Airport Master Plan Update

December 2011

Prepared For:

GTR Airport

Prepared by:

NEEL-SCHAFFER
Solutions you can build upon

In association with:

BWSC
Barge Waggoner Sumner & Cannon, Inc.

GOLDEN TRIANGLE REGIONAL AIRPORT

MASTER PLAN UPDATE

December 2011

Prepared for:
Golden Triangle Regional Airport

Prepared by:

Neel-Schaffer, Inc.
Barge Waggoner Sumner and Cannon, Inc.

FAA DISCLAIMER

The preparation of this document was financed in part through a grant from the Federal Aviation Administration (FAA) as provided under Section 47104 of Title 49 United States Code. The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of this document by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein nor does it indicate that any of the proposed development is environmentally acceptable in accordance with appropriate public laws.

Golden Triangle Regional Airport Master Plan Update

Table of Contents

Table of Contents

Chapter 5 – Facility Requirements

Chapter 6 – Development Alternatives

Chapter 7– Environmental Overview

Chapter 8 – Airport Layout Plans

Chapter 9 – Capital Improvement Program/Implementation Plan

List of Figures

Chapter 1

Chapter 4

Chapter 5

Chapter 8

List of Tables

Chapter 2

Chapter 3

Chapter 4

Chapter 5

Chapter 9

Appendix

CHAPTER 1
INTRODUCTION

Development of the Airport Master Plan Update for the Golden Triangle Regional Airport was undertaken by the Golden Triangle Regional Airport Authority for the purpose of examining the Airport's existing and future role and to provide direction for long term development of the Airport. Financial assistance for the preparation of the Master Plan Update was provided by the Federal Aviation Administration and the Mississippi Department of Transportation, Aeronautics Division (MDOT).

1.1 PURPOSE OF THE STUDY

The purpose of this study is to determine the aviation needs of the Golden Triangle Regional Airport and its service area for the next 20 years. The study is part of the continuing planning process necessary to assure adequate and compatible airport improvements as required to meet the growing aviation demands associated with the Airport.

1.2 GOALS AND OBJECTIVES

The overall goal of this study is to provide the Golden Triangle Regional Airport Authority with an effective planning tool to guide the future development of the Golden Triangle Regional Airport. This Master Plan Update provides local officials with such guidance while ensuring that the development of the airport is accomplished in a manner that respects the local environment and is consistent with the financial policies of the Authority. Accomplishment of this goal requires the evaluation of existing airport activity and facilities, and determination of actions needed to maintain an adequate, safe and reliable airport facility to meet the needs of Columbus, Starkville, West Point, Lowndes County, Oktibbeha County, Clay County and the surrounding areas.

Specific objectives of the Master Plan include the following purposes:

- Inventory existing airside, landside and other support facilities and services currently at the Airport, as well as, the local and regional economic development and growth affecting the Airport;
- Update historical aviation data and develop new forecasts based on historical trends and major changes anticipated for the future;
- Document the methodology, findings, analysis and conclusions for the technical investigation of concepts and alternatives which were performed to develop the proposed plan;
- Propose a viable, phased 5, 10, and 20-year financial plan for achieving the planned airport development and implementation schedule;
- Identify anticipated airport funding needs and proposed airport development policies for consideration by the Golden Triangle Regional Airport Authority.

1.3 MASTER PLAN ORGANIZATION

The Airport Master Plan Update for Golden Triangle Regional Airport is organized into functional chapters on the following plan elements:

Introduction – Purpose of study and overall goals and objectives;

Inventory and Existing Conditions – Inventory existing airport facilities and services including airside, landside and airport related land uses;

Forecasts of Aviation Demand – Develop forecasts of aeronautical demand for the short-term (5 years), medium (10 years) and long range (20 year) periods;

Demand/Capacity Analysis – Determine existing airport facilities' ability to accommodate the forecasted aeronautical demands;

Facility Requirements – Identify needed improvements to provide the required safety and capacity of airport facilities;

Development Alternatives – Evaluate alternatives to meet identified facility requirements.

Environmental Overview – Identify and analyze potential environmental impacts of the planned airport development and its alternatives;

Airport Layout Plans – Provide recommended plans for airport development, including the Airport Layout Drawing (ALD), Terminal Area Drawings, Airport Airspace Drawings, and Inner Portion of Approach Surface Plan Drawings;

Capital Improvement Program/Implementation Plan – A schedule and cost estimates of the proposed development will be prepared along with a Financial Plan that identifies future revenues, expenses, and income, as well as funding sources for the recommended facilities requirements.

The organization and format of the Golden Triangle Regional Airport Master Plan Update is designed to provide an easily readable, yet comprehensive presentation of the complete plan.

1.4 RELATED STUDIES

During the early part of the study, several sources of background information were assembled to be used throughout the remainder of the study. These publications have been acquired from various Federal, State, and local agencies.

1. Terminal Area Forecast Fiscal Years 2008-2025, U.S. Department of Transportation, Federal Aviation Administration, December 2008.
2. Terminal Area Forecast Fiscal Years 2010-2030, U.S. Department of Transportation, Federal Aviation Administration, December 2009.

3. National Plan of Integrated Airport Systems (NPIAS) 2005-2009, U.S. Department of Transportation, Federal Aviation Administration, September 2004.
4. FAA Aviation Forecasts Fiscal Years 2008-2025, U.S. Department of Transportation, Federal Aviation Administration, December 2008.
5. Mississippi Statewide Airports Study, Mississippi Department of Transportation, Aeronautics Division, May 1999.

CHAPTER 2
INVENTORY AND EXISTING CONDITIONS

2.1 INTRODUCTION

Preparation of the Airport Master Plan Update for the Golden Triangle Regional Airport (GTR) requires collection and analysis of various data relating to the airport, as well as the area it serves. This includes an inventory of the existing airport facilities, airspace and pertinent local and regional conditions as well as historical information. The data presented was collected through on-site inspections, interviews, as well as a review of previous reports, maps, and aerial photographs. Data contained in this chapter will be used as references to conduct additional analyses in subsequent chapters.

2.2 AIRPORT DEVELOPMENT HISTORY

Golden Triangle Regional Airport (GTR) became operational in 1971 in a cooperative effort by the communities within the Golden Triangle. In 1994 the terminal was renovated with a bright, contemporary architectural style. A state-of-the-art control tower was completed in 2004 to handle increased air traffic safety. It is manned under the FAA's Contract Tower Program.

GTR is the nucleus of a new industrial complex in northeast Mississippi. American Eurocopter, a subsidiary of EADS North America, moved into an 85,000-square-foot helicopter production plant built by the airport and leased to the company on airport property in 2004. The company is the leading manufacturer of civilian and paramilitary helicopters worldwide. In 2007 American Eurocopter finshed the second phase of the project, a 220,000-square-foot facility built primarily to manufacture and assemble the new U.S. Army UH-72A Lakota Light Utility Helicopter. Aurora Flight Sciences, a high-tech UAS manufacturer completed a manufacturing facility in 2006 and opened the second phase of the facility in late 2008. Stark Aerospace, a division of IAI North America, opened a manufacturing facility for UAS and electroptics on the north end of the airport in 2009 with an additional expansion opening in 2010. Severstal North America opened a steel mini-mill in an adjacent site in October 2007 and immediately

began construction on multiple expansions, bringing total investment in the plant to $1.8 billion. PACCAR, parent company of Peterbilt, Kenworth and DAF (Dutch) trucks operates a truck engine plant adjacent to the airport to the north. Other industry, many with international roots, continues to locate at the industrial park adjacent to the airport. The area has two "megasites" adjacent to the airport that were certified under the Tennessee Valley Authority's Certified Megasite program. Appendix 4 describes in detail the GTR Global Industrial Aerospace Park.

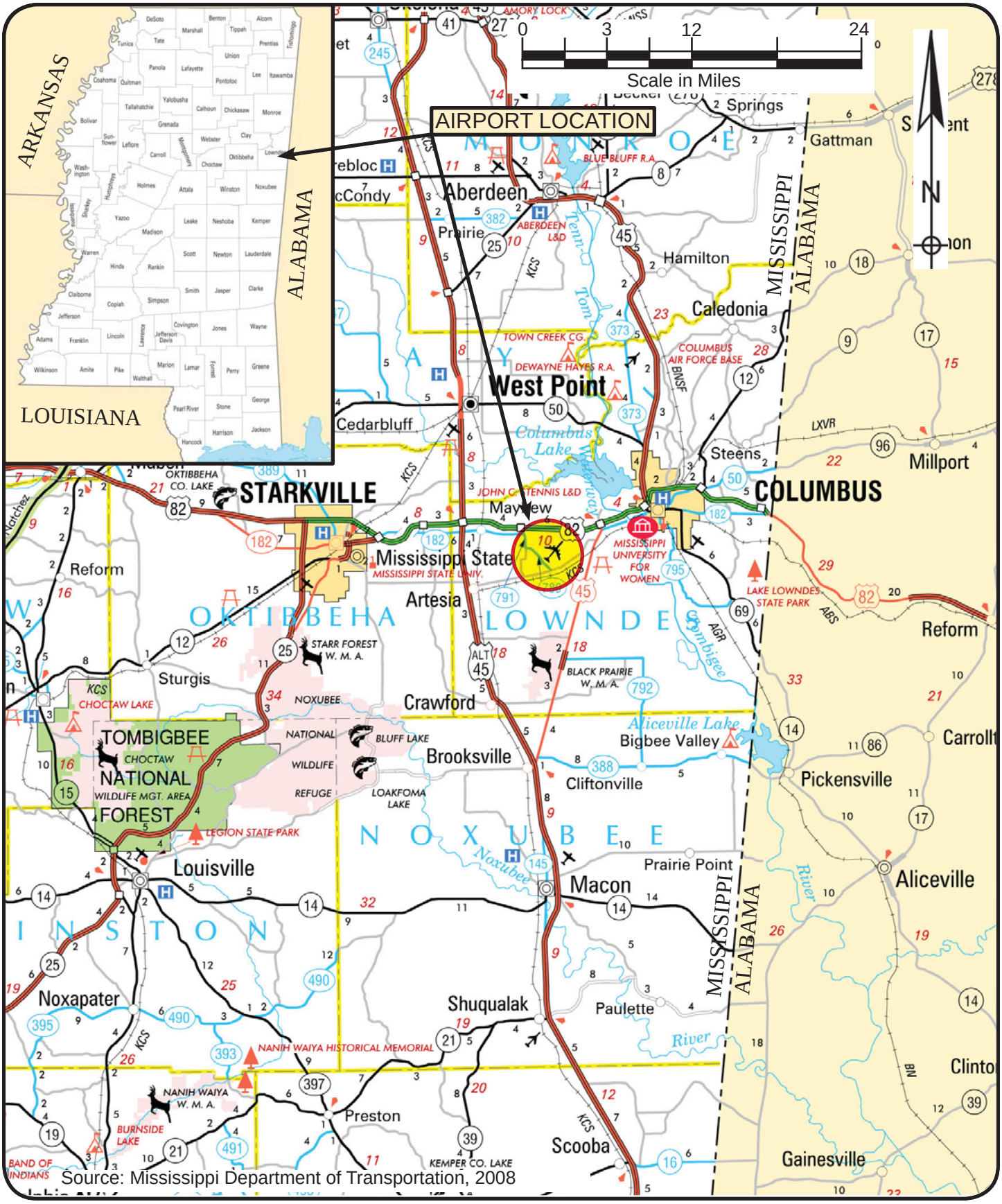
2.3 AIRPORT LOCATION, ROLE, AND SERVICE AREA

2.3.1 Airport Location

As illustrated in Figure 2.1, Golden Triangle Regional Airport is located in western Lowndes County, Mississippi, approximately 3 miles east of the Oktibbeha County line. Located almost equidistant between the cities of Columbus, Starkville and West Point, the Golden Triangle Regional Airport provides local residents and businesses access to the national and international air transportation system. Ground access to the airport is via U.S. Highway 82 to Airport Road from the north and Columbus-Artesia Road from the south. The airport is situated on approximately 1,000 acres of land.

2.3.2 Airport Role

The Golden Triangle Regional Airport operates as a publicly owned, public-use airport facility. It is included in the Federal Aviation Administration's (FAA) National Plan of Integrated Airport System (NPIAS) as a non-hub commercial service airport. In a similar manner, Golden Triangle Regional Airport is also included in the 1999 Mississippi Statewide Airports Study as a Type III Enhanced Airport within the state. As defined in the system plan, a Type III Enhanced Airport serves a contributing role in providing the local, regional, and statewide concerns with access to and from the national and global economy.



Source: Mississippi Department of Transportation, 2008

Golden Triangle Regional Airport

Location Map

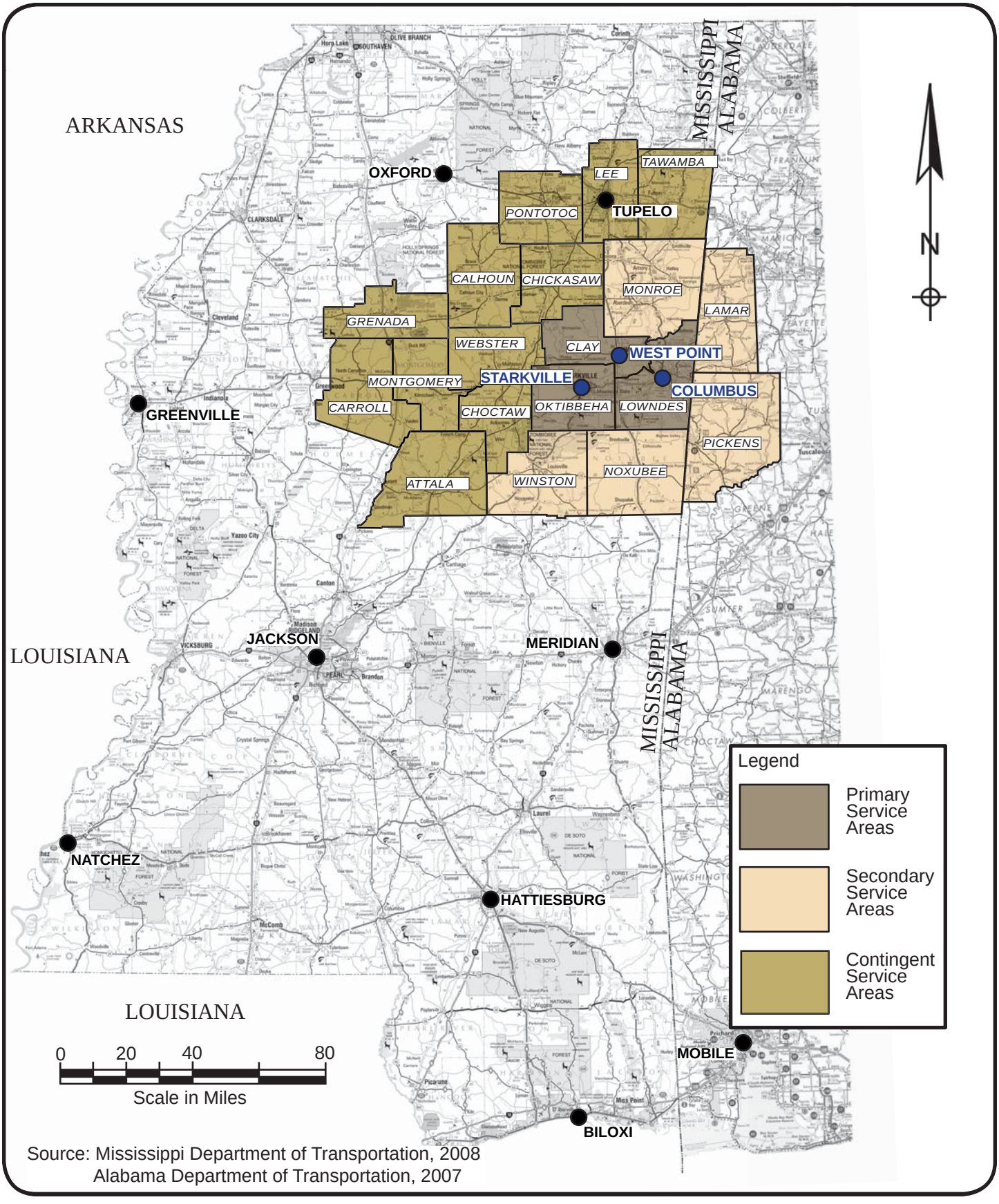
Figure 2.1

2.3.3 Airport Service Area

As illustrated in Figure 2.2 and for purposes of this study, the Golden Triangle Regional Airport is considered to have both a primary and a secondary service (market) area. The primary service area consists of Clay, Lowndes, and Oktibbeha Counties. The secondary service (market) area consists of Winston, Monroe and Noxubee Counties, Mississippi, and Lamar and Pickens Counties, Alabama. As will be discussed in Chapter 3, Forecasts of Aviation Demand, dynamic forces are at work in the air service industry which may, in time, dramatically reduce the number of communities with air carrier service. Major industry and university research of the "Regional Access Model" tend to indicate that the Golden Triangle Regional Airport and the Meridian Regional Airport will survive this major restructuring of the air service system while some of the other smaller airports in Mississippi will not. If this occurs, an additional portion of Mississippi will be served by the Golden Triangle Regional Airport. This new area is shown in Figure 2.2 as a contingent service (market) area, and consists of Choctaw, Webster, Chickasaw, Montgomery, Carroll, Grenada, Calhoun, Pontotoc, Lee and Itawamba Counties.

2.4 CURRENT AIRCRAFT TYPES

The Golden Triangle Regional Airport serves a variety of users operating a wide variety of aircraft types. Currently, the Delta Connection operates the CRJ-200. The CRJ-200 has a wingspan of 69.7 feet, a length of 87.8 feet, and a maximum takeoff weight of approximately 47,450 pounds. Regular charter aircraft include the B-737, B-757 and A-319/320. A large variety of corporate/business jet aircraft operators also use the airport on a regular basis. Representative aircraft types include the Cessna Citation, Canadair Challenger, and the Gulfstream G-IV and G-V series. The Gulfstream V has a wing span of 93.5 feet, a length of 96.4 feet, and a maximum takeoff weight of approximately 90,900 pounds. Military aircraft also use the airport on a regular basis. Predominate military aircraft types include the T-6, T-38, and T-1. Based on forecasts of future demand, a critical aircraft will be designated in Chapter 5, Facility Requirements.



Source: Mississippi Department of Transportation, 2008
Alabama Department of Transportation, 2007

Golden Triangle Regional Airport

Airport Service Areas

Figure 2.2

2.5 CHARACTERISTICS OF THE AIRPORT

The airport is situated on approximately 1,000 acres of land. The field elevation is 264 feet MSL and the existing airport reference point (ARP) is latitude 33° 26' 54" N, longitude 88° 35' 29" W. The mean maximum temperature of the hottest month is 93°F.

2.6 EXISTING AIRPORT FACILITIES

Airport facilities can be functionally classified into two broad categories: airside and landside. The airside category includes those facilities directly associated with aircraft operations. The landside category includes those facilities that provide a terminal interface between surface and air transportation, as well as support services such as aircraft storage and maintenance. An inventory of existing airport facilities was completed during the initial phase of the Master Plan Study. Table 2.1 provides a listing of the existing airside and landside facilities.

2.6.1 Airside Facilities

Airside facilities include runways, taxiways, lightning, signs, marking, and navigational aids. The existing airside facilities are illustrated in Figure 2.3.

2.6.2 Runways

The Airport is currently served by one asphalt runway designated as 18/36. Runway 18/36 is 8,002'x150'. The runway was seal coated in 2008 and the pavement is in excellent condition. Runway 18/36 is listed as having a pavement strength of 133,000 pounds (single wheel), 200,000 pounds (dual wheel), and 300,000 pounds dual tandem loading.

Table 2.1
Existing Facilities
Golden Triangle Regional Airport

Airport Name:	Golden Triangle Regional Airport
Identifier:	GTR
FAA Site Number:	00359.7
Ownership:	Golden Triangle Regional Airport Authority
Field Elevation:	264' MSL
Acreage:	1000

Runway Data

RUNWAY ID	18/36
Length:	8,002'
Width:	150'
Strength:	S-133,000, D-200,000, DT-300,000
Marking:	Precision
Surface:	Asphalt
Condition:	Excellent

Taxiways

Parallel:	Full
Condition:	Excellent
Connectors:	Yes

Airfield Lighting

Identification Lighting	Rotating Beacon
Runway Lighting	HIRL
Taxiway Lighting	MITL
Runway Threshold Lighting	Both Runway Ends
Runway End Identification Lighting	Runway 36 End

Approach Aids

Approach Lighting System	MALSR – Runway 18 End
Visual Approach Lighting	VASI-4 - Runway 18 End, PAPI-4 – Runway 36 End
Localizer:	ILS/DME – Runway 18 End, ILS/DME (Mar 2012) Runway 36 End
Other:	RNAV/GPS

Weather Reporting

Weather Observing System	AWOS-3 126.375

Navigational Aids

Control Tower	Yes
Rotating Beacon	Yes
Wind Indicator/Segmented Circle	Yes
Supplemental Wind Indicator	Yes (RW 36)
CTAF/UNICOM:	118.2/122.95

AIRPORT BUILDINGS

Commercial Terminal	36,600 SF
General Aviation Terminal:	2,500 SF
No. T-Hangars:	10 Units
No. Corporate Hangars:	7
No. Maintenance Hangars:	1

AUTO PARKING

Commercial Spaces	139
Rental Car	63
Employee	19
General Aviation	25

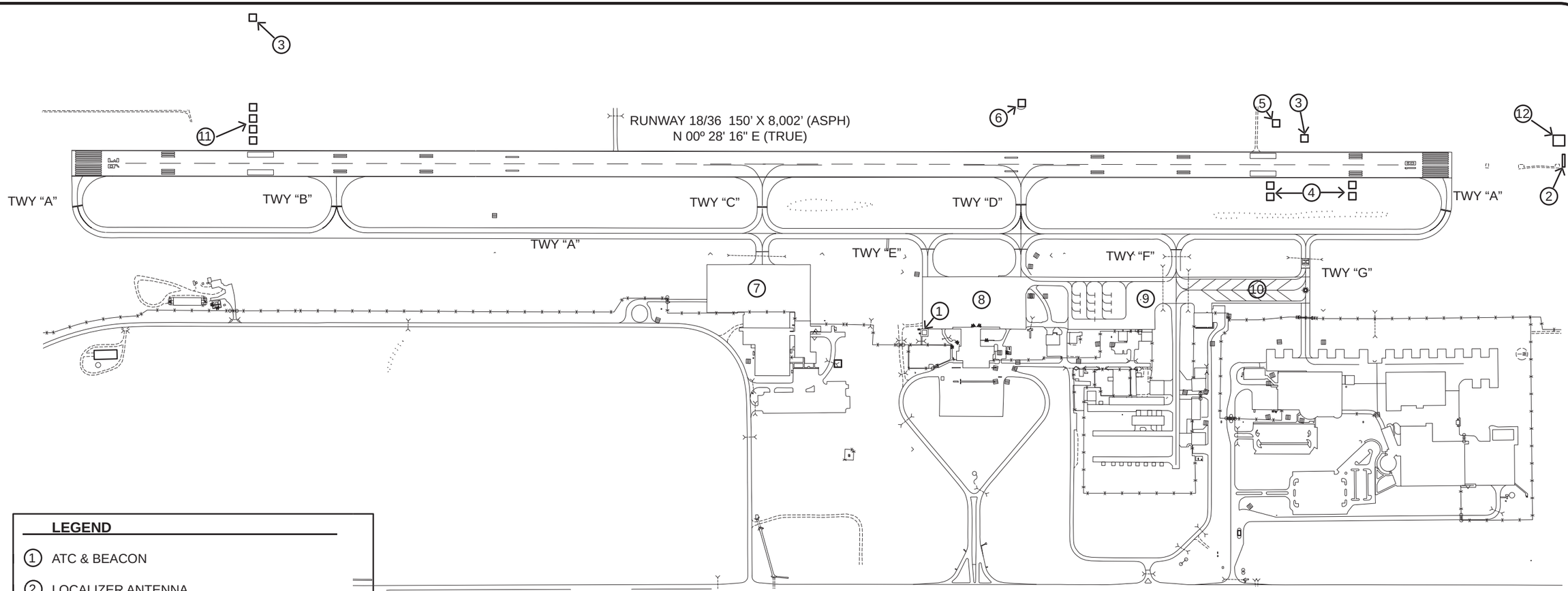
APRON

Commercial Terminal Apron	20,000 SY
North Apron	12,500 SY
G A Apron	16,000 SY
South Apron	18,000 SY
Total Aprons	66,500 SY
Tie-Downs:	12

FUEL

AVGAS:	20,000 Gal.
JET A:	1-20,000 Gal. and 1- 25,000 Gal.

Aircraft Rescue and Firefighting	ARFF Building; ARFF Truck (ARFF & Dry Chemical)



Golden Triangle Regional Airport

Existing Airside Facilities

Figure 2.3

2.6.3 Taxiways

The Airport has a series of taxiways that provide access between the runway and apron areas. A summary of the existing taxiway system is contained in Table 2.2.

Table 2.2
Taxiway Data

Taxiway	Type	Width	Construction	Condition
Alpha	Full Parallel	60'	Asphalt	Good
Bravo	Exit/Connector	60’	Asphalt	Excellent
Charlie	Exit/Connector	60’	Asphalt	Excellent
Delta	Exit/Connector	60'	Asphalt	Good
Echo	Connector	60'	Asphalt	Excellent
Foxtrot	Connector	60'	Asphalt	Excellent
Golf	Connector	60'	Asphalt	Good

Taxiway Alpha is the full parallel taxiway and traverses the entire length of the runway and connects to each runway end. Taxiway Bravo is an exit taxiway that connects Runway 36 to the parallel taxiway. Taxiway Charlie is an exit taxiway that connects the south apron area to the runway. Taxiway Delta is an exit taxiway that connects the commercial terminal building apron to runway. Taxiway Echo connects the commercial terminal building apron to the parallel taxiway. Taxiways Foxtrot and Golf connects the north apron area to the parallel taxiway.

2.6.4 Airfield Lighting, Marking and Signage

Airfield lightning systems extend an airport’s usefulness into periods of darkness and/or poor visibility. A variety of lightning systems are installed at the airport for this purpose. They are classified as follows:

Pavement Edge Lightning

Pavement edge lightning utilizes edge light fixtures placed near the edge of the pavement to define the lateral limits of the pavement. The lightning is essential for safe

operations during night and/or time of low visibility, in order to maintain safe and efficient access to and from the runway, and aircraft parking areas. Runway 18/36 has a High Intensity Runway Lightning (HIRL) system. All major taxiways and apron edge taxiway lanes, as well as connector taxiways are equipped with medium intensity taxiway lights (MITL).

Runway Threshold Lightning

Runway threshold lights identify the runway end. Runway threshold lights have specifically-designed lights that are green on one side and red on the other. Both runway ends are equipped with runway threshold lights.

Runway End Identification Lightning

Runway End Identifier Lights (REILS) provide rapid and positive identification of the approach end of a runway. The REIL system consists of two synchronized flashing lights located laterally on each side of the runway threshold facing the approaching aircraft. REILS are installed on the end of Runway 36.

Medium Intensity Approach Lighting System (MALSR)

The approach end of Runway 18 is equipped with a Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR). A MALSR consists of a series of light bars that begin at the runway threshold and extend 2,400 feet into the runway approach area. This system is especially helpful to pilots who use it in conjunction with the ILS approach available to Runway 18. The ILS approach and MALSR allow aircraft to continue to operate on the runway in visibility minimums as low as one half mile. This gives Golden Triangle Regional Airport the ability to continue operations in inclement weather that would otherwise require aircraft to deviate to an alternate airport or circle until the visibility minimums improve to the point that aircraft can land safely.

Airfield Markings

Pavement markings aid in the movement if aircraft along airport surfaces and identify closed or hazardous areas on the airport. Runway 18/36 is equipped with precision runway markings and is in excellent condition. Taxiway and apron taxilane centerline markings are provided to assist aircraft using these airport surfaces. Centerline markings assist pilots in maintaining proper clearance from pavement and objects near the taxilane/taxiway edges. Aircraft hold positions are also marked on all taxiway surfaces. Pavement markings identify aircraft parking positions.

Airfield Signage

Airfield identification signs assist pilots in identifying their location on the airfield and directing them to their desired location. Lighted signs are installed at all taxiways and runway intersections. These signs also identify the aircraft holding position. All of these signs are lighted for operations at night and during low visibility periods.

2.6.5 NAVAIDS/Visual Aids and Weather Reporting

Navigational Aids are electronic devices that transmit radio frequencies, which pilots with properly equipped aircraft translate into point-to-point guidance and position information. The electronic navigational aids available for aircraft flying to or from Golden Triangle Airport are the VOR, and GPS. Instrument approach aids include the ILS/DME and GPS.

Very High Frequency Omnidirectional Range (VOR) - A VOR is provided by the Bigbee VORTAC. A VORTAC is VOR equipment coupled with Tactical Air Navigation (TACAN). VORs provide location information to aircraft using the very high frequency portion of the radio spectrum, while TACAN uses the ultrahigh frequency portion of the radio spectrum and provides the added benefit of Distance Measuring Equipment (DME). There are no VOR approaches to the runways at GTR.

Instrument Landing System (ILS) – An Instrument Landing System is a system of ground facilities which enables a properly equipped aircraft to land during periods of inclement weather by providing both horizontal and vertical guidance to the runway threshold. The major components of an ILS are the localizer which provides horizontal guidance and, the glide slope which provides vertical guidance and one or more marker beacons for geographic reference. It may be equipped with Distance Measuring Equipment (DME) to augment or replace certain radio beacons. Runway 18 is equipped with a full ILS and a Medium Intensity Approach Light System with Runway Alignment Indicator Lights (MALS-R). Runway 36 is equipped with a full ILS with DME. It has no Approach Light System.

Global Positioning Satellite System (GPS) - In addition to the localizer, a GPS allows properly equipped aircraft to make non-precision approaches to Runways 18 and 36. A GPS works by using satellites to triangulate an aircraft's position, thereby providing the pilot with information regarding the aircraft's location, distance from the airport, height, speed, descent rate, and other information that make it possible for aircraft to make safe approaches to the runway. There are GPS approaches to both Runway 18 and Runway 36 with LPV minimums, which allow them to serve as effectively as many ILS facilities during periods of low visibility.

Visual Approach Lightning

Visual Approach Path Indicators (VASI-4) are available for Runway 18. The VASIs provide approach path guidance with a series of light units. The four-unit VASI gives the pilot an identification of whether their approach is above, below, or on-path, through the pattern or red and white light visible from the light unit. A 4 Box PAPI serves a similar function for Runway 36.

A segmented circle and lighted wind cone are located at the center of the airport, just west of the runway. The segmented circle identifies the traffic pattern to pilots, and the

wind cone indicates wind direction and approximate speed. A supplemental wind cone is located near the approach end of Runway 36.

Rotating Beacon - To assist pilots in locating the airport during periods of darkness, a standard rotating beacon is located south of the terminal building on top of the air traffic control tower. This beacon emits alternating green and white flashes of light which pilots can identify while in flight.

Weather Reporting

An Automated Weather Observing System (AWOS-III) is available at Golden Triangle Regional Airport to inform pilots of the weather conditions there. The AWOS-III provides automated aviation weather observations 24 hours a day. The AWOS-III provides pilots with information regarding temperature, wind speed and direction, thunderstorm advisories, and other information that allows pilots to make better decisions and conduct safer operations. The AWOS-III is near the approach end of Runway 18.

2.6.6 Instrument Approach Capabilities

Instrument approach procedures are a series of predetermined maneuvers established by the FAA, using electronic navigational aids that assist pilots in locating and landing at an airport, especially during instrument flight conditions. As found in the United States Government Flight Information Publication *U.S. Terminal Procedures,* the Golden Triangle Regional Airport currently offers four published instrument approaches.

These approaches are listed below, and illustrated in Figures 2.4 through 2.7.

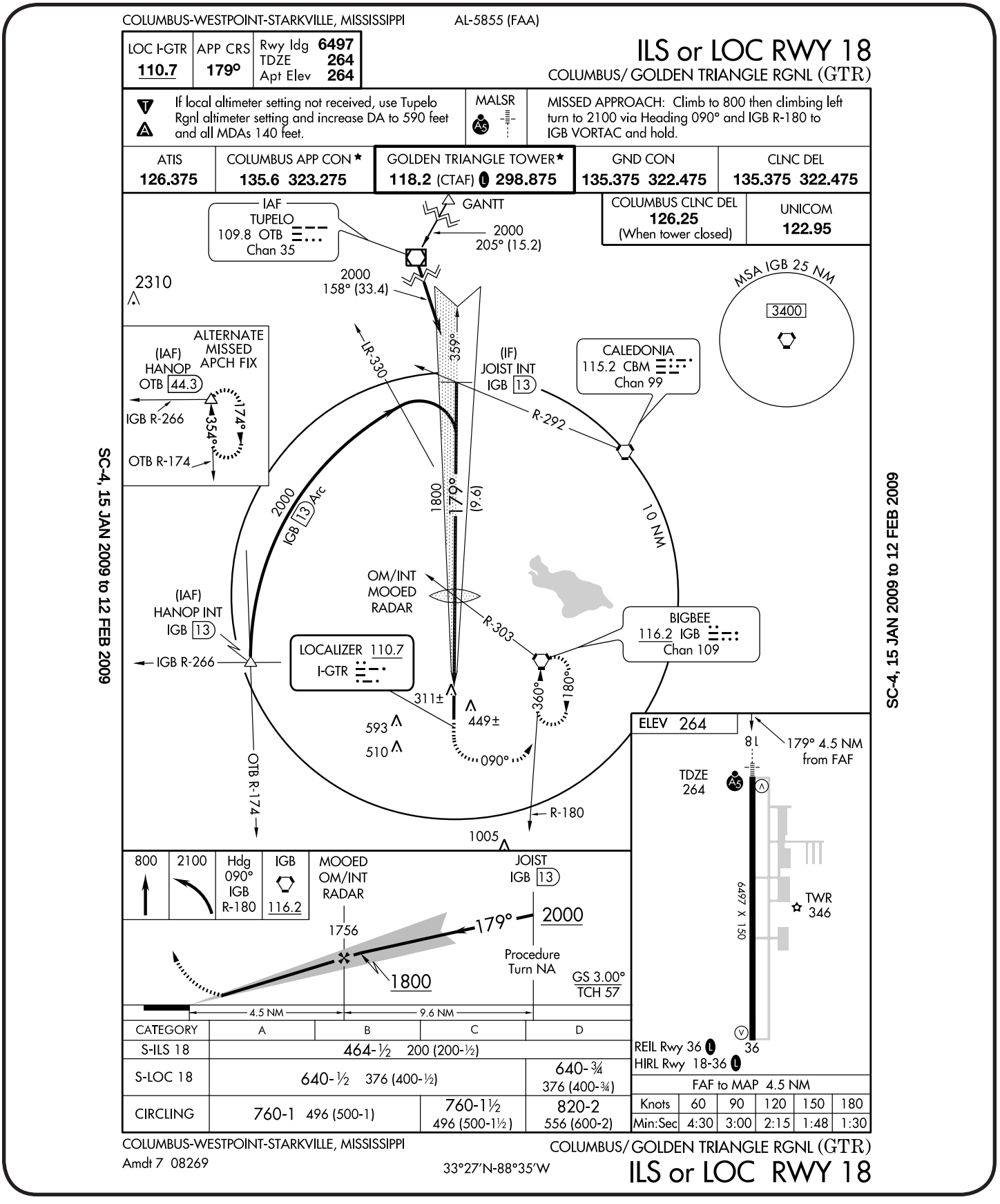
- ILS or LOC RWY 18
- RNAV (GPS) RWY 18
- LOC RWY 36
- RNAV (GPS) RWY 36

- New ILS RWY 36 approach will be published to Runway 36 upon commissioning of the equipment in March 2012.

Table 2.3 provides information about these approaches.

Table 2.3
Approach Minimums

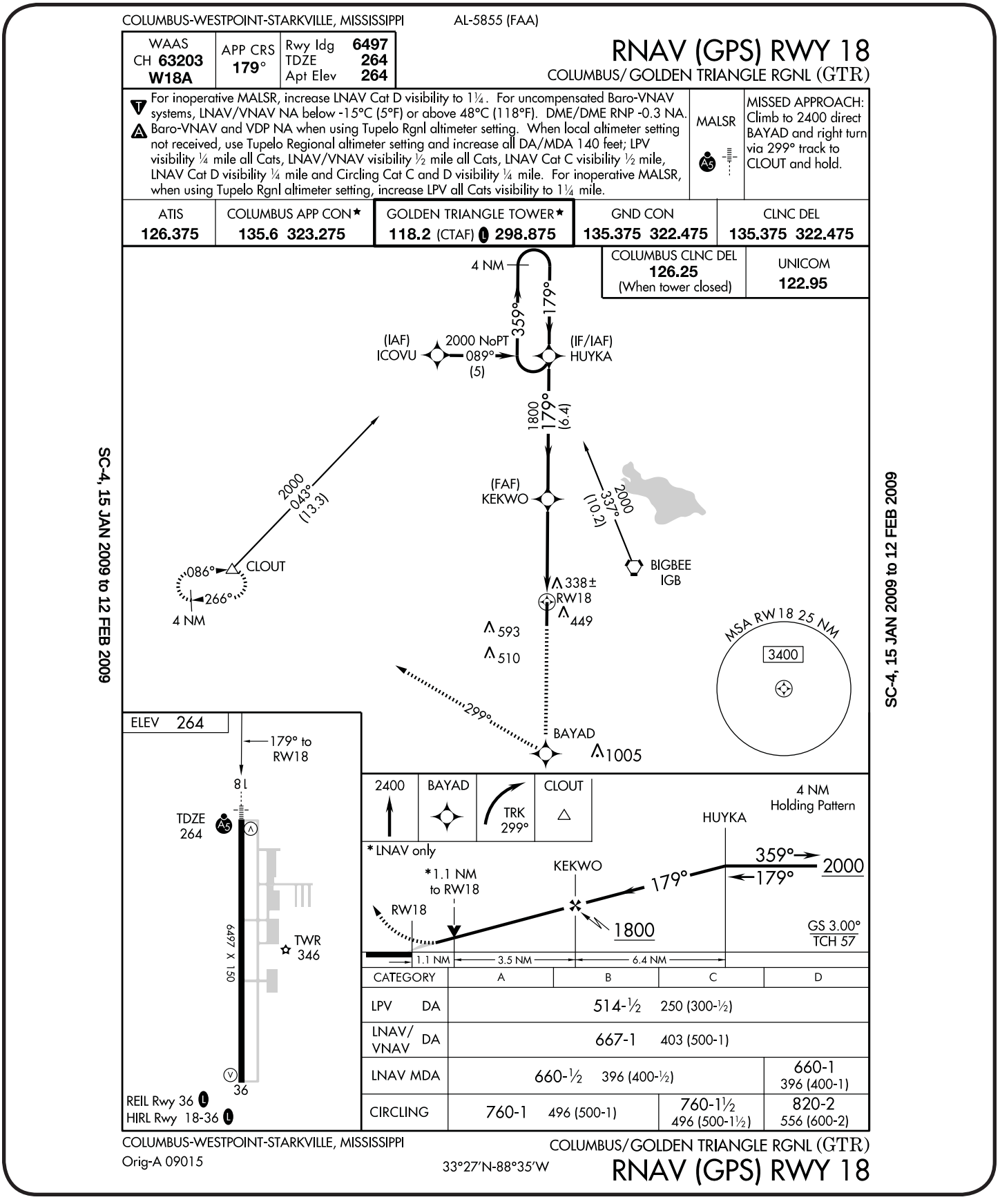
Runway	Type	Approach	Visibility
18	Precision	ILS	½ Mile
18	Non-Precision	RNAV/GPS	1 Mile
36	Non-Precision	RNAV/GPS	1 Mile
36	Non-Precision	LOC	1 Mile



Golden Triangle Regional Airport

ILS or LOC RWY 18

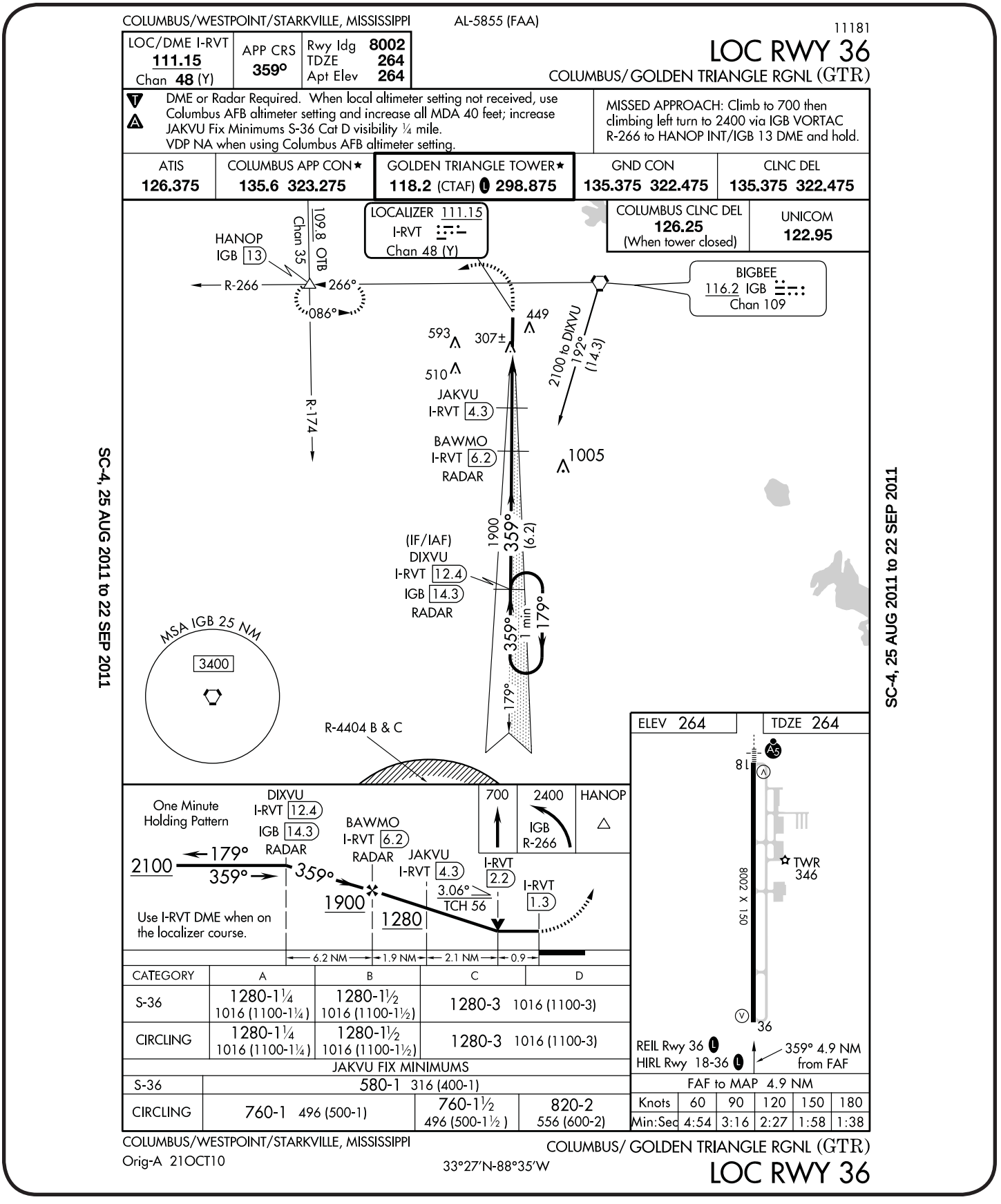
Figure 2.4



Golden Triangle Regional Airport

RNAV (GPS) RWY 18

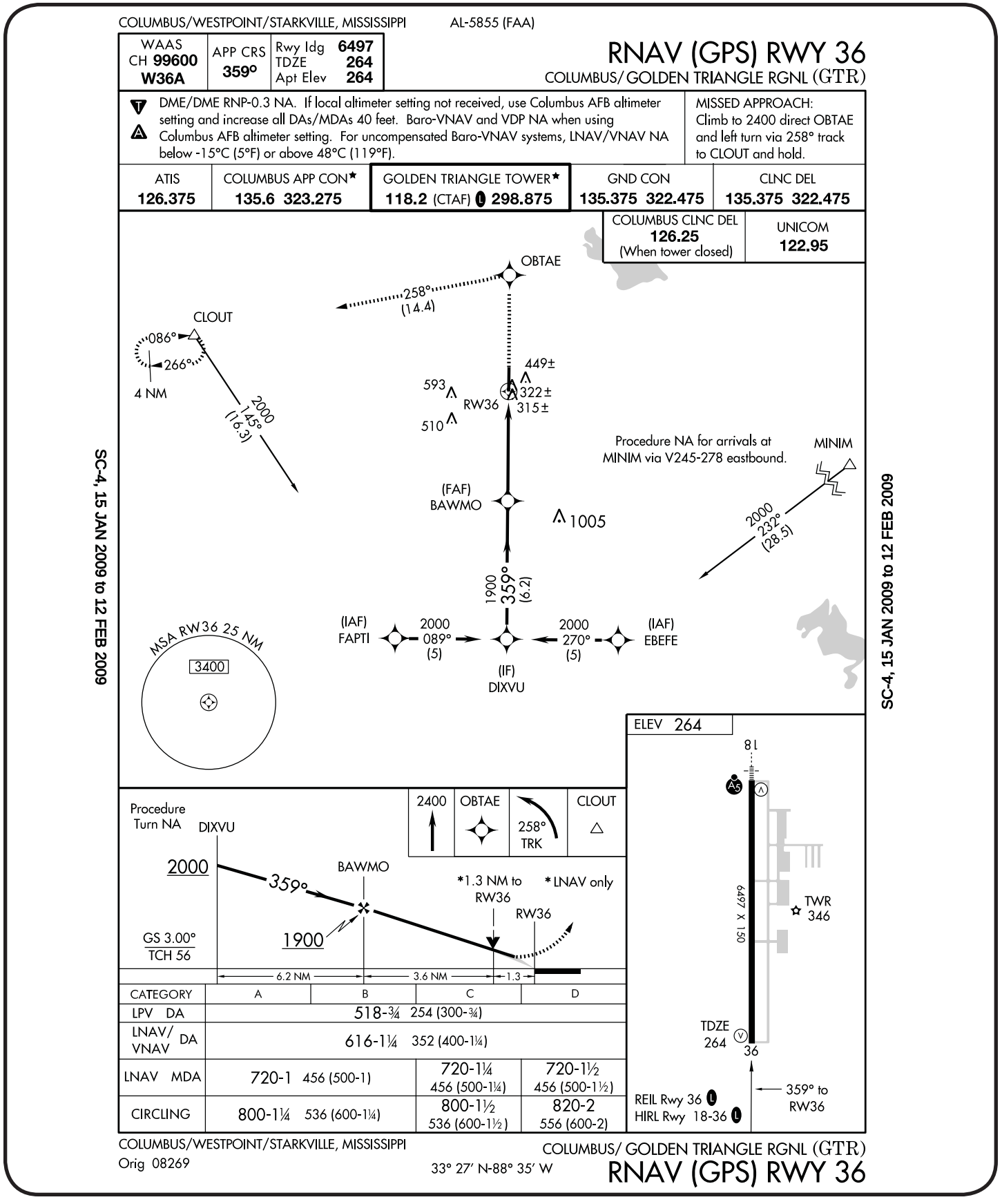
Figure 2.5



Golden Triangle Regional Airport

LOC RWY 36

Figure 2.6



Golden Triangle Regional Airport

RNAV (GPS) RWY 36

Figure 2.7

2.7 EXISTING LANDSIDE FACILITIES

Landside facilities are the facilities that support the aircraft and pilot/passenger handling functions. These facilities typically include a 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 (ARFF).

