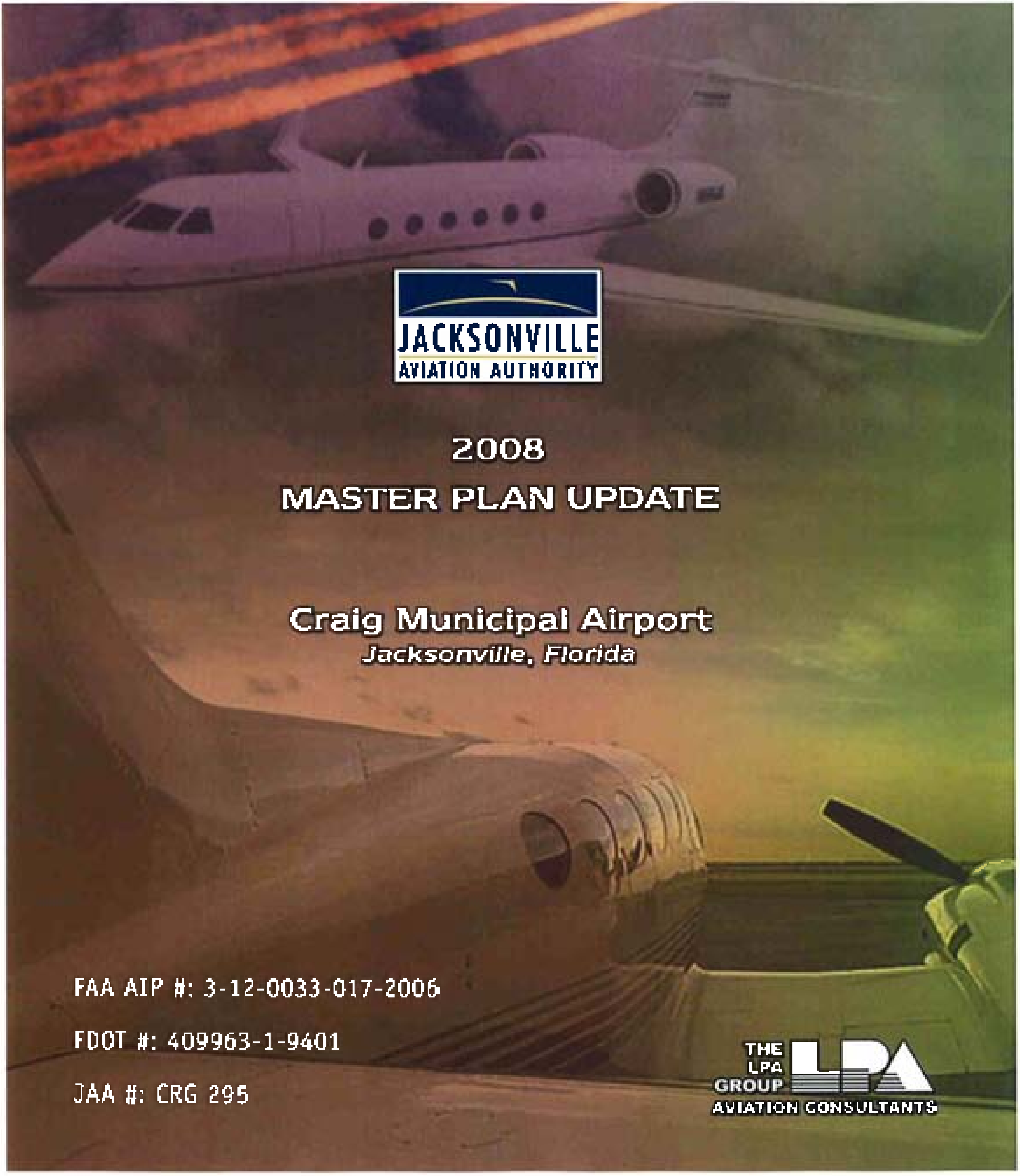

JACKSONVILLE AVIATION AUTHORITY

2008 MASTER PLAN UPDATE

Craig Municipal Airport
Jacksonville, Florida

FAA AIP #: 3-12-0033-017-2006

FDOT #: 409963-1-9401

JAA #: CRG 295

THE LPA GROUP
AVIATION CONSULTANTS

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

Orlando Airports District Office
5950 Hazeltine National Dr., Suite 400
Orlando, FL 32822-5003

Phone: (407) 812-6331

Fax: (407) 812-6978

May 6, 2009

Mr. Chip Seymour, C.M.
Director of Planning
Jacksonville Airport Authority
Jacksonville International Airport
P.O. Box 18018
Jacksonville, FL 32229-0010

RE: AIP Number 3-12-0033-017-2006
Craig Municipal Airport (CRG)
Master Plan Acceptance and Conditional ALP Approval

The Federal Aviation Administration (FAA) accepts your Airport Master Plan and conditionally approves your Airport Layout Plan (ALP) May 6, 2009 for Craig Municipal Airport. This approval is subject to the condition that the proposed airport development listed below requires environmental processing and may not be undertaken without the FAA's prior written environmental approval.

- Extension of Runway 14-32
- Any project requiring environmental determination under FAA Order 5050.4B

FAA approval of your ALP means that all existing and proposed airport development shown on the plan meets current FAA airport design standards, or a currently approved modification of the design standards that provide an acceptable level of safety at your airport. It also means that we find the proposed airport development shown on the plan useful and efficient. However, our approval does not represent a commitment to provide federal financial assistance to implement any development or air navigation facilities shown on the plan, nor does it mean that we find funding of the proposed airport development justified.

FAA acceptance of your Airport Master Plan means that it complies with the scope of work and contractual terms and conditions of the Airport Improvement Program (AIP) Grant Agreement. The contents of your Airport Master Plan reflect the views of the Jacksonville Aviation Authority, which is responsible for the facts and accuracy of the data presented. As with the ALP approval, acceptance of your Airport Master Plan does not represent a commitment to provide federal financial assistance to implement any development or air navigation facilities shown on the plan, nor does it mean that we find funding of the proposed airport development justified.

The ALP depicts Ultimate Declared Distances for Runway 14-32. While the calculation of the Declared Distances appears accurate, currently, we do not find any aeronautical need for the future or ultimate implementation of Declared Distances on this runway.

Please be aware that you are required to notify this office at least 60 days prior to the start of construction of any facilities on the airport. Also, this conditional ALP approval does not constitute airspace approval for aircraft parking aprons or structures. Prior to the start of construction of these facilities, you must submit proper notification to our office and receive FAA airspace approval.

We look forward to working with you in the continued development of your airport.

Sincerely,

Rebecca R Henry

Rebecca R. Henry
Planning Specialist

Enclosure (4 ALP)

cc:
AJV-E2 (w/3 ALPs)
Roland Luster, FDOT/2 (with 1 ALP)
AJW-E15C (with 1 ALP)
ASO-290 (with 1 ALP)
AJW-327G (with 1 ALP)
Tricia Fantinato, LPA Group (with 1 ALP)

CHAPTER ONE
Goals and Objectives

1.0 Introduction and Project Overview

A Master Plan provides an effective written and graphic representation of the ultimate development of the Airport and associated land uses adjacent to the Airport, while establishing a schedule of priorities and phasing for the various improvements proposed. The planning document presents a conceptual development plan, over a 20+-year period, for the Airport. Realistic master planning is a continuing and evolutionary process due to the justification and funding required during the implementation process. Many adjustments are likely to take place to meet the changing industry before facilities are designed, approved, and built to completion.

The Craig Municipal Airport (CRG) Airport Master Plan Update was designed to provide the Jacksonville Aviation Authority, owner and operator CRG, with long-term guidance, relating to on-going development needs, project phasing, financial requirements, and viability of the airport over the twenty-year planning period. Development of this master plan update was based upon the master plan guidelines and criteria established by the Federal Aviation Administration (FAA) and Florida Department of Transportation (FDOT). Government assistance related to proposed development is provided in the form of financial grants to the airport sponsor. The grants are provided by the FAA and by the FDOT budgetary processes via Joint Participation Agreements (JPA). As such, the master plan update provides management both a physical and financial plan to guide local decisions relating to airport facilities and their potential improvement.

1.1 General Guidelines

The goal of the master plan update is to define current and future aviation demand at CRG, the means and alternatives for addressing this demand, the role of the airport in the local, regional and national aviation system, and the need for and financial feasibility of new infrastructure and airport facilities. This project was funded from FAA and FDOT grants as well as Jacksonville Aviation Authority (JAA) project funds. The master plan update was programmed to begin in 2006 with completion of the study by early Fall 2007.

The airport's master plan serves a variety of functions including: projecting future aviation activity and development, providing airport management with a financial planning tool, and identifying and guiding on-airport and adjacent land use. The primary objective of the master plan update is to create a 20-year development program that will maintain a safe, efficient, economical, and environmentally acceptable airport facility for JAA, the City of Jacksonville, and Duval County. By achieving this objective, the document should provide guidance to satisfy general aviation demand in a financially feasible and responsible manner. The overall study approach will consider alternative airport development plans necessary to provide a "balanced" airport system.

1.2 Prior Planning Documentation

A major goal in the master planning process is the need to update information and plans at strategic intervals with recommended development concepts. This updating is necessary since prior Airport projects may have changed due to evolving conditions or policies in the political, social, and economic environment. The demand for scheduled services, GA services, or other aviation services may fluidly adjust in response to changes in the environment, and/or role of the Airport.

1.3 Key Issues

Since the last master plan update approximately six years ago, several physical and operational adjustments have occurred not only within the Jacksonville Aviation System, but within the Jacksonville Metropolitan area and aviation industry as a whole. Some of these changes include: community growth and increased surface congestion, expansion of residential and commercial development adjacent to CRG, the introduction of new technology and aircraft, as well as the impact of terrorism. Thus, JAA, in conjunction with FAA and FDOT, have identified key issues specific to Craig Airport that need to be addressed in this master plan update: These issues include, but are not limited to the following:

- Evaluate primary runway length requirements, runway safety area standards, and future airfield capacity;
- Evaluate long-term development options and provide infrastructure improvements to accommodate safety, security and aircraft demand;
- Evaluate potential noise impacts and provide recommendations for airfield noise abatement options;
- Maximize use of available property and airside access to general aviation facilities;
- Evaluate existing pavement conditions and develop a pavement management plan that maximizes pavement life and funding over time;
- Evaluate and recommend ground access improvements, if needed, to existing and future airport development areas; and
- The Craig Master Plan, as presented, is technically compliant with the Florida Aviation System Plan (FASP). However, the proposed runway extension is inconsistent with the City of Jacksonville's currently adopted Comprehensive Plan.

The preceding list is not intended to be an exhaustive delineation of issues but it does present an overview of the key considerations that were included in this Master Plan update. By addressing these and other issues, this Master Plan developed an action plan to address current and future aviation demand at CRG and to improve the quality of life in the surrounding community.

1.4 Goals and Objectives

The primary goal of this study is to provide JAA and airport management with guidelines related to future operations and improvements at the Craig Municipal Airport. In support of this goal, the following objectives were identified for further consideration:

- Identify airside, landside, and airspace improvements, and recommend options that optimize the economic benefits of the airport to the community.
- Enhance the safety, ease, and operational capacity of the airport's landside and airside facilities.
- Identify short-term improvements and optimize short-term funding opportunities.
- Establish an implementation schedule for short, intermediate, and long-term improvements, and ensure that they are financially feasible.
- Ensure that short-term actions and recommendations are consistent with and do not preclude long-range planning options.
- Incorporate the interests of and work closely with the public and governmental entities during the planning process.
- Remain sensitive to the overall environmental characteristics and issues in areas surrounding the airport.
- Coordinate with other related planning studies developed by the airport, government bodies, or community groups.

In addition, this document provides the guidance to satisfy the aviation demand in a financially feasible and responsible manner, while at the same addressing the community issues and formulating a realistic development program that will satisfy the airport’s needs.

1.5 Regulatory Guidelines

This Master Plan is prepared in accordance with Federal Aviation Administration (FAA) Advisory Circulars *AC 150/5370-6B Airport Master Plans* and *AC 150-5300-13, Change 9 Airport Design*, in conjunction with the FDOT’s *Guidebook for Airport Master Planning* and other related standards. Furthermore, current guidance will be incorporated from the FAA Airports District Office (Orlando), FDOT Aviation Office, JAA, and other local government agencies. City, county, regional, state and national planning efforts were considered in the development of the Master Plan Update in an effort to provide management and related organizations with a program which includes all related planning and development through the twenty year planning period.

In addition, in order to assist JAA in evaluating environmental factors that may impact future development at CRG, national, state and local legislation was considered (See Appendix B, Regulatory Guidelines). This overview of regulatory guidelines will assist the sponsor and the planning consultant in developing alternatives that are tailored to the airport's size, unique setting and operating environment while also considering the airport's environmental setting, the identification of environmentally related permits and the potential impacts of recommended development projects. An in-depth analysis of existing environmental conditions at CRG is provided in **Chapter Two**, *Inventory of Existing Conditions*.

1.6 Master Plan Process

This Airport Master Plan provides a step-by-step outline of the development actions required to maintain the airfield facilities. This process is defined by the FAA but allows the planning process to be responsive to airport and community specific needs and issues. To accomplish the objectives previously identified, the study team completed the following tasks:

- Conducted an inventory of the existing documents related to CRG, the physical facilities, the demographics of the airport service area, and the airport environment.
- Collected historical operational data, conducted tenant interviews, and forecasted aviation activity through the year 2026.
- Evaluated and compared the airfield, landside and terminal capacity based upon expected aviation activity.
- Determined the airfield, landside and terminal facilities required to meet the forecast demand.
- Developed and evaluated alternative methods to meet the facility requirements of the airfield, landside and terminal.
- Created a concise Airport Layout Plan (ALP) drawing set reflecting the proposed improvements through the year 2026.
- Compiled a schedule of the proposed improvements including cost estimates and phasing.

Additionally, this study process considered the recommendations of the recently completed FAR Part 150, Noise Compatibility Study, related to needed capital improvements which were incorporated into this Master Plan Update.

Overall, the Master Plan should provide the sponsor with a comprehensive overview of the airport's needs over the next twenty years, including issues related to the timing of proposed development, costs for this development, methods of financing, management options, and a clear plan of action. The product of this process includes a Capital Improvement Program for future development of CRG. Also, a financial analysis leading to the development of a Financial Plan was conducted by LPA with CRG staff coordination. Implementation of the study recommendations will begin following FAA and FDOT review of the ALP

The Master Plan is a written articulation and graphical representation of the ultimate conceptual development of the Airport over the course of the planning period. Though many changes are likely to take place before facilities are designed, approved, and constructed, an approved Airport Layout Plan is essential for an airport to qualify for and receive federal and/or state assistance, and will prove as an invaluable guide for management decisions. The steps that will be followed during the development of the Airport Master Plan are illustrated in **Figure 1-1**, *Steps in the Master Planning Process*.

1.7 Key Participants and Public Involvement

As part of the master plan process, key participants associated with development at CRG were asked to participate, including JAA Staff, representatives from the on-airport Fixed Base Operators (FBOs), flight school, charter companies and City of Jacksonville Planning. Public involvement was through existing mechanisms including the CACAC and CPAC process.

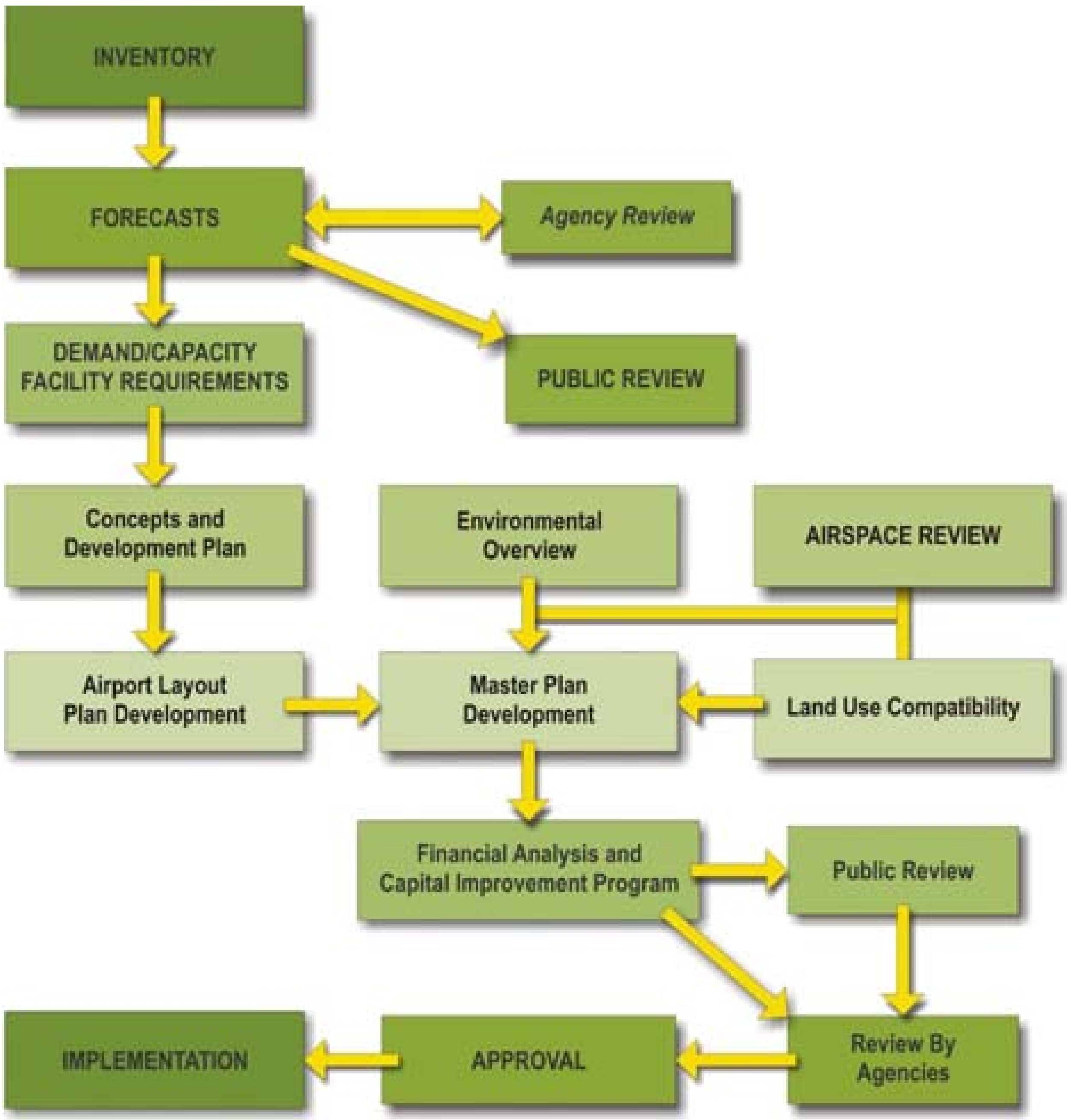
1.7.1 Technical Advisory Committee

The formation of the Technical Advisory Committee (TAC) is critical in the development of a master plan which meets the needs and demands of its users. The Craig Master Plan project includes technical representatives from JAA, airport tenants, as well as City of Jacksonville planning personnel. The TAC is scheduled to meet at least three times throughout the planning process at key sections of the report in order to provide insight and input into the proposed development over the twenty year planning period. Their comments as well as those provided from the general public are included in **Appendix C**, *Key Participants and Public Involvement,* of this report.

1.7.2 Jacksonville Aviation Authority Staff

Key members of JAA staff will provide input into the proposed development specifically in relation to Craig Airport's role within the Jacksonville aviation system. Further, JAA staff was critical in providing operating and financial data necessary to provide a plausible development plan for the airport over the twenty-year planning period. Input and information received from the Authority was included in **Appendix H,** *Key Participants and Public Involvement*, of this report.

Figure 1-1
Steps in the Master Plan Process



Sources: FAA Advisory Circular 150/5060-6B, Airport Master Plans, and The LPA Group Incorporated, 2007

1.7.3 City of Jacksonville Planning

Planning efforts and previous studies, including 2010 Comprehensive Plan, Airport Zoning and other related documentation associated with the City of Jacksonville Municipal Planning Organization were considered in the evaluation of the Craig Airport operations and proposed development over the twenty year planning period. In order to provide cohesive development between the City of Jacksonville Planning and CRG development, a member of the COJ Planning Organization was invited to participate on the Technical Advisory Committee throughout the planning process.

1.7.4 Public Involvement Process

Throughout this planning process a variety of community and user groups were given an opportunity to provide input. Groups included airport tenants, users, local government officials, community leaders, CRG's standing Airport Advisory Committee, and the general public. At the beginning of this study, a brochure was produced and distributed to interested parties giving an overview of this process and instructions on how to provide the study team with comments. This information was also made available via the airport's website. The City Council of Jacksonville was briefed near the end of this study period, allowing the Council an opportunity to provide feedback. At the conclusion of the study, a public workshop was held to receive comments from interested citizens on the proposed development plan. Throughout this process coordination with airport staff occurred to ensure the study reflected the stated goals and objectives

1.8 Summary

While the outlook for aviation over the next twenty years and what impact it will have on Craig Municipal Airport remains to be seen, it is anticipated that aviation will continue to grow as a major component of the transportation industry nationally, in Florida, and in the Jacksonville vicinity. A key factor in CRG's future success depends upon determining the viability of the present airfield and terminal facilities to meet demand well into the future, which is the major goal of this Master Plan. This process also provides the forum for discussion and establishment of links between community and airport goals. Thus, this Airport Master Plan should serve as a guide to decision makers, users, and the general public relative to realistic and achievable development that is in line with both airport and community objectives.

CHAPTER TWO
Existing Conditions

2.1 Overview

The master planning process requires the gathering of information related to existing conditions of the airport at the time of the report preparation. This information serves as the basis for future steps in the planning process. As such, information related to the Craig Municipal Airport (CRG) and its surrounding areas was collected from multiple sources in order to identify future aviation needs. Data collected in this phase provides an inventory of the following:

- Existing physical facilities: runways, taxiways, parking aprons, navigational aids, airport terminal, and facility areas for general aviation, corporate, air cargo, and aviation support.
- The airport's role in the overall community: development history, location, and access relationship to other transportation modes.
- Existing community, airport, and regional plans and studies that contain information that may relate to the development and eventual implementation of the recommendations of the Master Plan. This information is particularly relevant to future industrial/business development on or adjacent to the airport.

An inventory addressing these and other issues required data from a variety of sources in order to obtain an accurate depiction of Craig and its surrounding community, including:

- Interviews with CRG management and staff
- Interviews with and surveys to CRG users and tenants
- Contacts with local, state, and federal agencies
- Research and review of previous airport planning analyses and studies
- Review of aerial photography, mapping, and airport and terminal plans
- Review of facility directories, approach plates, sectional charts, etc.
- Reference materials, such as FAA publications, activity data sites, flight strip information, and planning guidelines
- Review of airport and FAA statistical reports

It is important to review previous planning documents completed for the airport to understand and incorporate past planning efforts. The following planning documents were obtained from the airport and other agencies during the inventory:

- 2001 Master Plan Update, Prosser & Hallock, Inc., TriState Planning & Engineering, P.C.

- 2005 Craig Airport FAR Part 150 Noise Study – Noise Compatibility Program (NPC), ESA
- 2006-2017 Aerospace Forecasts, Federal Aviation Administration
- 2006 and 2007 Terminal Area Forecast (TAF), Federal Aviation Administration
- 2005-2009 National Plan of Integrated Airport Systems, Federal Aviation Administration
- 2005-2025 Florida Aviation System Plan (FASP), Florida Department of Transportation

2.1.1 Background / History of the Airport

2.1.1.1 Airport History and Impact on Future Development

Craig Airport was built in the 1940's and was one of six airports in the Jacksonville area developed by the US Military for training. In 1946, under the Federal Surplus Properties Act, the US Military gave the airport to the City of Jacksonville. The City officially named the airport after fallen Navy Commander James Edwin Craig who died during the attack on Pearl Harbor.

The major issue that has faced the owners and operators of Craig Airport and the citizens of Jacksonville since the airport was converted to a civilian facility is the role of the airport in supporting the aviation needs of the community and the facilities necessary to support that role.

In order to understand the actions taken over the years and the changes in operations that continue to influence the decisions about Craig Airport, a review of the airport's history and the planning efforts that have taken place in the past is necessary.

Since 1963, when the airport was owned and operated by the City of Jacksonville, Department of Aviation, various proposals have been put forth to extend one or both runways at the airport to increase the safety of operations during landings and take-offs. With the advent of business jet and other higher performance aircraft since 1963, this need has become more critical. The 1963 Master Plan indicated a planned 1,000 foot extension to the southeast end of Runway 14-32 and a planned 1,000 foot extension to Runway 5-23.

In 1969-1970, the Jacksonville Area Planning Board contracted for a Jacksonville Airports System Plan. The study indicated that one other airport in the system besides JIA should be equipped with IFR (Instrument Flight Rules – Low ceilings and visibilities caused by bad weather) capabilities for use by all-weather general aviation aircraft. Because of concerns about conflicts between the Navy at Cecil Field and Mayport with civilian aircraft at Herlong and Craig, the study recommended de-emphasizing development of Herlong. Further, the study recommended the development of an engineering-economic analysis to determine (1) if Craig Airport could be expanded into a large general aviation facility with IFR capabilities, or (2) if construction of a new airport between Jacksonville and St. Augustine was feasible or required, or (3) if joint use of a military facility was feasible.

In late 1968, the City of Jacksonville transferred ownership and operation of all three airports in Duval County to the Jacksonville Port Authority. They began a Master Plan study for Jacksonville International Airport, Craig Airport and Herlong Airport in 1972 to determine needed aviation development between 1972 and 1992. The study forecasted operations at Craig to grow from 20,000 in 1962 to over 356,000 by 1992. The initial study recommendations were for Craig Airport to have a 3,700 foot parallel runway to Runway 14/32 located 1,400 feet northeast of the current runway with provisions for a 2,000 foot extension to the southeast on existing Runway 14-32 increasing the length to 6,000 feet in the long term.

One major concern voiced in the report was the compatibility of airport operations with surrounding land use. The Jacksonville Area Planning Board's Plan-1990 indicated that Craig Airport would be completely encircled by urban development by or before 1990. Because Craig Airport was planned to remain a general aviation facility, the report noted the importance of enforcing maximum compatibility in the approach zones off the ends of present and proposed runways.

The final study recommended that all airports in the system be developed to accommodate forecasted aviation activity but with no further improvements at Craig or Herlong in excess of that necessary to accommodate light general aviation activities. This included the 3,700 parallel at Craig and the development of a fourth airport in Duval or adjacent county or at a joint use military airport.

On January 10, 1973, the Authority received a letter from the US. Navy ruling out any possibility of a joint use facility or the potential release of any military airport in the region. The letter also objected to any significant increase in operations at Craig or Herlong.

On February 27, 1973, the authority board voted to develop JIA, Craig and Herlong as proposed in the study recommendations and plan for the addition of a fourth airport after 1982. Following this vote the final report was issued in 1974.

In 1979, the JPA began another planning effort to look at the necessary improvements to meet the future aviation needs of the community. Since the previous study had recommended a new airport site, the study reviewed efforts to identify a new site. A 1976 Florida Aviation System Plan had determined that the increase in aviation activity was not sufficient to justify the construction of a new airport facility, particularly in light of the economic cost, airspace constraints, environmental concerns and licensing delays. The 1979-1981 study was developed as an Environmental Assessment (EA) for an extension to Runway 14-32 at Craig.

The EA alternatives included: Alternative 1 – Do Nothing; Alternative 2 – Build 4,000 feet of additional pavement to the southeast on the Runway 32 end and relocate the Runway 14 threshold 2,000 feet southeast for a 6,000 foot runway and add a 3,200 foot parallel northeast of the existing Runway 14-32; Alternative 3 - Add 2,000 feet to the southeast end of Runway 32 for a 6,000 foot Runway 14-32 with no relocated threshold and a 3,200 foot parallel as in Alternate 2; Alternative 4 - Add 2,000 feet to the southeast end of Runway 32 for a 6,000 foot Runway 14-32 with no relocated threshold and a 3,200 foot parallel to Runway 5-23.

In 1979 there were 111,500 general aviation operations at Craig. Of these operations approximately 360 were from jet operations with no jets based at Craig. By 2005, the study forecasted 323,000 operations with an airfield Annual Service Volume (ASV) of 190,000 operations. Annual Service Volume is a measure of the runway capacity with no delay of over 15 minutes. Jet aircraft were forecasted to make up approximately 8,075 of these operations. The need for the proposed parallel runway was driven by the number of forecasted operations in the study period. The need for the 6,000 foot runway was driven by the need to safely handle the increasing numbers of jet aircraft that were beginning to use Craig Airport without the extension. As a part of the EA process, an extensive noise analysis was conducted that included actual monitoring of selected sites around the airport. The preferred alternate of the EA was Alternative 2 because it shifted noise away from the Holly Oaks neighborhood while also increasing the runway length to safely provide for the increasing numbers of jet aircraft using the airport.

In March 1981, a pre-application conference was held in compliance with Chapter 380, Florida Statutes, to coordinate the Florida Development of Regional Impact/Application for Development Approval DRI/ADA process with the Federal Environmental Assessment process. On May 7, 1981, the Public Hearing for the Federal EA was held. On August 11, 1983, the FAA issued a Finding of No Significant Impact. In 1986, it was determined that additional DRI analysis would be required. In 1987, an extensive public information program was begun to inform the City Council, neighborhood groups, the military and other interested parties about the need for the extension, the safety benefits and the projected noise impacts and improvement of conditions in Holly Oaks. These efforts continued through 1989. It should be noted that by 1987, with the changes in aircraft operating procedures mandated by FAA, the military was no longer opposed to increase operations and IFR procedures at Craig.

In 1988, the Florida Department of Transportation conducted a Northeast Florida Aviation Systems Plan study. The study looked at all of the airports in the region and concluded that development of all of the regions airports would be required to meet long range aviation demand. The study did not see the same growth in aircraft operations as previous studies. The 1988 FASP study forecast Craig to have 210,000 operations in 2005 which decreased the need for a parallel runway. However, the study did see the need for the extension to Runway 14-32 to increase the safety of business jets operating at Craig.

In 1990, the City Council passed the 2010 Comprehensive Plan that contained a provision that supported continued operation of Craig Airport but restricted further expansion of its runways.

In 1991, the JPA began another system Master Plan to identify and discuss options to meet the aviation needs of the regional airport system. The study noted that operations at Craig had increase by 65 percent from 1979 to 1989, and based aircraft had increased by 43 percent with 183,000 operations and 269 based aircraft of which 6 were jet aircraft. This study still projected a high number of potential aircraft operations with 347,000 operations and 366 based aircraft forecast by 2010. Of these 2,900 were forecast to be jet operations and 11 were forecast to be based jets.

The 1992 and 1994 Comprehensive Aviation Planning Program for Craig recommended a runway length of 5,400 to 5,600 feet to accommodate 75 to 100 percent of the C-II aircraft in the general aviation fleet at 60 percent useful load.

The study projected an Annual Service Volume (ASV) of 246,000 and recommended a short parallel runway for capacity prior to 2010. The final recommendation was for a 1,600 foot extension to both Runway 14-32 and 5-23 and a 3,200 foot parallel south of Runway 5-23. This configuration shifted much of the touch and go traffic off Runway 14-32 on to 5-23 and the 5-23 parallel to decrease noise over Holly Oaks. The parallel runway was programmed for construction in 1995 with the extension to Runway 14-32 programmed for 2001.

The study also looked at the need for a fourth airport, not to replace Craig or Herlong as envisioned in the 1973 timeframe, but to serve future demand that might not be met at the existing airports.

In 1993, the Navy identified NAS Cecil Field for closure in 1999 as a part of the Defense Base Closure and Realignment Act (BRAC). In 1997, the JPA undertook the Northeast Florida Aviation System Plan and Cecil Field Feasibility study to determine if a need existed for another civilian airport in Northeast Florida. This study looked at the forecasted demands and expansion capacities of every airport in the region. For Craig, the study noted 191,000 operations in 1990 and forecast 215,000 operations by 2000 and 264,000 operations by 2015. There were 269 aircraft (6 jets) based at Craig in 1990 with a forecast of 256 (9 jets) in 2000 and 355 (11 jets) in 2015.

This plan recommended a runway length at Craig of 7,000 feet to serve 75 percent of the general aviation business jet fleet to 60,000 pounds maximum take-off weight (MTOW) at 90 percent useful load. The study identified the need for all of the regions' airports, including a civilian airport at Cecil Field, to serve forecasted aviation needs of the community. Again, this was a major change from the conditions projected in 1973.

In 1999, JPA began another master planning effort to determine the facilities required to meet the needs of the future aviation demands at Craig. This study identified the need for a 2,000 foot extension to the southeast on the Runway 32 end. This would provide 6,000 feet of take-off runway and with a 1,000 foot displaced threshold on both Runway 14 and 32, would provide 5,000 feet for landing. This proposal provided the runway safety requirements for 75 to 90 percent of the business jet fleet at 60 percent useful load.

This plan began to recognize that operations were not increasing at the rate the earlier plans had projected and therefore did not propose a separate parallel runway as a requirement. It did project the increasing use by business jets even without a runway extension. This plan recognized the need to increase the safety of the runway for these types of operations by increasing the runway length.

As a part of this study, additional noise analysis was conducted that looked at the noise impacts to the Kensington neighborhood as well as the Holly Oaks neighborhood, even though the Kensington neighborhood is well outside any FAA recognized noise impact zones. The proposed plan was a compromise that attempted to reduce noise impacts to both neighborhoods. As a part of the additional analysis, JPA developed a voluntary noise abatement program to improve the noise impacts caused by aircraft flights from Craig Airport.

This plan was followed by an extensive public involvement program that attempted to inform the residents of the need for the improvement as well as the noise mitigation benefits.

In 2001, the Jacksonville Aviation Authority (JAA) took over ownership and operation of the Duval County airports system from the JPA. The JAA encouraged the Florida Army Guard to relocate their helicopters to Cecil Field, removing one of the major noise complaint issues from Craig.

In 2005-2006, JAA began the development of a Part 150 study to develop FAA approved noise mitigation measures for Craig Airport. This study reported 135,500 annual operations in 1997 and 137,800 in 2000 and forecast 174,500 in 2009 and 210,000 operations without a runway extension in 2020 and 214,000 operations with an extension. Jet operations were 4,750 in 2004 and were projected to grow to 5,200 in 2009 and 6,400 in 2020.

The noise contours show a clear reduction in noise over the Holly Oaks area from the proposed runway extension with displaced thresholds with no appreciable increase in noise over Kensington.

In 2006-2007, JAA began another Master Plan Update. This effort will reexamine the forecasts and the use by corporate jet aircraft to determine what runway facilities or other alternatives are required to serve the aviation needs of the Jacksonville community. The plan will also examine long-term capacity issues and possible regional solutions.

2.1.1.2 Airport Location

CRG is located approximately nine miles from Downtown Jacksonville and is one of four airports within the Jacksonville Airport System. See **Figure 2-1**, *Location Map*. Airport property consists of approximately 1,342 acres and is bordered by five main arterial roadways: Atlantic Boulevard to the south, Kernan Boulevard to the east, St. John's Bluff

Road to the west and Monument and McCormick Road to the North. The areas adjacent to the airport are currently zoned residential, commercial/institutional, and conservation.

Since residential areas are located contiguous to the airfield, Craig has become a noise sensitive airport. Thus, the airport has instituted efforts to reduce noise through the establishment of a noise abatement program. Further, JAA has recently completed a FAR Part 150 Study in an effort to mitigate noise impacts further.

2.1.2 Airport's Aeronautical Role

2.1.2.1 National System

The airport is included within the National Plan of Integrated Airport System (NPIAS), which is published by the U.S. Department of Transportation. In the NPIAS, the FAA establishes the role of those public airports defined as essential to meet the needs of civil aviation. Additionally, the role for each airport is defined in the NPIAS by one of five basic service levels. These levels describe the type of service that the airport is expected to provide the community at the end of the NPIAS five-year planning period. It also represents the funding categories set up by Congress to assist in airport development. CRG is designated as a reliever airport for Jacksonville International Airport (located approximately 55 miles to the north) based on data collected and transmitted to Congress by the Secretary of Transportation for the 2001-2005 planning period. The NPIAS currently lists 228 total airports that fall into the reliever airport category.

2.1.2.2 Jacksonville Aviation System

Jacksonville Aviation Authority operates four airports within its system: Jacksonville International Airport, Cecil Field, Craig Municipal and Herlong. Each airport operates in a specific role within the system. Based upon the National Plan of Integrated Airports Systems (NPIAS), Craig Airport is defined as a reliever airport. Due to its location, size and proximity to downtown Jacksonville, the airport diverts general aviation operations from Jacksonville International Airport. Thus, in 2005, CRG reported approximately 162,000 operations. At the time of this writing, CRG was home to more than 300 based aircraft consisting of single-engine, multi-engine piston, turboprop, turbojet and rotorcraft operations.

JACKSONVILLE AVIATION AUTHORITY

Airport Location Map

LPA

Figure 2-1

2.1.3 Economic Benefit to the Community

Based upon an economic study completed in 1999, the airport's economic benefit to the community exceeds $40 million annually due to the type and size of development both on and off airport property. CRG is also home to two Fixed Based Operators (FBOs): Craig Air Center and Sky Harbor. Both operators provide hangar, tie-down, and fueling service to based and transient aircraft.

CRG is also home to a variety of support businesses including: aviation college classes, flight training and maintenance training, air charter, aircraft sales, service, and repairs. Non-aviation businesses include an 18-hole golf club, gas station and convenience stores.

2.2 Inventory of Existing Facilities

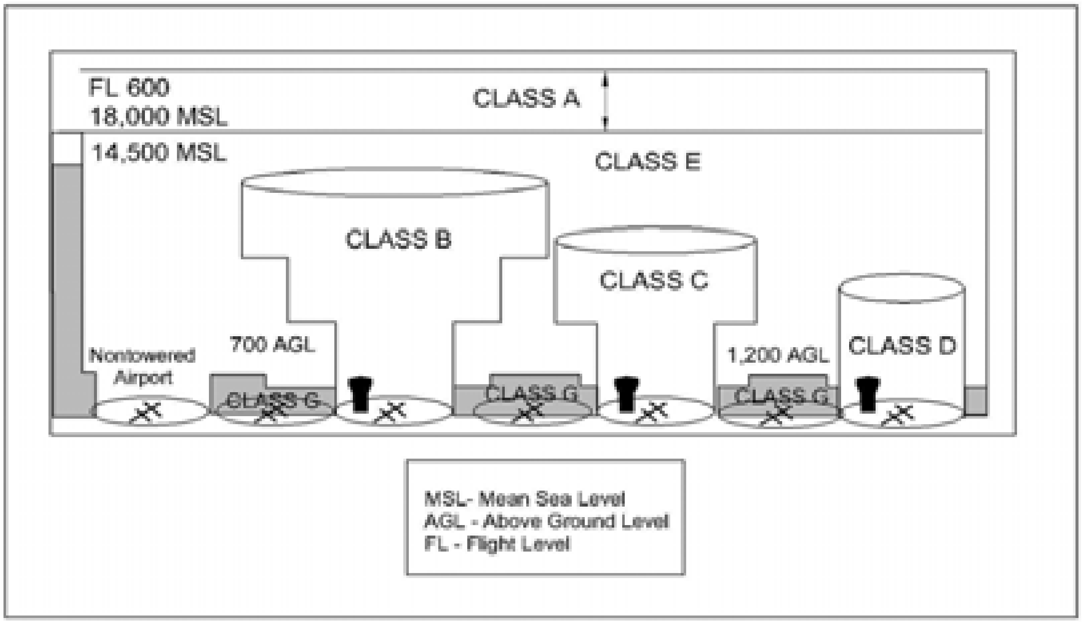
2.2.1 Airspace / Air Traffic Management

Northeast Florida airspace is one of the most intensively used areas in the nation because of the high concentration of military bases and training activities. Military operations occurring in the northeast Florida region are under control of JAX ATC. Control of the airspace from the surface to 10,000 feet is delegated to the Jacksonville TRACON. JAX operates in Class C airspace from the surface up to and including 4,000 feet MSL over JAX within a five-nautical mile radius and from 1,200 feet MSL to and including 4,000 feet MSL out to a ten-mile radius. The Jacksonville TRACON applies Class C service procedures within the designated airspace. A portion of Jacksonville's Class C veil airspace overlaps Craig's Class D airspace.

2.2.1.1 General Description (i.e. Class D)

Class D airspace is generally defined as the controlled airspace from the airport surface to 2,500 feet above the airport's ground elevation. Class D airspace is defined on the aeronautical chart as a dashed blue line and typically surrounds non-commercial airports that have a staffed Air Traffic Control Tower. Pilots that wish to enter class D airspace must obtain prior permission from the Air Traffic Control Tower. A graphic denoting the airspace classes is shown in **Figure 2-2**.

