N/A	Remove
8	Tree	410.7'	1.64'	N/A	Remove
9	Tree	413.8'	3.53'	N/A	Remove

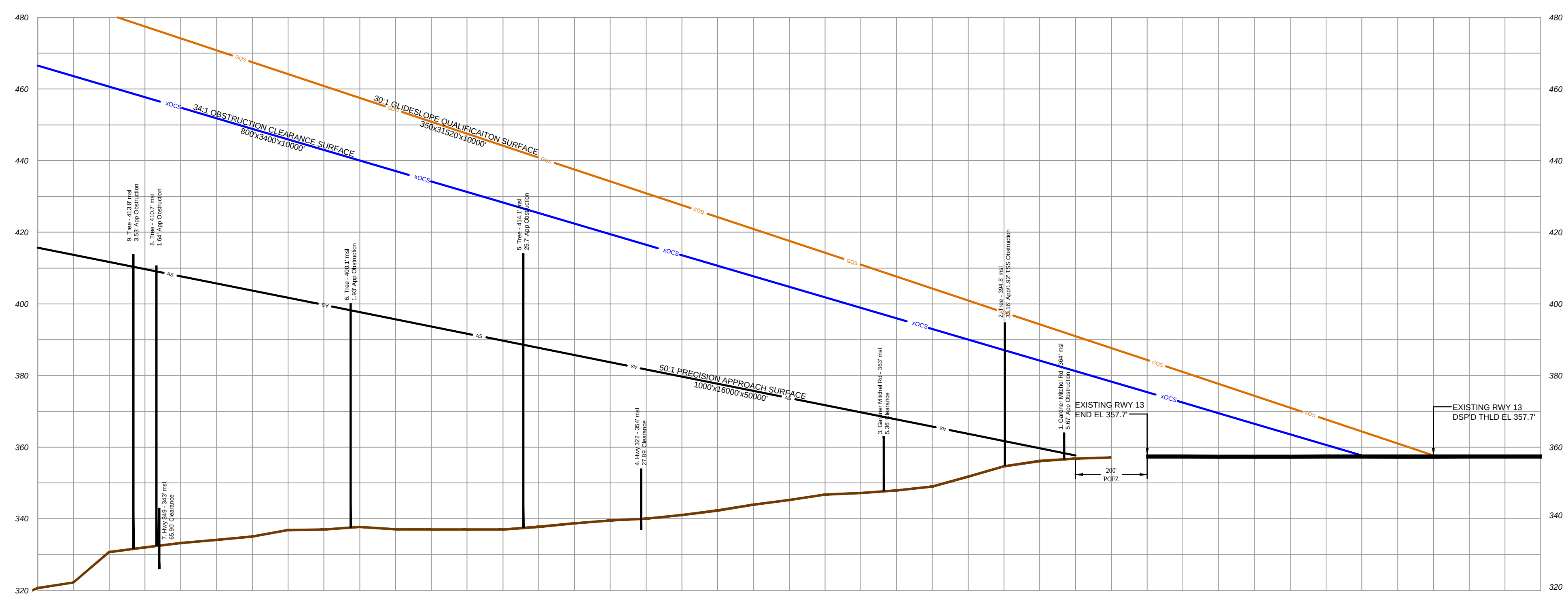
Survey Date: October 2017

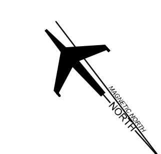
GENERAL NOTES:

1. UNLESS NOTED OTHERWISE, EXISTING DATA SOURCES FROM SURVEY DATED OCTOBER 2017 PROVIDED BY MARTINEZ GEOSPATIAL, EAGAN, MN.
2. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83; VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88.
3. MAGNETIC DECLINATION FROM NOAA NATIONAL GEOPHYSICAL DATA CENTER.
4. OBSTRUCTION(S) WITHIN GROUPINGS REPRESENT TALLEST NATURAL AND/OR MANMADE FEATURE

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
PL		AIRPORT PROPERTY LINE
ESMT	ESMT(U)	AIRPORT EASEMENT LINE
		OBSTRUCTION AREA
AS	SAME	APPROACH SURFACE
xOCS	SAME	OBSTACLE CLEARANCE SURFACE
GQS	SAME	GLIDEPATH QUALIFICATIONS SURFACE
RSA	SAME	RUNWAY SAFETY AREA
OFA	SAME	OBJECT FREE AREA
OFZ	SAME	OBSTACLE FREE ZONE
	SAME	PRECISION OBSTACLE FREE ZONE
RPZ	SAME	APPROACH RUNWAY PROTECTION ZONE
RPZ	SAME	DEPARTURE RUNWAY PROTECTION ZONE
	BRL	BUILDING RESTRICTION LINE
		SIGNIFICANT OBJECT PLAN VIEW
		SIGNIFICANT OBJECT PROFILE VIEW





Magnetic Declination
01° 55' East
Annual Rate of Change
0° 7' West
(Source: NOAA, NCEI, October 2018)

0 200 400
SCALE IN FEET

NO.	REVISIONS	DATE	BY	APP'D.

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EAST TEXAS REGIONAL AIRPORT

INNER PORTION OF THE APPROACH SURFACE DRAWING RUNWAY 13

GREGG COUNTY, TEXAS

PLANNED BY: S. Wagner/P. Taylor
DETAILED BY: D. Przybycien
APPROVED BY: T. Kahmann

APRIL 2019 SHEET 10 OF 19

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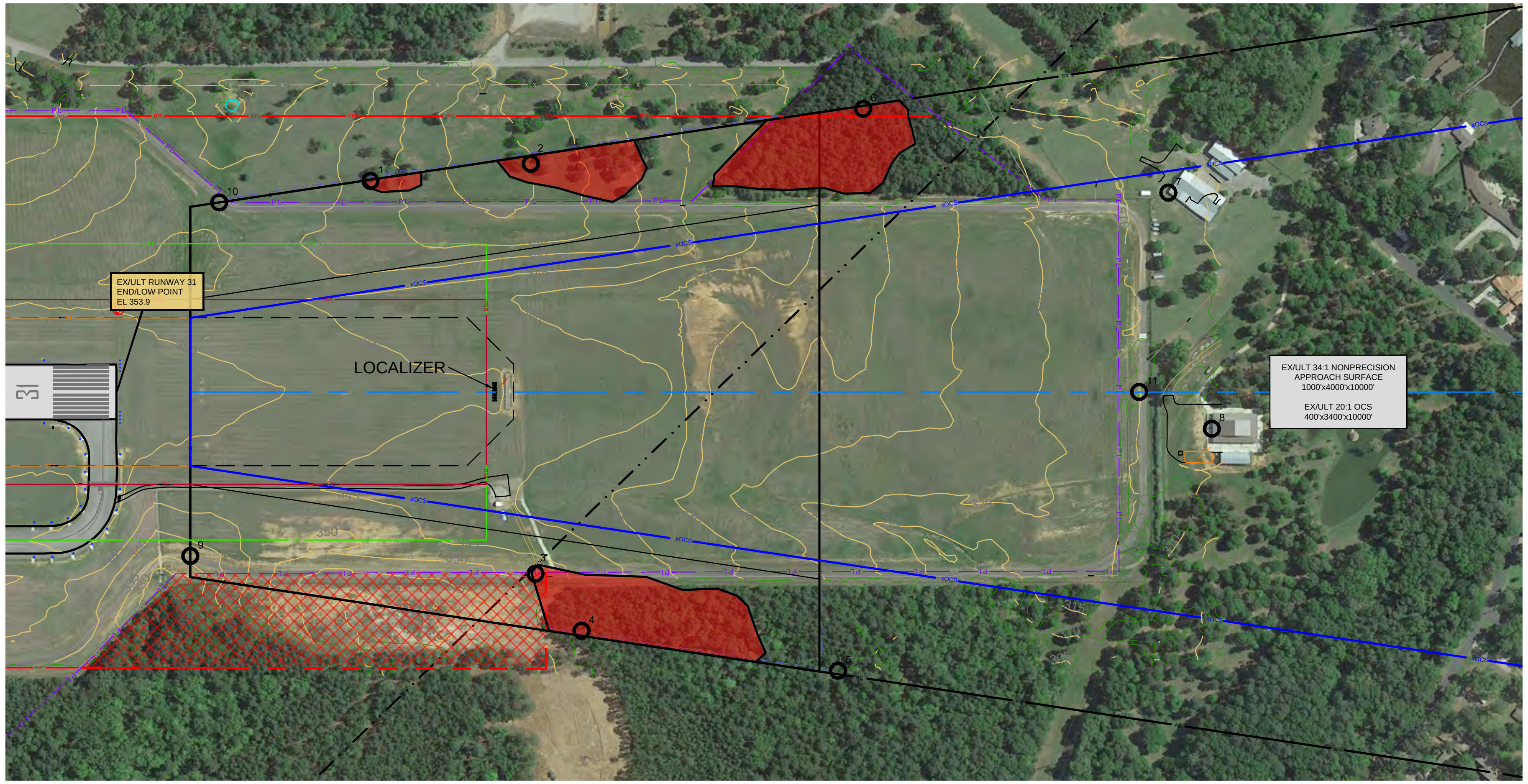

#	Feature	Elevation (ft. msl)	Approach Surface Penetration	OCS Penetration	Remediation
1	Tree	401.7'	33.48'	N/A	Remove
2	Tree	411.4'	30.44'	N/A	Remove
3	Utility Pole	381.7'	0.37'	N/A	Lower
4	Tree	410.5'	25.52'	N/A	Remove
5	Tree	407.0'	1.69'	N/A	Remove
6	Tree	419.7'	12.33'	N/A	Remove
10	Airport Service Road	356.0'	0.20'	N/A	Grade Road