Landside development at GTR is located, exclusively on the east side of the airport and consists of two separate and distinct areas: the commercial aviation operations area and the general aviation operations area. Existing landside facilities are illustrated in Figure 2.8.

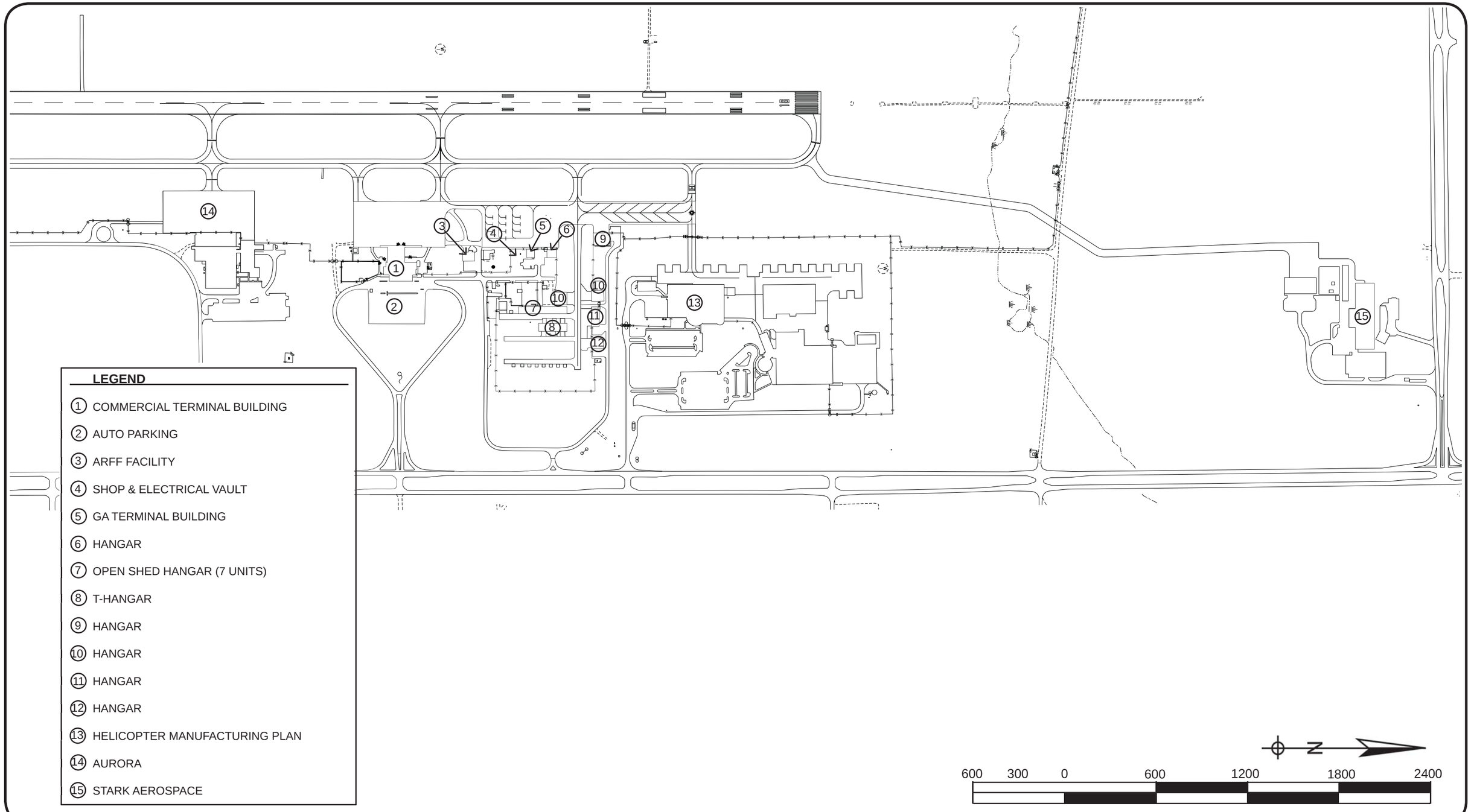
2.7.1 Commercial Aviation Terminal Area Facilities

The existing commercial aviation terminal complex includes the passenger terminal building; aircraft parking apron, passenger, visitor, rental car, and employee automobile parking areas; and the access roadway in immediate proximity to the terminal complex.

Commercial Terminal Building

The 20,000 S.F. bi-level passenger terminal building was constructed in 1971, remodeled in 1994 and expanded to 36,600 S.F.in 2010. The public area or lower level of the terminal building is primarily utilized for airline operations such as passenger ticketing, baggage and cargo handling, and baggage claim. Other space on the ground floor is devoted to, vending and concessions, auto rental offices, and restrooms. A sterile holding area is also included, with security screening provided by a carry-on baggage X-ray machine and a walk through metal detector.

It should be noted as part of the most recent expansion to the terminal building, a new pair of restrooms were added within the sterile holding area. This allows passengers to stay within secured boundaries of the terminal building and not have to leave the sterile area to use the restroom.



Golden Triangle Regional Airport

Existing Landside Facilities

Figure 2.8

Three rental car agencies operate at GTR: Avis, Hertz, and Enterprise rental car agencies. These operators occupy space along the terminal's east wall, near the baggage claim area.

The second level of the terminal building is occupied by the Golden Triangle Regional Airport Authority. Several mechanical and storage areas are also located on the second level. The first floor and second floor terminal building floor plans are depicted in Figures 2.9 and 2.10.

Delta Air Lines provides 3 round trip flights per day using Delta Connection (DCI) carriers on the 50 passenger CRJ-200 to their international hub in Atlanta.

Aprons

The commercial terminal aircraft parking apron is located west of the terminal building and has approximately 20,000 square yards of pavement for aircraft parking and circulation taxilanes. The apron is 600 feet wide and 300 feet deep. The south third of the apron has a weight bearing capacity of 133,000 pounds single wheel load (SWL), 200,000 pounds dual wheel load (DWL), and 300,000 pounds duel-tandem wheel load (DTWL). The northern two thirds are scheduled to be rehabilitated to full strength in the near future.

The North Apron, used for general aviation and corporate aircraft, is approximately 12,500 SY. The General Aviation Apron, also used for general aviation and corporate aircraft, is approximately 16,000 SY. The South Apron has approximately 18,000 SY and is used for large aircraft, including C-17's.

LEGEND

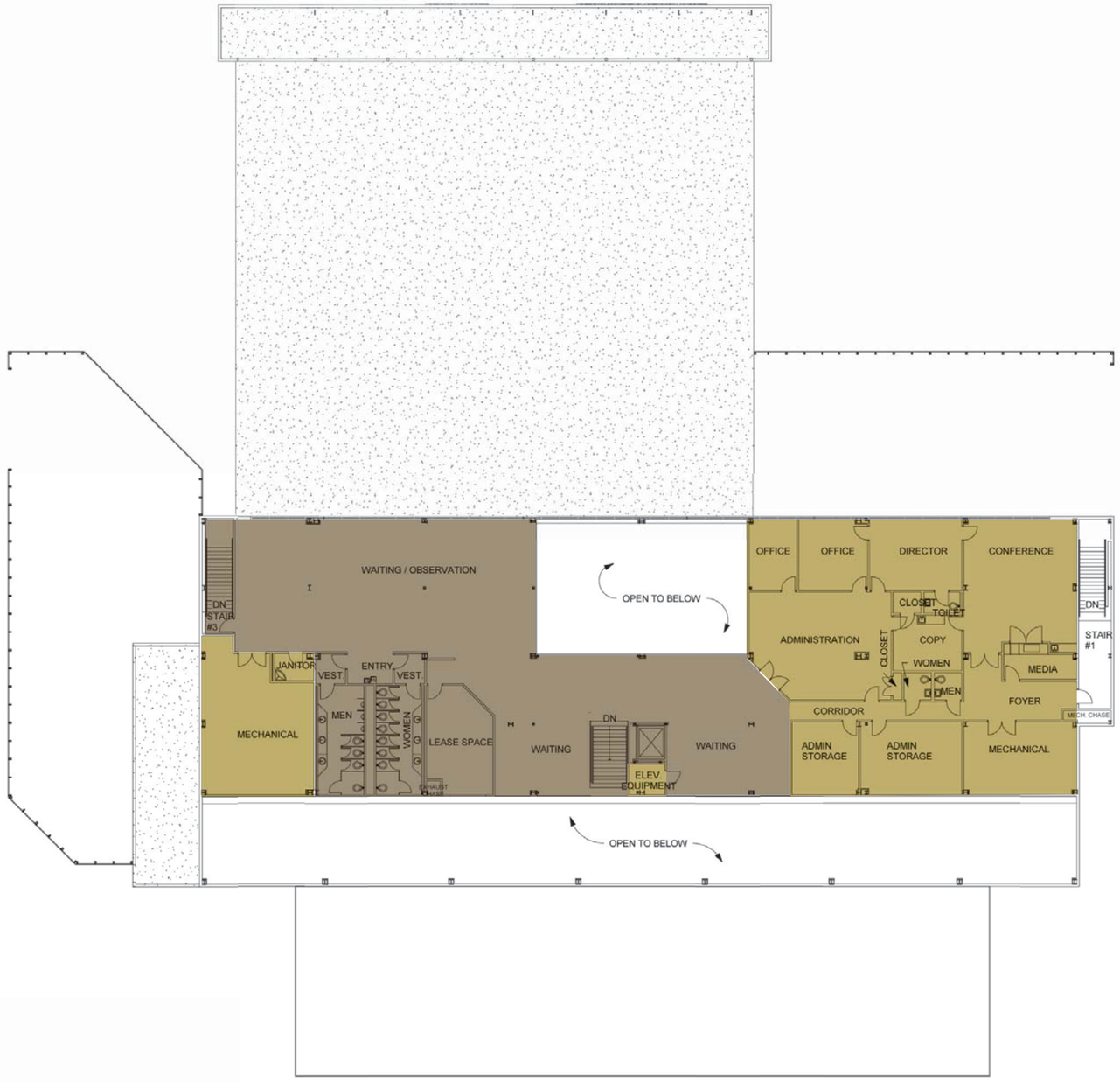
- AIRLINE AREAS
- CONCESSIONS AREAS
- PUBLIC AREAS
- SUPPORT AREAS

NOT TO SCALE

Golden Triangle Regional Airport

Existing 1st Floor Plan

Figure 2.9



NOT TO SCALE

LEGEND

- PUBLIC AREAS
- SUPPORT AREAS

Golden Triangle Regional Airport

Existing 2nd Floor Plan

Figure 2.10

Terminal Area Automobile Parking

Parking for passengers visiting or departing from the Airport is provided in the parking lot located directly across from the terminal entrance, in the center portion of the ground access loop. The parking lot is approximately 6,000 square yards and provides 139 passenger parking spaces. The parking lot is well lighted and secured by an on-duty lot attendant between the hours of 6:00 AM and 10:00 PM.

Airport Ground Access

There are three types of access roads to GTR: 2 primary access roads, a terminal access road, and a terminal frontage road. The two primary access roads leading to the main terminal building are U.S. Highway 82 and Artesia Road.

Connecting the primary ground access routes to the terminal area is Airport Road, a two-lane roadway designed to accommodate 250-300 vehicles per hour and leading to the terminal access loop and frontage road. Traffic circulation in front of the terminal is designed as a counter-clockwise flow.

The access loop leads to the main terminal and rental car automobile parking areas and the terminal frontage road. The inside lane provides terminal curb frontage and the outside lane serves through traffic and maneuvering to the terminal curb frontage.

2.7.2 General Aviation Terminal Area Facilities

The existing general aviation operations area includes one full service Fixed Based Operator (FBO), a flight school, and various other aviation and non-aviation businesses, automobile parking areas, and aircraft storage areas.

Apron/Hangars

Aircraft parking for general aviation aircraft is provided by two apron areas. The North Apron is 12,500 SY. The General Aviation Apron is approximately 16,000 square yards of asphalt apron, providing 12 tiedowns for transient and based aircraft. The apron area

has flood lights and is fenced to enhance security. The hangar area is located behind the general aviation apron. Access is provided by a 1000' x 25' taxilane. Currently, there is a 10 unit shade type hangar, 7 storage hangars, and a 4 unit t-hangar. A maintenance hangar is located adjacent to the apron.

Fixed Based Operator

RAS Aviation Inc. is a full service FBO providing general aviation customers with aircraft tie downs and storage facilities, airframe maintenance, service/repair, parts, pilot/flight training, ground transportation, aircraft fueling, and charter service. The FBO is located adjacent to the main general aviation aircraft parking apron, which lies north of the air carrier apron and terminal complex along the east side of Runway 18/36. Administration and pilot areas are located in a 2,500 square foot apron-side building. An automobile parking area for 25 cars is also provided. The FBO also occupies one 3,000 square foot conventional hangar which is used for aircraft storage.

2.8 AIRPORT TENANTS

Other tenants on the airfield include American Eurocopter, Stark Aerospace, Aurora Flight Sciences, Accessible Aviation, Civil Air Patrol, and several private citizens.

2.9 FUEL FACILITIES

The airport currently has one fuel farm that is operated by the FBO. The fuel farm consists of one 20,000 gallon fuel tank for AVGAS, one 20,000 and one 25,000 gallon fuel tank for jet fuel (Jet A). The fuel farm is located adjacent to the general aviation apron in the remote south area of the airport.

2.10 AIRCRAFT RESCUE AND FIREFIGHTING (ARFF)

Airport rescue and fire-fighting (ARFF) services are provided by the Golden Regional Airport. The airport is classified as a Class 1, ARFF Index A, but is capable of Index B with prior notice.

2.11 UTILITIES

2.11.1 Water

Water is provided by the Lowndes County Industrial Authority.

2.11.2 Sanitary Sewer

Sanitary sewer is provided by the Lowndes County Industrial Authority.

2.11.3 Electricity

Electricity is provided by Four County Electric Power.

2.11.4 Natural Gas

Natural gas is provided by Atmos Energy.

2.12 AIRPORT LAND USE AND ZONING

2.12.1 Land Use

Land use in the vicinity of the Golden Triangle Regional Airport consists of mainly industrial uses. However, several areas are designated agricultural and residential use. Existing land use adjacent and within the vicinity of the Golden Triangle Regional Airport is graphically depicted in Figure 2.11.

2.12.2 Zoning

Currently, no zoning is in effect around the airport.

Golden Triangle Regional Airport

Existing Land Use Map

Figure 2.11

2.13 AIRSPACE STRUCTURE

Airspace within the United States is classified as either "controlled" or uncontrolled". The difference between controlled and uncontrolled airspace relates primarily to requirements for pilot qualifications, ground-to-air communications, navigation and air traffic services, and weather conditions. Six classes of airspace have been designated in the United States as depicted in Figure 2.12. Airspace designated as Class A, B, C, D, or E is considered controlled airspace. Each of these classes has different dimensions, purposes, and requirements. A portion of the Sectional Aeronautical Chart illustrating the airspace surrounding the Golden Triangle Airport is shown in Figure 2.13.

Class A Airspace

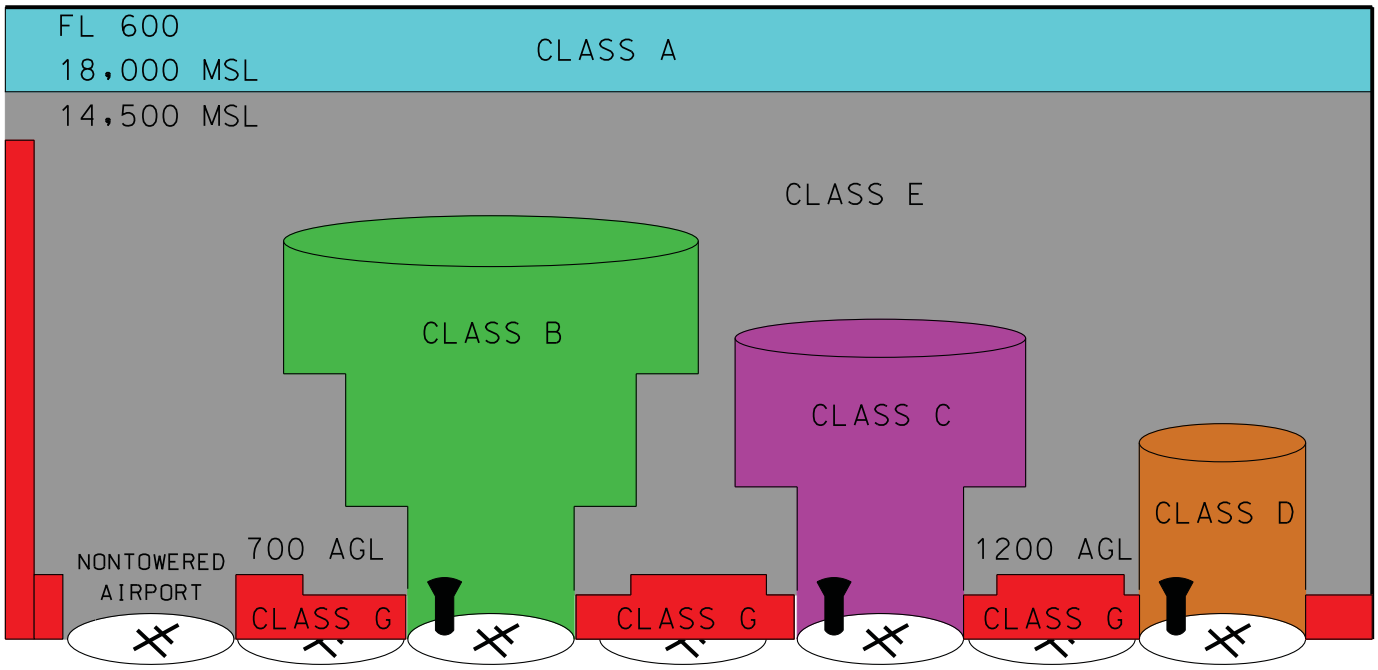
Class A Airspace includes all airspace from 18,000 feet to 60,000 feet above mean sea level (MSL). Aircraft flying in Class A airspace are required to operate under Instrument Flight Rules (IFR). The aircraft must have special radio and navigational equipment, and the pilot must obtain clearance from an air traffic control (ATC) facility to enter Class A airspace.

Class B Airspace

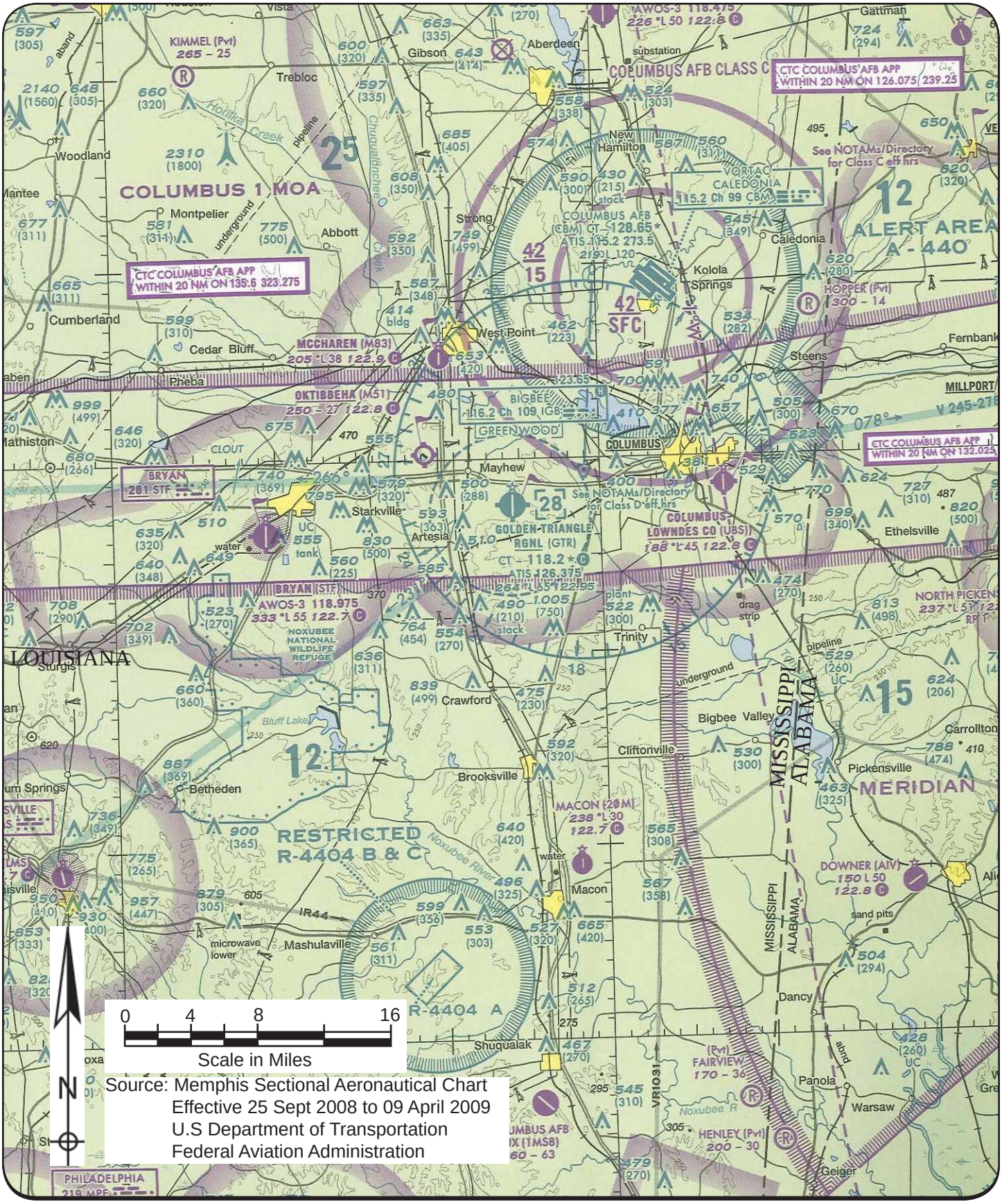
Class B airspace has been designated around some of the country's major airports, in order to separate arriving and departing aircraft. Class B airspace is designed to regulate the flow of uncontrolled traffic, above, around, and below the arrival and departure airspace required for high-performance, passenger-carrying aircraft at major airports.

Class C Airspace

Class C airspace is designed to regulate the flow of uncontrolled traffic above, around, and below the arrival and departure airspace required for high–performance, passenger-carrying aircraft at major airports. Class C airspace is that airspace from the surface to 4,000 feet above airport elevation surrounding those airports that have an operational air traffic control tower, are serviced by a radar approach control, and have a certain number of IFR operations or passenger enplanements.



MSL – MEAN SEA LEVEL
AGL – ABOVE GROUND LEVEL
FL – FLIGHT LEVEL



Source: Memphis Sectional Aeronautical Chart
Effective 25 Sept 2008 to 09 April 2009
U.S Department of Transportation
Federal Aviation Administration

Class D Airspace

The airspace encompassing Golden Triangle Airport is Class D (0600-2000L). Class D airspace is controlled airspace surrounding airports with an operating ATCT. Class D airspace is that area from the surface to 2,500 feet above the airport elevation having an operational control tower. The Class D airspace for Golden Triangle Airport extends 5 statue miles around the airport.

Class E Airspace

Class E is usually described as controlled airspace that is not classified as class A, B, C, or D. Class E is designated to accommodate all of the instrument approach procedures required to land at an airport during IFR conditions.

Class G Airspace

Airspace not designated as Class A, B, C, D, or E is considered uncontrolled, or Class G airspace. These are usually close to the ground and below radar contact with one of the nations' air traffic control centers.

2.14 SPECIAL USE AIRSPACE

Special use airspace consists of Prohibited Areas, Restricted Areas, Warning Areas, and Military Operations Areas (MOAs). Prohibited Areas are forbidden to all aircraft (except those on official government business), usually for reasons of national security. Military Operations Areas are used by the military services for high-volume or high-speed flights or for unusual aircrew training missions. These areas may be particularly hazardous to transient aircraft. Restricted Areas are usually military-training corridors or weapons testing ranges. These may be flown over at certain times and at certain altitudes, as shown on aeronautical charts, or with prior permission from the controlling authority. Failure to obtain this permission is not only a violation of FARs but frequently very dangerous. Warning Areas are areas of airspace over international territory that may or may not contain hazards. The FAA can only warn pilots about hazards, but cannot restrict movement into such areas because international territories are outside of

its jurisdiction. Pilots are required to exercise extreme caution when operating in these areas.

Columbus Air Force Base is located northeast of the Golden Triangle Regional Airport. Columbus 1 MOA is located north of Golden Triangle Regional Airport and Meridian 1 West MOA is located south of the airport. MOA's consist of airspace of defined vertical and lateral limits established for the purpose of separating certain military training activities from IFR traffic. Whenever a MOA is being used, nonparticipating IFR traffic may be cleared through a MOA if IFR separation can be provided by ATC. Otherwise, ATC will reroute or restrict nonparticipating IFR traffic.

Examples of activities conducted in MOAs include, but are not limited to: air combat tactics, air intercepts, aerobatics, formation training, and low-altitude tactics. Military pilots flying in an active MOA are exempted from the provisions of 14 CFR Section 91.303(c) and (d) which prohibits aerobatic flight within Class D and Class E surface areas, and within Federal airways. Additionally, the Department of Defense has been issued an authorization to operate aircraft at indicated airspeeds in excess of 250 knots below 10,000 feet MSL within active MOAs.

Pilots operating under VFR should exercise extreme caution while flying within a MOA when military activity is being conducted. The activity status (active/inactive) of MOAs may change frequently. Therefore, pilots should contact any FSS within 100 miles of the area to obtain accurate real-time information concerning the MOA hours of operation. Prior to entering an active MOA, pilots should contact the controlling agency for traffic advisories.

CHAPTER 3
FORECASTS OF AVIATION DEMAND

3.1 INTRODUCTION

After documenting the existing facilities and conditions at the Golden Triangle Regional Airport, forecasts of aviation activity were generated for the 20-year planning period. The forecasts of aviation demand are a key element in the planning process since demand will determine the aviation facilities that will be needed in the future. Data used to prepare these projections includes historical airport statistics (passengers, operations, based aircraft, etc.), discussions with airport management and users, socioeconomic data, and existing state and federal forecasts.

Although the 20-year planning period of 2009 – 2029 will be maintained for the study, a number of significant changes have occurred since the start of the study and should be noted. First, dynamic and unprecedented industrial growth has occurred in the airport environs, which is changing the area demographics dramatically. The newest industries to locate on and around the Golden Triangle Regional Airport are changing the nature of the workforce toward higher and more technical skills and better pay. No state or federal indicators have kept pace with the changing environment in the primary service area. The effect of this rapidly growing and rapidly changing economy is that historical projections, although presented here, are most likely erring on the low side.

In response to the changing nature of the industrial climate in the Golden Triangle environs, the Lowndes County Industrial Development Authority has created the GTR Global Industrial Aerospace Park adjacent to the airport and is actively recruiting international aerospace industries worldwide, (See Appendix 4). The industrial prospects which have expressed interest in the park are similar in nature to the high-tech industrial tenants which have located and expanded on the airport property in the recent past.

Second, dynamic forces are at work in the air service industry which, experts say, will dramatically reduce the number of communities with air carrier service. Although GTR, by all accounts, will maintain its commercial air service, it will have to provide commercial service to a significantly larger portion of Mississippi and, potentially a portion of Alabama. The model describing the effect of the reduction of commercial service locations, the regional access model, is not sufficiently developed or tested to provide a forecast of commercial service passengers and flights at this location. It does indicate that any forecasts based on historical trends will be low, although how low can only be determined with time.

It is expected that the forecasts presented herein will provide some indication of facility requirements for the short term. They should be updated after actual experience is gained with the regional access model or variations thereof.

3.2 DEMOGRAPHIC/ECONOMIC INDICATORS

Aircraft activity levels at public-use airports are a function of economic and demographic characteristics of the service area. For aviation forecasts at the Golden Triangle Regional Airport, the service area includes nine counties and is divided into a primary service area and a secondary service area. The primary service area includes Clay, Lowndes, and Oktibbeha Counties. The secondary service area includes Monroe, Winston, Pontotoc, and Noxubee Counties in Mississippi and Lamar and Pickens Counties in Alabama. For commercial airline forecasts, the service area includes the entire nine-county area. For general aviation activity forecasts, the primary service area will be used. Socioeconomic trends that were reviewed as part of the forecast include population, income, and employment.

Population - The population around an airport often has a direct influence on the airport's use. Under general circumstances, the greater the population, the more passengers and operations there will be at the airport.

The primary and secondary service areas have both experienced declining population since the 2000 census. Both service areas also had a slower population growth rate than Mississippi, Alabama, and the United States. It is expected that population in the total service area will remain essentially stable, increasing slightly through 2015, and then decreasing slightly for the next ten years. Table 3.1 shows historical and forecast population growth for the Golden Triangle Regional Airport primary and secondary service areas, Mississippi, Alabama, and the United States. Table 3.2 shows the population percent change from 1990 to 2025.

Table 3.1
Population
GTR Service Areas, Mississippi, Alabama and the U.S., 1990-2025

Year	Primary Service Area	Secondary Service Area	Total Service Area	State of Mississippi	State of Alabama	United States
1990	118,803	127,381	246,184	2,575,475	4,040,389	248,790,925
2000	126,467	134,301	260,768	2,844,658	4,447,100	281,421,906
2006	122,826	132,696	255,522	2,910,540	4,599,030	299,398,484
2015	123,648	137,448	261,096	3,014,409	4,663,111	322,365,787
2020	123,184	137,563	260,747	3,044,812	4,728,915	335,804,546
2025	123,108	137,373	260,481	3,069,420	4,800,092	349,439,199

Sources: U.S. Bureau of the Census, Population Division, December 2006
Center for Policy Research & Planning, Mississippi Institutions of Higher Learning, September 2008
Center for Business & Economic Research, University of Alabama, August 2001

Table 3.2
Population Percent Change
GTR Service Areas, Mississippi, Alabama and the U.S., 1990-2025

Year	Primary Service Area	Secondary Service Area	Total Service Area	State of Mississippi	State of Alabama	United States
1990-2000	6.45%	5.43%	5.92%	10.45%	10.07%	13.12%
2000-2006	-2.88%	-1.20%	-2.01%	2.32%	3.42%	6.39%
2006-2015	0.67%	3.58%	2.18%	3.57%	1.39%	7.67%
2015-2020	-0.38%	-0.08%	-0.13%	1.01%	1.41%	4.17%
2020-2025	-0.06%	-0.14%	-0.10%	0.81%	1.51%	4.06%

Source: BWSC, 2008

Income – An area's personal income is the income that is received by persons from all sources. Per capita income (PCI) is calculated as the personal income of the residents of a given area divided by the population of the area. It is often used as a gauge to measure a community's standard of living. Income is also an important determinant of air travel demand. As income levels rise in a community, the tendency to travel increases. Since 1990, per capita personal income has been lower in the secondary service area than in the primary service area. The total service area's PCI is about 6% below the PCI of the State of Mississippi. Table 3.3 shows the historical PCI for the Golden Triangle Regional Airport service areas, Mississippi, Alabama and the United States from 1990 to 2006.

Table 3.3
Historical Per Capita Income
GTR Service Areas, Mississippi, Alabama and the U.S., 1990-2006

	1990	2000	Avg annual Percent Incr	2006	Avg annual Percent Incr
Primary Service Area	$13,444	$20,080	4.94%	$26,663	5.46%
Secondary Service Area	$11,912	$18,438	5.48%	$23,523	4.60%
Total Service Area	$12,725	$19,325	5.19%	$25,223	5.09%
Mississippi	$13,089	$21,007	6.05%	$27,028	4.78%
Alabama	$15,723	$23,767	5.12%	$30,894	5.00%
United States	$19,477	$29,845	5.32%	$36,714	3.84%

Source: U.S. Department of Commerce, Bureau of Economic Analysis, 2008

Employment – The type of employment in a region can affect aviation demand. Previous studies have shown that select industries impact airport activity levels. The industries that usually impose the greatest demand on an airport are considered non-farm employers, like manufacturing, services, finance, transportation, and construction.

Table 3.4 shows the employment breakdown by major industry group for the Golden Triangle Regional Airport's primary and secondary service areas, Mississippi, Alabama and the United States. The manufacturing industry and the educational, health and social services are the two largest employers in the Airport's service area, providing about half of the area's employment. These two employment categories are also the major employers for the States of Mississippi and Alabama and the United States.

Table 3.4
Employment by Industry
GTR Service Areas, Mississippi, Alabama and the U.S., 2000

	Primary Service Area		Secondary Service Area		Total Service Area		Mississippi		Alabama		United States	
Industry	**Total**	**Percent**	**Total**	**Percent**	**Total**	**Percent**	**Total**	**Percent**	**Total**	**Percent**	**Total**	**Percent**
Agriculture, Forestry, Fishing & Hunting, & Mining	958	1.83%	1,718	4.13%	2,676	2.85%	39,473	3.36%	37,310	1.94%	2,426,053	1.87%
Construction	3,436	6.57%	2,907	6.98%	6,343	6.75%	88,818	7.57%	145,809	7.59%	8,801,507	6.78%
Manufacturing	**11,133**	**21.30%**	**13,601**	**32.66%**	**24,734**	**26.34%**	**215,203**	**18.34%**	**352,566**	**18.36%**	**18,286,005**	**14.10%**
Wholesale Trade	1,130	2.16%	1,080	2.59%	2,210	2.35%	39,717	3.39%	70,055	3.65%	4,666,757	3.60%
Retail Trade	5,943	11.37%	4,483	10.76%	10,426	11.10%	138,646	11.82%	233,742	12.17%	15,221,716	11.73%
Transportation & Warehousing, & Utilities	2,354	4.50%	2,134	5.12%	4,488	4.78%	63,189	5.39%	101,588	5.29%	6,740,102	5.20%
Information	790	1.51%	314	0.75%	1,104	1.18%	21,449	1.83%	42,754	2.23%	3,996,564	3.08%
Finance, Insurance, & Real Estate	1,996	3.82%	1,550	3.72%	3,546	3.78%	55,744	4.75%	110,743	5.77%	8,934,972	6.89%
Professional, Scientific, & Management	2,532	4.84%	1,375	3.30%	3,907	4.16%	60,557	5.16%	136,580	7.11%	12,061,865	9.30%
Educational, Health, & Social Services	**14,111**	**27.00%**	**7,416**	**17.81%**	**21,527**	**22.92%**	**236,382**	**20.15%**	**370,274**	**19.28%**	**25,843,029**	**19.92%**
Arts, Entertainment, Recreation, Accommodation and Food Services	3,566	6.82%	1,889	4.54%	5,455	5.81%	97,698	8.33%	122,333	6.37%	10,210,295	7.87%
Other Services (except Public Administration)	2,265	4.33%	1,735	4.17%	4,000	4.26%	56,215	4.79%	97,520	5.08%	6,320,632	4.87%
Public Administration	2,050	3.92%	1,443	3.47%	3,493	3.72%	60,223	5.13%	98,915	5.15%	6,212,015	4.79%
Total	52,264	100.00%	41,645	100.00%	93,909	100.00%	1,173,314	100.00%	1,920,189	100.00%	129,721,512	100.00%

3.3 COMMERCIAL SERVICE ACTIVITY

3.3.1 Commercial Service Trends

Regarding U.S. air carrier history, most carriers were expanding service at a rapid rate in the mid-1980s primarily through the proliferation of hub-and-spoke route systems. During the 1980s and 1990s, hub-and-spoke systems were the preferred route structure, which enabled carriers to consolidate resources and quickly increase market share. In 1988, the Golden Triangle Regional Airport was served by three regional airlines, American Eagle, Atlantic Southeast Airlines (ASA), and Northwest Airlink, offering 12 daily departures. However, by the mid-1990s, carriers began to realize the disadvantages associated with the hub-and-spoke route system and reduced their number of hub airports. As a result, airline service decreased at Golden Triangle Regional Airport.

In 2000, the U.S. economy began a downturn, which became more severe after the terrorist attacks on September 11, 2001. The U.S. economy, coupled with record high oil prices, led to a period of minimal growth in the aviation industry. Many carriers reduced or canceled service to their smaller markets. In 2006 and 2007, the airline industry was beginning to show signs of recovery and reported consecutive years of profitability. 2008 brought record high fuel prices and, in October, the U.S. economy took a sharp downturn. Both will certainly impact aviation, especially in the near term. As the economy rebounds, demand for air transportation is expected to again increase.

Currently, Delta Air Lines provides 3 round trip flights per day using Delta Connection (DCI) carriers on the 50 passenger CRJ-200 to their international hub in Atlanta.

3.3.2 Historical Commercial Service Activity

Commercial service activity at an airport is measured in aircraft operations (a takeoff or a landing) and enplaned passengers. As shown in Table 3.5, the number of commercial operations has declined from a high of 10,010 in 2001 to 2,986 in 2010. The number of

enplaned passengers has gradually decreased from a high of 45,518 in 1999 to 28,809 in 2007. During the 2008-2010 time period, enplanements rose from 35,673 to 38,374.

Table 3.5
Historical Commercial Service Activity
Operations & Enplaned Passengers

Year	Air Carrier Operations (more than 60 seats)	Air Taxi & Commuter Operations (60 seats or less)	Total Commercial Operations	Total Enplaned Passengers
1997	100	4,200	4,300	41,506
1998	100	4,200	4,300	43,112
1999	50	4,800	4,850	45,518
2000	50	4,800	4,850	43,938
2001	10	10,000	10,010	43,130
2002	50	8,862	8,912	42,037 [1]
2003	12	6,006	6,018	34,376 [1]
2004	9	1,903	1,912	33,609 [1]
2005	41	4,085	4,126	33,494 [1]
2006	41	3,769	3,810	30,068 [1]
2007	39 [1]	3,815 [1]	3,854[1]	28,809 [1]
2008	69 [1]	3,579 [1]	3,648[1]	35,673 [1]
2009	29	2,727	2,756	36,706 [1]
2010	26	2,960	2,986	38,374 [1]

Sources: [1] data provided by Airport Manager's Office, 2008
All other information taken from FAA Terminal Area Forecast (TAF), 2008 & 2010

3.4 COMMERCIAL SERVICE FORECASTS

Although all of the aviation forecasts developed as part of this Master Plan Study are important, few have more impact on the demand for future facilities than the commercial service forecasts. Because of the large sum of capital required to implement commercial airline programs, a great emphasis has been placed on developing reasonable commercial service forecasts.

The forecasts developed in this chapter are based on relationships established through the use of recognized statistical analysis techniques tempered by sound judgment. The forecasts presented are believed to be reasonable and acceptable for planning

purposes. Forecasts are presented for several commercial service parameters including enplaned passengers, operations, commercial operations by type, and peak day/ hour activity. Forecasts of commercial service activity have been developed for the short range (0-5 years), intermediate range (6-10 years), and the long range (11-20 years) planning periods.

3.4.1 Enplaned Passenger Forecast

Enplaned passengers provide one measure of an airport's activity and many planning considerations relate directly to the forecasts of passengers. Several forecast techniques were investigated as a part of this study. These include a market share analysis, socioeconomic relationships and statistical analysis using regression techniques. Each of these techniques is discussed in the following sections. The FAA's Terminal Area Forecast (TAF) and the Mississippi Statewide Airports Study are also presented for comparison with recommended forecasts. Charter passengers are included in the total forecast for passenger enplanements. None of these forecasts take into account the new "Regional Access Model" or its effect on possible future passenger forecasts.

Market Share – An accepted method of forecasting enplaned passengers considers one particular airport's share of a larger market. Historic records were assembled relating Golden Triangle Regional Airport's historic share of the FAA's Southern Region's commuter airline passengers. The Southern Region consists of Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico and the U.S. Virgin Islands. These records depicted in Table 3.6 indicate that Golden Triangle Regional Airport's share of the Southern Region market decreased from 0.1871% in 2002 to 0.1008% in 2010. Southern Region forecasts for enplaned passengers developed by the FAA were assembled and extrapolated through the year 2029. The average of the 9 year market share trend was held constant throughout the forecast period. The results are presented in Table 3.6.

Table 3.6
Market Share Analysis
Enplaned Passengers

Year	Southern Region Commuter Enplanements [1]	Golden Triangle Enplanements [2]	Percent of Southern Region
Historical:			
2002	22,470,994	42,037	0.1871%
2003	27,454,615	34,376	0.1252%
2004	31,818,623	33,609	0.1056%
2005	36,823,553	33,494	0.0910%
2006	38,358,287	30,068	0.0784%
2007	39,144,232	28,809	0.0736%
2008	39,274,290	35,673	0.0908%
2009	36,752,208	36,706	0.0998%
2010	38,039,535	38,374	0.1008%
Forecast:			
2011	39,265,458	**41,543**	0.1058%
2014	43,208,324	**45,714**	0.1058%
2019	49,137,665	**51,988**	0.1058%
2029	66,938,320	**70,821**	0.1058%

Sources: [1] *FAA Terminal Area Forecast, 2008 & 2010*
[2] *Airport Manager's Office (Includes Air Taxi)*

Time Series Analysis-

Time Series is a type of regression analysis that projects future values based solely on historic and present data of the variable under study and its correlation to a period of time. The period of time is the independent variable while the variable under study is the dependent variable. This method establishes a linear trend based on past and present data and allows future projections to be made by fitting forecast data into the trend.

Enplaned passengers from 1997 to 2010 were used as the dependent variable and "years" served as the independent variable. The following equation represents the line that best fits the historical data:

*Enplaned Passengers = -1800.76 * (Future Year) + 3,643,274.*

Using this equation, enplaned passengers would be forecast to decrease from 21,939 in 2010 to -10,475 in 2029. However, this forecast is not considered reasonable. This analysis reflects the decline in enplaned passengers since 2000, but that trend is not expected to continue over the planning period. Table 3.7 shows the time series analysis.

Table 3.7
Time Series Analysis
Enplaned Passengers

Year	Enplaned Passengers
Historical:	
1997	41,506
1998	43,112
1999	45,518
2000	38,299
2001	43,130
2002	42,037
2003	34,376
2004	33,609
2005	33,494
2006	30,068
2007	28,809
2008	35,673
2009	36,706
2010	38,374
Forecast:	
2011	**21,939**
2014	**16,536**
2019	**7,533**
2029	**-10,475**

Source: 1997-2001 FAA Terminal Area Forecast
2002-2008 Airport Managers' Office

Regression Analysis

Since the time series analysis did not produce usable results, a second regression analysis was performed using population vs. enplaned passengers. Population data

from 1990-2010 were used as the independent variable and enplaned passengers was the dependent variable. The following equation represents the line that best fits the historical data:

*Enplaned Passengers = 1.14256 * (Future Population) - 229,108.*

Using this equation, enplaned passengers would be forecast to increase from 31,704 in 2011 to 67,319 in 2029. This data is considered usable for the forecast analysis. The strength of a forecast using a regression model is measured by the coefficient of determination, or the R^2 value. For this analysis, the R^2 value is 1.0, which demonstrates a very high correlation of data. Population projections were interpolated for study forecast years from US Census projections. This Table 3.8 shows the regression analysis.

Table 3.8
Regression Analysis-Population vs. Passengers
Enplaned Passengers

Year	Total Service Area Population	Enplaned Passengers
Historical:		
1990	223,836	46,351 [1]
2000	234,042	38,299 [1]
2006	226,838	30,068 [2]
2008	227,415	35,673 [2]
2009	227,703	36,706 [2]
2010	227,991	38,374 [2]
Forecast:		
2011	228,279	**31,706**
2014	229,086	**32,636**
2019	260,408	**68,424**
2029	259,441	**67,319**

Sources: [1] FAA Terminal Area Forecast 2008 & 2010
[2] Airport Manager's Office

Socioeconomic Model- The basic indicator of future air passenger activity potential is the population to be served and the anticipated rate of growth. This socioeconomic

model was utilized to evaluate the relationship between population in the Golden Triangle Regional Airport Study Area, and the number of enplaned passengers for the years 1990, 2000, 2006 and 2008. The resulting passenger vs. population ratios of each historical year were then used to project future trends in enplaned passengers. The ratio was gradually increased over the forecast period. Data for historical and projected years are presented in Table 3.9.

Table 3.9
Socioeconomic Model
Enplaned Passengers

Year	Enplaned Passengers	Total Study Area Population	Passenger/Population Ratio
1990	46,351 [1]	246,184	18.8%
2000	38,299 [1]	260,768	14.7%
2006	30,068 [2]	255,522	11.8%
2008	35,673 [2]	227,415	15.7%
2009	36,706 [2]	227,703	16.1%
2010	38,374 [2]	227,991	16.8%
Forecast			
2011	39,949	**228,279**	17.5%
2014	41,235	**229,086**	18.0%
2019	48,175	**260,408**	18.5%
2029	49,294	**259,441**	19.0%

Sources: [1] *FAA Terminal Area Forecast 2008 & 2010*
[2] *Airport Manager's Office*

Recommended Study Forecast - Each of the enplanement forecasts presented in this chapter represents an effort to project future events. Although each method has positive points, they all must be evaluated in terms of their basic assumptions and the strength of their concept. It was determined that the market share provided the best indication of future activity. The recommended forecast indicates an increase over the planning period and is the forecast that will be used for this report. The enplanement levels are expected to increase from a 2011 level of 41,543, to a 2029 level of 70,821. Enplaned passenger forecasts are presented in Table 3.10.

Deplaned Passenger Forecast- The number of passengers deplaning at an airport is important in the planning of many facilities including baggage claim and ground transportation facilities. Historically at Golden Triangle Regional Airport, most if not all passengers are origination/destination passengers, not connecting passengers. For this reason, it is assumed that deplanements will equal enplanements for the duration of the planning period.

Table 3.10
Passenger Forecast Summary
Golden Triangle Regional Airport

Year	Market Share	Population Regression	Socio-economic	Recommended Forecast	Enplaned + Deplaned
2011	41,543	31,704	39,949	**41,543**	83,086
2014	45,714	32,636	41,235	**45,714**	91,428
2019	51,988	68,424	48,175	**51,988**	103,976
2029	70,821	67,319	49,294	**70,821**	141,642

Terminal Area Forecasts (TAF) - The TAF is developed by the FAA for all major airports each year as a part of their effort to meet the needs of the national aviation community. This document presents forecasts of a number of important aeronautical factors, including enplaned passengers. The TAF enplaned passenger forecast projects a moderate growth rate of 1.37% in total enplaned passengers between the years 2009 and 2025. The 2008 TAF forecast is shown below for the 5, 10 and 20 year planning periods. Since the FAA forecasts extend only until 2025, the 2029 figure was extrapolated.

	Annual Enplaned Passengers			
	2011	**2014**	**2019**	**2029**
Terminal Area Forecast	**27,824**	**28,987**	**31,041**	**35,120**

Mississippi Statewide Airports Study (MSAS) – The MSAS was published in 1999 to provide a comprehensive analysis of the State's airports and air transportation needs and provide the Aeronautics Division with a guide for developing, maintaining, and

promoting airports. Since the forecasts were prepared 10 years ago, they reflect the increased growth of the 1990's and are included only for information.