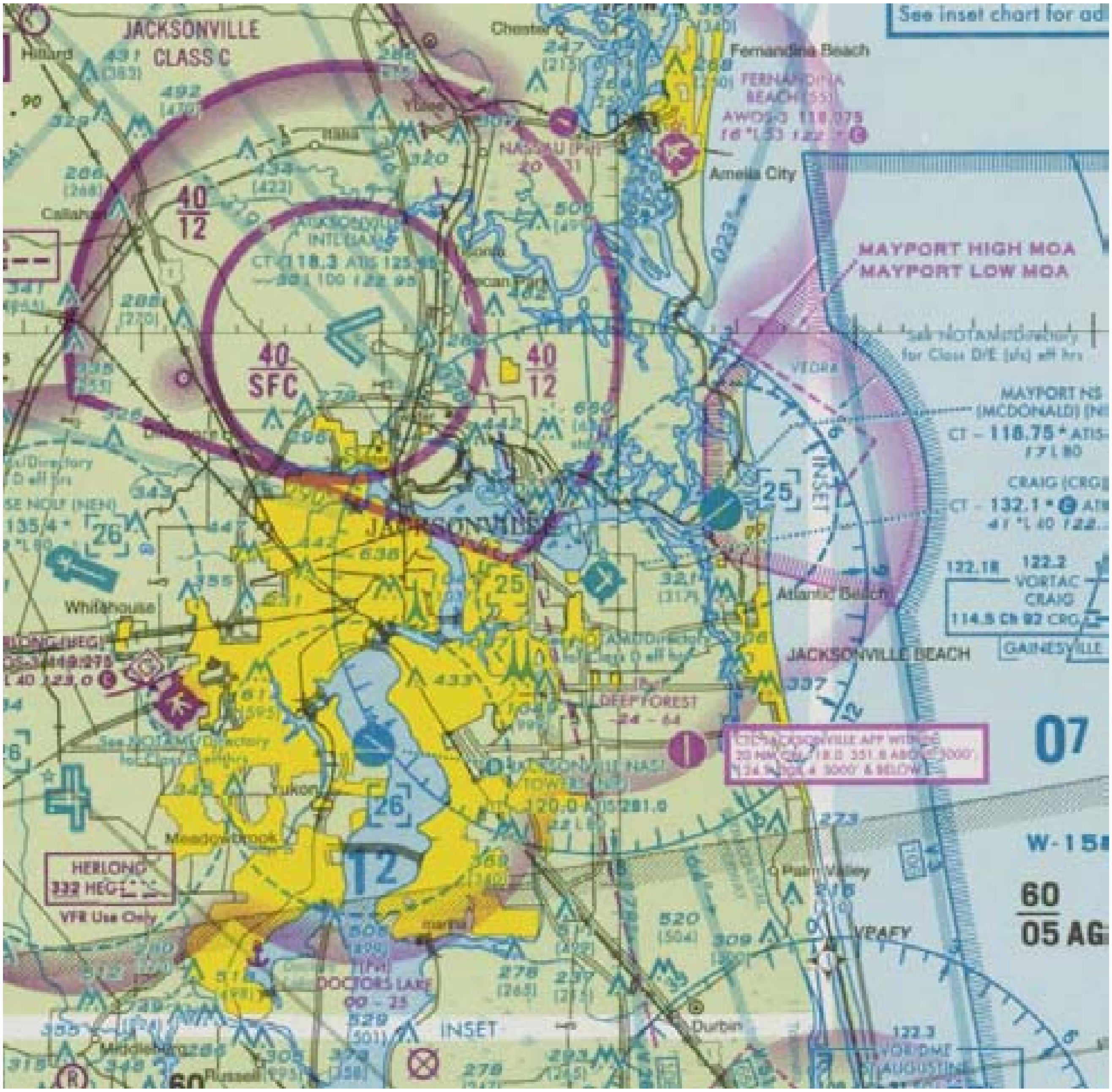
Figure 2-2 Airspace Classes



Source: Federal Aviation Regulations – Aeronautical Information Manual (FAR AIM) 2006

The aeronautical chart showing CRG's airspace along with adjacent airspaces is shown in **Figure 2-3**.

Figure 2-3
Aeronautical Chart – Craig Airspace



Source: Jacksonville North Aeronautical Chart – effective August 30, 2007 through February 14, 2008

2.2.1.2 Airports in the Area

There are several types of airports located within a 20 nautical mile radius of CRG as shown in **Figure 2-4**. Since several public and private airports in addition to military facilities are located within close proximity, airspace within the Jacksonville and surrounding area is congested.

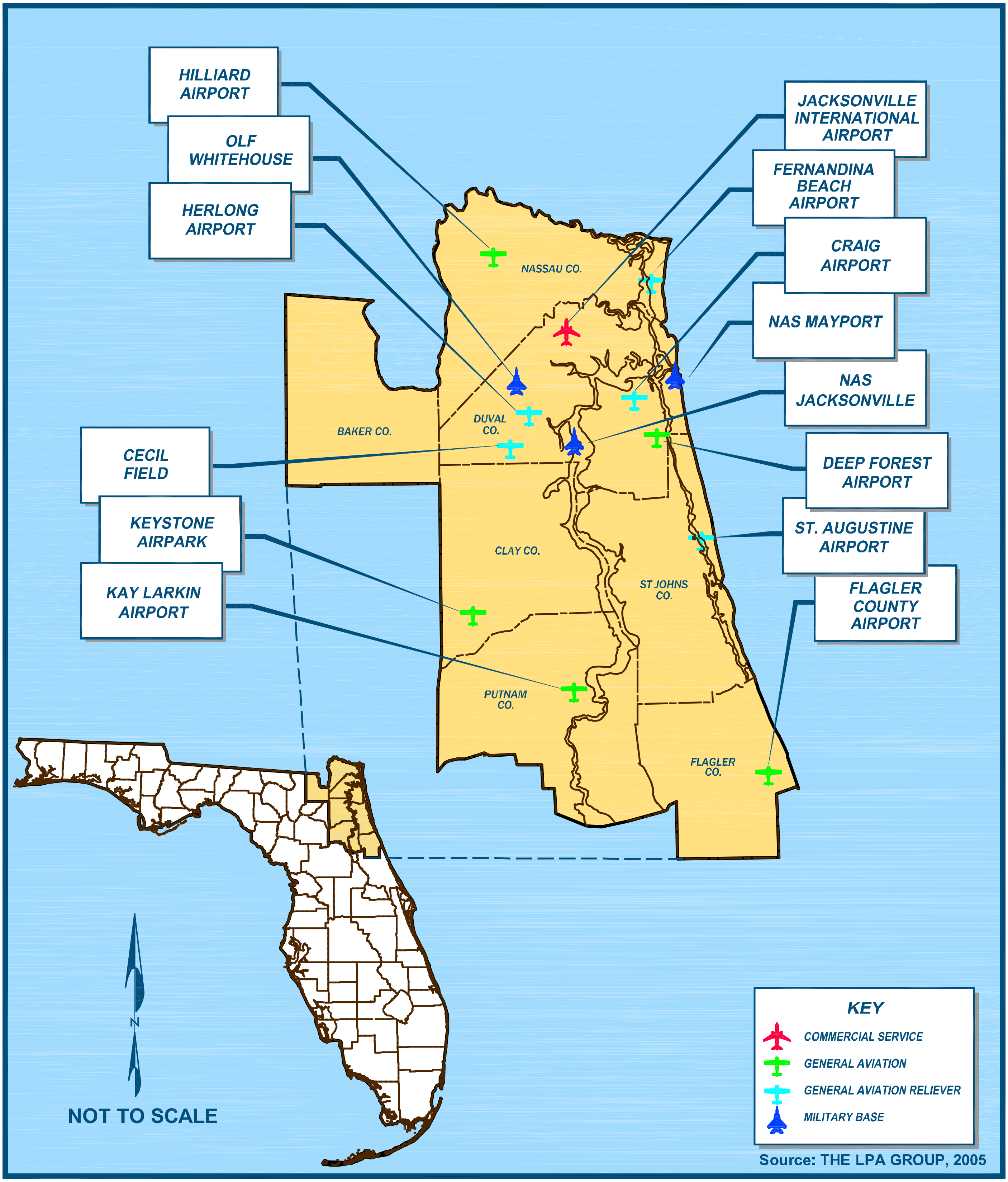
Table 2-1 provides a list of airports in the area as well as their distance and direction from CRG.

Table 2-1
Airports Within 20 NM of CRG

Airport	Distance / Direction from CRG	Type of Facility
Jacksonville International (JIA)	13 NM / NW	Commercial Service
Herlong (HEG)	16 NM / WSW	Public / GA
Mayport NS (NRB)	5 NM / NE	Naval Station
Jacksonville NAS (NIP)	10 NM / SW	Naval Station
Whitehouse NOLF (NEN)	19 NM / W	Naval Outlying Field
Cecil (VQQ)	20 NM / WSW	Public / GA
Fernandina Beach (55J)	16 NM / NNE	Public / GA
Deep Forest	7 NM / SE	Private

Source: The LPA Group Incorporated, 2006

Airports in the Region



Source: THE LPA GROUP, 2005

2.2.1.3 Noise Abatement Operational Procedures[1]

In an effort to mitigate noise in and around the airport, JAA implemented noise abatement procedures based upon data presented in the 2000 Noise Mitigation Program, 2001 Master Plan Update study and 2005 FAR Part 150 Noise Study.

Aircraft Departure Procedures: Six aircraft departure procedures, as discussed in the 2005 FAR Part 150 Study, were developed which take advantage of background noise levels, associated with nearby road noise, commercial and industrial land use as well as open space or less densely populated residential areas. It should be noted that jet and certain high performance turboprop aircraft may be limited in their ability to fly some of these tracks due to turn and speed requirement.

Aircraft Approach Procedures: As published in the Airport Facilities Directory, five VFR flight tracks were modified to limit noise exposure to residential areas. All of these arrival tracks either remain over water or over less densely populated areas prior to touchdown. Again, due to speed and turning requirements, jet and higher performance turboprop aircraft are limited to straight-in arrival procedures.

Aircraft Touch and Go Procedures: Four touch and go tracks support almost 95 percent of training activity at the airport when wind and weather permit. Touch and go training occurs on both Runways 14-32 and 05-23. However, when a number of aircraft are within the training pattern at the same time, the flight tracks extend further upwind before initiating turn to downward leg. Establishment of a touch and go track south of Runway 5-23 was considered since it would allow the majority of operations to remain on airport property. Upon further review, this pattern would impact the instrument landing system (ILS) procedures to Runway 32.

2.2.2 Weather

Weather conditions impact the planning and development of an airport. Temperature is a critical component in determining runway length, and wind speed and direction determine runway orientation. Also the frequency of cloud cover limits local area visibility and designates the need and type of navigational aids (NAVAIDs) and lighting. These issues are discussed in further detail in **Chapter 4,** *Demand Capacity and Facility Requirements*.

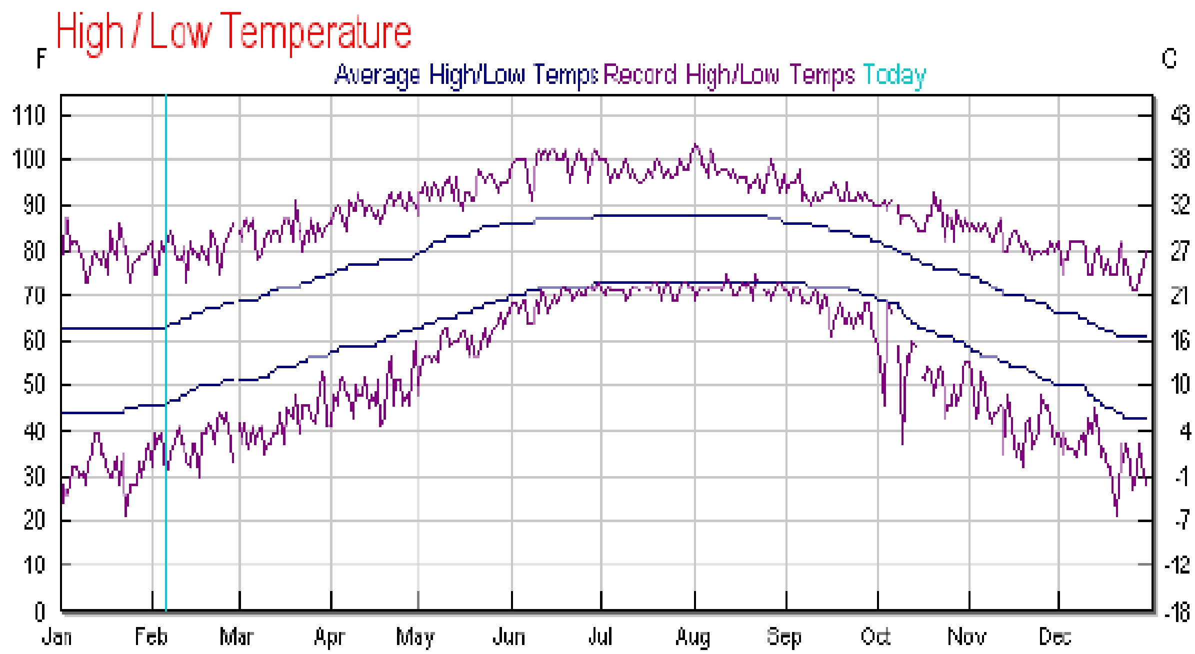
The northern Florida region enjoys mild climate during the winter months and hot and humid temperatures with afternoon thunderstorms during the spring and summer. Freezing temperatures occur occasionally with snow flurries occurring about once every 5-7 years.

Unofficial historical data from the National Weather Service (NWS) recorded for the period of 1971 through 2006 from Jacksonville Naval Air Station (KNIP) in Jacksonville reflects

[1] Please refer to Chapter 2, Current Noise Abatement/Land Use Management Program, Craig Airport FAR Part 150-Noise Exposure Maps and Noise Compatibility Program, ESA Airports, 2005.

temperatures ranging from a low of approximately 22° F in January to a high of 102° F in August as shown in **Figure 2-5**.

Figure 2-5
Jacksonville Naval Air Station
Season Weather Averages

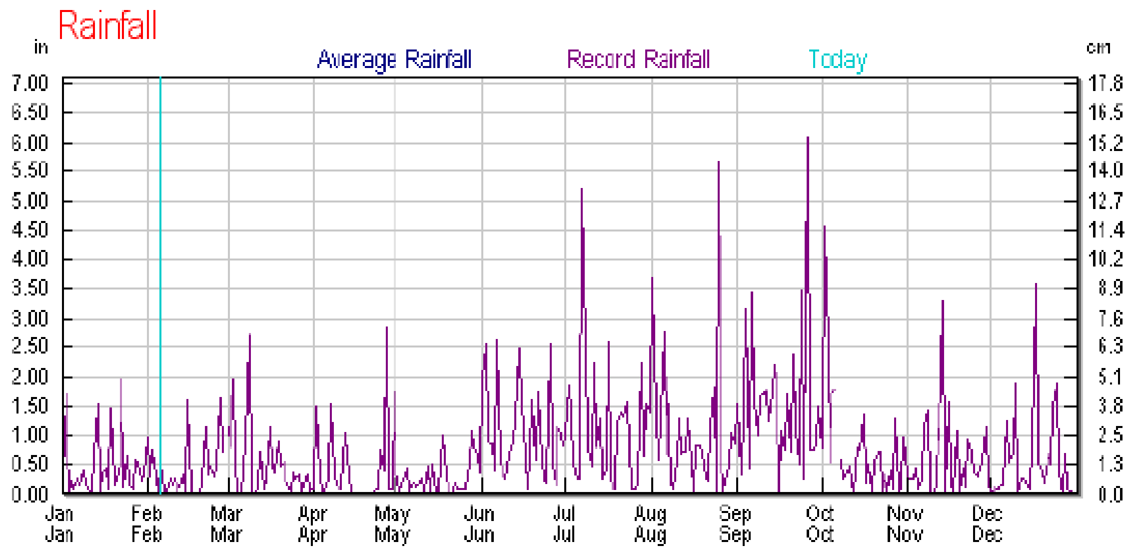


Source: Jacksonville Naval Air Station, unofficial National Weather Service/National Climatic Data Center, Weather Underground, 2007 (http://www.wunderground.com/NORMS/DisplayNORMS.asp?AirportCode=KNIP&SafeCityName=Jacksonville&StateCode=FL&Units=none&IATA=JAX),

According to NCDC for CRG, the mean maximum temperature of the hottest month (August) in 2006 was 92.7° Fahrenheit, and the maximum temperature was 98° Fahrenheit. Additional temperature data is provided in **Chapter 4**, *Demand Capacity and Facility Requirements*, and **Appendix E**, *Runway Length Analysis*.

Data collected over a 30-year period indicates monthly average total precipitation range from 2.19 inches during November to 7.93 inches during August. The average annual rainfall total is 51.31 inches per year. **Figure 2-6** shows the average and record high and low rainfall as recorded at the Jacksonville Naval Air Station.

Figure 2-6
Jacksonville Naval Air Station
Seasonal Weather Averages
Average High/Low Rainfall



Source: Jacksonville Naval Air Station, unofficial National Weather Service/National Climatic Data Center, Weather Underground, 2007 (http://www.wunderground.com/NORMS/DisplayNORMS.asp?AirportCode=KNIP&SafeCityName=Jacksonville&StateCode=FL&Units=none&IATA=JAX),

CRG is equipped with an ILS system which is supplemented by an approach lighting system thereby providing a precision approach to Runway 32. An ILS system allows pilots to navigate to the airport and land during inclement weather and during poor visibility conditions. Using the ILS, pilots have the ability to land with visibility minimums as low as 200-foot vertical and ½ mile horizontal. Hence, the airport remains open and operational during conditions that would typically cause other airports without an ILS system to be closed. It is estimated that most airports in Florida experience visibility conditions below minimums up to 5% of the time during the year. At CRG, it is estimated that this number is lower (2.5%) due to airport's lower approach minima. The amount of time that an airport remains closed due to weather ultimately impacts the number of operations that can be conducted annually. CRG's operations and capacity are discussed in more detail in subsequent chapters of this report.

2.2.3 Historical Data

2.2.3.1 Wind Direction

Evaluation of an area's wind direction is critical since aircraft takeoff and land into the wind. The FAA recommends that sufficient runways be provided to achieve 95 percent wind coverage. This is calculated using a 10.5-knot (12 mph) crosswind component for small, light aircraft, while a 13-knot (15 mph) crosswind component is utilized for larger, heavier aircraft. **FAA Advisory Circular 150/5300-13, Change 11**, *Airport Design*, states that a period of at least ten consecutive years be examined to determine wind coverage when carrying out an evaluation of this type. Wind information for CRG was obtained from the on-airport weather station recorded by the National Climate Data Center for the period from 1996 to 2005. The National Climatic Data Center in Asheville, North Carolina officially records meteorological information.

As stated in the previous master plan, both runways at CRG are designed and maintained in accordance with airport reference code (ARC) C-II planning and design criteria. Therefore, the maximum allowable crosswind component is 16 knots. As a result, coverage provided by each runway for an allowable 16 knot crosswind well exceeds the FAA recommended 95% wind coverage.

However, due to the amount of flight training activity at CRG using lighter aircraft which are more susceptible to crosswinds, a 10.5 knot crosswind component was used. Based upon this data, neither Runway 5-23 nor 14-32 alone can accommodate the FAA 95 percent wind coverage requirement for a 10.5 knot crosswind component.

Figure 2-7 illustrates the All Weather and IFR wind roses, respectfully, generated for CRG. Tables located within the Figure summarize the percent of wind coverage for an all weather scenario, using a 10.5, 12, and 16-knot crosswind component.

2.2.4 Airfield

A description of airfield facilities, as shown in **Figure 2-8, Existing Airfield Facilities**, as they existed as of February 2008 is summarized in the following subsections of the report. Descriptions of physical facilities, including runways and taxiways, airfield lighting, signage, pavement and markings are described in detail within the following section.

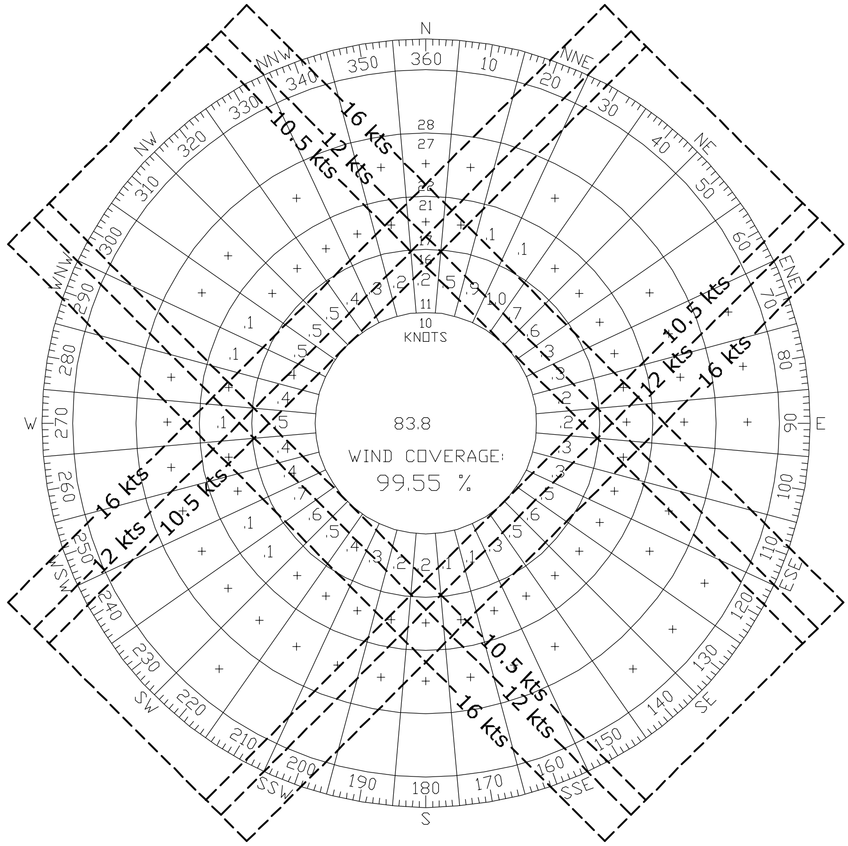
Further, safety related criteria and issues as defined by not only FAA AC 150-5300-13, Change 9 but also FAR Part 77, *Objects Affecting Navigable Airspace*, related to CRG were identified.

2.2.4.1 Runways

Runway 5-23

Runway 5-23 has a length of 4,004 feet and a width of 100 feet in compliance with aircraft design group (ADG) C-II. The pavement strength is rated at 30,000 lbs per single wheel. The asphalt is in good condition with both runway ends are marked with basic (visual) runway markings which are also in good condition. The runway is illuminated for night operations with medium intensity runway lighting (MIRL). Runway 5-23 also has 75 foot designated stopways beyond each end.

All Weather Windrose			
	Wind Coverage %		
Crosswind Component (kts)	Runway 5-23	Runway 14-32	Combined
10.5	93.65	91.77	99.55
12	95.42	94.03	99.85
16	99.35	99.18	99.98



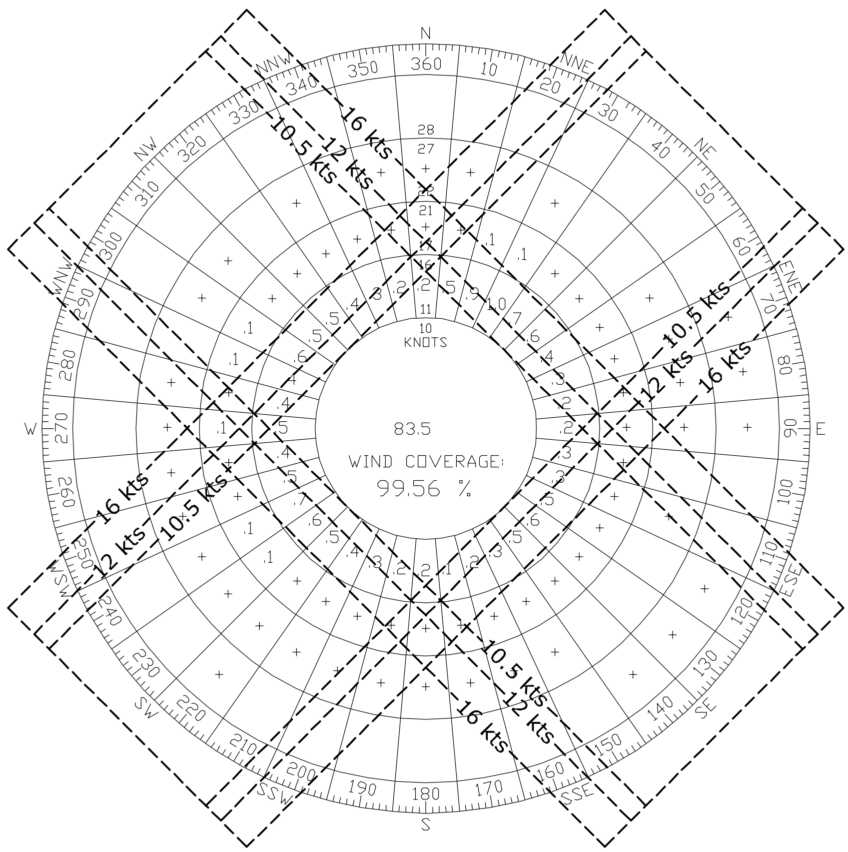
Wind Data Source:
National Climatic Data Center
Station 72206 - Jacksonville, Florida
Years (1996 - 2005)

Notes

Wind Roses generated using FAA Airport Design 4.2d.

All wind coverages were calculated using the runway's true bearing.

IFR Windrose			
	Wind Coverage %		
Crosswind Component (kts)	Runway 5-23	Runway 14-32	Combined
10.5	93.53	91.6	99.56
12	95.33	93.9	99.86
16	99.36	99.18	99.99



Source: The LPA Group Incorporated

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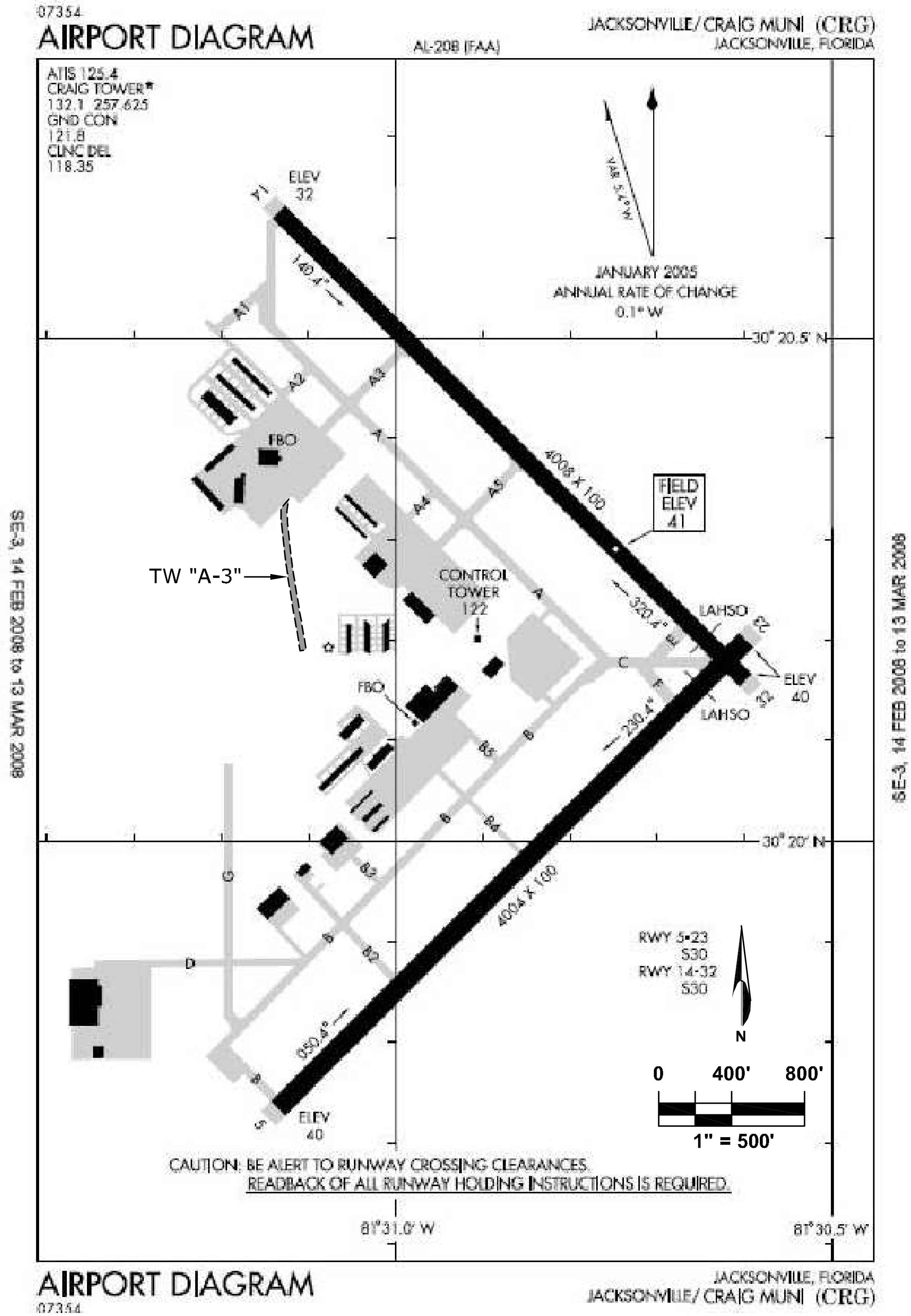
ALL WEATHER AND IFR WIND ROSES

Craig Municipal Airport Master Plan Update

Figure 2-7



JACKSONVILLE AVIATION AUTHORITY

EXISTING AIRFIELD FACILITIES

Craig Municipal Airport Master Plan Update

Figure 2-8

Instrument Capabilities / Approach Lighting

Although Runway 5-23 does not currently have any instrument capabilities, Runway 23 is equipped with Runway End Identifier Lights (REIL). The REILs are comprised of bright pulsing white lights that are positioned to the left and right of each runway threshold to help pilots locate the runway end at night and during IFR conditions.

Runway 14-32

Runway 14-32 has a length of 4,008 feet and a width of 100 feet in compliance with C-II aircraft design group (ADG) criteria. Similar to Runway 5-23, the pavement strength of Runway 14-32 is rated at 30,000 lbs per single wheel. The asphalt is also in good condition. Runway 14 is marked with non-precision markings; whereas, Runway 32 is marked with precision markings. All markings are in good condition. Both runway ends are equipped with 75 foot designated stopways.

Instrument Capabilities / Approach Lighting

Runway 14-32 has three separate methods of navigation for IFR operations – two instrument approaches to Runway 32 and one approach to Runway 14. The first and most critical system is the ILS / LOC approach to Runway 32. This system consists of medium intensity approach lighting system with runway alignment indicator lights (MALSR), a localizer, and glideslope antenna. The approach minimums for the ILS are 200 feet vertical and ½ mile horizontal; whereas, the LOC approach minimums are 440 feet vertical and ½ mile horizontal.

The second approach to Runway 32 is a VOR/DME or GPS approach to Runway 32. These approaches both have straight in minimums as low as 460 vertical and ½ mile horizontal. The third approach is a VOR or GPS approach to Runway 14. The minimums for this approach are as low as 800 feet vertical and 1 mile horizontal. Runway 14 is equipped with Runway End Indicator Lighting (REIL) to supplement the runway's visibility during night and IFR operations. Additional information on the ILS, VOR, and GPS systems are discussed later in the discussion of Navigational Aids.

2.2.4.2 Taxiways

Taxiways are provided to permit the safe and expeditious movement of aircraft to and from the runway and other airfield facilities. CRG is equipped with seven main taxiways designated as A through G. According to **AC 150/5300-13,** taxiways serving airplane design group (ADG) II are required to have a taxiway width of 35 feet. In addition, aircraft serving aircraft reference code (ARC) C-II aircraft will require a taxiway to runway centerline separation distance of:

- 300-feet for runways serving a non-precision instrument approach (greater than 3/4 statute mile visibility), or

- 400-feet for runways serving a precision instrument approach with less than 3/4 statute mile visibility.

All parallel taxiways at CRG were constructed with a taxiway to runway centerline separation of at least 520 feet. Taxiways E, C and F are designated as connector taxiways providing access from Taxiway B to Runway 32 (Taxiway E), the thresholds of Runway 32 and 23 (Taxiway C) and Runway 23 (Taxiway F) as shown in **Figure 2.8**. Also, according to information provided by the JAA engineering department and the published Airport Facilities Directory (AFD) all taxiways were constructed with pavement strengths of 30,000-pounds single-wheel and up to 60,000-pounds dual wheel, which is compatible to the pavement strengths of Runways 14-32 and 5-23. Based upon site visits in August 2006, all taxiways appear to be in fair to excellent condition based upon the FDOT pavement criteria. Note that specific pavement condition information is provided in more detail in **Section 4.3.8** *Airfield Pavement Conditions* within **Chapter 4**, *Demand Capacity and Facility Requirements*.

Based upon observations and data from airport management, the pavement width of Taxiways A, B and C, including some associated connector taxiways, are actually 50 feet. However, due to funding and critical aircraft requirements, only 35 feet of pavement is marked and maintained as a result of FAA funding requirements. In addition, all taxiways are equipped with medium intensity taxiway lighting, signage and reflective pavement markings.

Taxiway A

Taxiway A is a parallel taxiway serving Runway 14-32 and general aviation facilities to the west, including Craig Air Center, tie-down parking, T-hangar facilities and the ATP Flight School hangars. Taxiway A has five connectors that stem outward from the main taxiway, labeled A1, A2, A3, A4, and A5 beginning at the Runway 14 threshold. Taxiway A and associated connector taxiways are constructed of asphalt, and are in fair to good condition based upon observations and FDOT pavement criteria. Portions of Taxiway A between A-1 through A-5 were overlaid in 1993, and a section of Taxiway A from A-5 to Taxiway C was again overlaid in 2004 as part of an apron project (JAA contract number C-655A). The taxiway to runway separation centerline between Runway 14-32 and Taxiway A is approximately 525 feet which exceeds the 400 foot separation requirement for precision instrument runways. FAA has historically and will likely continue to provide funding for maintenance and improvements to Taxiway A.

Taxiway B

Taxiway B is also marked to a width of 35 feet and parallels Runway 5-23 to allow ingress and egress to the southernmost facilities including: T-hangars, large hangars, offices, Sky Harbor Maintenance facilities, and Building 607 facilities located to the south. Taxiway B is constructed of asphalt and portions of the pavement to the northeast and southwest associated with apron improvements and construction of Taxiway G, respectively, were overlaid in 2003 and 2004. Therefore, Taxiway B and its connectors, B2, B3 and B4, are in fair to good condition. The centerline separation between Taxiway B and Runway 5-23 is approximately 528 feet, which exceeds the 300 foot separation requirements designated in **AC 150/5300-13**.

However, Runway 5-23 is designated as the crosswind or supporting runway due to the precision instrument approach on Runway 32. Since federal funding has historically been provided on Taxiway B, it is believed that JAA will continue to receive federal and state funding related to taxiway maintenance and associated improvements.

Taxiway C

Taxiway C provides access to and from Taxiway A and B to the thresholds of Runway 23 and 32. Taxiway C, like all taxiways at CRG, is constructed of asphalt. Taxiway C is approximately 734 linear feet in length, approximately 50 feet in width but marked at a width of 35 feet, and is equipped with a run-up pad area to the south, which was part of the 2004 apron construction and taxiway overlay project. Since Taxiway C provides access to both Runways 23 and 32, it is anticipated that maintenance and improvements will continue to receive federal funding.

Taxiway D

Taxiway D is a connector taxiway providing access from Taxiway B to facilities to the north and west of Runway 5 (i.e. Building 607). Taxiway D is constructed of asphalt and is in excellent condition since it was overlaid in 2005. Taxiway D's pavement width is approximately 40 feet, but it is marked and lighted at a width of 35 feet. Taxiway D is not eligible for federal funding since it primarily provides access to private airfield facilities.

Taxiways E and F

Taxiways E and F are connector taxiways providing access to Runway 32 and Runway 23, respectively via Taxiway C. Taxiway E is approximately 267 linear feet, and Taxiway F is approximately 322 linear feet. Taxiway E is parallel to Runway 23, and centerline separation is 300 feet. Taxiway F is parallel to Runway 32, and centerline separation is 400 feet. Both centerline separations equal or exceed the 300 foot Group II separation requirements as outlined in **AC 150/5300-13**. In addition, Taxiways E and F are equipped with aircraft hold lines located approximately 133 feet from the Runway 32 centerline and 116 feet from the Runway 23 centerline, respectively, which safely accommodates the passage of Group II aircraft on Runways 14-32 and 5-23. Based upon observations and JAA historic data, the asphalt pavement on Taxiways E and F are in fair condition and will likely require an overlay within the next ten years. Like Taxiways A, B and C, Taxiways E and F support operations on Runways 5-23 and 14-32; therefore, it is anticipated that future maintenance and improvements to these taxiways will receive some federal funding.

Taxiway G

Taxiway G provides access to hangar facilities located in the southwest portion of the airfield. Taxiway G is fairly new, constructed in 2003 and 2004, of asphalt with a pavement width of approximately 40 feet. Taxiway G is marked with reflective pavement markings and is equipped with MITL. Taxiway G's currently length is approximately 1,780 feet. Connector taxiways to Taxiway G are currently planned in the short term, and are related to planned hangar development to the west. Taxiway G at this time is not eligible for federal funding since it provides access to private hangar facilities on the airport.

2.2.4.3 Signage

Airport signage provides essential guidance information that is useful to a pilot during all phases of movement on the airfield. CRG is equipped with an array of airfield signage that complies with AC 150/5340-18C, *Standard for Airport Sign Systems*. This advisory circular contains the FAA standards for the siting and installation of signs on airport runways and taxiways. Standardized taxiway and runway designation systems enhance safety and improve efficiency. Airfield signage at CRG is comprised of lighted taxiway and runway designator signage and runway hold position signage. Improvements to existing signage and future improvements will be discussed in later in the Facility Requirements chapter.

2.2.4.4 Navigational Aids

In addition to the navigational systems and markings previously discussed, runways are generally equipped with other navigational devices (NAVAIDS) to aid pilots in takeoff and landing procedures. Some give indications of weather conditions, while others give either visual or instrument course guidance. It should be noted that most of these systems are owned and operated by the FAA. **Table 2-2** provides a list of existing airport NAVAIDs at the time of this writing, which is described in more detail in the following sections.

Table 2-2 **Navigational Aids**
➢ Airport Beacon ➢ Unicom Frequency 122.950 ➢ Wind Indicator ➢ Segmented Circle ➢ VORTAC (on-field) ➢ PAPI ➢ MALSR ➢ Localizer, and ➢ Glideslope
Source: AIRNAV, 2006 and GCR, 2006

Global Positioning System (GPS)

GPS is a satellite based navigation system that consists of a network of satellites known as a constellation. This constellation provides a celestial reference for determining the position of any point on or above the Earth's surface. By analyzing the time delays of signals received from some of these satellites, air based receivers are able to determine an aircraft's latitude, longitude, and altitude. The GPS straight-in and circling non-precision approach offer lower minimum descent altitudes and visibility requirements. GPS approach procedures for Runways 14 and 32 are provided in **Figures 2-9** and **2-10**, respectively.