Obstruction Table

Survey Date: October 2017

GENERAL NOTES:

1. UNLESS NOTED OTHERWISE, EXISTING DATA SOURCES FROM SURVEY DATED OCTOBER 2017 PROVIDED BY MARTINEZ GEOSPATIAL, EAGAN, MN.
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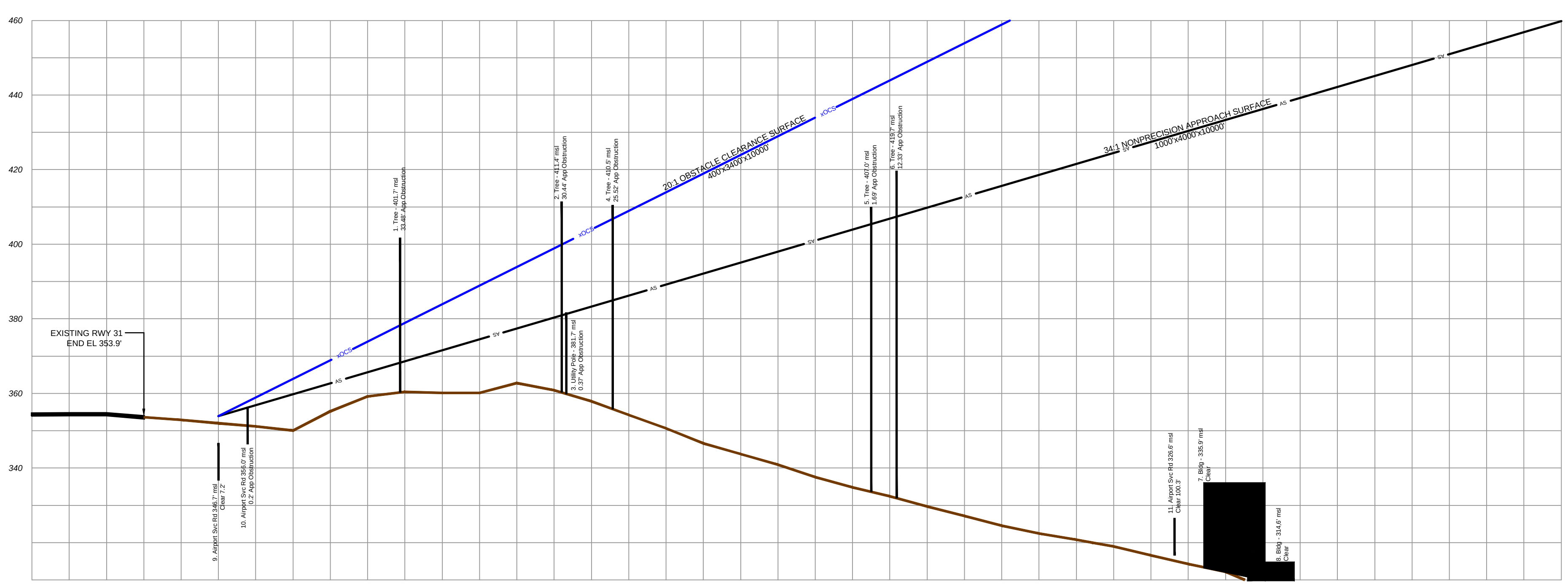
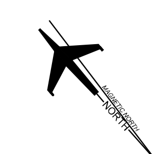
4. OBSTRUCTION(S) WITHIN GROUPINGS REPRESENT TALLEST NATURAL AND/OR MANMADE FEATURE

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
PL		AIRPORT PROPERTY LINE
ESMT	ESMT(U)	AIRPORT EASEMENT LINE
		OBSTRUCTION AREA
AS	SAME	APPROACH SURFACE
OCS	SAME	OBSTACLE CLEARANCE SURFACE
GQS	SAME	GLIDEPATH QUALIFICATIONS SURFACE
RSA	SAME	RUNWAY SAFETY AREA
OFA	SAME	OBJECT FREE AREA
OFZ	SAME	OBSTACLE FREE ZONE
	SAME	PRECISION OBSTACLE FREE ZONE
RPZ	SAME	APPROACH RUNWAY PROTECTION ZONE
RPZ	SAME	DEPARTURE RUNWAY PROTECTION ZONE
BRL		BUILDING RESTRICTION LINE
		SIGNIFICANT OBJECT PLAN VIEW
		SIGNIFICANT OBJECT PROFILE VIEW





Magnetic Declination
01° 55' East
Annual Rate of Change
0° 7' West
(Source: NOAA, NCEI, October 2018)

0 200 400
SCALE IN FEET

NO.	REVISIONS	DATE	BY	APP'D.

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EAST TEXAS REGIONAL AIRPORT

INNER PORTION OF THE APPROACH SURFACE DRAWING RUNWAY 31

GREGG COUNTY, TEXAS

PLANNED BY: S. Wagner/P. Taylor
DETAILED BY: D. Przybycien
APPROVED BY: T. Kahmann

APRIL 2019

SHEET 11 OF 19

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Obstruction Table

#	Feature	Elevation (ft. msl)	Approach Surface Penetration	TSS Penetration	Remediation
4	Tree	400.0'	7.54'	N/A	Remove
5	Tree	399.2'	4.46'	N/A	Remove
6	Tree	403.4'	5.5'	N/A	Remove
7	Tree	428.3'	20.59'	N/A	Remove
8	Tree	417.0'	2.26'	N/A	Remove

Survey Date: October 2017

GENERAL NOTES:

1. UNLESS NOTED OTHERWISE, EXISTING DATA SOURCES FROM SURVEY DATED OCTOBER 2017 PROVIDED BY MARTINEZ GEOSPATIAL, EAGAN, MN.
2. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83;
VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88.
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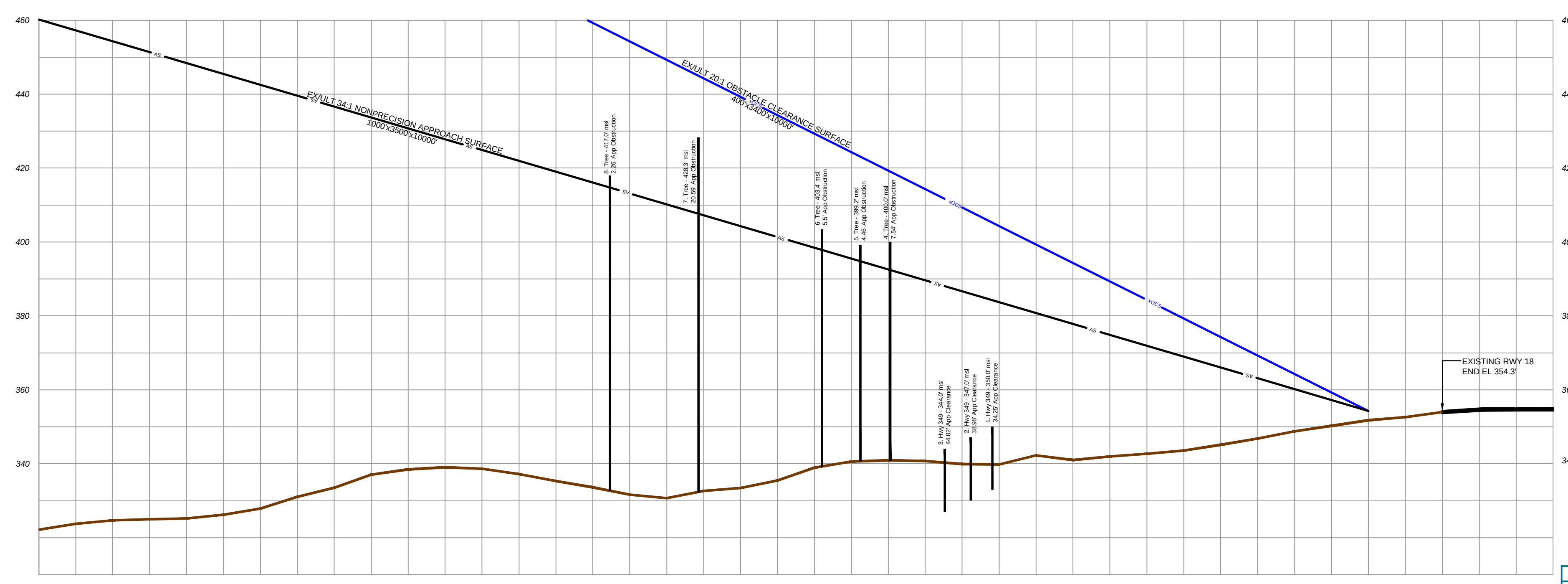
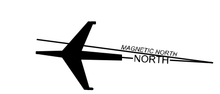
4. OBSTRUCTION(S) WITHIN GROUPINGS REPRESENT TALLEST NATURAL AND/OR MANMADE FEATURE

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
PL		AIRPORT PROPERTY LINE
ESMT	ESMT(U)	AIRPORT EASEMENT LINE
		OBSTRUCTION AREA
AS	SAME	APPROACH SURFACE
xOCS	SAME	OBSTACLE CLEARANCE SURFACE
GQS	SAME	GLIDEPATH QUALIFICATIONS SURFACE
RSA	SAME	RUNWAY SAFETY AREA
OFA	SAME	OBJECT FREE AREA
OFZ	SAME	OBSTACLE FREE ZONE
	SAME	PRECISION OBSTACLE FREE ZONE
RPZ	SAME	APPROACH RUNWAY PROTECTION ZONE
RPZ	SAME	DEPARTURE RUNWAY PROTECTION ZONE
BRL		BUILDING RESTRICTION LINE
○1		SIGNIFICANT OBJECT PLAN VIEW
I		SIGNIFICANT OBJECT PROFILE VIEW





Magnetic Declination
01° 55' East
Annual Rate of Change
0° 7' West
(Source: NOAA, NCEI, October 2018)

0 200 400
SCALE IN FEET

NO.	REVISIONS	DATE	BY	APP'D.