	Annual Enplaned Passengers	
	2008	2018
Mississippi Statewide Airports Study	**68,200**	**80,800**

3.4.2 Peak Hour Commercial Passengers

A determination of passenger volumes using the Golden Triangle Regional Airport during peak hours of operations is essential to terminal planning. This section presents the anticipated peak hour volumes for enplaned passengers occurring during the average day of the peak month. The peak month was estimated at 10% of the annual passenger activity. There are currently 3 daily arrivals and departures by The Delta Connection. The peak hour was estimated at 50% of the design day passengers. The following forecast of peak hour activity was developed assuming that these percentages hold constant throughout the planning period.

Table 3.11
Peak Period Enplaned Passengers
Golden Triangle Regional Airport

Year	Annual Enplaned Passengers	Peak Month	Design Day	Peak Hour
2011	41,543	4,154	138	69
2014	45,714	4,571	152	76
2019	51,988	5,198	173	86
2029	70,821	7,082	236	118

3.4.3 Commercial Service Operations Forecast

The forecast of commercial service operations were derived from the forecasts of annual enplanements, regression techniques and compared with FAA's Terminal Area Forecasts. Each of these techniques is discussed below.

Time Series Analysis – A time series analysis was performed to project future commercial operations based on historic operations and their correlation to a period of time. The period of time is the independent variable while the commercial operations is the dependent variable. The following equation represents the line that best fits the historical data:

*Commercial Operations = -112.782 * (Future Year) + 231,139.*

Using this equation, commercial operations would decrease over the forecast period to 2,305 in 2029. The strength of a forecast using a regression model is measured by the coefficient of determination, or the R^2 value. For this analysis, the R^2 value is 0.3, which demonstrates a very low correlation of data. Table 3.12 shows the regression analysis.

Table 3.12
Time Series Analysis
Commercial Operations

Year	Commercial Operations
Historical:	
1997	4,300
1998	4,300
1999	4,850
2000	4,850
2001	10,010
2002	8,912
2003	6,018
2004	3,824
2005	4,126
2006	3,810
2007	3,854
2008	3,648
2009	3,580
2010	3,621
Forecast:	
2011	**4,335**
2014	**3,997**
2019	**3,433**
2029	**2,305**

Source: FAA Terminal Area Forecast, 2008

Since operations have dropped since the high in 2001, a second time series analysis was performed using data from 2004 through 2010, the most recent time period where operations have been fairly stable. This results in the following equation:

*Commercial Operations = -22.6 * (Future Year) + 49,227.8.*

Using this second equation, derived from only the most recent data, commercial operations would decrease slightly over forecast period, as follows:

2011	2014	2019	2029
3,779	**3,711**	**3,598**	**3,372**

Although the R^2 value is only slightly higher at 0.38, it is believed that the second time series analysis is a more reasonable prediction of future operations than the first one, and will therefore be used for comparison with other commercial operations forecasts.

Enplaned Passengers per Departure – Average enplaned passengers per departure for the Golden Triangle Regional Airport are shown below in Table 3.13. According to FAA projections, the number of enplaned passengers per departure will increase very slightly during the forecast period from 20.5 in 2010 to 25.0 in 2029.

Table 3.13
Enplaned Passengers Analysis
Commercial Operations

Year	Enplaned Passengers per Departure
Historical:	
1997	19.3
1998	20.0
1999	18.5
2000	17.7
2001	8.5
2002	8.8
2003	12.0
2004	16.8
2005	16.6
2006	15.4
2007	14.9
2008	20.1
2009	20.5
2010	20.5
Forecast:	
2011	20.5
2014	21.0
2019	22.5
2029	25.0

Source: FAA Terminal Area Forecast, 2008 & 2010

The load factor is the number of passengers per flight divided by the number of seats available per flight. The 2008 average load factor of 40 percent is considerably lower than the industry average. According to the Regional Airline Association, the average load factor for regional airlines in 2008 was 74.5 percent. With low load factors, it is unlikely that larger regional jets will serve the Golden Triangle Regional Airport, especially in the short-term. Therefore, the 50-seat Canadair Regional Jet was used for this analysis. The recommended forecast for enplaned passengers was divided by the FAA forecast for enplaned passenger per departure to arrive at a forecast of departures. The departures were doubled to obtain a forecast of commercial operations. The resulting forecast is presented below:

2011	2014	2019	2029
4,114	**4,420**	**4,691**	**5,751**

Market Share – A market share analysis for commercial operations was evaluated, as done previously for enplaned passengers. This method considers Golden Triangle Regional Airport's historic share of the FAA Southern Region's commuter aircraft operations. The data, depicted in Table 3.14, indicates that Golden Triangle Regional Airport's share of the Southern Region market decreased from 0.3275% in 2002 to 0.1432% in 2010. Southern Region forecasts for commuter operations developed by the FAA were extrapolated through the year 2029. The average of the previous nine years (0.1653%) was held constant through the forecast period. The results are presented in Table 3.14.

Table 3.14
Market Share Analysis
Commercial Operations

Year	Southern Region Commuter Operations [1]	Golden Triangle Commercial Operations	Percent of Southern Region
Historical:			
2002	2,720,960	8,912 [1]	0.3275%
2003	2,847,313	6,018 [1]	0.2114%
2004	3,004,987	3,824 [1]	0.1260%
2005	3,108,562	4,126 [1]	0.1327%
2006	2,947,860	3,810 [1]	0.1292%
2007	2,828,407	3,854 [2]	0.1363%
2008	2,687,003	3,648 [2]	0.1357%
2009	2,482,284	3,580 [2]	0.1442%
2010	2,527,347	3,621 [2]	0.1432%
Forecast:			
2011	2,570,495	**4,249**	0.1653%
2014	2,706,542	**4,474**	0.1653%
2019	2,956,475	**4,887**	0.1653%
2029	3,412,260	**5,640**	0.1653%

Sources: [1] *FAA Terminal Area Forecast, 2008*
[2] *Airport Manager's Office*

Recommended Study Forecast - Each of the commercial operations forecasts presented represents an effort to predict future activity. Although each method has positive points, they all must be evaluated in terms of their basic assumptions and the strength of their concept. It was determined that the regression analysis did not represent a reasonable prediction of future activity and should not be included in the recommended forecast. Therefore, the enplanement passenger per operation and market share forecasts together provide the best indication of future activity. The average of these two techniques will be used for the planning forecasts.

The recommended forecast indicates a modest increase over the planning period and is the forecast that will be used for this report. The commercial operations are expected to

increase from a 2011 level of 4,182 to a 2029 level of 5,696. A summary of the commercial operations forecasts is presented in Table 3.15.

Table 3.15
Commercial Operations Forecast Summary
Golden Triangle Regional Airport

Year	Regression Analysis #2	Enplaned Passengers per Operation	Market Share	Recommended Forecast
2011	3,779	4,114	4,249	**4,182**
2014	3,734	4,420	4,474	**4,447**
2019	3,621	4,691	4,887	**4,789**
2029	3,395	5,751	5,640	**5,696**

Terminal Area Forecast (TAF) - The TAF forecast of commercial operations predicts a moderate growth rate of 1.17% between the years 2008 and 2025. The 2008 TAF forecast is shown below for the 5, 10 and 20 year planning periods. Since the FAA forecasts extend only until 2025, the 2029 figure was extrapolated.

	Annual Commercial Operations			
	2011	**2014**	**2019**	**2029**
Terminal Area Forecast	**3,662**	**3,791**	**4,015**	**4,453**

3.4.4 Commercial Service Forecast Summary

A summary of the commercial activity forecasts developed in this chapter is presented in Table 3.16. These forecasts are based on proven forecast techniques and are believed to be acceptable for planning purposes.

Table 3.16
Summary of Commercial Activity Forecast
Golden Triangle Regional Airport

Year	Commercial Operations	Enplaned Passengers	Peak Hour Passengers
2011	4,182	42,171	70
2014	4,447	46,406	77
2019	4,789	52,774	88
2029	5,696	71,892	120

3.5 GENERAL AVIATION ACTIVITY

General aviation is defined as that portion of civil aviation that encompasses all facets of aircraft activity except commercial operations and the military. 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. The general aviation activity forecast includes based aircraft, local operations, itinerant operations, general aviation passengers, and peak hour activity.

3.5.1 General Aviation Industry Trends

General aviation comprises a wide variety of aircraft from corporate and charter jets to single-engine piston-driven aircraft. General aviation serves many purposes and needs for communities and is the most expedient method of business and personal transportation.

The passage of the General Aviation Revitalization Act of 1994 (GARA) marked a significant turning point for general aviation. After its passage there was resurgence in demand for general aviation products and services. The General Aviation Manufacturers Association (GAMA) reports that in the first nine months of 2008, shipments of new piston-powered aircraft were down 11.4%, while turboprop shipments

were up 13.7% and business jet shipments increased 30.1% compared to the same period in 2007. The decrease in demand for piston aircraft, with increasing demand for turboprops and business jets continues the general aviation trend toward more business and corporate use. GAMA also stated "Notwithstanding these positive third quarter numbers for turbine powered aircraft deliveries, our industry is experiencing difficulties due to the weakness of the global economy."

3.5.2 Historical General Aviation Activity

Based Aircraft

An inventory of based aircraft show that there are currently 25 aircraft based at Golden Triangle Regional Airport. According to historical records from 1997 through 2010, the number of based aircraft has varied from a high of 31 aircraft to a low of 14. The airport has averaged 25 based aircraft over the past five years.

Table 3.17
Historical Based Aircraft, 1997-2010
Golden Triangle Regional Airport

Year	Based Aircraft
1997	19 [1]
1998	19 [1]
1999	17 [1]
2000	17 [1]
2001	26 [1]
2002	14 [1]
2003	16 [1]
2004	26 [1]
2005	26 [1]
2006	31 [1]
2007	22 [2]
2008	22 [2]
2009	25 [1]
2010	25 [1]

Sources: [1] FAA Terminal Area Forecast, 2008 & 2010
[2] Airport Manager's Office

Of the aircraft currently based at the airport, 15 are single engine piston aircraft; 4 are multi-engine; 5 helicopters, and 1 jet. Table 3.18 presents based aircraft by type for 2010.

Table 3.18
Based Aircraft by Type, 2010
Golden Triangle Regional Airport

	NUMBER	PERCENT
Single-Engine	15	60
Multi-Engine	4	16
Helicopters	5	20
Jet	1	4
TOTAL	25	100

Source: FAA Terminal Area Forecast 2010.

General Aviation Operations

An aircraft operation is defined as either a takeoff or a landing. General aviation operations are categorized as either itinerant or local. An itinerant operation is either a takeoff or landing from an aircraft that departs to, or arrives from, an area 20 miles from the airport. A local operation, on the other hand, is an operation that stays within a 20 miles radius from the airport. Most aircraft training operations are considered local operations. A “touch-and-go” is considered two operations.

Over the past 4 years, general aviation operations at the Golden Triangle Regional Airport have averaged approximately 51 percent of the total aircraft operations, military operations have averaged approximately 39 percent, and operations by commercial airlines comprise the remaining 10 percent. Historic operations are presented in Table 3.19.

Table 3.19
Historical Operations by Type, 1997-2010
Golden Triangle Regional Airport

	Itinerant Operations				Local Operations			Total
Year	Commercial	GA	Military	Total	GA	Military	Total	Operations
1997	4,300	9,000	500	13,800	14,000		14,000	27,800
1998	4,300	9,000	500	13,800	14,000		14,000	27,800
1999	4,850	9,000	500	14,350	14,000		14,000	28,350
2000	4,850	9,000	500	14,350	14,000		14,000	28,350
2001	10,010	6,000	50	16,060	9,000		9,000	25,060
2002	8,912	6,000	500	15,412	9,000		9,000	24,412
2003	6,018	6,065	50	12,133	9,098		9,098	21,231
2004	3,824	11,128	11,118	26,070	14,038	13,196	27,234	53,304
2005	4,126	11,663	11,979	27,768	14,746	4,384	19,130	46,898
2006	3,810	10,602	10,256	24,668	8,594	4,264	12,858	37,526
2007	3,854	10,280	7,491	21,625	5,066	4,252	9,318	30,943
2008	3,648	10,886	8,056	22,590	6,410	3,830	10,240	32,830
2009	2,756	8,873	7,560	19,189	5,497	4,677	10,174	29,363
2010	2,986	8,857	7,732	19,575	3,560	5,240	8,800	28,375

Source: FAA Terminal Area Forecast; 2008 and 2010,
Airport Manager's Office

3.6 GENERAL AVIATION FORECASTS

The general aviation facilities at an airport should accurately support the aviation activity. Forecasts of general aviation activity have been developed for the short range (0-5 years), intermediate range (6-10 years), and the long range (11-20 years) planning periods. The general aviation activity categories forecasted include based aircraft, local operations, itinerant operations, general aviation passengers, and peak hour operations. Data collected at the airport, FAA records of aircraft operations, historical aviation trends, and information collected through research and discussions have contributed to the forecasts of future general aviation activity for the Golden Triangle Regional Airport.

3.6.1 Based Aircraft Forecast

Forecasting based aircraft requires the assumption that the airport facilities will keep pace with and meet the demand for aviation use, and will not limit the number of based aircraft to be accommodated in the future. As discussed previously, 25 aircraft are

presently based at this facility, 15 single-engine aircraft, 4 multi-engine aircraft, 5 helicopters, and 1 jet.

Three methodologies were used to develop based aircraft projections for the Airport, which included a linear regression analysis of historic data, population/based aircraft correlation, and market share analysis. The first method compares historical data to create a linear regression. The second method compares the number of based aircraft to the population of the Airport's primary service area. The third method projects the number of potential based aircraft as a percentage or market share of active aircraft in the FAA's Southern Region.

Time Series Analysis – A linear regression analysis of historic data was performed. The data consisted of the total based aircraft from 1999-2010. A least squares regression of based aircraft against time over an 11-year time period resulted in the development of the following equation:

y = mx + b
y = based aircraft for year x
x = forecast year
m = -2066.05
b = 1.04242

The coefficient of determination (R^2) for the above relationship is 0.315, indicating a fair correlation of data. This analysis was applied to future years to obtain the results as shown in Table 3.20.

Table 3.20
Time Series Analysis
Based Aircraft

Year	Based Aircraft
2011	30
2016	33
2021	39
2031	49

Based Aircraft vs. Population – It is well recognized that population plays a major role in aircraft projections, and population figures typically correlate very well with based aircraft levels. A common method used to incorporate population into a forecast is to find a correlation between the population and the number of based aircraft. The commonly used relationship is aircraft per 10,000 people. For general aviation activity forecasts, the three-county primary service area is used. For the primary service area, the 1990 level of aircraft per 10,000 people was calculated and resulted in 1.85 aircraft per 10,000 people. The ratio for the year 1990, 2000, and 2006 was calculated and the three values were averaged, resulting in a ratio of 1.9 based aircraft per 10,000 people. This ratio was increased at an annual growth rate of 1.8% for the forecast years and applied to the primary service area's population for future years. Based on this method, the number of based aircraft would increase to 33 in 2029. Table 3.21 shows the historical and forecasted results of this analysis.

Table 3.21
Based Aircraft/Population Forecast
Golden Triangle Regional Airport

Year	GTR Based Aircraft	Primary Service Area Population	Based Aircraft per 10,000 Population
Historical:			
1990	22	118,803	1.8
2000	17	126,467	1.3
2006	31	122,826	2.5
2008	22	123,009	1.7
2009	25	123,100	2.0
2010	25	123,191	2.0
Forecast:			
2011	**26**	123,282	2.0
2014	**28**	123,556	2.1
2019	**31**	123,455	2.3
2029	**33**	122,880	2.7

Sources: FAA TAF; U.S. Bureau of the Census, Population Division December 2006

Market Share Analysis - The FAA's *Terminal Area Forecast Summary, Fiscal Years 2007-2025*, projects based aircraft for the United States and the various regions in the U.S. including the Southern Region. The Southern Region consists of Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico and the U.S. Virgin Islands. The market share methodology assumes that the Golden Triangle Regional Jetport will capture a percentage of the future market of aircraft in the Southern Region. Taking a conservative approach, the market share was increased at a modest 2% growth rate over the 20-year planning period. The projected market share was applied to the number of based aircraft in the FAA's Southern Region forecast. Based on this method, the number of based aircraft would grow to 42 in 2029. Table 3.22 shows the historical and future market share for the Golden Triangle Regional Airport.

Table 3.22
Market Share Analysis
Based Aircraft

Year	GTR Based Aircraft	Southern Region Based Aircraft	Market Share of Southern Region
Historical:			
2002	14	33,974	0.04121%
2003	16	34,269	0.04669%
2004	26	35,444	0.07336%
2005	26	36,158	0.07191%
2006	31	36,677	0.08452%
2007	31	36,430	0.08509%
2008	22	36,723	0.05991%
2009	25	36,981	0.06760%
2010	25	37,281	0.06705%
Forecast:			
2011	**26**	36,981	0.07030%
2016	**29**	38,506	0.07600%
2021	**35**	40,193	0.08600%
2031	**42**	43,780	0.09600%

Source: FAA Terminal Area Forecast, 2008 & 2010

FAA Terminal Area Forecast - The TAF is developed by the FAA for all major airports each year as a part of their effort to meet the needs of the national aviation community. The 2010 TAF forecast is shown below for the 5, 10 and 20 year planning periods for comparison with the study forecast.

	Based Aircraft			
	2011	2014	2019	2029
Terminal Area Forecast	**25**	**26**	**28**	**29**

Recommended Forecast – Each of the three forecasts was analyzed to determine the most suitable forecast for based aircraft. The time series analysis produced reasonable data. When based aircraft were compared with population, a very low forecast was produced due to the essentially flat population projections. Such low growth in based aircraft does not seem reasonable for planning future facility needs. The analysis of the Golden Triangle Regional Airport's market share of based aircraft of the FAA Southern Region produced a modest growth rate of 2% over the forecast period. Therefore, the average of the Time Series and Market Share was selected as the recommended forecast for based aircraft.

Table 3.23
Based Aircraft Forecast Summary
Golden Triangle Regional Airport

Year	Time Series Analysis	Based Aircraft vs. Population	Market Share	Recommended Forecast
2011	30	26	26	**28**
2014	33	28	29	**31**
2019	39	31	35	**37**
2029	49	33	42	**46**

3.6.2 Based Aircraft Fleet Mix

The distribution of aircraft by number and type of engines and number of seats is necessary in estimating the requirements for hanger and apron space. Consideration was given to the existing conditions and national trends, both historic and forecast, in the development of this forecast. The recommended forecast considers that multi-engine, turboprop, and business jet fleets are growing at a faster rate than the single engine piston aircraft fleets.

The proportion of single-engine aircraft based at the Golden Triangle Regional Airport is expected to decrease from approximately 60 percent in 2010 to about 55 percent in 2029, in keeping with the national trends. The exact number and type of aircraft actually based at the Golden Triangle Regional Airport at any time may vary from what is shown. However, it is believed that the totals and mix of aircraft shown are a reasonable representation and may be adopted for future facility planning.

Table 3.24
Based Aircraft Fleet Mix
Golden Triangle Regional Airport

	2011	2014	2019	2029
Single-Engine	17	18	21	25
Multi-Engine	4	4	5	7
Helicopters	6	6	7	9
Jet	1	3	4	5
TOTAL	**28**	**31**	**37**	**46**

Source: BWSC

3.6.3 General Aviation Operations

Three methodologies were analyzed in the development of general aviation operations forecast: time series regression; operations vs. based aircraft ratio; and market share. As with the based aircraft forecast, the FAA's Terminal Area Forecast was compared to the developed forecasts in order to assess the reasonableness of the forecast numbers. The operations forecast methods are briefly described as follows.

Time Series Analysis - Historical levels of activity over time is one of the simplest and most widely accepted methods of basic forecasting. The data string, used in the regression analysis, extended from 1997 to 2008. This methodology provided a regression equation as follows:

y = mx + b where:
y = projected level of operations
m = slope = -289.754
b = constant = 600,243
x = forecast year
r^2 = 0.036 = correlation coefficient

Applying this methodology results in the following level of operations:

Table 3.25
Time Series Analysis
General Aviation Operations

Year	GA Operations
2011	**17,565**
2014	**16,696**
2019	**15,247**
2029	**12,350**

Operations Per Based Aircraft – General aviation operations are related to the number of based aircraft. When the historical based aircraft is compared to the historical number of general aviation operations, a ratio can be developed to forecast operations. An average of historical data for the Golden Triangle Regional Airport over the last three years is 706 operations per based aircraft. The forecast of general aviation operations is determined by applying the average of 706 operations per based aircraft to the

recommended based aircraft forecast developed previously. This method predicts approximately 32,476 general aviation operations by the year 2029.

Table 3.26
Operations per Based Aircraft
General Aviation Operations

Year	Based Aircraft	GA Operations
2011	28	**19,768**
2014	31	**21,886**
2019	37	**26,122**
2029	46	**32,476**

Market Share - A market share analysis of operations as a percentage of the FAA Southern Region was also performed. The market share was increased at a modest 1% growth rate over the 20-year planning period. The projected market share was applied to the number of general aviation operations in the FAA's Southern Region forecast. Based on this method, the number of general aviation operations would increase to 31,212 in 2029. Table 3.27 shows the historical and future market share for the Golden Triangle Regional Airport.

Table 3.27
Market Share Analysis
General Aviation Operations

Year	GTR General Aviation Operations	Southern Region General Aviation Operations	Market Share of Southern Region
Historical:			
2002	15,000	18,438,298	0.0814%
2003	15,163	17,726,340	0.0855%
2004	12,583	17,624,632	0.0714%
2005	26,409	17,641,261	0.1497%
2006	19,196	17,316,369	0.1109%
2007	16,665	17,453,983	0.0955%
2008	16,332	17,168,090	0.0951%
2009	14,370	17,206,207	0.0781%
2010	12,417	17,280,298	0.0718%
Forecast:			
2011	**22,164**	17,350,452	0.1277%
2014	**23,852**	17,765,922	0.1343%
2019	**27,451**	18,510,673	0.1483%
2029	**31,212**	20,025,400	0.1559%

Source: FAA Terminal Area Forecast, 2008
BWSC

FAA Terminal Area Forecast - The 2010 TAF forecast is shown below for the 5, 10 and 20 year planning periods for comparison with the study forecast.

	General Aviation Operations			
	2011	**2014**	**2019**	**2029**
Terminal Area Forecast	**10,928**	**11,231**	**11,754**	**12,877**

Recommended Forecast – Each of the three forecasts was analyzed to determine the most suitable forecast for general aviation operations. The time series analysis did not produce reasonable data for planning future facilities and was eliminated from consideration. Therefore, the operations per based aircraft and market share forecasts

together provide the best indication of future activity. The average of these two techniques will be used for the planning forecasts.

Table 3.28
General Aviation Operations Forecast Summary
Golden Triangle Regional Airport

Year	Time Series Analysis	Operations per Based Aircraft	Market Share	Recommended Forecast
2011	17,565	19,768	22,164	**20,966**
2014	16,696	21,886	23,852	**22,869**
2019	15,247	26,122	27,451	**26,787**
2029	12,350	32,476	31,212	**31,844**

3.6.4 General Aviation Operations by Type

Aircraft operations are divided into two types: local and itinerant. Historically, about 60 percent of the general aviation operations at the Golden Triangle Regional Airport have been local operations, with 40 percent itinerant operations. During the past few years, however, the ratio of local operations has decreased and is currently 34 percent, with 66 percent itinerant operations. This shift is most likely due to a decrease in flight training activities as well as an increase in the number of business-generated flights. However, it is expected that the ratio of local to itinerant operations will return to the historic percentages and remain constant throughout the study period, with 40 percent local operations and 60 percent itinerant operations. The expected operations by type are shown on Table 3.29.

Table 3.29
General Aviation Operations by Type
Golden Triangle Regional Airport

Year	Local Operations	Itinerant Operations	Total Operations
2011	8,386	12,580	20,966
2014	9,148	13,721	22,869
2019	10,715	16,072	26,787
2029	12,738	19,106	31,844

3.6.5 General Aviation Pilots and Passengers

An estimate of the number of general aviation passengers that may be expected to use a facility is necessary in the planning of general aviation terminal and parking area needs. General aviation pilots and passengers were projected based on the average number of occupants per departure. Using 2.5 pilots and passengers per departure, which is recognized by the FAA as a standard measurement for planning purposes, the general aviation pilots and passengers forecast was developed.

Table 3.30
General Aviation Pilots and Passengers
Golden Triangle Regional Airport

Year	Annual Itinerant Operations	Annual Itinerant Departures	Annual Pilots and Passengers
2011	12,580	6,290	**15,725**
2014	13,721	6,861	**17,151**
2019	16,072	8,036	**20,090**
2029	19,106	9,553	**23,883**

3.6.6 Peak Hour Passengers

Peak periods of general aviation passengers were based on an estimated peaking factor to represent the highest number of passengers expected to occur during the peak month, average day, and peak hour. Typical peak hour passengers were projected as 15 percent of the average daily passenger in the peak month. In turn, the peak month

passengers were calculated based on 10 percent of the annual passengers. These ratios are anticipated to remain constant through the year 2029.

Table 3.31
Peak Hour General Aviation Passengers
Golden Triangle Regional Airport

Year	Annual Pilots/ Passengers	Peak Month Passengers	Peak Month Average Daily Passengers	Peak Hour Passengers
2011	15,725	1,572	52	8
2014	19,151	1,715	57	9
2019	20,090	2,009	67	10
2029	23,883	2,388	80	12

3.6.7 Military Operations

Military operations are a significant part of the activity at the Golden Triangle Regional Airport, and have averaged approximately 39 percent of the Airport's operations over the past 4 years. Since it is not practical to try to forecast military operations, the FAA Terminal Area Forecast projects military activity at the same level throughout the forecast. For the Golden Triangle Regional Airport, the 2010 Terminal Area Forecast projects 7,732 itinerant military operations and 5,240 local military operations from 2011 through 2029. This report will include the FAA military forecasts for planning purposes.

3.6.8 General Aviation Forecast Summary

Although there has been a recent decrease in general aviation activity at the Golden Triangle Regional Airport, this trend is expected to change as economic conditions rebound. Economic growth will certainly translate into increased general aviation activity. The forecasts made in this chapter are expected to be a reasonable projection of the Airport's aviation needs over the planning period. Planning for facilities to meet expected demand will put the Airport in a position to accommodate future growth. Table 3.32 presents a summary of the forecasts made in this Chapter.

Table 3.32
General Aviation Forecast Summary
Golden Triangle Regional Airport

	2011	2014	2019	2029
Based Aircraft	28	31	37	46
Annual Pilots/Passengers	15,725	19,151	20,090	23,883
Peak Hour Pilots/Passengers	8	9	10	12
Local GA Operations[1]	13,626	14,388	15,955	17,978
Itinerant GA Operations[1]	20,312	21,453	23,804	26,838
Annual GA Operations	33,938	35,841	39,759	44,816

[1] *Includes Military Operations*

3.8 AVIATION FORECASTS SUMMARY

Table 3.33 summarizes all of the aviation forecasts for the Golden Triangle Regional Airport.

Table 3.33
Summary of Aviation Forecasts
Golden Triangle Regional Airport

	2011	2014	2019	2029
Based Aircraft	28	31	37	46
Annual Enplaned Passengers	42,171	46,406	52,774	71,892
Peak Hour Commercial Passengers	70	77	88	120
Annual General Aviation Pilots/Passengers	15,725	19,151	20,090	23,883
Peak Hour General Aviation Pilots/Passengers	8	9	10	12
Itinerant Operations:				
-Commercial Service	4,182	4,447	4,789	5,696
-General Aviation	12,580	13,721	16,072	19,106
-Military	7,732	7,732	7,732	7,732
-Total Itinerant Operations	24,494	25,900	28,593	32,534
Local Operations:				
-General Aviation	8,386	9,148	10,715	12,738
-Military	5,240	5,240	5,240	5,240
-Total Local Operations	13,626	14,388	15,955	17,978
Annual Airport Operations	38,120	40,288	44,548	50,512
Peak Hour Operations	18	20	22	25

CHAPTER 4
DEMAND/CAPACITY ANALYSIS

4.1 INTRODUCTION

In order to adequately plan for the future of the Golden Triangle Regional Airport, airport activity characteristics and capacity levels must be analyzed. The purpose of this chapter is to determine the airfield capacity and compare it to the number of operations that are forecast throughout the 20 year planning period. If deficiencies exist, or are expected to materialize in future years, a more specific evaluation will be made in the following chapter.

4.2 AIRFIELD CAPACITY

The methodology for calculating an airfield's annual service volume (ASV) and hourly capacity is described in FAA Advisory Circular 150/5060-5 *Airport Capacity and Delay*. ASV is a tool that can be used to assess the adequacy of the airfield design, including the number of runways and their orientation. ASV is defined as a reasonable estimate of an airport's annual capacity. As the number of annual operations increases and approaches the airport's ASV, the average delay of aircraft increases. When annual operations are equal to the ASV, the average delay for each aircraft is approximately one to four minutes. When the number of annual operations exceeds the ASV, moderate to severe congestion will occur.

This study also examines the hourly capacity of the airfield. Hourly capacity is defined as the maximum number of aircraft operations that can be accommodated by the airfield system in one hour. It is used to evaluate the airfield's ability to accommodate peak hour operations.

A calculation of the airfield's ASV and annual capacity depends upon a number of factors including:

- Meteorological Conditions – The percentage of time that visibility and cloud cover are below certain minimums.

- Aircraft Mix – The percentage of operations that are conducted by certain categories of aircraft.

- Percent Arrivals – The percentage of arrivals in relation to departures during peak hours.

- Percent Touch-and-Go – The percentage of touch-and-go operations.

- Exit Taxiway Locations – The location of exit taxiways for landing aircraft.

4.2.1 Meteorological Conditions

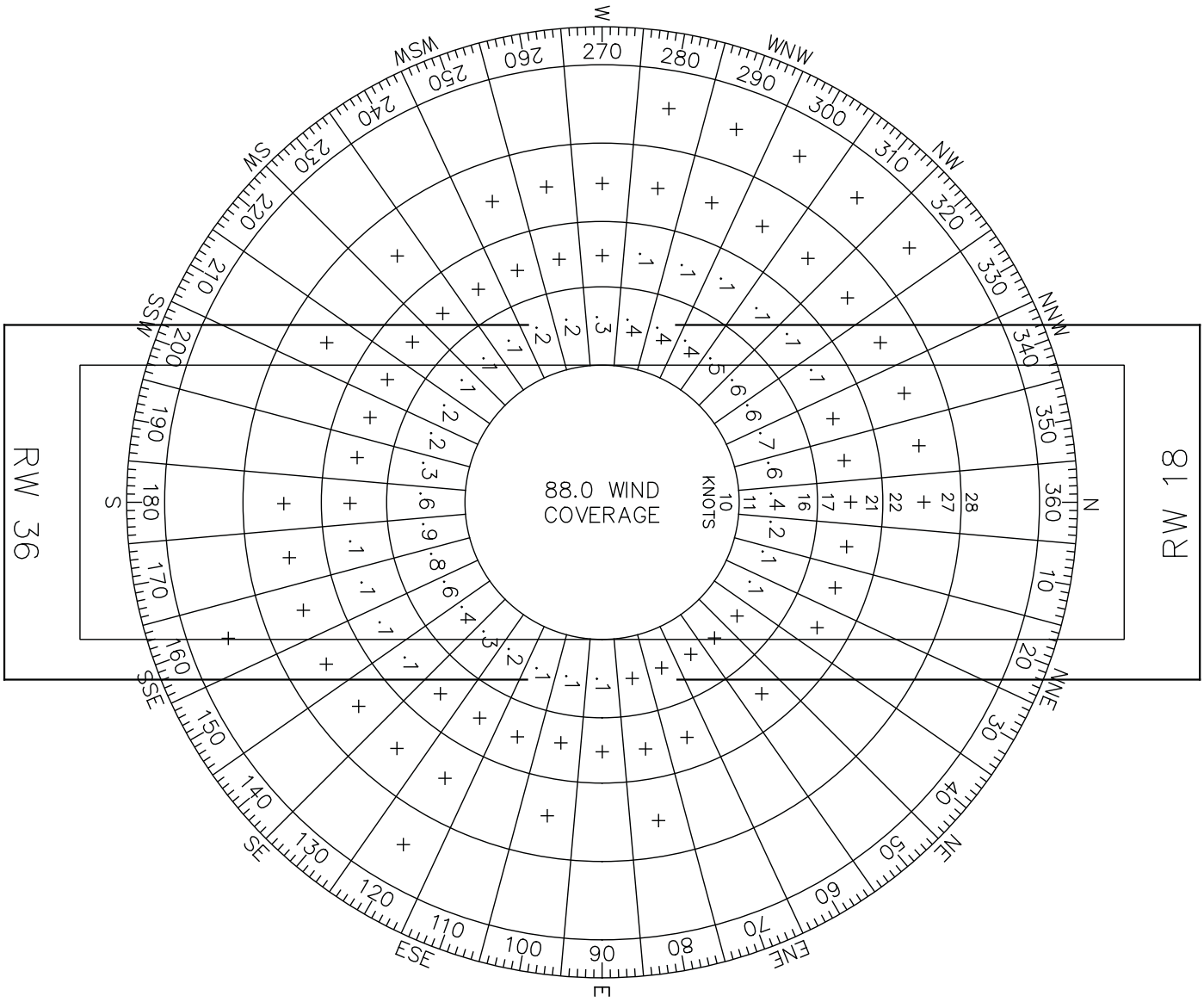
Meteorological conditions have a significant effect upon runway use which, in turn, affects the airfield's capacity. During VFR conditions, runway use is usually determined by prevailing winds. During IFR conditions, runway use is dictated by the availability and type of instrument approaches.

All-Weather and IFR Wind Roses are presented in Figures 4.1 and 4.2.

4.2.2 Aircraft Mix

Variation in aircraft approach speeds and landing distances affect runway occupancy times which, in turn, affect the airfield's capacity. Table 4.1 summarizes representative aircraft types found in each aircraft classification. It is estimated that Group C aircraft currently account for approximately 25-30 percent of operations, at the Golden Triangle Regional Airport. The remainder of operations are conducted by aircraft in Group A and Group B. It is expected that Group C aircraft will account for the majority of operation in the future.

STATION NUMBER 72330
PERIOD OF RECORD: 1991-2000
OBSERVATIONS: 80,522



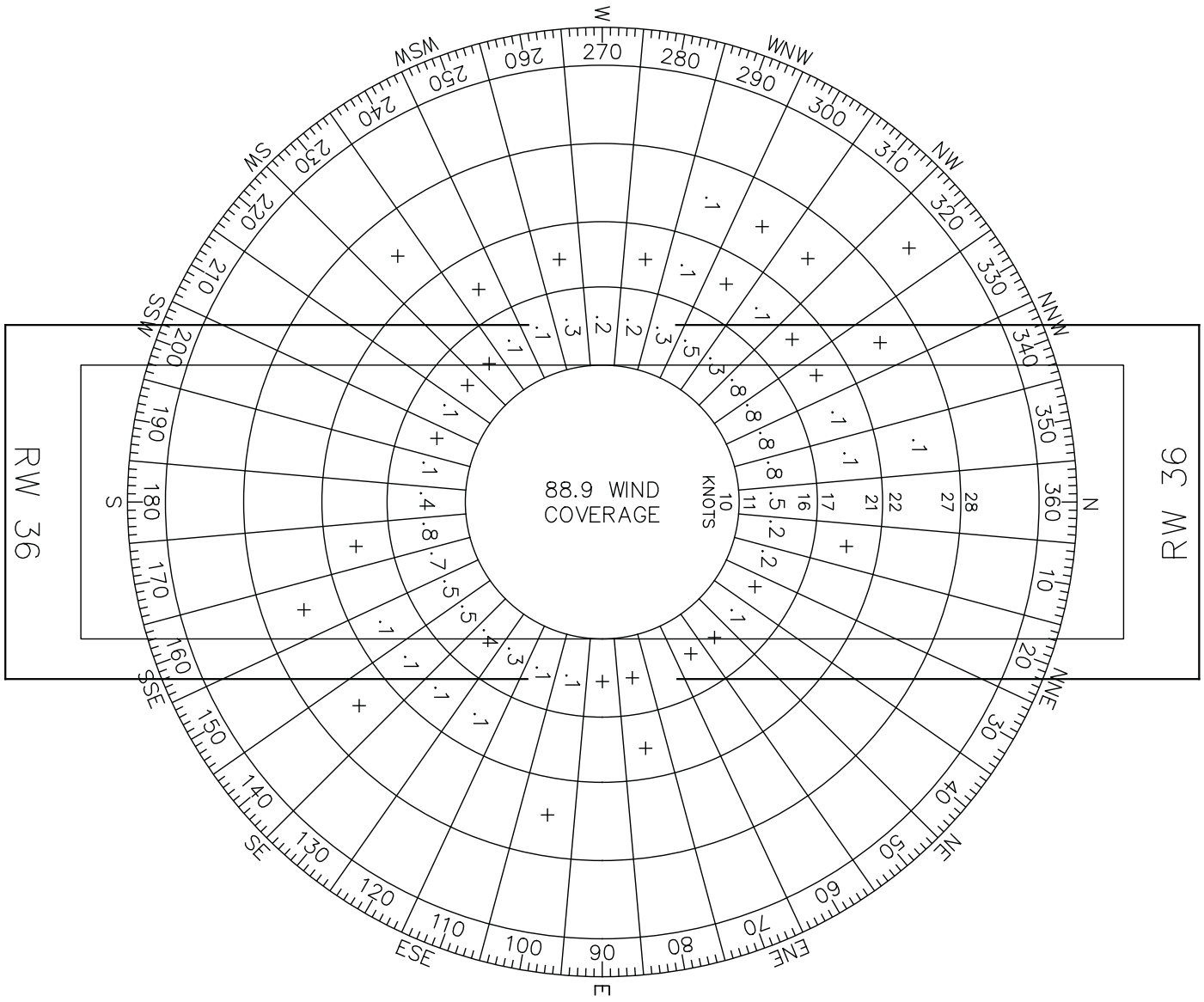
WIND COVERAGE RUNWAY 18/36	10.5 KNOTS 96.43	13 KNOTS 98.19	16 KNOTS 99.57	20 KNOTS 99.91

SOURCE: NOAA
COLUMBUS AIR FORCE BASE, MS

All WeatherWind Rose

Figure 4.1

STATION NUMBER 72330
PERIOD OF RECORD: 1991-2000
OBSERVATIONS: 4,984



WIND COVERAGE RUNWAY 18/36	10.5 KNOTS 96.96	13 KNOTS 98.45	16 KNOTS 99.54	20 KNOTS 99.86

SOURCE: NOAA
COLUMBUS AIR FORCE BASE, MS

Golden Triangle Regional Airport

IFR Wind Rose

Figure 4.2

Table 4.1
Typical Aircraft By Design Group

Group	Aircraft Type	
A	Cessna 172/182	Mooney 201
	Beech Bonanza	Piper Cherokee
B		
	Beech Baron	Mitsubishi MU-2
	Beech King Air 100	Piper Navajo
	Cessna 402	Cessna Citation II/III
C		
	Rockwell Saber	Jet Commander
	BAE Jetstream-31	Lear 25/55
	Canadair RJ-200	Boeing 727/737/BBJ
	Challenger 604	Douglas DC-9
D	Gruman Gulfstream II/IV/V	Hawker Sidney - 121
	Boeing 707/777/787	Airbus A-300/A-310

Source: FAA Advisory Circular 150/5300-13, Airport Design

The effect of the development of the GTR Global Industrial Aerospace Park on future aircraft mix is yet to be determined. Clearly, the nature of the target industries will dictate some increases in the percentages of Group C and Group D aircraft operations throughout the study period. In the study's later years it is optimistically expected that these two groups may account for as much as 70% of the operations at the airport.

4.2.3 Percentage Arrivals

The percentage of aircraft arrivals has a large impact on a runway's hourly capacity. For example, a runway used exclusively for arrivals will have a different capacity than a runway used exclusively for departures or for a mix of operations. In general, the higher

the percentage of arrivals, the lower the hourly capacity of a runway. It is assumed that arrivals equal departures (50 percent) at the Golden Triangle Regional Airport.

4.2.4 Touch-and-Go Operations

A touch-and-go operation is conducted when an aircraft lands and takes off without making a full stop. Because touch-and-go operations do not occupy the runway system as long as other operations, an airfield with a high number of touch-and–go operations can normally accommodate a greater number of operations.

Touch-and-go activity at the Golden Triangle Regional Airport was assumed to be 20 percent of local general aviation operations and 85 percent of local military operations. Based on this assumption, touch-and-go operations account for approximately 35 percent of all local operations at the Golden Triangle Regional Airport.

4.2.5 Exit Taxiway Locations

Exit taxiways along a runway influence runway occupancy times for aircraft. The longer the aircraft remains on a runway, the lower the capacity of the runway. When exit taxiways are properly located, landing aircraft can quickly exit the runway, thereby increasing the capacity of the runway. Runway 18/36 has 5 exit taxiways that provide adequate access between the runways and the taxiway system.

4.3 CAPACITY ANALYSIS

4.3.1 Annual Capacity

Long range planning figures are outlined in FAA Advisory Circular 150/5060-5, *Airport Capacity and Delay*, and were used to develop an ASV specifically for the Golden Triangle Regional Airport.

The figures estimate the ASV for a single-runway airport to be 230,000 annual operations.

This estimate exceeds all projected levels of demand throughout the study period, even when the forecasted air carrier operations are taken into consideration. A comparison of the projected annual demand and long-range-planning ASV is presented in Table 4.2.

Table 4.2
Annual Airfield Capacity

Year	Forecasted Annual Operations	Long-Range Planning ASV
2011	38,120	230,000
2014	40,288	230,000
2019	44,548	230,000
2029	50,512	230,000

Source: Advisory Circular 150/5060-5, Airport Capacity and Delay

4.3.2 Hourly Capacity

The hourly capacity of the Airport during VFR conditions was also calculated in accordance with the FAA advisory circular. These calculations revealed that under the current runway configuration the peak hour capacity of the airfield is approximately 98 operations during VFR weather conditions and 59 operations during IFR conditions.

CHAPTER 5
FACILITY REQUIREMENTS

5.1 INTRODUCTION

In previous sections of the Master Plan, an inventory was completed and documented to provide current information about the Golden Triangle Regional Airport and the surrounding area. Next, aviation activity forecasts were prepared for the planning period. (2011-2029). Chapter 4 of the Master Plan documented the existing capacity and compares capacity with projected demand. Shortfalls in existing capacity relative to future demand translate to future requirements. Chapter 5 establishes planning criteria to determine the airside (e.g., runways, taxiways, navigational aids, marking, and lighting), landside (e.g., commuter terminal area, general aviation terminal buildings, aircraft parking apron, hangars, fueling facilities, automobile parking, and access) and support facility requirements. These requirements are intended as general planning guides and will require detailed review on an item-by-item basis, as construction of each facility becomes imminent.

5.2 AIRPORT REFERENCE CODE

As defined in FAA Advisory Circular (AC) 150/5300-13 (Change 13), *Airport Design*, the Airport Reference Code (ARC) is a coding system used to relate airport design criteria to the operational and physical characteristics of aircraft anticipated to operate at the Airport. This code reflects the aircraft approach category (depicted by a letter) and the airplane design group (depicted by a Roman numeral).

The FAA defines an aircraft's approach category as "a grouping of aircraft based on 1.3 times their stall speed in the landing configuration at the certificated maximum flap setting and maximum landing weight at standard atmospheric conditions." The five categories are listed below.

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

The Airplane Design Group (ADG) is a group of airplanes based on wingspan. The six 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 up to but not including 262 feet.

Based on recent marketing efforts by the Golden Triangle Regional Airport Authority, it is anticipated that the GTR Global Industrial Aerospace Park will attract a major MRO Facility and possible a new aircraft manufacturing facility. Based on these assumptions, an analysis of expected future fleet mix composition indicates that Runway 18/36 should be designed to accommodate Aircraft Approach Category D, Airport Design Group V. The critical aircrafts expected to use Runway 18/36 on a regular basis would be the Boeing 777 and the Boeing 787-8 Dreamliner.

5.3 RUNWAYS

Runway location is important to the safety, efficiency and environment of an airport. The existing runway system, at the Golden Triangle Regional Airport, was analyzed from several different perspectives to determine its adequacy. Included in this analysis were runway orientation, runway length, runway width, pavement strength, and geometrics.

5.3.1 Runway Orientation

Wind conditions are vital to determining runway location. When the prevailing winds are consistently from one direction, the runway is oriented in that direction however, if the winds are from several directions, a crosswind runway may be required. The FAA mandates that a runway must have at least 95 percent wind coverage. The existing runway orientation at the Golden Triangle Regional Airport provides more than the 95 percent wind coverage. Runway 18/36 provides 99.57 percent wind coverage under all weather conditions, with a crosswind component of 16 knots and 99.54 percent under IFR conditions. In order to plan for future economic development initiatives at the airport, a crossing runway (Runway 12/30) is being recommended. A layout of the proposed industrial development associated with the GTR Global Industrial Aerospace Park is shown in Appendix 4.

5.3.2 Runway Length Requirements

Runway length is determined by the Airport Reference Code (ARC), which is obtained by observing the aircraft that are forecast to use the runway the most. According to *FAA Advisory Circular 150/5325-4B, Runway Length Requirements for Airport Design*, an aircraft is considered to provide substantial use to an airport after 500 operations a year. As mentioned previously, the critical aircraft selected for Runway 18/36 is the Boeing 777 and the Boeing 787-8 Dreamliner.

The aircraft operating at the airport are affected by three main factors; mean maximum temperature of the hottest month, airport elevation, and the runway gradient. The mean maximum temperature of the hottest month (July) is 93 degrees Fahrenheit. The airport elevation is 264 feet MSL and the runway gradient is 0.06 percent. Another factor is the length of haul (the distance from airport to airport) for aircraft over 60,000 pounds. It is assumed that the average length of haul for aircraft of this classification at the Golden Triangle Regional Airport would be 5000 miles.

Runway length requirements at the Golden Triangle Regional Airport were calculated using the FAA's Computerized Design Program, Version 4.2. Based on this analysis, a runway length of 10,950 feet is recommended to satisfy the requirements for a Boeing 777/787. The current runway configuration provides a runway length of 8,002' for Runway 18/36. Based on the critical aircraft, a 1,000' runway extension is recommended as demand dictates. Runway 12/30, when constructed, is recommended to have a runway length of 5000'.

5.3.3 Runway Width

As discussed earlier, Runway 18/36 should, at a minimum, be capable of accommodating aircraft in the FAA's design group D-V. This requires a runway width of 150 feet. Runway 18/36 has an existing runway width of 150 feet, which is in compliance with this FAA design standard. Runway 12/30 should be constructed to 100 feet.

5.3.4 Runway Pavement Strength

Pavement strength requirements for airfield pavements are related to design aircraft weight. Using the predominant aircraft categories projected, the existing pavement strength on Runway 18/36 should be adequate throughout the planning period. An overlay is recommended during Stage III. Runway 12/30, when constructed, is recommended to have a pavement strength of 30,000 (S), 65,000 (D) and 95,000 (DT).