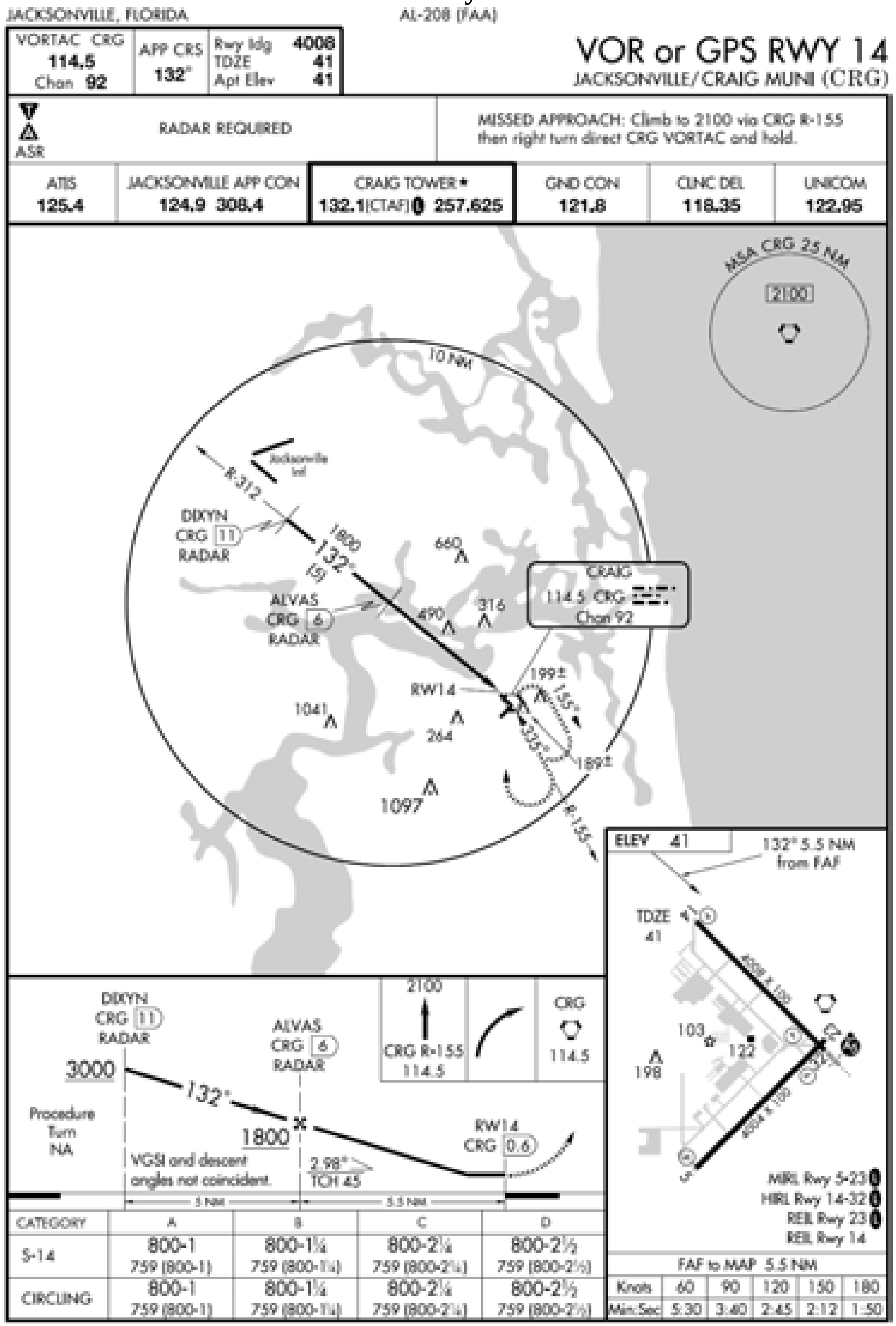
Instrument Landing System (ILS)

As previously mentioned, Craig Municipal Airport is currently equipped with an Instrument Landing System (ILS) to provide precision instrument approaches to Runway 32 as shown in **Figure 2-11**. ILS systems provide both vertical and horizontal guidance to pilots on approach to the runways. Craig's ILS system is comprised of three components. The first element is the approach lighting system, including approach lights, centerline lights, and runway lights, as described previously in this report. The second element consists of a glide slope facility. The glide slope facility indicates aircraft vertical position relative to the runway threshold end and the approach slope to the runway. This glide path beam allows pilots to precisely know their position in relation to the approach surface. The third element of an ILS consists of an electronic localizer. Since an ILS approach is provided to the Runway 32, the related localizer antennas are installed off the opposing end. The localizer antenna provides electronic azimuth steering information to the pilot based on the aircraft position relative to the runway centerline. In short, the localizer provides an electronic beam that travels above the approximate runway centerline that provides a pilot with an indication of whether the aircraft is to the left or right of the appropriate course to the runway.

Very High Frequency Omnidirectional Radio Range with Tactical Air Navigation (VORTAC)

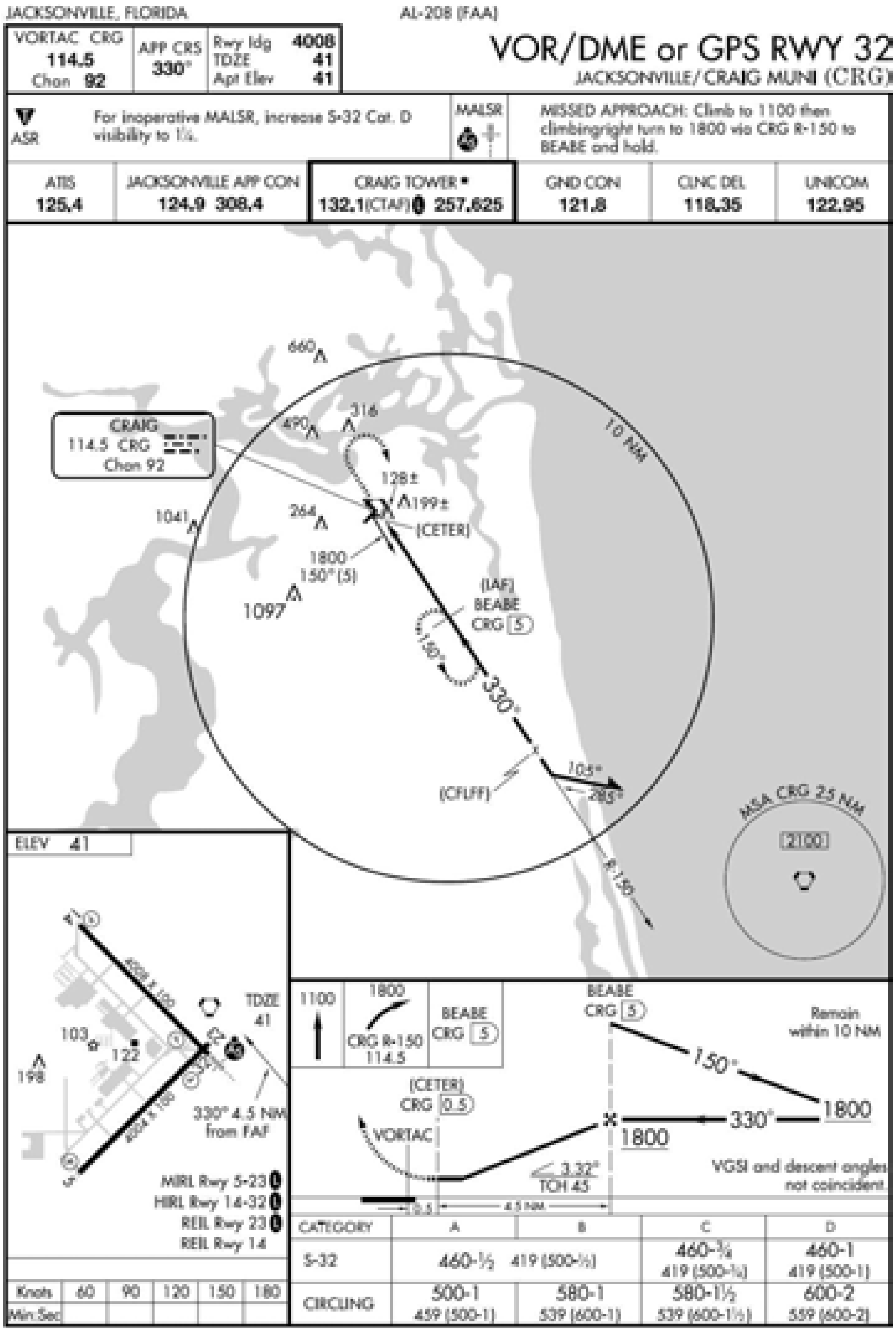
Craig's VORTAC facility, identified on aeronautical charts as CRAIG, is located in the center of airport property, just north of the intersections of Runway 23 and 32. This facility is used to both provide and support approach capabilities at CRG. The VORTAC is also used for terminal and enroute navigation purposes. This ground-based electronic navigation aid transmits very high frequency navigation signals helping aircraft pilots to identify their location relative to the airport. The Tactical Air Navigation (TACAN) portion of the system is used by military pilots. This system provides air navigation aid by indicating bearing and distance to the station on a different frequency.

Figure 2-9
VOR or GPS Approach Procedures
Runway 14



Source: FAA Airport/Facility Directory - 14 February 2008 to 13 March 2008

Figure 2-10
VOR or GPS Approach Procedures
Runway 32

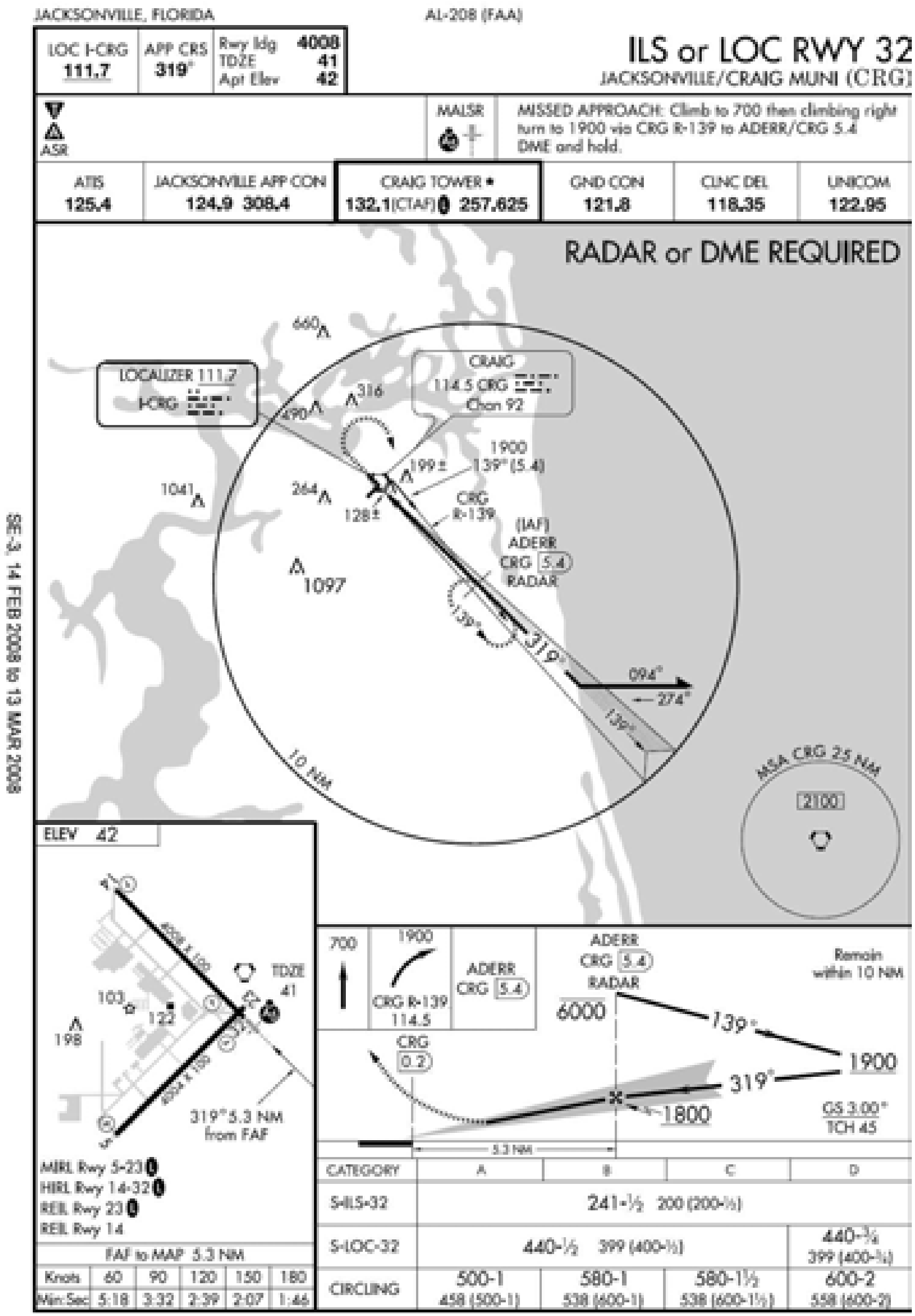


CATEGORY	A	B	C	D
S-32	460-½ 419 (500-½)		460-¾ 419 (500-¾)	460-1 419 (500-1)
CIRCLING	500-1 459 (500-1)	580-1 539 (600-1)	580-1½ 539 (600-1½)	600-2 559 (600-2)

Knots	60	90	120	150	180
Min:Sec					

Source: FAA Airport/Facility Directory - 14 February 2008 to 13 March 2008

Figure 2-11
ILS or Localizer Approach Procedure
Runway 32



Source: FAA Airport/Facility Directory - 14 February 2008 to 13 March 2008

2.2.4.5 Visual Approach Aids

Precision Approach Path Indicators (PAPI)

All four runway ends are equipped with Precision Approach Path Indicators, usually referred to as a PAPI. The units are located on the left-hand side of each runway approximately 1,000 feet past the runway threshold. Each PAPI unit consists of a grouping of four lights (with split red and white lenses) that give pilots on a visual approach vertical guidance on their approach slope. If the aircraft is descending at the appropriate slope, the pilot should see two red and two white lights. If they are too high they will see four white lights and if too low they will see all red.

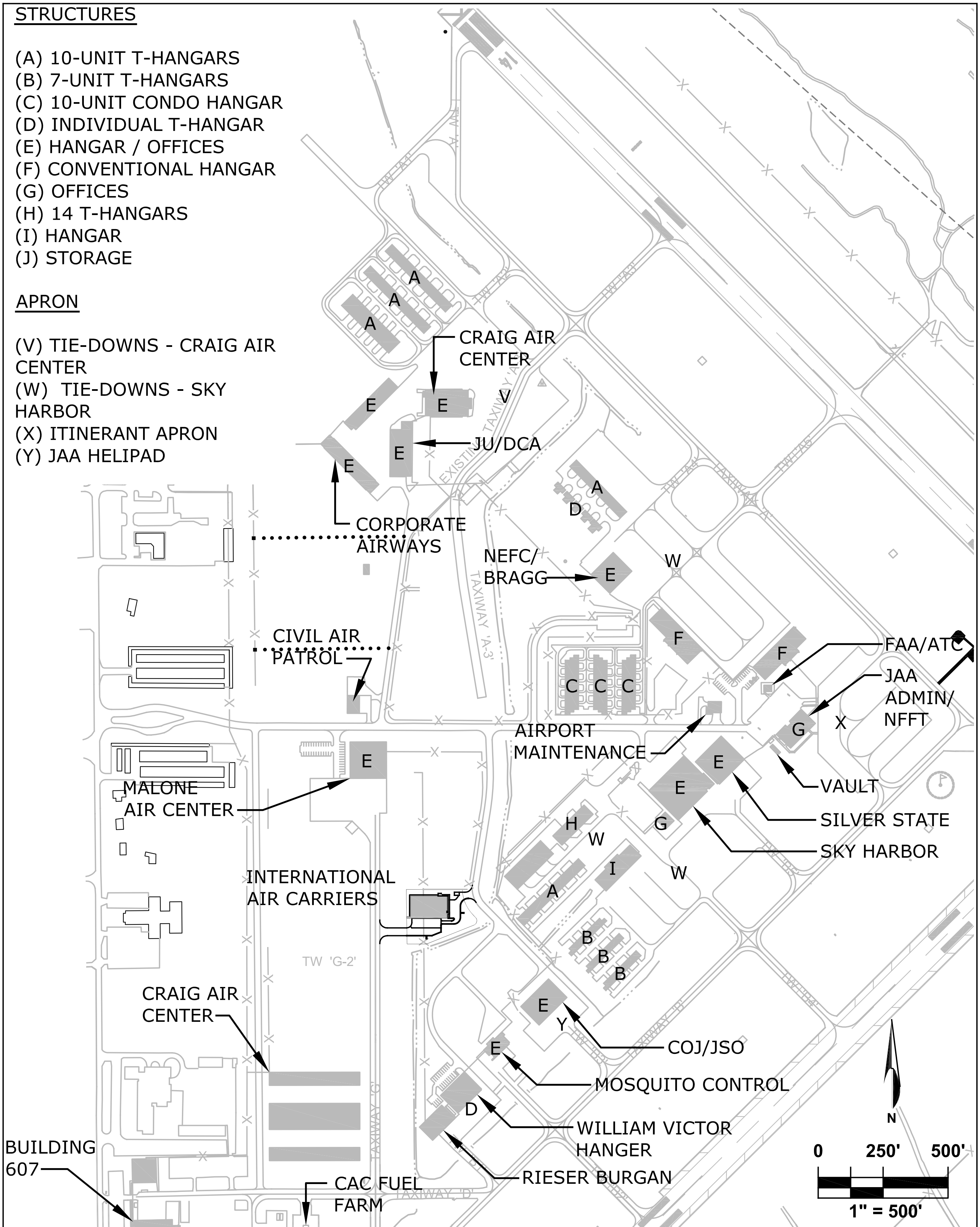
Airport Rotating Beacon

Pilots are aided in locating airports that operate at night or during very adverse weather conditions by rotating lighted beacons. At CRG, the beacon is located due west of the condo hangars between the hangars and Bragg Ave. This beacon is mounted on a tower above ground level and is equipped with an optical rotating system that projects two beams of light, one green and one white. It is operated continuously at night and during instrument flight operations.

2.2.4.6 Aircraft Apron Facilities

Aircraft parking aprons as shown in **Figure 2-12,** *Existing Facilities***,** are generally divided into two user categories: Based Aircraft Parking and Transient Aircraft Parking. Transient aircraft parking at CRG is primarily located adjacent to the two local FBO's, Craig Air Center and Sky Harbor Aviation. Furthermore, transient parking apron is located near the intersection of Taxiways B, C and A.

In addition to transient tie-down facilities, based aircraft tie-down areas are also located near the FBO facilities adjacent to the hangar storage facilities along the north and south quadrants of the airfield. Additional tie-down facilities associated with based aircraft are related to existing tenant facilities, such as aircraft apron related to Airline Transport Professionals, North Florida Flight Training Center, Comair Aviation Academy, etc.



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EXISTING LANDSIDE FACILITIES

Craig Municipal Airport Master Plan Update

Figure 2-12

The size and storage capacity of existing airport tie-down apron facilities is provided in **Table 2-3**.

Table 2-3 Existing Apron / Aircraft Parking Areas		
Description	**Size (S.Y.)**	**Aircraft Storage Capacity**
(V) Tie Downs – Craig Air Center	25,780	95
(W) Tie Downs – Sky Harbor	54,870	140
(X) Itinerant Apron	2,500	8
(Y) JAA Helipad	2,000	3
Total	**85,150**	**246**
Sources: Jacksonville Aviation Authority and The LPA Group Incorporated, 2007		

2.2.5 Landside Facilities

The majority of landside facilities at CRG are located adjacent to Runways 14-32 and 5-23 as shown in **Figure 2-12**, *Existing Airfield Facilities*. Landside facilities currently consist of a combination of aviation and non-aviation related facilities, including fuel storage, aircraft storage facilities, aircraft and airport maintenance, and various tenant facilities.

2.2.5.1 Aircraft Facilities

Aircraft facilities at CRG are associated with aviation and non-aviation tenant operations as well as based aircraft storage. CRG serves all facets of corporate and general aviation. As of 2006, the airport is home to 327 based aircraft of which approximately 43 percent (including Building 607)[2] are stored on paved tie-downs. The remaining based aircraft are stored in a combination of T-hangar, corporate and conventional hangar facilities as shown in **Table 2-4**, *Existing Airport Structures*.

[2] *Craig Municipal Airport*, Florida Community Airport Summary, Florida Department of Transportation, April 2005.

Table 2-4 Existing Airport Structures			
Facility	**Quantity (Total Units)**	**Aircraft Storage Capacity***	**Total S.F.**
(A) 10-Unit T-Hangars	50	50	59,179
(B) 7-Unit T-Hangars	21	21	13,570
(C) 10-Unit Condo Hangars	30	30	34,620
(D) Individual T-Hangars	6	6	5,785
(E) Hangar / Offices	9	57	115,190
(F) Conventional Hangar	2	6	31,500
(G) Offices	2	n/a	11,775
(H) Corporate Hangar	1	4	8,065
(I) Hangar	2	9*	53,810
(J) Storage	1	n/a	2,180
(K) Restaurant	1	n/a	11,290
*Notes: * - aircraft storage capacity does not include Building 607 storage.*			
Sources: Jacksonville Aviation Authority and The LPA Group Incorporated, 2006			

CRG is also home to a number of tenants including, two FBO's and several aviation training programs connected to local colleges and universities. Aviation and non-aviation tenants currently located at the airport include:

- Craig Air Center
- Sky Harbor Aviation
- Northeast Florida Aircraft Maintenance
- Airline Transport Professionals (ATP)
- Comair Aviation Academy
- North Florida Flight Center
- Sterling Flight Training
- Malone Air Charter/Leapfrog Airways
- Florida Helijet
- Beach Banners
- Mill Cove Golf Club
- Gate Petroleum, and
- Davis and Weight Motorsports

The Jacksonville Sheriff's Department also leases hangar and office facilities at the airport as a base for their rotorcraft operations.

In addition to corporate aviation demand, flight training is a significant component of CRG's operations. Four flight schools are currently located at the airport, which provide active fixed wing pilot training. As a result, approximately 55 percent of CRG's operations may be attributed to flight training operations. The remaining 45 percent of annual operations are attributed to business related operations. Of which, 25 percent of transient general aviation aircraft operations may be attributed to jet aircraft.

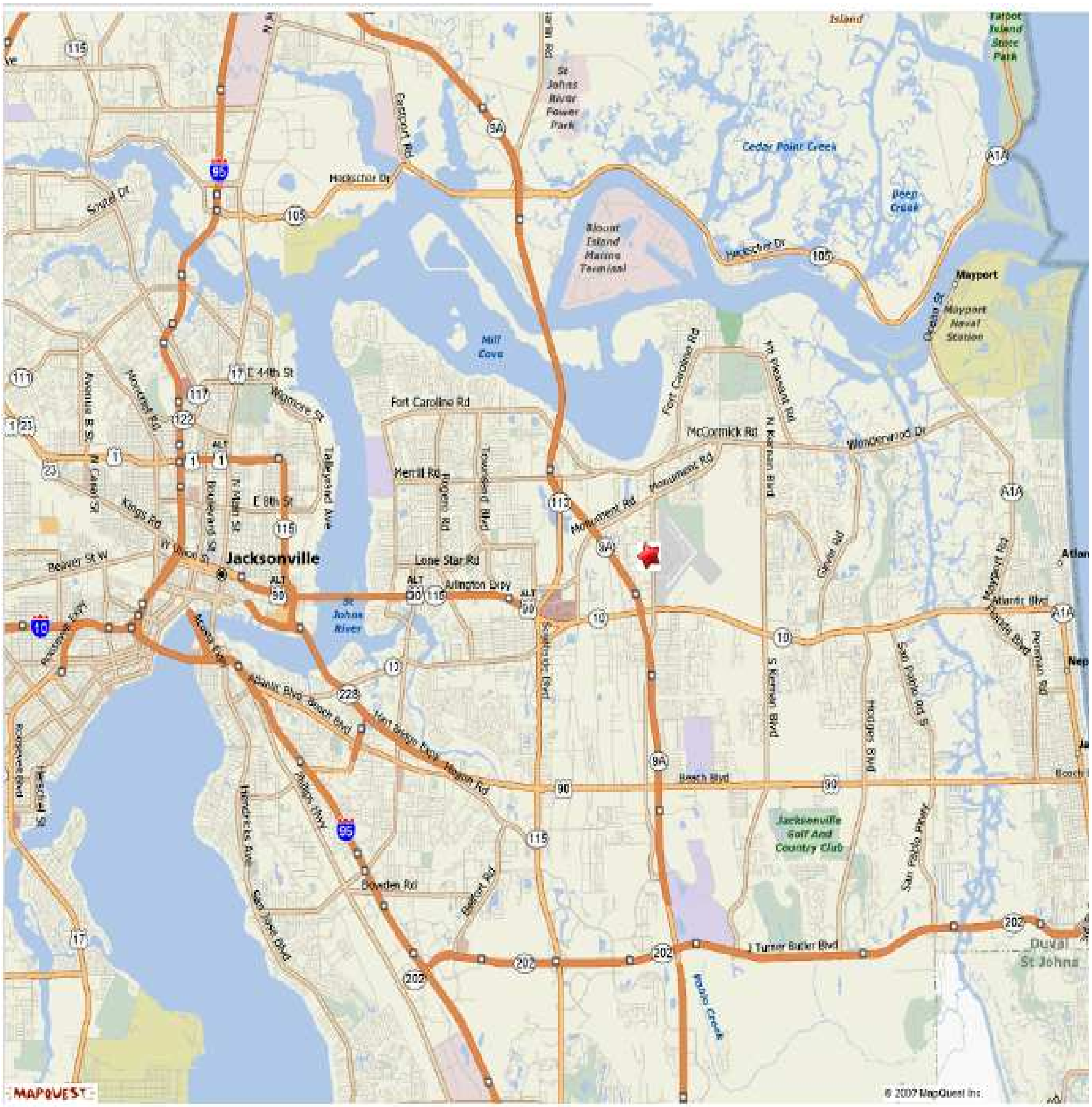
An analysis of existing and future hangar demand and facility requirements is provided in **Chapter 4** of this report.

2.2.5.2 Surface Transportation Network

CRG is located just minutes for the City's beaches and downtown business district. Access to Aviation Drive (the airport entrance road) is provided from St. Johns Bluff Road North as shown in **Figure 2-13**. Access to the airport is provided via several state and city roads including County Route (CR) 10 (Atlantic Blvd), State Road (SR) 9A, Beach Blvd, Wonderwood Expressway, Monument Drive, etc. Access to CRG from the north, south, east and west are outlined below.

- From the northeast (i.e. Mayport Naval Station), travel west on the Wonderwood Expressway, then turn southwest onto Monument Road, then turn south onto St. Johns Bluff Road North then turn east onto Aviation Drive.
- From the southeast (i.e. Jacksonville Beach), travel west on State Road 90 (also known as Beach Blvd.) go under overpass to State Route 9A (past Florida Community College South Campus) then turn north onto St. Johns Bluff Road North. Continue north crossing Atlantic Blvd. (CR 10) before turning east onto Aviation Drive.
- From the northwest (i.e. Downtown Jacksonville), take Alt State Road 90 east to connect with Atlantic Blvd. (CR 10). Continue east on Atlantic Blvd then turn north (left) onto St. Johns Bluff Road North finally turning east (right) onto Aviation Drive.
- From the southwest (i.e. The Perimeter Center), travel north on US 95, get off on J. Turner Butler Blvd (Route 202) and travel east toward Florida Community College). Turn North (left) onto State Road 9A, and continue traveling north until Atlantic Blvd (CR 10). Turn east (right) onto Atlantic Blvd, then turn north (left) onto St. Johns Bluff Road North before turning east (right) onto Aviation Drive.

Figure 2-13
Surface Transportation Network



Source: Mapquest, 2007

Access to facilities on-airport is limited to airport employees, administration, maintenance staff, pilots and other designated users. All airport facilities are located on the west side of the airfield. Traveling east on Aviation Drive (the airport's main entrance) on-airport facilities are accessed is provided by three side roads: Charles Lindberg Drive (to north), Wright Brothers Drive (to south), and Amelia Earhart Drive (north and south). Aviation Drive then continues east until it terminates at the airport office and itinerant apron area. The Mill Cove Golf Club is located on the northeast side of the airfield and can be accessed via Monument Road which is located north of airport property and runs in an east-west direction. The airport also leases property southeast of Runway 5 for a restaurant facility that is accessed from Atlantic Blvd. by General Doolittle Drive.

2.2.6 Support Facilities

Support facilities ensure the efficient and safe operation of aircraft at CRG. Services provided include security, fuel, fire fighting facilities, air traffic control (ATC) and airport maintenance which all support a safe and efficient operating environment.

2.2.6.1 Aircraft Rescue and Firefighting Facilities (ARFF)

Airport rescue and fire fighting facilities are provided by local fire stations located off-airport. Fire station response will vary depending upon available resources, but typically Jacksonville Fire Station 30, located at 9735 First Federal Drive, Jacksonville, Florida, is the first to respond. The Fire Station is located approximately 2.21 miles from the airport, and average response time is under six minutes.

2.2.6.2 Airport Administration / Airport Maintenance

The Jacksonville Aviation Authority administration offices for Craig Municipal Airport share office space with the North Florida Flight Training Center in Building 1. Building 1 is a renovated building located on the east end of Aviation Drive at the center of the airport property. The building includes approximately 3,300 square foot of space for airport administrative functions including tenant coordination, invoicing, marketing, lease compliance, project funding, and airfield maintenance to name a few. Airport maintenance equipment is located within Building 2 (the former ARFF station), and the Civil Air Patrol was temporarily relocated to the old Airport Administration building (Building 11).

2.2.6.3 Aircraft Fuel Storage

Both Sky Harbor Aviation and Craig Air Center provide self-serve 100LL/AvGas facilities as well as full service Jet A and 100LL/AvGas fueling services. Both FBOs are equipped with 10,000 gallon Avgas and Jet A tanks in addition to 5,000 gallon self-serve Avgas facilities. Both Sky Harbor and Craig Air Center use fuel trucks to provide aircraft curbside fueling facilities.

In addition to fuel facilities provided by Sky Harbor and Craig Air Center, limited fuel storage is located near North East Florida Maintenance and Flight Training which is used for their operations only. Further discussion of existing fuel facilities and demand is provided in **Chapter 4**, *Demand Capacity and Facility Requirements*.

2.2.6.4 Electrical Vault

This 600 square foot building is located due west of the transient apron and offices (**Figure 2-13**). The electrical vault houses the necessary transformers, controllers, and generators for airfield lighting, signage, and NAVAIDS.

2.2.6.5 Air Traffic Control Tower

As shown in **Figure 2-12 page 29**, the Air Traffic Control Tower is located in the landside center of the airport adjacent the transient apron, just south of the conventional hangar (F). The ATCT is operational Monday through Friday from 6:00am to 11:00pm (0600-2300). The ATCT not only oversees aircraft flying within the controlled airspace near CRG, but also the vehicles and aircraft operating on the ground within the defined movement area. Vehicle or aircraft operators must maintain contact with tower personnel in either of these areas, whether on the ground or in the air. Tower personnel’s purpose is to ensure that all movements are coordinated in a safe manner. Pilots that wish to enter or transition through the Class D airspace surrounding CRG, must first get clearance from the Tower.

2.2.6.6 Security

Since the federal government has not implemented specific security requirements other than fencing and lighting at the majority of GA airports around the country, security related improvements are often given a low priority in the funding system. Typically the main threat to GA airports has been associated with theft and vandalism. In an effort limit threats against GA facilities, the Florida Department of Transportation has embarked on an integrated general aviation security program of which CRG is one of four participating airports.

CRG is equipped with a 6 foot perimeter fence topped with three strands of barbed wire to limit unauthorized access to the airfield as well as local wildlife. The existing airport perimeter fence encompasses the airfield and all aircraft movement areas. Access gates are equipped with keypads and card readers, and provide adequate vehicular and pedestrian access. In addition, the Jacksonville's Sheriff's department has hangar and office facilities currently located at the airport.

2.3 Existing Environmental Conditions

2.3.1 Environmental Inventory

In order to inventory potential environmental constraints to future development at the Airport, a review of available background information and literature was conducted. Sources of information included the following:

- 2004 U.S. Geological Survey (USGS) true color aerial photography;
- 1:100,000 scale and 1:24,000 scale USGS topographic mapping;
- 2000 Saint Johns River Water Management District (SJRWMD) Florida Land Use, Cover, and Forms Classification System (FLUCFCS) mapping;
- Natural Resources Conservation Service (NRCS) digital soils mapping;
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapping;
- Wetland delineation mapping for the Taxilane Construction Project from 2005;
- Federally Listed Species for Duval County (USFWS 2006);
- Florida Natural Areas Inventory (FNAI) Tracking List for Duval County (2006);
- Florida Fish and Wildlife Conservation Commission (FFWCC) wading bird colony location data (including wood stork colonies, 2000);
- FFWCC eagle nest location data (1999); and
- Federal Emergency Management Agency (FEMA) digital 100-year floodplain mapping

Mapping of some of these environmental constraint categories is provided in the Regulatory Guidelines Section in **Appendix B**. Due to the limited nature of this literature review some environmental constraint categories were not assessed. Those categories include the following:

- Department of Transportation Act, Section 4(f) properties
- Historical, architectural, archaeological, and cultural resources
- Social impacts
- Hazardous materials storage areas
- Contaminated areas

A detailed outline of regulatory requirements for environmental impact categories is presented in **Appendix B**. Based on the results of literature review, the following conclusions were reached concerning environmental potential constraints to development at the airport.

2.3.2 Air Quality Classification

Based on a review of information concerning air quality attainment status provided on the Environmental Protection Agency (EPA) website, which can be accessed at (http://www.epa.gov/ebtpages/airairqualityattainment.html), Duval County is categorized as being in attainment for all of the national ambient air quality standard criteria pollutants. Therefore, no projects at the Airport would be expected to affect the County's air quality attainment status. This should be re-evaluated for future environmental documentation required for projects at the Airport.

2.3.3 Aquatic Concerns

2.3.3.1 Wetlands

Based on available NWI mapping, FLUCFCS mapping, and the 2005 wetland delineation that was conducted for the Taxilane Construction Project, wetlands and ditches that are subject to the permitting authority of the U.S. Army Corps of Engineers (COE) and/or the SJRWMD present a potential constraint to new development at the Airport. This is particularly evident in the area southeast of the approach end of Runway 32, the area northeast of the approach end of Runway 23, portions of the area along the southeast side of Runway 5/23, and portions of the area along the northeast side of Runway 14/32. In these areas, forested wetlands and/or ponds are indicated on the NWI mapping and the FLUCFCS mapping. Other smaller areas of wetlands and ponds are indicated southwest of the approach end of Runway 5. Based upon past Master Plans and Environmental Studies referenced in Section 2.1.1.1, JAA recognizes that any project proposed in this Master Plan that has wetland impacts will require close coordination with COE and SJRWMD to develop mitigation and permitting strategies that will enable the needed project to be completed as expeditiously as possible while complying with all environmental regulations.

2.3.3.2 Ditches and Swales

In addition, there are numerous ditches and swales throughout the Airport property, and in many cases, these areas also fall under the jurisdiction and permitting authority of the COE and/or the SJRWMD as jurisdictional waters of the U.S. or as State Surface Waters. Based on a review of aerial photography and the 1:24,000 scale USGS mapping, some of the ditches and swales drain to the southwest toward the Ginhouse Creek sub-watershed and others drain to the north to the Cowhead Creek watershed. Other ditches likely drain to wetlands adjacent to Airport property.

Impacts to COE and/or SJRWMD jurisdictional areas would require that permits be obtained through the SJRWMD's joint permitting process.

2.3.3.3 Floodplains

Based on digital flood data obtained from FEMA (**Appendix B**) there are no 100-year floodplains mapped for the project area.

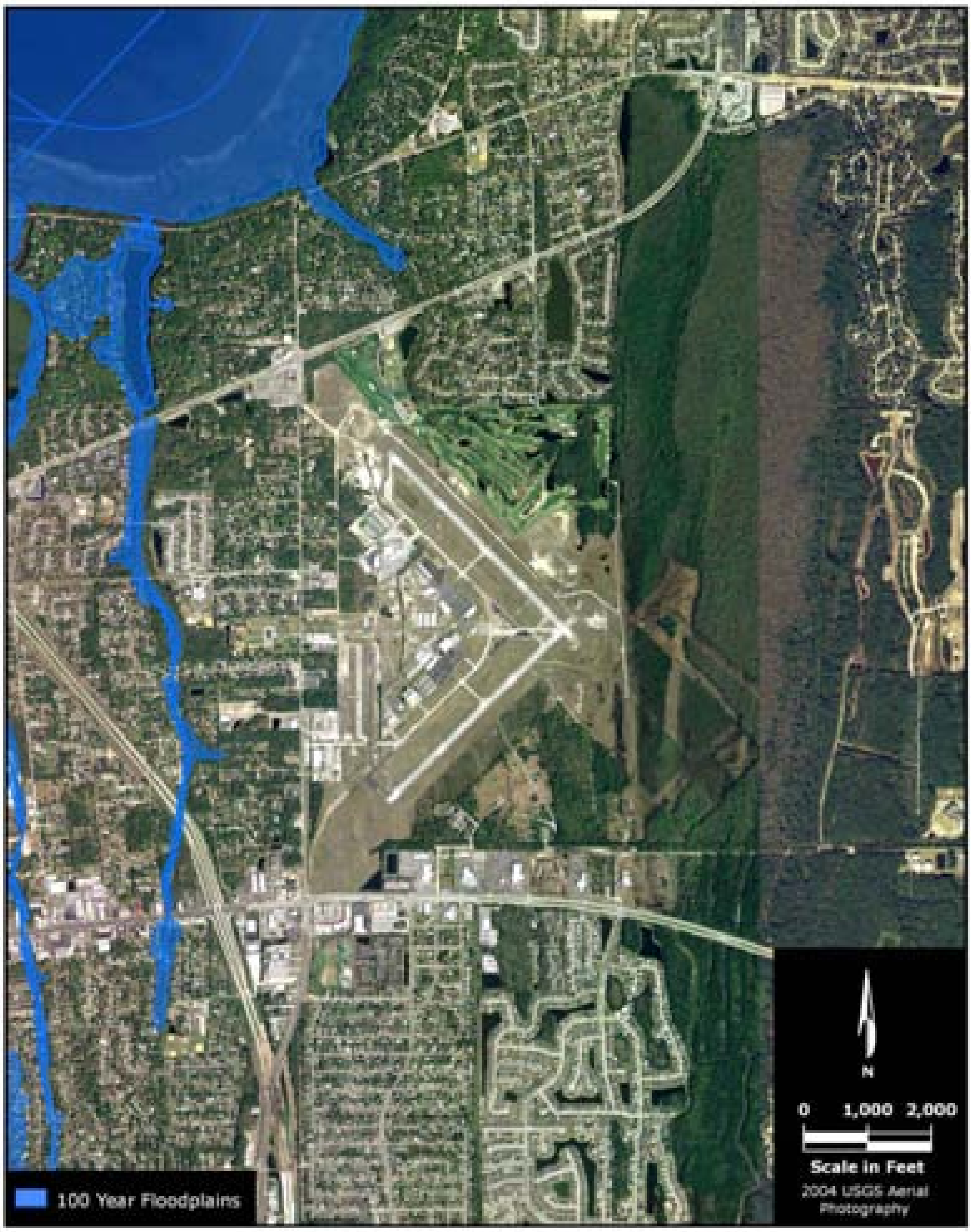
Figure 2-14
NWI and Delineated Ditches

Sources: *USFWS Branch of Habitat Assessment wetlands mapper http://wetlandsfws.er.usgs.gov/ and The LPA Group Incorporated, 2007*

Figure 2-15
FLUCFCS Map

Sources: 2004 SJRWMD Land use land cover mapping from
http://sjr.state.fl.us/gisdevelopment/docs/themes.html

Figure 2-16
FEMA Flood Map



Sources: FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA); FEMA FLOOD INSURANCE RATE MAPS 1996

2.3.4 Terrestrial Concerns

2.3.4.1 Protected Species

The USFWS list of Federally Protected Species for Duval County was obtained from the USFWS North Florida Field Office website, and the FNAI list for Duval County was obtained from the FNAI website. These lists can be found in **Appendix B**. In addition, readily available information concerning documented locations of protected species occurrences was obtained from the FFWCC. This documentation was available for wading bird colonies, including wood storks, and for eagle nest locations. Based on this limited review and taking into consideration the FLUCFCS land cover types that are mapped in the vicinity of the Airport, it was determined that of the 12 federally protected species on the USFWS Duval County list the following two species have some potential for utilizing habitats on or adjacent to Airport property:

Bald eagle	(*Haliaeetus leucocephalus*)
Eastern indigo snake	(*Drymarchon corais couperi*)

However, during the environmental survey, no bald eagle nests were found on airport property. The closest nest was located approximately one mile northeast of the airport.

In addition, it was determined that the following State protected species could potentially utilize habitats on or adjacent to Airport property:

Gopher tortoise	(*Gopherus polyphemus*)
Florida pine snake	(*Pituophis melanoleucus mugitus*)
Florida burrowing owl	(*Athene cunicularia floridana*)
Little blue heron	(*Egretta caerulea*)
Snowy egret	(*Egretta thula*)
Tricolored heron	(*Egretta tricolor*)
Swallow-tailed kite	(*Elanoides forficatus*)
White ibis	(*Eudocimus albus*)
Purple honeycomb-head	(*Balduina atropupurea*)
Bartram’s ixia	(*Calydorea coelestina*)
Florida toothache-grass	(*Ctenium floridanum*)
Drosera intermedia	(*Drosera intermedia*)
Giant orchid	(*Pteroglossaspis ecristata*)
Yellow sunnybell	(*Schoenolirion croceum*)
Variable-leaf crownbeard	(*Verbesina heterophylla*)

Field survey within future development areas would be required to determine whether any of these protected species would be potentially impacted by the proposed project(s).