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EAST TEXAS REGIONAL AIRPORT

INNER PORTION OF THE APPROACH SURFACE DRAWING RUNWAY 18

GREGG COUNTY, TEXAS

PLANNED BY: S. Wagner/P. Taylor
DETAILED BY: D. Przybycien
APPROVED BY: T. Kahmann

APRIL 2019

SHEET 12 OF 19

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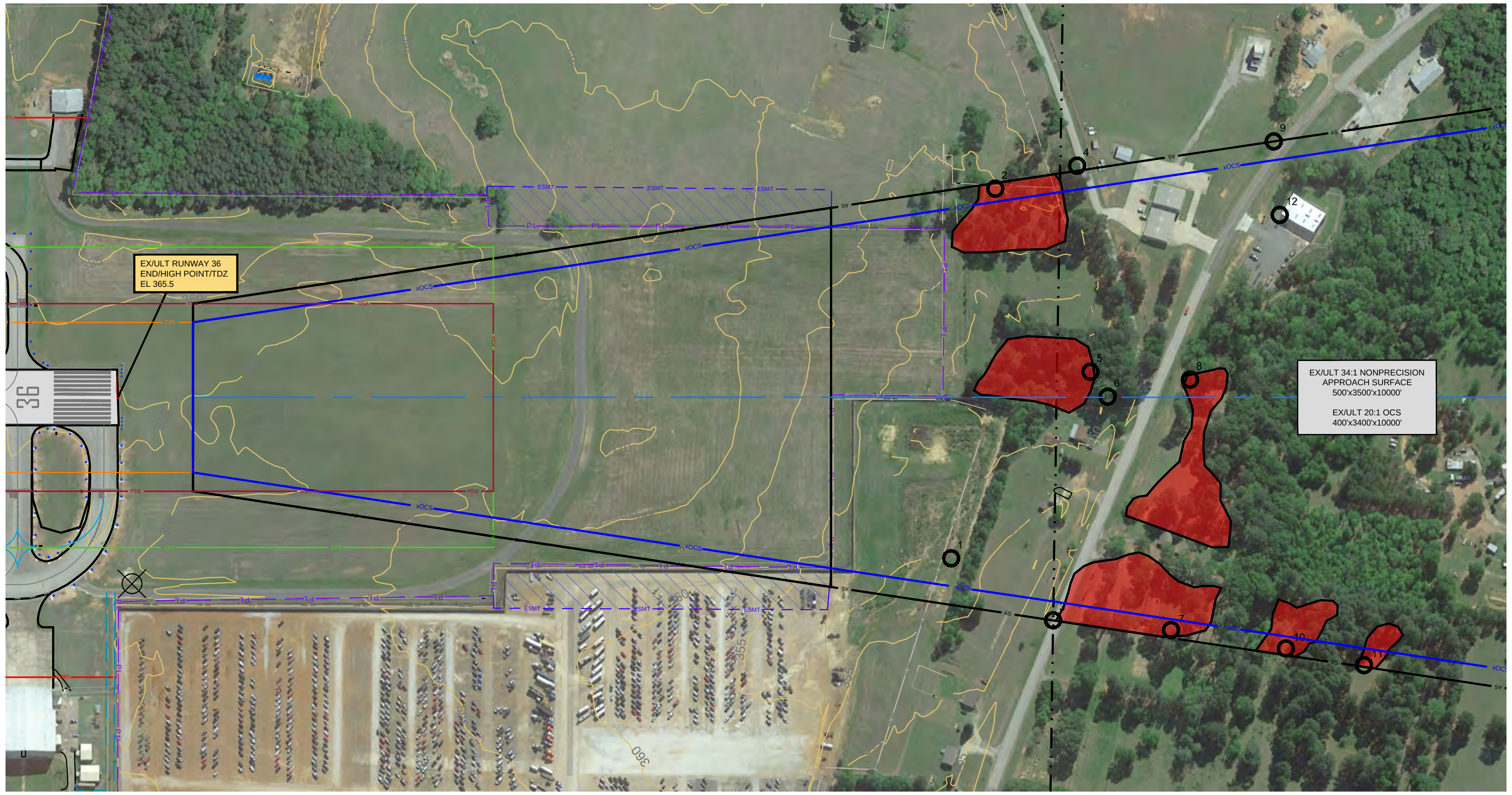
Coffman Associates G:\Diana\MP\East Texas Regional (GGG)\ALP\12 GGG IPASD 18_CD.dwg Printed Date: 12-12-19 11:14:26 AM Diana Przybycien



Obstruction Table

#	Feature	Elevation (ft msl)	Approach Surface Penetration	OCS Penetration	Remediation
1	Tree	426.1'	1.25'	N/A	Remove
2	Tree	457.2'	28.84'	N/A	Remove
5	Tree	443.3'	7.51'	N/A	Remove
7	Tree	460.8'	18.7'	N/A	Remove
8	Tree	453.1'	9.51'	N/A	Remove
10	Tree	466.5'	15.4'	N/A	Remove
11	Tree	468.1'	10.83'	N/A	Remove

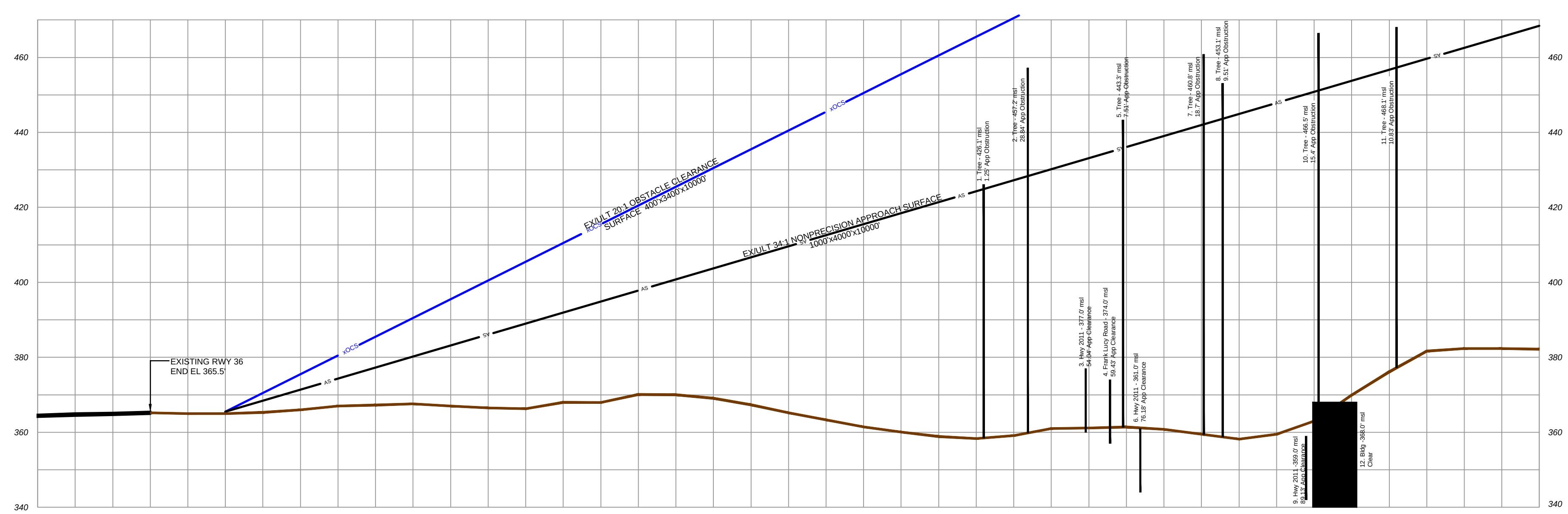
Survey Date: October 2017

GENERAL NOTES:

1. UNLESS NOTED OTHERWISE, EXISTING DATA SOURCES FROM SURVEY DATED OCTOBER 2017 PROVIDED BY MARTINEZ GEOSPATIAL, EAGAN, MN.
2. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83; VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88.
3. MAGNETIC DECLINATION FROM NOAA NATIONAL GEOPHYSICAL DATA CENTER.
4. OBSTRUCTION(S) WITHIN GROUPINGS REPRESENT TALLEST NATURAL AND/OR MANMADE FEATURE

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
PL		AIRPORT PROPERTY LINE
ESMT	ESMT(U)	AIRPORT EASEMENT LINE
		OBSTRUCTION AREA
AS	SAME	APPROACH SURFACE
OCS	SAME	OBSTACLE CLEARANCE SURFACE
GQS	SAME	GLIDEPATH QUALIFICATIONS SURFACE
RSA	SAME	RUNWAY SAFETY AREA
OFA	SAME	OBJECT FREE AREA
OFZ	SAME	OBSTACLE FREE ZONE
	SAME	PRECISION OBSTACLE FREE ZONE
RPZ	SAME	APPROACH RUNWAY PROTECTION ZONE
RPZ	SAME	DEPARTURE RUNWAY PROTECTION ZONE
	BRL	BUILDING RESTRICTION LINE
		SIGNIFICANT OBJECT PLAN VIEW
		SIGNIFICANT OBJECT PROFILE VIEW



MAGNETIC NORTH
NORTH

0 200 400
SCALE IN FEET

NO.	REVISIONS	DATE	BY	APP'D.