5.3.5 Geometric Requirements

The minimum separation criteria for each runway are listed as follows:

Runway 18/36	**Existing**	**Proposed**
Airport Reference Code:	**C-III**	**D-V**
Runway Centerline to:		
-Taxiway centerline	400'	400'
-Aircraft Parking Area	400'	500'

Runway width	150’	150’
Runway Safety Area Width (RSA)	500’	500’
Runway Safety Area Length	1000’	1000’
Taxiway width	50’	50’
Taxiway Safety Area Width	118’	118’
Runway Obstacle Free Area Width (OFA)	800’	800’
Runway Obstacle Free Area Length (OFA)	1000’	1000’

Runway 12/30

Proposed

Airport Reference Code:	**C-II**
Runway Centerline to:	
-Taxiway centerline	400’
-Aircraft Parking Area	500’
Runway Width	100’
Runway Safety Area Width	500’
Runway Safety Area Length	
1000’	
Taxiway Width	35’
Taxiway Safety Area Width	79’
Runway Object Free Area Width	800’
Runway Object Free Area Length	1000’

5.3.6 Runway Safety Area (RSA)

The RSA for Runway 18/36 currently meets FAA standards. An RSA of 1000’x500’ should be maintained for the runway extension. When Runway 12/30 is constructed, a RSA of 1000’x500’ should be planned for.

5.3.7 Runway Protection Zones/Approaches

Property located adjacent to a runway's threshold is critical to the safe operation of aircraft. Structures or vegetation that is located too close to a runway end can be an obstruction to air navigation and may become a hazard. To ensure the safety and compatibility of people and property with airport operations, the FAA has established criteria that define the size, shape, and height of areas beyond the ends of runways that should remain clear of structures and vegetation. These standards also provide guidance to communities and to airport management concerning compatible land uses and land ownership.

The runway protection zone (RPZ) defines the size and shape of these areas while the approach slope defines the required height limitations associated with these areas. Table 5.2 provides data concerning the RPZ's dimensional standards and Table 5.3 provides runway approach data such as approach slope dimensions and the obstruction clearance slopes associated with each runway end at Golden Triangle Regional Airport. The obstruction clearance slope indicates the slope to the top of the controlling obstruction within the runway's approach. It should be noted that the Airport has full ownership of property within the existing RPZ's on the approach end of each runway.

Table 5.1
Runway Protection Zone Dimensions

Existing			
Runway	**Length (Ft)**	**Inner Width (Ft)**	**Outer Width (Ft)**
18	2,500	1,000	1,750
36	2,500	1,000	1,750
Proposed			
Runway	**Length (Ft)**	**Inner Width (Ft)**	**Outer Width (Ft)**
18	2,500	1,000	1,750
36	2,500	1,000	1,750
12*	1,000	500	700
30*	1,000	500	700

Source: Federal Aviation Administration Advisory Circular 150/5300-13, Airport Design.

**G.A. Requirements. (If Runway 12/30 should be converted to a C-III or D-III, dimension criteria will have to be re-evaluated.*

Table 5.2
Runway Approach Data

Existing				
Runway	**Length (Ft)**	**Inner Width (Ft)**	**Outer Width (Ft)**	**Approach Slope**
18	50,000	1,000	16,000	50:1*
36	50,000	1,000	16,000	50:1*
Proposed				
Runway	Length (Ft)	Inner Width (Ft)	Outer Width (Ft)	Approach Slope
18	50,000	1,000	16,000	50:1*
36	50,000	1,000	16,000	50:1*
12	5,000	500	3,500	34:1**
30	5,000	500	3,500	34:1**

Source: FAR Part 77, Objects Affecting Navigable Airspace.
*Approach slopes for runway ends with precision approach capability extend outward at a slope of 50:1 for the first 10,000 feet and 40:1 for the remaining 40,000 feet.
*** G.A. Requirements. (If Runway 12/30 should be converted to a C-III or D-III, dimension criteria will have to be re-evaluated.*

5.4 TAXIWAYS

Taxiways are constructed primarily to facilitate aircraft movements to and from the runway system. Some taxiways are necessary simply to provide access between apron and runways, whereas other taxiways become necessary as activity increases and safer and more efficient use of the airfield is needed. The following taxiways are recommended:

- Extend Taxiway A to serve the proposed Runway Extension
- Full Parallel Taxiway and stub taxiways to serve the proposed Runway 12/30
- Stub Taxiway from apron expansion
- Stub taxiways for the future development of the proposed south general aviation development
- Widen existing taxiways to 75’
- Widen taxiway fillets

5.5 NAVAIDS/VISUAL AIDS/LIGHTING/MARKING/SIGNAGE

The following Airport markings and lighting are very important to the safety of an airport's facilities. Proper lighting helps pilots to make out the airport, land safely and taxi around the facilities with ease. Runway markings and signage allows pilots to identify the proper runway/taxiway and to maneuver around the facilities safely.

5.5.1 NAVAIDS/Visual Aids

Airport and runway navigational aid requirements are based on recommendations as depicted in *DOT/FAA Handbook 7031.2C, Airway Planning Standards Number One,* and *FAA Advisory Circular150/5300-13, Airport Design.* Navigational aids provide visual, nonprecision or precision guidance to a runway or to the Airport itself. The basic difference between a nonprecision and precision navigational aid is that the latter provides electronic decent, alignment (course), and position guidance, while the non precision navigational aid provides only alignment and position location information. The necessity of such equipment is predicated on safety considerations and operational needs. The type, purpose and volume of aviation activity expected at the airport are factors normally used in the determination of the airport's eligibility for navigational aids. The existing navigational aids at the Golden Triangle Regional Airport are primarily directed toward Runway 18 and include an ILS or Localizer approach and a RNAV. Runway 36 has a LOC/DME and RNAV (GPS) approach. Runway 18 is equipped with a full ILS and a Medium Intensity Approach Light System with Runway Alignment Indicator Lights (MALS-R). Runway 36 is will soon be equipped with a full ILS with DME. It is recommended that a MALSR be installed under the FAA's Facilities and Equipment Program, as funding allows. There are GPS approaches to both Runway 18 and Runway 36 with LPV minimums, which allow them to serve as effectively as many ILS facilities during periods of low visibility. Runway 12/30 is recommended to have full instrumentation. Precision Approach Path Indicators (PAPI-4) to Runway 36 have recently been provided as part of the runway extension project. It is also recommended that a Precision Approach Path Indicator (PAPI-2) be installed on both ends of Runway

12/30 initially and PAPI-4 in the future. Runway End Identifier Lights are also recommended for Runway 12/30.

5.5.2 Lighting

Existing High Intensity Runway Lights (HIRL) and Medium Intensity Taxiway Lights (MITL) should be replaced during Stage II. Medium Intensity Runway Lights (MIRL) are recommended on Runway 12/30 when constructed. Taxiway Lights (MITL) are recommended when the parallel and stub taxiways are constructed. The lighting projects should be fully coordinated with airport paving and drainage plans.

5.5.3 Marking

Runway 12/30 should be marked with non-precision marking when constructed.

5.5.4 Signage

Future airport signage is recommended to be installed in accordance with FAA standards. Signage projects should be coordinated with any proposed construction project.

5.6 COMMERCIAL SERVICE REQUIREMENTS

Components of the commercial service area complex at the Golden Triangle Regional Airport include the terminal building, gate positions, apron area, auto parking, and roadway access system. The analysis of facility requirements for these functional areas was performed using the guidelines included in *FAA Advisory Circular 150/5360-9, Planning and Design of Airport Terminal Facilities at Nonhub Locations.* These guidelines utilize forecasted annual enplanements, design hour enplanements and peak hour passengers to estimate terminal building, apron and automobile parking facilities requirements over the planning period.

5.6.1 Air Carrier Terminal Building

The size of the terminal building depends upon the type of airline operations it must accommodate, as well as, the peak activity periods that can regularly be expected. Utilizing the criteria established in 150/5360-9, the gross size of the commercial service terminal building was estimated using the forecast enplanement levels at the Airport. The result of this analysis indicates a terminal building of approximately 38,000 square feet during the 20 year planning period. This includes those areas dedicated for waiting areas, airline ticketing and operations, ticket lobby, baggage claim, terminal services (including food, beverage, rental cars, restrooms, and maintenance), airport management, security check points, and the buildings mechanical systems. Based on this analysis, a terminal building expansion of 1,400 square feet may be necessary at some time during the study period.

5.6.2 Aircraft Gate Positions and Apron Area

The size and configuration of the airline apron will vary with the level of airline service. A commuter airline generally can be expected to operate smaller aircraft with less than 50 passenger seats; however, the larger regional aircraft can seat between 50 and 100 passengers. Two additional gates were completed as part of the recent terminal building expansion. The commercial apron area at the Golden Triangle Regional Airport is recommended to be expanded 15,000 square yards during Stage III.

5.6.3 Automobile Parking

Vehicle parking in the terminal area includes those spaces utilized by passengers, visitors, employees, and on-airport businesses. Parking spaces are classified as public, employee and rental car. Requirements for public and rental car parking are dictated by the origin-destination passenger levels and the availability of other modes of ground transportation. Employee parking is dependent on total passenger levels.

The number of public vehicle parking spaces at the terminal was determined using *FAA Advisory Circular 150/5360-9.* Based on the number of forecasted enplanements, it is

recommended that 251 spaces be designated as public parking. Approximately 20 percent or 50 spaces, of all public parking should be designated as short-term parking. Based on these assumptions, an additional 800 square yards or 21 spaces are recommended by the end of the planning period. Employee parking was determined to be 10 percent or 25 spaces of the total public parking spaces. An additional 13 spaces is recommended for employee parking. Rental car parking requirements were estimated to be 20 spaces per rental car agency. Currently, no additional spaces are needed to satisfy rental car parking requirements.

5.6.4 Access Road

A new access road from the main access road and a relocation of the access booth area are recommended for the long term parking area. This is being accomplished with funding assistance provided by MDOT.

The air carrier terminal area facility requirements that are expected to be needed during the 20 year planning period are presented in Table 5.3.

Table 5.3
Air Carrier Terminal Area Facility Requirements

	Stage I (0-5 Years)	Stage II (6-10 Years)	Stage III (11-20 Years)
Terminal Building	N/C	N/C	**1,400 S.F.**
Gates	N/C	N/C	**N/C**
Apron	N/C	N/C	**+ 15,000 SY**
Auto Parking	N/C	Expansion 800 SY (+ 21 Spaces)	**N/C**
Access Road	**N/C**	**200 LF**	**N/C**

Source: BWSC, 2011

5.7 CORPORATE AND GENERAL AVIATION REQUIREMENTS

The purpose of this section is to determine the space requirements needed during the planning period for the following types of facilities normally associated with corporate and general aviation terminal areas:

- Hangars
- Local and Itinerant Apron
- General Aviation Terminal Building
- Vehicle Parking

5.7.1 Hangars

The demand for hangar facilities typically depends on the number and type of aircraft expected to be based at the airport. Use by general aviation aircraft is expected to grow and it is very important to determine the type and degree of development required to accommodate this most important component. Based upon an analysis of general aviation facilities and the current demand at the Golden Triangle Regional Airport, percentages representing hangar requirements have been calculated.

For planning purposes the percentage of aircraft owners desiring hangars is forecast to be 90 percent of the single-engine aircraft, and 100 percent of the multi-engine, turboprops and jets.

5.7.2 Aircraft Parking Apron

Adequate aircraft parking apron should be provided to accommodate those local aircraft not stored in hangars, as well as transient aircraft. At the Golden Triangle Regional Airport, the local aircraft are parked on the southern end of the general aviation apron. The transient tie-down spaces are located between the local tie-down spaces in front of the general aviation terminal. Currently, there are a total of 12 tie-down spaces on the general aviation apron.

In determining future apron requirements, it is necessary to examine local and transient tie-down facilities as separate entities. The local apron should at least meet the demand established by the unhangared based aircraft. Transient parking requirements can be determined from knowledge of busy day operations. The number of transient spaces required at the Golden Triangle Regional Airport was determined to be 15 percent of the busy day general aviation itinerant operations. A planning criteria of 300 square yards per local aircraft and 360 square yards per transient aircraft was used for the analysis. Based on this analysis, it was determined that the existing South and North apron areas are sufficient and no additional apron would be needed by the end of the planning period.

5.7.3 General Aviation Terminal Building

A general aviation terminal building has several functions which include providing space for passenger waiting, pilot's lounge and flight planning, concessions, storage, and various other needs. This space is not necessarily limited to a single, separate terminal building, but also includes the space offered by fixed base operators for these functions and services.

The methodology used to evaluate terminal building capacity generally calculates the square footage requirements for terminal facilities based on the number of design hour pilots and passengers forecast to use the airport. Space requirements were determined using 75 square feet per design hour passenger. Based on this analysis, the current terminal building is adequate for the planning period.

5.7.4 Automobile Parking

The requirement for automobile parking at airports is largely dependent upon the level of general aviation operations, as well as the type of general aviation facilities and activities at the airport. General aviation terminal area parking facilities are determined under guidelines set forth in FAA publications, while the number of automobile parking spaces for other general aviation facilities would be based on other factors.

The requirements for tenant visitor parking at a general aviation terminal at the Golden Triangle Regional Airport were based upon the number of design hour pilots and passengers. The total number of public parking positions was projected based on one space per design hour pilot and passenger and 350 square feet per automobile parking space (providing for both the parking stall and a share of the parking aisles).

General aviation parking requirements were calculated under the assumption that 25 percent of the based aircraft will require automobile parking positions at any one time. The amount of parking area required per space is the same as that used in determining terminal area parking requirements.

General aviation facility requirements are summarized and illustrated on Table 5.4.

Table 5.4
General Aviation Requirements

	Stage I (0-5 Years)	Stage II (6-10 Years)	Stage III (11-20 Years)
Terminal Building	N/C	N/C	N/C
Apron	N/C	N/C	North Apron Overlay
Hangars			
T-Hangars	+4	+4	+4
Storage	+1	+4 (Warbirds)	+1
Maintenance/Storage	N/C	N/C	N/C
Auto Parking	N/C	N/C	N/C
Access Road	Mill/Overlay	N/C	N/C

Source: BWSC, 2011

5.8 SUPPORT FACILITY REQUIREMENTS

Various facilities that do not logically fall within classifications of airfield, commercial services or general aviation requirements have been identified as support facilities. The following paragraphs describe the Airport Rescue and Firefighting (ARFF), fuel storage facility, airport traffic control tower (ATCT), and access requirements for the Golden Triangle Regional Airport.

5.8.1 Aircraft Rescue and Firefighting (ARFF)

FAR Part 139 details the requirements for ARFF protection at FAR Part 139 certificated airports. Airport ARFF capabilities are described by a specific index based on the following two factors: 1) the length of air carrier aircraft expressed in groups and 2) the average daily departures of air carrier aircraft. For the purpose of Index determination, air carrier aircraft lengths are grouped as follows:

- Index A includes aircraft less than 90 feet in length.
- Index B includes aircraft at least 90 feet but less than 126 feet in length.
- Index C includes aircraft at least 126 feet but less than 159 feet in length.
- Index D includes aircraft at least 159 feet but lass than 200 feet in length.
- Index E includes aircraft at least 200 feet in length.

Except as provided in FAR 139.319(c), the Index required by 139.319 is determined as follows:

- If there are five or more average daily departures of air carrier aircraft in a single Index group serving that airport, the longest index group with an average of five or more daily departures is the Index required for the airport.
- If there are less than five average daily departures of air carrier aircraft in a single index group serving that airport, the next lower index from the

longest index group with air carrier aircraft in it is the index required for the airport. The minimum designated index shall be Index A.

The following rescue and fire fighting equipment and agents are the minimum required for the indexes referred to in FAR Part 139.315:

(a) Index A: One vehicle carrying at least

(1) 500 pounds of sodium based dry chemical or Halon 1211; or

(2) 450 pounds of potassium based dry chemical and water with a commensurate quantity of Aqueous Film Forming Foam (AFFF) to total 100 gallons, for simultaneous dry chemical and AFFF foam application.

(b) Index B: Either of the following:

(1) One vehicle carrying at least 500 pounds of sodium based dry chemical or Halon 1211 and 1,500 gallons of water and the commensurate quantity of AFFF for foam production.

(2) Two vehicles -

(i) One vehicle carrying the extinguishing agents as specified in paragraph

(a)(1) or (2) of this section; and

(ii) One vehicle carrying an amount of water and the commensurate quantity of AFFF so that the total quantity of water for foam production carried by both vehicles is at least 1,500 gallons.

(c) Index C: Either of the following:

(1) Three vehicles-

(i) One vehicle carrying the extinguishing agents as specified in paragraph

(a)(1) or (2) of this section; and

(ii) Two vehicles carrying an amount of water and the commensurate quantity of AFFF so that the total quantity of water for foam production carried by all three vehicles is at least 3,000 gallons.

(2) Two vehicles-

(i) One vehicle carrying the extinguishing agents as specified in paragraph (b)(1) of this section; and

(ii) One vehicle carrying water and the commensurate quantity of AFFF so that the total quantity of water for foam production carried by both vehicles is at least 3,000 gallons.

(d) Index D: Three vehicles-

(1) One vehicle carrying the extinguishing agents as specified in paragraph (a)(1) or (2) of this section; and

(2) Two vehicles carrying an amount of water and the commensurate quantity of AFFF so that the total quantity of water for foam production carried by all three vehicles is at least 4,000 gallons.

(e) Index E: Three Vehicles-

(1) One vehicle carrying the extinguishing agents as specified in paragraph (a)(1) or (2) of this section; and

(2) Two vehicles carrying an amount of water and the commensurate quantity of AFFF so that the total quantity of water for foam production carried by all three vehicles is at least 6,000 gallons.

The Golden Triangle currently provides emergency fire service at the airport.

It is forecast that the future commercial service aircraft would be at least 90 feet in length; therefore the airport should be classified as an Index B.

5.8.2 Fuel Storage

The location and capacity of fuel storage facilities depends largely upon the airport's operations activity and management procedures. A remote location requires the use of a service vehicle to make the fuel available to the aircraft on the apron; self-fueling facilities, on the other hand, allow aircraft to pull up to a pump. Currently, fuel storage at the Golden Triangle Regional Airport is in three above-ground tanks. Fuel delivery to aircraft is provided by service vehicles.

An additional fuel storage facility is recommended during Stage III. When Runway 12/30 is constructed, the fuel storage facility should be relocated to the East side development area.

5.9 LAND ACQUISITION

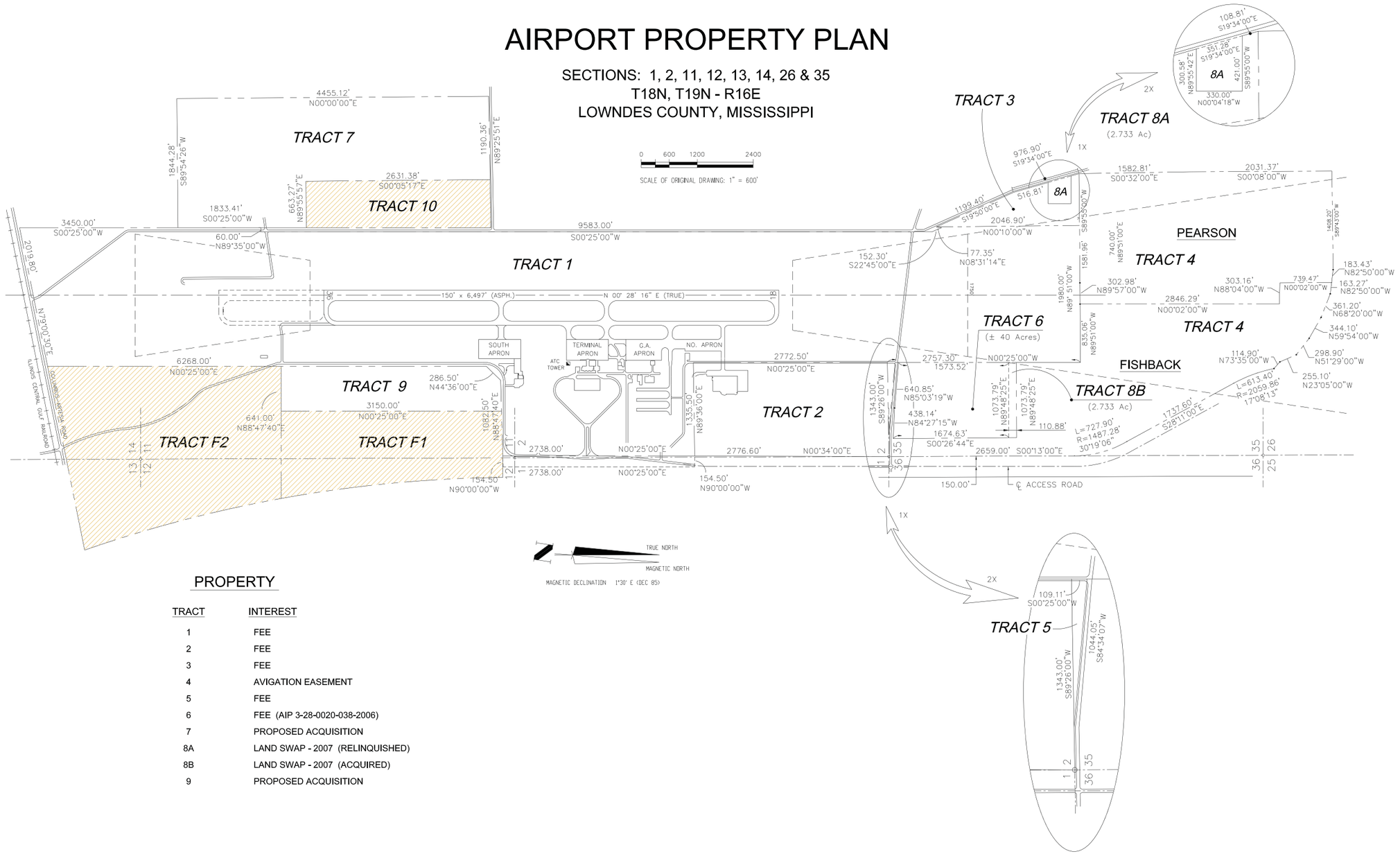
Three additional tracts of land are recommended to be purchased during the planning period. These tracts are identified as Tracts 10, F-1, and F-2. See Figure 5-1.

5.10 CONCLUSIONS

The majority of the existing airside facilities at the Golden Triangle Regional Airport are capable of meeting the forecast demand throughout the planning period. However, additional airside and landside facilities will need to be improved or expanded in order to adequately serve the anticipated increase in both aircraft and passengers utilizing the facility. Table 5.5 presents a summary of the Facility Requirements for the Golden Triangle Regional Airport.

AIRPORT PROPERTY PLAN

SECTIONS: 1, 2, 11, 12, 13, 14, 26 & 35
T18N, T19N - R16E
LOWNDES COUNTY, MISSISSIPPI



PROPERTY

TRACT	INTEREST
1	FEE
2	FEE
3	FEE
4	AVIGATION EASEMENT
5	FEE
6	FEE (AIP 3-28-0020-038-2006)
7	PROPOSED ACQUISITION
8A	LAND SWAP - 2007 (RELINQUISHED)
8B	LAND SWAP - 2007 (ACQUIRED)
9	PROPOSED ACQUISITION

Table 5.5
Facility Requirements

Item	Existing	Stage I (0-5 Years)	Stage II (6-10 Years)	Stage III (11-20 Years)
Landside				
Commercial				
Terminal	30,600 SF	N/C	N/C	1,400SF
Gates	2	N/C	N/C	N/C
Apron	20,000 SY	Apron Rehab – P-2	N/C	Expansion 15,000 SY
Auto Parking				
Commercial	139 Spaces	N/C	Expansion 800 SY	N/C
Rental Car	63 Spaces	N/C	N/C	N/C
Employee	19 Spaces	N/C	N/C	N/C
Access Road	2300 LF	N/C	200 LF	N/C
General Aviation				
Terminal	2,500 SF	N/C	N/C	N/C
Apron	16,600 SY	N/C	N/C	N/C
Access Road	3,600 LF	Mill/Overlay	N/C	N/C
Hangars				
T-Type	10	+4	+4	+4
Storage	7	+1	+4 (Warbirds)	+1
Maintenance	1	N/C	N/C	N/C
Airside				
Runway 18/36 **Extension** **Lighting** **Widening** **Strengthen**	8002'x150' HIRL S-133,000,D-200,000,DT-300,000	N/C	 N/C N/C N/C	Overlay N/C Replace HIRL N/C
Runway 12/30 **Extension** **Lighting** **Widening** **Overlay**	N/A	N/C	5000'x100' MIRL	N/C
Taxiways				
a) Length	Full/Partial	N/C	New R/W 12/30	Overlay
b) Width	50'	N/C	50'	
c) Lighting	MITL	Additional MITL	Replace/New	N/C
Visual Aids	R/W 18/36 PAPI-4	Relocate	R/W 12/30 PAPI, REILS	N/C
Weather Aids	AWOS – III	N/C	N/C	N/C
Fuel	AVGAS – 10,000 Gal Jet A – 1-20,000Gal 1-25,000 Gal	N/C	N/C	Additional Fuel Farm
Air Traffic Control Tower	Yes	N/C	N/C	N/C
Land Acquisition		Tract 10	Tract F-1	Tract F-2

CHAPTER 6
DEVELOPMENT ALTERNATIVES

6.1 INTRODUCTION

The proceeding chapter identified and described facilities required at Golden Triangle Regional Airport to properly accommodate existing and future demands. This chapter identifies and evaluates various alternatives for providing these facilities. The key issues that will be addressed are development alternatives for the airfield, commercial terminal building, and general aviation facilities. This chapter also discusses the alternatives and recommends a course of action for each key issue.

6.2 AIRFIELD DEVELOPMENT

Airfield development addresses the Airport's runway, taxiways, lighting, and instrumentation. The airfield components have adequate separations and will provide sufficient capacity during the study period. However, the existing airfield pavements will need to be strengthened during the planning period to accommodate the forecasted fleet.

6.2.1 Runway Improvements

The current runway length for Runway 18/36 is adequate throughout the planning period. It is recommended that a new crossing runway (Runway 12/30 – 5000'x100) be constructed. The recommended orientation would have the least impact on the existing facilities at the airport, and serve the planned aerospace park throughout the long range future.

These improvements are crucial to ensure the operational efficiency and safety of pilots and passengers utilizing GTR.

6.2.2 Taxiway Improvements

A full parallel taxiway should be constructed on the north side of the proposed new crossing runway (R/W 12/30). Other recommended alternatives include the construction of stub taxiways to serve the new general aviation development.

6.3 AIR CARRIER TERMINAL BUILDING

The 20,000 S.F. bi-level passenger terminal building was constructed in 1971 and remodeled in 1994. The public area or lower level of the terminal building is primarily utilized for airline operations such as passenger ticketing, baggage and cargo handling, and baggage claim. Other space on the ground floor is devoted to, vending and concessions, auto rental offices, and restrooms. A sterile holding area is also included, with security screening provided by a carry-on baggage X-ray machine and a walk through metal detector.

Three rental car agencies operate at GTR: Avis, Hertz, and Enterprise rental car agencies. These operators occupy space along the terminal's east wall, near the baggage claim area.

The second level of the terminal building is occupied by the Golden Triangle Regional Airport Authority. Several mechanical and storage areas are also located on the second level. Since 2002, enplanements have increased and the need for a renovated and expanded terminal building has become evident. In addition to providing more space, the renovated terminal will improve passenger circulation and baggage-handling is essentially adequate. Facilities may require updates over time and mirror expansions may be necessary.

6.4 AUTO PARKING AND ACCESS ROAD

As indicated in Chapter 5, expansion of the Airport's automobile parking facilities is recommended. This includes the addition of 21 spaces (800 SY) to accommodate Airport passengers and the general public. Increasing the number of parking spaces will not only allow the Airport to provide adequate parking for its patrons, but will also give it more opportunity to collect parking revenue. The Airport Layout Plan shows an expansion of the parking area and rerouting of the entrance to the parking lot.

6.5 GENERAL AVIATION/CARGO/CORPORATE FACILITIES

This section addresses development alternatives for the general aviation facilities at GTR. The Airport Layout Plan shows the addition of hangars and apron space for the new general aviation areas, as well as development of an area for cargo, manufacturing facilities and corporate hangars.

The first area identified for development is the area behind the south apron. This area is prepared and could be developed with a minimum amount of lead time for new industries. Several manufacturing facilities are identified, along with a future cargo facility and future corporate hangars. Access would be provided by construction of a connector taxiway to Taxiway "E".

The second potential location for development is a new site located on the west side of the airport. In addition to general aviation t-hangars, possible locations for manufacturing and cargo facilities have been identified.

CHAPTER 7
ENVIRONMENTAL OVERVIEW

7.1 INTRODUCTION

This environmental analysis provides federal, state, and local officials as well as the general public with an understanding of the possible environmental impacts of the proposed development at the Golden Triangle Regional Airport. The analysis presented in this chapter is modeled after the format and content of an Environmental Assessment, as described in FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Projects*. This format will accommodate the extraction of appropriate information for use in a formal Environmental Assessment, if necessary.

7.2 FEDERAL ENVIRONMENTAL REQUIREMENTS

The *National Environmental Policy Act* (NEPA) was enacted by Congress in 1969 to establish a national policy which ensured that potential environmental impacts would be thoroughly reviewed in all federally-funded projects. Prior to receiving any federal grant, the potential grantee must consider the alternatives to the proposed project(s); identify any mitigation measures that may be necessary; coordinate with appropriate federal, state, and local agencies for review; and document public participation during the decision-making process.

For airport development projects, the FAA is typically the lead governmental agency because the FAA provides funding for most major airport projects. It is also the agency responsible for reviewing the impacts, including social, economic, and environmental, of a proposed airport development project. FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Projects*, provides policies and procedures for considering environmental impacts of airport development.

Depending on the nature and extent of airport development, there are three levels of FAA environmental review:

- Development projects that are normally categorically excluded from further environmental analysis.
- Development projects normally requiring an Environmental Assessment (EA).
- Development projects normally requiring an Environmental Impact Statement (EIS).

Categorical Exclusions

FAA Order 5050.4B defines certain airport development projects as categorically excluded from formal environmental study. When a project is identified as a Categorical Exclusion (CE), the proposed airport development project is allowed to proceed without further environmental studies. Airport development actions that are typically categorically excluded from environmental review (EA or EIS) include:

- Runway, taxiway, apron, or loading ramp construction or repair work including extension, strengthening, reconstruction, resurfacing, marking, grooving, fillets, jet blast facilities, and new heliports on existing airports (except where such projects would create environmental impacts off-airport property).
- Installation or upgrading of airfield lighting systems, including runway end identifier lights, visual approach aids, beacons, and electrical distribution systems.
- Installation of miscellaneous items including segmented circles, wind or landing direction indicators, measuring devices, or fencing.
- Construction or expansion of passenger handling facilities.
- Construction, relocation, or repair of entrance or service roads.
- Grading or removal of obstructions on airport property and erosion control measures with no off-airport impacts.
- Landscaping generally and landscaping or construction of physical barriers to diminish impact of airport blast and noise.
- Projects to carry out noise compatibility programs.

- Land acquisition and relocation associated with any of the above items.
- Federal release of airport land.
- Removal of displaced thresholds.

Environmental Assessment

An Environmental Assessment (EA) examines potential impacts to determine whether they exceed a predefined threshold of significance or create sufficient controversy to require the FAA to prepare a full Environmental Impact Statement. If the potential impacts do not exceed the predefined threshold, the FAA can provide a Finding of No Significant Impact (FONSI) and the proposed airport development can proceed. Actions normally requiring an EA include the following:

- A new airport location.
- A new runway.
- A major runway extension that would involve extraordinary circumstances
- Runway strengthening that would result in a 1.5 DNL (the average day-night sound level) increase in noise impacting a sensitive area within the 65 DNL contour.
- Construction or relocation of entrance or service road connections to public roads that adversely affect the capacity of such roads.
- Land acquisition associated with any of the above items including land acquisition that would result in the relocation of residential units when there is evidence of insufficient compatible replacement dwellings, major disruption of business activities, or acquisition that involves land covered under Section 4(f) of the *Department of Transportation Act of 1966*.
- Establishment or relocation of an Instrument Landing System (ILS) or an approach lighting system.
- An airport development action that involves extraordinary circumstances or involves historical, archeological, architectural, or cultural significance; land acquisition for conversion of farm land; impacts to wetlands, coastal areas, or floodplains; or endangered and threatened species.

An EA was previously completed for the Runway 36 extension project in 2009.

Environmental Impact Statement

If the proposed development will likely result in a significant environmental impact, an Environmental Impact Statement (EIS) may be required. An EIS is a thorough review process that provides local, regional, state, federal, and other agencies an opportunity to participate on the project as coordinating or commenting agencies. The detail of the EIS is determined either by the EA or during the FAA environmental scoping process. Full evaluation of the proposed project or action and all reasonable and prudent alternatives must be undertaken. Actions normally requiring an EIS include:

- The development of a first time airport layout plan or airport location approval for a commercial service airport in a Standard Metropolitan Statistical Area (SMSA).
- Financial participation in or airport layout plan approval of, a new runway capable of handling air carrier aircraft at a commercial service airport in a SMSA.

7.3 PROPOSED PROJECTS REQUIRING ENVIRONMENTAL APPROVAL

The primary elements of the improvements proposed in this Master Plan include the following:

- New Runway 12/30 – 5000'x100'
- New Corporate Facilities

The remainder of this chapter will analyze the typical impact categories included in an Environmental Assessment. While it provides an overview, the FAA-Jackson ADO as well as the appropriate federal, state, and local agencies should be contacted prior to any construction activities to determine the appropriate level of environmental study necessary.

7.4 ENVIRONMENTAL CONSEQUENCES

7.4.1 Noise

When development or expansion of an airport is proposed, one of the primary criticisms that are voiced from people who live or work nearby is the anticipated increase in noise. Land uses surrounding an airport become a very important factor in reducing noise impacts to nearby citizens while, at the same time, maximizing the economic benefits of the airport. Noise exposure maps are useful as a planning tool for both the airport operator and those who plan the growth of the communities in the vicinity of the airport.

Noise exposure maps were prepared for current operations (2008) and future operations (2010 and 2029). See Appendix 2.

7.4.2 Compatible Land Use

The compatibility of existing and planned land uses in the vicinity of airports is usually associated with the extent of the impact from noise. The Golden Triangle Regional Airport is located in a rural area, outside corporate limits of Columbus, Mississippi. Major land uses in the vicinity of the Golden Triangle Regional Airport are industrial and agricultural. As discussed in the previous section, no significant noise impact due to the airport is anticipated. Although noise is a major component of compatible land use around an airport, it is not the only factor. The height of structures around an airport should be carefully controlled to prevent obstructions, which can limit the utility and development potential of the airport. Airport zoning ordinances are an effective method of preventing non-compatible land uses and obstructions. Adoption of such zoning ordinances is recommended to protect the Golden Triangle Regional Airport from incompatible land uses and obstructions.

7.4.3 Social Impacts

An action is judged as having significant social impacts if it involves any of the following:

- The relocation of any residences or businesses.
- The alteration of surface transportation patterns.

- The division or disruption of established communities.
- The disruption of orderly planned development.
- An appreciable change in employment.

No such actions are anticipated within the planning period for the Golden Triangle Regional Airport.

7.4.4 Induced Socioeconomic Impacts

Induced socioeconomic impacts involve shifts in patterns of population growth, public service demands, and changes in economic and business activities as a result of airport development. No such actions are anticipated within the planning period for the Golden Triangle Regional Airport

7.4.5 Air Quality

In accordance with the guidelines set forth in FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Projects*, an air quality analysis must be performed if the proposed action involves the following:

- Airport location (new airport site).
- Airport development allowing an increase in aircraft operations.
- The construction or expansion of passenger handling or parking facilities.

Based on the detailed air quality assessment procedures outlined in FAA-EE-82-21, *Air Quality Procedures for Civilian and Air Force Bases*, an air carrier airport must exceed 1.3 million annual passenger enplanements or 180,000 general aviation operations to warrant further air quality assessment.

7.4.6 Water Quality

The *Clean Water Act* of 1977, as amended, requires proper authorities to establish water quality standards, control discharges into surface and subsurface waters, develop waste treatment management plans and practices, and issue permits for discharges and for dredge and fill operations. An environmental assessment requires description of

design, mitigation measures, and construction controls as they apply to the proposed improvements in order to demonstrate that local, state, and federal water quality standards and permit requirements will be met.

In accordance with the 1982 *Airport Act*, a water quality certification is required for the approval of an Airport Improvement Program application when a project involves airport location, a major runway extension, or a runway location. The Mississippi Department of Environment and Conservation should be contacted prior to initiation of construction activities at the Airport to determine if a water quality certification is needed.

Potential adverse impacts to surface and ground water quality are normally related to those resulting from construction activities and the maintenance and use of the new facility. Potential construction-related impacts in water ways include increased turbidity, sedimentation, the improper use of fertilizers, and accidental releases of petroleum products from equipment and machinery. Increased turbidity is a temporary phenomenon while sedimentation, the improper use of fertilizers, and petroleum contamination may have a long-term adverse effect on aquatic organisms and habitats. A National Pollutant Discharge Elimination System (NPDES) Construction General Permit for Storm Water Discharges from Construction Activities will be required from MDEC for the proposed improvements.

The construction phase of the proposed development should include measures to control erosion and the discharge of suspended materials into water bodies as prescribed in FAA Advisory Circular 150/5370-10B *Standards for Specifying Construction of Airports*. The plans and specifications for the proposed project should incorporate those design and construction measures necessary to control erosion, minimize the impact of sedimentation, and prevent pollution. Specific measures to protect water quality may include the use of silt fences and traps, staked hay bales, seeding and mulching of exposed soils, sedimentation traps, diversion ditches, and ditch and slope linings. The construction phase of the proposed project should also incorporate the use of Best Management Practices (BMPs), as recommended by

MDEC, in an effort to maintain the quality of any storm water discharged from the construction site and to minimize the potential for groundwater contamination during construction efforts. The use of BMPs is required by state-issued NPDES permits for construction projects.

A Notice of Intent (NOI) should be filed and a NPDES permit should be obtained from TDEC prior to initiation of any construction activities associated with the proposed project. Best management practices identify commonly-accepted measures that can be taken, depending on the specific situation, to control erosion and sedimentation. Best management practices also detail recommended procedures related to the handling and storage of petroleum products and other potentially hazardous materials on the construction site.

Potential adverse impacts related to the use and maintenance of the improvements may result from the occasional use of fertilizers, herbicides, and pesticides; random spills; and storm water runoff. The improper use of fertilizers, herbicides, and pesticides can be detrimental to water quality and aquatic organisms. However, if used properly, these substances have very little effect on water quality or aquatic organisms. In regard to random spills, the frequency and magnitude of accidents cannot be accurately predicted. Vehicles and aircraft will have the potential to be involved in accidents which could result in pollution of adjacent water bodies. Airfield storm water runoff may contain varying levels of suspended solids, heavy metals, oils, nutrients, and other pollutants. The potential impact of the pollutant load on adjacent water bodies varies greatly and is influenced by numerous factors including the frequency and duration of rainfall events, wind, vegetation, traffic volumes, and adjacent land uses.

Construction of the proposed improvements to the airport facility, utilizing erosion and sedimentation control measures and pollution prevention practices, will have minimal short-term and long-term adverse impacts on water quality and aquatic habitats. The potential to adversely impact water quality in adjacent water bodies as a result of normal

use and maintenance of the improvements should be no greater than if the proposed projects were not constructed.

Another potential impact to water quality involves Section 404 of The Clean Water Act of 1977 (33 USC 1344) which prohibits the filling activities in waters, including wetlands, of the United States without securing a permit from the U.S. Army Corps of Engineers (USACE). The USACE was contacted for comments; however no comments have been received at the time of this publication. Prior to construction activities, the USACE should be contacted again.

7.4.7 Department of Transportation Act, Section 4(f)

Section 4(f) of *The Department of Transportation Act of 1966* requires that the Secretary of Transportation not approve any project that requires the use of any publicly owned land from public parks, recreation areas, historic sites, or wildlife and waterfowl refuges unless there is no practicable alternative available and provisions to minimize the possibility of harm are included in the planning. Such mitigation measures can include replacement in-kind of land facilities or design measures to mitigate any adverse effects. The Mississippi Department of Environment and Conservation, Historic Preservation Division (MDEC) and U.S. Fish and Wildlife Service (USFWS) should be contacted for comments.

7.4.8 Historic, Architectural, Archeological, and Cultural Resources

An environmental review for the proposed development actions at the Golden Triangle Regional Airport requires the examination of thresholds concerning two basic laws that apply to impacts to historic and archeological resources. The first law, *The National Historic Preservation Act of 1966*, as amended, requires an initial review to determine whether or not any land involved in potential environmental impact is either in, or eligible for, inclusion into the National Register of Historic Places. The second law, *The Archeological and Historic Preservation Act of 1974*, provides for the survey, recovery, and preservation of significant scientific, prehistoric, historical, or archeological data that could be damaged or irretrievably lost as the result of a development which has received federal funding.

7.4.9 Biotic Communities

Biotic communities are defined as areas where plants (flora) and animals (fauna) share a mutual habitat necessary for sustenance and propagation. The level of anticipated impacts determines the level of biotic assessment needed. Several factors are examined to determine the anticipated impacts to biotic communities:

- If there is any taking or impact to public owned wildlife or waterfowl refuge areas with local, regional, state or federal significance.
- If there is threatened or endangered species in the area of immediate impact.
- If the proposed development affects water resources (i.e., wetlands, groundwater, impoundment, diversion, deepening, controlling, modifying, polluting, dredging or filling).

The proposed action is not anticipated to impact any biotic communities. A wildlife study was completed in 2009 and a Wildlife Hazard Management Plan was approved in 2011.

7.4.10 Endangered and Threatened Species

The U.S. Fish and Wildlife Service (USFWS) should be contacted in the matters of endangered and threatened species.

7.4.11 Wetlands

In general, wetlands are lands that are saturated by surface or ground water at a frequency and duration sufficient to support vegetation and wildlife typically adapted for life in saturated soil conditions. Examples of wetlands include marshes, swamps, and bogs. This unique habitat is valuable to the ecosystem because they provide natural water quality improvement, flood protection, shoreline erosion control, natural resources, and recreation opportunities.

Department of Transportation Order 5660.1A, *Preservation of the Nation's Wetlands*, provides that federal agencies:

1. Avoid, to the extent possible, the short-term and long-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or

indirect support of new construction in wetlands wherever there is a practicable alternative, and;

2. Avoid the undertaking or providing assistance for new construction located in wetlands unless the agency finds:
   a. that there is no practicable alternative to such construction, and
   b. that the proposed action includes all practicable measures to minimize harm to wetlands, which may result from such use.

Section 404 of *The Clean Water Act of 1977* establishes a program to regulate the discharge of dredged and filled material into waters of the United States, which includes wetlands. Coordination with the U.S. Army Corps of Engineers-Mobile District, which is the permitting authority, is necessary to determine if any jurisdictional wetlands will be directly altered or impacted by a proposed project. In determining whether to issue a permit, the USACE may take into account environmental, economic, and other pertinent factors. A wetland determination should be preformed prior to any construction project that involves land disturbing activities.

7.4.12 Floodplains

Floodplains are defined as lowland and relatively flat areas adjoining inland and coastal waters. At a minimum, floodplains include areas that are subject to a 1 percent or greater chance of flooding in any given year (i.e., the area that would be inundated by a 100-year flood). Executive Order 11988, *Floodplain Management*, directs federal agencies to take action to reduce the risk of flood loss, to minimize the impacts of floods on human safety, and to restore and preserve the natural and beneficial values served by floodplains.

Methods that may be used to minimize harm to floodplains include construction controls to minimize erosion and sedimentation, design of the proposed improvements to allow adequate flow circulation and to preserve natural drainage, use of pervious surfaces where practicable, control of runoff, and waste and spoils disposal to avoid

contamination of ground and surface water. There are no floodways or floodplains located on the airport.

7.4.13 Wild and Scenic Rivers

In October 1968, the U.S. Congress created the National Wild and Scenic Rivers System to preserve selected rivers and stream segments in their free-flowing condition to protect the water quality of these rivers and to fulfill other national conservation purposes. In addition to the National Park Service, there are four other federal agencies charged with protecting and managing the wild and scenic rivers: Bureau of Land Management, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and U.S. Forest Service. There are no wild and scenic rivers located on the airport.

7.4.14 Prime and Unique Farmlands

The Farmland Protection Policy Act (FPPA) of 1981 was designed to minimize the contribution of federal programs to the unnecessary and irreversible conversion of farmland to uses other than those that are agricultural in nature. Farmland protected under this act is defined as “prime” farmland, “unique” farmland, and farmland of local or state importance. Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing agricultural crops with minimum input of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion. Unique farmland is land used for production of specific high-value food and fiber crops.

According to Section 523-11-C of the Farmland Protection Policy Act, activities not subject to provisions of FPPA include projects on land already in urban development or used for water storage. There are no prime and unique farmlands located on the airport.

7.4.15 Energy Supply and Natural Resources

Energy requirements associated with airport operations have been divided into two general categories. The first category involves those requirements that relate to an increased demand for electricity from stationary facilities such as the FBO/terminal area

and airfield lighting. The second category involves those requirements which relate to providing aircraft fuel. As increased aviation activity and landside development occurs at the airport, the energy requirement will increase, but will not create a substantial demand on local energy supplies. Impacts to any mineral resources that are in short supply or are unusual in nature are not anticipated; however, the Mississippi Division of Geology should be consulted prior to any construction activities.

7.4.16 Light Emissions

Airport lighting systems are generally located in the airfield, apron, terminal, parking lots, and access roadways. FAA Order 5050.4A states that the airport sponsor should consider the extent to which any lighting associated with an airport action will create an annoyance among people in the vicinity of the installation. Several factors are considered to determine if an annoyance may exist:

- Site location of lights or lighting systems.
- Purpose of the light system, either pole or ground mounted, beam angle, intensity, color, flashing frequency, and other pertinent characteristics.
- Possible measures, including shielding or angular adjustments, available to lessen any annoyances.

Light emissions that may create an annoyance to residences in the vicinity of an airport must be taken into account. It is anticipated that there will be minimal impacts at the Golden Triangle Regional Airport due to the fact no residences are located close to the airport.

7.4.17 Solid Waste

Solid waste is typically affected by commercial, industrial, and terminal development rather than airfield development. Projects that relate only to airfield development, such as runways and taxiways, do not normally result in any direct impact to solid waste collection, control, or disposal other than that associated with the construction itself. The impact of the proposed construction of new facilities at the Airport is anticipated to result in a minimal increase in solid waste.

7.4.18 Construction Impacts

The construction of the proposed projects will result in some temporary, unavoidable impacts related to air quality, noise levels, water quality, and traffic inconveniences. The project construction plans will require that the contractor use appropriate measures to minimize any impacts that could possibly occur. The incorporation of the provisions and specifications of FAA Advisory Circular 150/5370-10, *Standards for Specifying the Construction of Airports*, Item P-156, will be used in order to avoid and/or minimize adverse construction impacts. The following discussion briefly describes the possible impacts and measures that may minimize the impacts.

The amount of airborne suspended particulates will be expected to increase temporarily in the project area during construction activities. To minimize impacts from fugitive dust, the contractor will be required to implement adequate dust control measures. Such measures may include, but not be limited to, watering of dirt stockpiles and exposed areas. Additionally, the open burning of vegetation and wood wastes, if undertaken, will be conducted in accordance with all state air pollution control regulations and local ordinances.