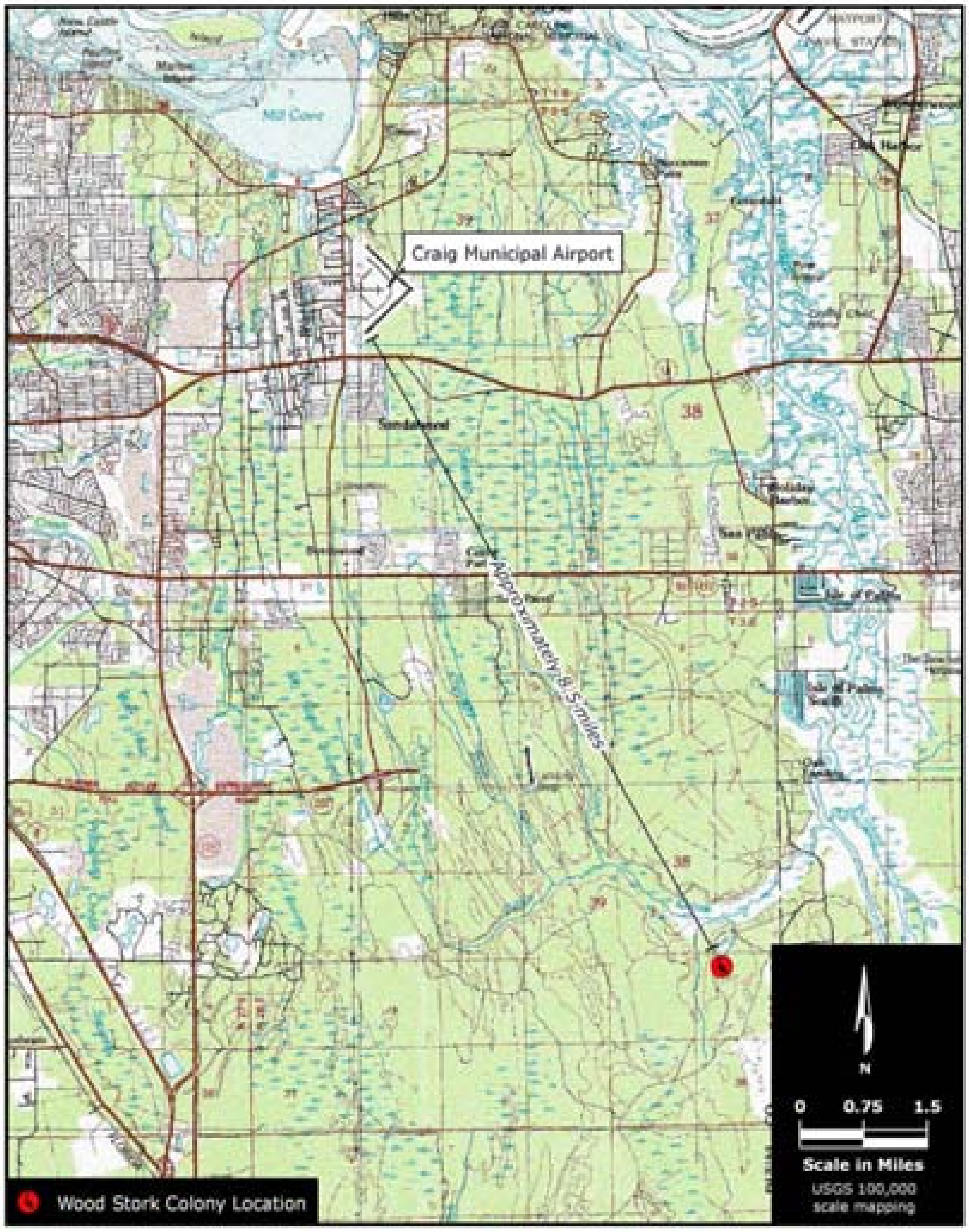
Figure 2-17
Eagles Nest

Sources: Florida Fish and wildlife conservation commission 2006 http://myfwc.com/eagle/eaglenests/

Figure 2-18
Wading Bird Colony

Source: Florida Fish and Wildlife Conservation Commission. 2003, October 8. Florida's Waterbird Colony Locator. http://www.myfwc.com/waders

Figure 2-19
Wood Stork Colony Location



Source: Florida Fish and Wildlife Conservation Commission. 2003, October 8. Florida's Waterbird Colony Locator. http://www.myfwc.com/waders

2.3.4.2 Prime Farmland

No prime farmland soils, unique farmland soils, or state important farmland soils, as shown in **Figure 2-20**, occur in Duval County. Therefore, there would be no impact to Prime Farmlands as a result of future development at the Airport.

Figure 2-20
Soil Map Unit Boundary

Source: *NRCS Soil Data Mart 2005 http://soildatamart.nrcs.usda.gov/*

2.3.5 Cultural Concerns

2.3.5.1 Parks and Wildlife Refuges

Based on a review of information on the USFWS Wildlife Refuges website (www.usfws.gov/refuges/) there are no wildlife refuges in the vicinity of the Airport. Based on a review of information on the FFWCC website (http: //myfwc.com/recreation/) there are no wildlife management areas, mitigation parks, or cooperative recreation areas in the vicinity of the Airport. Based on a review of information on the Florida State Parks website (www.floridastateparks.org) there are no State Parks in the vicinity of the Airport. Finally, based on a review of Geographic Information Systems (GIS) mapping available on the City of Jacksonville's website (http://maps.coj.net/jaxgis/) there are no City or County parks located in the immediate vicinity of the Airport property.

2.4 Summary

The information provided within the section of the report was used as the foundation for the remaining elements of the master plan update. Information on current infrastructure and operations served as a basis for the development of aviation activity forecasts, demand and capacity analysis, as well as facility requirements.

Existing data provided guidance for the assessment of potential changes to facilities and/or procedures necessary to meet the goals of the airport planning process. The analyses of airport facilities were based upon existing and anticipated user demands over the short-intermediate and long-term planning periods. The inventory of existing conditions is the first step in the complex process needed to meet the Communities' projected aviation demand. The information collected was based upon the year 2006 operational data, which served as the baseline/foundation for forecast airport activity and facilities.

CHAPTER THREE
Aviation Forecasts

3.1 Overview

This chapter discusses both recent and ongoing aviation industry trends in relation to projections of aviation demand at CRG. A key focus is how the former affects the latter. CRG is a general aviation airport, which serves a variety of aviation activities including: personal and recreational flying, flight training, corporate flying, aircraft servicing, limited military operations and other similar activities. As a result, particular attention was given to factors that affect this type of activity including, but not limited to, fuel price, the national and local economy, insurance rates, pilot training, and airspace restrictions instituted after the September 2001 terrorist attacks. Nationally, the use of general aviation (GA) for business travel has increased due in part to the development of the fractional aircraft ownership industry and the implementation of extensive security measures that have deterred business travelers from commercial airlines and airports. Prediction of corporate general aviation operations at the airport is essential as facility requirements for corporate aircraft usually exceed recreational GA aircraft requirements. Growth in corporate aviation activity is expected as part of the recent economic recovery. In addition, development of light jet aircraft such as the Eclipse 500 and Cessna Mustang offer a lower cost and fuel-efficient alternative to larger corporate jets currently on the market. Furthermore, learn-to-fly programs (such as the Young Eagles) and aircraft safety improvements, as well as the development of new aircraft models featuring reduced operating costs are expected to increase both corporate and recreational flying at CRG in the near future.

Typically the planning forecast is based upon a 20-year period divided into short-term (2007-2011), mid-term (2012-2016) and long-term (2017-2026). 2006 data was used as the base year for calculating based aircraft and aircraft operations over the 20-year planning period.

3.2 Previous Forecasts

Aviation activity forecasting generally commences by analyzing the most recent data along with the historical trends obtained from previous activity. For CRG, this data has evolved from a comprehensive examination of historical airport records from airport personnel and review of the following documents:

- 2001 Master Plan Update Craig Airport
- 2005 Craig Airport FAR Part 150 Noise Study
- 2005 Florida Aviation System Plan
- 2007 FAA Terminal Area Forecasts

- 2006-2017 FAA Aerospace Forecasts
- Socioeconomic data obtained from Department of Labor, and the Florida Legislature Office of Economic and Demographic Research (EDR)
- Florida Aviation System Plan (FASP)

This data was supplemented by information obtained during interviews with airport management, tenants, and users to derive a more complete picture of operational activities and emerging trends at CRG.

3.3 Forecast Elements and Assumptions

Two primary considerations that can influence activity forecasts at an airport include historical trends and industry trends. By tracing historic trends, it is possible to determine the impact that economic fluctuations, as well as changes in the industry have had on activity at the airport. Likewise, applying recent or anticipated industry trends can allow educated assumptions to be made as to how CRG's activity is affected in the future. These considerations play a key role in the forecast of based aircraft and annual operations.

In addition, assumptions were made with respect to how aviation activity may change in the future based on trends emerging in the aviation industry. Along these lines, many different factors were considered which may influence the course in which activity at an airport develops. This included evaluating CRG's role in Florida's aviation transportation network. The primary goal of the analysis was to develop an approach that gives reasonable attention to these factors while at the same time providing a rational basis on which to base the forecast selection.

Another key element in the forecast process is the identification of local trends that enhance the potential for additional activity, as well as the potential for the airport to attract new tenants and users. In developing the forecasts for CRG, historic and projected demographics of the region were analyzed to identify potential factors that could impact the level or type of aviation activity. This data was used to develop the series of linear and multiple regression analyses. The methodology used to develop forecasts and the reasoning behind the selection of a preferred forecast is discussed in detail in each of the following sections. Depending on the availability of information and correlation of data, different methods were used to produce selected forecasts for each type of activity. The methods used to develop and select forecasts are indicated in each forecast section.

3.3.1 Socio-Economic Analysis

Levels of aviation activity at local and regional airports can generally be predicted from the size and wealth of the surrounding community. These characteristics can be defined for a region from a variety of statistical sources. Historical and projected data for socioeconomic indicators used in this analysis were obtained from the 2006 Bureau of Economic Analysis, which is published annually by the U.S. Department of Commerce. Additional sources include the U.S. Bureau of Labor Statistics, published by the Department of Labor, and the Florida Legislature Office of Economic and Demographic Research (EDR). The following sections provide information about trends of economic indicators as they relate to employment sectors by industry, regional economic trends, and local development that will also serve as the basis for the forecasts of aviation demand.

The demand for aviation services can also be related to key characteristics (i.e. population, employment, household income, etc.), which are combined to profile the larger community served by the local airport. Aviation services include commercial air carrier, flight training, maintenance, cargo, and storage of private aircraft. Usually the level of demand is directly related to the size and composition of the regional population, which may be described in terms of earnings (the ability to pay for services), and the employment that provides such earnings. Therefore, the existing data and characteristics (i.e. population, income, employment, etc.) are used as a basis upon which future aviation activity is forecast. Any necessary airport facilities can then be planned accordingly. The following sections describe key population, demographic, employment, income, socio-economic, and transportation trends, as they relate to aviation activity.

3.3.1.1 Local Area Characteristics

The Jacksonville Metropolitan Statistical Area (MSA) includes Clay, Baker, Duval, Nassau, and St. John's Counties. The Airport's service area also extends to portions of extreme southern Georgia including Camden and Charlton Counties. However, socioeconomic data for only Duval County and the greater Jacksonville MSA based upon the First Coast Metropolitan Planning Organization service area as shown in Figure 3-1, were considered to be the key input in quantifying future levels of aviation activity at Craig Municipal Airport. Moreover, the data provides sufficient background information on local trends and projections since Jacksonville serves as the principal city within the MSA.

Figure 3-1
Greater Jacksonville Metropolitan Statistical Area

Source: First Coast Metropolitan Planning Organization (www.firstcoastmpo.com), January 2007

3.3.1.2 Population

The historical population data shows that the permanent population of the Jacksonville MSA and Duval County grew at a relatively stable rate between 1990 and 2004. The city limits of Jacksonville extend well beyond concentrated population centers within central parts of Duval County. As such, greater population growth between 1990 and 2004 occurred in neighboring counties such as Nassau and St. John's Counties. Comparative data; however, shows that population growth for the Jacksonville MSA was below that for the State of Florida as a whole. **Table 3-1** summarizes historical population information for the State of Florida, Duval County, and the Jacksonville MSA.

Table 3-1
Historical Population (1990-2004)

Year	Florida	Duval County	Jacksonville MSA
1990	13,033,307	677,746	932,169
1991	13,369,798	693,469	955,572
1992	13,650,553	707,797	977,699
1993	13,927,185	711,693	990,520
1994	14,239,444	717,206	1,004,478
1995	14,537,875	724,468	1,020,631
1996	14,853,360	744,682	1,052,363
1997	15,186,304	757,842	1,077,069
1998	15,486,559	766,249	1,094,889
1999	15,759,421	773,150	1,109,951
2000	16,048,887	779,689	1,126,194
2001	16,350,565	790,485	1,148,289
2002	16,677,860	801,793	1,173,474
2003	17,385,430	811,531	1,196,464
2004	17,789,864	819,623	1,223,741
AAGR	**2.25%**	**1.37%**	**1.96%**

Source: Bureau of Economic Analysis, 2006; The LPA Group, 2006

Population projections for the local area were gathered from the Florida Office of Economic and Demographic Research (EDR). Growth forecasts for the Jacksonville MSA are expected to slow to 1.74 percent annually through 2026, above the projected average for the State of Florida. **Table 3-2** outlines EDR's growth forecast for Florida, Duval County, and the Jacksonville MSA through 2026.

Table 3-2 Forecast Population (2006-2026)			
Year	**Florida**	**Duval County**	**Jacksonville MSA**
2006	18,321,668	879,661	1,311,067
2011	20,301,399	954,831	1,457,993
2016	22,121,516	1,025,911	1,595,936
2021	23,792,157	1,089,622	1,721,789
2026	25,289,717	1,147,508	1,835,694
AAGR	**1.65%**	**1.38%**	**1.74%**

Source: Florida Office of Economic and Demographic Research (EDR), 2006; The LPA Group, 2006

3.3.1.3 Per Capita Income

Per capita income levels provide a valuable assessment of the economic strength of a particular area and specifically relates to the measure of wealth among a sample of a population. Historical numbers indicate that on average, per capita personal income grew at 3 percent annually in the United States. Such a figure is representative with the cost of living and Consumer Price Index (CPI) increases year-on-year. Per capita income growth within the Jacksonville MSA as well as Duval County grew at an average annual rate of 3.83 percent, nearly 28 percent faster that the national average and 11 percent faster than the historical average for the State of Florida. Increases in disposable income often leave more discretionary income to be used for goods and services. It is projected that per capita income will continue to rise at the historical rate until 2026. **Table 3-3** provides a historical perspective of per capita income growth. **Table 3-4** shows forecast per capita income for the same study areas.

Table 3-3 Historical Per Capita Income (1990-2004)			
Year	**Florida**	**Duval County**	**Jacksonville MSA**
1990	$19,564	$19,001	$19,087
1991	$19,780	$19,137	$19,278
1992	$20,417	$19,690	$19,943
1993	$21,050	$20,549	$20,744
1994	$21,666	$21,308	$21,494
1995	$22,691	$22,527	$22,719
1996	$23,655	$23,404	$23,725
1997	$24,502	$24,147	$24,667
1998	$25,987	$25,869	$26,445
1999	$26,894	$26,666	$27,304
2000	$28,509	$28,920	$29,436
2001	$29,273	$28,879	$29,439
2002	$29,709	$29,498	$29,931
2003	$30,128	$30,546	$30,826
2004	$31,469	$32,175	$32,283
AAGR	**3.45%**	**3.83%**	**3.83%**
Source: Bureau of Economic Analysis, 2006; The LPA Group, 2006			

Table 3-4 Forecast Per Capita Income (2006-2026)			
Year	**Florida**	**Duval County**	**Jacksonville MSA**
2006	$33,677	$34,686	$34,803
2011	$34,839	$36,015	$36,136
2016	$36,041	$37,394	$37,520
2021	$37,285	$38,826	$38,957
2026	$38,571	$40,313	$40,449
AAGR	**3.45%**	**3.83%**	**3.83%**
Source: Bureau of Economic Analysis, 2006; The LPA Group, 2006			

3.3.1.4 Unemployment

The rate of local and regional unemployment for the Jacksonville MSA and the Duval County study areas has historically been below that of the Florida average, varying between 4.58 and 4.75 percent to the State average of 5.53 percent. The volatility of unemployment rates correspond to fluctuations in both the local and national economies. According to **Table 3-5**, the Jacksonville MSA recorded relatively stable unemployment rates between 1995 and 2000. During this time, the U.S economy experienced an upward cycle of economic activity, whereas between 2001 and 2005 a recession triggered by the events of September 11 affected national, regional, and local job growth rates. However, the average annual growth rate between 1990 and 2005 indicated a downward trend in unemployment statistics, albeit slower than the pace of job growth in the State of Florida.

Projections of unemployment are particularly difficult to measure because they most specifically reflect the cyclical patterns of national economic activity. In addition to typical economic trends, local influences in business patterns, taxation, and property markets affect the dynamism of employment growth. However, it is expected that the unemployment rate for the Jacksonville MSA to remain below 5 percent throughout the planning period to 2026. **Table 3-5** summarizes historical unemployment rates for the three study areas.

Table 3-5
Historical Unemployment Rates (%) (1990-2005)

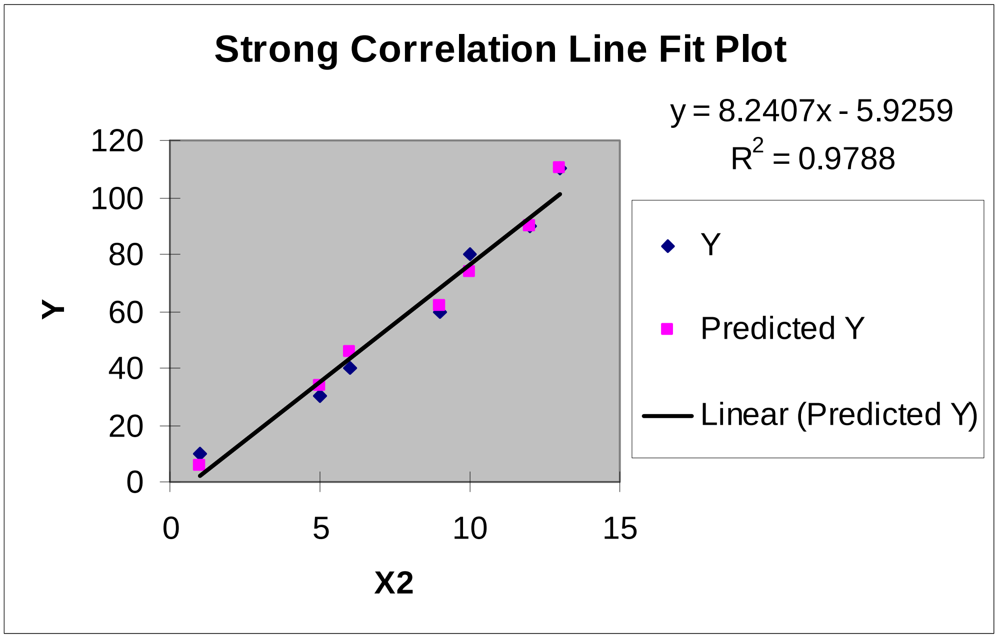
Year	Florida	Duval County	Jacksonville MSA
1990	6.3	5.4	5.3
1991	7.6	6.5	6.4
1992	8.4	7.1	7.0
1993	7.2	5.7	5.7
1994	6.7	5.0	4.9
1995	5.5	3.8	3.7
1996	5.3	3.9	3.7
1997	5.0	3.9	3.8
1998	4.5	3.4	3.2
1999	4.0	3.2	3.1
2000	3.8	3.3	3.2
2001	4.7	4.2	4.1
2002	5.7	5.7	5.4
2003	5.3	5.5	5.2
2004	4.7	5.2	4.7
2005	3.8	4.2	3.9
Mean	5.53%	4.75%	4.58%
AAGR	**-3.31%**	**-1.66%**	**-2.02%**

Source: Bureau of Labor Statistics, 2006; The LPA Group, 2006

3.3.1.5 Regression Analysis / Socioeconomic Correlation

The purpose of a regression analysis is to use independent variable data to predict the value of a dependent variable. Some regression analyses provide strong correlations, i.e. a comparison of automobile insurance rates to population within a square mile. The increased traffic in higher populated areas results in additional number of accidents, thefts, etc. and therefore causes insurance rates to increase. In this example, the population per square mile would be the independent variable, whereas the cost of insurance would be the dependent variable. There are numerous methods validating regression analysis reliability; however, the most common methods include use of R-squared or an analysis of variance (ANOVA). The ANOVA methodology uses an approach known as the F test to determine the difference between the means of two or more groups. The R-squared output of the regression is the fraction or percentage of the variation in dependent variables that is explained by the independent variables. In essence, data from both sources are used to develop a scatter plot of x and y values. This data is then analyzed to formulate a best fit line which represents the least amount of deviation for both predictors. Variables that demonstrate strong correlations will produce values (or confidence) above 90%. In these cases, the independent variable does a good job of explaining variation in the dependent variable and the analysis is therefore considered valid. If the significance value of F or R-squared is less then 90% then the independent variables do not explain the dependent variable and a null hypothesis is accepted for the model as a whole. **Figure 3-2** below denotes a strong correlation between independent and dependent variables and **Figure 3-3** indicates the output generated by the variables for CRG.

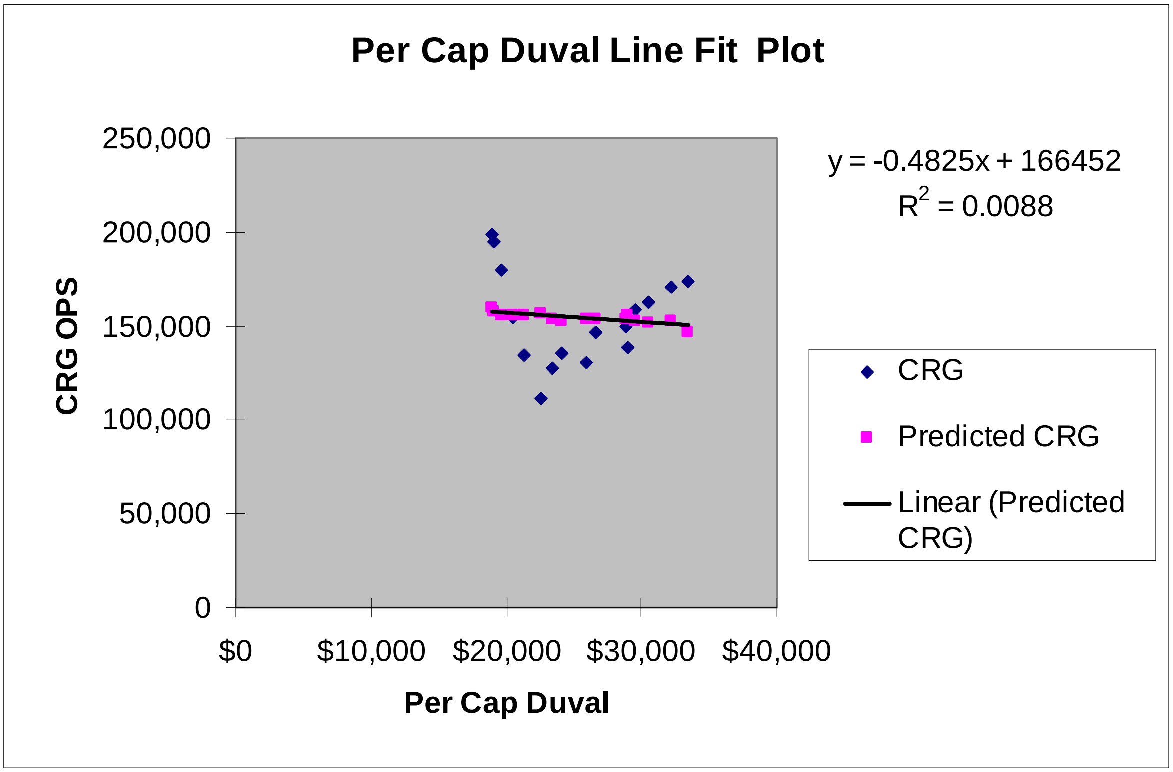
Figure 3-2 – Strong Correlation



Source: The LPA Group Incorporated, 2006

In the case of CRG, the independent variables are comprised of population and per capita income data for both Duval County and the Jacksonville MSA, whereas the dependent variable is the number of based aircraft and/or operations. The objective of this analysis was to determine whether or not a correlation existed between population and income to the number of based aircraft and/or operational activity at CRG. After analyzing the data collected by using the two regression methods discussed, it was determined that the F statistic was too high and the R squared value was too low. Therefore, neither of the models described produced a valid correlation. A possible reason for this may be attributed to the fact that CRG functions as a part of the Jacksonville Aviation System and that the number of operations cannot be exclusively correlated to income levels or population because there are many airports within the system. As such, the number of operations at CRG is most closely affected by variables related to the airport itself and not as a result of local socioeconomic influences. For this reason, the creation of a regression forecast using the aforementioned variables was abandoned due to a lack of correlation. Thus, alternative forecasting methodologies were implemented in the following sections to calculate activity projection forecasts for CRG.

Figure 3-3 – Weak Correlation: Per Capita Income and CRG Operations



Source: The LPA Group Incorporated, 2006

3.3.2 Aviation Activity Forecasts

Historic trends are one of the primary considerations that can influence activity forecasts at an airport. By tracing these trends, it is possible to determine the impact that economic fluctuations, as well as changes in the industry have had on activity at the airport. Study of historical trends is particularly valuable at those airports having an active air traffic control tower. Historic operations at CRG include air taxi, general aviation, and military operations. However, historically general aviation (GA) operations consistently represent the majority of airport operations.

Many elements make up the broad definition of general aviation activity. General aviation includes all segments of the aviation industry except those conducted by scheduled commercial air carriers. Its activities include the training of new pilots, sightseeing, aerial photography, law enforcement, and medical flights, as well as business, corporate, and personal travel. General aviation operations are divided into the categories of local or itinerant. Local operations are those arrivals or departures performed by aircraft that remain in the airport traffic pattern, or those that occur within sight of the airport. This covers an area within a 20 nautical mile radius of the airfield. Local operations are most often associated with training activity and flight instruction. Itinerant operations are arrivals or departures other than local operations, performed by either based or transient aircraft that do not remain within the airport traffic pattern.

The FAA defines an operation as either a single aircraft landing or takeoff. Under this definition, touch-and-go training procedures are considered two operations (one arrival and one departure) and are deemed local operations. Itinerant general aviation operations are typically comprised of private, business/corporate, and air taxi flight activity. Additionally, itinerant activity may include law enforcement and medical flights.

In addition, a comparison of the estimated traffic count at CRG for 2006 with historic data from the 2007 FAA TAF, FAA Air Traffic Activity Database System (ATADS), which compiles specific operational information from airports that have control tower facilities, and 2005 FASP has revealed some inconsistency. Historic data from those sources seem to indicate a level of operations either below or significantly above operations recorded by CRG ATCT. Since ATCT recorded data at CRG counts only those operations that occurred during times the control tower was operational, historic tower data were benchmarked to FAA TAF and historical airport information to adjust for activity that occurred after hours.

Industry trends, as well as national and local economy reviews, constituted the most reliable sources of information for the projection of aircraft activity at the airport. The best source of information on the nation’s general aviation activity is contained in the 2006 FAA Aerospace Forecasts. Given the nature of the airport operations, which are mostly general aviation, projection of future activity based on these forecasts with an adjustment based on local trends was considered a reasonable forecasting approach. The primary goal of the analysis was to develop an approach that gives reasonable attention to all factors while at the same time providing a rational basis on which to base the forecast selection.

Additionally, general aviation growth relies on many other factors, which include: level of services offered, competitive pricing, airfield characteristics, local area attractiveness, and pilots' perception of services. As a result, these forecasts assume that Airport Management, Fixed Based Operators (FBO), and other tenants, will actively support all aviation activity and initiate the appropriate measures to either maintain or extend air traffic at the airport.

Projections of military activity were included as part of the overall forecast of aviation activity at CRG. However, as a result of the relocation of the Florida Army National Guard helicopters to Cecil Field, local military operations at CRG will decrease to zero in the year 2007. Secondly, the 2005 FAR Part 150 study determined that the tower had been reporting nearby operations to Mayport and Navy JAX as military itinerant operations for CRG. Thus, itinerant military activity levels have historically been inflated due to a counting error. Now that this error has been identified and corrected, itinerant military activity levels during 2005 and 2006 reflect lower numbers than those previously reported.

Regardless of the decrease in military operations, it is anticipated that total aircraft operations at CRG will continue to grow due to a strong presence in flight training activity coupled with increased business traffic.

3.3.2.1 Aircraft Operations Forecast

Projected airport operational activity levels are an important factor in identifying existing airfield capacity shortfalls and assessing future needs for airside improvements. Frequency and type of operation also give insight into specific airfield needs that may be sensitive to increased levels of operational activity. Thus, in order to develop an accurate forecast for CRG, it was necessary to create several forecasts using existing data and also necessary to compile and compare existing forecasts from a variety of sources. A discussion of each source along with the pros and cons of each forecast are discussed below.

2007 Terminal Area Forecast (TAF) – The FAA's TAF forecast are developed for all active airports within the National Plan of Integrated Airport System (NPIAS). These forecasts are prepared to meet the budget and planning needs of FAA and provide information for use by state and local authorities, the aviation industry, and the public. The TAF forecast predicts an average annual growth rate of 1.78% for total aviation activity at CRG through the year 2026.

2006 FAA Aerospace Forecast – The FAA Aerospace forecast is a forecast developed by the FAA for the years 2006 through 2017. The FAA forecast is a macro-level forecast that anticipates operational activity for the entire United States. Although not necessarily representative of regional activity, the FAA forecast is valid for comparison and development of new forecasts. Since the majority of activity at CRG consists of general aviation operations, an average annual growth rate of 1.4% was used. According to the FAA forecast, the historic slowdown in the demand for business jets is waning due to increased security measures and processing times for commercial aircraft as well as the growing market for microjets which are expected to enter the market in 2006-2007.

2007 National Plan of Integrated Airport Systems (NPIAS) – The NPIAS is a report by the Secretary of Transportation to the United States Congress pursuant to Section 47103 of title 49, United States Code. The plan identifies airports within the country that are significant to air transportation and therefore eligible to receive grants under the FAA's Airport Improvement Program (AIP). The NPIAS provides activity forecasts for each of the airports within the system. For Craig, the NPIAS forecast had an average annual growth rate of 2.04%.

2005 Florida Aviation System Plan (FASP) – The FASP forecast is developed by the FDOT and is specific to the local economies within Florida rather than the entire nation as with the

Aerospace forecasts. FASP forecasts of operational activity are developed for all public-use airports within the state of Florida. The FASP forecast for CRG denoted an average annual growth rate of 1.62%.

2001 Master Plan Forecast – The most recent master plan update that was completed in 2001 included a preferred forecast of operational activity. The growth rate of this forecast was the second most aggressive forecast of all forecasts analyzed and closely resembled the historical forecast. The average annual growth rate of the 2001 MPU forecast is 2.10%.

Historical Operational Activity Forecast – Historic activity was used as the basis of the historical forecast. Past growth trends taken during the years 2000 and 2006 were used and incorporated into a straight-line linear regression through the year 2026. The historical forecast was revealed to be the most aggressive forecast of all the forecasts presented. The average annual growth rate of the historical forecast is 3.25%.

2005 Part 150 Study – A Part 150 noise study was completed in 2005 for Craig Municipal Airport. This study noted that the operational activity projected in the 2001 Master Plan Update deviated little from the 2005 TAF, and, therefore, were initially used as the baseline for the study. However, as stated earlier, the ATCT had recorded military itinerant operations that did not actually land at or depart from CRG. As a result, the Part 150 Study adjusted their 2004, 2009 and 2020 baseline forecasts to 162,115, 174,561, and 214,562, respectively, to more accurately reflect activity. Since these forecasts were reviewed and approved by the FAA, the forecasts were deemed to be reasonable and valid for comparison. As a result, the adjusted forecast showed an average annual growth rate of 1.80%.

Composite Forecast – The composite forecast was developed by taking the average of all other forecasts of aviation activity. The composite forecast resulted in an average annual growth rate of 2.11% through the forecast period.

Selected Forecast

After reviewing and comparing all forecasts, it was noticeable that all average annual growth rates fell within a close range of 1.4 and 3.25 percent. The historical forecast was deemed far too aggressive and the 2006 FAA Aerospace forecast was deemed too conservative to use in determining the selected forecast. Additional confidence was given to the FAR Part 150 Study forecast since it was based upon 2004 and 2005 data.

As a result, the selected forecast was based upon the average annual growth rates for the 2007 FAA TAF, 2007 NPIAS, 2005 FASP, 2001 Master Plan Update, and 2005 Part 150 Study. By applying the average growth rates for each five year period to the historic base year, the selected forecast predicts 237,049 total operations to occur in 2026. This represents an average annual growth rate of 1.86 percent for the period 2006 through 2026.

Although the 2005 Part 150 Study predicts approximately 1,200 operations more than the 2006 Master Plan Update, they are both reliable forecasts since they are based upon the market conditions and data available at the time. The 2005 FAR Part 150 Study used 2004 historic data, which was available at the time, as well as the 2005 FAA TAF data. Whereas, the 2006 Master Plan Update obtained historic data through the year 2006 and utilized updated forecasts from the FAA TAF (2007), FAA Aerospace Forecast (2006-2011), NPIAS (2007) and FASP. In addition, the 2006 Master Plan Update used 2006 historic data as the base for the forecasts, whereas, the FAR Part 150 used 2004 historic data for the base year. Also, during the two-year period between the two forecasts, socio-economic events have impacted general aviation and military operations. Such events include increasing oil and fuel prices, the on-going conflict in the Middle East as well as severe weather events (snowstorms, hurricanes, tornados, etc.), all of which impact aviation operations. Thus, based upon this data, the selected forecast is believed to be the most accurate based upon current events and operations. **Table 3-6** illustrates the historical data and forecasts for Craig Municipal Airport.

3.3.2.2 Instrument Operations Forecast

Although included in the total operations forecast, a separate forecast for IFR operations is also analyzed in this section. This analysis is important in that it supports the development of adequate facilities pertaining to aircraft operations under instrument meteorological conditions. The FAA Aerospace Forecast (2006-2017) predicts that there will be a 3.3% increase in instrument operations after 2007 due to introduction of the microjet aircraft. An analysis of historic data from 2000 to 2006 revealed fluctuations in growth varying from a 2.29% reduction in IFR activity to an increase of 17.56%. Hence, growth from 2006 to 2007 used the FAA TAF forecast growth rate of 2.4% whereas growth beyond 2007 used FAA Aerospace growth rate of 3.3% through the duration of the planning period. The instrument operations forecast is shown below in **Table 3-7**.

3.3.2.3 Local / Itinerant Operations Forecast

The operations forecast developed in **Table 3-6** is further broken down by local and itinerant activity in **Table 3-8**. A historic analysis of the TAF and tower data during the last two years revealed that CRG's operations are comprised of 58.96% to 60.54% of itinerant activity and the remaining 39.46% to 41.04% was made up of local activity. As shown in the based aircraft forecast, **Table 3-10**, the number of based aircraft is expected to continue increasing each year. This compiled with a likely increase in training operations is expected to raise the number of local operations thus diminishing the number of itinerant operations throughout the planning period. For this reason, the TAF 58.96% itinerant versus 41.04% local split was used as a starting point for the local/itinerant forecast, and then the rate was adjusted each year during the forecast period until it reached a 50/50 split by the year 2026. The forecast of local/itinerant operations is shown in **Table 3-8**.

Table 3-6
CRG Forecast of Total Operations

Year	2007 FAA TAF	2006 FAA Aero	2007 NPIAS	2005 FASP	2001 MPU	Historical	Part 150 Study	Composite	Selected Forecast
2000	131,210	137,856		138,307	155,741	137,856	137,856	139,804	137,856
2001	140,839	158,456		150,000	151,895	158,456	158,456	153,017	158,456
2002	168,485	163,114		158,769	156,909	163,114	163,114	162,251	163,114
2003	165,559	170,643		163,114	161,922	170,643	170,643	167,087	170,643
2004	170,076	162,115		170,643	166,936	162,115	162,115	165,667	162,115
2005	171,350	161,798		173,407	171,950	161,798	161,798	167,017	161,798
2006	**156,915**	**163,988**	**163,988**	**176,217**	**175,529**	**163,988**	**166,972**	**163,988**	**163,988**
2007	160,321	166,284	168,580	179,071	179,109	169,318	169,460	170,306	167,079
2008	163,808	168,612	171,951	181,972	182,688	174,820	171,990	173,692	170,229
2009	167,383	170,972	175,390	184,920	186,268	180,502	174,561	177,142	173,438
2010	171,045	173,366	178,898	187,916	189,847	186,368	177,646	180,727	176,707
2011	174,796	175,793	182,476	190,960	193,799	192,425	180,785	184,434	180,038
2012	178,639	178,254	186,126	194,054	197,751	198,679	183,980	188,212	183,325
2013	182,577	180,750	189,848	197,197	201,703	205,136	187,232	192,063	186,672
2014	185,495	183,280	193,645	200,392	205,655	211,803	190,541	195,830	190,080
2015	188,463	185,846	197,518	203,638	209,607	218,687	193,908	199,667	193,550
2016	191,482	188,448	201,468	206,937	213,970	225,794	197,335	203,634	197,084
2017	194,554	191,086	205,498	210,290	218,333	233,132	200,822	207,674	200,790
2018	197,677	193,762	209,608	213,696	222,697	240,709	204,371	211,788	204,566
2019	200,856	196,474	213,800	217,158	227,060	248,532	207,983	215,980	208,413
2020	204,090	199,225	218,076	220,676	231,423	256,610	214,562	220,666	212,332
2021	207,379	202,014	222,437	224,251	236,885	264,949	218,354	225,181	216,325
2022	210,726	204,842	226,886	227,884	242,475	273,560	222,213	229,798	220,320
2023	214,129	207,710	231,424	231,576	248,197	282,451	226,140	234,518	224,388
2024	217,593	210,618	236,052	235,327	254,055	291,631	230,136	239,345	228,531
2025	221,117	213,567	240,773	239,140	260,051	301,109	234,203	244,280	232,751
2026	223,527	216,556	245,589	243,014	266,188	310,895	238,342	249,159	237,049
AAGR 2006-2026	**1.78%**	**1.40%**	**2.04%**	**1.62%**	**2.10%**	**3.25%**	**1.80%**	**2.11%**	**1.86%**

Source: The LPA Group Incorporated, 2006

Table 3-7
Instrument Operations Forecast

	Preferred Total Operations	Instrument Ops (% of Total Ops)	Total Instrument Ops
2006	**163,988**	**20.76%**	**34,041**
2007	167,079	20.86%	34,858
2011	180,038	22.05%	39,692
2016	197,084	23.69%	46,688
2026	237,049	27.25%	64,596
AAGR (2006-2026)	**1.86%**	**1.37%**	**3.25%**

Source: The LPA Group Incorporated, 2007.

Table 3-8
Local / Itinerant Operations Forecast

Year	Total Ops	Itinerant %	Itinerant Ops	Local %	Local Ops
2006	163,988	58.96%	96,687	41.04%	67,301
2007	167,079	60.00%	100,248	40.00%	66,832
2011	180,038	57.00%	102,622	43.00%	77,416
2016	197,084	55.00%	108,396	45.00%	88,688
2026	237,049	50.00%	118,525	50.00%	118,525

Source: The LPA Group Incorporated, 2007.

3.3.2.4 TAF / Airport Forecast Comparison

During the FAA's review of the forecasts provided, it is necessary to compare the TAF forecast of operations to the selected forecast of operations. A comparison of this data reveals that the selected forecast closely resembles the TAF forecast. The selected forecast varies from 2.24% to 6.05% of the TAF forecast. A summary of the activity forecasts comparison are shown in **Table 3-9** below.

Table 3-9 TAF Forecast Comparison			
Year	**2007 FAA TAF**	**Selected**	**Deviation from TAF**
2006	**156,915**	**163,988**	**4.51%**
2007	160,321	167,079	**4.22%**
2008	163,808	170,229	**3.92%**
2009	167,383	173,438	**3.62%**
2010	171,045	176,707	**3.31%**
2011	174,796	180,038	**3.00%**
2012	178,639	183,325	**2.62%**
2013	182,577	186,672	**2.24%**
2014	185,495	190,080	**2.47%**
2015	188,463	193,550	**2.70%**
2016	191,482	197,084	**2.93%**
2017	194,554	200,790	**3.21%**
2018	197,677	204,566	**3.48%**
2019	200,856	208,413	**3.76%**
2020	204,090	212,332	**4.04%**
2021	207,379	216,325	**4.31%**
2022	210,726	220,320	**4.55%**
2023	214,129	224,388	**4.79%**
2024	217,593	228,531	**5.03%**
2025	221,117	232,751	**5.26%**
2026	223,527	237,049	**6.05%**

Source: The LPA Group Incorporated, 2007.

3.3.2.5 Historical and Projected Based Aircraft

In order to forecast based aircraft at CRG, historic and forecast data were obtained from several information sources including the FAA Terminal Area Forecast (TAF), the FAA Aerospace Forecast, the Florida Aviation System Plan (FASP) forecast, and the 2001 Master Plan Forecast.

Based aircraft at CRG historically included a combination of single-engine, multi-engine piston and turbine aircraft used for general aviation as well as military fixed wing and rotorcraft. However, in 2003 the Florida Army National Guard helicopters were relocated to Cecil Field. This resulted in a decrease in based aircraft from 353 to 319. However, based aircraft increased in 2005 and 2006 as a direct result of increased flight training operations at the airport.

Historically, the average annual growth rate for based aircraft between 2000 and 2005 was 6.59 percent – a distinctly high rate of growth. Using this growth rate, a historical forecast was developed through the year 2026. Although this forecast used past growth trends to develop the forecast, it is somewhat unrealistic to assume that the substantial growth rates experienced from 2000 to 2005 would continue through 2026. Under this assumption, the number of based aircraft would nearly triple over the next 20 years (from 327 to 1172). This being said, the historical forecast was assumed to be unrealistic and was therefore abandoned. A review of the FAA Aerospace Forecast and the 2001 Master Plan forecast both revealed conservative average annual growth rates of 1.4% and 1.36% respectively. The FASP and the Market Share forecasts denoted the most conservative growth rates at .68% and .85% respectively. After analyzing all historic data and forecasts for CRG, the FAA TAF forecast illustrated the most realistic growth rate through the planning period (2.65%). Applying the growth 2007 FAA TAF average annual growth rates to historic based aircraft resulted in a forecast of 543 based aircraft by the year 2026. However, this growth is highly dependent upon the Jacksonville Aviation Authority's ability to provide ample storage facilities to accommodate future demand.