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EAST TEXAS REGIONAL AIRPORT

INNER PORTION OF THE APPROACH SURFACE DRAWING RUNWAY 36

GREGG COUNTY, TEXAS

PLANNED BY: S. Wagner/P. Taylor
DETAILED BY: D. Przybycien
APPROVED BY: T. Kahmann

APRIL 2019 SHEET 13 OF 19

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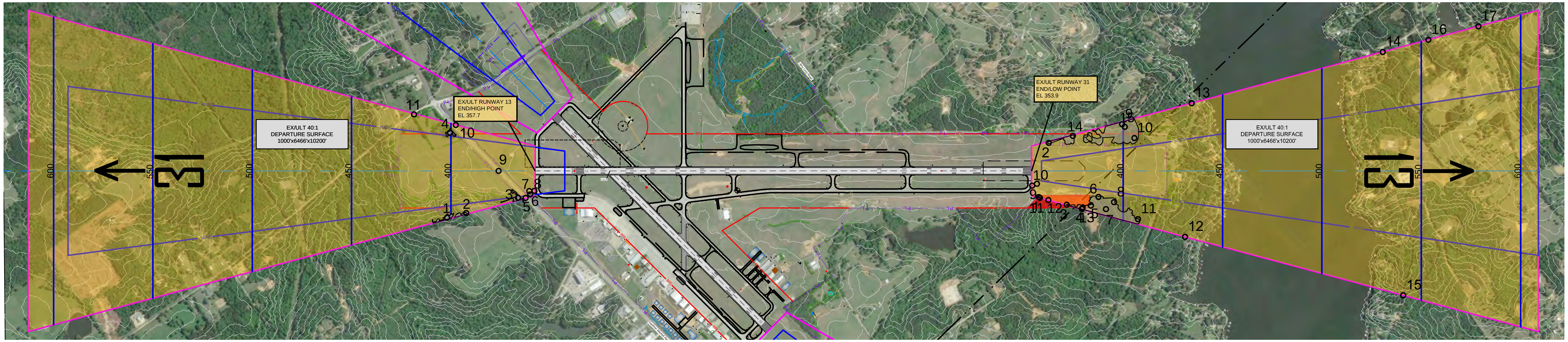
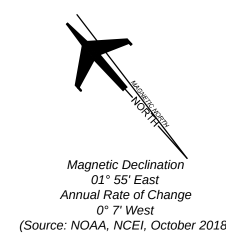
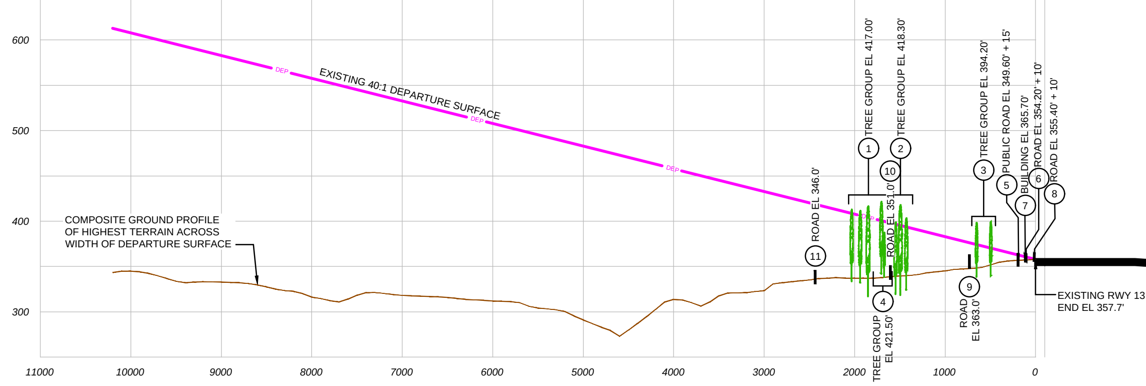
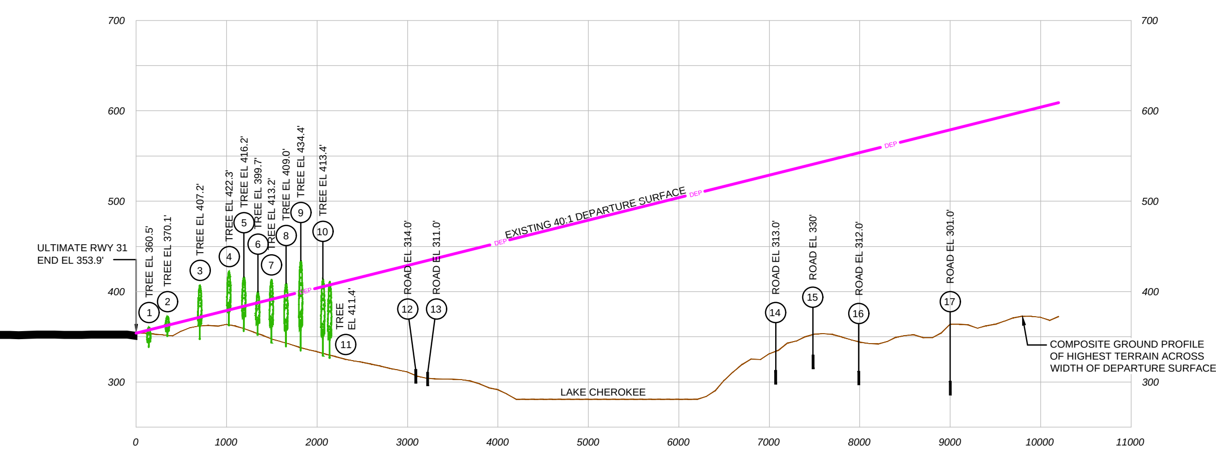




0 1000 2000
HORIZONTAL SCALE IN FEET

0 100 200
VERTICAL SCALE IN FEET





RUNWAY 13 DEPARTURE OBSTRUCTION TABLE

No.	Description	Top Elevation	Departure Penetrations		Remediation
			Existing	Ultimate	
1	TREE GROUP	417.0'	18.6'	NA	TRIM OR REMOVE
2	TREE GROUP	418.3'	26.5'	NA	TRIM OR REMOVE
3	TREE GROUP	394.2'	27.7'	NA	TRIM OR REMOVE
4	TREE GROUP	421.5'	22.4'	NA	TRIM OR REMOVE
5	ROAD	349.6'	2.6'	NA	--
6	ROAD	354.2'	3.4'	NA	--
7	BUILDING	365.7'	4.6'	NA	--
8	ROAD	355.4'	7.4'	NA	--

RUNWAY 13 DEPARTURE OBSTRUCTION TABLE

No.	Description	Top Elevation	Departure Penetrations		Remediation
			Existing	Ultimate	
9	ROAD	350.4'	6.4'	NA	--
10	ROAD	348.0'	1.6'	NA	--
11	TREE GROUP	381.6'	23.5'	NA	TRIM OR REMOVE
12	TREE	382.7'	20.5'	NA	TRIM OR REMOVE
13	TREE GROUP	421.6'	42.5'	NA	TRIM OR REMOVE
14	TREE GROUP	405.2'	30.2'	NA	TRIM OR REMOVE
15	TREE GROUP	427.7'	36.5'	NA	TRIM OR REMOVE

LEGEND

OBSTRUCTION AREA - SAMPLED POINTS REPRESENT THE HIGHTES POINTS WITHIN THE VICINTIY OF OBJECTS.

9 OBSTRUCTION IDENTIFIER

GENERAL NOTES:

1. UNLESS NOTED OTHERWISE, EXISTING DATA SOURCES FROM SURVEY DATED OCTOBER 2017 PROVIDED BY MARTINEZ GEOSPATIAL, EAGAN, MN.
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EAST TEXAS REGIONAL AIRPORT

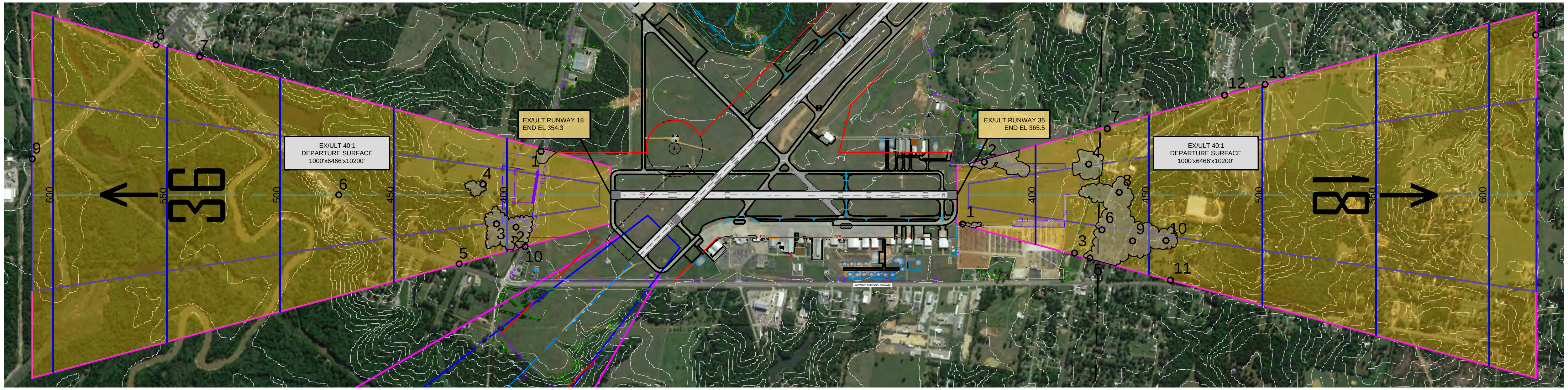
RUNWAY 13-31 DEPARTURE SURFACE DRAWING

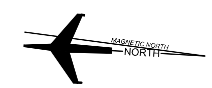
GREGG COUNTY, TEXAS

PLANNED BY: S. Wagner/P. Taylor
DETAILED BY: D. Przybycien
APPROVED BY: T. Kahmann