There may be a slight and temporary impact from the noise and dust associated with the delivery of materials and the operation of machinery on site. The impacts may be mitigated, to some extent, by requiring that the contractor use designated haul routes to avoid residential and other noise sensitive receptors. On-site construction noise is expected to have a negligible, temporary impact on nearby residences and businesses.

The construction of the proposed improvements will include the use of commonly accepted measures to minimize erosion, sedimentation, and water pollution. Erosion and sedimentation control measures may include, but not be limited to, the use of staked hay bales and silt fences during construction. Soils exposed during construction will be re-seeded as soon as practical to minimize erosion potential and establish permanent ground cover.

The construction activities will require a NPDES Permit. Implementation of Best Management Practices by the contractor, as mandated by the required NPDES permit, will ensure that all steps necessary to maintain the quality of water discharged from the construction site into adjacent water courses, wetlands, and water bodies are taken. Wastes, loose soil, and other debris will not be deposited into streams or other water bodies.

The disposal of wastes, debris, and excavated material will be handled in accordance with applicable state and local requirements. The contractor will be required to use legally operating landfills for the disposal of wastes, debris, and materials generated during the construction of the proposed project.

Prior to implementation of any construction activities, the Mississippi Department of Environment and Conservation Permits and Services Division should be contacted to ensure that all applicable permits have been obtained.

CHAPTER 8
AIRPORT LAYOUT PLANS

8.1 INTRODUCTION

This chapter provides a graphic description of the recommended airport development program for both airfield and landside facilities which is recommended in the Golden Triangle Regional Airport Master Plan Update. The airport plan drawings include the following components:

- Airport Layout Drawing (ALD)
- Terminal Area Drawings
- Airport Airspace Drawings (Part 77)
- Inner Portion of Approach Surface Plan – Runway 36
- Inner Portion of Approach Surface Plan – Runway 18

Drawings depicted in these plans are contained in the 11" x 17" set of airport plan sheets accompanying this Master Plan Update. Additional 24" x 36" plans are provided to the Airport sponsor, MDOT, and FAA as a part of the approval process as well. An explanation of the purpose and highlights of each of these plans is improved in the following sections.

8.2 AIRFIELD DESIGN STANDARDS

The airfield planning and design standards depicted on this plan set are based upon the future role of the Airport and the critical aircraft expected to utilize the Airport. The FAA publishes advisory circulars containing airfield design standards that are intended to provide guidance, with flexibility in application, to insure the safety, economy, efficiency, and longevity of the Airport.

The FAA advisory circular that applies to design of airfield facilities at the Airport is FAA Advisory Circular 150/5300-13, Change 13 - *Airport Design*.

8.3 AIRPORT LAYOUT DRAWING

The Airport Layout Drawing (ALD) is shown in Figure 8.1 and depicts the existing airport facilities as well as the recommended facilities required to accommodate forecast demand through the Year 2029.

Major airfield improvements incorporated in the ALP are summarized as follows:

1. New Runway 12/30 – 5000'x100'
2. Hangar, T-hangar and Apron areas adjacent to the new Runway 12/30.
3. Development of taxiways and buildings associated with future aviation industries in the southeast quadrant of the airfield.
4. New taxiway system to provide access to the airport from the future Aerospace Park.

The ALD illustrates graphically the existing and proposed facilities identified in the Layout Plan Update. Phased development, estimated project costs and funding sources for the recommended improvements according to the 5 -, 10 -, and 20 – year planning periods are recommended in Chapter 9, "Capital Improvement Program Implementation Plan."

8.4 TERMINAL AREA DRAWINGS

The Terminal Area Drawings for the Golden Triangle Regional Airport is shown in Figures 8.2 and 8.3. This drawing shows a higher level of detail regarding the existing and proposed terminal area facilities.

RUNWAY DATA

		RUNWAY 18/36		RUNWAY 12/30
		EXISTING	ULTIMATE	ULTIMATE
AIRPORT REFERENCE CODE		C-III	D-III	B-II
CRITICAL AIRCRAFT		B-727	SAME	G-II
APPROACH VISIBILITY MINIMUMS	RWY 18	¾ MILE	SAME	1 MILE
	RWY 36	1 MILE	SAME	1 MILE
RUNWAY LENGTH		8,001'	SAME	5,000'
RUNWAY WIDTH		150'	SAME	100'
TAXIWAY WIDTH		60'	SAME	50'
APPROACH SURFACE	RWY 18	50:1	SAME	RWY 12: 34:1
	RWY 36	50:1	SAME	RWY 30: 34:1
INSTRUMENT RUNWAY	RWY 18	PRECISION	SAME	RWY 12: VISUAL
	RWY 36	PRECISION	SAME	RWY 30: VISUAL
RUNWAY MARKINGS		PRECISION	SAME	NPI
RUNWAY LIGHTING		HIRL	SAME	MIRL
LANDING AIDS	RWY 18	VASI, MALSR, ILS	PAPI, MALSR, ILS	RWY 12: PAPI, MALSR
	RWY 36	PAPI, ILS, DME	PAPI, ILS, DME	RWY 30: PAPI
% WIND COVERAGE (13 KNOTS)		98.2%	SAME	< TBD >
RUNWAY BEARING	RWY 18	S 180°19'57" W	SAME	RWY 12: S 122°10'55" E
	RWY 36	N 00°19'57" E	SAME	RWY 30: N 302°10'55" W
EFFECTIVE RUNWAY GRADIENT		.06%	SAME	< TBD >
PAVEMENT CONSTRUCTION		ASPHALT	SAME	ASPHALT
PAVEMENT STRENGTH		SWL 93,000 LBS DW 100,000 LBS DTW 145,000 LBS	SAME	SWL 30,000 LBS DW 65,000 LBS DTW 95,000 LBS
RUNWAY END COORDINATES (NAD 83)	RWY 18	33°27'33.34" N 88°35'28.63" W	SAME	RWY 12: 33°26'46.14" N 88°36'07.52" W
	RWY 36	33°26'14.17" N 88°35'29.40" W	SAME	RWY 30: 33°26'19.70" N 88°35'17.65" W
RUNWAY END ELEVATIONS	RWY 18	260.4'	SAME	RWY 12: 245.0'
	RWY 36	253.0'	SAME	RWY 30: 250.0'
DISPLACED THRESHOLD COORDINATES	RWY 18	N/A	N/A	RWY 12: N/A
	RWY 36	N/A	N/A	RWY 30: N/A
DISPLACED THRESHOLD ELEVATIONS	RWY 18	N/A	N/A	RWY 12: N/A
	RWY 36	N/A	N/A	RWY 30: N/A
TOUCHDOWN ZONE ELEVATIONS	RWY 18	265.0'	SAME	RWY 12: <T.B.D.>
	RWY 36	265.1'	SAME	RWY 30: <T.B.D.>

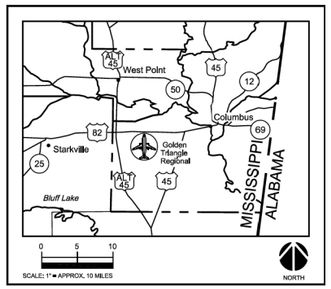
T.B.D. = TO BE DETERMINED
N/A = NOT APPLICABLE

LAYOUT PLAN LEGEND

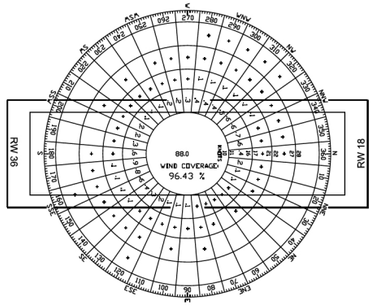
ITEM	EXISTING	ULTIMATE
AIRFIELD PAVEMENT		
ROAD		
POWER POLE		(SAME)
LIGHT POLE		(SAME)
BUILDING		
BUILDING RESTRICTION LINE	BRL	(SAME)
RUNWAY PROTECTION ZONE		
RUNWAY SAFETY AREA	RSA	RSA(U)
OBJECT FREE ZONE	OFZ	OFZ(U)
OBJECT FREE AREA	OFA	OFA(U)
CRITICAL AREA (GLIDE SLOPE)	CA	(SAME)
CRITICAL AREA (LOCALIZER)	CA	(SAME)
CRITICAL AREA (AWOS)	CA CA	(SAME)
AIRPORT SECURITY FENCE		
CHAIN LINK FENCE		(SAME)
AIRPORT PROPERTY LINE		
AIR TRAFFIC CONTROL TOWER		(SAME)
ROTATING BEACON		(SAME)
LIGHTED WIND CONE & SEGMENTED CIRCLE		
GROUND CONTOURS	250	(SAME)
FUEL FARM	F	F
THRESHOLD LIGHTS		
RWY. END IDENTIFIER LGTS (REIL's)	(NONE)	
AIRPORT REFERENCE POINT		
PAPI		
VASI		
WEATHER STATION (AWOS-III)		

EXISTING BUILDING & LEGEND

NO.	STRUCTURE
B1	TERMINAL BUILDING
B2	AIR TRAFFIC CONTROL TWR.
B3	ARFF FACILITY
B4	SHOP & ELECTRICAL VAULT
B5	GENERAL AVIATION
B6	OMITTED
B7	ENCLOSED HANGARS
B8	AIRPORT STORAGE BUILDING
B9	FUEL FARM (3 TANKS)
B10	LOCALIZER BLDG. (RWY 18 APPROACH)
B11	AERIAL APPLICATION CENTER
B12	OPEN SHED HANGAR (7 UNITS)
B13	LOCALIZER SHELTER (RWY 36 APPROACH)
B14	CORPORATE HANGAR
B15	HELICOPTER MFG. PLANT
B16	MANUFACTURING FACILITY
B17	LOCALIZER ANTENNA (RWY 18 APPROACH)
B18	GLIDE SLOPE ANTENNA (RWY 36 APPROACH)
B19	OMITTED
B20	OMITTED
B21	AURORA FLIGHT SCIENCES
B22	WEATHER STATION (AWOS-III)
B23	AMERICAN EUROCOPTER
B24	OMITTED
B25	GLIDE SLOPE ANTENNA (RWY 18 APPROACH)
B26	MALSR
B27	LOCALIZER ANTENNA (RWY 36 APPROACH)
B28	VASI



LOCATION MAP

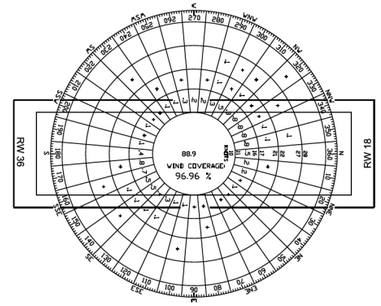


ALL WEATHER

WIND ROSE DATA TABLE

CROSSWIND COMPONENT (KNOTS)	WIND COVERAGE %	
	ALL WEATHER WINDROSE	IFR WINDROSE
10.5	96.43	96.96
13.0	98.19	98.45
16.0	99.57	99.54
20.0	99.91	99.86

SOURCE: NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)
COLUMBUS AFB, MS
STATION NO. 72330
PERIOD OF RECORD: 1991-2000
OBSERVATIONS: 80,522 (ALL WEATHER)
4,984 (IFR)



IFR

GEOMETRIC DATA

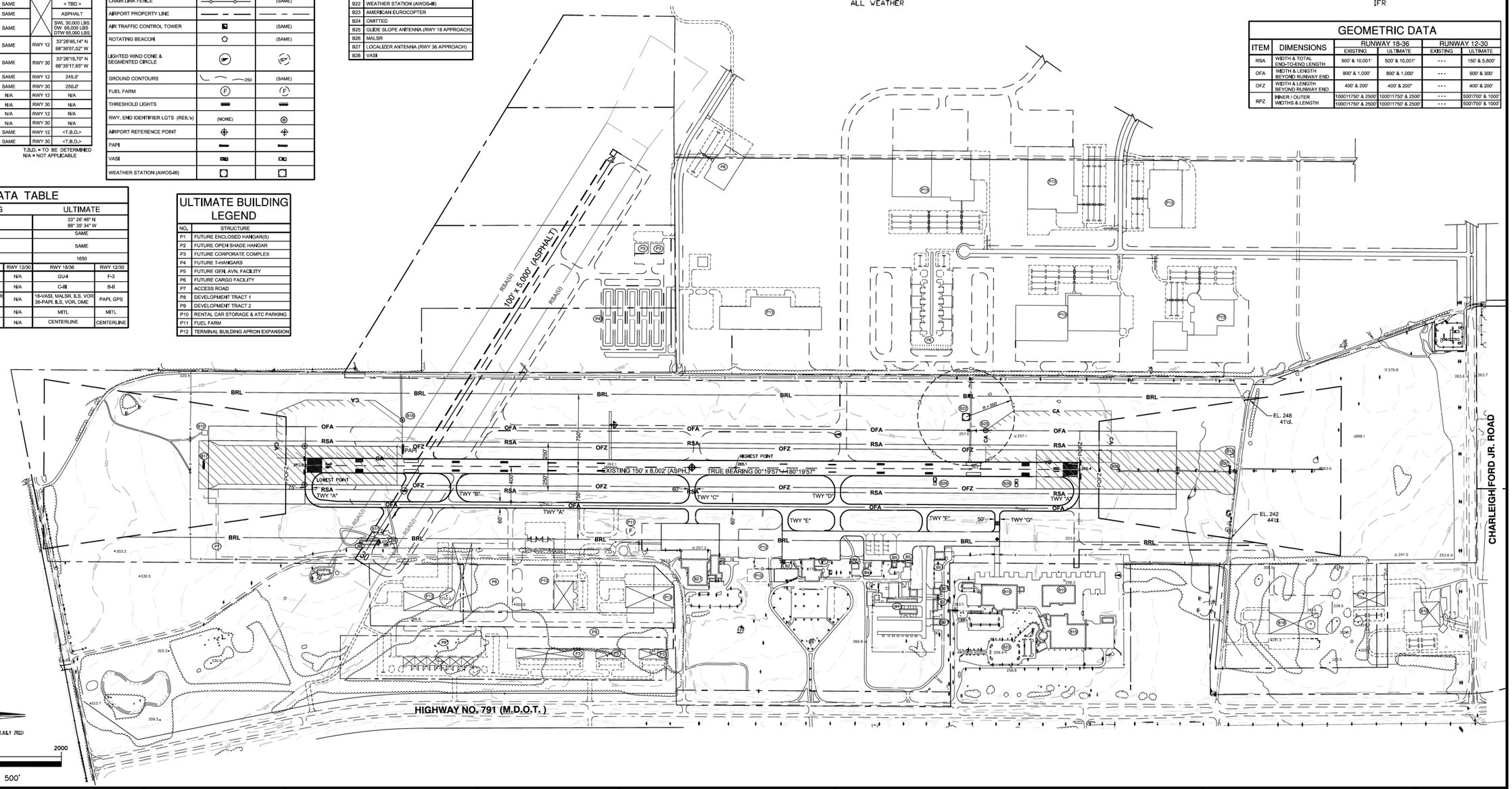
ITEM	DIMENSIONS	RUNWAY 18-36		RUNWAY 12-30	
		EXISTING	ULTIMATE	EXISTING	ULTIMATE
RSA	WIDTH & TOTAL END-TO-END LENGTH	500' & 10,001'	500' & 10,001'	---	150' & 5,600'
OFA	WIDTH & LENGTH BEYOND RUNWAY END	800' & 1,000'	800' & 1,000'	---	500' & 300'
OFZ	WIDTH & LENGTH BEYOND RUNWAY END	400' & 200'	400' & 200"	---	400' & 200'
RPZ	INNER / OUTER WIDTHS & LENGTH	1000'/1750' & 2500'	1000'/1750' & 2500'	---	500'/700' & 1000'
		1000'/1750' & 2500'	1000'/1750' & 2500'	---	500'/700' & 1000'

AIRPORT DATA TABLE

ITEM	EXISTING		ULTIMATE	
AIRPORT REFERENCE POINT COORDINATES (NAD 83)	33° 26' 54" N 88° 35' 29" W		33° 26' 46" N 88° 35' 34" W	
AIRPORT ELEVATION (MSL)	264'		SAME	
MEAN MAX. TEMPERATURE OF HOTTEST MONTH	93° F		SAME	
AIRPORT PROPERTY (ACRES)	1000		1650	
	RWY 18/36	RWY 12/30	RWY 18/36	RWY 12/30
AIRPORT SERVICE LEVEL	BU-II	N/A	GU-I	F-3
AIRPORT REFERENCE CODE	C-III	N/A	C-III	B-II
AIRPORT NAVIGATION AIDS	18-VASI, MALSR, ILS, VOR 36-PAPI, ILS, VOR, DME	N/A	18-VASI, MALSR, ILS, VOR 36-PAPI, ILS, VOR, DME	PAPI, GPS
TAXIWAY LIGHTING	MITL	N/A	MITL	MITL
TAXIWAY MARKINGS	CENTERLINE	N/A	CENTERLINE	CENTERLINE

ULTIMATE BUILDING LEGEND

NO.	STRUCTURE
P1	FUTURE ENCLOSED HANGAR(S)
P2	FUTURE OPEN SHADE HANGAR
P3	FUTURE CORPORATE COMPLEX
P4	FUTURE T-HANGARS
P5	FUTURE GEN. AVN. FACILITY
P6	FUTURE CARGO FACILITY
P7	ACCESS ROAD
P8	DEVELOPMENT TRACT 1
P9	DEVELOPMENT TRACT 2
P10	RENTAL CAR STORAGE & ATC PARKING
P11	FUEL FARM
P12	TERMINAL BUILDING APRON EXPANSION



MAGNETIC DECLINATION 1° 33' W (JULY 2011)

0 250 500 1000 2000

HORIZONTAL SCALE: 1" = 500'

NEEL-SCHAFFER
Solutions you can build upon
15 Southlake Lane, Suite 200
Birmingham, Alabama 35244
TEL (205) 397-3800
FAX (205) 397-3900

CONSTRUCTION NOTICE REQUIREMENT

TO PROTECT OPERATIONAL SAFETY AND FUTURE DEVELOPMENT, ALL PROPOSED CONSTRUCTION ON THE AIRPORT MUST BE COORDINATED BY THE AIRPORT OWNER WITH THE FAA AIRPORTS DISTRICT OFFICE PRIOR TO CONSTRUCTION.

FAA'S REVIEW TAKES APPROXIMATELY 60 DAYS.

ALP APPROVAL BLOCK

MR. MICHAEL P. HAINSEY,
EXECUTIVE DIRECTOR
GOLDEN TRIANGLE REGIONAL AIRPORT

DEC. '11
DATE

REVISIONS

DATE	BY	DESCRIPTION

GOLDEN TRIANGLE REGIONAL AIRPORT
CITIES OF STARKVILLE, WEST POINT & COLUMBUS, MS
CLAY COUNTY, LOWNDES COUNTY & OKTIBBEHA COUNTY

A.I.P. PROJECT NO. 3-28-0020-041-2008

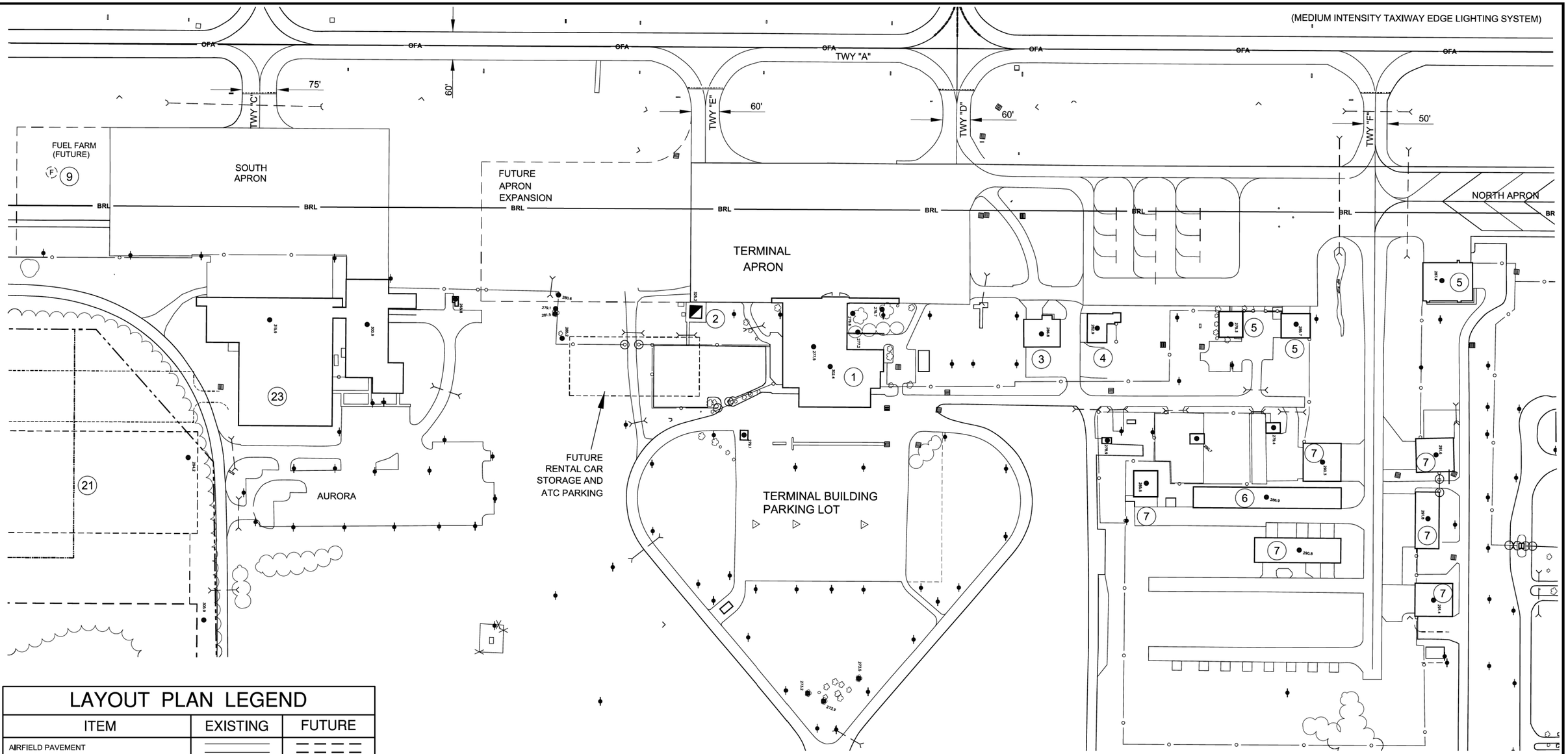
AIRPORT LAYOUT PLAN

AIRPORT LAYOUT DRAWING (SHEET 1 of 1)

DATE:	DEC. 2011
DRAWN BY:	WSB
CHECKED BY:	KWG
SURVEYED	N/A
N-S P.O.:	00.07384.001
SHEET NO.:	

Figure 8.1

(MEDIUM INTENSITY TAXIWAY EDGE LIGHTING SYSTEM)



LAYOUT PLAN LEGEND

ITEM	EXISTING	FUTURE
AIRFIELD PAVEMENT		
ROAD		
BUILDING		
BUILDING RESTRICTION LINE	BRL	(SAME)
AIRPORT SECURITY FENCE	×	(SAME)
AIRPORT PROPERTY LINE		
AIR TRAFFIC CONTROL TOWER		(SAME)
FUEL FARM	(F)	(F)
POWER POLE		(SAME)
STORM CULVERT		
TREE/VEGETATION		(SAME)

BUILDING TABLE

BLDG. #	DESCRIPTION		TOP ELEVATION
	EXISTING	ULTIMATE	
1	TERMINAL BUILDING	-	302.4
2	AIR TRAFFIC CONTROL TOWER	-	325.2
3	ARFF FACILITY	-	286.8
4	SHOP & ELECTRICAL VAULT	-	282.9
5	GENERAL AVIATION	-	287.4
6	OPEN HANGARS	-	-
7	ENCLOSED HANGARS	-	291.8
8	-	-	-
9	-	FUTURE FUEL FARM	-
21	-	FUTURE MANUF. FACILITY	-
23	AURORA (MANUFACTURING)	-	315.9

MAGNETIC DECLINATION 1° 33' W (JULY 2011)

0 50 100 200 400
HORIZONTAL SCALE: 1" = 100'

NEEL-SCHAFFER
Solutions you can build upon
15 Southlake Lane, Suite 200
Birmingham, Alabama 35244
TEL (205) 397-3800
FAX (205) 397-3900

CONSTRUCTION NOTICE REQUIREMENT

TO PROTECT OPERATIONAL SAFETY AND FUTURE DEVELOPMENT, ALL PROPOSED CONSTRUCTION ON THE AIRPORT MUST BE COORDINATED BY THE AIRPORT OWNER WITH THE FAA AIRPORTS DISTRICT OFFICE PRIOR TO CONSTRUCTION.

FAA'S REVIEW TAKES APPROXIMATELY 60 DAYS.

ALP APPROVAL BLOCK

MR. MICHAEL P. HAINSEY, EXECUTIVE DIRECTOR
GOLDEN TRIANGLE REGIONAL AIRPORT

DEC. '11
DATE

REVISIONS		
DATE	BY	DESCRIPTION

GOLDEN TRIANGLE REGIONAL AIRPORT
CITIES OF STARKVILLE, WEST POINT & COLUMBUS, MS
CLAY COUNTY, LOWNDES COUNTY & OKTIBBEHA COUNTY

A.I.P. PROJECT NO. 3-28-0020-041-2008

AIRPORT LAYOUT PLAN

TERMINAL AREA DRAWING (SHEET 1 of 2)

DATE:	DEC. 2011
DRAWN BY:	WSB
CHECKED BY:	KWC
SURVEYED	N/A
N-S P.O.:	00.07384.001
SHEET NO.:	

Figure 8.2

(MEDIUM INTENSITY TAXIWAY EDGE LIGHTING SYSTEM)

OFA

BRL

TWY "D"

TWY "F"

TWY "G"

TWY "A"

60'

50'

NORTH APRON

EUROCOPTER

LAYOUT PLAN LEGEND

ITEM	EXISTING	FUTURE
AIRFIELD PAVEMENT		
ROAD		
BUILDING		
BUILDING RESTRICTION LINE	BRL	(SAME)
AIRPORT SECURITY FENCE	×	(SAME)
AIRPORT PROPERTY LINE		
AIR TRAFFIC CONTROL TOWER		(SAME)
FUEL FARM	(F)	(F)
POWER POLE		(SAME)
STORM CULVERT		
TREE/VEGETATION		(SAME)

BUILDING TABLE

BLDG. #	DESCRIPTION		TOP ELEVATION
	EXISTING	ULTIMATE	
3	ARFF FACILITY	-	286.8
4	SHOP & ELECTRICAL VAULT	-	282.9
5	GENERAL AVIATION	-	287.4
6	OPEN HANGARS	-	-
7	ENCLOSED HANGARS	-	291.8
17	HELICOPTER MFG. PLANT	-	299.8

MAGNETIC DECLINATION 1° 33' W (JULY 2011)

0 50 100 200 400

HORIZONTAL SCALE: 1" = 100'

NEEL-SCHAFFER
Solutions you can build upon
15 Southlake Lane, Suite 200
Birmingham, Alabama 35244
TEL (205) 397-3800
FAX (205) 397-3900

CONSTRUCTION NOTICE REQUIREMENT

TO PROTECT OPERATIONAL SAFETY AND FUTURE DEVELOPMENT, ALL PROPOSED CONSTRUCTION ON THE AIRPORT MUST BE COORDINATED BY THE AIRPORT OWNER WITH THE FAA AIRPORTS DISTRICT OFFICE PRIOR TO CONSTRUCTION.

FAA'S REVIEW TAKES APPROXIMATELY 60 DAYS.

ALP APPROVAL BLOCK

MR. MICHAEL P. HAINSEY,
EXECUTIVE DIRECTOR
GOLDEN TRIANGLE REGIONAL AIRPORT

DEC. '11
DATE

REVISIONS		
DATE	BY	DESCRIPTION

GOLDEN TRIANGLE REGIONAL AIRPORT
CITIES OF STARKVILLE, WEST POINT & COLUMBUS, MS
CLAY COUNTY, LOWNDES COUNTY & OKTIBBEHA COUNTY

A.I.P. PROJECT NO. 3-28-0020-041-2008

AIRPORT LAYOUT PLAN

TERMINAL AREA DRAWING
(SHEET 2 of 2)

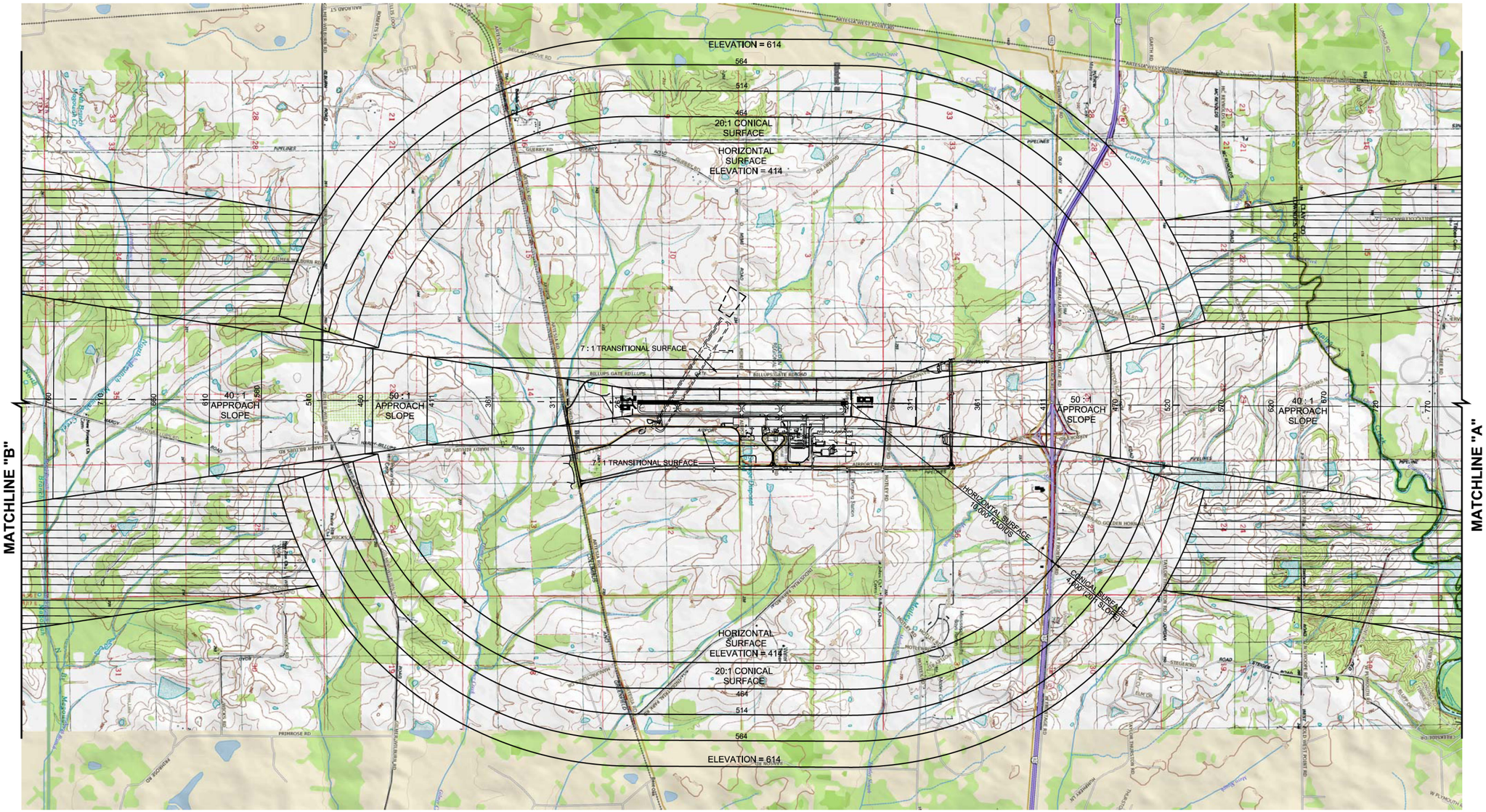
DATE:	DEC. 2011
DRAWN BY:	WSB
CHECKED BY:	KWC
SURVEYED	N/A
N-S P.O.:	00.07384.001
SHEET NO.:	Figure 8.3

8.5 AIRPORT AIRSPACE DRAWINGS (PART 77)

Ideally, airports should be located so that the surrounding airspace is free and clear of obstructions that could be hazardous to aircraft on takeoff or approach paths. It is therefore necessary to maintain the surrounding airspace free of obstacles, preventing the development and growth of obstructions to airspace that could cause the airport to become unusable. The regulations for the protection of airspace in the vicinity of airports are established by a set of imaginary obstacle limitation surfaces, penetration of which represents an obstacle to air navigation. The geometry of the imaginary surfaces is governed by the regulations set forth in Federal Aviation Regulations (FAR) Part 77. Protected airspace around airports is made up of five principal imaginary surfaces, which are shown on the FAR Part 77 Airspace Drawing:

- Primary Surface – A surface that is longitudinally centered on the runway, extending 200 feet beyond the threshold in each direction in the case of paved runways.
- Approach Surface – An inclined plane or combination of planes of varying width and slope running from the ends of the primary surface.
- Horizontal Surface – A horizontal plane 150 feet above the established airport elevation. Its dimensions are governed by the runway service category and approach procedure desired.
- Transitional Surface – An inclined plane with a slope of 7:1 extending upward and outward from the Primary Surface and Approach Surface, terminating at the horizontal surface where these two planes meet.
- Conical Surface – An inclined plant at a slope of 20:1 extending upward and outward from the periphery of the horizontal surface for a horizontal distance of 4,000 feet.

Figures 8.4 – 8.6 presents the Airspace Drawings, which depicts the proposed surfaces. The plan should be officially adopted and integrated into the planning and zoning ordinances for the city in order to prevent obstructions that could preclude future development.



MAGNETIC DECLINATION 1° 33' W (JULY 2011)

0 1000 2000 4000 8000

HORIZONTAL SCALE: 1" = 2000'

OBSTRUCTION DATA	AIRPORT DATA	USGS MAPS
FOR OBSTRUCTION DATA, SEE SHEETS 8 AND 9 OF 9.	AIRPORT ELEVATION (E) 264' HORIZONTAL SURFACE ELEVATION (E) 414' RUNWAY 18 / 36 LENGTH (E) = 8002'	7.5 MINUTE USGS TOPOGRAPHICAL MAPS USED FOR CONTOUR BASEMAP. • CRAWFORD EAST, MISSISSIPPI (1987) • BENT OAK, MISSISSIPPI (1987) • WAVERLY, MISSISSIPPI (1987)

NEEL-SCHAFFER
Solutions you can build upon
15 Southlake Lane, Suite 200
Birmingham, Alabama 35244
TEL (205) 397-3800
FAX (205) 397-3900

CONSTRUCTION NOTICE REQUIREMENT

TO PROTECT OPERATIONAL SAFETY AND FUTURE DEVELOPMENT, ALL PROPOSED CONSTRUCTION ON THE AIRPORT MUST BE COORDINATED BY THE AIRPORT OWNER WITH THE FAA AIRPORTS DISTRICT OFFICE PRIOR TO CONSTRUCTION.

FAA'S REVIEW TAKES APPROXIMATELY 60 DAYS.

ALP APPROVAL BLOCK

MR. MICHAEL P. HAINSEY,
EXECUTIVE DIRECTOR
GOLDEN TRIANGLE REGIONAL AIRPORT

DEC. '11
DATE

REVISIONS		
DATE	BY	DESCRIPTION

GOLDEN TRIANGLE REGIONAL AIRPORT

CITIES OF STARKVILLE, WEST POINT & COLUMBUS, MS
CLAY COUNTY, LOWNDES COUNTY & OKTIBBEHA COUNTY

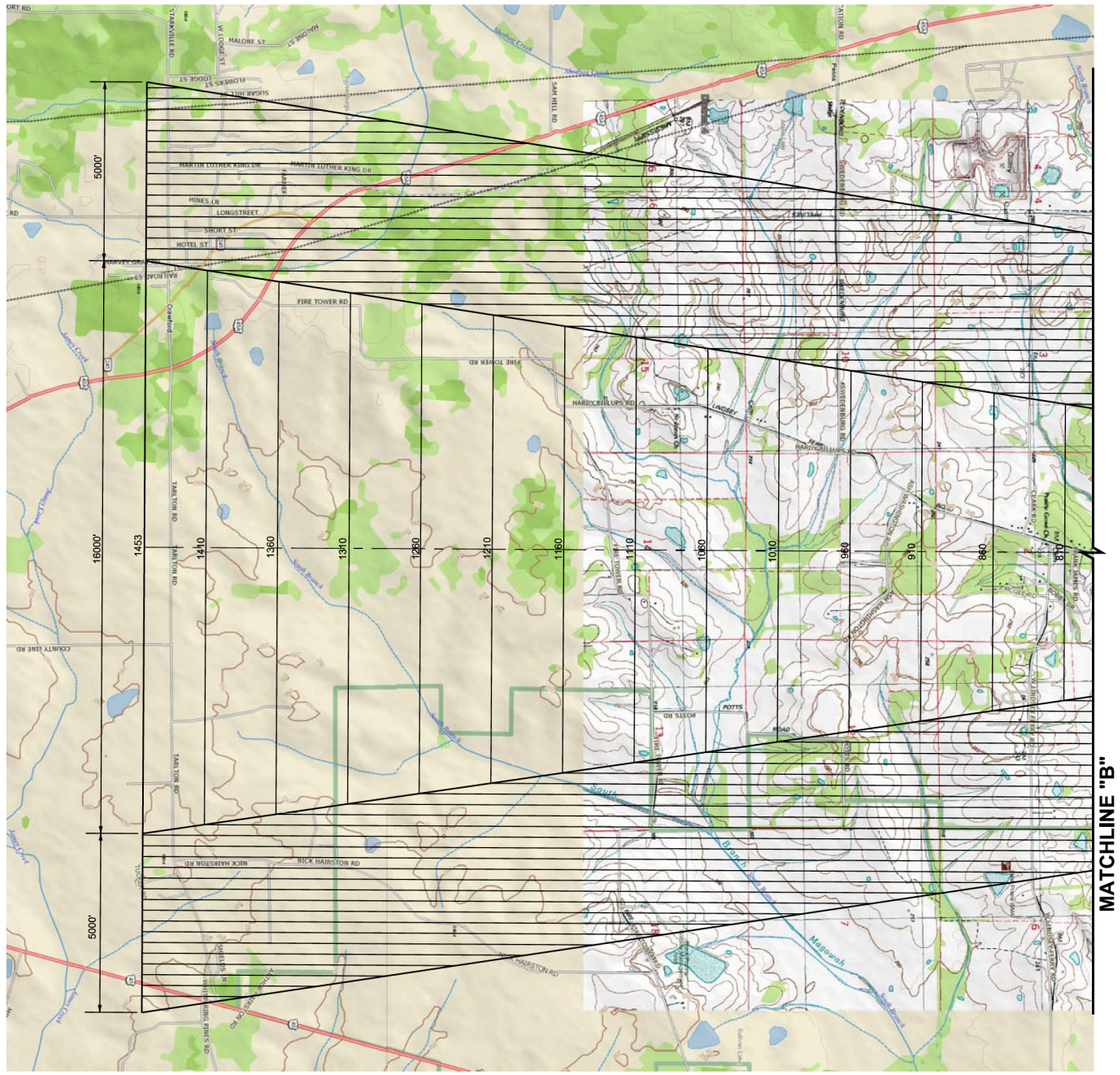
A.I.P. PROJECT NO. 3-28-0020-041-2008

AIRPORT LAYOUT PLAN

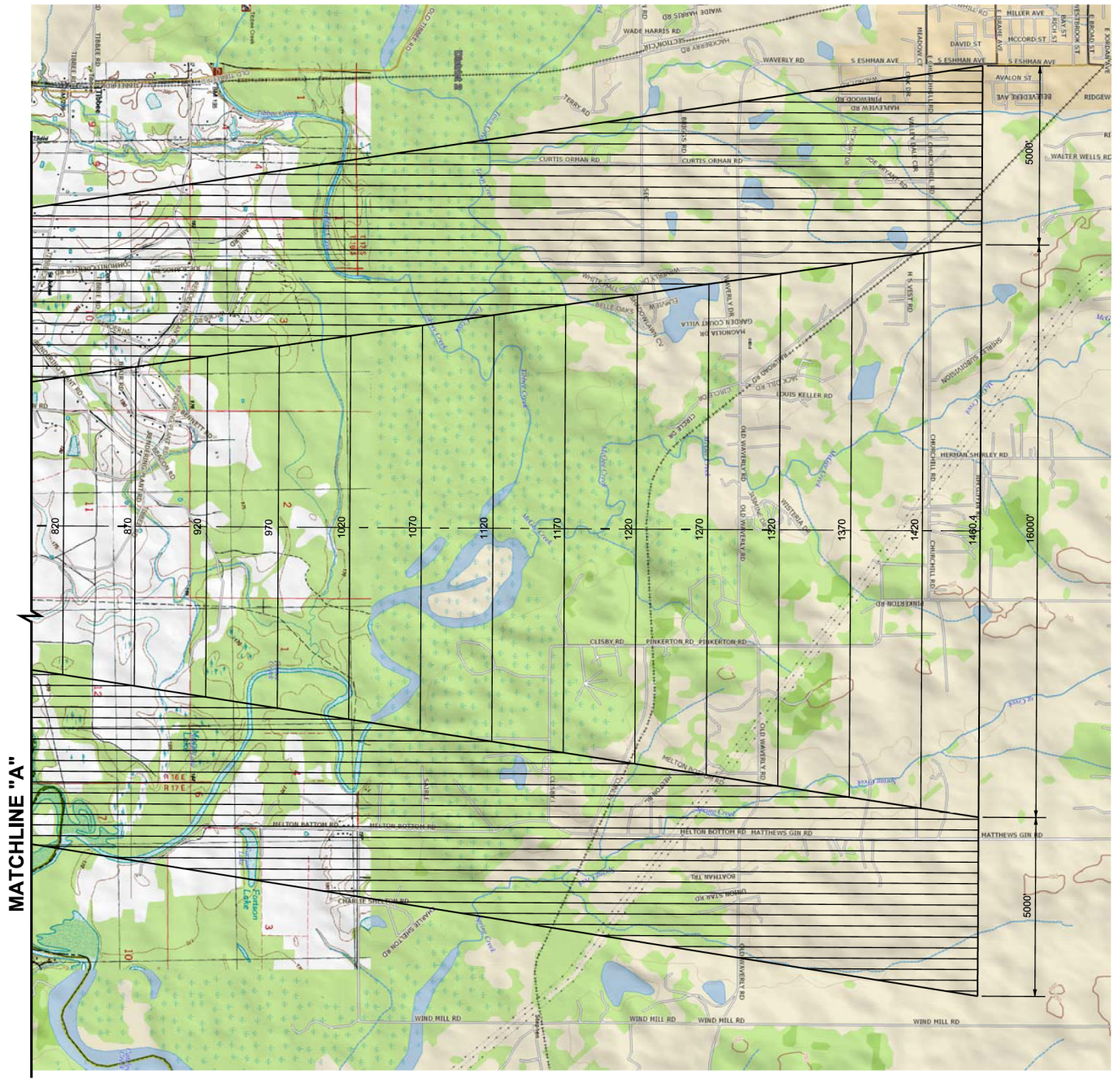
AIRPORT AIRSPACE DRAWING
(SHEET 1 of 3)

DATE:	DEC. 2011
DRAWN BY:	WSB
CHECKED BY:	KWG
SURVEYED	N/A
N-S P.O.:	00.07384.001
SHEET NO.:	

Figure 8.4



RUNWAY 36



RUNWAY 18

MAGNETIC DECLINATION 1° 33' W (JULY 2011)

0 1000 2000 4000 8000

HORIZONTAL SCALE: 1" = 2000'

NEEL-SCHAFFER
Solutions you can build upon
15 Southlake Lane, Suite 200
Birmingham, Alabama 35244
TEL (205) 397-3800
FAX (205) 397-3900

CONSTRUCTION NOTICE REQUIREMENT

TO PROTECT OPERATIONAL SAFETY AND FUTURE DEVELOPMENT, ALL PROPOSED CONSTRUCTION ON THE AIRPORT MUST BE COORDINATED BY THE AIRPORT OWNER WITH THE FAA AIRPORTS DISTRICT OFFICE PRIOR TO CONSTRUCTION.

FAA'S REVIEW TAKES APPROXIMATELY 60 DAYS.