Although the current percentage of local to itinerant operations is 58.96% and 41.04% respectively, this percentage is predicted to shift to more of a 50/50 split during the planning period as more based hangar facilities are available. Projections of based aircraft are shown in **Table 3-10.**

Aircraft Fleet Mix

Aside from determining the number of based aircraft, it is also vital to identify the aircraft fleet mix at the airport, both in terms of based aircraft and aircraft operations. Understanding the future fleet mix allows the airport to develop facilities to accommodate various types of aircraft that are forecast to operate at the airport. The future fleet mix data was derived from various sources, including discussions with airport management, assumptions derived from the 2005 Part 150 Study, the FAA Aerospace Forecast (2006-2017) as well as the previous master plan effort.

The Part 150 study provided detailed operational activity levels that were also broken down by aircraft type. The Part 150 fleet mix was determined by analyzing more than 5,500 flight strips, data provided by airport operations department, and also during discussions with ATCT personnel. For this reason, this dataset appeared to be the most recent and most detailed representation of the historic and current fleet mix at CRG. The Part 150 study provided operational breakdowns by itinerant and local operations. For the purpose of determining future fleet mix activity, the percentages were combined and then broken back down by local and itinerant activity. This data was used to determine the types and frequency of operations at CRG through 2006.

Table 3-10 Historic and Based Aircraft Forecast									
YEAR	**FAA TAF**	**FAA Aero**	**FASP**	**Market Share**	**2001 MPU**	**OPBA**	**Historical**	**Composite**	**Selected**
2000	223	n/a	n/a	n/a	223	223	223	223	223
2001	304	n/a	n/a	n/a	304	304	304	304	304
2002	319	n/a	n/a	n/a	319	319	319	319	319
2003	353	n/a	n/a	n/a	353	353	353	353	353
2004	319	n/a	n/a	n/a	319	319	319	319	319
2005	327	n/a	n/a	n/a	327	327	327	327	327
2006	**334**	**327**	**304**	**327**	**311**	**327**	**327**	**322**	**327**
2007	342	332	310	330	317	325	349	329	335
2008	349	336	313	333	322	331	372	336	343
2009	358	341	316	335	327	337	396	344	351
2010	366	346	320	338	333	361	422	355	359
2011	375	351	323	341	339	367	450	364	367
2012	384	355	326	344	345	383	480	374	376
2013	392	360	329	347	352	390	511	383	386
2014	403	365	332	350	358	406	545	394	395
2015	413	371	336	353	364	414	581	404	405
2016	424	376	339	356	371	431	619	416	416
2017	434	381	343	359	377	439	660	428	427
2018	446	386	346	362	384	457	703	441	438
2019	458	392	349	365	390	466	750	453	450
2020	470	397	353	368	397	485	799	467	462
2021	483	403	356	371	402	494	852	480	475
2022	496	408	360	374	407	514	908	495	488
2023	510	414	364	378	413	523	968	510	501
2024	524	420	367	381	418	544	1031	526	515
2025	539	426	371	384	423	554	1099	542	529
2026	552	432	375	387	429	576	1172	560	543
AAGR 2000-2006	6.96%	NA	NA	NA	5.70%	NA	6.59%	6.34%	6.59%
AAGR 2006-2011	2.34%	1.40%	1.22%	0.85%	1.75%	2.36%	6.59%	2.44%	2.34%
AAGR 2012-2016	2.51%	1.40%	0.98%	0.85%	1.78%	2.99%	6.59%	2.73%	2.64%
AAGR 2017-2021	2.71%	1.40%	0.93%	0.85%	1.61%	2.99%	6.59%	2.94%	2.57%
AAGR 2022-2026	2.70%	1.40%	1.01%	0.85%	1.29%	2.89%	6.59%	3.13%	2.70%
AAGR 2006-2026	2.54%	1.40%	1.05%	0.85%	1.62%	2.87%	6.59%	2.80%	2.57%
Source: The LPA Group Incorporated, 2007									

The FAA Aerospace forecast (2006-2017) includes a fleet mix forecast for the nation as a whole; however, a comparison of the FAR Part 150 data to the FAA's forecast revealed inconsistencies in fleet mix percentages primarily in the area of multi-engine aircraft and rotorcraft. Since the FAA's forecast is representative of the entire country rather than specific to the types of activity that occur at CRG, the FAA forecast could not be used to forecast the future fleet mix for CRG. It is logical to assume that the fleet mix at CRG would remain consistent with levels witnessed during prior years; however, it is also practical to assume that the FAA's forecast is also realistic in some aspects due to their consideration of new aircraft and industry trends. The FAA's forecast denoted minimal growth in single engine and multi-engine aircraft (.3%, and .1%) respectively; whereas, the largest areas of growth were recognized in the jet and rotorcraft categories. In order to produce an accurate fleet mix forecast, it was necessary to integrate CRG's existing fleet mix with the FAA's forecast. Specifically, CRG's existing fleet mix percentages were used as a starting point during the base year (2006); however, each category was then projected outward using the FAA's average annual growth rate (AAGR) for each type of aircraft through the remainder of the forecast period (through 2017). Since it is nearly impossible to anticipate changes in fleet beyond 2017, the fleet mix percentages were held constant through the remainder of the forecast (2018-2026). The operational fleet mix forecast for CRG is shown below in **Table 3-11**. The based aircraft fleet mix forecast is shown in **Table 3-12**.

Critical Aircraft

Determination of the critical aircraft is fundamental in developing an airport's design criteria in addition to identification of the airport reference code (ARC). Characteristically, the critical aircraft is defined as the most demanding aircraft (highest approach speed and longest wingspan) that utilizes the airport on a regular basis. FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)*, defines substantial use as scheduled commercial service or at least 500 total aircraft operations a year. Further, the critical aircraft reference code is that which represents the lowest maximum allowable crosswind.

2006 airport operations data provided from the FAA (GCR Inc.) database, CRG Air Traffic Control records, and information provided by existing tenants identified that the critical aircraft at CRG is based upon two aircraft groups rather than a single aircraft. Both ARC B-II and C-I group aircraft were responsible for more than 500 operations each in 2006[1]. Applying FAA planning criteria, the existing airport reference code for CRG should be upgraded from a B-II to a C-II. **Table 3-13** provides a forecast of the jet operations by aircraft type during the planning period. This forecast indicates that 628 ARC C-II (i.e. Citation X or other) aircraft operations are forecast for 2026 due to the popularity of these jet aircraft within the business/corporate market.

[1] In 2006, 2,713 operations were associated with B-II aircraft, 907 operations with C-I aircraft, and 100 operations associated with C-II aircraft. A list of C-II aircraft is provided in **Section 5.1.2**, *Runway Length Requirements*, and **Appendix E**, *Runway Length Justification*. Historic data based upon FAA GCR Database, CRG ATCT information and Tenant logs.

Table 3-11
Fleet Mix Operations Forecast

		SEP		MEP		Turbo Prop		Jet		Rotor		Total %
Year	**Total Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**
2006	163,988	66.00%	108,232	20.00%	32,798	10.00%	16,399	3.00%	4,920	1.00%	1,640	100.00%
2007	167,079	65.36%	109,203	19.91%	33,265	10.09%	16,858	3.36%	5,614	1.27%	2,122	100.00%
2008	170,229	64.73%	110,189	19.82%	33,739	10.18%	17,329	3.73%	6,350	1.55%	2,639	100.00%
2009	173,438	64.09%	111,156	19.73%	34,219	10.27%	17,812	4.09%	7,094	1.82%	3,157	100.00%
2010	176,707	63.45%	112,121	19.64%	34,705	10.36%	18,307	4.45%	7,863	2.09%	3,693	100.00%
2011	180,038	62.82%	113,100	19.55%	35,197	10.45%	18,814	4.82%	8,678	2.36%	4,249	100.00%
2012	183,325	62.18%	113,991	19.45%	35,657	10.55%	19,341	5.18%	9,496	2.64%	4,840	100.00%
2013	186,672	61.55%	114,897	19.36%	36,140	10.64%	19,862	5.55%	10,360	2.91%	5,432	100.00%
2014	190,080	60.91%	115,778	19.27%	36,628	10.73%	20,396	5.91%	11,234	3.18%	6,045	100.00%
2015	193,550	60.27%	116,653	19.18%	37,123	10.82%	20,942	6.27%	12,136	3.45%	6,677	100.00%
2016	197,084	59.64%	117,541	19.09%	37,623	10.91%	21,502	6.64%	13,086	3.73%	7,351	100.00%
2017	200,790	59.00%	118,466	19.00%	38,150	11.00%	22,087	7.00%	14,055	4.00%	8,032	100.00%
2018	204,566	59.00%	120,694	19.00%	38,868	11.00%	22,502	7.00%	14,320	4.00%	8,183	100.00%
2019	208,413	59.00%	122,964	19.00%	39,598	11.00%	22,925	7.00%	14,589	4.00%	8,337	100.00%
2020	212,332	59.00%	125,276	19.00%	40,343	11.00%	23,357	7.00%	14,863	4.00%	8,493	100.00%
2021	216,325	59.00%	127,632	19.00%	41,102	11.00%	23,796	7.00%	15,143	4.00%	8,653	100.00%
2022	220,320	59.00%	129,989	19.00%	41,861	11.00%	24,235	7.00%	15,422	4.00%	8,813	100.00%
2023	224,388	59.00%	132,389	19.00%	42,634	11.00%	24,683	7.00%	15,707	4.00%	8,976	100.00%
2024	228,531	59.00%	134,833	19.00%	43,421	11.00%	25,138	7.00%	15,997	4.00%	9,141	100.00%
2025	232,751	59.00%	137,323	19.00%	44,223	11.00%	25,603	7.00%	16,293	4.00%	9,310	100.00%
2026	237,049	59.00%	139,859	19.00%	45,039	11.00%	26,075	7.00%	16,593	4.00%	9,482	100.00%

Note: Due to rounding, numbers may not sum up.
Source: The LPA Group Incorporated, 2006.

Table 3-12 Based Aircraft Fleet Mix Forecast											
		SEP		MEP		Turbo Prop		Jet		Rotor	
Year	Total Based Aircraft	%	Aircraft	%	Aircraft	%	Aircraft	%	Aircraft	%	Aircraft
2006	327	66.00%	216	20.00%	65	10.00%	33	3.00%	10	1.00%	3
2007	335	65.36%	219	19.91%	67	10.09%	34	3.36%	11	1.27%	4
2011	367	62.82%	231	19.55%	72	10.45%	38	4.82%	18	2.36%	9
2016	416	59.64%	248	19.09%	79	10.91%	45	6.64%	28	3.73%	15
2026	543	59.00%	320	19.00%	103	11.00%	60	7.00%	38	4.00%	22

Note: 2006 data was obtained from Tenant surveys and Airport Management data in September 2006
Source: The LPA Group Incorporated, 2006.

Table 3-13 Forecast Turbojet Fleet Mix											
		ARC A-I		ARC B-I		ARC B-II		ARC C-I		ARC C-II	
Year	Total Turbojet Operations	Ops[1]	%[2]	Ops	%[2]	Ops	%[2]	Ops	%[2]	ARC C-II Ops	%[2]
2006	4,920	0	0.00%	1,200	24.39%	2,713	55.14%	907	18.44%	100	2.03%
2007	5,614	0	0.00%	1,358	24.19%	3,080	54.87%	1,042	18.57%	117	2.37%
2011	8,678	93	1.07%	2,017	23.25%	4,669	53.81%	1,696	19.55%	202	2.33%
2016	13,086	193	1.47%	2,895	22.12%	6,871	52.51%	2,775	21.21%	352	2.69%
2021	15,143	307	2.03%	3,188	21.05%	7,759	51.24%	3,405	22.49%	483	3.19%
2026	16,593	465	2.80%	3,319	20%	8,297	50.00%	3,886	23.42%	628	3.78%

Notes: [1]Designates light sport, experimental and very light jet aircraft
[2]Percent of operations to total Jet operations
Sources: FAA Aerospace Forecasts (2006-2017; 2007-2020), Honeywell Business Jet Forecast 2007-2017, NBAA Factbook, 2004, FAA ATC Database, 2006, FAA GCR INC. Operational Data, 2007, CRG FAR Part 150 Study, 2006, Tenant Surveys, Fuel Flowage Data, and The LPA Group, Inc. 2007.

The impact of the critical aircraft on runway length is discussed in detail in **Appendix E**, *Runway Length Analysis.*

3.3.2.6 Peak Activity Projections

Annual projections generally provide a good overview of the activity at an airport, but may not reflect operational characteristics of a facility. As such, peak forecasts are developed based on the fact that annual demand is typically not equally distributed throughout the entire year. In many cases, facility requirements are not driven by annual demand, but rather by capacity shortfalls and delays experienced during peak times.

Peak month operations were determined by evaluating historical monthly activity that was tallied by city tower personnel. An analysis of the activity between the years 2000 and 2006 revealed that the busy month typically occurred sometime during the fall of each year with October being one of the busiest months. Once the busy month for each year was determined, the operations performed were divided by the annual operations in order to establish a percentage of busy month operations. The percentage of each year was then averaged in order to develop a peak month operations percentage factor of 10.91% as shown in **Table 3-14**.

Table 3-14
Historic Peak Month Percentage of Operations

Peak Month / Year	Peak Month Ops	Total Ops	% of total ops
Oct-00	15,402	125,233	12.30%
Oct-01	18,306	158,769	11.53%
Oct-02	15,691	163,064	9.62%
Oct-03	17,491	170,629	10.25%
Oct-04	17,813	174,114	10.23%
May-05	15,876	161,988	9.80%
Apr-06	15,574	123,533	12.61%
		Average	**10.91%**

Source: The LPA Group Incorporated, 2006.

This percentage was then multiplied by the number of forecasted operations in order to develop the peak month operations for the forecast years. The result of this calculation was divided by 30.42 days to find the average day peak month, (365 days divided by 12 months = 30.42 days). Peak hour calculations are usually comprised of 10 to 20 percent of the average day peak month operations. For this analysis, 15 percent of the average day peak month traffic was used to generate peak hour traffic. The results of these calculations for both historic and forecast years are shown in **Table 3-15**.

Table 3-15 Peak Hour Operations Breakdown								
Year	**Ops**	**Peak Month (10.91%)**	**Avg. Day Peak Month**	**Peak Hour (15% of ADPM)**	**% Itinerant Ops**	**Itinerant Peak hour Ops**	**% Local Ops**	**Local Peak Hour Ops**
2006	163,988	17,891	588	88	58.96%	52	41.04%	36
2007	167,079	18,228	599	90	60.00%	54	40.00%	36
2008	170,229	18,572	611	92	60.00%	55	40.00%	37
2009	173,438	18,922	622	93	60.00%	56	40.00%	37
2010	176,707	19,279	634	95	58.00%	55	42.00%	40
2011	180,038	19,642	646	97	58.00%	56	42.00%	41
2012	183,325	20,001	657	99	57.00%	56	43.00%	42
2013	186,672	20,366	669	100	57.00%	57	43.00%	43
2014	190,080	20,738	682	102	56.00%	57	44.00%	45
2015	193,550	21,116	694	104	56.00%	58	44.00%	46
2016	197,084	21,502	707	106	55.00%	58	45.00%	48
2017	200,790	21,906	720	108	55.00%	59	45.00%	49
2018	204,566	22,318	734	110	54.00%	59	46.00%	51
2019	208,413	22,738	747	112	54.00%	61	46.00%	52
2020	212,332	23,165	762	114	53.00%	61	47.00%	54
2021	216,325	23,601	776	116	53.00%	62	47.00%	55
2022	220,320	24,037	790	119	52.00%	62	48.00%	57
2023	224,388	24,481	805	121	52.00%	63	48.00%	58
2024	228,531	24,933	820	123	51.00%	63	49.00%	60
2025	232,751	25,393	835	125	51.00%	64	49.00%	61
2026	237,049	25,862	850	128	50.00%	64	50.00%	64

Source: The LPA Group Incorporated, 2006.

Peak Passenger Demand

Since the airport is classified as a general aviation airport, the passenger forecast was based upon the ratio of pilots and GA passengers per GA activity at the airport. Using the FAA forecast methodology, GA passengers were determined using an average of 2.5 passengers (1 pilot and 1.5 passengers) per GA takeoff. Thus, to forecast passengers, peak operations were divided in half and then multiplied by 2.5. By using the peak operations established in the previous section, peak passengers were determined as shown below in **Table 3-16**. The forecast of peak passengers is used in the following chapter to determine FBO, parking facility, and access requirements through the remainder of the planning period.

Table 3-16 Peak Hour Passengers			
Year	**Peak Hour Ops**	**50% of Peak Ops**	**Peak Passengers**
2006	88	44	110
2007	90	45	112
2011	97	48	121
2016	106	53	133
2026	128	64	159
Source: The LPA Group, Incorporated, 2007.			

3.4 Summary

In summary, the data and methods used to forecast aviation demand for the airport are consistent with those used by the FAA and other airports located within the State. The forecasts presented in this study, as shown in **Table 3-17**, are considered to accurately reflect the activity anticipated at CRG through 2026 provided facilities necessary to accommodate this demand are made available. Overall, the current activity at CRG is expected to show moderate growth throughout the forecast period.

Table 3-17 Airport Planning Forecasts Forecast levels and growth rates										
Craig Municipal Airport										
City of Jacksonville		Base Year: **2006**								
						Average Annual Compound Growth Rates				
	Base Yr. Level	**Base Yr. + 1yr.**	**Base Yr. + 5yrs.**	**Base Yr. + 10yrs.**	**Base Yr. + 15yrs.**	**Base Yr. + 20yrs.**	**Base yr. to +1**	**Base yr. to +5**	**Base yr. to +10**	**Base yr. to +15**	**Base yr. to +20**
Operations											
Itinerant:											
Air Carrier	0	0	0	0	0	0	NA	NA	NA	NA	NA
Air Taxi	7,636	8,540	8,895	9,234	9,767	10,097	11.83%	2.58%	1.74%	1.65%	1.41%
GA	77,330	78,983	82,272	85,403	90,332	93,383	2.14%	1.04%	0.91%	1.04%	0.95%
Military	11,720	12,725	13,255	13,759	14,553	15,045	8.57%	2.07%	1.47%	1.45%	1.26%
Total Itinerant Operations	96,686	100,248	104,422	108,396	114,652	118,525	3.68%	1.29%	1.04%	1.14%	1.02%
Local:											
GA	67,052	66,832	75,616	88,688	101,673	118,525	-0.33%	2.02%	2.57%	2.81%	2.89%
Military	250	0	0	0	0	0	NA	NA	NA	NA	NA
Total Local Operations	67,302	66,832	75,616	88,688	101,673	118,525	-0.70%	1.96%	2.54%	2.79%	2.87%
TOTAL OPERATIONS	**163,988**	**167,079**	**183,325**	**200,790**	**216,325**	**237,049**	**1.89%**	**1.88%**	**1.86%**	**1.86%**	**1.86%**

Table 3-17 (Con't) Airport Planning Forecasts Forecast Levels and Growth Rates										
Craig Municipal Airport										
City of Jacksonville	Base Year: **2006**									
						Average Annual Compound Growth Rate				
	Base Yr. Level	**Base Yr. + 1yr.**	**Base Yr. + 5yrs.**	**Base Yr. + 10yrs.**	**Base Yr. + 15yrs.**	**Base Yr. + 20yrs.**	**Base yr. to +1**	**Base yr. to +5**	**Base yr. to +10**	**Base yr. to +15**	**Base yr. to +20**
Instrument Operations	34,041	34,858	39,692	46,688	54,917	64,596	2.40%	2.59%	2.91%	3.24%	3.25%
Peak Hour Operations	88	90	97	106	116	128	1.89%	1.57%	1.69%	1.86%	1.86%
Based Aircraft											
Single Engine (Piston)	216	219	231	248	280	320	1.36%	1.11%	1.26%	1.76%	1.99%
Multi Engine	65	67	72	79	90	103	1.88%	1.56%	1.77%	2.17%	2.30%
Turboprop	33	34	38	45	52	60	3.27%	2.71%	3.01%	3.17%	3.06%
Jet	10	11	18	28	33	38	14.75%	10.33%	9.85%	8.48%	7.01%
Helicopter	3	4	9	15	19	22	30.25%	17.66%	15.19%	12.45%	9.93%
Other	0	0	0	0	0	0	NA	NA	NA	NA	NA
TOTAL	**327**	**335**	**367**	**416**	**475**	**543**	**2.34%**	**1.96%**	**2.21%**	**2.52%**	**2.57%**
Operational Factors											
Total GA Operations Per Based Aircraft (OPBA)	442	436	430	419	404	390	-1.32%	-0.45%	-0.48%	-0.59%	-0.61%
Local GA Operations Per Based Aircraft	206	200	206	213	214	218	-2.97%	0.00%	0.33%	0.26%	0.30%

Source: *The LPA Group Incorporated*, 2007

Note: Due to rounding or undisclosed editing, numbers may not sum up. Right hand side of worksheet has embedded formulas for average annual compound growth rate calculations.

CHAPTER FOUR
Demand Capacity and Facility Requirements

4.1 Overview

In order to properly plan for future demand and development at Craig Municipal Airport (CRG), it is necessary to identify the types and quantities of facilities needed to accommodate projected demand. This chapter applies approved forecast data, determined in **Chapter 3**, in conjunction with FAA and FDOT planning criteria to determine the airfield and landside facility requirements.

As a result, this chapter identifies the adequacy of existing facilities, needed new facilities and the anticipated time frame for development. Landside and airside requirements will then be used as the basis for airside and landside alternative development provided in **Chapter 5** of this report.

Airside facilities typically include: runways, taxiways, navigational aids, airfield lighting, marking and signage, etc. and are related to the arrival, departure and ground movement of aircraft. Landside facilities provide an interface between the air and ground transportation methods and include general aviation terminal facilities, aircraft hangars, aircraft parking aprons, automobile parking and access as well as various airport support facilities.

4.2 Physical Planning Criteria

Airport physical planning criteria, as outlined in **FAA Advisory Circular (AC) 150/5300-13**, is based primarily on the most demanding aircraft or group of aircraft which use the airport on a regular (at least 500 operations[1]) basis. Further, the critical aircraft reference code is that which represents the lowest maximum allowable crosswind.

In the case of CRG, the use of the airport is based upon its current and future role within the Jacksonville Aviation System. The airports within the Jacksonville Aviation System include Jacksonville International Airport (JAX), Cecil Field (VQQ), Craig Municipal and Herlong Airports (HEG). Due to CRG's proximity to JAX as well as the Jacksonville central business district, it is considered the general aviation reliever for JAX, which includes corporate or

[1] FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)*, defines substantial use as scheduled commercial service or at least 500 total aircraft operations a year.

business aircraft. This impacts the existing and anticipated aircraft fleet mix using the airport and defines the airport design criteria.

4.2.1 Airport Role and Service Level

According to the *Florida Aviation System Plan (*FASP*), 2007*, and the *FAA National Plan of Integrated Airport Systems* (NPIAS), *2007-2011*, CRG is designated as a reliever airport. A reliever airport absorbs general aviation operations from busy commercial service airports (i.e. Jacksonville International Airport). Relievers typically have large numbers of based aircraft and high levels of aircraft operations. The FASP includes CRG in the Community Airport (GA) category. The Northeast Florida Regional Overview of the FASP reports CRG as the busiest GA airport in the region handling over 28 percent of the regional GA traffic. The Regional Overview indicates that State funding should be targeted to CRG to enhance services and increase airport capacity.

Further, since CRG is included in the NPIAS published by the U.S. Department of Transportation, it is eligible for GA Entitlement funding. Within the NPIAS, the FAA defines the role of public use airports as essential to meet the needs of civil aviation and to support the Department of Defense (DOD) and U.S. Postal System. Each airport's role is classified as one of five basic service levels: commercial service - primary, commercial service - non-primary, reliever, transport and General Aviation (GA). These levels describe the type of service that the airport is expected to provide the community during the NPIAS five (5) year planning period. It also represents the funding categories determined by Congress to assist in airport development. CRG is categorized as a GA Reliever Airport, based upon data collected and transmitted to Congress by the Secretary of Transportation for the 2007-2011 planning period, the most recent edition of the NPIAS.

JAA leases space to two fixed based operators (FBOs) at CRG: Sky Harbor and Craig Air Center. Both FBOs offer a wide range of services including hangars, tie-downs, fueling and maintenance. CRG is also home to aviation training programs connected to local colleges/universities, including Comair for Jacksonville University (JU) and Sterling Flight Services for the Florida Community College of Jacksonville (FCCJ) contract. In addition, CRG is home to tenants providing aviation training, aircraft sales, service and maintenance, avionics, airframe and power plant maintenance, aircraft charter services, and aircraft and automobile rentals. Based upon discussions with JAA Management, CRG will continue to function as a General Aviation reliever airport for Jacksonville International Airport. In this role, the airport provides services for small and large GA business traffic, flight training and on-call air taxi services. Development of these facilities at CRG will focus on accommodating anticipated demand. Flight training is a large component of this airport's general aviation activity. Approximately 55 percent of the airport's annual operations are related to flight training activity. To date, there are four businesses located on the airport that provide flight training.

General aviation operations associated with corporate and business users are also common at the airport. The airport estimates that 35 to 40 percent of its annual general aviation operations are business related. Approximately 10 percent of the airport's based aircraft are owned by local businesses. The airport also attracts a number of transient or visiting general aviation aircraft. Approximately 25 percent of all visiting general aviation aircraft fall into the business jet category[2], including, but not limited to, the Cessna Citation Jet (CJ-2), Cessna Citation Excel (560XL), Falcon 900EX, Beechjet 400A, etc.

The airport expects continued growth primarily in flight training, corporate jets and air taxi operations including those related to Very Light Jets (VLJ) aircraft.

4.2.2 Airport Reference Code

The FAA has established an airport reference code (ARC) to define the operational characteristics of the most demanding aircraft using the airport. The ARC consists of two components: the aircraft approach speed, which is based upon 1.3 times the aircraft's stall speed in landing configuration, and airplane design group (ADG), which relates to the aircraft wingspan and tail height. Generally, aircraft approach speed applies to runways and runway-related facilities, while wingspan and tail height relates to runway and taxiway width and separation criteria involving taxiways, taxi lanes and landside facilities.

TABLE 4.1
FAA AIRCRAFT CLASSIFICATION CRITERIA

Aircraft Approach Category	Approach Speed (Knots)	Airplane Design Group	Wing Span (ft)	Tail Height (ft)
A	< 91	I	< 49	< 20
B	91 < 121	II	49 < 79	20 < 30
C	121 < 141	III	79 < 118	30 < 45
D	141 < 166	IV	118 < 171	45 < 60
E	166	V	171 < 214	60 < 66
		VI	214 < 262	66 < 80

Source: FAA Advisory Circular (AC) 150/5300-13

The airport serves the needs of corporate users and all facets of general aviation, and, as of 2006, was home to 31 turboprop and 12 turbojet aircraft as shown in **Table 4.2**. However since this writing, the number of based turbojet aircraft has increased to 14 with the addition of a Learjet 45 by PSS World Medical and a Learjet 35 by CAC. Of the 4,920 turbojet operations recorded in 2006, approximately 33.7 percent or 1,662 operations were associated with based turbojet aircraft.

[2] Source: The Florida Aviation System Plan, April 2005, CRG Management, and ATC data.

TABLE 4.2 BASED TURBINE ENGINE AIRCRAFT 2006			
Aircraft	**ARC**	**Based Aircraft[1]**	**Operations**
Turbojet Aircraft:			
Mitsubishi MU-300	B-I	3	109
Cessna 501	B-I	1	76
Cessna 525 (CJ1)	B-I	1	110
Cessna 525A (CJ2)	B-II	1	2
Cessna 550	B-II	1	97
Cessna 560	B-II	3	830
Cessna 560 XL	B-II	2	438
	Total Turbojet	**12**	**1,662**
Turboprop Aircraft:			
Lanceair IV[2]	A-I	1	4
Cessna 414A	B-I	1	1
Piper PA-34-220T	B-I	10	8
Piper PA-44-180	B-I	10	5
Piper PA46-500 TP	B-I	8	1
Zenair CH-2000[2]	A-I	1	13
	Total Turboprop	**31**	**32**
	Total Aircraft	**43**	**1,694**

Notes:
[1]Based Aircraft numbers were obtained from GCR data and limited information provided by existing tenants through December 2006.
[2]Designates light sport and experimental turboprop aircraft.
Sources: Tenant Surveys, Craig Municipal Airport Management, FAA GCR Database 2006, and The LPA Group Incorporated. 2007

Transient turbojet aircraft operations, according to 2006 data (the last full year of available data), are provided in **Table 4.3**.

TABLE 4.3 TURBOJET TRANSIENT AIRCRAFT ONLY OPERATIONS 2006		
Aircraft	**ARC**	**Operations[1]**
Cessna 501	B-I	205
Dassault Falcon 10	B-I	107
MU300	B-I	295
Cessna 525 (CJ1)	B-I	297
Cessna 525A (CJ2)	B-II	237
Cessna 525B (CJ3)	B-II	44
Cessna 550	B-II	190
Cessna 560 XL	B-II	170
Cessna 560	B-II	639
Dassault Falcon 2000EX	B-II	10
Falcon 50	B-II	48
Falcon 50EX	B-II	8
Beechjet 400A	C-I	213
Israel Westwind	C-I	70
Learjet 31/31A	C-I	181
Learjet 35	C-I	121
Learjet 45	C-I	322
Cessna 650 (Citation VI)	C-II	10
Cessna 680 (Sovereign)	C-II	13
Cessna 750 (Citation X)	C-II	21
Challenger (Series 600)	C-II	19
Falcon 900EX	C-II	38
		3,258

Notes: [1]Transient Aircraft Data obtained from 2006 GCR Database, FAA ATADS data 2006, and CRG ATCT information
Sources: Tenant Surveys, Craig Municipal Airport Management, FAA GCR Database 2006, and The LPA Group Incorporated, 2007

Table 4.4 provides the based and transient fleet mix for the base year, 2006.

TABLE 4.4 2006 BASED AND TRANSIENT FLEET MIX											
		ARC A-I[1]		**ARC B-I**		**ARC B-II**		**ARC C-I**		**ARC C-II**	
	Total Jet Operations	**Ops**	**%[2]**	**Ops**	**%[2]**	**Ops**	**%[2]**	**Ops**	**%[2]**	**Ops**	**%[2]**
Based	1,662	0	0.00%	295	17.75%	1,367	82.25%	0	0	0	0.00%
Transient	3,258	0	0.00%	905	27.78%	1,346	41.31%	907	27.84%	100	3.06%
TOTAL	**4,920**	**0**	**0.00%**	**1,200**	24.39%	**2,713**	55.14%	**907**	18.44%	**100**	2.03%

Notes:
[1]Designates operations associated with experimental jets and very light jets
[2]Percent of operations to total Jet operations
Sources: FAA GCR 2006 Data, FAA ATADS, CRG ATCT Database, Tenant Surveys, The LPA Group Incorporated, 2007

4.2.3 Airport Fleet Mix

Based aircraft and operational fleet mix data was determined for the base year 2006 using several sources including FAA Air Traffic Data, FAA GCR 2006 Data, Craig Airport FAR Part 150 Study, airport operations, and information provided from surveys received from both Fixed Based Operators (FBOs) and existing airport tenants. The future fleet mix was adjusted as required to reflect industry trends including the introduction of very light jets and aircraft fractional ownership. A sample of aircraft that typically use CRG is provided in **Figure 4.1**, *Aircraft Classifications.*

As outlined in **Chapter 3**, *Aviation Forecasts*, the Part 150 study provided operational breakdowns by itinerant and local operations which were used to determine the types and frequency of operations through 2006. This information was compared to CRG's existing fleet mix information which was used as the baseline for the fleet mix forecast through 2026. Each category was projected outward using the FAA's average annual growth rate (AAGR) for each type of aircraft through the remainder of the forecast period (through 2017). Since it is nearly impossible to anticipate changes in fleet beyond 2017, the fleet mix percentages were held constant through the remainder of the forecast period (2018-2026). As outlined in Chapter 3, the operational fleet mix forecast and based aircraft fleet mix information are provided in **Tables 4.5 and 4.6**, respectively.

Military helicopter operations, in the 2006 Craig Airport FAR Part 150 Study, were included in the fleet mix for the base year 2004 and 2009. However, military itinerant activity was removed from the long-term fleet mix when it was determined that little of this type of activity was actually occurring at CRG.[3]

4.2.3.1 Critical Aircraft

Although both the 1994 and 2001 master plan update recommended that the ARC increase from a B-II to a C-II, the ARC code was never upgraded according to information obtained from JAA and FAA. Considering existing based and transient aircraft operations, as shown in **Table 4.5**, *Turbojet Fleet Mix*[4], the existing critical aircraft at CRG is based upon a group rather than a single aircraft. Since both ARC B-II and C-I aircraft exceed the required 500 operations threshold, facility requirements, based upon **FAA Circular 150/5300-13**, must be designed to an ARC C-II aircraft code. **Figure 4-1**, *Aircraft Classifications*, provides an illustrative sample of aircraft in the ARC B-I, B-II, C-I and C-II categories.

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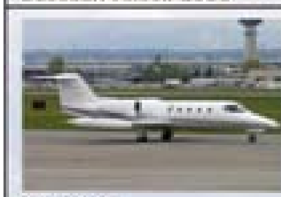
[3] Craig Airport FAR Part 150 Study - Noise Exposure Maps and Noise Compatibility Program, Chapter 14, Pg. 14-7, ESA Airports, 2006

[4] Transient and Based turbine engine aircraft data obtained from FAA GCR Database, CRG Air Traffic Control Tower personnel, FAA ATADS data and information obtained from existing tenants.

Figure 4.1
Aircraft Classifications

Sample Aircraft	Aircraft Approach Category	Airplane Design Group
 Cessna 150	A	I
 DHC-6-300 Twin Otter	A	II
 Dassault Falcon 10	B	I
 Dassault Falcon 2000	B	II
 Learjet 35	C	I
 Dassault Falcon 900EX	C	II

Source: The LPA Group Incorporated, 2007

Further, based upon discussions and over 50 letters received from existing and future airport tenants, the National Business Aviation Association, Inc. and approved FAA twenty year aircraft forecasts (**Appendix E,** *Runway Length Analysis)*, operations associated with C-II aircraft will continue to increase over the twenty year planning period.

Typically, future planning considers the needs of potential aviation demand in conjunction with capital improvement decisions. The FAA requires that runways, taxiways and apron areas be designed according to the wingspan requirements of the most demanding aircraft likely to operate within a functional area of the airport. For example, taxilanes providing access to T-Hangar facilities are normally developed to accommodate ADG I and II requirements since they serve smaller single-engine and multi-engine piston aircraft, whereas runways and taxiways must be designed ARC C-II (critical aircraft) standards.

Airport activity forecasts, as provided in **Chapter 3**, were approved by the FAA and FDOT in February 2007. According to the based aircraft fleet data recorded for 2006 obtained from FAA 5010, airport management and tenant survey data, 327 aircraft were based at the airport. Of those 327 based aircraft, 33 aircraft were identified as turboprop and 10 were recorded as turbojet aircraft. However based upon information obtained in June 2007, it was actually found that the two aircraft identified as turboprops were actually turbojet aircraft. As a result, **Table 4.6**, *Based Aircraft Fleet Mix Forecast*, provides an updated forecast of based aircraft using the approved methodology outlined in **Chapter 3**.

As of February 2008, CRG management noted that two additional turbojet aircraft (a Learjet 45 and Learjet 35) were now based at CRG. Since this increase is aligned with the based aircraft fleet forecast, no other adjustments were required.

TABLE 4.5 FLEET MIX OPERATIONS FORECAST												
		SEP		MEP		Turbo Prop		Jet		Rotor		Total %
Year	Tot Ops	%	Ops	%	Ops	%	Ops	%	Ops	%	Ops	
2006	163,988	66.00%	108,232	20.00%	32,798	10.00%	16,399	3.00%	4,920	1.00%	1,640	100.00%
2007	167,079	65.36%	109,203	19.91%	33,265	10.09%	16,858	3.36%	5,614	1.27%	2,122	100.00%
2008	170,229	64.73%	110,189	19.82%	33,739	10.18%	17,329	3.73%	6,350	1.55%	2,639	100.00%
2009	173,438	64.09%	111,156	19.73%	34,219	10.27%	17,812	4.09%	7,094	1.82%	3,157	100.00%
2010	176,707	63.45%	112,121	19.64%	34,705	10.36%	18,307	4.45%	7,863	2.09%	3,693	100.00%
2011	180,038	62.82%	113,100	19.55%	35,197	10.45%	18,814	4.82%	8,678	2.36%	4,249	100.00%
2012	183,325	62.18%	113,991	19.45%	35,657	10.55%	19,341	5.18%	9,496	2.64%	4,840	100.00%
2013	186,672	61.55%	114,897	19.36%	36,140	10.64%	19,862	5.55%	10,360	2.91%	5,432	100.00%
2014	190,080	60.91%	115,778	19.27%	36,628	10.73%	20,396	5.91%	11,234	3.18%	6,045	100.00%
2015	193,550	60.27%	116,653	19.18%	37,123	10.82%	20,942	6.27%	12,136	3.45%	6,677	100.00%
2016	197,084	59.64%	117,541	19.09%	37,623	10.91%	21,502	6.64%	13,086	3.73%	7,351	100.00%
2017	200,790	59.00%	118,466	19.00%	38,150	11.00%	22,087	7.00%	14,055	4.00%	8,032	100.00%
2018	204,566	59.00%	120,694	19.00%	38,868	11.00%	22,502	7.00%	14,320	4.00%	8,183	100.00%
2019	208,413	59.00%	122,964	19.00%	39,598	11.00%	22,925	7.00%	14,589	4.00%	8,337	100.00%
2020	212,332	59.00%	125,276	19.00%	40,343	11.00%	23,357	7.00%	14,863	4.00%	8,493	100.00%
2021	216,325	59.00%	127,632	19.00%	41,102	11.00%	23,796	7.00%	15,143	4.00%	8,653	100.00%
2022	220,320	59.00%	129,989	19.00%	41,861	11.00%	24,235	7.00%	15,422	4.00%	8,813	100.00%
2023	224,388	59.00%	132,389	19.00%	42,634	11.00%	24,683	7.00%	15,707	4.00%	8,976	100.00%
2024	228,531	59.00%	134,833	19.00%	43,421	11.00%	25,138	7.00%	15,997	4.00%	9,141	100.00%
2025	232,751	59.00%	137,323	19.00%	44,223	11.00%	25,603	7.00%	16,293	4.00%	9,310	100.00%
2026	237,049	59.00%	139,859	19.00%	45,039	11.00%	26,075	7.00%	16,593	4.00%	9,482	100.00%

Sources: FAA ATC Database, 2006, CRG FAR Part 150 Study, 2006, Tenant Surveys, and The LPA Group Incorporated, 2007.

TABLE 4.6
BASED AIRCRAFT FLEET MIX FORECAST

		Single Engine Piston		Multi-Engine Piston		Turbo Prop		Jet		Rotor	
Year	Total Based Aircraft	%	Aircraft	%	Aircraft	%	Aircraft	%	Aircraft	%	Aircraft
Historic Data											
2006	327	66.06%	216	19.88%	65	9.48%	31	3.67%	12	0.92%	3
Forecast Data											
2007	335	65.36%	219	19.91%	67	9.49%	32	3.96%	13	1.27%	4
2011	367	62.82%	231	19.55%	72	9.91%	36	5.36%	20	2.36%	9
2016	416	59.64%	248	19.09%	79	10.43%	43	7.12%	30	3.73%	15
2021	475	59.00%	280	19.00%	90	10.58%	50	7.42%	35	4.00%	19
2026	543	59.00%	320	19.00%	103	10.63%	58	7.37%	40	4.00%	22

Sources: FAA ATC Database, 2006, CRG FAR Part 150 Study, 2006, Tenant Surveys, and The LPA Group Incorporated, 2006.

Further, in reviewing forecast growth in the use of turbine aircraft for business, fractional ownership, air taxi and personal use nationwide, it is logical to assume that an increase in the number of turbine powered aircraft operating to and from CRG will increase over the twenty-year planning period.