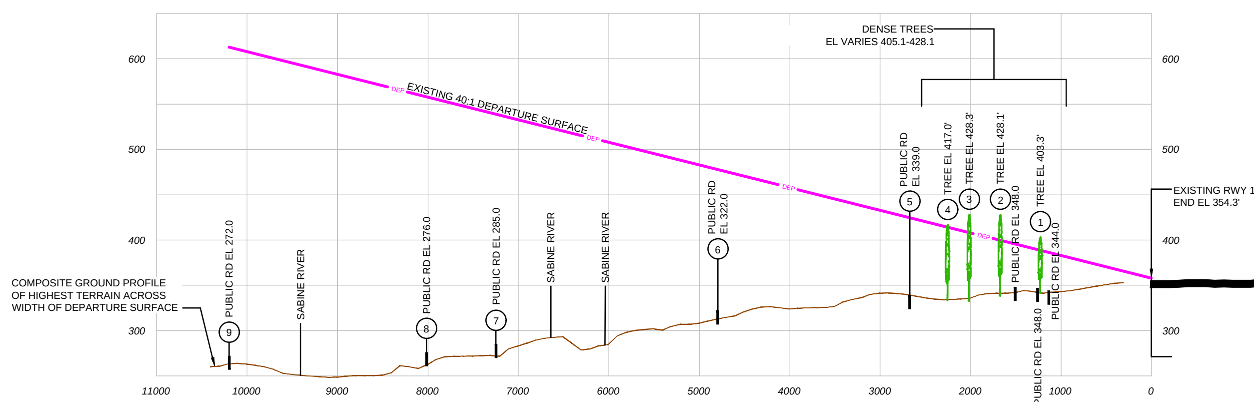
Coffman Associates Airport Consultants www.coffmanassociates.com

APRIL 2019 SHEET 14 OF 19



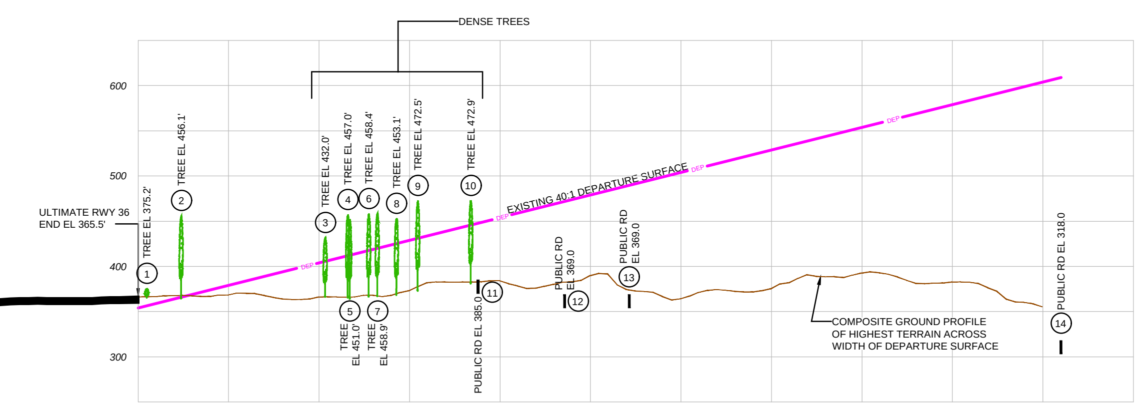


Magnetic Declination
01° 55' East
Annual Rate of Change
0° 7' West
(Source: NOAA, NCEI, October 2018)



0 1000 2000
HORIZONTAL SCALE IN FEET

0 100 200
VERTICAL SCALE IN FEET



RUNWAY 36 DEPARTURE OBSTRUCTION TABLE					
No.	Description	Top Elevation	Departure Penetrations		Remediation
			Existing	Ultimate	
1	TREE GROUP	403.3'	18.3	NA	TRIM OR REMOVE
2	TREE GROUP	428.1'	32.0'	NA	TRIM OR REMOVE
3	TREE GROUP	428.3'	23.6'	NA	TRIM OR REMOVE
4	TREE GROUP	417.0'	6.3'	NA	TRIM OR REMOVE

LEGEND

OBSTRUCTION AREA - SAMPLED POINTS REPRESENT THE HIGHTES POINTS WITHIN THE VICINTIY OF OBJECTS.

9 OBSTRUCTION IDENTIFIER

RUNWAY 36 DEPARTURE OBSTRUCTION TABLE					
No.	Description	Top Elevation	Departure Penetrations		Remediation
			Existing	Ultimate	
1	TREE GROUP	375.2'	7.3	NA	TRIM OR REMOVE
2	TREE GROUP	456.1'	78.7'	NA	TRIM OR REMOVE
3	TREE GROUP	432.0'	14.9'	NA	TRIM OR REMOVE
4	TREE GROUP	457.0'	33.6'	NA	TRIM OR REMOVE
5	TREE GROUP	451.0'	27.1'	NA	TRIM OR REMOVE
6	TREE GROUP	458.4'	29.2'	NA	TRIM OR REMOVE
7	TREE GROUP	458.9'	27.3'	NA	TRIM OR REMOVE
8	TREE GROUP	453.1'	16.2'	NA	TRIM OR REMOVE
9	TREE GROUP	472.5'	29.7'	NA	TRIM OR REMOVE
10	TREE GROUP	472.9'	15.5'	NA	TRIM OR REMOVE

GENERAL NOTES:

1. UNLESS NOTED OTHERWISE, EXISTING DATA SOURCES FROM SURVEY DATED OCTOBER 2017 PROVIDED BY MARTINEZ GEOSPATIAL, EAGAN, MN.
2. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83; VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88.
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4. OBSTRUCTION(S) WITHIN GROUPINGS REPRESENT TALLEST NATURAL AND/OR MANMADE FEATURE

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EAST TEXAS REGIONAL AIRPORT

RUNWAY 18-36 DEPARTURE SURFACE DRAWING

GREGG COUNTY, TEXAS

PLANNED BY: S. Wagner/P. Taylor
DETAILED BY: D. Przybycien
APPROVED BY: T. Kahmann
Coffman Associates
Airport Consultants
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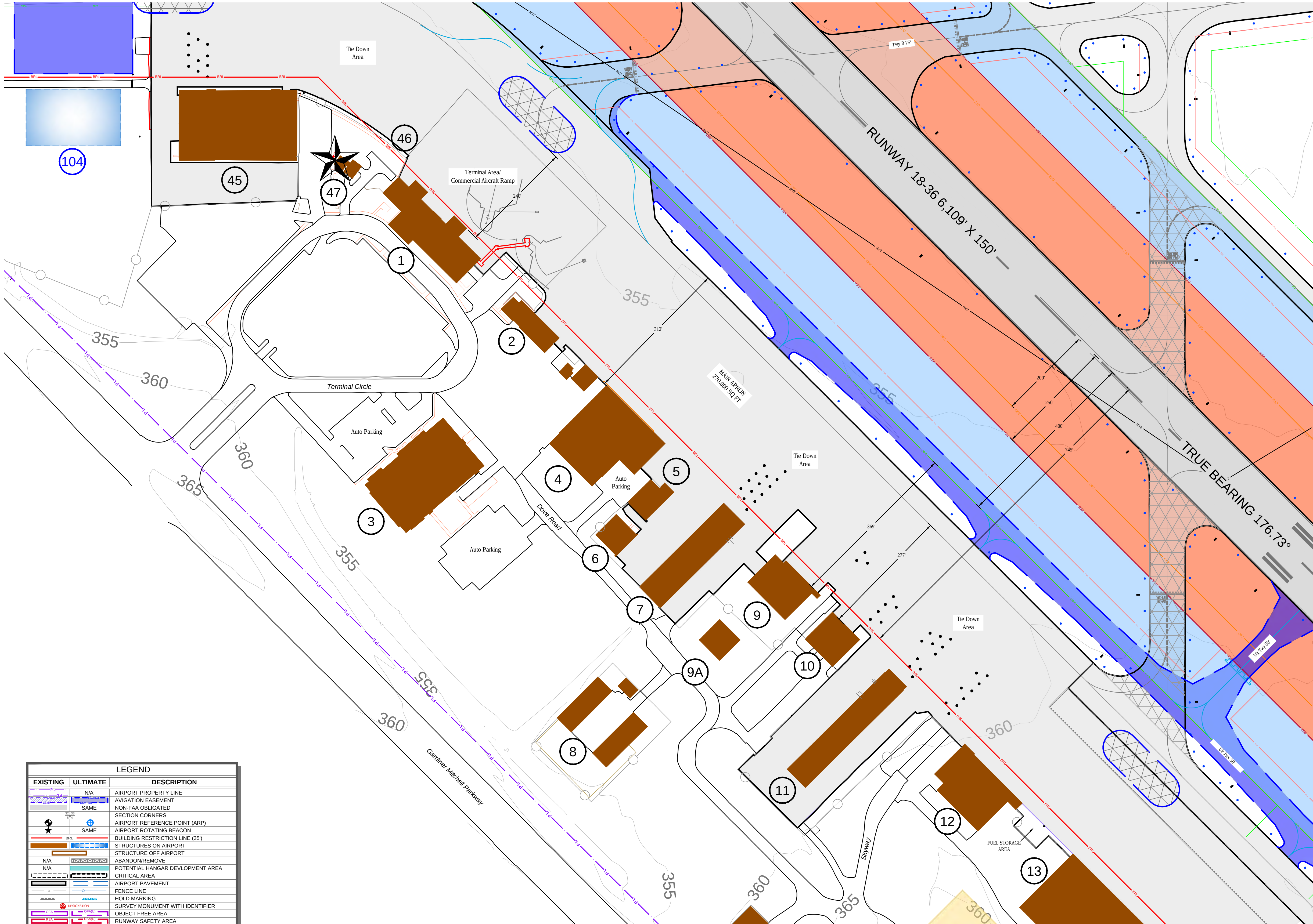
APRIL 2019