ALP APPROVAL BLOCK

MR. MICHAEL P. HAINSEY,
EXECUTIVE DIRECTOR
GOLDEN TRIANGLE REGIONAL AIRPORT

DEC. '11
DATE

REVISIONS		
DATE	BY	DESCRIPTION

GOLDEN TRIANGLE REGIONAL AIRPORT
CITIES OF STARKVILLE, WEST POINT & COLUMBUS, MS
CLAY COUNTY, LOWNDES COUNTY & OKTIBBEHA COUNTY

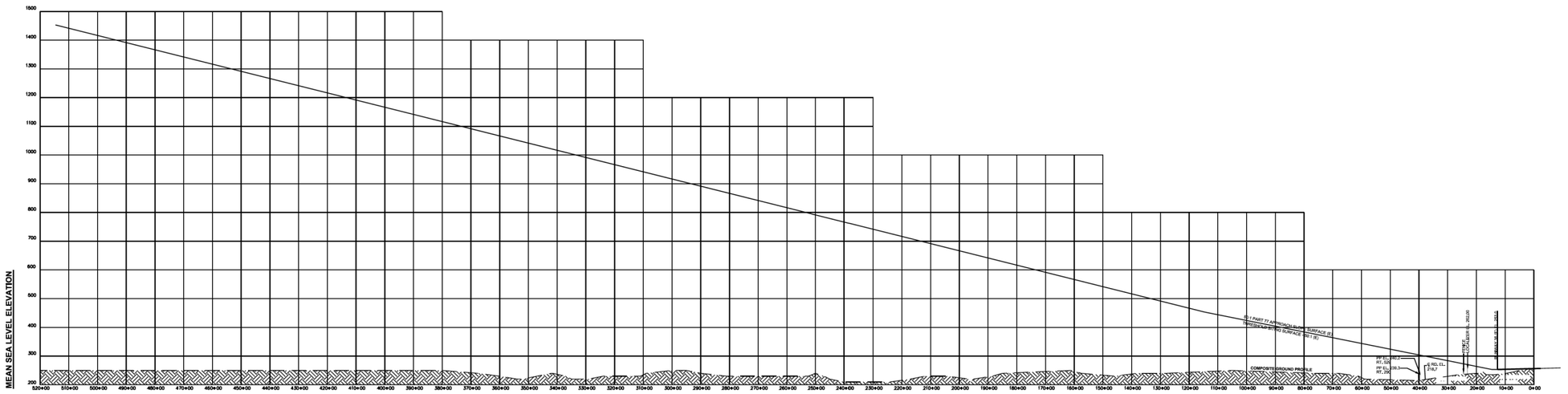
A.I.P. PROJECT NO. 3-28-0020-041-2008

AIRPORT LAYOUT PLAN

AIRPORT AIRSPACE DRAWING
(SHEET 2 of 3)

DATE:	DEC. 2011
DRAWN BY:	WSB
CHECKED BY:	KWC
SURVEYED	N/A
N-S P.O.:	00.07384.001
SHEET NO.:	

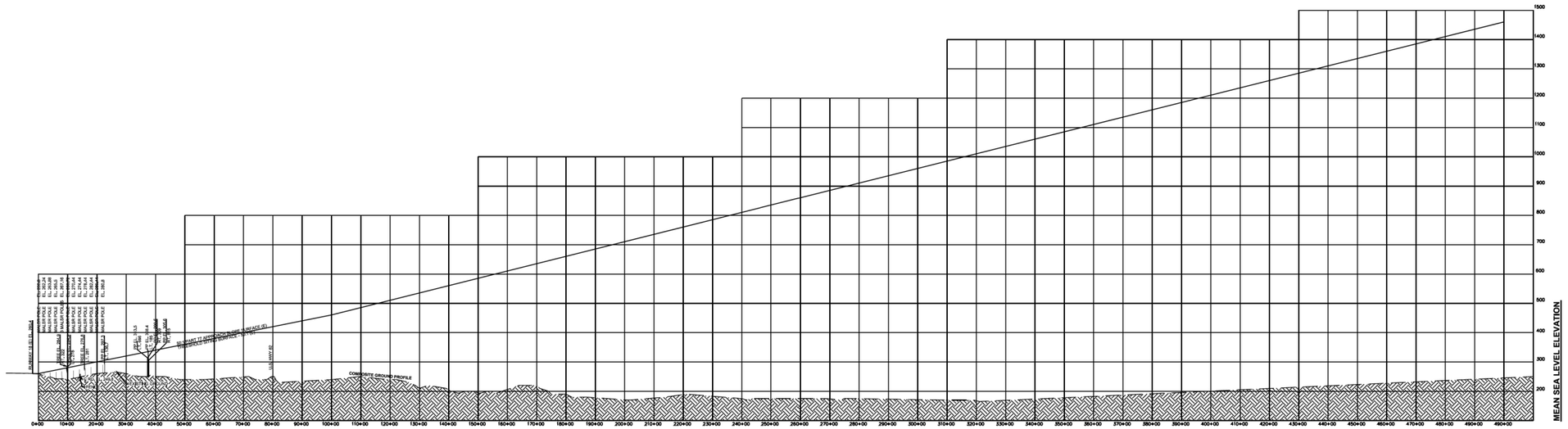
Figure 8.5



RUNWAY 36

APPROACH PROFILE

SCALE IN FEET
HORIZONTAL SCALE: 1" = 1000'
VERTICAL SCALE: 1" = 100'



RUNWAY 18

APPROACH PROFILE

SCALE IN FEET
HORIZONTAL SCALE: 1" = 1000'
VERTICAL SCALE: 1" = 100'

NEEL-SCHAFFER
Solutions you can build upon
15 Southlake Lane, Suite 200
Birmingham, Alabama 35244
TEL (205) 397-3800
FAX (205) 397-3900

CONSTRUCTION NOTICE REQUIREMENT

TO PROTECT OPERATIONAL SAFETY AND FUTURE DEVELOPMENT, ALL PROPOSED CONSTRUCTION ON THE AIRPORT MUST BE COORDINATED BY THE AIRPORT OWNER WITH THE FAA AIRPORTS DISTRICT OFFICE PRIOR TO CONSTRUCTION.

FAA'S REVIEW TAKES APPROXIMATELY 60 DAYS.

ALP APPROVAL BLOCK

MR. MICHAEL P. HAINSEY,
EXECUTIVE DIRECTOR
GOLDEN TRIANGLE REGIONAL AIRPORT

DEC. '11
DATE

REVISIONS		
DATE	BY	DESCRIPTION

GOLDEN TRIANGLE REGIONAL AIRPORT
CITIES OF STARKVILLE, WEST POINT & COLUMBUS, MS
CLAY COUNTY, LOWNDES COUNTY & OKTIBBEHA COUNTY

A.I.P. PROJECT NO. 3-28-0020-041-2008

AIRPORT LAYOUT PLAN

AIRPORT AIRSPACE DRAWING
(SHEET 3 of 3)

DATE:	DEC. 2011
DRAWN BY:	WSB
CHECKED BY:	KWG
SURVEYED	N/A
N-S P.O.:	00.07384.001
SHEET NO.:	

Figure 8.6

8.6 INNER PORTION OF APPROACH SURFACE PLAN – RUNWAY 36

The Inner Portion of Approach Surface Plan – Runway 36 drawing is depicted on Figure 8.7 and is based on Federal Aviation Regulations (FAR) Part 77, *Objects Affecting Navigable Airspace.* In order to protect the airspace and approaches to each runway end from hazards that could affect the safe and efficient operation of the airport, Federal criteria has been established to control the height of objects in the vicinity of the airport.

The dimensional standards for the approach surfaces and RPZ are determined by the classification of runways for precision and non-precision approaches. The FAA requires the establishment of runway protection zones (RPZ) at the ends of runways when federal funds are to be expended on new or existing airports. The airport owner should have positive control over development within the RPZ by either aviation easements or ownership in fee simple; thereby providing long-term positive assurance that there will be no encroachment within the critical portions of the inner approach surface.

The Inner Portion of Approach Surface Plan drawings show the runway end approach and RPZ profile in relation to any objects that fall with these surfaces. The Golden Triangle Regional Airport owns in fee simple all RPZ's for Runway 18/36.

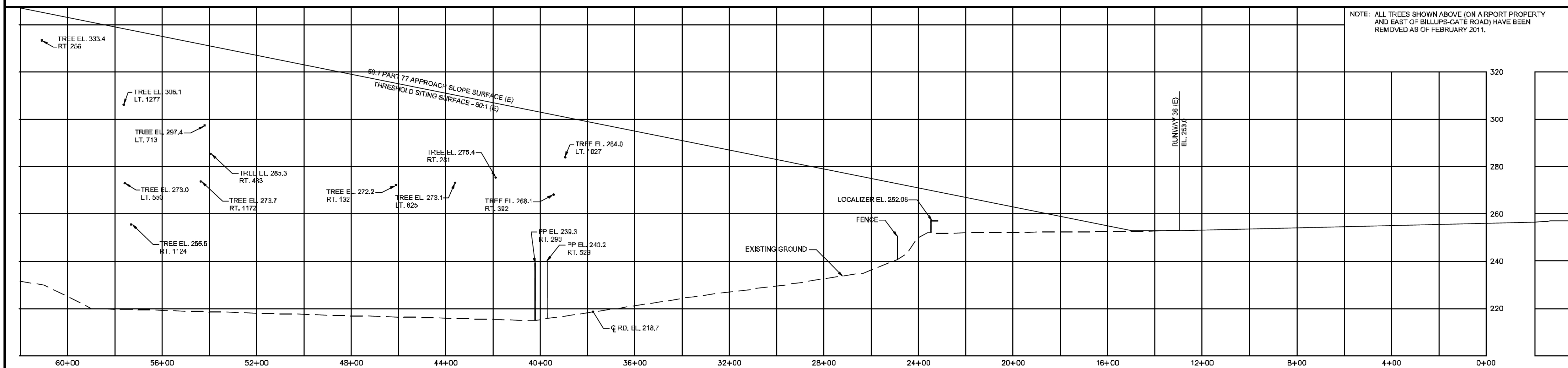
8.7 INNER PORTION OF APPROACH SURFACE PLAN- RUNWAY 18

The Inner Portion of Approach Surface Plan – Runway 18 drawing is depicted on Figure 8.8.

IPASD Obstruction Table									
No.	Object Description	Latitude	Longitude	Distance fm RW end	Offset fm RW C/L	Top Elevation	Amt of Penetration	Surface(s) Penetrated	REMEDIATION / ACTION
1	POWER POLE	33°26'23.373" N	88°35'23.393" W	568'	498' R	281.5	19.5'	APPROACH (E - 36)	REMOVED AS OF 2 - 2011
2	TREE	33°26'09.526" N	88°35'33.263" W	1955'	326' L	290.5	30.5'	APPROACH (J - 36)	REMOVED AS OF 2 - 2011
3	TREE	33°26'09.039" N	88°35'25.874" W	2020'	300' R	305.3	12.4'	APPROACH (E - 36)	REMOVED AS OF 2 - 2011
4	TREE	33°26'03.145" N	88°35'22.020" W	2618'	635' R	279.4	7.2'	APPROACH (J - 36)	REMOVED AS OF 2 - 2011
5	TREE	33°26'03.607" N	88°35'24.886" W	2568'	388' R	307.1	3.3'	APPROACH (E - 36)	REMOVED AS OF 2 - 2011
6	TREE	33°26'00.880" N	88°35'26.346" W	2855'	267' R	305.8	23.5'	APPROACH (J - 36)	REMOVED AS OF 2 - 2011
7	TREE	33°26'00.549" N	88°35'33.548" W	2894'	343' L	310.4	32.8'	APPROACH (J - 36)	REMOVED AS OF 2 - 2011
8	TREE	33°27'44.329" N	88°35'24.715" W	925.9'	322' L	284.8	5.3'	APPROACH (E - 18)	REMOVED
9	-	_°_'__" N	_°_'__" W	_'	_'	-	-	-	-

* ELEVATIONS ADJUSTED UPWARD 15' FOR PUBLIC ROADWAY, 17' FOR INTERSTATE HIGHWAY, 23' FOR RAILROADS
**OFFSETS ARE DESCRIBED RIGHT OR LEFT OF THE RUNWAY CENTERLINE AS SEEN BY A PILOT APPROACHING THE RUNWAY TO LAND

LEGEND	EXISTING	ULTIMATE
RUNWAY/TAXIWAY OUTLINE		
BUILDINGS/FACILITIES		
AIRPORT PROPERTY LINE		
AIRPORT PROPERTY LINE w/FENCE		
FENCE LINE		
THRESHOLD LIGHTS		
RW END IDENTIFIER LIGHTS (REILS)		
GROUND CONTOURS		
SIGNIFICANT OBJECT LOCATION		
TREES/BRUSH		



NOTE: ALL TREES SHOWN ABOVE (ON AIRPORT PROPERTY AND EAST OF BILLUPS-GATE ROAD) HAVE BEEN REMOVED AS OF FEBRUARY 2011.

NEEL-SCHAFFER
Solutions you can build upon
15 Southlake Lane, Suite 200
Birmingham, Alabama 35244
TEL. (205) 397-3800
FAX (205) 397-3900

CONSTRUCTION NOTICE REQUIREMENT

TO PROTECT OPERATIONAL SAFETY AND FUTURE DEVELOPMENT, ALL PROPOSED CONSTRUCTION ON THE AIRPORT MUST BE COORDINATED BY THE AIRPORT OWNER WITH THE FAA AIRPORTS DISTRICT OFFICE PRIOR TO CONSTRUCTION.

FAA'S REVIEW TAKES APPROXIMATELY 60 DAYS.

ALP APPROVAL BLOCK

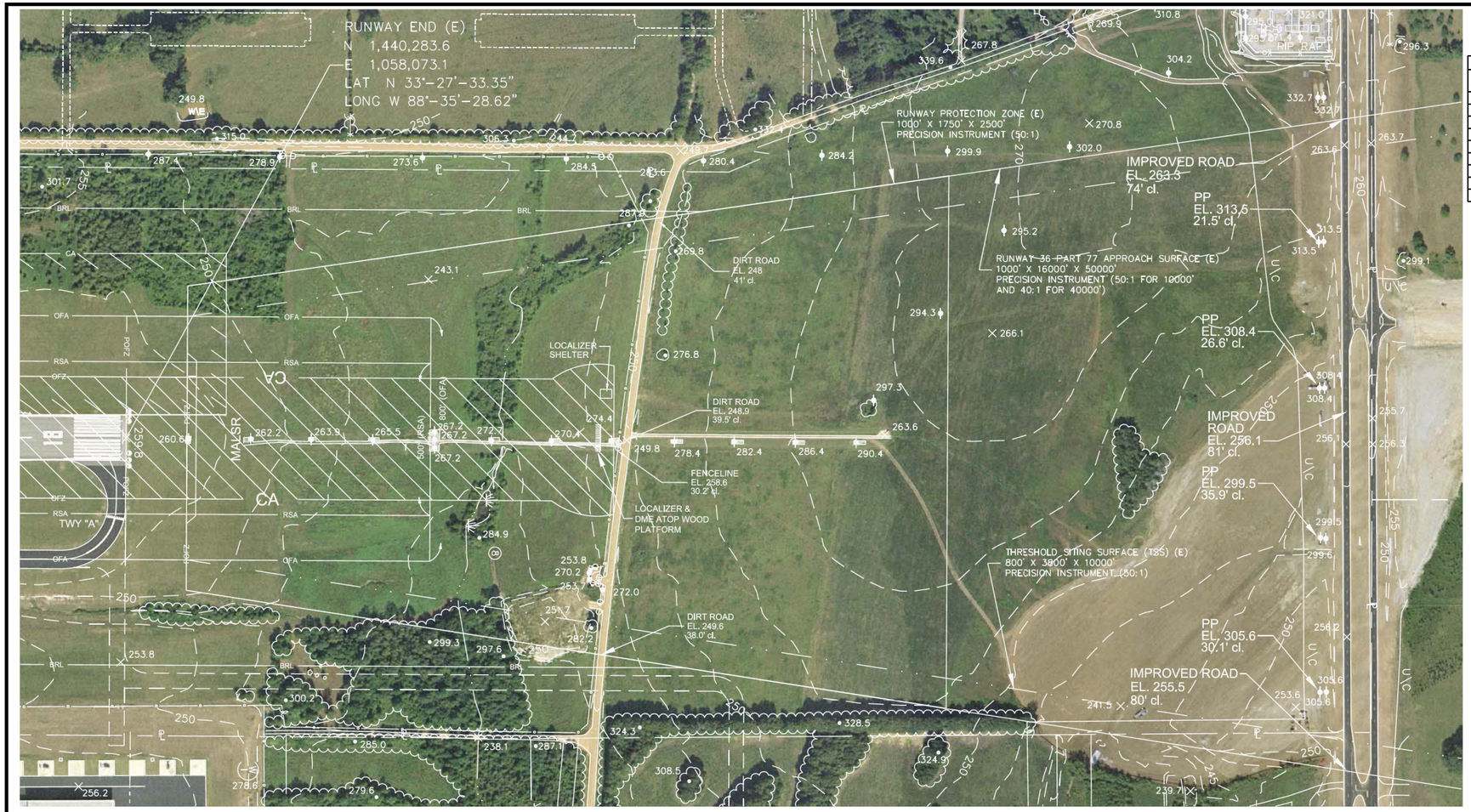
MR. MICHAEL P. HAINSEY, EXECUTIVE DIRECTOR, GOLDEN TRIANGLE REGIONAL AIRPORT — DEC. '11 — DATE

REVISIONS		
DATE	BY	DESCRIPTION

GOLDEN TRIANGLE REGIONAL AIRPORT
CITIES OF STARKVILLE, WEST POINT & COLUMBUS, MS
CLAY COUNTY, LOWNDES COUNTY & OKTIBBEHA COUNTY
A.I.P. PROJECT NO. 3-28-0020-041-2008

AIRPORT LAYOUT PLAN
RUNWAY 36 INNER PORTION OF THE APPROACH SURFACE DRAWING
(SHEET 1 of 2)

DATE:	DEC. 2011
DRAWN BY:	WSB
CHECKED BY:	KWC
SURVEYED	N/A
N-S P.O.:	00.07384.001
SHEET NO.:	Figure 8.7



IPASD Obstruction Table

No.	Object Description	Latitude	Longitude	Distance fm RW end	Offset fm RW C/L	Top Elevation	Amt of Penetration	Surface(s) Penetrated	REMEDIATION / ACTION
1	POWER POLE	33°26'23.373" N	88°35'23.393" W	569'	499' R	281.9	18.5'	APPROACH (E - 36)	REMOVED AS OF 2 - 2011
2	TREE	33°26'09.628" N	88°35'33.263" W	1965'	326' L	290.5	30.9'	APPROACH (U - 36)	REMOVED AS OF 2 - 2011
3	TREE	33°26'09.039" N	88°35'25.874" W	2020'	300' R	305.3	12.4'	APPROACH (E - 36)	REMOVED AS OF 2 - 2011
4	TREE	33°26'03.145" N	88°35'22.020" W	2618'	636' R	279.4	7.2'	APPROACH (U - 36)	REMOVED AS OF 2 - 2011
5	TREE	33°26'03.607" N	88°35'24.886" W	2568'	388' R	307.1	3.3'	APPROACH (E - 36)	REMOVED AS OF 2 - 2011
6	TREE	33°26'00.680" N	88°35'26.346" W	2865'	267' R	305.6	28.5'	APPROACH (U - 36)	REMOVED AS OF 2 - 2011
7	TREE	33°26'00.549" N	88°35'33.548" W	2884'	343' L	310.4	32.9'	APPROACH (U - 36)	REMOVED AS OF 2 - 2011
8	TREE	33°27'44.829" N	88°35'24.715" W	926.9'	322' L	284.9	5.3'	APPROACH (E - 18)	REMOVE
9	-	- ° - ' - " N	- ° - ' - " W	-	-	-	-	-	-

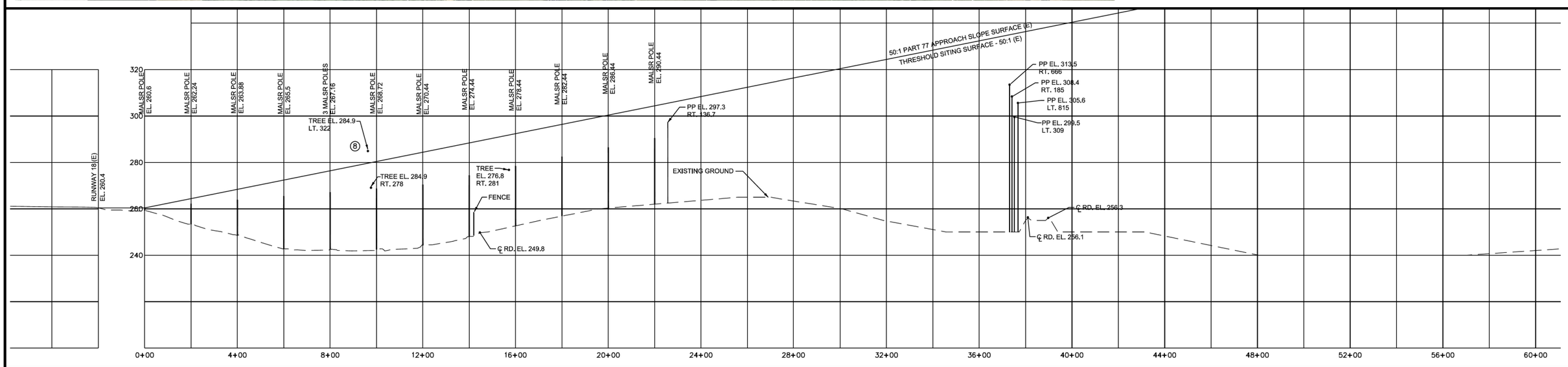
* ELEVATIONS ADJUSTED UPWARD 15' FOR PUBLIC ROADWAY, 17' FOR INTERSTATE HIGHWAY, 23' FOR RAILROADS
**OFFSETS ARE DESCRIBED RIGHT OR LEFT OF THE RUNWAY CENTERLINE AS SEEN BY A PILOT APPROACHING THE RUNWAY TO LAND

MAGNETIC DECLINATION 1° 33' W (JULY 2011)

0 100 200 400 800

HORIZONTAL SCALE: 1" = 200'

LEGEND		
	EXISTING	ULTIMATE
RUNWAY/TAXIWAY OUTLINE		
BUILDINGS/FACILITIES		
AIRPORT PROPERTY LINE		
AIRPORT PROPERTY LINE w/FENCE		
FENCE LINE		
THRESHOLD LIGHTS		
RW END IDENTIFIER LIGHTS (REILS)		
GROUND CONTOURS		
SIGNIFICANT OBJECT LOCATION		
TREES/BRUSH		



NEEL-SCHAFFER
Solutions you can build upon
15 Southlake Lane, Suite 200
Birmingham, Alabama 35244
TEL (205) 397-3800
FAX (205) 397-3900

CONSTRUCTION NOTICE REQUIREMENT

TO PROTECT OPERATIONAL SAFETY AND FUTURE DEVELOPMENT, ALL PROPOSED CONSTRUCTION ON THE AIRPORT MUST BE COORDINATED BY THE AIRPORT OWNER WITH THE FAA AIRPORTS DISTRICT OFFICE PRIOR TO CONSTRUCTION.

FAA'S REVIEW TAKES APPROXIMATELY 60 DAYS.

ALP APPROVAL BLOCK

MR. MICHAEL P. HAINSEY, EXECUTIVE DIRECTOR
GOLDEN TRIANGLE REGIONAL AIRPORT

DEC. '11
DATE

REVISIONS		
DATE	BY	DESCRIPTION

GOLDEN TRIANGLE REGIONAL AIRPORT
CITIES OF STARKVILLE, WEST POINT & COLUMBUS, MS
CLAY COUNTY, LOWNDES COUNTY & OKTIBBEHA COUNTY

A.I.P. PROJECT NO. 3-28-0020-041-2008

AIRPORT LAYOUT PLAN

RUNWAY 18 INNER PORTION OF THE APPROACH SURFACE DRAWING
(SHEET 2 of 2)

DATE:	DEC. 2011
DRAWN BY:	WSB
CHECKED BY:	KWC
SURVEYED	N/A
N-S P.O.:	00.07384.001
SHEET NO.:	

Figure 8.8

CHAPTER 9
CAPITAL IMPROVEMENT PROGRAM IMPLEMENTATION PLAN

9.1 INTRODUCTION

The previous sections of this Master Plan present a logical, step-by-step explanation of how the long-range improvement plan was developed for the Airport. This implementation plan is designed to assist Airport management in achieving their primary goals to maximize revenues and minimize operating expenditures, while at the same time providing facilities to accommodate the flying public. The implementation plan presented in this section both describes the staging of proposed improvements and provides the basic capital requirements of each. Over the 20-year planning period, the implementation plan may serve as general financial guidance in making policy decisions regarding the development of the airport.

9.2 PROGRAM STAGING AND COST ESTIMATING

An initial development schedule was prepared based upon facility needs presented in Chapter 5, which in most cases were dependent upon the operations forecast. Therefore, since actual activity levels realized at the Airport may vary, the staging must remain sensitive to such variations. It is quite possible for some projects to move up in priority, while at the same time, others may move down. A prioritization of improvements considered the urgency of need, ease of implementation, logic of sequence, and input received from Airport staff. The objective was to establish an efficient order for project development and implementation that satisfied forecasted activity and Airport desires. The development schedule is divided into three general stages that represent the short (2011-2013), intermediate (2014-2018), and long-term (2019-2029).

9.2.1 Capital Improvement Program

The Capital Improvement Program (CIP) development schedule and cost summaries are presented in Table 9.1 and provide an itemized breakdown of the AIP and Non-AIP

funding for the improvements proposed by this Master Plan.

As noted, cost projections are based on 2011 dollars and include estimated engineering fees and contingencies. Although these costs are approximate, they are appropriate for planning purposes. These projections however, should be used for planning purposes only and do not imply that funding for these will necessarily be available. The total cost of the projects identified for Stage 1 (2011-2013) is $7,416,060. The FAA eligible portion is $6,361,257 which is 95 percent of the AIP Eligible total costs. The remaining $1,054,803 is the Non-Federal share. The total cost of the projects identified for Stage II (2014-2018) is $17,253,880. The FAA eligible portion is $14,145,671 which is 95 percent of the AIP Eligible total costs. The remaining $3,108,209 is the Non-Federal share. The total cost of the projects identified for Stage III (2019-2029) is $17,915,400. The FAA eligible portion is $16,335,630 which is 95 percent of the AIP Eligible total costs. The remaining $1,579,770 is the Non-Federal share.

The next step focused on identifying costs associated with each capital improvement project. These project-specific development costs were then further broken down considering conventional aviation funding sources, such as AIP Eligible and Non-AIP Eligible projects. Particular focus was given to detailing estimated costs for the short-term.

TABLE 9.1
Golden Triangle Regional Airport
Columbus, Mississippi
Proposed Capital Improvement Plan Projects

	Qty	Unit	Unit Cost	Federal	Non-Federal	Total
A. AIP ELIGIBLE - STAGE I (0-5 YR)						
1. Access Road Rehabilitation (3,600 LF)						
a. Mobilization	1	LS	$25,000	$23,750	$1,250	$25,000
b. Milling/Planing	9600	SY	$6	$54,720	$2,880	$57,600
c. Crack Repair (Pavement Reinforcing Fabric)	1200	SY	$6	$6,840	$360	$7,200
d. Bituminous Paving (3")	1750	TON	$75	$124,688	$6,563	$131,250
e. Marking/Traffic Control	1	LS	$10,000	$9,500	$500	$10,000
Subtotal				*$219,498*	*$11,553*	*$231,050*
Engineering/Contingencies		LS		$43,900	$2,311	$46,210
Total				***$263,397***	***$13,863***	***$277,260***
2. Commercial Apron Rehabilitation		LS				$2,000,000
Subtotal				*$1,900,000*	*$100,000*	*$2,000,000*
Engineering/Contingencies		LS		$380,000	$20,000	$400,000
Total				***$2,280,000***	***$120,000***	***$2,400,000***
3. Land Acquisition (Tract 10)	40	AC	$14,000	$532,000	$28,000	$560,000
Subtotal				*$532,000*	*$28,000*	*$560,000*
Engineering/Contingencies		LS		$106,400	$5,600	$112,000
Total				***$638,400***	***$33,600***	***$672,000***
4. Resurface/Widen Taxiways to 75' and Add Tapers/Fillets						
a. Mobilization	1	LS	$100,000	$95,000	$5,000	$100,000
b. Excavation	14500	CY	$6	$82,650	$4,350	$87,000
c. Subbase	22000	SY	$15	$313,500	$16,500	$330,000
d. Base Course	21500	SY	$18	$367,650	$19,350	$387,000
e. Bituminous Paving	22000	TON	$75	$1,567,500	$82,500	$1,650,000
f. Marking	1	LS	$10,000	$9,500	$500	$10,000
g. Seeding/Mulching	2	AC	$5,000	$9,500	$500	$10,000
h. Erosion Control	1	LS	$15,000	$14,250	$750	$15,000
i. Relocate Lighting	1	LS	$200,000	$190,000	$10,000	$200,000
Subtotal				*$2,649,550*	*$139,450*	*$2,789,000*
Engineering/Contingencies		LS		$529,910	$27,890	$557,800
Total				***$3,179,460***	***$167,340***	***$3,346,800***
TOTAL - AIP ELIGIBLE - STAGE I				**$6,361,257**	**$334,803**	**$6,696,060**

Golden Triangle Regional Airport
Columbus, Mississippi
Proposed Capital Improvement Plan Projects

	Qty	Unit	Unit Cost	Federal	Non-Federal	Total
B. NON AIP ELIGIBLE - STAGE I (0-5 YR)						
1. Hangars						
a. 1 - 4 Unit Nested T-Hangar	1	LS	$200,000	$0	$200,000	$200,000
b. 1-80'x80' Storage Hangar	1	LS	$400,000	$0	$400,000	$400,000
Subtotal				*$0*	*$600,000*	*$600,000*
Engineering/Contingencies		LS		$0	$120,000	$120,000
Total				***$0***	***$720,000***	***$720,000***
TOTAL NON-AIP ELIGIBLE - STAGE 1				**$0**	**$720,000**	**$720,000**
TOTAL STAGE I*				**$6,361,257**	**$1,054,803**	**$7,416,060**

Golden Triangle Regional Airport
Columbus, Mississippi
Proposed Capital Improvement Plan Projects

	Qty	Unit	Unit Cost	Federal	Non-Federal	Total
C. AIP ELIGIBLE - STAGE II (6-10 YR)						
1. Access Road Addition (200 LF)						
a. Mobilization	1	LS	$50,000	$47,500	$2,500	$50,000
b. Clearing & Grubbing	1	ACRE	$5,000	$4,750	$250	$5,000
c. Earthwork	500	CY	$8	$3,800	$200	$4,000
d. Erosion Control	1	LS	$15,000	$14,250	$750	$15,000
e. Storm Drainage	100	LF	$85	$8,075	$425	$8,500
f. Paving	600	SY	$30	$17,100	$900	$18,000
g. Marking/Traffic Control	1	LS	$10,000	$9,500	$500	$10,000
h. Seeding/Mulching	1	ACRE	$5,000	$4,750	$250	$5,000
Subtotal				*$109,725*	*$5,775*	*$115,500*
Engineering/Contingencies		LS		$43,890	$2,310	$46,200
Total				**$153,615**	**$8,085**	**$161,700**
2. Replace MITL for TW's A-H (RW 18/36)	1	LS	$400,000	$380,000	$20,000	$400,000
Subtotal				*$380,000*	*$20,000*	*$400,000*
Engineering/Contingencies		LS		$114,000	$6,000	$120,000
Total				**$494,000**	**$26,000**	***$520,000***
3. Land Acquisition (Tract F-1)	43	AC	$25,000	$1,021,250	$53,750	$1,075,000
Subtotal				*$1,021,250*	*$53,750*	*$1,075,000*
Engineering/Contingencies		LS		$204,250	$10,750	$215,000
Total				***$1,225,500***	***$64,500***	***$1,290,000***
4. Construct Runway 12/30 (5,000' X 100', CAT C-II)						
a. Mobilization	1	LS	$250,000	$237,500	$12,500	$250,000
b. Clearing & Grubbing	100	ACRE	$2,000	$190,000	$10,000	$200,000
c. Earthwork	300,000	CY	$3	$855,000	$45,000	$900,000
d. Erosion Control	1	LS	$150,000	$142,500	$7,500	$150,000
e. Storm Drainage	2000	LF	$85	$161,500	$8,500	$170,000
f. Sub-Base Course	55,600	SY	$15	$792,300	$41,700	$834,000
g. Base Course	55,600	SY	$18	$950,760	$50,040	$1,000,800
h. Bituminous Surface Course	36,000	TON	$80	$2,736,000	$144,000	$2,880,000
i. Signage	1	LS	$25,000	$23,750	$1,250	$25,000
j. MIRL	1	LS	$250,000	$237,500	$12,500	$250,000
k. Pavement Marking	1	LS	$150,000	$142,500	$7,500	$150,000
l. Seeding/Mulching	80	ACRE	$3,000	$228,000	$12,000	$240,000
m. Windcone	1	LS	$25,000	$23,750	$1,250	$25,000
n. Security Fencing	10,000	LF	$15	$142,500	$7,500	$150,000
Subtotal				*$6,863,560*	*$361,240*	*$7,224,800*
Engineering/Contingencies		LS		$1,372,712	$72,248	$1,444,960
Total				**$8,236,272**	**$433,488**	***$8,669,760***
5. Construct RW 12/30 Parallel TW (50' wide)						
a. Mobilization	1	LS	$150,000	$142,500	$7,500	$150,000
b. Clearing & Grubbing	20	ACRE	$2,000	$38,000	$2,000	$40,000
c. Earthwork	75,000	CY	$3	$213,750	$11,250	$225,000
d. Erosion Control	1	LS	$50,000	$47,500	$2,500	$50,000
e. Storm Drainage	1000	LF	$85	$80,750	$4,250	$85,000
f. Sub-Base Course	33,200	SY	$15	$473,100	$24,900	$498,000
g. Base Course	33,200	SY	$18	$567,720	$29,880	$597,600
h. Bituminous Surface Course	18,000	TON	$75	$1,282,500	$67,500	$1,350,000
i. Signage	1	LS	$25,000	$23,750	$1,250	$25,000
j. MITL	1	LS	$275,000	$261,250	$13,750	$275,000
k. Pavement Marking	1	LS	$50,000	$47,500	$2,500	$50,000
l. Seeding/Mulching	15	ACRE	$3,000	$42,750	$2,250	$45,000
Subtotal				*$3,221,070*	*$169,530*	*$3,390,600*
Engineering/Contingencies		LS		$644,214	$33,906	$678,120
Total				***$3,865,284***	***$203,436***	***$4,068,720***

Golden Triangle Regional Airport
Columbus, Mississippi
Proposed Capital Improvement Plan Projects

	Qty	Unit	Unit Cost	Federal	Non-Federal	Total
6. Runway 12/30 PAPI and REIL						
a. 4 Box PAPI	2	EA	$45,000	$85,500	$4,500	$90,000
b. REIL	1	LS	$30,000	$28,500	$1,500	$30,000
Subtotal				*$114,000*	*$6,000*	*$120,000*
Engineering/Contingencies		LS		$57,000	$3,000	$60,000
Total				***$171,000***	***$9,000***	***$180,000***
TOTAL - AIP ELIGIBLE - STAGE II				**$14,145,671**	**$744,509**	**$14,890,180**
D. NON AIP ELIGIBLE - STAGE II (6-10 YR)						
1. Commercial Auto Parking (800 SY)						
a. Mobilization	1	LS	$50,000		$50,000	$50,000
b. Clearing & Grubbing	2	ACRE	$5,000		$10,000	$10,000
c. Earthwork	1000	CY	$8		$8,000	$8,000
d. Erosion Control	1	LS	$20,000		$20,000	$20,000
e. Storm Drainage	100	LF	$85		$8,500	$8,500
f. Paving	800	SY	$30		$24,000	$24,000
g. Marking/Traffic Control	1	LS	$15,000		$15,000	$15,000
h. Seeding/Mulching	2	ACRE	$5,000		$10,000	$10,000
Subtotal				*$0*	*$145,500*	*$145,500*
Engineering/Contingencies		LS			$58,200	$58,200
Total				**$0**	$203,700	**$203,700**
2. Hangars						
a. 1 - 4 Unit Nested T-Hangar	1	LS	$200,000	$0	$200,000	$200,000
b. 4-80'x80' Storage Hangar	4	LS	$400,000	$0	$1,600,000	$1,600,000
Subtotal				*$0*	*$1,800,000*	*$1,800,000*
Engineering/Contingencies		LS		$0	$360,000	$360,000
Total				**$0**	**$2,160,000**	**$2,160,000**
TOTAL NON-AIP ELIGIBLE - STAGE II				**$0**	**$2,363,700**	**$2,363,700**
TOTAL STAGE II*				**$14,145,671**	**$3,108,209**	**$17,253,880**

Golden Triangle Regional Airport
Columbus, Mississippi
Proposed Capital Improvement Plan Projects

	Qty	Unit	Unit Cost	Federal	Non-Federal	Total
E. AIP ELIGIBLE - STAGE III (11-20 YR)						
1. Rehabilitate Runway 18/36 (8000' X 150')						
a. Mobilization	1	LS	$100,000	$95,000	$5,000	$100,000
b. Milling/Planing	135,000	SY	$2	$256,500	$13,500	$270,000
c. Crack Repair (Pavement Reinforcing Fabric)	20,000	SY	$6	$114,000	$6,000	$120,000
d. Bituminous Paving (3")	25,000	TON	$75	$1,781,250	$93,750	$1,875,000
f. Runway Grooving	116,000	SY	$1	$110,200	$5,800	$116,000
g. Runway Marking	1	LS	$200,000	$190,000	$10,000	$200,000
h. Topsoil/Sodding	1		$50,000	$47,500	$2,500	$50,000
Subtotal				*$2,594,450*	*$136,550*	*$2,731,000*
Engineering/Contingencies		LS		$518,890	$27,310	$546,200
Total				***$3,113,340***	***$163,860***	***$3,277,200***
2. Replace RW 18/36 HIRL		LS		$332,500	$17,500	$350,000
Subtotal				*$332,500*	*$17,500*	*$350,000*
Engineering/Contingencies		LS		$99,750	$5,250	$105,000
Total				***$432,250***	***$22,750***	***$455,000***
3. Expand Commercial Apron (15,000 SY)						
a. Mobilization	1	LS	$250,000	$237,500	$12,500	$250,000
b. Clearing & Grubbing	3	ACRE	$2,000	$5,700	$300	$6,000
c. Earthwork	5,000	CY	$6	$28,500	$1,500	$30,000
d. Erosion Control	1	LS	$15,000	$14,250	$750	$15,000
e. Sub-Base Course	15,000	SY	$15	$213,750	$11,250	$225,000
f. Base Course	15,000	SY	$18	$256,500	$13,500	$270,000
g. Portland Cement Concrete Surface Course	15,000	SY	$375	$5,343,750	$281,250	$5,625,000
h. MITL/Lighting	1	LS	$50,000	$47,500	$2,500	$50,000
i. Pavement Marking	1	LS	$15,000	$14,250	$750	$15,000
j. Seeding/Mulching	1	ACRE	$3,000	$2,850	$150	$3,000
Subtotal				*$6,164,550*	*$324,450*	*$6,489,000*
Engineering/Contingencies		LS		$1,232,910	$64,890	$1,297,800
Total				***$7,397,460***	***$389,340***	***$7,786,800***
4. Rehabilitation TW's A-H (75')						
a. Mobilization	1	LS	$60,000	$57,000	$3,000	$60,000
b. Milling/Planing	106,000	SY	$2	$201,400	$10,600	$212,000
c. Crack Repair (Pavement Reinforcing Fabric)	15,000	SY	$6	$85,500	$4,500	$90,000
d. Bituminous Paving (3")	21,000	TON	$75	$1,496,250	$78,750	$1,575,000
g. Marking	1	LS	$85,000	$80,750	$4,250	$85,000
h. Topsoil/Sodding	1		$75,000	$71,250	$3,750	$75,000
Subtotal				*$1,992,150*	*$104,850*	*$2,097,000*
Engineering/Contingencies		LS		$398,430	$20,970	$419,400
Total				***$2,390,580***	***$125,820***	***$2,516,400***
5. Additional Fuel Farm*						
a. 12,000 Gal Jet A	1	LS	$200,000	$190,000	$10,000	$200,000
b. 12,000 Gal 100LL	1	LS	$200,000	$190,000	$10,000	$200,000
Subtotal				*$380,000*	*$20,000*	*$400,000*
Engineering/Contingencies		LS		$114,000	$6,000	$120,000
Total				***$494,000***	***$26,000***	***$520,000***
Note: Entitlement Funds Only						
6. Land Acquisition (Tract F-2)	88	AC	$25,000	$2,090,000	$110,000	$2,200,000
Subtotal				*$2,090,000*	*$110,000*	*$2,200,000*
Engineering/Contingencies		LS		$418,000	$22,000	$440,000
Total				**$2,508,000**	**$132,000**	***$2,640,000***
TOTAL - AIP ELIGIBLE - STAGE III				**$16,335,630**	**$859,770**	**$17,195,400**

Golden Triangle Regional Airport
Columbus, Mississippi
Proposed Capital Improvement Plan Projects

	Qty	Unit	Unit Cost	Federal	Non-Federal	Total
F. NON AIP ELIGIBLE - STAGE III (11-20 YR)						
1. Hangars						
a. 1 - 4 Unit Nested T-Hangar	1	LS	$200,000	$0	$200,000	$200,000
b. 1-80'x80' Storage Hangar	1	LS	$400,000	$0	$400,000	$400,000
Subtotal				*$0*	*$600,000*	*$600,000*
Engineering/Contingencies		LS		$0	$120,000	$120,000
Total				**$0**	**$720,000**	**$720,000**
TOTAL - NON AIP ELIGIBLE - STAGE III				**$0**	**$720,000**	**$720,000**
TOTAL STAGE III*				**$16,335,630**	**$1,579,770**	**$17,915,400**
TOTAL STAGES I, II, & III (AIP)*				**$36,842,558**	**$1,939,082**	**$38,781,640**
TOTAL STAGES I, II, & III (NON-AIP)*				**$0**	**$3,803,700**	**$3,803,700**
GRAND TOTAL STAGES I, II, & III*				**$36,842,558**	**$5,742,782**	**$42,585,340**

***All cost are shown in terms of 2011 dollars.**

9.3 SOURCES OF REVENUE

Revenue for capital improvement projects is available from a variety of sources. The following paragraphs provide a description of these sources.

9.3.1 FAA Participation

In 1982, the passage of the Airport and Airways Improvement Act enabled the federal govement to provide financial assistance to airports in support of its broad objective, to assist in the development of a nationwide system of public-use airports adequate to meet the projected growth of civil aviation. The Act provides funding for airport planning and development projects at airports included in the National Plan of Integrated Airport Systems (NPIAS) in the form of Airport Improvement Program (AIP) grants. The fund is financed by means of taxes or user fees on various aviation activities including passenger tickets, cargo waybills, fuel, oil, etc. Although airport development funding must be re-authorized every few years, it is anticipated that future funding mechanisms will be similar to the present system established in the 1982 act, as amended.

Grants are issued to airports under several different programs, two of which are Entitlement and Discretionary programs. Under the Entitlement program, grants are allocated to commercial service airports that enplane more than 10,000 passengers annually. Discretionary funds are awarded by the FAA on a priotized basis using a point-value system. This system provides an objective means whereby the FAA can determine the highest level of need for all the airports requesting discretionary funding. It should be noted that these discretionary funds are not guaranteed to any airport and all airports nation-wide are in competition for these funds.

AIP grants may be used to pay a percentage of the total cost of each eligible project. The percentages vary with the nature of the project and the size of the airport at which the project is to be undertaken. Typically, the percentage is 95 percent for all AIP eligible projects at the Airport. The percentage not funded by the AIP is known as the Non-AIP share. Examples of the federal participation include runway extensions, which are eligible for 95 percent funding. In addition to AIP grants, the FAA may also provide

funding to airports via Facilities and Equipment (F&E) funds. F&E is not part of the AIP program; however, these funds primarily support FAA constructed and maintained facilities such as runway instrumentation, weather reporting devices, and air traffic control facilities. The FAA funds the entire cost of an F&E project with no requirement for a local matching share.

9.3.2 Airport Participation

There are several sources the Airport has available to fund a portion of the capital improvements. The Aviation Safety and Capacity Expansion Act of 1990, provided airport operators with the opportunity to apply for authorization to collect a Passenger Facility Charge (PFC) from each revenue passenger enplaning at its airport. This legislation enables public agencies that own or operate commercial service airports to impose up to $4.50 per-passenger charge on enplaned passenger. These fees are collected by the air carriers when tickets are sold and are later remitted to the Airport, less an $.11 per PFC to cover the administrative expense it incurs associated with collecting and accounting for PFC's. Airports are allowed to use revenue received from PFC's to fund or finance AIP-eligible projects. Also, general obligation bond programs can be used by Airport's to advance project implementation. In addition, when the Airport establishes its rates for use of certain facilities, they can allocate certain portions of the capital cost to users such as tenants and air carriers.

9.3.3 State Participation

The Mississippi Department of Transportation, Aeronautics Division, also provides funding for eligible project costs. In general terms, the state eligibility requirements are very similar to those of AIP projects. State participation in AIP projects is usually limited to 50 percent of the local share costs (2.5 percent of total project costs). Additionally, the state may participate in non-AIP projects at 75 percent of the total cost.

9.3.4 Other/Private Participation

Other potential sources of funds include non-conventional federal, state, and local government programs as well as private capital investments.

9.4 FUTURE CAPITAL REVENUE

To assess the ability of GTR to finance proposed capital improvements, it is necessary to determine the likely amount of capital revenues. Of course, capital improvements associated with the GTR Global Industrial Aerospace Park will be financed by economic development funding sources and will not encumber airport funds in any way. Conversely, the presence of the Park will generate direct and indirect revenues which will accrue to the airport. The major sources of funding for future capital projects associated with airport development are anticipated to remain the Airport Improvement Program and Passenger Facility Charges. The following paragraphs estimate future revenues from AIP and passenger facility charges.

9.4.1 Entitlement Funding

As specified by the present AIP legislation, entitlement funding is calculated on an annual basis of $7.80 for the first 50,000 enplaned passengers, $5.20 for the next 50,000 passengers, $2.60 for the next 40,000 passengers, $0.65 for the next 500,000, and $0.50 for each passenger in excess of 1,000,000. However, the minimum level of funding for commercial service airports as authorized by AIP legislation is $1,000,000. Therefore, GTR receives the minimum entitlement.

9.4.2 Discretionary Funding

As described in the previous section, the ability of GTR to obtain discretionary funding will depend on future AIP appropriations as well as priorities established by the FAA. The FAA will consider discretionary funding for capital improvements on a priority basis. Because of the uncertainty of discretionary funding, it has not been estimated for future years.

9.4.3 Passenger Facility Charges

A calculation of potential PFC's generated during the study period was conducted with the following assumptions:

- The future number of passengers at the Airport will follow the forecast presented in Chapter 3
- An estimated 95 percent of GTR's passengers will be eligible for PFC charges.
- The amount of PFC is $4.50 per passenger
- The amount of air carrier compensation for the cost of collecting PFC's is currently $0.11 for each PFC collected. Table 9.2 reflects the net revenue that will be remitted to the airport after this charge has been removed. The 5 percent dilution shown in the table is the estimated result of passengers traveling using a ticket purchased through a frequent flyer program or some other promotion that is not eligible for PFC collection.

Table 9.2
Estimated PFC Revenue

Year	Enplanements	5 Percent Dilution	Projected PFC Revenue
2011	42,171	40,062	$175,872
2012	43,582	41,403	$181,759
2013	44,993	42,743	$187,642
2014	46,406	44,086	$193,538
2015	47,679	45,295	$198,845
2016	48,952	46,504	$204,153
2017	50,225	47,714	$209,464
2018	51,498	48,923	$214,772
2019	52,774	50,135	$220,093
2020	54,685	51,951	$228,065
2021	56,596	53,766	$236,033
2022	58,507	55,582	$244,005
2023	60,418	57,397	$251,973
2024	62,329	59,213	$259,945
2025	64,240	61,028	$267,913
2026	66,151	62,843	$275,881
2027	68,062	64,659	$283,853
2028	69,973	66,474	$291,821
2029	71,892	68,297	$299,824
Total	**598,068**	**568,164**	**$2,494,241**

Source: Barge Waggoner Sumner & Cannon

Based on data included in Table 9.2, it is estimated that PFC's will generate approximately $2,494,241 in revenue over the planning period.

9.4.4 Projected Revenue and Expenses

The feasibility of the proposed capital improvement program depends on the ability of future airport funding to meet or exceed program costs and the timing between the funding and costs. Table 9.3 presents a comparison between projected revenue and expenses for the Golden Triangle Regional Airport over the planning period. Table 9.4 presents the yearly comparison of revenue and expenses against the non-federal share

of capital improvement costs. The results indicate that the airport authority will have to seek additional funding or secure more revenue to offset these costs.