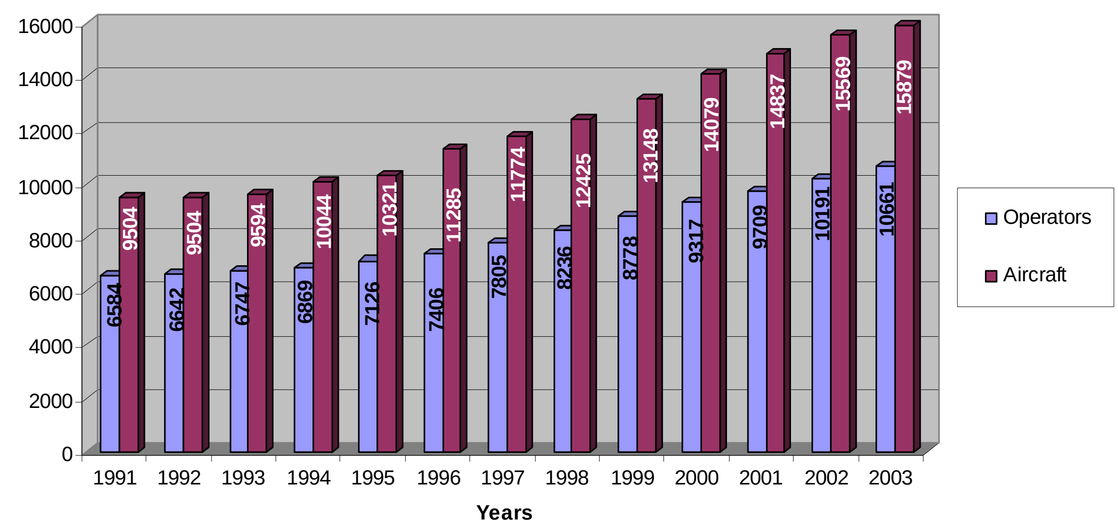
Survey data provided by The National Business Aircraft Association (NBAA) stated, "The majority (63 percent) of companies surveyed operate only one business aircraft; however, a significant number (37 percent) have more than one aircraft in their fleet, and fully 1 in 10 (10 percent) operates five or more aircraft. The majority (59 percent) of all business aircraft are jet aircraft. Jets constitute a greater majority (62 percent) of the fleet of companies with more than one business aircraft."[5] In addition, business aircraft demand forecasts provided by Honeywell (*Honeywell Aerospace's 12th Annual Business Aviation Outlook*) and Rolls Royce (*The Market for Business Jets, 2003-2022*) both show increased demand for business aircraft. Honeywell predicts that over 7,700 aircraft will be added to the worldwide fleet by 2013, and Rolls Royce predicts 13,948 new aircraft will be delivered between 2003 and 2022.

According to NBAA, the popularity of business aircraft is due primarily to increased efficiency and productivity. "The number of companies operating business aircraft in the United States has grown more than 60 percent from 6,584 companies operating 9,504 aircraft in 1991 to 10,661 companies operating 15,879 aircraft in 2003." This represents an average annual growth of 4.37 percent. "During 2003, 14,555 operators flew 23,121 turbine-powered business aircraft worldwide." More than 75 percent of the operators (10,982) and 72 percent of the aircraft (16,650) were located in North America as shown in **Figure 4.2**.[6]

In addition, based upon letters from interested operators and existing tenant surveys at CRG, operators want to expand their existing fleet to accommodate the needs of their operators and stage length requirements while improving the efficiency of their operations. It has been shown that business operators, on-demand charter operators and aircraft fractional owners prefer to use smaller, less congested airports closer to their destinations rather than busy commercial airports. As a result, of the top 50 airports in the United States for itinerant GA traffic, approximately 13 are located within the state of Florida. This is primarily due to the number of flight schools as well as business operators within the state.

[5] National Business Aircraft Association, Inc. Study No. 718235, "Survey of Companies Using Turbine-Powered General Aviation Aircraft for Business Transportation", Louis Harris and Associates, Inc. 1997
[6] National Business Aircraft Association Factbook, 2003

Figure 4.2
U.S. Companies Operating Fixed Wing Turbine-Powered Aircraft and Number of Aircraft
1991-2003



Source: NBAA Business Aviation Factbook, 2004

As a result of demand, estimates of jet aircraft operations over the twenty year planning period were developed. Based upon the *FAA Aerospace Forecast, 2007-2020*, turbine aircraft use is expected to increase by at least 2.8 percent per year. Applying the FAA average annual growth rate to CRG resulted in conservative jet aircraft demand of 16,593 operations (7 percent of total aircraft operations) of which approximately four (4) percent of total jet aircraft operations (628 operations) would be attributed to ARC C-II aircraft by the year 2026 as shown in **Table 4.7.** However, it is important to note that even with the expected increase in C-II operations, operations associated with B-I, B-II and C-I aircraft will continue to represent the majority of turbojet operations.

TABLE 4.7
TURBOJET FLEET MIX

Year	Total Turbojet Operations	ARC A-I Operations[1]	%	ARC B-I Operations	%	ARC B-II Operations	%	ARC C-I Operations	%	ARC C-II Operations	%
2006	4,920	0	0.00%	1,200	24.39%	2,713	55.14%	907	18.44%	100	2.03%
2007	5,614	0	0.00%	1,358	24.19%	3,080	54.87%	1,043	18.57%	133	2.37%
2011	8,679	92	1.06%	2,018	23.25%	4,670	53.81%	1,697	19.55%	202	2.33%
2016	13,086	192	1.47%	2,895	22.12%	6,871	52.51%	2,776	21.21%	352	2.69%
2021	15,143	307	2.03%	3,188	21.05%	7,759	51.24%	3,406	22.49%	483	3.19%
2026	16,594	465	2.80%	3,319	20%	8,297	50.00%	3,886	23.42%	627	3.78%

Notes: [1]Designates light sport, experimental and very light jet aircraft
Sources: FAA ATC Database, 2006, FAA GCR INC. Operational Data, 2007, CRG FAR Part 150 Study, 2006, Tenant Surveys, and The LPA Group Incorporated, 2006.

4.3 Airfield Requirements

Airfield requirements were based upon the existing and anticipated critical aircraft in conjunction with forecast demand as provided in **Chapter 3**, *Aviation Forecasts*, of this report. The adequacy of existing airfield facilities at CRG was analyzed from a variety of perspectives including: airfield capacity, runway length, pavement strength, lighting, navigational aids and markings. The study addressed requirements using the most recent FAA guidelines for master planning, and provides estimates of facility requirements in 5, 10, 15 and 20- year planning increments.

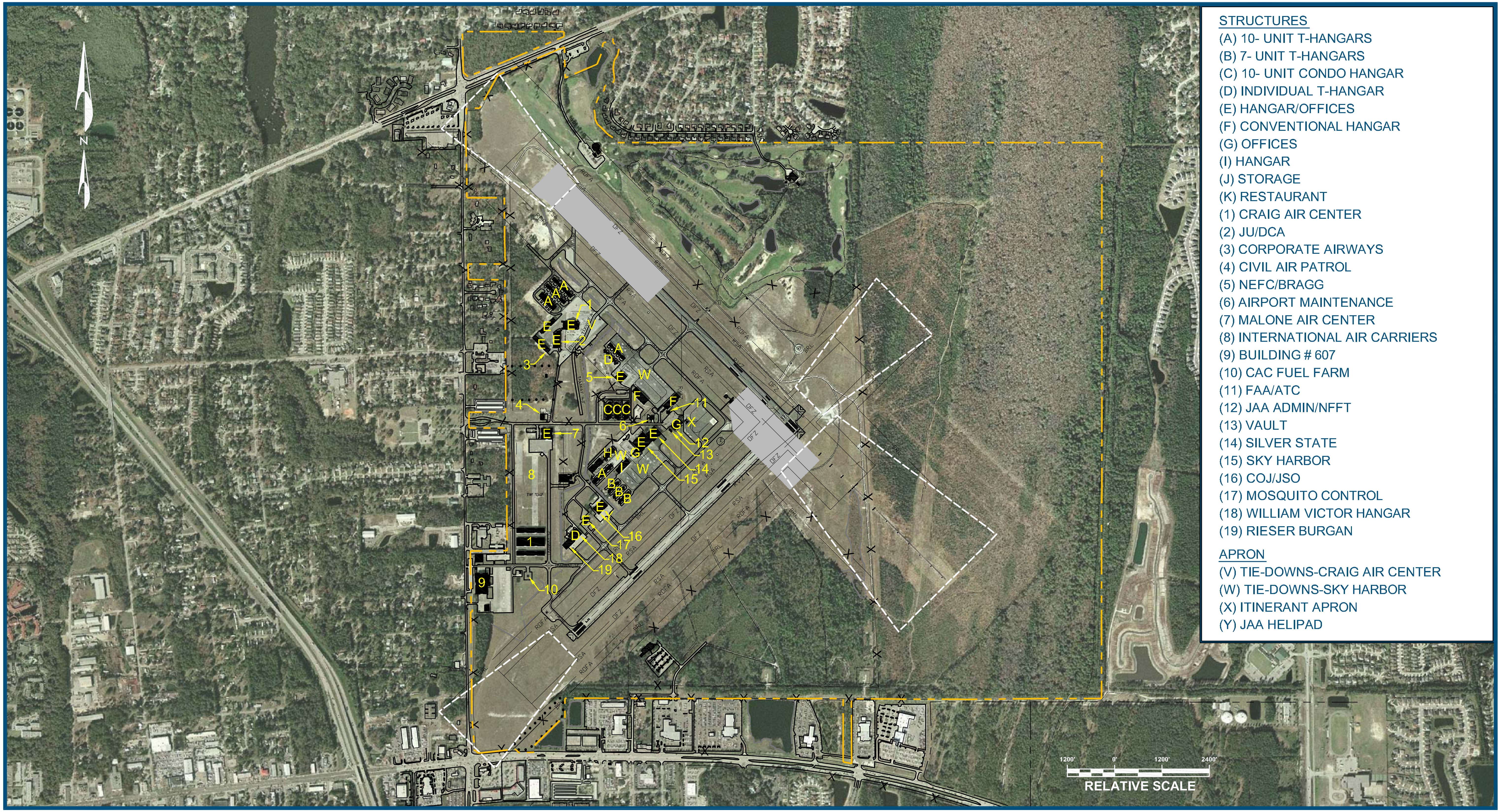
4.3.1 Airfield Capacity

The airfield demand and capacity analysis measured the capacity of existing airfield facilities against forecast demand. Airfield capacity is impacted by several factors including: airfield layout, meteorological conditions, aircraft mix, runway use, touch and go operations, and exit taxiway locations. Airfield capacity is measured in terms of annual service volume (ASV) using the guidelines described in **FAA AC 150/5060-5**, *Airport Capacity*.

At CRG, Runways 5-23 and 14-32 intersect, as shown in **Figure 4-3**, *Airport Diagram*, creating dependencies whereby one aircraft can perform an operation at a time. This airfield characteristic limits the airport's overall capacity due to the fact that simultaneous operations on both runways would require the implementation of land and hold short operations (LAHSO). LAHSO operations are controlled and managed by Air Traffic Control Tower personnel and are currently in effect at CRG when the tower is attended. The tower is operational from 6:00 am to 11:00 pm (0600-2300) during weekdays and 7:00 am to 10:00 pm (0700-2200) on weekends. Since the tower acts only in an advisory capacity, this practice cannot be safely implemented after hours.

JACKSONVILLE AVIATION AUTHORITY

Existing Conditions



LPA

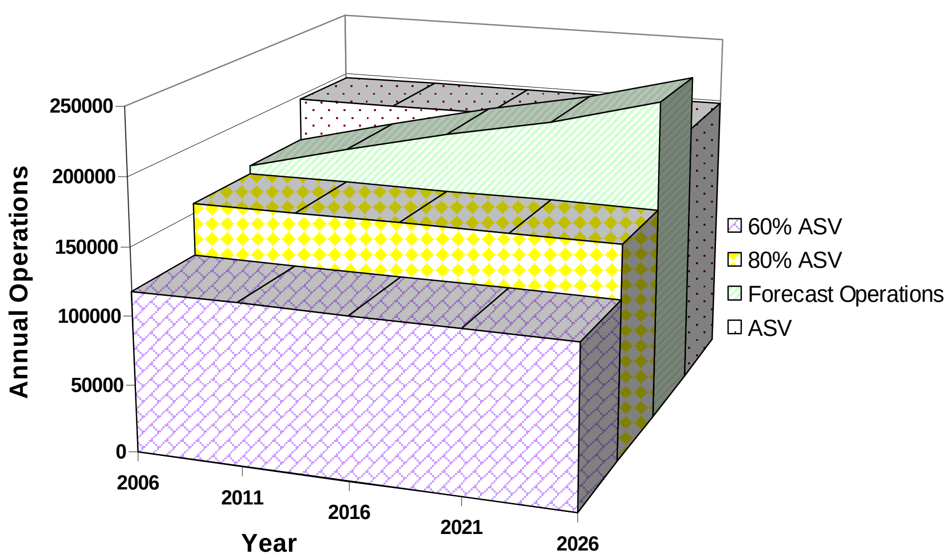
Figure 4-3

Using the methodology prescribed in **AC 150/5060-5**, the capacity analysis resulted in a VFR hourly capacity of 100 and IFR hourly capacity of 59. This resulted in a weighted hourly capacity of 63.7, and annual service volume of 197,449 primarily as a result of land and hold short procedures (LAHSO) and an increase in airport design group (ADG) C aircraft. Since the forecast annual operations for the year 2026 were 237,049, CRG exceeds its usable capacity level as shown in **Table 4.6**, *Annual Service Volume*, and **Figure 4-4**, *Airfield Capacity Level*. Runway utilization at CRG greatly affects the lower annual service volume from what can theoretically be achieved.

TABLE 4.8
ANNUAL SERVICE VOLUME

Year	Annual Operations	Annual Service Volume	Capacity Level
Base Year			
2006	163,988	197,449	83.05%
Forecast			
2011	180,038	197,449	91.18%
2016	197,084	197,449	99.82%
2021	216,325	197,449	109.56%
2026	237,049	197,449	120.06%
Source: The LPA Group Incorporated, 2007			

Figure 4-4
Airfield Capacity Level



Source: The LPA Group Incorporated, 2007

Using the following guidelines provided by the FAA, JAA management should be taking steps to improve airfield capacity at CRG over the twenty-year planning period.

- 60 percent of ASV: Threshold at which planning for capacity improvements should begin.
- 80 percent of ASV: Threshold at which planning for improvements should be complete and construction should begin.
- 100 percent of ASV: Airport has reached the total number of annual operations (demand) the airport can accommodate without undue delay, and capacity-enhancing improvements should be in place to avoid extensive delays.

According to the FAA methodology, a demand that exceeds the ASV will result in delays on the airfield. However, no matter how substantial an airport's capacity may appear, it should be realized that delays could occur even before an airport reaches its stated capacity. In fact, a number of projects that would increase the capacity at an airport are eligible for funding from the FAA. According to FAA **Order 5090.3C**, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)*, this eligibility is achieved once the airfield has reached 60 percent of its current capacity. This allows improvements to be made before demand levels exceed the capacity of the facility in order to avoid lengthy delays. Future capacity levels for the airport have been calculated based on the forecasted annual operations and the calculated ASV for the airport.

The capacity level increases from approximately 83 percent in 2006 to 121 percent in 2026. This increase is attributed to the increase of operational activity at the airport without any changes in airfield capacity. Based on capacity levels as presented in **Table 4.6**, the airfield capacity at CRG will be constrained. Existing capacity levels exceed the point at which planning is required for additional capacity enhancement projects as well as when construction on those projects should begin. Since CRG is constrained by encroachment surrounding the airport's property boundary and is sensitive to community opinion, any additional capacity projects will relate closely to preserving and enhancing existing airfield infrastructure elements. The detailed demand/capacity analysis is provided in **Appendix C,** *Airport Demand Capacity Analysis***,** of this report. Using the information provided herein, alternative development options for enhancing airfield capacity is provided in **Chapter 5**, *Airport Alternative Analyses*, of this report.

4.3.2 Runway Orientation and Wind Coverage

CRG is served by two runways. Runway 14-32 is the primary runway, with a length of 3,998 feet and a width of 100 feet. Runway 14-32 is equipped with a PAPI-4 and Category-I ILS system[7], which is supplemented by a MALSR, REILs, and HIRLs. Runway 5-23 has a length of 4,004 feet and a width of 100 feet and is equipped with PAPI-4, REILs, and MIRLs. Runway 14-32 is oriented in a northwest/southeast manner; whereas Runway 5-23

[7] For definition and requirements associated with Category-I ILS System, see Appendix A, Glossary of Terms, of this report.

is oriented in a southwest/northeast manner. FAA criterion typically identifies the primary runway as the runway oriented in the prevailing wind direction. However, at CRG, Runway 14-32 is designated as the primary runway since it is equipped with a precision instrument approach.

According to FAA design standards provided in **AC 150/5300-13**, additional runway configurations are required when the primary runway configuration provides less than 95 percent wind coverage at specific crosswind components (i.e. 10 knots, 13 knots, 16 knots, etc.). In the case of CRG, 10.5 knot, 12 knot (for aircraft weighing less than 12,500 lbs.) and 16 knot crosswinds (for aircraft weighing more than 12,500 lbs.) were used to evaluate wind coverage. Typically, smaller and lighter aircraft are impacted to a greater degree by the crosswind component compared to their heavier counterparts. Using National Climatic Data Center's (NCDC) most complete data available for CRG, Runway 14-32, at 10.5 and 12 knots during both IFR and VFR operations, does not exceed the required 95 percent wind coverage as shown in **Table 4.7**, *Windrose Coverage*.

TABLE 4.9
WINDROSE COVERAGE

Runway	All Weather	IFR
10.5 Knot (12 MPH) Crosswind Component		
Runway 5-23	93.65	93.53
Runway 14-32	91.77	91.60
Combined	99.55	99.56
12 Knot (13.5 MPH) Crosswind Component		
Runway 5-23	95.42	95.33
Runway 14-32	94.03	93.90
Combined	99.85	99.86
16 Knot (18 MPH) Crosswind Component		
Runway 5-23	99.35	99.36
Runway 14-32	99.18	99.18
Combined	99.98	99.99

Sources: National Climatic Data Center, Craig Municipal Airport (Station 72206), Jacksonville FL Station (1996-2005) and The LPA Group Incorporated, 2007

Although at 10.5 and 12 knots, both runway 14-32 and 5-23 are required to achieve 95 percent or greater wind coverage, it is unlikely based upon current federal funding priorities and fleet mix that improvements to Runway 5-23 and associated taxiways will be eligible for federal discretionary funding.

4.3.3 Runway Length Design Requirements

In determining the recommended runway length for Craig Airport, a five step procedure and rationale as outlined in **FAA AC 150/5325-4B** was used. A detailed step-by-step analysis and rationale is provided in **Appendix E**, *Runway Length Analysis*. Using 2006 data, a summary of each step is provided below.

1. Identify the list of critical design airplanes that will make regular use of the proposed runway for an established period of at least five years.
2. Identify airplanes or family of airplanes that will require the longest runway lengths at maximum certified takeoff weight (MTOW).
3. Using *Table 1-1* of **AC 150/5325-4B** and the airplanes identified in Step #2, determine the method that will be used for establishing the recommended runway length based upon useful load and service needs of critical design aircraft or family of aircraft.
4. Select the recommended runway length from among the various runway lengths generated in Step 3 using the process identified in Chapter 3 of **AC 150/5325-4B**.
5. Apply any necessary adjustment (i.e. pavement gradient, pavement condition (wet or dry), etc.)

4.3.3.1 Determine Critical Design Airplanes (Steps 1, 2 and 3)

The FAA's definition of "critical design airplanes" refers to the listing of airplanes (or a single airplane) that would result in the longest recommended runway length. The most demanding aircraft using CRG are turbojet aircraft between 12,500 and 60,000 pounds. Therefore, according to Table 1.1 from FAA AC 150/5325-4B (**Table 4.10**), the methodology outlined in Chapter 3 of the Advisory Circular should be used to determine the runway length requirements at CRG. **Table 4.11**, *Critical Design Aircraft*, identifies all current turbojet aircraft that are operating at CRG.

TABLE 4.10
AIRPLANE WEIGHT CATEGORIZATION FOR RUNWAY LENGTH REQUIREMENTS

Airplane Weight Category Maximum Certificated Takeoff Weight (MTOW)			Design Approach	Location of Design Guidelines (in AC 150/5325-4B)
12,500 pounds or less	Approach Speed less than 20 knots		Family Grouping of Small Airplanes	Chapter 2; Paragraph 203
	Approach Speeds of at least 30 knots but less than 50 knots		Family Grouping of Small Airplanes	Chapter 2; Paragraph 204
	Approach Speeds of 50 knots or more	With Less than 10 Passengers	Family Grouping of Small Airplanes	Chapter 2; Paragraph 205; Figure 2-1
		With More than 10 Passengers	Family Grouping of Small Airplanes	Chapter 2; Paragraph 205; Figure 2-2
Over 12,500 pounds but less than 60,000 pounds **(Selected Category)**			Family Grouping of Large Airplanes	Chapter 3; Figure 3-1 or 3-2[a] and Tables 3-1 or 3-2
60,000 pounds or more or Regional Jets			Individual Large Airplane	Chapter 4; Airplane Manufacturer Websites (Appendix 1)

Source: FAA AC 150/5325-4B.
Notes:
a) When the design airplane's airport planning manual (APM) shows a longer runway length than what is shown in Figure 3-2 (AC 150/5325-4B), use the airplane manufacturer's APM. However, users of an APM are to adhere to the design guidelines found in Chapter 4 (AC 150/5325-4B).

TABLE 4.11 CRITICAL DESIGN AIRCRAFT CRAIG MUNICIPAL AIRPORT						
Critical Design Aircraft	ARC	MTOW[1]	Fleet Category[2]	Aircraft Operations		
				2006	2011	2026
VLJs (Eclipse 500)	A-I	5,995	NA	0	92	465
			Subtotal A-I	**0**	**92**	**465**
Cessna 501	B-I	10,600	75%	282	473	0
Dassault Falcon 10	B-I	18,740	75%	107	181	697
MU300	B-I	14,630	75%	404	679	1,311
Cessna 525 (CJ1)	B-I	10,400	75%	407	685	1,311
			Subtotal B-I	**1,200**	**2,018**	**3,319**
Cessna 525A (CJ2)	B-II	12,500	75%	239	411	730
Cessna 525B (CJ3)	B-II	13,870	75%	44	76	135
Cessna 550	B-II	14,800	75%	287	494	878
Cessna 560 XL	B-II	19,200	75%	608	1,046	1857
Cessna 560	B-II	16,830	75%	1469	2,528	4493
Dassault Falcon 2000EX	B-II	35,800	100%	10	17	30
Falcon 50	B-II	37,480	75%	48	83	150
Falcon 50EX	B-II	40,780	75%	8	14	24
			Subtotal B-II	**2,713**	**4,670**	**8,297**
Beechjet 400A	C-I	16,100	75%	213	399	1,010
Israel Westwind	C-I	23,500	75%	70	130	103
Learjet 31/31A	C-I	16,500	75%	181	339	539
Learjet 35	C-I	18,300	75%	121	227	804
Learjet 45	C-I	20,200	75%	322	602	1,430
			Subtotal C-I	**907**	**1,697**	**3,886**
Cessna 650	C-II	23,000	100%	10	20	64
Cessna 680	C-II	30,300	75%	13	25	77
Cessna 750 (Citation X)	C-II	36,100	100%	20	43	133
Challenger (Series 600)	C-II	48,200	100%	19	38	118
Falcon 900EX	C-II	48,300	100%	38	76	235
			Subtotal C-II	**100**	**202**	**627**
			Total Operations	**4,920**	**8,679**	**16,594**

Notes:
[1]Maximum Takeoff Weight Obtained from Manufacturer's websites and airport operating manuals.
[2]Fleet Category corresponds to aircraft groupings contained in Tables 3-1 and 3-2 of FAA AC 150-5325-4B. VLJs, at this time, have not been assigned a category.
Sources: Manufacturer Data, CRG ATCT, GCR Incorporated 2006 Data, FAA ATADS, 2006, and The LPA Group Incorporated, 2007

The most frequently used aircraft in 2006 was the Cessna 560 with 1,469 operations followed by the Cessna 560XL with 608 recorded operations. It should be noted that both ARC B-II and C-I operations in 2006 (the base year) exceed 500 annual operations; therefore, justifying the proposed change to the airport's design category from a B-II to a C-II.

4.3.3.2 Select Recommended Runway Length (Step 4)

In Steps 1, 2 and 3, it was concluded that Figure 3-2 (Chapter 3, pg 13) in **FAA AC 150/5325-4B** would be used to calculate runway length requirements at CRG since aircraft in the 100% fleet mix category are currently and are expected to continue to operate at CRG. Figure 3-2 provides two separate runway length curves which vary by 60% or 90% of the airplane useful load factor. Using Figure 3-2 of the FAA Runway Length Design Advisory Circular (shown below as **Figure 4-5**) and applying the following factors:

- CRG's Elevation = 41 feet[8] above mean sea level, and
- CRG's Mean Maximum Temperature for Hottest Month (August 2006) = 92.7° F[9]

the unadjusted runway length at 60 percent useful load is 5,540 feet and at 90 percent useful load is 8,840.

4.3.3.3 Runway Length Adjustment (Step 5)

The runway length determined in Step 4 does not include an adjustment for runway gradient. Paragraph 304 of the AC (pg. 10) states that the runway length should be increased at a rate of 10 feet for each foot of elevation difference between the high and low points of the runway centerline. At CRG, the difference in elevation in the runway high and low points of Runway 14-32 is 10 feet[10]. Therefore, 100 feet should be added to the runway length calculated in Step 4. **This results in a total recommended length of 5,640 feet for aircraft operating at 60 percent useful load on dry pavement and 8,940 feet for aircraft operating at 90 percent useful load.**

The AC further states by regulation, the runway length for turbojet-powered airplanes obtained from the "60 percent useful load" curves are increased by 15 percent or up to 5,500 feet, whichever is less, to accommodate wet pavement conditions. Since the range of recommended runway length at CRG exceeds 5,500 feet, an additional adjustment for wet and slippery conditions is technically not required.

Thus, providing a runway length of approximately 5,640 feet would accommodate approximately 100 percent of current turbojet aircraft at 60 percent useful load[11]. Useful load is the maximum certificated takeoff weight minus the operating empty weight[12]. Based upon the average stage length of 1,500 nautical miles (Jacksonville, FL to Denver, CO), the majority of current medium to long-range aircraft at CRG operating at 60 percent useful load could operate at a stage length of between 1,000 to 1,200 nautical miles before refueling.

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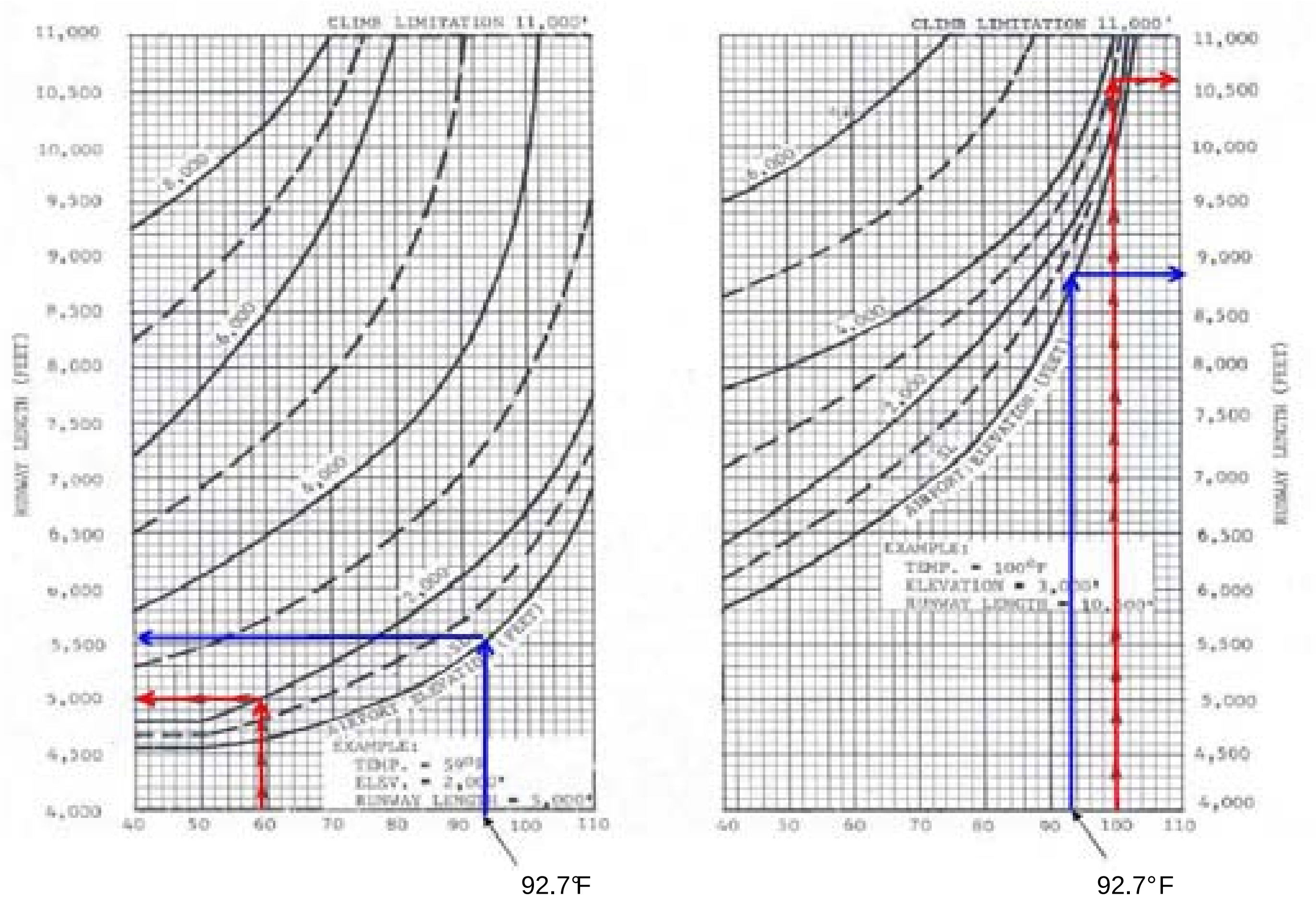
[8] Airport elevation obtained from previous approved Airport Layout Plan Set, FAA 5010 Database and verified by 2007 airport survey.
[9] National Climatic Data Center, Official Temperature Records, Craig Municipal Airport (Station 72206), Jacksonville FL Station (August 2006).
[10] High and low point runway elevations based upon LD Bradley Survey Data, 2007
[11] Useful load refers to Fuel and Payload (i.e. passengers, cargo, etc.)
[12] Operating empty weight includes aircraft, fuel reserve, pilots, and equipment.

Therefore, a runway length of 5,640 feet is necessary to accommodate existing and anticipated demand over the twenty-year planning period.

Figure 4-5
100 Percent of Fleet at 60 or 90 Percent Useful Load



100 Percent of feet at 60 percent Useful Load

100 Percent of feet at 90 percent Useful Load

Sources: FAA Advisory Circular 150/5325-4B, Figure 3-2, NCDC Official Weather Data, Runway Inner Approach Survey, and The LPA Group Incorporated, 2007

Additional runway length justification related to stage length and operational use (i.e. personal, air taxi, fractional ownership, etc.) are provided in **Appendix E**, *Runway Length Analysis*, of this report. In addition to the FAA Regional Guidance Letter 01-2, **Appendix F** also includes the FAA's New Landing Assessment Rule, recent National Transportation Safety Administration recommendations and letters from existing and interested aircraft operators.

4.3.4 Crosswind Runway

According to **FAA AC 150/5325-4B**, *Runway Length Requirements for Airport Design*, the crosswind runway length must equal 80 percent of the recommended runway length determined for the lower crosswind capable airplanes using the primary runway. Thus, based upon the types of aircraft using Runways 14-32 (the primary runway) and 5-23 (crosswind runway), Runway 5-23 would remain at its current length of 4,000 feet. This is adequate for use by small aircraft with less than 10 passenger seats, which currently comprise approximately 86 percent of the operations at the airport. The crosswind runway will assist with capacity issues, as well as allow the airport to remain open if the primary runway is closed for maintenance, emergencies or other services. However, due to limited runway length on Runway 5-23, some business jets may be forced to divert to an alternate airport if Runway 5-23 is the only available option.

4.3.5 Runway Width

Runway width is designated by the critical aircraft wingspan requirements. According to FAA design requirements, runways accommodating C-II aircraft must have a width of 100 feet. At CRG, the current width of both Runway 14-32, and crosswind runway, 5-23, is 100 feet. Proposed improvements include a pavement overlay and remarking.

4.3.6 Pavement Strength

An important feature of airfield pavement is the ability to withstand repeated use by aircraft of significant weight. At CRG, this includes small single-engine aircraft to business jet aircraft less than 60,000 pounds. According to FAA 5010 data, both Runways 5-23 and 14-32 have single-wheel loading strength of 30,000 pounds and dual-wheel loading strength of 60,000 pounds. According to the **FAA Southern Region Guidance Letter**, dated May 2001, entitled, *Runway Length and Strength Requirements for Business Jet Aircraft* (**Appendix F)** the runway pavement strength should be based upon aircraft with the most demanding maximum takeoff weight (MTOW) utilizing the airport on a regular basis (approximately 500 operations). "In general, runways should have dual wheel pavement strength of 30,000 pounds if they accommodate only category B business jets, 60,000 pounds if they accommodate category B and C business jets, and 90,000 pounds if they accommodate category B, C, and D business jets."[13] Both Runways 14-32 and 5-23 can currently accommodate 60,000 pound dual wheel loading.

[13] Runway Length and Strength Requirements for Business Jet Aircraft, FAA Southern Region Regional Guidance Letter, May 2001.

4.3.7 Taxiways

Taxiways are constructed to facilitate the movement of aircraft around the airfield. Taxiway width and separation requirements are determined by the wingspan of the most critical aircraft likely to use facilities on the airport. For example, taxiways providing access to the runway should be designed to accommodate the airport critical aircraft, such as a C-II. However, it is unlikely that business jets will use T-Hangar and other small storage facilities; therefore, the taxiways/taxilanes providing access to these storage facilities could be designed to accommodate smaller (ADG I) aircraft.

At CRG, both Runways 14-32 and 5-23 are equipped with full length parallel taxiways and five connector taxiways. Based upon information from airport management and recent aerial imaging, the actual pavement width on Taxiways A, B, C and some associated connectors is 50 feet, but, due to funding and critical aircraft requirements, only 35 feet of pavement has been marked and maintained. Based upon anticipated aircraft, parallel taxiway widths should be maintained at a width of 35 feet.

Design standards for the separation distances between runways and parallel taxiways are based upon the ARC for that particular runway as well as instrument approach capability. For Runway 14-32, the required design separation is 400 feet due to the instrument approach with visibility minimums of less than 3/4 mile. The design separation standard for Runway 5-23 is 300 feet since the runway approach is equal to or greater than 3/4 mile. The runway to taxiway centerline separation for both Runways 5-23 and 14-32 are 525 feet and exceed existing and future design requirements. Further, the additional separation provides JAA greater flexibility for development in and around the airfield.

Holding aprons provide run-up areas for aircraft preparing for departure. The use of holding aprons also allows for increases in airfield capacity since it allows aircraft to bypass other aircraft which are not ready for departure. At CRG, holding aprons are located on Taxiway A, B and C to serve Runways 14-32 and 5-23. It is anticipated that the existing holding aprons at CRG are sufficient to accommodate long-term demand at CRG over the twenty year planning period.

4.3.8 Airfield Pavement Condition

According to **FAA AC 150/5320-17**, a method of pavement rating and surface condition is established that characterizes the surface rating scales into numerical form, with a rating of 5 as "excellent" and a rating of 1 as "failed". This scale is shown in **Figure 4-6,** *Pavement Condition Index.*

Figure 4-6
Pavement Condition Index

Surface rating	*Visible distress**	*General condition/ treatment measures*
5 Excellent	None, or initial thermal cracks, all narrow (less than 1/8")	New pavement less than 5 years old. No maintenance or isolated crack sealing required.
4 Good	Additional thermal cracking. Cracks generally spaced more than 50' apart. Less than 10% of cracks and joints need sealing. Minimal or slight raveling. No distortion. Patches in good condition.	Recent sealcoat or pavement over 5 years old. Seal open cracks or joints and replace sealant where needed.
3 Fair	Moderate raveling. Thermal cracks and joints generally spaced less than 50' apart. Crack sealing or repair of sealant needed on 10%-25% of cracks or joints. Edge cracks along 10% or less of pavement edges. Block crack pattern with cracks 6'-10' apart. Isolated alligator cracking and poor patches. Minor distortion or crack settlement less than 1".	Seal open cracks and joints. Replace failed sealant. Apply new surface treatment or thin overlay. Minor patching and joint repair.
2 Poor	Frequent thermal cracks. Wide cracks and joints with raveling in cracks. Deterioration along more than 25% of cracks. Edge cracks on up to 25% of pavement edges. Block cracks spaced 5' apart or less. Alligator cracking or poor patches cover up to 20% of surface area. Distortion or settlement 1"-2".	Needs significant crack sealing plus patching and repair on up to 25% of pavement surface. Overlay entire area with structural overlay.
1 Failed	Widespread, severe cracking with raveling and deterioration. Alligator cracking and potholes over 20% of the area. Distortion over 2".	Condition may be limiting service. Needs reconstruction.

Source: FAA Pavement Condition Index (PCI), 2006

Based upon data provided by JAA with regards to the age and condition of airfield pavement at CRG, as shown in **Figure 4-7,** *Craig Airport Pavement History*, the majority of the runway and taxiway pavement is in good condition. As a general guideline, taxiway pavement should be resurfaced every ten years, depending on relative condition and degree to which the pavement inhibits the safe and expeditious movement of aircraft across the airfield. Most pavement structure failings are likely caused by the variation in temperature during the seasons, as well as poor design and drainage issues caused by rain.

According to the pavement history provided by JAA, portions of Taxiways A and B as well as Runway 5-23 may need to be overlaid within the next one to three years to maintain existing operating conditions. Runway 14-32 was overlaid in 2005. However, a runway overlay to preserve the pavement in conjunction with a runway extension should be considered within the short-term to intermediate term.

4.3.9 Summary of Runway and Taxiway Requirements

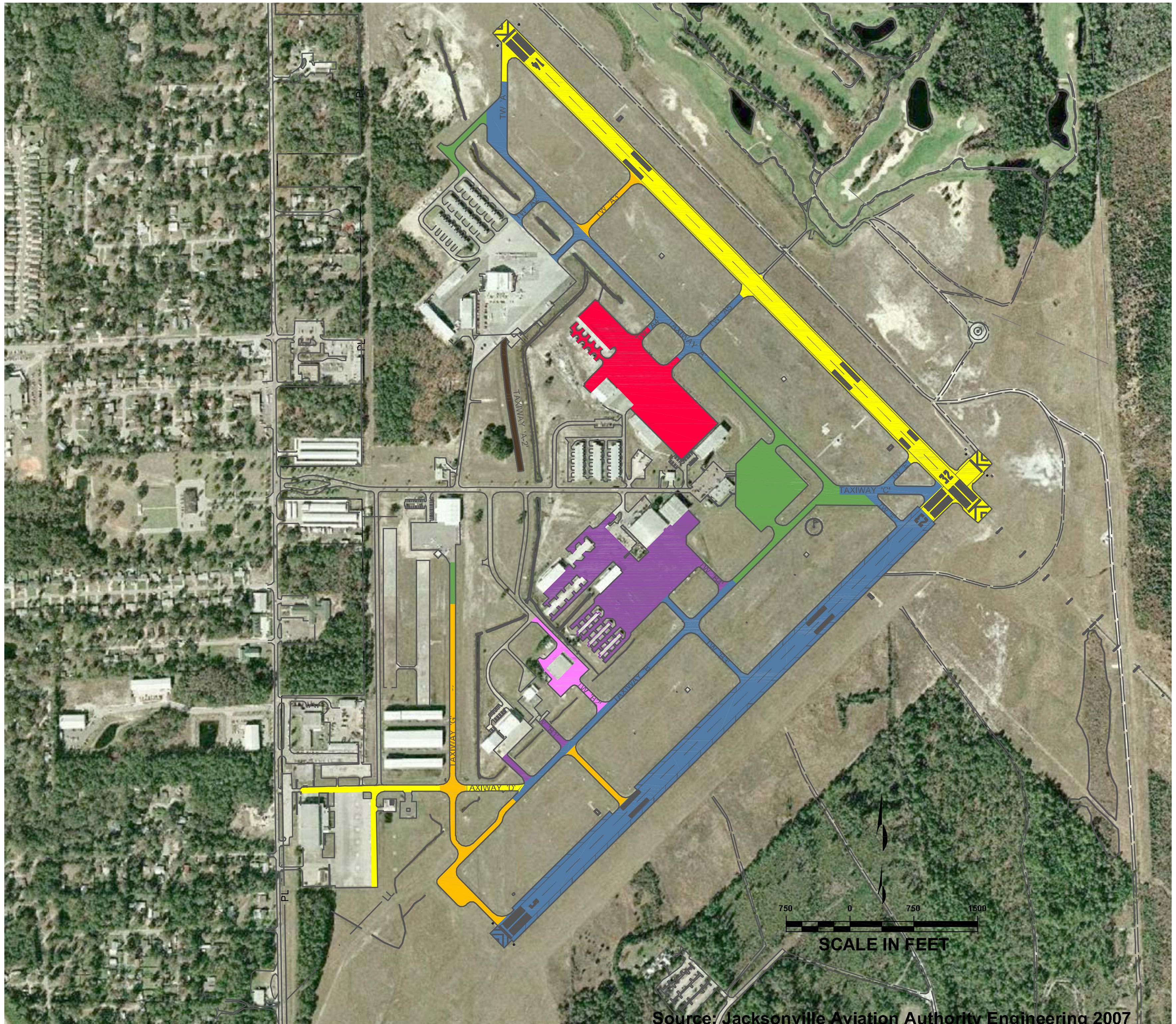
Runway and Taxiway requirements were determined using **FAA AC 150/5300-13**, *Airport Design*, criteria. Comparing ARC C-II design standard requirements to existing CRG facilities in **Table 4.12** demonstrates that CRG facilities equal or exceed FAA airport design requirements.