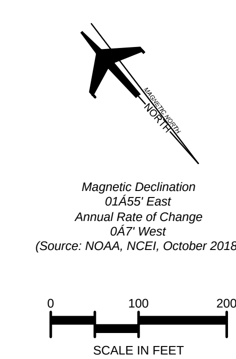
EXISTING AIRPORT BUILDINGS

NO.	DESCRIPTION	ELEV. (MSL)
1	Terminal Building	413.4'
2	ARFF/Sheriff	383.2'
3	J.W. Operating	383.2'
4	Gregg Aircraft Services	405.5'
5	Hurst	384.9'
6	Wade Johnson	379.6'
7	Stebbins T-Hangars #1	378.6'
8	Airport Maintenance	377.9'
9	Nix Patterson & Roach	392.8'
9A	L. J. Camp LLc	379.5'
10	JVE Corporation	382.3'
11	Stebbins T-Hangars #2	377.0'
12	Martin Hangar	398.8'
13	KRS Jet Center Hangar #1	417.3'
14	KRS Jet Center Hangar #2	402.3'
45	Stebbins Aviation	401.5'
46	Electrical Vault	
47	Airport Beacon	418.2'

ULTIMATE AIRPORT BUILDINGS

NO.	DESCRIPTION	ELEV. (MSL)*
104	Storage Hangar	400.0'

* - ESTIMATED



LEGEND

EXISTING	ULTIMATE	DESCRIPTION
PL	N/A	AIRPORT PROPERTY LINE
ESMT	ESMT(U)	AVIGATION EASEMENT
	SAME	NON-FAA OBLIGATED
32 33 5 4		SECTION CORNERS
		AIRPORT REFERENCE POINT (ARP)
	SAME	AIRPORT ROTATING BEACON
BRL		BUILDING RESTRICTION LINE (35')
		STRUCTURES ON AIRPORT
		STRUCTURE OFF AIRPORT
N/A		ABANDON/REMOVE
N/A		POTENTIAL HANGAR DEVLOPMENT AREA
		CRITICAL AREA
		AIRPORT PAVEMENT
X		FENCE LINE
		HOLD MARKING
DESIGNATION		SURVEY MONUMENT WITH IDENTIFIER
OFA	OFA(U)	OBJECT FREE AREA
RSA	RSA(U)	RUNWAY SAFETY AREA
OFZ	OFZ(U)	OBSTACLE FREE ZONE
		PRECISION OBSTACLE FREE ZONE
RPZ		RUNWAY PROTECTION ZONE
RVZ	RVZ(U)	RUNWAY VISIBILITY ZONE
TOFA	SAME	TAXIWAY OBJECT FREE AREA
TSA	SAME	TAXIWAY SAFETY AREA
		TIE-DOWNS
		PAPI-4
		RUNWAY END IDENTIFIER LIGHTS (REIL)
		WINDSOCK
		LOCALIZER
3660	3660	TOPOGRAPHIC CONTOURS

GENERAL NOTES:

1. UNLESS NOTED OTHERWISE ALL EXISTING COORDINATES, ELEVATIONS, AND BEARINGS, AIRFIELD LOCATIONS FROM SURVEY DATED OCTOBER 2017 PROVIDED BY MARTINEZ GEOSPATIAL, EAGAN, MN.
2. OTHER DATA SOURCES CONSULTED INCLUDE THE FAA DATASHEET http://webdatasheet.faa.gov/, U.S. TERMINAL PROCEDURES, AIRPORT MASTER RECORD FORM 5010, AND THE FAA AIRPORT FACILITY DIRECTORY.
3. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83; VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88.
4. MAGNETIC DECLINATION FROM NOAA NATIONAL GEOPHYSICAL DATA CENTER.
5. SEE INNER PORTION OF THE APPROACH SURFACE DRAWINGS FOR THRESHOLD SITING SURFACE PENETRATIONS.

NO.	REVISIONS	DATE	BY	APP'D.

EAST TEXAS REGIONAL AIRPORT

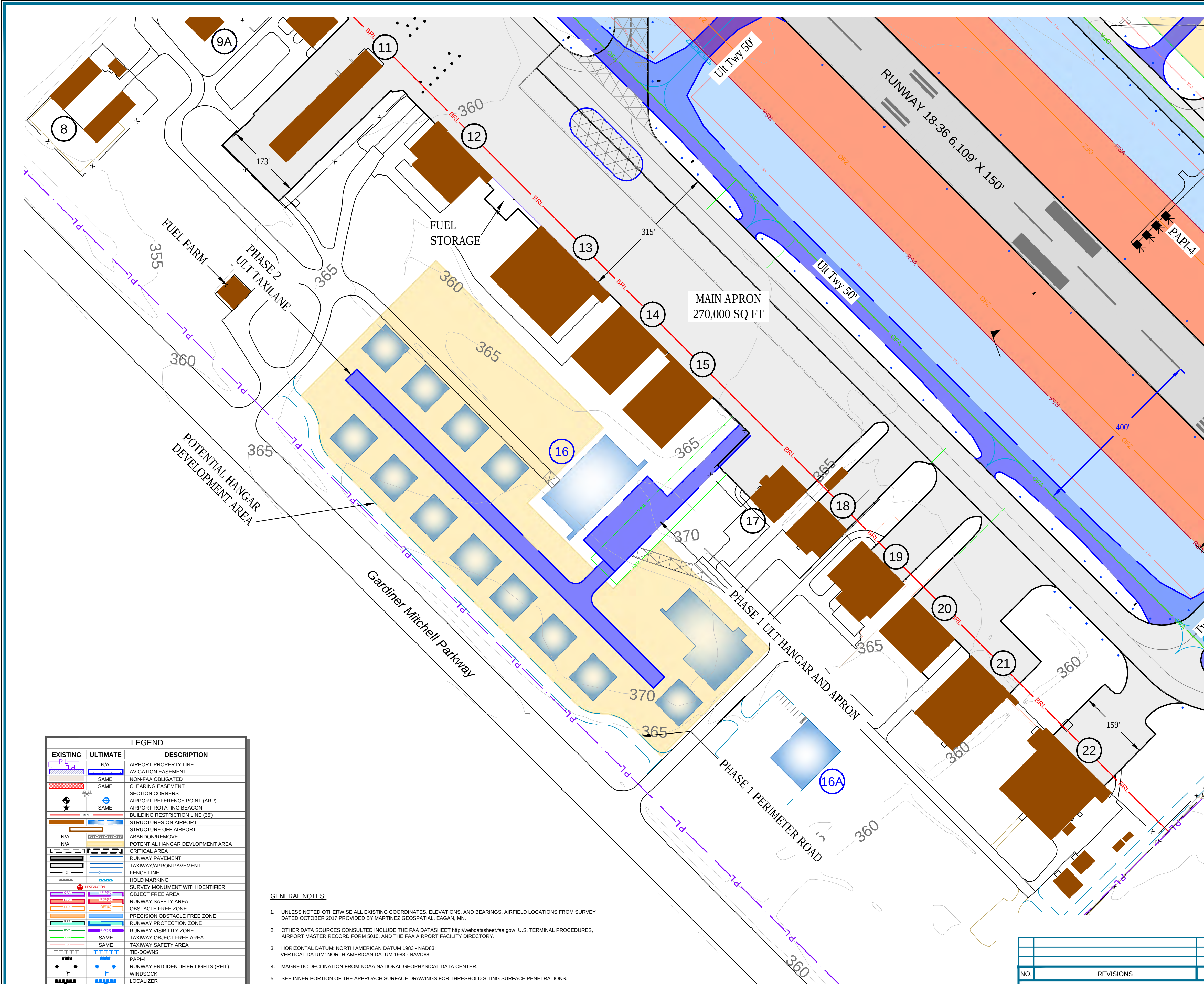
TERMINAL AREA DRAWING I

GREGG COUNTY, TEXAS

PLANNED BY: S. Wagner/P. Taylor
DETAILED BY: D. Przybycien
APPROVED BY: T. Kahmann

APRIL 2019

Coffman Associates Airport Consultants www.coffmanassociates.com



EXISTING AIRPORT BUILDINGS		
NO.	DESCRIPTION	ELEV. (MSL)
8	Airport Maintenance	377.9'
9A	LJ Camp, LLC	382.0'
11	Stebbins T-Hangars #2	377.0'
12	Martin Gas Hangar	398.8'
13	KRS Jet Center Hangar #1	417.3'
14	KRS Jet Center Hangar #2	402.3'
15	KRS Jet Center Hangar #3	403.0'
16	-	
17	OLB	391.3'
18	PHI Air Medical	397.2'
19	R. Lacy	408.4'
20	Aerosmith Aviation Inc. #3	394.0'
21	Aerosmith Aviation Inc. #2	406.6'
22	Aerosmith Aviation Inc. #1	428.9'