Table 9.3
Golden Triangle Regional Airport
Projected Revenue and Expenses

Account No.	Operating Income	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
3000	FBO Fees & Revenue	$ 19,794	$ 20,388	$ 21,000	$ 21,630	$ 22,279	$ 22,947	$ 23,635	$ 24,344	$ 25,074	$ 25,826	$ 26,601	$ 27,399	$ 28,221	$ 29,068	$ 29,940	$ 30,838	$ 31,763	$ 32,716	$ 33,697
3010	Aviation Fuel & Flowage Fees	$ 55,000	$ 56,650	$ 58,350	$ 60,101	$ 61,904	$ 63,761	$ 65,674	$ 67,644	$ 69,673	$ 71,763	$ 73,916	$ 76,133	$ 78,417	$ 80,770	$ 83,193	$ 85,689	$ 88,260	$ 90,908	$ 93,635
3015	Land Rent	$ 78,214	$ 80,365	$ 82,575	$ 84,846	$ 87,179	$ 89,576	$ 92,039	$ 94,570	$ 97,171	$ 99,843	$ 102,589	$ 105,410	$ 108,309	$ 111,287	$ 114,347	$ 117,492	$ 120,723	$ 124,043	$ 127,454
3016	Grounds and Maintenance	$ 1,000	$ 1,015	$ 1,030	$ 1,045	$ 1,061	$ 1,077	$ 1,093	$ 1,109	$ 1,126	$ 1,143	$ 1,160	$ 1,177	$ 1,195	$ 1,213	$ 1,231	$ 1,249	$ 1,268	$ 1,287	$ 1,306
3020	Hangar Ground Rent	$ 300	$ 309	$ 318	$ 328	$ 338	$ 348	$ 358	$ 369	$ 380	$ 391	$ 403	$ 415	$ 427	$ 440	$ 453	$ 467	$ 481	$ 495	$ 510
3025	Charter & Ramp Fees	$ 33,000	$ 33,330	$ 33,663	$ 34,000	$ 34,340	$ 34,683	$ 35,030	$ 35,380	$ 35,734	$ 36,091	$ 36,452	$ 36,817	$ 37,185	$ 37,557	$ 37,933	$ 38,312	$ 38,695	$ 39,082	$ 39,473
3030	Corporate Hangar Rental	$ 60,000	$ 60,600	$ 61,206	$ 61,818	$ 62,436	$ 63,060	$ 63,691	$ 64,328	$ 64,971	$ 65,621	$ 66,277	$ 66,940	$ 67,609	$ 68,285	$ 68,968	$ 69,658	$ 70,355	$ 71,059	$ 71,770
3031	T-Hangar Rental	$ 1,600	$ 1,616	$ 1,632	$ 1,648	$ 1,664	$ 1,681	$ 1,698	$ 1,715	$ 1,732	$ 1,749	$ 1,766	$ 1,784	$ 1,802	$ 1,820	$ 1,838	$ 1,856	$ 1,875	$ 1,894	$ 1,913
3035	Landing Fees	$ 40,634	$ 41,040	$ 41,450	$ 41,865	$ 42,284	$ 42,707	$ 43,134	$ 43,565	$ 44,001	$ 44,441	$ 44,885	$ 45,334	$ 45,787	$ 46,245	$ 46,707	$ 47,174	$ 47,646	$ 48,122	$ 48,603
3040	Airline Space Rent	$ 153,120	$ 154,651	$ 156,198	$ 157,760	$ 159,338	$ 160,931	$ 162,540	$ 164,165	$ 165,807	$ 167,465	$ 169,140	$ 170,831	$ 172,539	$ 174,264	$ 176,007	$ 177,767	$ 179,545	$ 181,340	$ 183,153
3042	American Eurocopter Income	$ 102,853	$ 103,882	$ 104,921	$ 105,970	$ 107,030	$ 108,100	$ 109,181	$ 110,273	$ 111,376	$ 112,490	$ 113,615	$ 114,751	$ 115,899	$ 117,058	$ 118,229	$ 119,411	$ 120,605	$ 121,811	$ 123,029
3050	Rental Car Revenue	$ 161,750	$ 163,368	$ 165,002	$ 166,652	$ 168,319	$ 170,002	$ 171,702	$ 173,419	$ 175,153	$ 176,905	$ 178,674	$ 180,461	$ 182,266	$ 184,089	$ 185,930	$ 187,789	$ 189,667	$ 191,564	$ 193,480
3052	Rental Car Space Rent	$ 14,165	$ 14,307	$ 14,450	$ 14,595	$ 14,741	$ 14,888	$ 15,037	$ 15,187	$ 15,339	$ 15,492	$ 15,647	$ 15,803	$ 15,961	$ 16,121	$ 16,282	$ 16,445	$ 16,609	$ 16,775	$ 16,943
3055	Parking Lot Rent-Rental Car	$ 28,783	$ 29,071	$ 29,362	$ 29,656	$ 29,953	$ 30,253	$ 30,556	$ 30,862	$ 31,171	$ 31,483	$ 31,798	$ 32,116	$ 32,437	$ 32,761	$ 33,089	$ 33,420	$ 33,754	$ 34,092	$ 34,433
3060	Parking Lot Revenue	$ 273,776	$ 276,514	$ 279,279	$ 282,072	$ 284,893	$ 287,742	$ 290,619	$ 293,525	$ 296,460	$ 299,425	$ 302,419	$ 305,443	$ 308,497	$ 311,582	$ 314,698	$ 317,845	$ 321,023	$ 324,233	$ 327,475
3070	Vendor Income	$ 2,100	$ 2,121	$ 2,142	$ 2,163	$ 2,185	$ 2,207	$ 2,229	$ 2,251	$ 2,274	$ 2,297	$ 2,320	$ 2,343	$ 2,366	$ 2,390	$ 2,414	$ 2,438	$ 2,462	$ 2,487	$ 2,512
3080	Terminal Building Space Rent	$ 25,750	$ 26,008	$ 26,268	$ 26,531	$ 26,796	$ 27,064	$ 27,335	$ 27,608	$ 27,884	$ 28,163	$ 28,445	$ 28,729	$ 29,016	$ 29,306	$ 29,599	$ 29,895	$ 30,194	$ 30,496	$ 30,801
3085	Advertising Space	$ 13,000	$ 13,130	$ 13,261	$ 13,394	$ 13,528	$ 13,663	$ 13,800	$ 13,938	$ 14,077	$ 14,218	$ 14,360	$ 14,504	$ 14,649	$ 14,795	$ 14,943	$ 15,092	$ 15,243	$ 15,395	$ 15,549
3090	Gasoline Sales Commission	$ 3,000	$ 3,030	$ 3,060	$ 3,091	$ 3,122	$ 3,153	$ 3,185	$ 3,217	$ 3,249	$ 3,281	$ 3,314	$ 3,347	$ 3,380	$ 3,414	$ 3,448	$ 3,482	$ 3,517	$ 3,552	$ 3,588
	Total Operating Income	**$ 1,067,839**	**$ 1,081,395**	**$ 1,095,167**	**$ 1,109,165**	**$ 1,123,390**	**$ 1,137,843**	**$ 1,152,536**	**$ 1,167,469**	**$ 1,182,652**	**$ 1,198,087**	**$ 1,213,781**	**$ 1,229,737**	**$ 1,245,962**	**$ 1,262,465**	**$ 1,279,249**	**$ 1,296,319**	**$ 1,313,685**	**$ 1,331,351**	**$ 1,349,324**
	Other Income																			
3100	Late Payment Penalty	$ 25	$ 26	$ 27	$ 28	$ 29	$ 30	$ 31	$ 32	$ 33	$ 34	$ 35	$ 36	$ 37	$ 38	$ 39	$ 40	$ 41	$ 42	$ 43
3101	Above Ground Fuel Farm Rent	$ 4,800	$ 4,944	$ 5,068	$ 5,195	$ 5,325	$ 5,458	$ 5,594	$ 5,734	$ 5,877	$ 6,024	$ 6,175	$ 6,329	$ 6,487	$ 6,649	$ 6,815	$ 6,985	$ 7,160	$ 7,339	$ 7,522
3110	Miscellaneous Income	$ 500	$ 515	$ 538	$ 562	$ 587	$ 613	$ 641	$ 670	$ 700	$ 732	$ 765	$ 799	$ 835	$ 873	$ 912	$ 953	$ 996	$ 1,041	$ 1,088
3121	Interest Income	$ 7,500	$ 7,725	$ 7,957	$ 8,196	$ 8,442	$ 8,695	$ 8,956	$ 9,225	$ 9,502	$ 9,787	$ 10,081	$ 10,383	$ 10,694	$ 11,015	$ 11,345	$ 11,685	$ 12,036	$ 12,397	$ 12,769
	Total Other Income	**$ 12,825**	**$ 13,210**	**$ 13,590**	**$ 13,981**	**$ 14,383**	**$ 14,796**	**$ 15,222**	**$ 15,661**	**$ 16,112**	**$ 16,577**	**$ 17,056**	**$ 17,547**	**$ 18,053**	**$ 18,575**	**$ 19,111**	**$ 19,663**	**$ 20,233**	**$ 20,819**	**$ 21,422**
3100	**Total Operatng Income**	**$ 1,080,664**	**$ 1,094,605**	**$ 1,108,757**	**$ 1,123,146**	**$ 1,137,773**	**$ 1,152,639**	**$ 1,167,758**	**$ 1,183,130**	**$ 1,198,764**	**$ 1,214,664**	**$ 1,230,837**	**$ 1,247,284**	**$ 1,264,015**	**$ 1,281,040**	**$ 1,298,360**	**$ 1,315,982**	**$ 1,333,918**	**$ 1,352,170**	**$ 1,370,746**

Table 9.3 (Cont.)
Golden Triangle Regional Airport

Projected Revenue and Expenses

Account No.	Expenses	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
4000	Runway & Field Expense	$ 3,000	$ 3,075	$ 3,152	$ 3,231	$ 3,312	$ 3,395	$ 3,480	$ 3,567	$ 3,656	$ 3,747	$ 3,841	$ 3,937	$ 4,035	$ 4,136	$ 4,239	$ 4,345	$ 4,454	$ 4,565	$ 4,679
4001	Parking Lot Sales Tax	$ 16,427	$ 16,838	$ 17,259	$ 17,690	$ 18,132	$ 18,585	$ 19,050	$ 19,526	$ 20,014	$ 20,514	$ 21,027	$ 21,553	$ 22,092	$ 22,644	$ 23,210	$ 23,790	$ 24,385	$ 24,995	$ 25,620
4011	Fuel Farm Maintenance	$ 100	$ 103	$ 106	$ 109	$ 112	$ 115	$ 118	$ 121	$ 124	$ 127	$ 130	$ 133	$ 136	$ 139	$ 142	$ 146	$ 150	$ 154	$ 158
4015	Building Expense & Maintenance	$ 18,000	$ 18,450	$ 18,911	$ 19,384	$ 19,869	$ 20,366	$ 20,875	$ 21,397	$ 21,932	$ 22,480	$ 23,042	$ 23,618	$ 24,208	$ 24,813	$ 25,433	$ 26,069	$ 26,721	$ 27,389	$ 28,074
4020	Roads & Ground Expense	$ 8,000	$ 8,200	$ 8,405	$ 8,615	$ 8,830	$ 9,051	$ 9,277	$ 9,509	$ 9,747	$ 9,991	$ 10,241	$ 10,497	$ 10,759	$ 11,028	$ 11,304	$ 11,587	$ 11,877	$ 12,174	$ 12,478
4025	Janitorial Expense	$ 24,000	$ 24,600	$ 25,215	$ 25,845	$ 26,491	$ 27,153	$ 27,832	$ 28,528	$ 29,241	$ 29,972	$ 30,721	$ 31,489	$ 32,276	$ 33,083	$ 33,910	$ 34,758	$ 35,627	$ 36,518	$ 37,431
4030	Gasoline Expense	$ 5,000	$ 5,125	$ 5,253	$ 5,384	$ 5,519	$ 5,657	$ 5,798	$ 5,943	$ 6,092	$ 6,244	$ 6,400	$ 6,560	$ 6,724	$ 6,892	$ 7,064	$ 7,241	$ 7,422	$ 7,608	$ 7,798
4035	Diesel Expense	$ 5,000	$ 5,125	$ 5,253	$ 5,384	$ 5,519	$ 5,657	$ 5,798	$ 5,943	$ 6,092	$ 6,244	$ 6,400	$ 6,560	$ 6,724	$ 6,892	$ 7,064	$ 7,241	$ 7,422	$ 7,608	$ 7,798
4040	Vehicle Maintenance	$ 8,000	$ 8,200	$ 8,405	$ 8,615	$ 8,830	$ 9,051	$ 9,277	$ 9,509	$ 9,747	$ 9,991	$ 10,241	$ 10,497	$ 10,759	$ 11,028	$ 11,304	$ 11,587	$ 11,877	$ 12,174	$ 12,478
4050	Equip. Maintenance	$ 4,500	$ 4,613	$ 4,728	$ 4,846	$ 4,967	$ 5,091	$ 5,218	$ 5,348	$ 5,482	$ 5,619	$ 5,759	$ 5,903	$ 6,051	$ 6,202	$ 6,357	$ 6,516	$ 6,679	$ 6,846	$ 7,017
4055	Shop Supplies	$ 3,500	$ 3,588	$ 3,678	$ 3,770	$ 3,864	$ 3,961	$ 4,060	$ 4,162	$ 4,266	$ 4,373	$ 4,482	$ 4,594	$ 4,709	$ 4,827	$ 4,948	$ 5,072	$ 5,199	$ 5,329	$ 5,462
4060	Radio Equipment - Other	$ 14,000	$ 14,350	$ 14,709	$ 15,077	$ 15,454	$ 15,840	$ 16,236	$ 16,642	$ 17,058	$ 17,484	$ 17,921	$ 18,369	$ 18,828	$ 19,299	$ 19,781	$ 20,276	$ 20,783	$ 21,303	$ 21,836
4065	Airport Security	$ 1,000	$ 1,025	$ 1,051	$ 1,077	$ 1,104	$ 1,132	$ 1,160	$ 1,189	$ 1,219	$ 1,249	$ 1,280	$ 1,312	$ 1,345	$ 1,379	$ 1,413	$ 1,448	$ 1,484	$ 1,521	$ 1,559
4070	CFR Supplies	$ 3,000	$ 3,075	$ 3,152	$ 3,231	$ 3,312	$ 3,395	$ 3,480	$ 3,567	$ 3,656	$ 3,747	$ 3,841	$ 3,937	$ 4,035	$ 4,136	$ 4,239	$ 4,345	$ 4,454	$ 4,565	$ 4,679
4085	Professional Fees	$ 5,000	$ 5,125	$ 5,253	$ 5,384	$ 5,519	$ 5,657	$ 5,798	$ 5,943	$ 6,092	$ 6,244	$ 6,400	$ 6,560	$ 6,724	$ 6,892	$ 7,064	$ 7,241	$ 7,422	$ 7,608	$ 7,798
4095	Office Maintenance Agreement	$ 3,600	$ 3,690	$ 3,782	$ 3,877	$ 3,974	$ 4,073	$ 4,175	$ 4,279	$ 4,386	$ 4,496	$ 4,608	$ 4,723	$ 4,841	$ 4,962	$ 5,086	$ 5,213	$ 5,343	$ 5,477	$ 5,614
4100	Office Supplies	$ 4,000	$ 4,100	$ 4,203	$ 4,308	$ 4,416	$ 4,526	$ 4,639	$ 4,755	$ 4,874	$ 4,996	$ 5,121	$ 5,249	$ 5,380	$ 5,515	$ 5,653	$ 5,794	$ 5,939	$ 6,087	$ 6,239
4110	Postage	$ 2,000	$ 2,050	$ 2,101	$ 2,154	$ 2,208	$ 2,263	$ 2,320	$ 2,378	$ 2,437	$ 2,498	$ 2,560	$ 2,624	$ 2,690	$ 2,757	$ 2,826	$ 2,897	$ 2,969	$ 3,043	$ 3,119
4115	Telephone Expense	$ 20,000	$ 20,500	$ 21,013	$ 21,538	$ 22,076	$ 22,628	$ 23,194	$ 23,774	$ 24,368	$ 24,977	$ 25,601	$ 26,241	$ 26,897	$ 27,569	$ 28,258	$ 28,964	$ 29,688	$ 30,430	$ 31,191
4120	Bank Charges	$ 8,000	$ 8,200	$ 8,405	$ 8,615	$ 8,830	$ 9,051	$ 9,277	$ 9,509	$ 9,747	$ 9,991	$ 10,241	$ 10,497	$ 10,759	$ 11,028	$ 11,304	$ 11,587	$ 11,877	$ 12,174	$ 12,478
4125	Dues & Subscriptions	$ 17,000	$ 17,425	$ 17,861	$ 18,308	$ 18,766	$ 19,235	$ 19,716	$ 20,209	$ 20,714	$ 21,232	$ 21,763	$ 22,307	$ 22,865	$ 23,437	$ 24,023	$ 24,624	$ 25,240	$ 25,871	$ 26,518
4135	Marketing	$ 48,000	$ 49,200	$ 50,430	$ 51,691	$ 52,983	$ 54,308	$ 55,666	$ 57,058	$ 58,484	$ 59,946	$ 61,445	$ 62,981	$ 64,556	$ 66,170	$ 67,824	$ 69,520	$ 71,258	$ 73,039	$ 74,865
4140	Insurance	$ 53,000	$ 54,325	$ 55,683	$ 57,075	$ 58,502	$ 59,965	$ 61,464	$ 63,001	$ 64,576	$ 66,190	$ 67,845	$ 69,541	$ 71,280	$ 73,062	$ 74,889	$ 76,761	$ 78,680	$ 80,647	$ 82,663
4145	Utilities	$ 129,737	$ 132,980	$ 136,305	$ 139,713	$ 143,206	$ 146,786	$ 150,456	$ 154,217	$ 158,072	$ 162,024	$ 166,075	$ 170,227	$ 174,483	$ 178,845	$ 183,316	$ 187,899	$ 192,596	$ 197,411	$ 202,346
4150	Water Expense	$ 14,000	$ 14,350	$ 14,709	$ 15,077	$ 15,454	$ 15,840	$ 16,236	$ 16,642	$ 17,058	$ 17,484	$ 17,921	$ 18,369	$ 18,828	$ 19,299	$ 19,781	$ 20,276	$ 20,783	$ 21,303	$ 21,836
4151	Trash Collection	$ 3,300	$ 3,383	$ 3,468	$ 3,555	$ 3,644	$ 3,735	$ 3,828	$ 3,924	$ 4,022	$ 4,123	$ 4,226	$ 4,332	$ 4,440	$ 4,551	$ 4,665	$ 4,782	$ 4,902	$ 5,025	$ 5,151
4155	Administrative Salaries	$ 169,535	$ 173,773	$ 178,117	$ 182,570	$ 187,134	$ 191,812	$ 196,607	$ 201,522	$ 206,560	$ 211,724	$ 217,017	$ 222,442	$ 228,003	$ 233,703	$ 239,546	$ 245,535	$ 251,673	$ 257,965	$ 264,414
4160	Maintenance Salaries	$ 113,972	$ 116,821	$ 119,742	$ 122,736	$ 125,804	$ 128,949	$ 132,173	$ 135,477	$ 138,864	$ 142,336	$ 145,894	$ 149,541	$ 153,280	$ 157,112	$ 161,040	$ 165,066	$ 169,193	$ 173,423	$ 177,759
4165	Public Safety Salaries	$ 166,261	$ 170,418	$ 174,678	$ 179,045	$ 183,521	$ 188,109	$ 192,812	$ 197,632	$ 202,573	$ 207,637	$ 212,828	$ 218,149	$ 223,603	$ 229,193	$ 234,923	$ 240,796	$ 246,816	$ 252,986	$ 259,311
4166	Parking Lot Salaries	$ 36,167	$ 37,071	$ 37,998	$ 38,948	$ 39,922	$ 40,920	$ 41,943	$ 42,992	$ 44,067	$ 45,169	$ 46,298	$ 47,455	$ 48,641	$ 49,857	$ 51,103	$ 52,381	$ 53,691	$ 55,033	$ 56,409
4180	Payroll Taxes	$ 37,002	$ 37,927	$ 38,875	$ 39,847	$ 40,843	$ 41,864	$ 42,911	$ 43,984	$ 45,084	$ 46,211	$ 47,366	$ 48,550	$ 49,764	$ 51,008	$ 52,283	$ 53,590	$ 54,930	$ 56,303	$ 57,711
4185	Pension Expense Employer	$ 53,686	$ 55,028	$ 56,404	$ 57,814	$ 59,259	$ 60,740	$ 62,259	$ 63,815	$ 65,410	$ 67,045	$ 68,721	$ 70,439	$ 72,200	$ 74,005	$ 75,855	$ 77,751	$ 79,695	$ 81,687	$ 83,729
4190	Health Insurance/Cafeteria Plan	$ 55,535	$ 56,923	$ 58,346	$ 59,805	$ 61,300	$ 62,833	$ 64,404	$ 66,014	$ 67,664	$ 69,356	$ 71,090	$ 72,867	$ 74,689	$ 76,556	$ 78,470	$ 80,432	$ 82,443	$ 84,504	$ 86,617
4195	Uniforms	$ 2,000	$ 2,050	$ 2,101	$ 2,154	$ 2,208	$ 2,263	$ 2,320	$ 2,378	$ 2,437	$ 2,498	$ 2,560	$ 2,624	$ 2,690	$ 2,757	$ 2,826	$ 2,897	$ 2,969	$ 3,043	$ 3,119
4200	Auto Allowance	$ 4,000	$ 4,100	$ 4,203	$ 4,308	$ 4,416	$ 4,526	$ 4,639	$ 4,755	$ 4,874	$ 4,996	$ 5,121	$ 5,249	$ 5,380	$ 5,515	$ 5,653	$ 5,794	$ 5,939	$ 6,087	$ 6,239
4210	Travel - ADM	$ 11,150	$ 11,429	$ 11,715	$ 12,008	$ 12,308	$ 12,616	$ 12,931	$ 13,254	$ 13,585	$ 13,925	$ 14,273	$ 14,630	$ 14,996	$ 15,371	$ 15,755	$ 16,149	$ 16,553	$ 16,967	$ 17,391
4215	Professional Development - ADM	$ 2,000	$ 2,050	$ 2,101	$ 2,154	$ 2,208	$ 2,263	$ 2,320	$ 2,378	$ 2,437	$ 2,498	$ 2,560	$ 2,624	$ 2,690	$ 2,757	$ 2,826	$ 2,897	$ 2,969	$ 3,043	$ 3,119
4235	Miscellaneous Expense	$ 10,000	$ 10,250	$ 10,506	$ 10,769	$ 11,038	$ 11,314	$ 11,597	$ 11,887	$ 12,184	$ 12,489	$ 12,801	$ 13,121	$ 13,449	$ 13,785	$ 14,130	$ 14,483	$ 14,845	$ 15,216	$ 15,596
4237	Hangar G Loan Payment	$ 4,009	$ 4,109	$ 4,212	$ 4,317	$ 4,425	$ 4,536	$ 4,649	$ 4,765	$ 4,884	$ 5,006	$ 5,131	$ 5,259	$ 5,390	$ 5,525	$ 5,663	$ 5,805	$ 5,950	$ 6,099	$ 6,251
4260	Interest Expense	$ 372	$ 381	$ 391	$ 401	$ 411	$ 421	$ 432	$ 443	$ 454	$ 465	$ 477	$ 489	$ 501	$ 514	$ 527	$ 540	$ 554	$ 568	$ 582
4260	**Total Expenditures**	**$ 1,086,853**	**$ 1,114,025**	**$ 1,141,879**	**$ 1,170,429**	**$ 1,199,690**	**$ 1,229,682**	**$ 1,260,425**	**$ 1,291,936**	**$ 1,324,233**	**$ 1,357,338**	**$ 1,391,269**	**$ 1,426,049**	**$ 1,461,700**	**$ 1,498,243**	**$ 1,535,697**	**$ 1,574,095**	**$ 1,613,451**	**$ 1,653,788**	**$ 1,695,132**

Table 9.4
Golden Triangle Regional Airport
Projected Yearly Comparison

Operating Income	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Operating Income	$ 1,067,839.00	$ 1,081,395.00	$ 1,095,167.00	$ 1,109,165.00	$ 1,123,390.00	$ 1,137,843.00	$ 1,152,536.00	$ 1,167,469.00	$ 1,182,652.00	$ 1,198,087.00	$ 1,213,781.00	$ 1,229,737.00	$ 1,245,962.00	$ 1,262,465.00	$ 1,279,249.00	$ 1,296,319.00	$ 1,313,685.00	$ 1,331,351.00	$ 1,349,324.00
Other Income	$ 12,825.00	$ 13,210.00	$ 13,590.00	$ 13,981.00	$ 14,383.00	$ 14,796.00	$ 15,222.00	$ 15,661.00	$ 16,112.00	$ 16,577.00	$ 17,056.00	$ 17,547.00	$ 18,053.00	$ 18,575.00	$ 19,111.00	$ 19,663.00	$ 20,233.00	$ 20,819.00	$ 21,422.00
Total Operating Income	$ 1,080,664.00	$ 1,094,605.00	$ 1,108,757.00	$ 1,123,146.00	$ 1,137,773.00	$ 1,152,639.00	$ 1,167,758.00	$ 1,183,130.00	$ 1,198,764.00	$ 1,214,664.00	$ 1,230,837.00	$ 1,247,284.00	$ 1,264,015.00	$ 1,281,040.00	$ 1,298,360.00	$ 1,315,982.00	$ 1,333,918.00	$ 1,352,170.00	$ 1,370,746.00
Expenditures																			
Total Expenditures	$ 1,086,853.00	$ 1,114,025.00	$ 1,141,879.00	$ 1,170,429.00	$ 1,199,690.00	$ 1,229,682.00	$ 1,260,425.00	$ 1,291,936.00	$ 1,324,233.00	$ 1,357,338.00	$ 1,391,269.00	$ 1,426,049.00	$ 1,461,700.00	$ 1,498,243.00	$ 1,535,697.00	$ 1,574,095.00	$ 1,613,451.00	$ 1,653,788.00	$ 1,695,132.00
PFC Revenue	$ 175,872.00	$ 181,759.00	$ 187,642.00	$ 193,538.00	$ 198,845.00	$ 204,153.00	$ 209,464.00	$ 214,772.00	$ 220,093.00	$ 228,065.00	$ 236,033.00	$ 244,005.00	$ 251,973.00	$ 259,945.00	$ 267,913.00	$ 275,881.00	$ 283,853.00	$ 291,821.00	$ 299,824.00
Capital Costs (Non-Federal)	$ 13,863.00	$ 153,600.00	$ 167,340.00	$ -	$ -	$ 302,285.00	$ -	$ 645,924.00	$ -	$ -	$ 186,610.00	$ 389,340.00	$ 151,820.00	$ 132,000.00	$ -	$ -	$ -	$ -	$ -
Capital Costs (Private)	$ -	$ 240,000.00	$ 480,000.00	$ -	$ -	$ 480,000.00	$ 480,000.00	$ 480,000.00	$ 240,000.00	$ 480,000.00	$ -	$ -	$ -	$ -	$ 240,000.00	$ 480,000.00	$ -	$ -	$ -
Difference	$ 155,820.00	$ 8,739.00	$ (12,820.00)	$ 146,255.00	$ 136,928.00	$ (175,175.00)	$ 116,797.00	$ (539,958.00)	$ 94,624.00	$ 85,391.00	$ (111,009.00)	$ (324,100.00)	$ (97,532.00)	$ (89,258.00)	$ 30,576.00	$ 17,768.00	$ 4,320.00	$ (9,797.00)	$ (24,562.00)

APPENDIX 1

Glossary of Terms

GLOSSARY OF TERMS

Included in the following pages are definitions of commonly used airport planning terms to assist the reader in understanding the technical language included in this document.

Air Taxi: an operator which: 1) performs at least five round trips per week between two or more points and publishes flight schedules which specify times, days of the week and places between which such flights are performed; or 2) transports mail by pursuant through a current contract with the U.S. Postal Service.

Airport Traffic Control Tower (ATCT): a central operations facility in the terminal air traffic control system, consisting of a tower, including an associated 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 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 enroute phase of flight.

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.

Azimuth: horizontal direction or bearing; usually measured from the reference point of 0 degrees clockwise through 360 degrees.

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.

Compass Locator (LOM) (LMM): a low power low/medium frequency radio-beacon installed in conjunction with the instrument landing system at one of two of the marker sights.

Control Zone: airspace extending upward from the ground which may include one or more airports and is normally a circular area of five statute miles in radius with extensions where necessary to include instrument approach and departure paths.

Displaced Threshold: a threshold that is located at one 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: day-night noise level. the daily average noise metric in which that noise occurring between 10:00 p.m. and 7:00 a.m. is penalized by 10 decibels.

Downwind Leg: a flight path parallel to the landing runway, opposite of the landing direction. The down wind leg normally extends to a point at which the aircraft turns to base leg.

Duration: length of time, in seconds, a noise event such as an aircraft flyover is experienced. (May refer to the length of time a noise event exceeds a specified threshold level.)

Enplaned Passengers: the total number of revenue passengers boarding aircraft, including originating, stop-over, and transfer passengers, in scheduled and non-scheduled threshold level.

FBO (Fixed Base Operator): a provider of service to users of an airport. Such services include, but are not limited to , fueling, hangaring, flight training, repair and maintenance.

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.

Glide Slope: electrical equipment that emits signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as an ILS, or visual ground aids, such as VASI, which provide vertical guidance for a VFR approach or for the visual portion of an instrument approach and landing.

Global Positioning System: an instrument approach and landing system that utilizes satellites to determine aircraft position when providing non –precision and precision approach capabilities.

Ground Effect: the excess attenuation attributed to absorption or reflection of noise by man-made or natural features on the ground surface.

Instrument Approach: 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. It is prescribed and approved for a specific airport by competent authority.

Instrument Flight Rules (IFR): rules governing the procedures for conducting instrument flight. Also a term used by pilots and controllers to indicate type of flight plan.

Instrument Landing System (ILS): a precision instrument approach system which normally consists of the following electronic components and visual aids: localizer, glide slope, outer marker, middle market, and approach lights.

Localizer (LOC): providing horizontal guidance to the runway centerline for aircraft during approach and landing by radiating a directional pattern of radio waves modulated by two signals which, when received with equal intensity, are displayed by compatible airborne equipment as an “on-course” indication, and when received in unequal intensity are displayed as an “off-course” indication.

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.

Microwave Landing System (MLS): an instrument approach and landing system that provides precision guidance in azimuth, elevation, and distance measurement.

Missed Approach: an instrument approach not completed by landing. This may be due to visual contact not established at authorized minimums or instructions from air traffic control, or other reasons.

Non-Directional Beacon (NDB): a radio beacon transmitting non-directional signals that a pilot of an aircraft equipped with direction finding equipment can determine his/her bearing to or from the radio beacon and “home” on or track to or from the station. When the radio beacon is installed in conjunction with the Instrument Landing System market, it is normally called a Compass Locator.

Nonprecision Approach Procedure: a standard instrument approach procedure in which no electronic glide slope is provided, such as VOR, TACAN, NDB, or LOC.

Operation: a take-off or a landing.

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.

Precision Approach Path Indicator (PAPI): an airport lighting facility in the terminal area navigation system used primarily under VFR conditions. It provides vertical guidance to the pilot during approach and landing, by radiating a pattern of high intensity red and white focused light beams which indicate whether the aircraft is above, on , or below the glide path.
Precision Approach Procedure: a standard instrument approach procedure in which an electronic glide slope is provided, such as ILS.

Precision Instrument Runway: a runway having an existing Instrument Landing System (ILS).

Reliever Airport: an airport to serve general aviation aircraft which might otherwise use a congested air-carrier served airport.

Vector: a heading issued to an aircraft to provide navigational guidance by radar.

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 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 in the terminal area navigation system used primarily under VFR conditions. It provides vertical visual guidance to aircraft during approach and landing, by radiating a pattern of high intensity red and white focused light beams which indicate to the pilot that he/she is above, on, or below the flight path.

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.

VOR/Very High Frequency Omnidirectional Range Station: 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.

VORTAC/VHF Omnidirectional Range/Tactical Air Navigation: a navigation aid providing VOR azimuth, and TACAN distance-measuring equipment (DME) at one sight.

ABBREVIATIONS

AGL:	Above ground level
AIA:	Annual instrument approaches
AIP:	Airport Improvement Program
ARFF:	Aircraft rescue and firefighting
ARSA:	Airport radar surface area
ARTCC:	Air route traffic control center
ASOS:	Automated Surface Observing System
ASR:	Airport Surveillance Radar
ATCT:	Air traffic control tower
AWOS:	Automated Weather Observing System
CIP:	Capital Improvement Program (5 Year CIP)
DME:	Distance Measuring Equipment
DNL:	Day-night noise level

DWL:	Runway weight bearing capacity for aircraft with dual-wheel type landing gear
DTWL:	Runway weight bearing capacity for aircraft with dual-tandem type landing gear
FAA:	Federal Aviation Administration
F.A.R.:	Federal Aviation Regulations
FBO:	Fixed Base Operator
GADOT:	Georgia Department of Transportation
GPS:	Global Positioning System
GS:	Glide Slope
HIRL:	High Intensity Runway Lights
IFR:	Instrument Flight Rules
ILS:	Instrument Landing System
LMM:	Compass Locator at Middle Marker
LOC:	ILS Localizer
LOM:	Compass Locator at Outer Marker
MIRL:	Medium Intensity Runway Lights
MITL:	Medium Intensity Taxiway Lights
MLS:	Microwave Landing System
MM:	Middle Marker
MSL:	Mean Sea Level
NAVAID:	Navigational Aid
NDB:	Non Directional Beacon
NM:	Nautical Mile
OM:	Outer Marker
PAPI:	Precision Approach Path Indicator
RCO:	Remote Communications Outlet
REILS:	Runway End Identification Lighting System
SEL:	Sound Exposure Level
SM:	Statute Mile
SWL:	Runway weight bearing capacity for aircraft with single-wheel type landing gear
TCA:	Terminal Control Area
TFR:	Temporary Flight Restriction
TRACON:	Terminal Radar Approach Control
VADI:	Visual Approach Slope Indicator
VASI:	Visual Approach Slope Indicator
VFR:	Visual Flight Rules (F.A.R. Part 91)
VHF:	Very High Frequency
VOR:	Very High Frequency Omnidirectional Range
VORTAC:	(see VOR and TACAN)

APPENDIX 2

FAA Airport Design Airplane and Airport Data

AIRPORT DESIGN AIRPLANE AND AIRPORT DATA

Aircraft Approach Category D or E
Airplane Design Group V
Airplane wingspan . . . . . 197.00 feet
Primary runway end approach visibility minimums are not lower than CAT I
Other runway end approach visibility minimums are not lower than CAT I
Airplane undercarriage width (1.15 x main gear track) . . . 41.01 feet
Airport elevation . . . . . 264 feet
Airplane tail height . . . . . 56.00 feet

RUNWAY AND TAXIWAY WIDTH AND CLEARANCE STANDARD DIMENSIONS

	Airplane	Group/ARC
Runway centerline to parallel runway centerline simultaneous operations when wake turbulence is not treated as a factor:		
VFR operations with no intervening taxiway		700 feet
VFR operations with one intervening taxiway		800 feet
VFR operations with two intervening taxiways		1067 feet
IFR approach and departure with approach to near threshold		2500 feet less 100 ft for each 500 ft of threshold stagger to a minimum of 1000 feet.
Runway centerline to parallel runway centerline simultaneous operations when wake turbulence is treated as a factor:		
VFR operations		2500 feet
IFR departures		2500 feet
IFR approach and departure with approach to near threshold		2500 feet
IFR approach and departure with approach to far threshold		2500 feet plus 100 feet for each 500 feet of threshold stagger.
IFR approaches		3400 feet
Runway centerline to parallel taxiway/taxilane centerline	348.5	400 feet
Runway centerline to edge of aircraft parking	400.0	500 feet
Runway width		150 feet
Runway shoulder width		35 feet
Runway blast pad width		220 feet
Runway blast pad length		400 feet
Runway safety area width		500 feet
Runway safety area length beyond each runway end or stopway end, whichever is greater		1000 feet
Runway object free area width		800 feet
Runway object free area length beyond each runway end or stopway end, whichever is greater		1000 feet
Clearway width		500 feet
Stopway width		150 feet
Obstacle free zone (OFZ):		
Runway OFZ width		400 feet
Runway OFZ length beyond each runway end		200 feet
Inner-approach OFZ width		400 feet
Inner-approach OFZ length beyond approach light system		200 feet
Inner-approach OFZ slope from 200 feet beyond threshold		50:1
Inner-transitional OFZ height H	41.7	40.1 feet
Inner-transitional OFZ slope		6:1
Runway protection zone at the primary runway end:		
Width 200 feet from runway end		1000 feet
Width 2700 feet from runway end		1750 feet
Length		2500 feet

Runway protection zone at other runway end:

Width 200 feet from runway end	1000 feet
Width 2700 feet from runway end	1750 feet
Length	2500 feet

Departure runway protection zone:

Width 200 feet from the far end of TORA	500 feet
Width 1900 feet from the far end of TORA	1010 feet
Length	1700 feet

Threshold surface at primary runway end:

Distance out from threshold to start of surface	200 feet
Width of surface at start of trapezoidal section	1000 feet
Width of surface at end of trapezoidal section	4000 feet
Length of trapezoidal section	10000 feet
Length of rectangular section	0 feet
Slope of surface	34:1

Threshold surface at other runway end:

Distance out from threshold to start of surface	200 feet
Width of surface at start of trapezoidal section	1000 feet
Width of surface at end of trapezoidal section	4000 feet
Length of trapezoidal section	10000 feet
Length of rectangular section	0 feet
Slope of surface	34:1

Taxiway centerline to parallel taxiway/taxilane centerline	246.4	267 feet
Taxiway centerline to fixed or movable object	147.9	160 feet
Taxilane centerline to parallel taxilane centerline	226.7	245 feet
Taxilane centerline to fixed or movable object	128.2	138 feet
Taxiway width	71.1	75 feet
Taxiway shoulder width		35 feet
Taxiway safety area width	197.0	214 feet
Taxiway object free area width	295.8	320 feet
Taxilane object free area width	256.4	276 feet
Taxiway edge safety margin		15 feet
Taxiway wingtip clearance	49.4	53 feet
Taxilane wingtip clearance	29.7	31 feet

REFERENCE: AC 150/5300-13, Airport Design, including Changes 1 through 4.

GTRRW2.TXT
AIRPORT AND RUNWAY DATA

Airport elevation	264 feet
Mean daily maximum temperature of the hottest month	93.00 F.
Maximum difference in runway centerline elevation	0 feet
Length of haul for airplanes of more than 60,000 pounds	5000 miles

Dry runways

RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN

Small airplanes with approach speeds of less than 30 knots	310 feet
Small airplanes with approach speeds of less than 50 knots	820 feet
Small airplanes with less than 10 passenger seats	
75 percent of these small airplanes	2620 feet
95 percent of these small airplanes	3180 feet
100 percent of these small airplanes	3780 feet
Small airplanes with 10 or more passenger seats	4360 feet
Large airplanes of 60,000 pounds or less	
75 percent of these large airplanes at 60 percent useful load	4730 feet
75 percent of these large airplanes at 90 percent useful load	6960 feet
100 percent of these large airplanes at 60 percent useful load	5620 feet
100 percent of these large airplanes at 90 percent useful load	8810 feet
Airplanes of more than 60,000 pounds	Approximately 10950 feet

REFERENCE: Chapter 2 of AC 150/5325-4A, Runway Length Requirements for Airport Design, no Changes included.

APPENDIX 3

Noise Contour Maps

Final

GOLDEN TRIANGLE REGIONAL AIRPORT

Runway Extension Noise Analysis

Prepared for
Golden Triangle Regional Airport Authority

Prepared By
ESA Airports

April 30, 2009

1.0 Summary of Impacts

No noise sensitive uses will experience a significant noise impact as a result of the proposed project and no mitigation is required.

1.1 Introduction

The purpose of this study is to determine if significant noise impacts would result from the proposed runway extension at the Golden Triangle Regional Airport (GTR). The airport currently includes one runway at 6,497 feet in length. The proposed extension will lengthen the runway by 1,503 feet to a total length of 8,000 feet. This study has been prepared in order to satisfy the noise requirements of the National Environmental Policy Act (NEPA).

1.2 Regulatory Setting

NEPA requires Federal agencies to analyze the environmental consequences of their proposed projects. The Federal Aviation Administration (FAA) is responsible for complying with NEPA and approving Federal actions and Federal grants for proposed airport development projects. Two documents identify the FAA policies on the means to comply with NEPA - FAA Order 1050.1E – Policies and Procedures for Considering Environmental Impacts (as amended June 08, 2006) and FAA Order 5050.4B National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions. This study has been prepared to comply with the requirements set forth in these two Orders.

FAA Order 1050.1E defines what is considered a significant noise impact as a result of a proposed action. The order identifies that a significant impact would occur:

"When an action, compared to the no action alternative for the same timeframe, would cause noise sensitive areas located at or above DNL 65 dB to experience a noise increase of at least DNL 1.5 dB."

As per the regulations, this study has been prepared to determine if any noise sensitive area within the 65 DNL contour would experience a 1.5 DNL increase as a result of the proposed runway extension.

1.3 Methodology

The FAA has determined that the cumulative noise exposure resulting from aviation activity must be established in terms Day-Night Average Sound Level (DNL). As such, DNL contours have been prepared for the year 2008, the year 2010 with and without the extension, and the year 2029 with and without the extension. The following provides a description of the DNL metric.

DNL Noise Metric Overview

Cumulative noise metrics have been developed to assess community response to noise. They are useful because these scales include the loudness of the noise, the duration of the noise, the total

number of noise events, and the time of day these events occur into one single number rating scale. The DNL metric is a 24-hour, time-weighted energy average noise level based on the A-weighted decibel. It is a measure of the overall noise experienced during an entire day.

In calculating DNL, the hourly noise figures are summed for the 15 hours of daylight (7:00:00 a.m. to 9:59:59 p.m.) and added to the sum of the remaining 9 hours of nighttime with a 10 dB penalty added to the nighttime figures. This penalty is accounting for the higher potential for annoyance and decrease in background noise levels at night. The result is the DNL noise level or a 24-hour average summary of noise levels for a given location. When aircraft noise contours are calculated, the noise levels are solely due to the aircraft and do not include background or ambient noise levels.

Integrated Noise Model

The standard methodology for analyzing the noise conditions at airports involves the use of an aircraft noise model. The FAA has approved the Integrated Noise Model (INM) for use in environmental assessments. The INM was developed by the Transportation Systems Center of the United States Department of Transportation (USDOT) and is undergoing continuous refinement. INM Version 7.0a, the most current version of the model, has been used for the noise analysis described in this report.

INM Input Data

In order to develop DNL noise contours, the INM uses a series of input factors. Some of these factors are included in the database for the model (such as engine noise levels, thrust settings, and aircraft speeds) and others are airport-specific and need to be determined for each condition analyzed. These airport-specific data include the airport elevation, average annual temperature, runway layout, and the assignment of specific aircraft to individual flight tracks. Other INM input factors include:

- Runway use
- Existing and future aircraft operations and fleet mix
- Time of day/night operations

1.4 2008 Noise Exposure

The 2008 operational activity has been based on the Air Traffic Activity Data System (ATADS) data. The ATADS is based on data logged by air traffic control tower (ATCT) personnel. The ATCT at GTR is staffed from 6:00a.m.until 8:00p.m. A limited number of operations do occur during the time the ATCT is not staffed. These operations are not accounted for in the ATADS data. Airport management estimated that adding an additional 5 percent to the itinerant general aviation operations and one air taxi operation to the data reported in the ATADS would account for these nighttime operations. The 2008 annual operations used in this noise study by major aircraft categories are listed in **Table 1-1**.

TABLE 1-1
2008 AIRCRAFT OPERATIONS

Year	Commercial Service	General Aviation	Military	Total
2008	3,648	17,296	11,886	32,830

Source: ATADS FY 2008, ESA Airports and Airport Management

Aircraft operations data included in the ATADS data is not specific enough for the data sets required by the INM. For the purposes of preparing noise contours, the data must be further refined into operations by specific aircraft types within each major category. In order to help assist the study team in identifying specific aircraft types, data was purchased from FlightAware, LLC. for the most recent 6-month period available (09/08 – 03/09) for operations at GTR. The data included the following:

- Aircraft Registration Number
- Origin City
- Destination City
- Departure Time
- Aircraft Type
- Destination Airport
- Departure/Arrival Date
- Arrival Time

Military aircraft are not listed in the FlightAware database. The types of military aircraft that operate at the airport have been estimated by airport management.

INM Aircraft Substitutions

The INM contains a number of civilian and military aircraft types, but does not contain all the aircraft that are operating today. The model does contain a list of substitute aircraft approved for use by the FAA. When a specific aircraft is not contained within the model, and is not on the substitution list, the model user is required to contact the FAA for the appropriate substitute aircraft. This requirement pertains to FAR Part 150 and 161 studies and to FAA Order 1050.1E Environmental Assessments and Environmental Impact Statements. As part of this study, approval by the FAA was sought for three aircraft, the Bombardier Challenger 300, Van's Aircraft RV-4, and the Van's Aircraft RV-10. Correspondence received from the FAA as to the approved INM substitutes for these aircraft is included in Appendix A.

Aircraft Fleet Mix

Aircraft operations are identified as either itinerant or local. An itinerant operation leaves the local airspace. A local operation remains within the vicinity of the airport and is most often associated with aircraft flight training. The breakdown of the 2008 itinerant and local aircraft operations and fleet mix is included in **Tables 1-2** and **1-3**.

Table 1-2
2008 Itinerant Operations and Fleet Mix
Golden Triangle Regional Airport

Aircraft Category	INM Aircraft	Aircraft Type(s)	Operations Per Average Day		Total Annual Operations
			Daytime	Nighttime	
Large Air Carrier	737700	B737-700	0.09	0.00	34
	737800	B737-800	0.06	0.00	23
	757RR	B757-200	0.01	0.00	2
	DC93LW	DC9-30	0.04	0.00	14
Air Taxi	CL601	Canadair Regional Jet	4.73	0.97	2,080
	EMB145	Embraer 145	0.20	0.00	74
GA Jet	MU3001	Beechjet 400, Citation V	1.37	0.07	527
	CNA500	Cessna Citation I	0.37	0.02	141
	CNA55B	Citation Bravo	0.03	0.00	10
	CIT3	Cessna Citation III	0.09	0.00	35
	LEAR35	Lear 35, 60, Hawker 800	0.50	0.03	194
	CNA750	Cessna Citation X	0.04	0.00	15
	CL600	Challenger Jet	0.08	0.00	30
	FAL20	Falcon Jet	0.31	0.02	118
	GIV	Gulfstream IV	0.05	0.00	18
	GV	Gulfstream V	0.01	0.00	5
	IA1125	Westwind Jet	0.21	0.01	81
Single Piston	GASEPV	Bonanza, Mooney M20, Cherokee, Vans RV	6.68	0.35	2,567
	GASEPF	Piper Archer II, Caravan I, Great Lakes Sport	5.11	0.27	1,965
	CNA172	Cessna 172, Cessna 152	5.76	0.30	2,212
	CNA206	Cessna 182	0.35	0.02	134
Twin Piston	BEC58P	Beech Baron, Cessna 310 Navajo, Seminole	4.79	0.25	1,841
	PA30	Piper Twin Comanche	0.01	0.00	5
	PA31	Piper Chieftain	0.05	0.00	18
Turboprop	DHC6	Super King Air 200	0.52	0.03	199
	CNA441	Cessna Conquest	0.18	0.01	68
	SD330	Shorts 330	0.28	0.01	106
Military	T-6	T-6 Texan	17.66	0.00	6,445
	T-1	T-1 Jayhawk	4.41	0.00	1,611
Rotorcraft	S76	UH-72A Lakota	2.19	0.00	800
	A109	Eurocopter EC-135	0.82	0.00	300
	AS350	Eurocopter AS-350	2.19	0.00	800
	R22	Robinson R-22	0.27	0.00	100
Total			**59.47**	**2.36**	**22,590**

Source: ESA Airports, and Airport Management; Numbers may not sum due to rounding.