TABLE 4.12
RUNWAY AND TAXIWAY DESIGN REQUIREMENTS
(IN FEET)

	Approach Category C Design Group II	**Existing Facilities**	
Runway	**Standards**	**Runway 5-23**	**Runway 14-32**
Runway Width	100	100	100
RWY CL to TWY CL (visibility> 3/4 mi)	300	525	525
RWY CL to TWY CL (visibility < 3/4 mi)	400	525	525
RWY CL to Aircraft Parking	400	750	750
RWY Shoulder Width	10	25	10
RSA Width	500	500	500
RSA Length prior to Landing Threshold	600	1000	1000
RSA beyond RWY End	1000	1000	1000
ROFZ Width	400	400	400
ROFA Width	800	800	800
ROFA beyond RWY End	1000	1000	1000
Taxiways		**Taxiway A**	**Taxiway B**
Taxiway Width[1]	35	35	35
TWY CL to Fixed or Movable Object	65.5	225	225
TWY Shoulder	10	varies from 10 to 20	varies from 10 to 20
TWY Safety Area Width	79	79	79
TOFA Width	131	131	131

Note: [1]Taxiway Width refers to marked width since Taxiways A and B are marked to a width of 35 feet but actual pavement is 50 feet in width.
*Sources: **FAA AC 150/5300-13**, Airport Design, Craig Airport Management, and The LPA Group Incorporated, 2007*

Pavement Construction History



- 1975 - Contract No. C-83
- 1984 - Contract No. C-312
- 1986 - Contract No. C-345
- 1993 - Contract No. C-425
- 2003 - Contract No. C-655
- 2004 - Contract No. C-655A
- 2005 - Contract No. C-692
- 2006 - Contract No. C-698

4.3.10 Navigational Aids, Runway Approaches and Obstructions to Air Navigation

Electronic navigational aids are used to assist pilots in locating and landing at CRG. Instrument approach plates associated with Runways 14-32 are provided in **Figures 2-9 through 2-11** of **Chapter 2**, *Inventory of Existing Conditions*. Instrument approaches include:

- VOR/DME or GPS approach to Runway 14,
- VOR/DME or GPS approach to Runway 32, and
- Instrument Landing System (ILS/LOC) approach to Runway 32.

Radio-navigational aids are also used to assist pilots during approach, departure and over-flight procedures. Navigational aids within the airport vicinity include:

- Craig VORTAC
- Cecil VOR
- St. Augustine VOR/DME
- Eastport NDB, and
- Herlong NDB

Runway 5-23 does not currently accommodate any instrument approach procedures. Airspace surrounding CRG is constrained due to airport traffic patterns associated with: Naval Station Mayport to the northeast, JAX to the northwest and NAS Jacksonville to the west and tall towers to the southwest. As a result, the possibility of an instrument approach to Runways 5, 14 or 23 is limited.

The establishment of takeoff minimums and obstacle departure procedures ensures that pilots can see and avoid known obstacles or are routed such that the obstacles do not impact operations. At CRG, Runway 23 has assigned takeoff minimums and Runways 5 and 14 have assigned departure procedures including obstacle avoidance[14]:

- Runway 23 Takeoff Minimums: Visibility conditions for departures on Runway 23 must have a ceiling of at least 1,100 feet mean sea level (msl) and 3 miles or aircraft must climb 320 feet per nautical mile (NM) until it reaches 1,300 feet msl.
- Runway 5 Departure Procedure: Aircraft must climb on the runway heading to at least 800 feet msl before turning south.
- Runway 14 Departure Procedure: Aircraft must climb on the runway heading to at least 1,000 feet msl before turning right.

Since a 1,000 ft tower is located 20,000 feet within the approach path of Runway 5, it is unlikely that visibility could be lowered to less than 1 mile. Although an 85 foot tower is located 1,751 feet from the Runway 23 threshold and there are potential airspace conflicts with the runway operations at Navy Mayport, a non-precision approach with lower visibility

[14] Published approach and departure minimums, AirNav.com, 2007

may be plausible if procedures could be developed with the U.S. Navy. However, further evaluation will be required by the FAA Flight Procedures Branch.

4.3.11 Lighting, Signage and Markings

Airfield lighting, signage and pavement markings assist pilots during airfield approach, especially during IFR conditions, as well as during airfield ground navigation.

4.3.11.1 Airfield Lighting

Airfield lighting not only includes runway and taxiway lighting, but also stationary lighting used to assist pilots in locating the airport during IFR minimums. CRG is equipped with a lighted, rotating beacon, which is located due west of the condo hangars between the hangars and Bragg Avenue. This beacon is mounted on a tower approximately 50 feet above ground level and is equipped with an optical rotating system. The airport is also equipped with two lighted wind cones and segmented circles which provide pilots data concerning wind direction and local traffic patterns.

Runway 14-32 is equipped with high intensity runway lighting (HIRLs) as recommended for instrument approach runways. Further, Runway 32 is equipped with a medium intensity approach lighting system (MALSR) with runway alignment indicator lights (RAILs) as part of its instrument approach system, and both Runway 14 and 32 are equipped with 4-light precision approach path indicator (PAPI) lights.

Runway 5-23 is equipped with medium intensity runway lighting (MIRLs), 4-light PAPIs, and runway end identification lights (REILs) on Runway 23 only. It is important to note that due to terrain and other issues, the Runway 5 PAPI is unusable 7.5 degrees to the right of runway centerline and Runway 23 PAPI is unusable 9.0 degrees to the right of the centerline.

The effective ground movement of aircraft is enhanced by the use of taxiway lights and lighted signage. Medium intensity taxiway lighting (MITL) is provided on all active taxiways.

According to airport management and JAA Engineering, runway lighting rehabilitation including signage and the electrical vault occurred in 1993. New regulators were installed to accommodate new signage and lighting in 2002 and 2003, and additional taxiway lighting and signage improvements were provided in 2004. These recent improvements will allow JAA to upgrade existing taxiway lighting to LED lights in the future while providing maintenance and operating cost savings to the airport since power consumption is approximately one-third of traditional taxiway lighting. LED runway lighting is not currently available; however, management should evaluate installing LED runway lighting over the long-term.

4.3.11.2 Airfield Signage

Airfield signage is used to provide directional and location guidance to pilots on the airfield and also identifies holding positions. The airport is equipped with a full complement of airfield signage including lighted taxiway and runway identification signage, directional and location signs. Throughout the planning period, existing signage should be maintained in proper working order. Additionally, as other airfield pavement projects are conducted, new signage should be installed and existing ones should be upgraded to meet FAA design criteria. The types and number of new signs that are likely to be required during the planning period depend upon the selected development alternatives. However, it is recommended in conjunction with a runway extension that lumacurve lighted signage and distance to go markers, similar to those currently used at Cecil Field, be added. According to staff at Cecil Field, this type of signage is also cost effective since it uses only 12 volts and 20 watts of power. The existing signage at CRG adequately provides pilots with the information required to safely navigate the airfield.

4.2.11.3 Airfield Markings

Runway pavements are marked with painted lines and numbers in order to aid in the identification of the runways from the air and to provide information to the pilot during approach phase of flight. There are three standard sets of markings used depending on the type of runway: basic, non-precision and precision.

Depending on the type of aircraft activity and physical characteristics of pavement, additional markings may be required for any of the three categories above. The FAA also allows markings on a runway to be upgraded at any time to include elements that are not required, but may enhance safety. Runway pavement markings are painted white and taxiway pavement is painted yellow. The FAA provides guidance for pavement marking in **AC 150/5340-1J**.

Runway 14-32 is marked as a precision instrument approach runway, and Runway 5-23 is marked as a basic visual approach runway. If a non-precision approach is developed for either Runway 5 or 23, pavement markings would need to be upgraded.

Taxiway and apron areas also require markings to assure that aircraft remain on the pavement. Yellow centerline strips are currently painted on all taxiway and apron surfaces to provide pilot guidance. Edge markings on Taxiways A, B, C, D, E, F and G are currently located 17.5 feet from the existing taxiway centerline even though portions of Taxiways A, B, and C pavements are actually 50 feet in width.

4.3.12 Weather Instruments

Weather instruments provide meteorological data for pilots operating in and around the airport. Two types of weather instruments are currently located on the field at CRG:

Windsocks and Automated Surface Observing System (ASOS). In addition, an ASOS is located at Jacksonville International Airport (JAX) approximately 13 nautical miles (NM) northwest and automated weather observation systems (AWOS) are located at Herlong (HEG) 16 NM west and Fernandina Beach (55J) 17 NM north of the airfield.

4.3.12.1 Windsock

A windsock or wind cone provides visual guidance of wind direction to pilots and must be visible from all runway ends. The wind socks also must be lighted and include a segmented circle to denote the traffic pattern to each runway.

The primary wind sock at CRG is located within the sod between Taxiways C and B near the approaches of Runways 32 and 23. The secondary wind sock is located within the sod area near the approach of Runway 14 along the north-northwest side of the Runway.

4.3.12.2 ASOS

An ASOS is used to provide weather observations including: temperature, dewpoint, wind, altimeter settings, visibility, sky condition, and precipitation. The ASOS provides computer generated voice data directly to aircraft within the vicinity of the airport. The ASOS at CRG is located within the grassy section in the middle of the infield near Taxiway A and Runway 32. Pilots may access the ASOS information on frequency 125.40 or by phone at (904) 646-4670.

4.3.13 Air Traffic Control Tower

Northeast Florida airspace is one of the most intensively used areas in the nation because of the high concentration of military bases and training activities. Military operations occurring within this region are under control of JAX ATC. Control of the airspace from the surface to 10,000 feet is delegated to the Jacksonville TRACON.

Jacksonville International Airport (JAX) operates in Class C airspace from the surface up to and including 4,000 feet MSL over JAX within a five-nautical mile radius and from 1,200 feet MSL to and including 4,000 feet MSL out to a ten-mile radius. A portion of Jacksonville's Class C veil airspace overlaps Craig's Class D airspace. Therefore, all aircraft arriving under instrument flight rules (IFR) are controlled by the JAX TRACON. Aircraft nearing CRG receive minimal clearance from CRG ATCT, and the TRACON monitors instrument traffic when CRG ATCT is not operational.

The CRG ATCT is located on the landside center of the airport adjacent to the transient apron. The Tower is operational Monday through Friday from 6:00 am to 11:00 pm (0600-2300) and 7:00 am to 10:00 pm (0700-2200) on Saturday and Sunday. ATCT oversees aircraft flying within CRG's Class D airspace as well as vehicles and aircraft operating on the ground within the defined movement area. Vehicle and aircraft operators must maintain contact with tower personnel to ensure that all movements are safely coordinated. Pilots that wish to enter or transition through the Class D airspace surrounding CRG, must first get clearance from CRG Tower personnel.

4.4 Landside Requirements

Landside facilities are required to accommodate aircraft and passengers on the ground while providing an interface between air and ground transportation. The capacities of existing facilities including aircraft storage, parking apron, passenger facilities, automobile parking, fuel and ground access were evaluated with regard to forecast demand. Thus, based upon demand, landside facility requirements were identified for key years.

4.4.1 General Aviation Requirements

General aviation facilities provide aircraft parking and storage requirements for corporate and private based aircraft, transient aircraft and pilot/passenger space requirements. For planning purposes, based and transient aircraft requirements were evaluated separately since they serve different functions. Due to the mix of aircraft currently and anticipated to serve CRG through the twenty-year planning period, storage and apron aircraft parking requirements were delineated by not only transient and based aircraft but by aircraft size as well.

In general, aircraft parking and storage requirements are provided through a combination of some or all of the following facilities:

4.4.1.1 Hangars

T-Hangars - a fully enclosed building housing individual stalls, each capable of storing one aircraft, typically a single-engine and light multi-engine aircraft as well as small helicopters.

Corporate Hangars - a fully enclosed hangar with attached office which typically accommodates one to three turboprop or small business jet aircraft. For this study, based upon the type of aircraft, corporate hangars accommodate three (3) business aircraft.

Conventional Hangars - A fully enclosed hangar which may or may not include office space. Conventional hangars are often referred to storage hangars and are capable of holding multiple aircraft (five to seven each). Based upon existing and forecast fleet mix, conventional hangars were assumed to accommodate five (5) aircraft each over the twenty-year planning period.

4.4.1.2 Apron Area

Small aircraft - an outdoor parking space with tie-down capability, sized to accommodate single-engine and light multi-engine aircraft. Using FAA guidelines, 300 square yards (SY) was used for based aircraft and 360 SY for transient small aircraft.

Large aircraft - spaces provided on a paved apron suitable for parking the larger business type aircraft, such as the Citation, Falcon and Learjet business jet aircraft fleets as well as larger helicopter operations. Using the existing and forecast fleet mix and FAA criteria, 1,100 SY was used to determine large aircraft and rotorcraft apron space requirements.

CRG currently utilizes a combination of the facilities listed above to accommodate aircraft parking demand and storage. A forecast of both apron and hangar storage demand was developed based upon fleet mix data provided in **Chapter 3**, *Forecast Aviation Demand*, of this report.

Applying this data resulted in based aircraft fleet mix forecast as shown in **Table 4.13**. Further, the percentage of aircraft storage demand by type (conventional, corporate, T-Hangar and apron) and fleet mix is provided in **Table 4.14**.

TABLE 4.13
BASED AIRCRAFT FLEET MIX FORECAST

Year	Total Based Aircraft	Single-Engine Piston		Multi-Engine Piston		Turboprop		Jet		Helicopter	
		%	Aircraft	%	Aircraft	%	Aircraft	%	Aircraft	%	Aircraft
2006	327	66%	216	20%	65	9%	31	4%	12	1%	3
2007	335	65%	219	20%	67	9%	32	4%	13	1%	4
2011	367	63%	231	20%	72	10%	36	5%	20	2%	9
2016	416	60%	248	19%	79	11%	43	7%	30	4%	15
2026	543	59%	320	19%	103	11%	58	7%	40	4%	22

Source: LPA Group Incorporated, 2007

TABLE 4.14 BASED AIRCRAFT STORAGE						
Year	**Aircraft Type**	**Conventional**	**Corporate**	**T-Hangar**	**Apron**	**Total**
2006	Single Engine	5%	5%	50%	40%	100%
	Multi-Engine Piston	25%	15%	50%	10%	100%
	Turbo-Prop	50%	50%	0%	0%	100%
	Jet/VLJ	50%	50%	0%	0%	100%
	Helicopter (Rotor)	70%	20%	0%	10%	100%
2007	Single Engine	5%	5%	50%	40%	100%
	Multi-Engine Piston	25%	15%	50%	10%	100%
	Turbo-Prop	50%	50%	0%	0%	100%
	Jet/VLJ	50%	50%	0%	0%	100%
.	Helicopter (Rotor)	70%	20%	0%	10%	100%
2011	Single Engine	5%	5%	50%	40%	100%
	Multi-Engine Piston	25%	15%	50%	10%	100%
	Turbo-Prop	50%	50%	0%	0%	100%
	Jet/VLJ	50%	50%	0%	0%	100%
	Helicopter (Rotor)	70%	20%	0%	10%	100%
2016	Single Engine	5%	5%	60%	30%	100%
	Multi-Engine Piston	25%	15%	60%	0%	100%
	Turbo-Prop	50%	50%	0%	0%	100%
	Jet/VLJ	50%	50%	0%	0%	100%
	Helicopter (Rotor)	70%	30%	0%	0%	100%
2026	Single Engine	5%	5%	70%	20%	100%
	Multi-Engine Piston	25%	15%	60%	0%	100%
	Turbo-Prop	50%	50%	0%	0%	100%
	Jet/VLJ	50%	50%	0%	0%	100%
	Helicopter (Rotor)	70%	30%	0%	0%	100%

Source: The LPA Group Incorporated, 2007

Aircraft fleet mix and storage demand was used to determined hangar and apron demand over the twenty-year planning period.

4.4.1.3 General Aviation Hangar and Based Aircraft Apron Demand

The demand for based aircraft hangar space at CRG is expected to increase from 71 percent to approximately 89 percent based upon the forecast fleet mix as well as storage demand at similar airports within the region. Since only a small percentage of itinerant (transient) traffic utilizes an airport's hangar facilities, primarily for maintenance and overnight visits, only based aircraft demand was used to plan hangar storage requirements over the twenty-year planning period. **Table 4.15**, *Aircraft Storage Demand*, reflects the number of based aircraft that will require hangar space through the planning period.

TABLE 4.15 AIRCRAFT STORAGE DEMAND								
	Conventional[1]		Corporate[2]		T-Hangar[3]		Apron	
	Based Aircraft	Hangar	Based Aircraft	Hangar	Based Aircraft	Hangar	Based Aircraft	Apron
Actual								
2006	66	13	4	1	107	107	132[4]	246[5]
Demand								
2006	51	10	43	14	141	141	93	93
2007	53	11	44	15	143	143	95	95
2011	64	13	52	17	152	152	101	101
2016	79	16	65	22	196	196	75	75
2026	106	21	87	29	286	286	64	64
Surplus/ (Deficiency)		**(8)**		**(28)**		**(179)**		**182**

Notes: [1]Conventional Hangars typically accommodate 5 aircraft
[2]Corporate Hangars accommodate typically can accommodate 3 aircraft
[3]At least 85 T-Hangars are over 10 years old and will need to be replaced during the planning period
[4]Aircraft includes 132 based aircraft + helicopters (minus 18 US Army Helicopters)
[5]Tie-downs include only Craig Air Center, Sky Harbor and Transient Aircraft Parking (does not include US Army helicopter tie-downs)
Sources: Craig Airport Management, Tenant Surveys, and The LPA Group Incorporated, 2007

During a field visit to the airport and tenant-provided information, approximately 162 aircraft and rotorcraft were reported to be stored in hangars. Of these 162 aircraft, approximately 107 are stored in T-Hangars, two (2) in the one corporate hangar, and the remaining 53 are stored within the conventional hangar facilities on the airport. This represents a hangar storage demand of approximately 50 percent. Typically, this percentage would be applied throughout the planning period. However, due to discussions with airport management, existing tenants and information from similarly sized airports within the region, this does not meet short or long-term storage demand. Thus, demand outlined within **Table 4.13** is deemed appropriate.

4.4.1.4 Aircraft Parking Apron

The need for general aviation apron space has different standards for those aircraft based at an airport and those that represent transient operations. Thus, the needs of each were reviewed separately and then combined to provide the overall apron requirements for the planning period. Both methodologies were applied to provide a general guidance for GA ramp planning.

Apron demand in and around aircraft hangar storage facilities provides for the movement of aircraft rather than parking. As a result, apron associated with proposed hangar facilities, based upon **FAA AC 150/5300-13** design criterion, with the exception of T-Hangar facilities will equal the footprint of the hangar. As a result, hangar and associated apron demand related to airfield and GA alternative development is provided in **Chapter 5**, *Airport Development Alternatives,* of this report.

Transient Parking Demand

The requirements for transient aircraft parking are derived using the guidelines provided in **FAA AC 150/5300-13**, *Airport Design.* The transient peak hour demand forecast as shown in **Table 4.16** is based upon the transient peak hour demand provided in **Chapter 3** of this report. Peak hour transient parking demand assumes that 50 percent of peak hour transient operations will need to be accommodated at one time. The final calculated amount was increased by 10 percent to accommodate expansion for at least the next two-year period as outlined in *Airport Design* in order to provide adequate lead time for future development. The final value was split to represent small versus large aircraft using the transient aircraft fleet mix forecast.

Itinerant aprons are intended for relatively short-term parking, usually less than 24 hours, although these may also accommodate transient aircraft overnight parking. Such aprons should be located to provide easy access to terminal or FBO facilities, fueling and ground transportation. According to FAA design requirements, a minimum of 360 SY per itinerant aircraft should be used for planning purposes. This is reasonable for small GA aircraft that currently utilize the field.

However, for larger business type aircraft, parking areas up to 2,600 SY per aircraft may be necessary. Based upon existing and forecast business aircraft, such as the Cessna Citation, Dassault Falcon 900, and Bombardier models, an area of 1,100 SY was used to strike a balance between the needs of various business aircraft. **Table 4.16**, *Business Aircraft Parking Area Requirements,* illustrates the parking areas required by various business aircraft.

TABLE 4.16 BUSINESS AIRCRAFT PARKING AREA REQUIREMENTS		
Make/Model*	**Length/Wing Span (Feet)**	**Required Parking Area[1] (Square Yards)**
VLJs (Eclipse 500)	33.5/37.9	473
Cessna 501	43.6/43.9	594
Dassault Falcon 10	45.6/42.11	591
MU-300	48.2/43.3	620
Cessna 525 (CJ1)	42.7/46.11	607
Cessna 525A (CJ2)	48/49.5	684
Cessna 525B	50.2/52.11	723
Cessna 550 (Citation Bravo)	47.2/52.2	700
Cessna 560 Citation XL	53/57	796
Cessna 560	53/57	796
Dassault Falcon 2000EX	67/64	999
Dassault Falcon 50	61/62	920
Dassault Falcon 50EX	61/62	920
Beechjet 400A	48/44	626
Israel Aircraft Westwind	52/45	664
Learjet 31A	49/40	593
Learjet 35	48.8/39.6	588
Learjet 45	58/47.9	739
Cessna 650 (Citation III/VI)	55.5/53.6	781
Cessna 680 (Citation Sovereign)	63.7/63.4	961
Cessna 750 Citation X	73/64	1,055
Dassault Falcon 900 EX	67/64	999
Bombardier Challenger 600 Series	68/64	1,000

Notes:
**Sample of Transient Aircraft currently operating at CRG*
[1] Required parking area includes +-10 feet of clearance from each wingtip and 40 +- feet in front of the aircraft to the centerline of the taxilane
Sources: Aircraft Manufacturer Data, Jane's Aircraft Recognition Guide and The LPA Group Incorporated 2007

Using the required number of itinerant aircraft parking spaces, the value of the 360 SY was applied for each small aircraft (single-engine and multi-engine piston) while 1,100 SY was applied for each larger aircraft and rotorcraft (turboprop and jet) expected.

TABLE 4.17 TRANSIENT AIRCRAFT PARKING DEMAND					
Year	Itinerant Peak Hour Operations	AC Tie-Down Demand + 10%	SEP/MEP	Jet/Rotor	Apron
2006	52	26	22	4	12,054
2007	54	27	23	4	12,663
2011	56	28	23	5	13,733
2016	64	32	23	9	15,005
2026	70	35	25	10	16,730
Notes: 360 SY for Transient Aircraft Apron 1000 SY for Jet Aircraft including Rotorcraft Sources: FAA AC 150/5300-13, Airport Design, and The LPA Group Incorporated, 2007					

Summary of Itinerant and Based Aircraft Apron Area Requirements

According to the FAA *Airport Design Manual*, a minimum area of 300 SY per based aircraft is used for planning purposes. This figure is lower than transient aircraft requirements since it is assumed that tighter spacing between based aircraft can be achieved. The actual area, however, will likely vary based upon the configuration and layout of the parking positions. Further, it is assumed that all larger aircraft, such as business jets, will be stored in hangar facilities. Applying the 300 SY criteria to based aircraft apron parking demand requires approximately 27,900 SY of based aircraft parking apron in 2006 but decreases to 19,200 SY in 2026 as a result of increased hangar storage availability.

Table 4.18, *Total Aircraft Apron Parking Demand***,** outlines the forecast parking demand for both based and transient aircraft operations over the twenty year planning period.

TABLE 4.18 TOTAL AIRCRAFT APRON PARKING DEMAND							
Year	Based Aircraft			Transient Aircraft			Total Parking Demand (SY)
	SEP/MEP	Rotor	Apron Parking Demand (SY)	SEP/MEP	Jet/Rotor	Apron Parking Demand (SY)	
2006	93	0	27,900	22	4	12,054	39,954
2007	95	0	28,500	23	4	12,663	41,163
2011	99	1	30,000	23	5	13,733	43,733
2016	74	0	22,200	23	9	15,005	37,205
2026	64	0	19,200	25	10	16,730	35,930
Sources: FAA AC 150/5300-13 and The LPA Group Incorporated 2007							

Based upon discussions with airport representatives, there does not appear to be a shortage of available itinerant and based aircraft apron space at CRG. However, the age of the pavement adjacent to the FBO facilities, designated as C-112 and C-345 on the pavement map, were last overlaid in 1984 and 1986, respectively. Therefore, a pavement overlay rather than an expansion of tie-down facilities is required in the short-term. However, if demand by large transient aircraft at CRG becomes greater than projected based upon services offered at the airport, then expansion and/or development of additional transient parking facilities may be warranted.

4.4.2 Airport Support Facilities

Additional facility requirements to support the operations at CRG are included in the following sections. These address the requirements for pilot and passenger terminal facilities, automobile parking fuel storage, electrical vault, and security fencing

4.4.2.1 Demand for General Aviation Pilot and Passenger Terminal Facilities

Currently GA passenger and pilot terminal facilities are provided by the two fixed based operators (FBOs) on the airfield, Craig Air Center and Sky Harbor. Since current FBO facilities at CRG are somewhat constrained, an analysis was conducted to estimate the size of GA pilot and passenger facilities needed to accommodate expected demand over the planning period.

Peak hour pilots/passengers for GA operations project the highest average number of pilots and passenger that use an airport during a one-hour period. To estimate the peak hour pilots/passengers, the following assumptions were made:

- Only itinerant operations would require GA terminal demand.
- Since arriving and departing GA pilots and passengers could use the FBO facilities at the same time, the number of peak hour operations was not adjusted.
- Based upon the type of operation (transient or based) and fleet mix (large or small aircraft), the following average pilot/passenger assumptions were used:
  - Air Taxi Operations = 9
  - Transient Small Aircraft Operation = 3
  - Transient Large Aircraft Operation = 7
- An area of 62.5 SF for each pilot/passenger was used to determine the space requirements. This value per pilot/passenger incorporates all functions of a full service GA terminal building including FBO counter, waiting area, snack room, pilot's lounge, restrooms, etc.

Using the peak hour data provided in **Table 4.19**, peak hour operations by aircraft type were determined in **Table 4.20**.

TABLE 4.19 PEAK HOUR GA/AT OPERATIONS BREAKDOWN								
Year	**Ops**	**Peak Month (10.91%)**	**Avg. Day Peak Month (30.42)**	**Peak Hour (15% of ADPM)**	**% Itinerant Ops**	**Itinerant Peak Hour Ops**	**% Local Ops**	**Local Peak Hour Ops**
2006	152,018	16,585	545	82	59%	48	41%	34
2007	154,354	16,840	554	83	60%	50	40%	33
2011	166,783	18,196	598	90	58%	52	42%	38
2016	183,325	20,001	657	99	55%	54	45%	44
2021	201,772	22,013	724	109	53%	58	47%	51
2026	222,004	24,221	796	119	50%	60	50%	60
Source: FAA Approved Aviation Forecasts, 2007 and The LPA Group Incorporated. 2007								

TABLE 4.20 PEAK HOUR OPERATIONS BY AIRCRAFT TYPE				
Year	**Transient Operations Total**	**Air Taxi**	**GA Small**	**GA Large**
2006	48	4	38	6
2007	50	5	38	7
2011	52	5	39	8
2016	54	5	39	10
2021	58	6	40	11
2026	60	6	42	12
Source: The LPA Group Incorporated, 2007				

Thus, applying the passenger data to the aircraft mix, resulted in constrained passenger demand of 131 passengers.

TABLE 4.21 PEAK HOUR PASSENGER DEMAND		
Year	**Transient Peak Pax**	**Space Required (SF)**
2006	98	6,101
2007	103	6,410
2011	110	6,866
2016	118	7,379
2021	126	7,874
2026	131	8,173
Source: The LPA Group Incorporated, 2007		

Based upon the methodology used above, approximately 8,173 square feet of GA passenger demand is projected through the end of the GA planning period. This may be provided by either expanding existing FBO terminal facilities or providing a GA Terminal adjacent to the transient apron parking facilities.

4.4.2.2 Automobile Parking

General aviation automobile parking demand is based upon an evaluation of existing airport use as well as industry standards. GA Terminal/FBO parking demands were calculated by adding busy hour passengers and employees to determine required GA parking requirements.

In addition, the parking requirements of aircraft owners were also considered. Although some owners prefer to park their vehicles in their hangars, safety can be compromised when automobile and aircraft movements are mixed. Therefore, separate parking requirements, which consider one half of based aircraft at the airport, were applied to general aviation automobile parking space requirements. A summary of parking requirements are presented in **Table 4.22**.

The airport currently has approximately 312 total parking spaces available. This includes parking in front of the FBO facilities and adjacent to several buildings and hangars around the airport.

TABLE 4.22
AUTOMOBILE PARKING DEMAND*

Year	Itinerant Demand			Based Aircraft Demand	Total	
	Busy Hour Passengers and pilots	Busy Hour Employees	Required Parking Spaces	Required Parking Spaces	Parking Required	Parking Area Required (SY)
2006	98	3	101	164	264	10,575
2007	103	3	106	168	273	10,939
2011	110	4	114	184	297	11,881
2016	118	4	122	208	330	13,200
2026	131	4	135	272	407	16,285

*Note: * Based upon GA Passenger and employee demand. Additional automobile parking will be required as part of hangar development.*
Source: The LPA Group Incorporated, 2007

4.4.2.3 Aviation Fuel Storage

Craig Air Center and Sky Harbor Aviation, the two local FBOs, provide the majority of aircraft fuel to tenants and transient operations at Craig Airport. In addition, Sterling Flight Training and William Victor Aviation meet the minimum leasehold standards to provide self fueling facilities at the airport. Both Sky Harbor and Craig Air Center are equipped with 10,000 gallon Jet A and Avgas fuel tanks in addition to 5,000 gallon avgas self-fuel facilities. Both Sky Harbor and Craig Air Center use trucks to provide apron aircraft fueling. Limited fuel is provided by Sterling Flight Training and William Victor Aviation. Both of these tenants meet leasehold standards to provide self fueling for their owned aircraft only.

Therefore, for this study, it was determined that the primary suppliers of aviation fuel at CRG are the FBOs.

Fuel storage requirements are typically based upon maintaining a two-week supply of fuel during an average month; however, more frequent deliveries can reduce the fuel storage requirement. Thus, applying the Fleet Mix forecast provided in **Chapter 3** to peak hour demand and operations as shown in **Table 4.23**, fuel storage requirements were determined. The resulting Jet A and Avgas demand over the twenty year planning period is shown in **Table 4.24.**

TABLE 4.23
PEAK HOUR DEMAND BY AIRCRAFT TYPE

Year	Total	SEP	MEP	Turboprop	Jet	Helicopter
2006	588	388	118	59	18	6
2007	599	392	119	60	20	8
2011	646	406	126	68	31	15
2016	707	422	135	77	47	26
2021	776	458	147	85	54	31
2026	850	502	162	94	60	34

Sources: CRG Airport Management and The LPA Group Incorporated 2007

Using historic fuel data per operation provided by airport management and FBO records, gallons of Avgas per piston aircraft operation in 2006 was 2.81 and 43 gallons of Jet A per turbine operation. Thus, assuming that fuel usage per operation will increase by two (2) percent per year, demand for avgas and Jet A facilities was estimated for the twenty-year planning period.

TABLE 4.24 AVIATION FUEL STORAGE REQUIREMENTS BASED UPON AVERAGE PEAK MONTH						
Aircraft Type/Fuel Demand	**Existing Use (2006)**	**2007**	**2011**	**2016**	**2021**	**2026**
Piston Engine						
Gallons per Operation	2.81	2.87	3.10	3.43	3.78	4.18
Gallons per Day	1,421	1,464	1,651	1,907	2,289	2,768
Avgas Requirements						
Total Avgas Per Day (GAL)	1,421	1,464	1,651	1,907	2,289	2,768
14-Day Reserve	19,893	20,495	23,112	26,693	32,047	38,757
Turboprop, Helicopter and Jet						
Gallons per Operation	43	44	47	52	58	64
Gallons per Day	3,540	3,867	5,407	7,886	9,880	11,949
Jet A Requirements						
Jet A Demand per Day (Gal)	3,540	3,867	5,407	7,886	9,880	11,949
14-Day Fuel Reserve	49,557	54,142	75,698	110,405	138,320	167,279

Sources: CRG Airport Management, Sky Harbor, Craig Air Center, Sterling Aviation and William Victor Fuel Records, and The LPA Group, Incorporated, 2007

Based upon fuel demand noted in **Tables 4.24**, additional fuel storage is required in the short-term to accommodate the two-week reserve. If, however, CRG and the local operators agree to a more frequent fuel deliveries, than additional Jet A and Avgas storage facilities will be required later in the planning period.

4.4.2.4 Electrical Vault

A 600 square foot electrical vault building is located due west of the transient apron and offices. The electrical vault houses the necessary transformers, controllers, and generators for airfield lighting, signage, and NAVAIDS. Recent improvements to the electrical vault include new regulators in 2002 and 2003 to accommodate new signage and lighting at the airport. Existing regulators are from 1993 or earlier. In addition, the vault ampoules were increased to 400 and 600 ampoules to accommodate new equipment. As a result, upgrades to the older vault regulators are recommended as part of vault expansion related to recommended runway and taxiway improvements.

4.4.2.5 Security Fencing

Since the federal government has not implemented specific security requirements other than fencing and lighting at the majority of GA airports around the country, security related improvements are often given a low priority in the funding system. Typically the main threat to GA airports has been associated with theft and vandalism. In an effort to limit threats against GA facilities, the Florida Department of Transportation has embarked on an integrated general aviation security program of which CRG is one of four participating airports.

CRG is equipped with a 6-foot tall perimeter fence topped with three strands of barbed wire to limit unauthorized access to the airfield as well as control local wildlife. The existing airport perimeter fence encompasses the airfield and all aircraft movement areas. Access gates are equipped with keypads and card readers, and provide adequate vehicular and pedestrian access. In addition, the Jacksonville's Sheriff's department has hangar and office facilities currently located at the airport.

4.4.3 Ground Access

The Craig Municipal Airport is located approximately 9 miles east of the downtown central business district, which makes it extremely convenient for business travelers. The airport is surrounded by five main arterial roadways:

- Atlantic Boulevard to the South
- Kernan Road to the East
- St. John's Bluff Road to the west, and
- Monument Road and portions of McCormick Road to the north

In the last ten years, the City of Jacksonville has widened Monument Road to relieve congestion and improve access in and around the airport. The City has designed a widening project for St. John’s Bluff Road and began construction in 2007. This project is scheduled for completion in 2009.

Primary access to on-airport facilities is via St. John's Bluff Road and Aviation Drive, which provides direct access to Sky Harbor FBO and the new JAA Administration Building and North Florida Flight Center facility (Building 1). Access to Craig Air Center is provided from Aviation Drive to Charles Lindbergh Avenue providing direct access to their facilities and associated T-Hangars, conventional hangars and offices on the airfield. A service road running parallel to the fenceline and St. John's Bluff Road provides access to newer facilities adjacent to Taxiways D and G, and Wright Brother's Drive provides access to various hangars, Jacksonville Sheriff and Mosquito Control facilities.

Access to Mill Cove Golf Course, a public 18-hole Arnold Palmer Signature Golf Course located on Craig Airport property, is provided off Monument Road. Access to the Gold Club Restaurant and Bar is provided off Atlantic Blvd via General Doolittle Drive. This road currently provides the only access to the South Development area. The road is limited to right in/right out access from eastbound Atlantic Blvd.

4.4.4 Land Use

The Craig Airport property encompasses approximately 1,432 acres which is owned by the Jacksonville Aviation Authority. The majority of the property is used for aviation. The airport is also surrounded by residential, commercial/institutional and conservation type land use as shown in **Figure 4.8**, *City of Jacksonville Land Use Map*. The use of the surrounding land is also controlled by the City of Jacksonville Zoning Map as shown in **Figure 4.9**.

Due to residential development that surrounds the airfield, a voluntary noise mitigation program was implemented in 2000. Most recently, an FAR Part 150 Study was prepared in 2006 to not only review the effectiveness of existing noise mitigation measures but also assess potential impacts associated with fleet mix changes such as the relocation of the National Guard Apache helicopters to Cecil Field and increasing operations associated with business jet aircraft.

As a result, any recommended development of airport property must consider the impacts to airport operations as well as impacts to the surrounding community. First, JAA must ensure that property is set aside to provide for all airfield, hangar, apron and other aviation support uses for the 20 year planning period and beyond as requirements are identified. An analysis of potential land use to proposed airfield development is presented in detail within **Chapter 5**, *Airport Alternatives Analysis*, of this report.

JAA should then evaluate any remaining property for non-aviation use to determine if sufficient non-aviation revenue can be produced to support existing and future aviation needs. JAA has already determined that the property on the northeast corner of St. John's Bluff Road and Monument Road could be used to support compatible non-aviation development. The Authority is also evaluating the golf course property and property bordering Atlantic Boulevard for compatible business park/industrial development. It should be noted that Florida growth management laws, concurrency requirements and City of Jacksonville sign ordinances may limit JAA's ability to develop these properties in a cost effective manner.

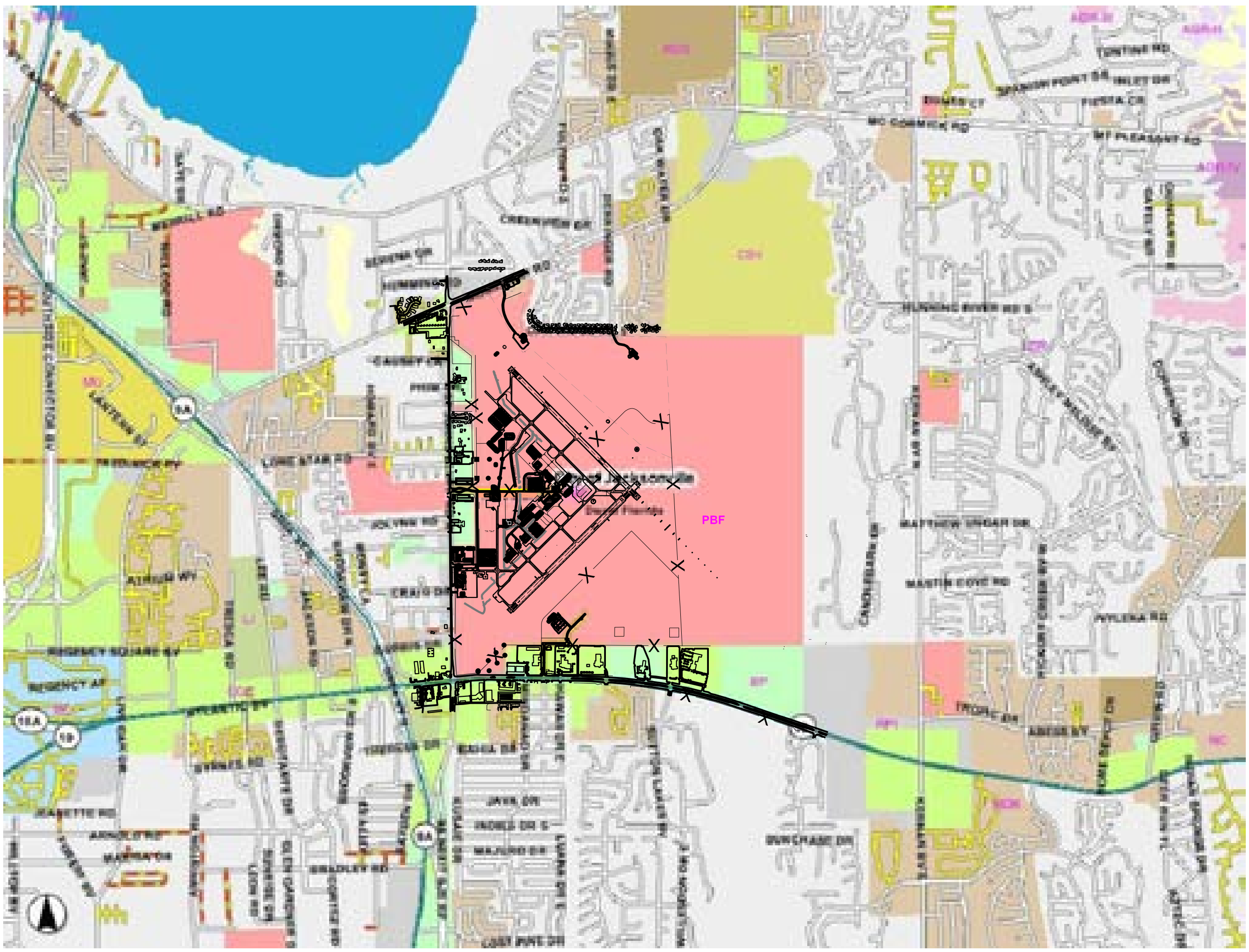
Also based on an initial evaluation, it appears that JAA will not need to acquire additional property to support development of the needed aviation facilities. JAA, however, may need to acquire additional property southeast of the airport to limit incompatible residential development if the property should become available at a reasonable price. This property is currently approved by the City of Jacksonville for limited residential development. However, the property is outside of any FAA recognized noise contours, and development of the property does not preclude JAA's ability to develop the needed runway infrastructure proposed in this and previous plans. Because the property is not within the 65 DNL contour, JAA could have to purchase this property without any federal assistance.