ULTIMATE AIRPORT BUILDINGS		
NO.	DESCRIPTION	ELEV. (MSL)*
16	KRS Hangar #4	403.0'
16A	Siddon's Martin Building	397.0'

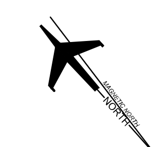
* - ESTIMATED

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
	N/A	AIRPORT PROPERTY LINE
		AVIGATION EASEMENT
	SAME	NON-FAA OBLIGATED
	SAME	CLEARING EASEMENT
		SECTION CORNERS
		AIRPORT REFERENCE POINT (ARP)
	SAME	AIRPORT ROTATING BEACON
BRL		BUILDING RESTRICTION LINE (35')
		STRUCTURES ON AIRPORT
		STRUCTURE OFF AIRPORT
N/A		ABANDON/REMOVE
N/A		POTENTIAL HANGAR DEVLOPMENT AREA
		CRITICAL AREA
		RUNWAY PAVEMENT
		TAXIWAY/APRON PAVEMENT
		FENCE LINE
		HOLD MARKING
DESIGNATION		SURVEY MONUMENT WITH IDENTIFIER
OFA	OFA(U)	OBJECT FREE AREA
RSA	RSA(U)	RUNWAY SAFETY AREA
OFZ	OFZ(U)	OBSTACLE FREE ZONE
		PRECISION OBSTACLE FREE ZONE
RPZ		RUNWAY PROTECTION ZONE
RVZ	RVZ(U)	RUNWAY VISIBILITY ZONE
TOFA	SAME	TAXIWAY OBJECT FREE AREA
TSA	SAME	TAXIWAY SAFETY AREA
		TIE-DOWNS
		PAPI-4
		RUNWAY END IDENTIFIER LIGHTS (REIL)
		WINDSOCK
		LOCALIZER
3660	3660	TOPOGRAPHIC CONTOURS

GENERAL NOTES:

1. UNLESS NOTED OTHERWISE ALL EXISTING COORDINATES, ELEVATIONS, AND BEARINGS, AIRFIELD LOCATIONS FROM SURVEY DATED OCTOBER 2017 PROVIDED BY MARTINEZ GEOSPATIAL, EAGAN, MN.
2. OTHER DATA SOURCES CONSULTED INCLUDE THE FAA DATASHEET http://webdatasheet.faa.gov/, U.S. TERMINAL PROCEDURES, AIRPORT MASTER RECORD FORM 5010, AND THE FAA AIRPORT FACILITY DIRECTORY.
3. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83;
VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88.
4. MAGNETIC DECLINATION FROM NOAA NATIONAL GEOPHYSICAL DATA CENTER.
5. SEE INNER PORTION OF THE APPROACH SURFACE DRAWINGS FOR THRESHOLD SITING SURFACE PENETRATIONS.
6. STORAGE HANGARS 9A AND 105 WERE ADDED AFTER THE OCTOBER 2017 MAPPING. ELEVATIONS ARE ESTIMATES.



Magnetic Declination
01° 55' East
Annual Rate of Change
0° 7' West
(Source: NOAA, NCEI, October 2018)

0 100 200
SCALE IN FEET

NO.	REVISIONS	DATE	BY	APP'D.

"THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."

EAST TEXAS REGIONAL AIRPORT

TERMINAL AREA DRAWING II

GREGG COUNTY, TEXAS

PLANNED BY: S. Wagner/P. Taylor
DETAILED BY: D. Przybycien
APPROVED BY: T. Kahmann

APRIL 2019

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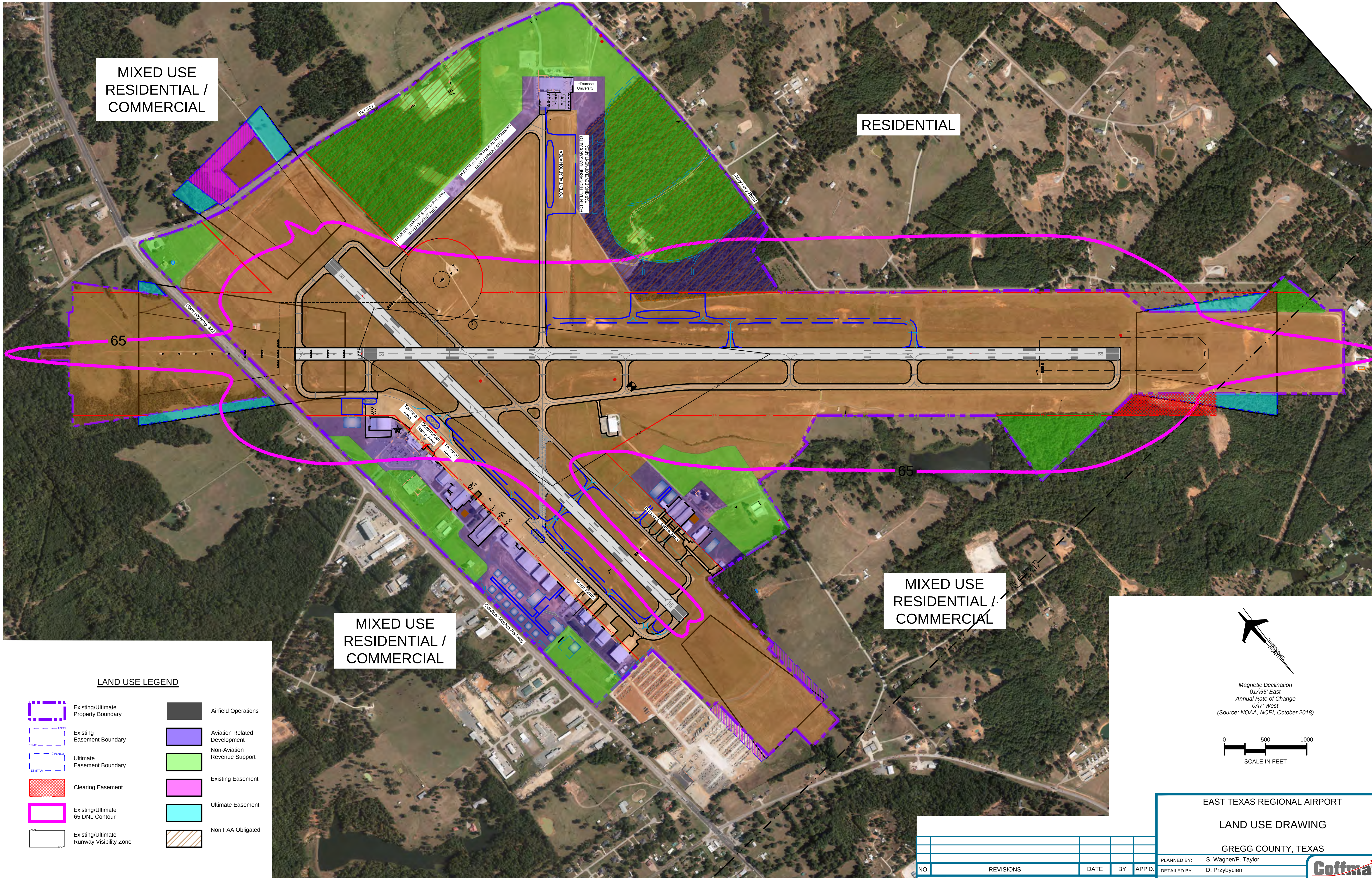

Magnetic Declination
01Á55' East
Annual Rate of Change
0Á7' West
(Source: NOAA, NCEI, October 2018)

0 500 1000
SCALE IN FEET

LAND USE LEGEND

- Existing/Ultimate Property Boundary
- Existing Easement Boundary (ESMT)
- Ultimate Easement Boundary (ESMT(U))
- Clearing Easement
- Existing/Ultimate 65 DNL Contour
- Existing/Ultimate Runway Visibility Zone (RVZ)
- Airfield Operations
- Aviation Related Development
- Non-Aviation Revenue Support
- Existing Easement
- Ultimate Easement
- Non FAA Obligated

AERIAL PHOTO DATED OCTOBER 2017 FROM MARTINEZ GEOSPATIAL, EAGAN, MN.

NO.	REVISIONS	DATE	BY	APP'D.