Table 1-3
2008 Local Operations and Fleet Mix
Golden Triangle Regional Airport

Aircraft Category	INM Aircraft	Aircraft Type(s)	Operations Per Average Day		Total Annual Operations
			Daytime	Nighttime	
Local	GASEPF	Piper Archer II, Caravan I, Great Lakes Sport	0.88	0.00	320
	CNA172	Cessna 172, Cessna 152	13.17	0.00	4,807
	PA31	Piper Chieftain	3.51	0.00	1,281
	T-6	T-6 Texan	8.40	0.00	3,066
	T-1	T-1 Jayhawk	2.10	0.00	766
Total			**28.06**	**0.00**	**10,240**

Source: ESA Airports, and Airport Management; Numbers may not sum due to rounding.

Runway Use and Flight Tracks

In addition to the aircraft operations and fleet mix, the runway use and location of aircraft flight tracks are an important factor in determining the geographic distribution of noise on the ground. Runway use has been identified for north flow, which is when aircraft are operating on Runway 36, and for south flow, when aircraft are operating on Runway 18. Based on airport management estimates, this study modeled the airport operating 40 percent of the time in north flow and 60 percent of the time in south flow.

Aircraft flight tracks in the immediate vicinity of the runway were modeled straight-in and straight-out. Local aircraft operations were modeled using a standard left hand pattern from both runway ends.

2008 DNL Contours

The existing 2008 65-75 DNL contours are shown on **Figure 1**. The 65 DNL contour extends approximately 350 feet north of the Runway 18 threshold and approximately 400 feet south of the Runway 36 threshold. The slightly larger contour south of the runway is a result of the airport operating in south flow 60 percent of the time.

No residences or other noise sensitive areas are located within the 2008 65 DNL contour.

Golden Triangle Regional Airport

Golden Triangle Regional Airport Runway Extension Noise Analysis
2008 DNL Contours
Figure 1

1.5 2010 Noise Exposure

An Environmental Assessment requires that noise contours be prepared for the first year the proposed project is expected to be in operation, and a long-term analysis year which is normally 5 to 10 years beyond opening. For this study, the proposed runway extension is expected to be in operation in 2010. The long-term analysis year is 2029.

2010 Aircraft Operations and Fleet Mix

The 2010 operational activity has been based on the updated aircraft activity forecast prepared as part of the airports ongoing Master Plan Update. The 2010 annual operations by major aircraft categories are listed in **Table 1-4**.

TABLE 1-4
2010 FORECASTAIRCRAFT OPERATIONS

Year	Commercial Service	General Aviation	Military	Total
2010	4,239	20,708	11,886	36,833

Source: Barge Waggoner Sumner & Cannon, Inc.

By 2010, it forecast that a total of 36,833 operations will occur annually, or an average of 100 operations per day. This is a slight increase from the average of 90 operations per day that occurred in 2008.

Runway Use and Flight Tracks

The runway use percentages and flight track locations modeled for the 2010 were the same as modeled for the year 2008.

Aircraft Fleet Mix

The 2010 aircraft fleet mix was based in part on the fleet mix of aircraft that occurred in 2008. One notable change is that by 2010, it is expected that the airport will have added two daily Saab 340 commuter flights. This change has been included in the modeled 2010 condition. The breakdown of the 2010 itinerant and local aircraft operations and fleet mix is included in **Tables 1-5** and **1-6**.

Table 1-5
2010 Itinerant Operations and Fleet Mix
Golden Triangle Regional Airport

Aircraft Category	INM Substitute Aircraft	Aircraft Type(s)	Operations Per Average Day		Total Annual Operations
			Daytime	Nighttime	
Large Air Carrier	737700	B737-700	0.10	0.00	33
	737800	B737-800	0.06	0.00	23
	757RR	B757-200	0.01	0.00	2
	DC93LW	DC9-30	0.04	0.00	14
Air Taxi	CL601	Canadair Regional Jet	3.08	0.63	1,352
	EMB145	Embraer 145	0.19	0.00	70
GA Jet	MU3001	Beechjet 400, Citation V	1.44	0.08	555
	CNA500	Cessna Citation I	0.39	0.02	149
	CNA55B	Citation Bravo	0.03	0.00	11
	CIT3	Cessna Citation III	0.10	0.01	37
	LEAR35	Lear 35, 60, Hawker 800	0.53	0.03	204
	CNA750	Cessna Citation X	0.04	0.00	16
	CL600	Challenger Jet	0.08	0.00	32
	FAL20	Falcon Jet	0.32	0.02	125
	GIV	Gulfstream IV	0.05	0.00	19
	GV	Gulfstream V	0.01	0.00	5
	IA1125	Westwind Jet	0.22	0.01	85
Single Piston	GASEPV	Bonanza, Mooney M20, Cherokee, Vans RV	7.43	0.39	2,855
	GASEPF	Piper Archer II, Caravan I, Great Lakes Sport	5.78	0.30	2,221
	CNA172	Cessna 172	6.46	0.34	2,481
	CNA206	Cessna 182	0.37	0.02	141
Twin Piston	BEC58P	Beech Baron, Cessna 310 Navajo, Seminole	5.18	0.27	1,990
	PA30	Piper Twin Comanche	5.31	0.00	5
	PA31	Piper Chieftain	0.05	0.00	19
Turboprop	DHC6	Super King Air 200	0.55	0.03	210
	CNA441	Cessna Conquest	0.19	0.01	72
	SF340	Saab 340B	3.80	0.20	1,460
	SD330	Shorts 330	0.29	0.02	111
Military	T-6	T-6 Texan	17.67	0.00	6,445
	T-1	T-1 Jayhawk	4.41	0.00	1,611
Rotorcraft	S76	UH-72A Lakota	2.57	0.00	938
	A109	Eurocopter EC-135	0.96	0.00	352
	AS350	Eurocopter AS-350	2.57	0.00	938
	R22	Robinson R-22	0.32	0.00	117
Total			**65.34**	**2.38**	**24,720**

Source: ESA Airports, Barge Waggoner Sumner & Cannon, Inc. and Airport Management; Numbers may not sum due to rounding.

Table 1-6
2010 Local Operations and Fleet Mix
Golden Triangle Regional Airport

Aircraft Category	INM Aircraft	Aircraft Type(s)	Operations Per Average Day		Total Annual Operations
			Daytime	Nighttime	
Local	GASEPF	Piper Archer II, Caravan I, Great Lakes Sport	1.13	0.00	414
	CNA172	Cessna 172	17.02	0.00	6,212
	PA31	Piper Chieftain	4.54	0.00	1,657
	T-6	T-6 Texan	8.40	0.00	3,064
	T-1	T-1 Jayhawk	2.10	0.00	766
Total			**33.19**	**0.00**	**12,113**

Source: ESA Airports, Barge Waggoner Sumner & Cannon, Inc. and Airport Management; Numbers may not sum due to rounding

2010 No Action DNL Contours

The 2010 No Action 65-75 DNL contours are shown on **Figure 2**. The 65 DNL contour extends approximate 400 feet north of the Runway 18 threshold and approximately 450 feet south of the Runway 36 threshold. This represents an increase when compared to the 2008 year and is due to the forecast increase in the number of operations expected in 2010. As with the 2008 condition, the slightly larger contour south of the runway is a result of the airport operating in south flow 60 percent of the time.

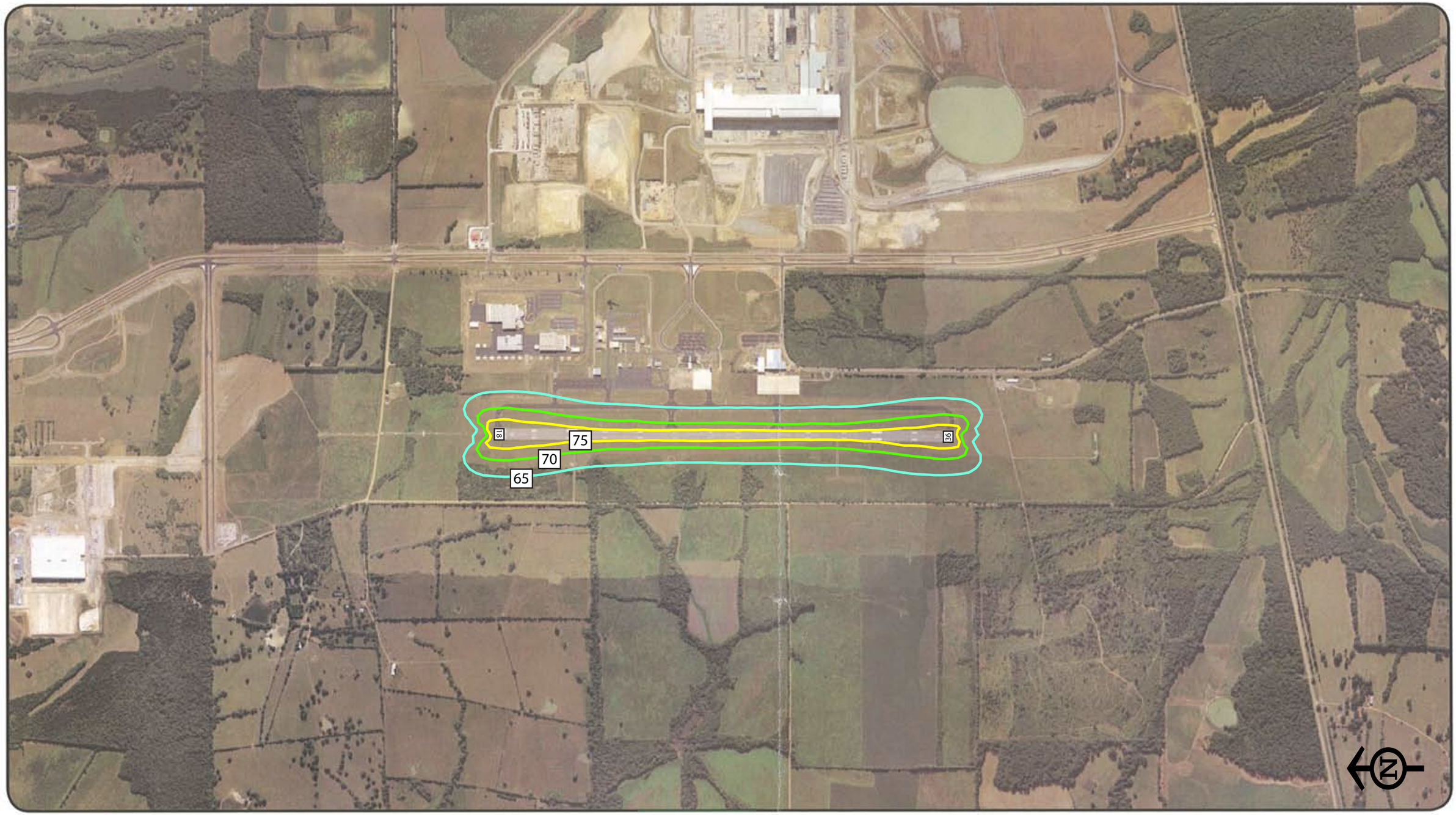
No residences or other noise sensitive areas are located within the 2010 No Action 65 DNL contour.

2010 Proposed Action DNL Noise Contours

The 2010 Proposed Action includes extending the runway by 1,503 feet to the south. This results in a total runway length of 8,000 feet. The extension is expected to result in an increase in operations at the airport when compared to the 2010 No Action condition. The change is the addition of an estimated 480 annual operations by F-16 military aircraft. In modeling the 2010 Proposed Action condition, the runway in the model was lengthened to 8,000 feet, the flight tracks were shifted to the new Runway 36 threshold (a result of the extended runway), and the 480 F-16 operations were added. No other changes to the data used to model the 2010 No Action conditions were made.

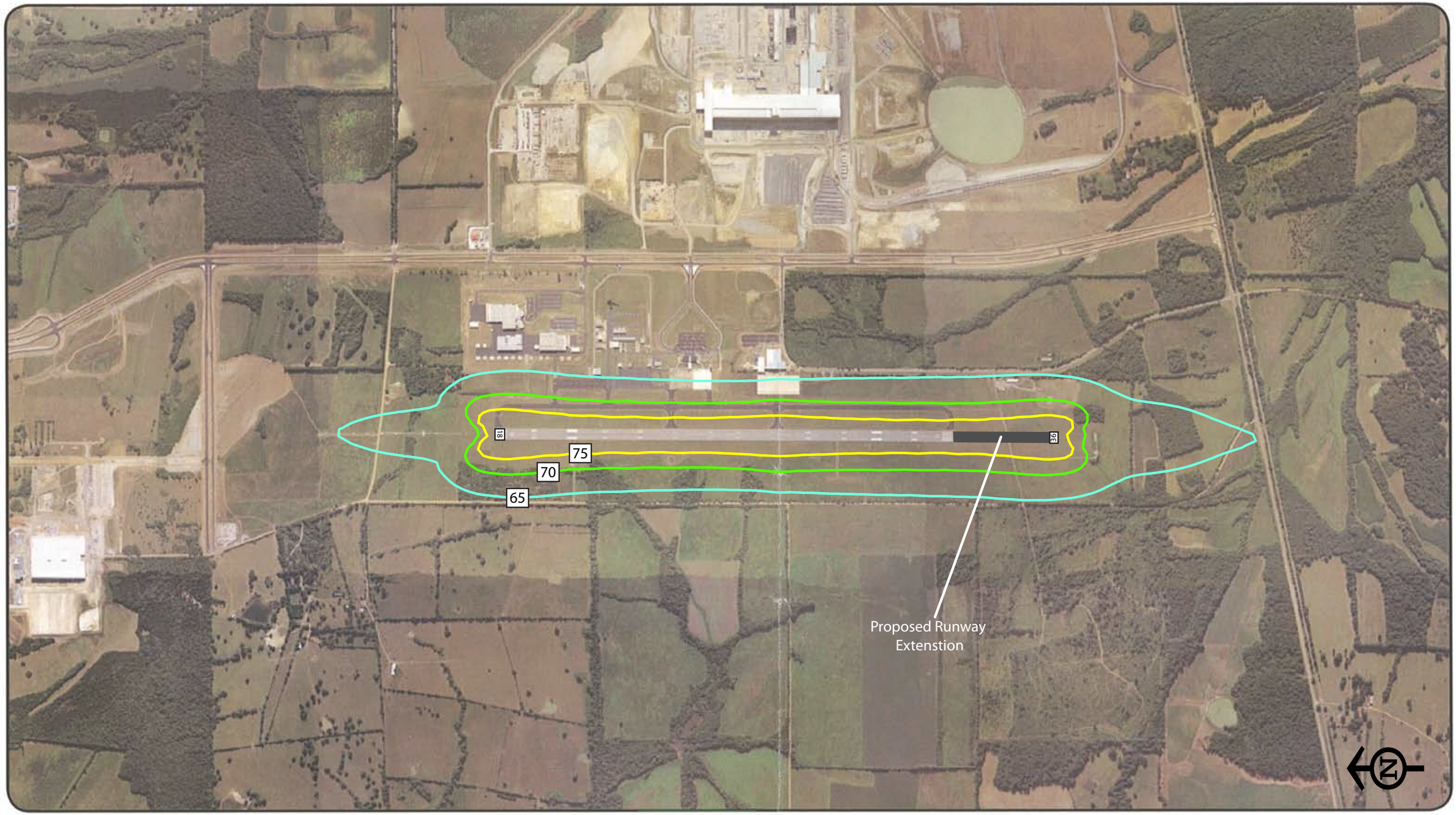
The 2010 Proposed Action 65-75 DNL contours are shown on **Figure 3**. The 65 DNL contour extends approximate 2,100 feet north of the Runway 18 threshold, and approximately 2,600 feet south of the extended Runway 36 threshold. This is an increase when compared to the 2010 No Action condition. The larger contour increase is due to the addition of the F-16 aircraft.

While the size of the contours increases when compared to the No Action condition, no residences or other noise sensitive areas are located within the 2010 Proposed Action 65 DNL contour.



Golden Triangle Regional Airport

Golden Triangle Regional Airport Runway Extension Noise Analysis
2010 No Action DNL Contours
Figure 2



Golden Triangle Regional Airport

Golden Triangle Regional Airport Runway Extension Noise Analysis
2010 Proposed Action DNL Contours
Figure 3

1.6 2029 Noise Exposure

As noted in Section 1.5, an Environmental Assessment requires a long-term year of analysis which is normally 5 to 10 years beyond the project opening year. For this study, the long-term year of analysis is 2029.

2029 Aircraft Operations and Fleet Mix

The 2029 operational activity has been based on the updated aircraft activity forecast prepared as part of the airport's ongoing Master Plan Update. The 2029 annual operations by major aircraft categories are listed in **Table 1-7**.

TABLE 1-7
2029 FORECASTAIRCRAFT OPERATIONS

Year	Commercial Service	General Aviation	Military	Total
2029	5,871	31,844	11,886	49,601

Source: Barge Waggoner Sumner & Cannon, Inc.

By 2029, it forecast that a total of 49,601 operations will occur, or an average of 135 operations per day. This is a 35 percent increase in activity over 2010 levels.

Runway Use and Flight Tracks

The runway use percentages and flight track locations modeled for the 2029 were the same as modeled for the year 2008.

Aircraft Fleet Mix

The aircraft fleet mix that was used to model 2029 was based on the fleet mix of aircraft that is expected to occur in 2010. The percentage of the fleet forecast in 2010 was applied to the total airport operations forecast to occur in 2029. The breakdown of the 2029 itinerant and local aircraft operations and fleet mix is included in **Tables 1-8** and **1-9**.

Table 1-8
2029 Itinerant Operations and Fleet Mix
Golden Triangle Regional Airport

Aircraft Category	INM Substitute Aircraft	Aircraft Type(s)	Operations Per Average Day		Total Annual Operations
			Daytime	Nighttime	
Large Air Carrier	737700	B737-700	0.10	0.00	33
	737800	B737-800	0.06	0.00	23
	757RR	B757-200	0.01	0.00	2
	DC93LW	DC9-30	0.04	0.00	14
Air Taxi	CL601	Canadair Regional Jet	4.26	0.87	1,872
	EMB145	Embraer 145	0.27	0.00	97
GA Jet	MU3001	Beechjet 400, Citation V	2.14	0.11	822
	CNA500	Cessna Citation I	0.57	0.03	220
	CNA55B	Citation Bravo	0.04	0.00	16
	CIT3	Cessna Citation III	0.14	0.01	55
	LEAR35	Lear 35, 60, Hawker 800	0.79	0.04	303
	CNA750	Cessna Citation X	0.06	0.00	24
	CL600	Challenger Jet	0.12	0.01	47
	FAL20	Falcon Jet	0.48	0.03	185
	GIV	Gulfstream IV	0.07	0.00	28
	GV	Gulfstream V	0.02	0.00	8
	IA1125	Westwind Jet	0.33	0.02	126
Single Piston	GASEPV	Bonanza, Mooney M20, Cherokee, Vans RV	11.35	0.60	4,363
	GASEPF	Piper Archer II, Caravan I, Great Lakes Sport	8.91	0.47	3,423
	CNA172	Cessna 172	9.91	0.52	3,808
	CNA206	Cessna 182	0.54	0.03	208
Twin Piston	BEC58P	Beech Baron, Cessna 310 Navajo, Seminole	7.79	0.41	2,993
	PA30	Piper Twin Comanche	0.02	0.00	8
	PA31	Piper Chieftain	0.07	0.00	28
Turboprop	DHC6	Super King Air 200	0.81	0.04	311
	CNA441	Cessna Conquest	0.28	0.01	106
	SF340	Saab 340B	5.26	0.28	2,022
	SD330	Shorts 330	0.43	0.02	165
Military	T-6	T-6 Texan	17.67	0.00	6,445
	T-1	T-1 Jayhawk	4.41	0.00	1,611
Rotorcraft	S76	UH-72A Lakota	3.78	0.00	1,379
	A109	Eurocopter EC-135	1.42	0.00	517
	AS350	Eurocopter AS-350	3.78	0.00	1,379
	R22	Robinson R-22	0.47	0.00	172
Total			**87.0**	**3.50**	**33,033**

Source: ESA Airports, Barge Waggoner Sumner & Cannon, Inc. and Airport Management; Numbers may not sum due to rounding.

Table 1-9
2029 Local Operations and Fleet Mix
Golden Triangle Regional Airport

Aircraft Category	INM Aircraft	Aircraft Type(s)	Operations Per Average Day		Total Annual Operations
			Daytime	Nighttime	
Local	GASEPF	Piper Archer II, Caravan I, Great Lakes Sport	1.74	0.00	636.90
	CNA172	Cessna 172	26.20	0.00	9,553.50
	PA31	Piper Chieftain	7.00	0.00	2,547.60
	T-6	T-6 Texan	8.40	0.00	3,064.00
	T-1	T-1 Jayhawk	2.10	0.00	766.00
Total			**45.40**	**0.00**	**16,568**

Source: ESA Airports, Barge Waggoner Sumner & Cannon, Inc. and Airport Management; Numbers may not sum due to rounding.

2029 No Action DNL Noise Contours

The 2029 No Action 65-75 DNL contours are shown on **Figure 4**. The 65 DNL contour extends approximate 500 feet north of the Runway 18 threshold, and approximately 550 feet south of the Runway 36 threshold. This is an increase when compared to the 2010 No Action contour.

No residences or other noise sensitive areas are located within the 2029 No Action 65 DNL contour.

2029 Proposed Action DNL Noise Contours

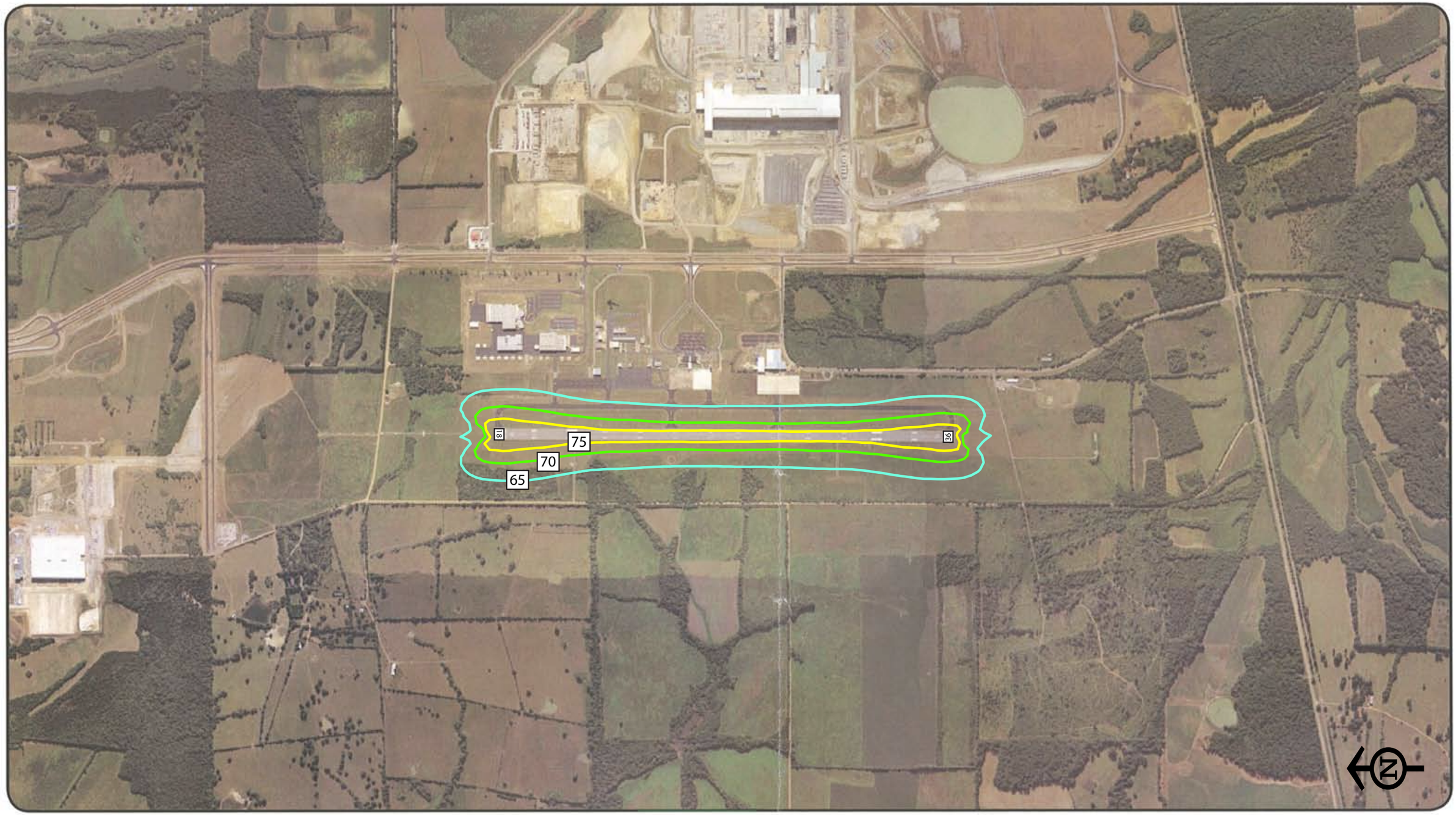
The 2029 Proposed Action 65-75 DNL contours are shown on **Figure 5**. The contours are noticeably smaller when compared to the 2010 Proposed Action DNL contours. The reason for this is that by 2029, it is expected that the contract which resulted in the additional F-16 operations in 2010 will have ended. It is for this reason that the F-16 aircraft were not included in the 2029 fleet mix.

No residences or other noise sensitive areas are located within the 2029 Proposed Action 65 DNL contour.

1.7 Conclusion

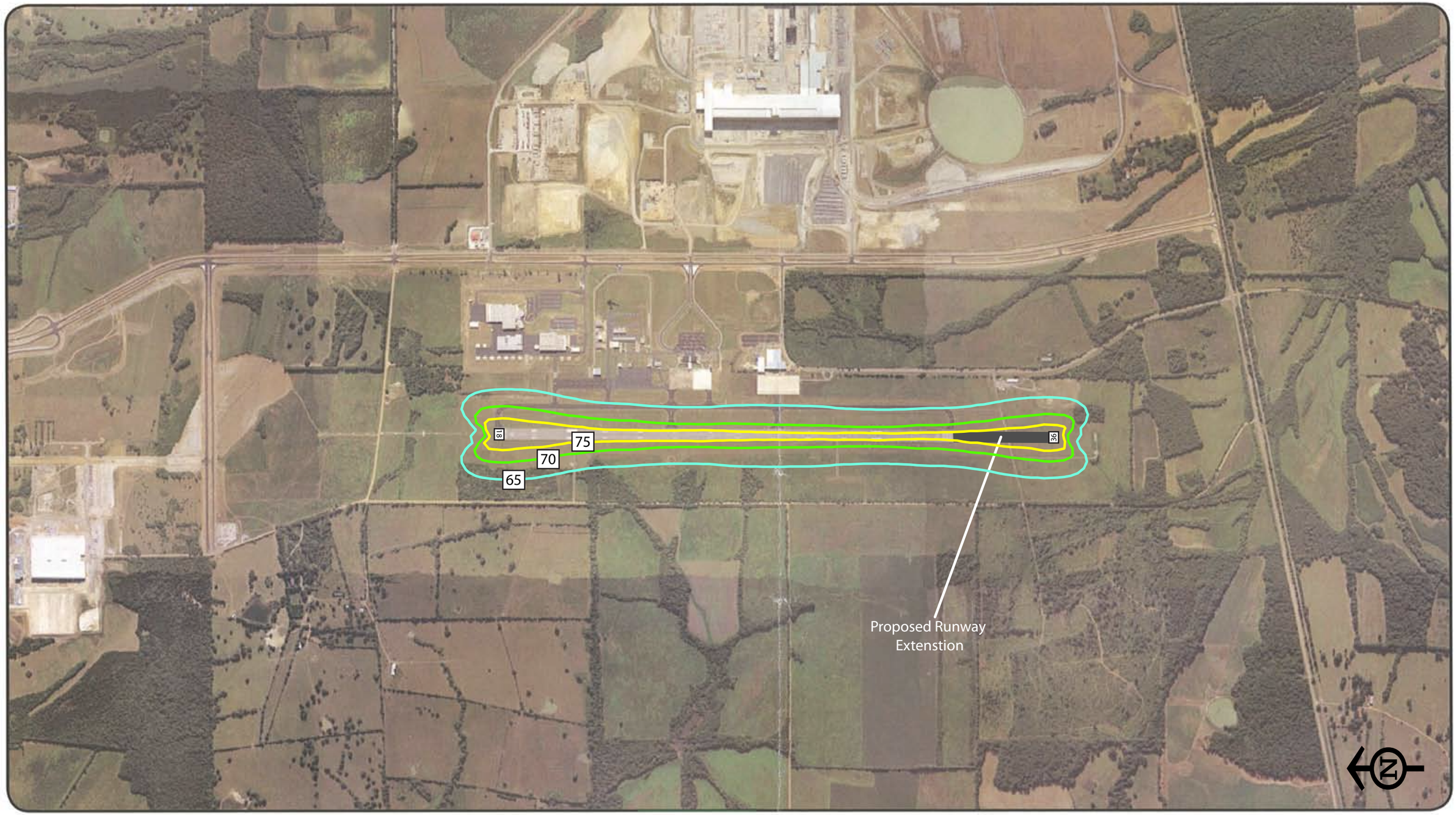
As noted earlier, FAA Order 1050.1E defines what is considered a significant noise impact as a result of a proposed project. The Order identifies that a significant impact would occur when an action, compared to the no action alternative for the same timeframe, would cause noise sensitive areas located at or above DNL 65 dB to experience a noise increase of at least DNL 1.5 dB.

At GTR, no noise sensitive areas are at or above the 65 DNL for any of the years or alternatives. Therefore, no noise sensitive area will experience a significant noise impact as a result of the proposed action and no mitigation is required.



Golden Triangle Regional Airport

Golden Triangle Regional Airport Runway Extension Noise Analysis
2029 No Action DNL Contours
Figure 4



Golden Triangle Regional Airport

Golden Triangle Regional Airport Runway Extension Noise Analysis
2029 Proposed Action DNL Contours
Figure 5

Appendix A

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

Office of Environment and Energy

800 Independence Ave., S.W.
Washington, D.C. 20591

April 13, 2009

Dana Perkins
Federal Aviation Administration
Atlanta Airports District Office
1701 Columbia Avenue
Campus Building, Suite 2-260
College Park, Georgia 30337

Dear Ms. Perkins,

The Office of Environment and Energy (AEE) has reviewed the proposed non-standard Integrated Noise Model (INM) aircraft substitutions for the Golden Triangle Regional Airport (GTR) Runway Environmental Assessment (EA) and Master Plan Update.

ESA Airports is providing aircraft noise modeling support to Bargewaggoner, Sumner, and Cannon, Inc., and has proposed substitutions for three aircraft types that currently do not have standard substitutions in the INM aircraft database. The proposed substitutions and the corresponding AEE recommendations are summarized in the table below.

Aircraft	**ESA Proposed Substitution**	**AEE Recommendation**
Bombardier Challenger 300	CL601	CL600
Van's Aircraft RV-4	GASEPV	Concur
Van's Aircraft RV-10	GASEPV	Concur

AEE concurs with the two Van's Aircraft substitutions proposed. Van's Aircraft are kit aircraft and so the engine/propeller combinations are unknown. Since these aircraft use constant speed propellers, the GASEPV appears to be a reasonable substitution.

AEE recommends the Bombardier Challenger 300 be modeled with the INM CL600, rather than the proposed CL601. Although the CL601 appears to be a better match when comparing noise data at all three certification points, it should be noted that both the CL601 and CL600 noise certification data at the flyover point are for full power takeoff. The Bombardier Challenger 300 data at the flyover point is for a takeoff with cutback, making it difficult to compare the aircraft at the flyover point. The sideline certification value for the CL600 is higher than that of the Challenger 300, whereas the

CL601 sideline value is lower than the Challenger 300. AEE prefers to model aircraft substitutions conservatively, therefore we recommend the CL600.

Please understand that this approval is limited to this particular EA and Master Plan update for GTR. Any additional projects or non-standard INM input at GTR or any other site will require separate approval.

Sincerely,

M. Morgan for RG.

Raquel Girvin, Ph.D.
Manager
AEE/Noise Division

cc: Jake Plante

Appendix B

List of Preparers

Environmental Science Associates (ESA Airports)

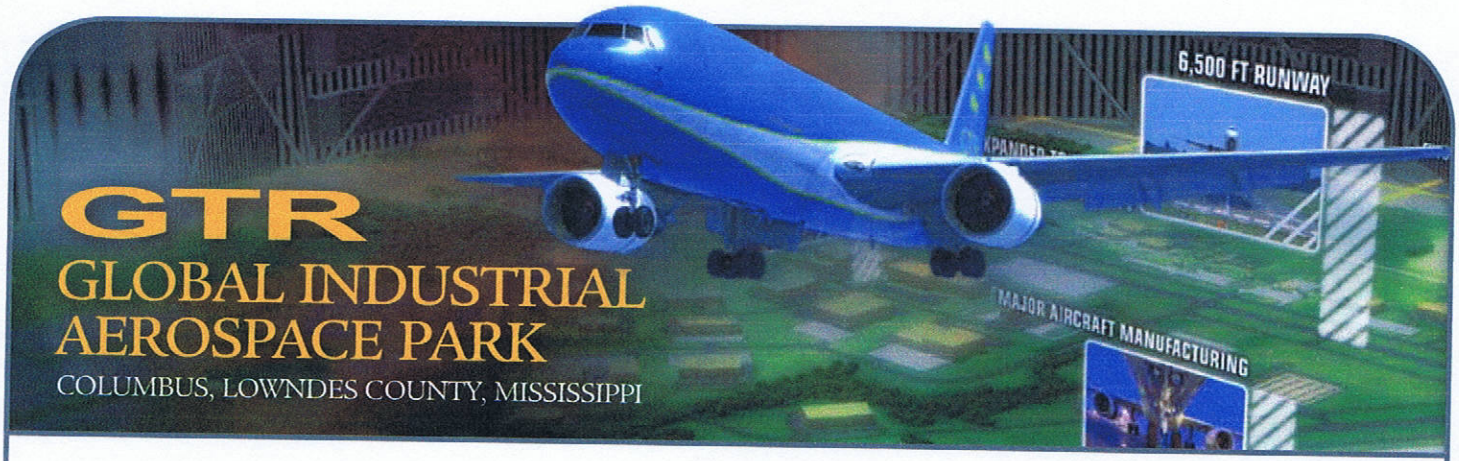
Michael E. Alberts, B.A. Geography, 16 years of experience. ESA Airports Project Manager, Responsible for the preparation of the noise analysis.

Sean D. Burlingame, B.S. Aviation Planning, 3 years of experience. Responsible for supporting the preparation of the noise analysis.

Michael Arnold, B.S. Civil Engineering, 18 years experience. QA/QC of all work products.

APPENDIX 4

GTR Global Industrial Aerospace Park



GTR GLOBAL INDUSTRIAL AEROSPACE PARK

COLUMBUS, LOWNDES COUNTY, MISSISSIPPI

THE LINK

The Columbus Lowndes Development LINK was founded in 2006 with the merger of the Chamber of Commerce and economic development entities. The LINK's staff of seven consists of two full-time certified economic developers and one part-time certified economic developer, two certified chamber executives, one governmental affairs expert and an administrative assistant. During its six years of existence, the LINK has experienced enormous success in both the economic development and community development arenas. Industrial and retail development has brought over $3.4 billion in investments and the creation of 4,000± new jobs with top pay grades. A notable accomplishment is the creation of two TVA certified megasites in a two-year time period. Additionally, the Golden Triangle Industrial Park has expanded three-fold during this time. The LINK's economic development staff also manages the Lowndes County Industrial Development Authority, which owns and operates the Golden Triangle Industrial Park and the GTR Global Industrial Aerospace Park. Community development efforts include the creation of The Trust, a five-year capital investment campaign. Local business and industry leaders investing in The Trust are ensuring that the LINK has the tools to compete and succeed nationally and internationally at attracting new and better jobs to this area, while retaining existing jobs.

GTR GLOBAL INDUSTRIAL AEROSPACE PARK

Concept: The GTR Global Industrial Aerospace Park is designed to complement the area's growing aerospace and defense industries that currently consist of composites, maintenance, unmanned aerial systems, helicopters and geospatial technologies. The aerospace industry represents 3-5% of the US GDP, with 10,000,000 existing jobs; and the industry leads the US economy in net exports. The park is a lucrative spot for the design, development, manufacturing and maintenance of aerospace-related products as well as other products. Columbus Air Force Base, a pilot training base and one of the nation's busiest airports, is located in Lowndes County. With Mississippi State University and its aerospace engineering department a short distance away, the synergies are in place for the creation of a world-renowned industrial aerospace park. Workforce training is available at nearby East Mississippi Community College, which has provided training for the existing area aerospace industries.

- **Regional Effort**: The GTR Global Industrial Aerospace Park is centrally located in Lowndes County and surrounded by four Mississippi counties and three Alabama counties. These county governments, along with the major city governments, economic and industrial development entities and educational institutions, have agreed that the GTR Global Industrial Aerospace Park is beneficial to the economic growth and well being of their communities. As a result, a Memorandum of Cooperation and Collaboration has been developed and all entities are in concurrence to the benefits of the park.

Site: The site is 2,500 acres, publicly controlled, adjacent to the Golden Triangle Regional Airport (GTRA), Mississippi's third largest commercial airport. Fifty percent of the site is the Crossroads Megasite, a TVA certified megasite.

- **Infrastructure**:
  - **Water and Sewer**: The nearby Golden Triangle Industrial Park has 1,000,000 gallons on water storage capacity in elevated storage tanks. Funding has been appropriated to construct a 1,000,000 gallon tank northeast of the aerospace park and run 16" water lines along the western boundary of the aerospace park. The industrial park is in the design stage of expanding its sewer treatment facilities, and construction is expected to begin in Spring of 2010. Funding has also been appropriated for the installation of two pump stations and 35,000 ft. of 12" sewer force main.

SEEING IS BELIEVING.

WWW.GTRAEROSPACEPARK.COM

LINK

- **Electricity**: Electricity is provided by the Tennessee Valley Authority and distributed by 4-County Electric Power Association. Redundant power is available as both TVA and 4-County have state-of-the art delivery systems adjacent to the site.
- **Natural Gas**: Atmos Energy has lines adjacent to the site that can easily be extended into the site.

- **Transportation**:
  - **Air**: The GTRA runway is 6,500 ft. with funds appropriated to expand to 8,000 ft. by 2011. The airport's master plan includes a 5,000 ft. crossing runway that dissects the GTR Global Industrial Aerospace Park. GTRA and CAFB collaborate on many missions and projects, with CAFB providing backup air control for GTRA and GTRA providing runway space to CAFB. An air cargo ramp is in place.
  - **Rail**: The Kansas City Southern Railroad bounds the site to the south, providing access to five other railroads in Columbus, which have connections to the east and west coasts, Mexico and Canada.
  - **Highway**: Airport Road and Artesia Road connect the site to US Highways 82 and 45, interstate quality highways providing access to Interstates 20, 55, 59 and 22 Corridor.
  - **Water**: The Lowndes County Ports (east and west banks) are located on the Tennessee-Tombigbee Waterway, America's newest inland waterway. Both ports are operated by stevedoring services and have intermodal loading and unloading capabilities. The west bank port is nine (9) highway miles from the site. The Tenn-Tom Waterway provides water access to all cardinal points

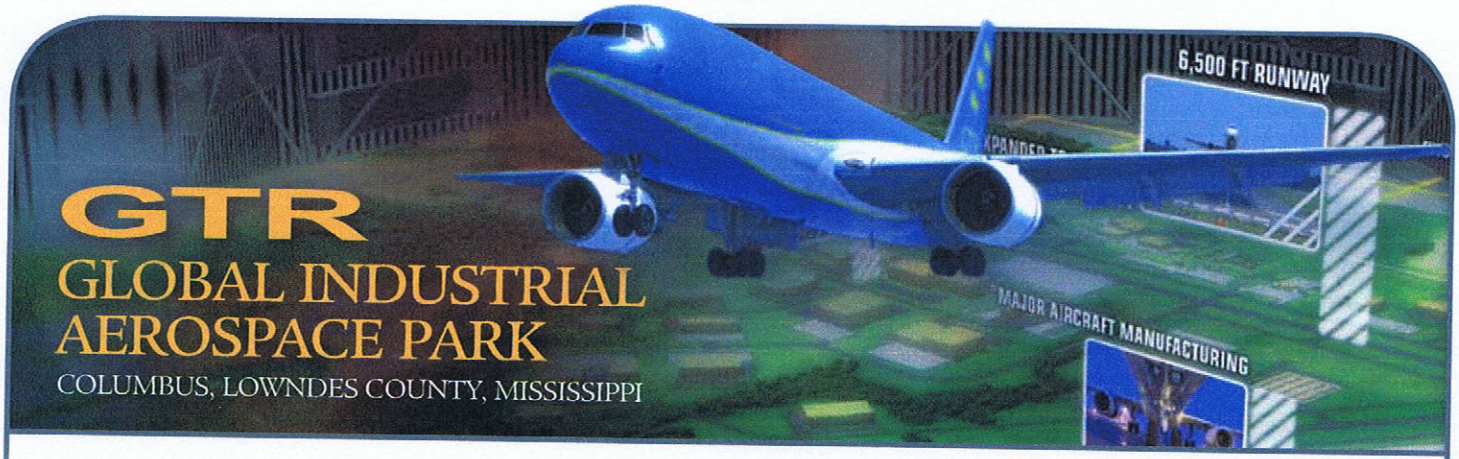
- **Due Diligence**:
  - **Environmental**: All environmental studies have been performed and clearances received on the site. The site is also in an air attainment area.
  - **Geotechnical**: Geotechnical testing has been performed on the site. The site sits atop Selma Chalk, which carries a 120 dpi, providing a dramatic savings in construction costs.
  - **Cultural Resources**: Cultural resources clearances have been completed on the site.

Workforce:

The majority of the workforce for the aerospace park will come from the five Mississippi counties and three Alabama counties signing the Memorandum of Cooperation and Collaboration. The combined population of these counties is 232,377 with a total available workforce of 92,172. Well-trained air force retirees, 6,600 at last count, are also available for employment in the aerospace industry.

Education

- **Mississippi State University**: Located 12 miles from the site, Mississippi State University has an outstanding, world recognized aerospace engineering school. The 75-year old school is ranked 80th among 350 schools in the nation by US News and World Report and ranks 55th among public universities in total research and development expenditures. The university provides employees and solutions to area manufacturers.
- **East Mississippi Community College**: Workforce training at EMCC is second to none, with the college's enrollment continuously growing, and innovative training abounding. The school's Center for Manufacturing Excellence, provides specialized, hands-on training for manufacturers.
- **Mississippi University for Women**: The "W" has been recognized by many publications for its quality education. The College of Professional Studies has expanded its mission to include a number of sought-after degrees and curricula, thus enhancing the attractiveness of the university to business and industry.



GTR
GLOBAL INDUSTRIAL AEROSPACE PARK

COLUMBUS, LOWNDES COUNTY, MISSISSIPPI

SITE	ATTRIBUTE
Acres	2,500 in industrial park setting; 50% TVA Certified Megasite; "shovel ready" site
Water/Storage	16" line with 16" connecting funded; 1 million gallons elevated & 1 million gallon elevated tank funded for construction
Wastewater Treatment	12" gravity line w/2 pump stations and force main; 500,000 gpd, expanding to 1,000,000 gpd
Electricity	3-phase 13 kV distribution adjacent; 7.2 kV at site's SW corner; 161 kV transmission lines available; TVA contractually obligated to build a second transmission line to the 4-County substation from a redundant source by 2012 or earlier
Natural Gas	Two 8" lines; One 30" line; One 6" line within 3,500 ft.
Airport	Adjacent to Golden Triangle Regional Airport; 6,500' runway expanding to 8,000' by 2011
Rail	Dual accessibility via Kansas City Southern Railroad (bounds site on south) with connectivity to five railroads with routes to the east and west coasts, Canada & Mexico
Water	Two ports providing service to all cardinal points through the Tennessee-Tombigbee Waterway
Environmental	Site has received environmental clearances
Archeological	Cultural resources studies complete
Wetlands Screening	Wetlands screening conducted with delineation & mitigation plan prepared
Geotechnical	Complete

LOCATION	ATTRIBUTE
Golden Triangle Regional Airport (GTRA)	Mississippi's third largest commercial airport with 2 inbound and 2 outbound flights daily to Memphis & Atlanta; cargo unloading ramp available
Columbus Air Force Base (15 mi. NE of site)	One of the busiest airports in the U.S.—300 sorties a day
Workforce	600,000 populace within a 60-mile radius; includes 6,600 military retirees
Industrial Setting	Located adjacent to existing Golden Triangle Industrial Park
Education	Aerospace programs available at Mississippi State University & University of Alabama with workforce training at East Mississippi Community College-Golden Triangle, Bevill State Community College & Shelton State Community College
Protective Services	Police & fire protection available at GTRA
Environmental	Located in an air attainment area

EXISTING INDUSTRIES	
Aerospace Industries	Stark Aerospace (IAI), American Eurocopter (EADS North America), Aurora Flight Sciences
Prominent Industries	Severstal Mississippi, PACCAR Engines, Weyerhaeuser, Omnova Solutions, Nammo Talley, Baldor Electric, Eka Chemicals

SEEING IS BELIEVING.

WWW.GTRAEROSPACEPARK.COM

LINK

GTR GLOBAL INDUSTRIAL AEROSPACE PARK

U S HIGHWAY 82
NORTH FRONTAGE ROAD
SOUTH FRONTAGE ROAD
596 Acres +/-
PACCAR (Under Construction)
Charleigh Ford Jr. Road
Charleigh Ford Jr. Road Extension
4-County Substation
Stark Aerospace (Under Construction)
Existing Runway Protection Zone
Road A
Road B
Road C
Road D
Road E
Airport Road
Possible Additional Runway Expansion Area
Approximate Location of Wetland Fingers
Airside Access
950 Acres +/-
1290 Acres +/-
Future Air Cargo Facility
Future Aircraft Maintenance
Ultimate Runway Protection Zone
Future F.B.O.
Future T-Hangars
Proposed Crosswind Runway Expansion
Rail
Rail Loading Area
Possible Rail Service/ Transfer Location
Possible Substation Service
Possible Rail Service Location
Eurocopter
GTR Airport Terminal
Aurora
Future Corporate Complex
Existing End of Runway
Future Air Cargo Facility
Runway Expansion to 8000 LF (Estimated Completion May 2011)
Possible Additional Runway Expansion Area
Ultimate Runway Protection Zone
Existing Runway Protection Zone
Ultimate Runway Protection Zone
HIGHWAY NO. 791 (M.D.O.T.)
Severstal Steel Mini-Mill 1400 +/- AC (Lowndes Co. Megasite)
ARTESIA ROAD

VICINITY MAP
SITE

STATE MAP
SITE

LEGEND:
- AIR FRONTAGE INDUSTRY
- RAIL ACCESS INDUSTRY
- ROAD-ONLY ACCESS INDUSTRY

GTR WEST SIDE CONCEPTUAL MASTER PLAN
GTR GLOBAL INDUSTRIAL AEROSPACE PARK
COLUMBUS, LOWNDES COUNTY, MISSISSIPPI

Prepared in August 2009 by:
TVA Economic Development Technical Services