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EAST TEXAS REGIONAL AIRPORT

LAND USE DRAWING

GREGG COUNTY, TEXAS

PLANNED BY: S. Wagner/P. Taylor
DETAILED BY: D. Przybycien
APPROVED BY: T. Kahmann

APRIL 2019 SHEET 18 OF 19

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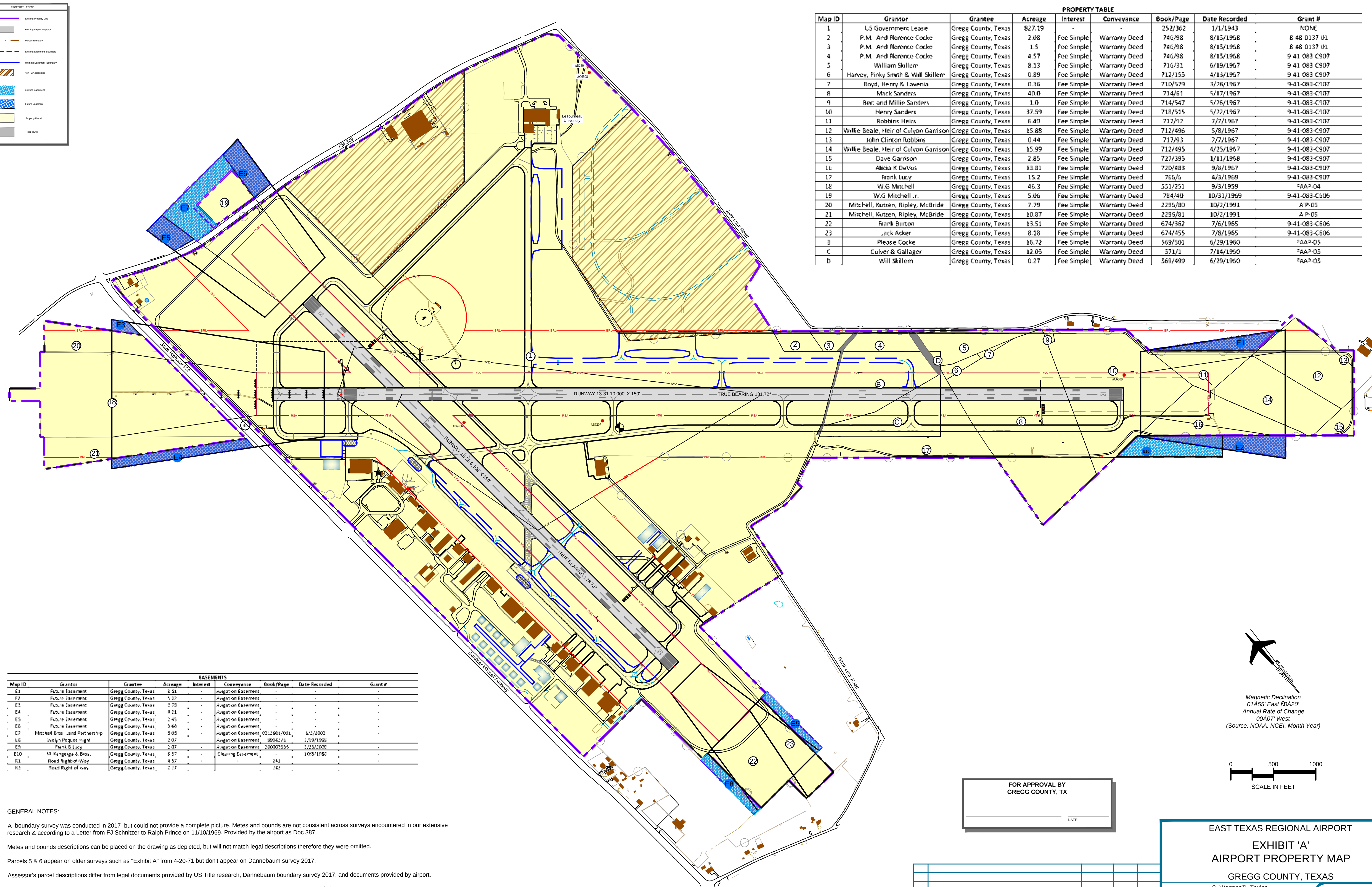

PROPERTY TABLE

Map ID	Grantor	Grantee	Acreage	Interest	Conveyance	Book/Page	Date Recorded	Grant #
1	US Government Lease	Gregg County, Texas	827.19	-	-	252/362	1/1/1943	NONE
2	P.M. And Florence Cocke	Gregg County, Texas	2.08	Fee Simple	Warranty Deed	746/98	8/15/1968	8 48 0137 01
3	P.M. And Florence Cocke	Gregg County, Texas	1.5	Fee Simple	Warranty Deed	746/98	8/15/1968	8 48 0137 01
4	P.M. And Florence Cocke	Gregg County, Texas	4.57	Fee Simple	Warranty Deed	746/98	8/15/1968	9 41 083 C907
5	William Skillern	Gregg County, Texas	8.13	Fee Simple	Warranty Deed	716/31	6/19/1967	9 41 083 C907
6	Harvey, Pinky Smith & Will Skillern	Gregg County, Texas	0.89	Fee Simple	Warranty Deed	712/155	4/13/1967	9 41 083 C907
7	Boyd, Henry & Lavenia	Gregg County, Texas	0.36	Fee Simple	Warranty Deed	710/579	3/28/1967	9-41-083-C907
8	Mack Sanders	Gregg County, Texas	40.0	Fee Simple	Warranty Deed	714/61	5/17/1967	9-41-083-C907
9	Bert and Millie Sanders	Gregg County, Texas	1.0	Fee Simple	Warranty Deed	714/547	5/26/1967	9-41-083-C907
10	Henry Sanders	Gregg County, Texas	37.59	Fee Simple	Warranty Deed	718/515	5/22/1967	9-41-083-C907
11	Robbins Heirs	Gregg County, Texas	6.49	Fee Simple	Warranty Deed	717/92	7/7/1967	9-41-083-C907
12	Willie Beale, Heir of Culyon Garrison	Gregg County, Texas	15.88	Fee Simple	Warranty Deed	712/496	5/8/1967	9-41-083-C907
13	John Clinton Robbins	Gregg County, Texas	0.44	Fee Simple	Warranty Deed	717/93	7/7/1967	9-41-083-C907
14	Willie Beale, Heir of Culyon Garrison	Gregg County, Texas	15.99	Fee Simple	Warranty Deed	712/495	4/25/1967	9-41-083-C907
15	Dave Garrison	Gregg County, Texas	2.85	Fee Simple	Warranty Deed	727/395	1/11/1968	9-41-083-C907
16	Alicia K DeVos	Gregg County, Texas	13.81	Fee Simple	Warranty Deed	720/483	9/8/1967	9-41-083-C907
17	Frank Lucy	Gregg County, Texas	15.2	Fee Simple	Warranty Deed	765/6	4/3/1969	9-41-083-C907
18	W.G Mitchell	Gregg County, Texas	46.3	Fee Simple	Warranty Deed	551/251	9/3/1959	FAAP-04
19	W.G Mitchell Jr.	Gregg County, Texas	5.06	Fee Simple	Warranty Deed	784/40	10/31/1969	9-41-083-C606
20	Mitchell, Kutzen, Ripley, McBride	Gregg County, Texas	7.79	Fee Simple	Warranty Deed	2295/80	10/2/1991	AIP-05
21	Mitchell, Kutzen, Ripley, McBride	Gregg County, Texas	10.87	Fee Simple	Warranty Deed	2295/81	10/2/1991	AIP-05
22	Frank Burton	Gregg County, Texas	13.51	Fee Simple	Warranty Deed	674/362	7/6/1965	9-41-083-C606
23	Jack Acker	Gregg County, Texas	8.18	Fee Simple	Warranty Deed	674/455	7/8/1965	9-41-083-C606
B	Please Cocke	Gregg County, Texas	16.72	Fee Simple	Warranty Deed	569/501	6/29/1960	FAAP-05
C	Culver & Gallager	Gregg County, Texas	12.05	Fee Simple	Warranty Deed	571/1	7/14/1960	FAAP-05
D	Will Skillem	Gregg County, Texas	0.27	Fee Simple	Warranty Deed	569/499	6/29/1960	FAAP-05

EASEMENTS

Map ID	Grantor	Grantee	Acreage	Interest	Conveyance	Book/Page	Date Recorded	Grant #
E1	Future Easement	Gregg County, Texas	3.51	-	Avigation Easement	-	-	-
E2	Future Easement	Gregg County, Texas	5.32	-	Avigation Easement	-	-	-
E3	Future Easement	Gregg County, Texas	0.78	-	Avigation Easement	-	-	-
E4	Future Easement	Gregg County, Texas	4.21	-	Avigation Easement	-	-	-
E5	Future Easement	Gregg County, Texas	2.45	-	Avigation Easement	-	-	-
E6	Future Easement	Gregg County, Texas	3.64	-	Avigation Easement	-	-	-
E7	Mitchell Bros. Land Partnership	Gregg County, Texas	5.05	-	Avigation Easement	03129017001	6/2/2003	-
E8	Evelyn Peques Hight	Gregg County, Texas	2.07		Avigation Easement	9904275	3/19/1999	
E9	Frank B Lucy	Gregg County, Texas	2.07	-	Avigation Easement	200003535	2/23/2000	-
E10	M. Kangerga & Bros.	Gregg County, Texas	6.37	-	Clearing Easement	-	10/9/1980	-
R1	Road Right-of-Way	Gregg County, Texas	4.57	-	-	243		-
R2	Road Right of way	Gregg County, Texas	2.17			243		

GENERAL NOTES:

A boundary survey was conducted in 2017 but could not provide a complete picture. Metes and bounds are not consistent across surveys encountered in our extensive research & according to a Letter from FJ Schnitzer to Ralph Prince on 11/10/1969. Provided by the airport as Doc 387.

Metes and bounds descriptions can be placed on the drawing as depicted, but will not match legal descriptions therefore they were omitted.

Parcels 5 & 6 appear on older surveys such as "Exhibit A" from 4-20-71 but don't appear on Dannebaum survey 2017.

Assessor's parcel descriptions differ from legal documents provided by US Title research, Dannebaum boundary survey 2017, and documents provided by airport.

Non-FAA Obligated property indicates property that owned by Gregg County and was not purchased with FAA grant or reimbursement.

FOR APPROVAL BY
GREGG COUNTY, TX

DATE:

NO.	REVISIONS	DATE	BY	APP'D.

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EAST TEXAS REGIONAL AIRPORT

EXHIBIT 'A'
AIRPORT PROPERTY MAP

GREGG COUNTY, TEXAS

PLANNED BY: S. Wagner/P. Taylor
DETAILED BY: D. Przybycien
APPROVED BY: T. Kahmann

APRIL 2019

SHEET 19 OF 19

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