City of Jacksonville Land Use Map

JACKSONVILLE AVIATION AUTHORITY

LEGEND

- PBF - PUBLIC FACILITIES
- BP - BUSINESS PARK
- CSV = CONSERVATION
- RPI = RESIDENTIAL - PROFESSIONAL INSTITUTIONAL
- RLD = RESIDENTIAL LIGHT DENSITY
- LI = LIGHT INDUSTRIAL
- CGC = COMMUNITY / GENERAL COMMERCIAL
- RMD = RESIDENTIAL MEDIUM DENSITY
- MU = MULTI USE
- RC = REGIONAL COMMERCIAL
- NC = NEIGHBORHOOD COMMERCIAL



Source: City of Jacksonville 2008

LPA

Figure 4-8

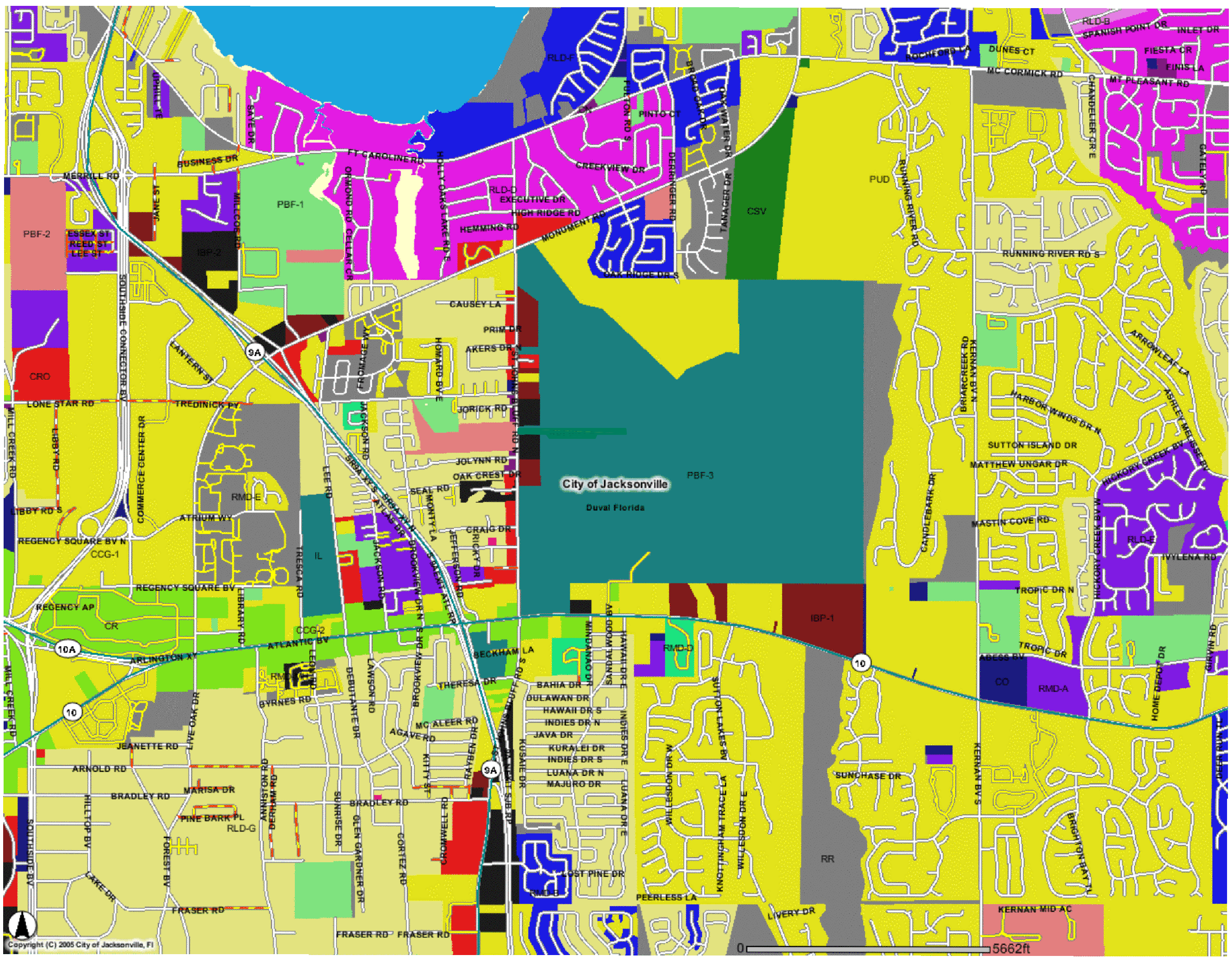
Y:\Planning\CRG AMPU\Figures\Chapter 4\Fig 4-8_Land Use Map.dwg April 22 2008-16:30

JACKSONVILLE AVIATION AUTHORITY

City of Jacksonville Zoning Map

LEGEND

- PUD-PLANNED UNIT DEVELOPMENT
- CSV-CONSERVATION
- RLD-D-RESIDENTIAL LOW DEVELOPMENT
- RLD-E-RESIDENTIAL LOW DEVELOPMENT
- RLD-F-RESIDENTIAL LOW DEVELOPMENT
- RLD-G-RESIDENTIAL LOW DEVELOPMENT
- PBF-1-PUBLIC BUILDING & FACILITIES
- CRO-COMMERCIAL, RESIDENTIAL & OFFICE
- IBP-1-INDUSTRIAL BUSINESS PARK
- WATER
- IBP-2-INDUSTRIAL BUSINESS PARK
- PBF-2-PUBLIC BUILDING & FACILITIES
- RMD-A-RESIDENTIAL MEDIUM DENSITY



NORTH

Source: City of Jacksonville 2007

LPA

Figure 4-9

There are also small portions of the Runway Protection Zones associated with the existing runways northwest and southwest of Craig that JAA does not control. JAA should attempt to acquire an avigation easement from the current property owners, if possible. However, these areas are outside of any runway safety areas and currently do not contain incompatible uses.

JAA has worked diligently at being a good neighbor to local residents located in areas designated as residential-low density or residential-medium density by instituting noise abatement procedures at CRG, and by having continuing meetings of the Craig Airport Citizens Advisory Committee (CACAC) to air problems and concerns.

4.5 Summary

The facility requirements addressed in this chapter were determined necessary to satisfy the demand of activity projected for CRG over the next 20 years. Proposed facilities are outlined in **Table 4.25** and do not reflect any priorities. Alternatives to meet the various facility needs are addressed in the next chapter.

TABLE 4.25 SUMMARY OF FACILITY REQUIREMENTS	
Runways	✈ Routine pavement maintenance for all runways ✈ Extend Runway 14-32 to 5,600 feet ✈ Maintain all imaginary and safety related surfaces ✈ Maintain RPZ and RSA clear of obstacles
Taxiways	✈ Overlay and Remark Taxiways A, B and C[1] ✈ Construct new taxiway connectors from Taxiway A to developable areas, as needed ✈ Rehabilitate taxiway pavements throughout planning period ✈ Extend Taxiway A associated with runway development ✈ Provide stop/hold bars on Taxiway A prior to Runway 32 safety area ✈ Provide run-up pad near extended runway threshold
Additional Airfield Facilities	***Navigational Aids, Lighting and Electrical Vault*** ✈ Add taxiway lights associated with proposed improvements ✈ Relocate Glideslope near Runway 32 ✈ Relocate PAPI-4 on Runways 14 and 32 ✈ Relocate REILs on Runway 14 ✈ Relocate MALSR and RAILs on Runway 32 ✈ Add REILs, if possible, to Runway 5 ✈ Update taxiway lighting to LED lights ✈ Maintain all runway and taxiway lighting, as needed ✈ Upgrade electrical vault regulators
	Signage ✈ Add/replace and refurbish airfield signage as necessary ✈ Install Distance to Go Markers and Signage ***Pavement Markings*** ✈ Periodic remarking of all pavement surfaces ✈ Add Runway Hold Lines associated with runway extension
GA Facilities	✈ Rehabilitate existing pavement adjacent to Craig Air Center and Sky Harbor ✈ Rehabilitate or replace 85 T-Hangars ✈ Add approximately fifteen 12-unit T-Hangars ✈ Construct at least 8 Conventional hangars ✈ Construct at least 28 Corporate hangars
Support Facilities	✈ Install additional Jet A fuel tanks ✈ Relocate fenceline associated with development
Access and Infrastructure	✈ Construct additional internal roads north of Airport Road to provide access to additional aviation and non-aviation facilities. ✈ Provide additional parking where needed to accommodate anticipated demand

Note: [1]According to Airport Personnel and 2007 Aerial Image, Taxiways A, C and B are marked to 35 feet but have pavement that extends to 50 feet.
Source: The LPA Group Incorporated, 2007

CHAPTER FIVE
Airport Alternatives Analyses

5.1 General Overview

The Craig Municipal Airport (CRG) is one of four airports within the Jacksonville Aviation System. The Airport is designated as a general aviation reliever for Jacksonville International Airport (JAX). CRG is located approximately 14 miles southeast of JAX and nine miles east of the downtown central business district. As a result, the airport draws general aviation (GA) traffic away from JAX, and provides an alternate site for business/corporate and aircraft training operations, reducing potential delays and congestion at JAX.

CRG is currently home to a variety of fixed and rotor wing aircraft including a mix of single and twin engine piston, turboprop and turbojet aircraft and helicopters. Existing property at CRG includes 1,432 acres, bordered by five main arterial roadways:

- Atlantic Boulevard to the south
- Kernan Road to the east
- St. Johns Bluff Road to the west, and
- Monument and McCormick Roads to the north.

According to the City of Jacksonville Planning Department, land use adjacent to the airport includes residential, commercial/institutional and conservation zones. Due to the proximity of residential development, JAA implemented several noise mitigation measures in 2000 to help reduce the noise impacts around CRG based upon the findings of the *Noise Mitigation Program and Noise Contour Analysis* performed by TSI/ESA Airports. In 2005, JAA also proceeded with the development of a formal Part 150 study to assess the effectiveness of existing noise mitigation efforts and changes to the airport fleet mix.

The alternatives analysis not only evaluated the findings provided in the 2006 FAR Part 150 Study, but reviewed the following reports to provide insight into key issues, airport goals, and long-range planning recommendations:

- *Noise Mitigation Program and Noise Contour Analysis*, TSI/ESA Airports, March 2000
- *Master Plan Update*, Prosser & Hallock, Inc. and TriState Planning & Engineering, October 2001
- City of Jacksonville Zoning Maps, City of Jacksonville Planning Department
- City of Jacksonville Land Development Code, Part 10, Zoning Code adopted by the City Council on March 27, 2007 through Ordinance **2006-1225**, Part 10 Rewrite., and further amended through Ordinance **2007-727.**

- City of Jacksonville revised and adopted *2010 Comprehensive Plan*.

The analysis of existing facilities, as presented in **Chapter 4**, indicated that the airport should implement various airside and landside facility improvements to accommodate projected demand over the 20-year planning period. In identifying potential alternative development at CRG, some intuitive judgment was used to identify which alternatives have the greatest potential for implementation.

Based upon the primary airport elements, alternatives for the airfield, general aviation facilities, navigational aids, support facilities and landside improvements were developed. In addition, the utilization of available airport property to provide revenue support for the airport and economic development within the Jacksonville Metropolitan Area was also considered.

The selection of the preferred alternatives was based upon input received from the Jacksonville Aviation Authority (JAA), City of Jacksonville Planning Department, Federal Aviation Administration (FAA), and Florida Department of Transportation (FDOT). In addition, input from the general public and airport users through meetings and community organizational input was also considered.

5.1.1 Key Issues

In an effort to develop airfield and landside alternatives to accommodate anticipated demand over the twenty year planning period, the following key issues were identified and considered as part of the alternative analysis:

KEY ISSUES	DESCRIPTION
Runway Length and Airfield Configuration	Based upon existing and anticipated demand, the current runway, taxiway and apron areas were reviewed based upon airport operational requirements, efficiency and safety. The Craig Master Plan, as presented, is technically compliant with the Florida Aviation System Plan (FASP). However, the proposed runway extension is inconsistent with the City of Jacksonville's currently adopted Comprehensive Plan.
Airport Activity	Anticipated aircraft activity and potential impacts to the surrounding communities specifically related to noise were evaluated. Airport operational limits to aircraft weighing 60,000 pounds or less were identified.
Air Traffic Patterns	Approach and departure patterns were evaluated to mitigate potential impacts to noise sensitive areas while accommodating the operational needs of the airport.
Aircraft Technology	Use of new technologies and runway modification were also studied. These technologies may reduce noise impacts to surrounding communities.
Airfield Capacity	Existing airfield operational capacity is restricted; therefore, proposed airfield improvements were evaluated to determine potential capacity versus the increased use of Herlong, Cecil Field or other airports.

KEY ISSUES	DESCRIPTION
Environmental Impacts	On airport and contiguous airport land use were studied to minimize or mitigate impacts on the ecosystem, wetlands and any endangered or threatened species.
Aircraft Noise	CRG is surrounded by several residential communities (**Figure 5-1**) and noise sensitive sites (**Figures 5-2 and 5-3**) including schools and churches. However, none of the schools or churches located near Craig Airport is within the existing and future 65 DNL noise contour as shown in **Figure 5-2**.
On and Off Land Use	On-airport development was reviewed to consider highest and best use based upon existing and forecast demand as well as financial viability of development. On airport operations were examined for impacts to off-airport noise sensitive areas. Off-airport residential land use should be limited to areas outside of the noise impact areas as shown in **Table 5-1** and **Figures 5-2 and 5-3**. Commercial land use should be evaluated so as not to negatively impact airport operations.
Vehicular Traffic Demand	Vehicular traffic demand related to on airport development was considered in conjunction with City of Jacksonville planned development to limit the impacts to surface transportation on the neighboring communities.
Financial Viability & Feasibility	The viability and feasibility of proposed projects related to operating revenue and funding capacity were evaluated.

5.1.2 On and Off Airport Land Use and Zoning

Florida Statute 333.03 and Part 10 of the City of Jacksonville Zoning Code addresses on and off airport land use. According to **Florida Statute 333**, *Airport Zoning*, **Section 03**, every political subdivision having an airport hazard area within its territorial limits shall adopt, minister and enforce ... airport zoning regulations for such airport hazard areas. Further, when any airport hazard is located wholly or partly outside the territorial limits of the airport political subdivision, the airport political subdivision in conjunction with the political subdivision within which the airport is located shall either:

1. Adopt, administer and enforce airport zoning regulations by interlocal agreement in accordance with Chapter 163 or,
2. By ordinance or resolution, adopt/create a joint airport zoning board to administer and enforce airport zoning regulations applicable to the airport hazard in question.

The purpose of the airport zoning code is to provide land use regulation by requiring controls within certain noise zones, airport height and hazard zones, and clear zones to minimize the potential detrimental effects on its citizens. The intent of Part 10 is to promote the health, safety and general welfare of inhabitants and visitors by "preventing the creation, establishment or maintenance of hazards to aircraft, preventing the destruction or impairment of the utility of the airports in the city and the public investment therein and protecting the lives and properties of owners or occupants of lands in the vicinity of the airports as well as users of airports and to aid and implement the overriding federal interest in safe operation of airports and the security of land surrounding airports".[1]

The regulations outlined in Part 10 are applicable to all lands lying within delineated airport environs adopted as part of the Zoning Atlas as provided in Section 656.202 and to all lands defined in Section 656.1005 as shown in **Appendix L** of this report. As part of the off airport land use evaluation, residential communities contiguous to the airport environs are illustrated in **Figure 5.1**.

Also, as defined within FS 333.03, 'where an airport authority or other governing body operating a publicly owned, public use airport has conducted a noise study in accordance with the provisions of 14 CFR Part 150, neither residential construction nor any educational facility as defined in Chapter 1013, with the exception of aviation school facilities, shall be permitted within the area contiguous to the airport defined by the outer noise contour that is considered incompatible with that type of construction as defined within **14 CFR Part 150**, *Appendix A* or an equivalent noise level as established by other types of noise studies'.[2] As shown in Part 10, the Civilian Airport Environs is provided in **Table 5-1.**

TABLE 5-1
CIVILIAN AIRPORT ENVIRON

Area	DNL Range/Comment
Noise Zone A	70 or greater
Noise Zone B	65 - 69.99
Airport Notice Zone	60 - 64.99
Runway Safety Area	Is the area surrounding the runway that is prepared or suitable for reducing the risk of damage to airplanes in the event of a problem on landing or takeoff by clearing all obstructions within the area. This surface typically extends 600 to 1,000 feet from the end of an existing or future runway depending upon the type of aircraft operating on that runway.
Runway Protection Zones (RPZ)	Is a trapezoidal area starting 200 ft from the existing or future runway ends at a civilian airport and extending 1,000 to 2,500 feet beyond the starting point depending upon aircraft and approach visibility minima for the runway that is intended to enhance the protection of people and property on the ground. The FAA requires the clearing of all incompatible objects and activities from this area and encourages the airport to acquire a sufficient property interest in the RPZ to control the land uses on the property to prohibit residences and places of public assembly, churches, schools, hospitals, office buildings, shopping centers, and fuel storage facilities.
Height and Hazard Zones (HH)	Includes lands located within the surface limits of the airport height zone for which there is a potential for such hazards as electronic interference, light glare, bird strike hazard, and other hazards to safe navigation of aircraft. Height zone means the obstruction height limits as defined in Title 14 Code of Federal Regulations (CFR) Part 77. They include all the land lying beneath the approach, transitional, horizontal and conical surfaces as they apply to the airport. ..... The City has defined 0', 35', 50', 150', 300' and 500' height and hazard zones and structures exceeding these heights must be referred to the Jacksonville Aviation Authority as required by Section 656.1005.

Source: Table 656-1, Section 656.10051, Part 10 Chapter 656

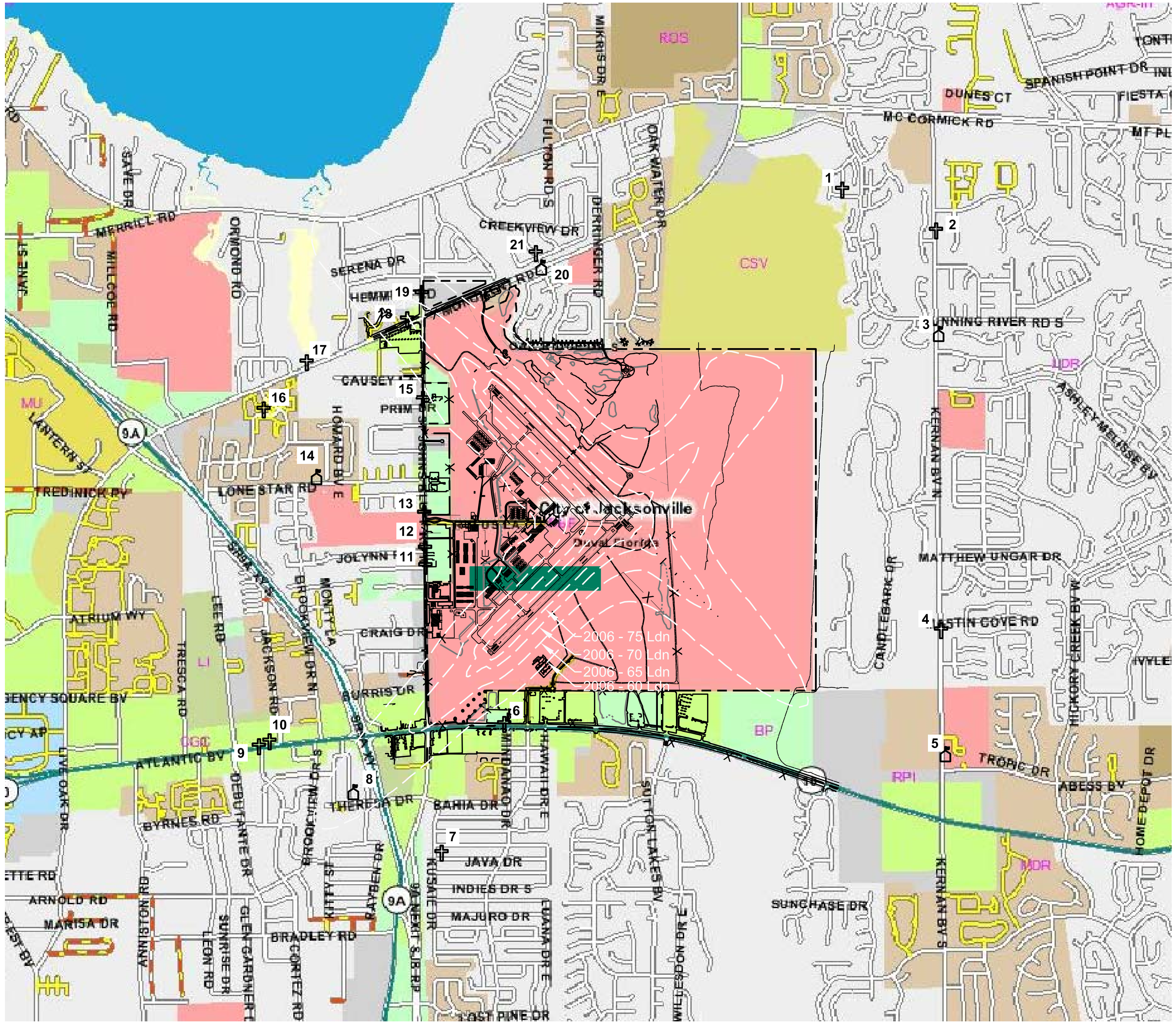
[1] City of Jacksonville Zoning, Part 10, Section 656.1002, Ordinance 2006-1225-E, March 27, 2007, Page 2.
[2] Florida Statute 333.03, Power to Adopt Airport Zoning Regulations, Section 2(C).

Residential Communities

Figure 5-1

JACKSONVILLE AVIATION AUTHORITY

Existing Land Use with Noise Contours



LEGEND

- PBF - PUBLIC FACILITIES
- BP - BUSINESS PARK
- CSV = CONSERVATION
- RPI = RESIDENTIAL - PROFESSIONAL INSTITUT
- RLD = RESIDENTIAL LIGHT DENSITY
- LI = LIGHT INDUSTRIAL
- CGC = COMMUNITY / GENERAL COMMERCIAL
- RMD = RESIDENTIAL MEDIUM DENSITY
- MU = MULTI USE
- RC = REGIONAL COMMERCIAL
- NC = NEIGHBORHOOD COMMERCIAL
- AGR-I = AGRICULTURAL I
- AGR-II = AGRICULTURAL II
- AGR-III = AGRICULTURAL III
- AGR-IV = AGRICULTURAL IV
- Churches
- Schools

SCHOOLS & CHURCHES

1 BEACHES FIRST CHURCH OF NAZARENE PARSONGAGE CHURCH
2 RIVER OF LIFE FULL GOSPEL FELLOWSHIP CHURCH
3 SABAL PALM ELEMENTARY SCHOOL
4 EAST POINTE CHURCH
5 LANDMARK MIDDLE SCHOOL
6 ATLANTIC COMMUNITY CHURCH
7 HORSESHOE U.S.A. CHURCH
8 BROOKVIEW ELEMENTARY SCHOOL
9 NEW COVENANT MINISTRIES CHURCH
10 ATLANTIC BOULEVARD BAPTIST CHURCH
11 REGENCY ASSEMBLY OF GOD CHURCH
12 BETHEL RENEWAL CHURCH
13 CHAPEL HILLS MEMORY GARDENS CEMETERY CHURCH
14 LONE STAR ELEMENTARY SCHOOL
15 EASTSIDE COMMUNITY CHURCH
16 JACKSONVILLE CHRISTIAN CENTER CHURCH
17 NARROW WAY MINISTRIES CHURCH
18 THE JACKSONVILLE CHURCH OF CHRIST
19 CHRIST CARES ALLIANCE CHURCH
20 LIGHTHOUSE CHRISTIAN SCHOOL
21 THE FATHER'S HOSE INTERNATIONAL CHURCH

Source: City of Jacksonville 2007 and THE LPA GROUP INCORPORATED

Figure 5-2

2006 Noise Notice Zone

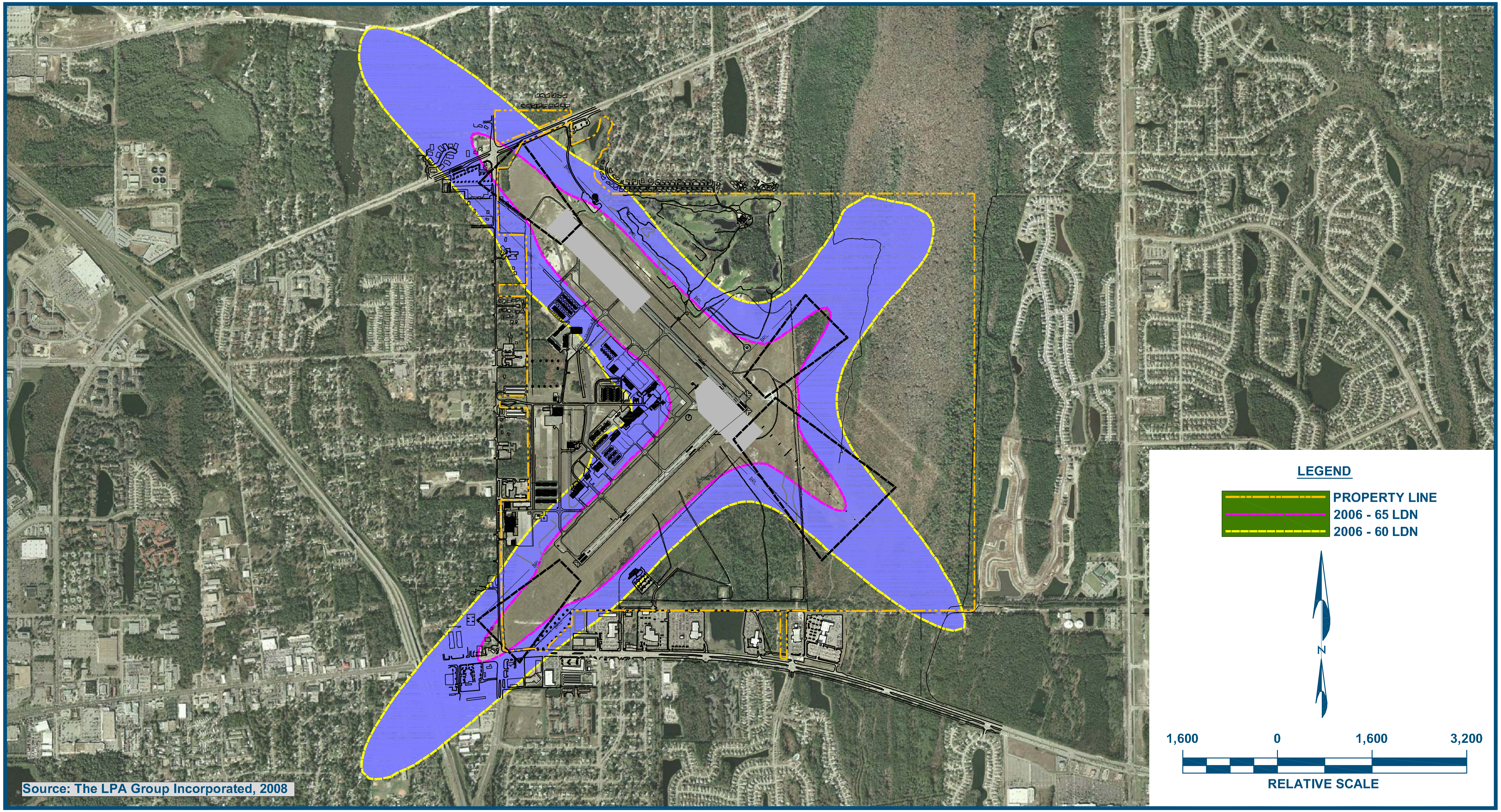


Figure 5-3

Both City of Jacksonville Zoning Ordinance and Florida Statute 333.03 state that airport zoning regulations shall be adopted which restrict new incompatible uses, activities, or construction within runway clear zones, including uses, activities or construction which are incompatible with normal airport operations or endanger public health, safety and welfare by resulting in congregations of people, emissions of light or smoke, or attraction of birds.

5.1.2.1 Noise and Noise Notice Zones

Within Part 10, Table 656-2, land use requirements are determined based upon the zoning classification and allowable land uses designated by the noise zones within which the parcel lies. Land uses are delineated into three categories:

- Unacceptable development (X) which even though otherwise permitted by the zoning classification of the parcel, land use is prohibited because of noise requirements.
- Conditional new development (C) defined that even though permitted in the zoning classification of the parcel, the use shall meet the guidelines set for in the footnotes of Table 656-2 (See **Table 5-2**).
- Acceptable Development (A) the provisions of the appropriate zoning classification of the parcel shall apply as well as Airport Notice Zone Acknowledgement requirements (Form found in **Appendix J** of this report).

A copy of Table 656-2 is provided in **Table 5-2**.

TABLE 5-2
LAND USE CATEGORY

Land Use	Noise Zone A (>70 DNL)	Noise Zone B (65-69.99 DNL)	Airport Notice Zone (60-64.99 DNL)
Residential			
Single Family Dwelling	X,11	C, 1, 2	C, 1
Multi-family Dwelling	X, 11	C, 1, 2	C, 1
Mobile Home Park	X	X	C, 1
Foster Care/Family Care Facility	X, 11	C, 1, 2	C, 1
Group Care Home and Similar Uses	X, 11	C, 1, 2	C, 1
Rooming House/Boarding House	X, 11	C, 1, 2	C, 1
Commercial			
Retail outlets for the sale of general merchandise, apparel, etc.	C, 1, 2	C, 1	C, 1
Retail sales of building materials, hardware, farm equipment, new or used automobiles, mobile homes, boats or similar uses	C, 1, 2	C, 1	C, 1
Commercial Parking Lot	C, 1	C, 1	C, 1
Retail sale of furniture, home furnishings, and similar uses	C, 1, 2	C, 1	C, 1
Service establishments such as restaurants (including drive-in restaurants), service of alcoholic beverages and similar uses	C, 1, 2	C, 1, 3	C, 1
All types of professional and business offices, personal services, professional or business including building trades, contractors and similar uses.	C, 1, 2	C, 1, 3	C, 1

TABLE 5-2 LAND USE CATEGORY			
Land Use	**Noise Zone A (>70 DNL)**	**Noise Zone B (65-69.99 DNL)**	**Airport Notice Zone (60-64.99 DNL)**
Commercial indoor recreational or entertainment facilities	C, 1, 2	C, 1, 3	C, 1
Repair services and service garages including automobile repair, radio and television repair and similar uses	C, 1	C, 1	C, 1
Automobile service station	C, 1	C, 1	C, 1
Motel or hotel	C, 1, 2	C, 1, 2	C, 1
Radio and television broadcasting offices and studios, telephone exchange and similar uses.	C, 1, 2	C, 1, 2	C, 1
Medical and other health services such as hospitals, clinics and similar uses	X, 11	C, 1, 2	C, 1
Industrial			
Wholesaling, warehousing storage or distribution establishments, assembling of components and similar uses.	C, 1, 10	C, 1, 10	C, 1
Freight, bus, traveling, shipping or other transportation terminals	C, 1, 10	C, 1, 10	C, 1
Manufacturing of food and kindred products, apparel, textile mill products and similar uses	C, 1, 10	C, 1, 10	C, 1
Manufacturing of chemicals and allied products, petroleum refining and related activities, rubber and miscellaneous plastic products and similar uses	C, 1, 10	C, 1, 10	C, 1
Manufacturing of lumber and wood products, furniture and fixtures, paper and allied products, stone, clay and glass products, primary metal including fabrication of metal products and similar uses.	C, 1, 10	C, 1, 10	C, 1
Printing, lithography, publishing or similar establishments	C, 1, 10	C, 1, 10	C, 1
Manufacturing of professional, scientific and control instruments, prosthetic appliances, dentures, eyeglasses, hearing and similar products	C, 1, 10	C, 1, 10	C, 1
Public and Quasi-Public Services			
Cemeteries	C, 1, 5	C, 1, 5	C, 1
Churches	X, 11	C, 1, 2	C, 1
Governmental services, such as offices, fire stations, postal services and prisons	C, 1, 2	C, 1, 2	C, 1
Schools	X, 11	X, 11	C, 1, 7
Cultural activities such as libraries, museums, art galleries and similar uses	X, 11	X, 11	C, 1
Private clubs and similar uses which provide for public assembly	X, 11	C, 1, 2	C, 1
Outdoor Recreation			
Playgrounds, neighborhood parks	X, 11	X, 11	C, 1
Community and regional parks	X, 11	X, 11	C, 1
Nature exhibits	X, 11	X, 11	C, 1
Spectator sports including arenas	X, 11	X, 11	C, 1
Golf courses, riding stables, and similar uses	C, 1, 6	C, 1, 6	C, 1
Private camps (including day camps)	X, 11	X, 11	C, 1
Entertainment assembly, amphitheater, music shell and similar uses	X, 11	X, 11	X, 11

TABLE 5-2 LAND USE CATEGORY			
Land Use	**Noise Zone A (>70 DNL)**	**Noise Zone B (65-69.99 DNL)**	**Airport Notice Zone (60-64.99 DNL)**
Resource Production, Extraction and Open Land			
Agriculture, including livestock grazing	C, 1, 8	C, 1, 8	C, 1
Livestock farms and animal breeding	C, 1, 8	C, 1, 8	C, 1
Agriculture related activities	C, 1, 8	C, 1, 8	C, 1
Forestry	C, 1, 4, 8	C, 1, 4, 8	C, 1
Legend:			
A = Acceptable Development			
X = Unacceptable Development			
C = Conditional development with conditions as noted:			
1. Recorded Airport Notice Zone Acknowledgement applied to parcel.			
2. Compatible development is conditioned on design and construction providing for an average minimum NLR of average minimum 30 dBA throughout the facility or dwelling.			
3. Compatible development is conditioned on design and construction providing for an average minimum NLR of average minimum 25 dBA throughout the facility or dwelling.			
4. Permitted only within height constraints.			
5. Rooms/buildings for funeral services, prayers and meditation are not permitted.			
6. Compatible development is conditioned on design and construction providing for an average minimum NLR of average minimum 30 dBA in the clubhouse or other interior meeting structure.			
7. Schools are further limited by FS 333 (Section 165.1009)			
8. Operations which attract a large concentration of birds should be excluded.			
9. Compatible development is conditioned on design and construction providing a noise level reduction of average minimum 30 dBA in reception, office and employee lounge areas.			
10. Compatible development is conditioned on design and construction providing for a noise level reduction of average minimum 25 dBA in reception, office and employee lounge areas.			
11. Development permitted in Planned Unit Developments approved prior to the enactment date of this ordinance or pursuant to preliminary site development reviews in accordance with Section 656.1003 and uses or structures permitted pursuant to Section 656.1008 shall also be subject to footnote 1 and footnote 2 of this table.			
Source: Table 656-2, Ordinance 2006-1225-E, Part 10, Chapter 656, March 27, 2007			

City of Jacksonville land use and noise zones as determined in the 2006 Part 150 study are illustrated in **Figure 5.2,** *Land Use*.

Airport Notice Zones are defined as those zones "requiring execution of an Airport Notice Zone Acknowledgement, as required under Section 656.1010". The Airport Notice Zones are areas for which the limits are represented by the 60 DNL to 64.99 DNL noise contour range which are illustrated in **Figure 5.3**, *Airport Noise Notice Zone*.

5.1.2.2 Airport Height and Hazard Zones

Airport height and hazard zones exist around all civilian airports within the Jacksonville City limits. Under **Title 14, Code of Federal Regulations, Part 77** guidelines, the City of Jacksonville has defined the horizontal limits of the zones and limitations on heights of obstructions for each civilian airport within the city. In order to ensure that Part 77 guidelines are not exceeded and that no structure or obstruction is permitted that would raise a minimal obstruction clearance altitude, a minimum vectoring descent altitude or decision height, all cell towers, and any structure or obstruction above 200 feet or that penetrates a Part 77 surface, must provide notice to the FAA prior to construction. Based upon the City of Jacksonville Zoning, **Figure 5.4** illustrates the existing Height and Hazard Zones surrounding the Craig Airport.

In addition to proposed development which may exceed the 200 foot height limitation, Part 77 also applies to:

- Miscellaneous Use Regulation limits development which may be a hazard to aircraft in flight. It is considered unlawful and a violation of the Zoning Code to establish, maintain or continue a use within the surface limits of the height and hazard zones that would interfere with the operation of an airborne aircraft. Based upon the zoning code, the following is a list of special requirements.
  - i. Lights used in conjunction with street, parking, signs, structures, etc. shall be arranged as to not be misleading or dangerous to aircraft operating to and from an airport or operating within the airport vicinity;
  - ii. No operations of any type shall produce smoke, glare or other visual hazards within the approach or departure zones that would adversely impact the safe flight of aircraft;
  - iii. No operations of any type shall produce electronic interference with navigation signals or radio communication between the airport and aircraft within the limits of the zone;
  - iv. No structure or obstruction will be permitted within the City that would cause a minimum vectoring altitude to be raised.
  - v. No use of land which would foster or harbor the growth of insects, rodents, amphibians, etc that would result in a significant increase in bird population within the vicinity of the airport is discouraged.

In addition, prior to modifying the use of a parcel of land located within an airport's runway protection zone (RPZ), the Aviation Authority Office of Planning and Development must be notified in writing of the proposed changes to the use of the parcel in order to coordinate the compatibility of the proposed use with runway protection zone requirements.

2006 Civilian Height and Hazard Zone

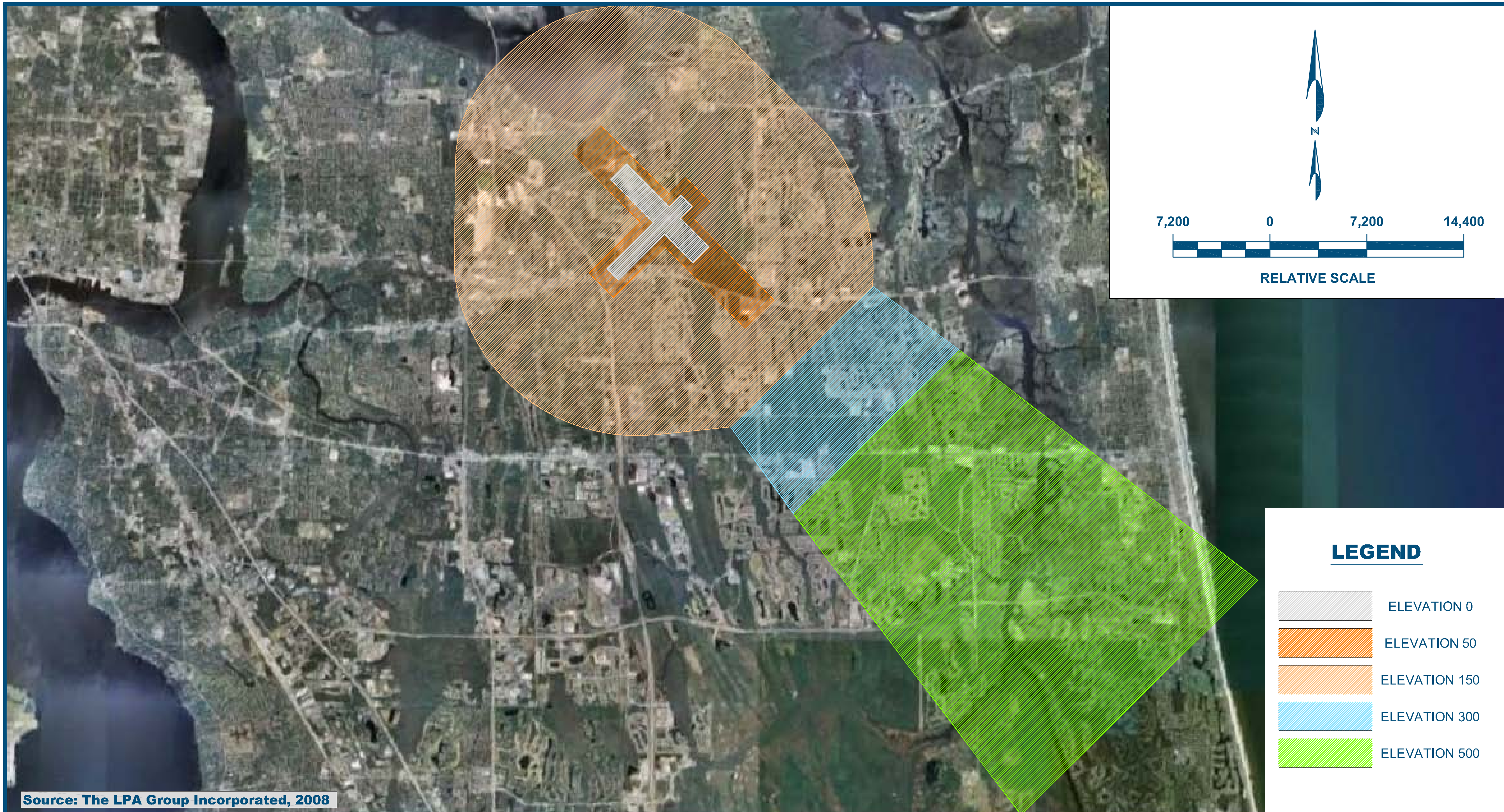


Figure 5-4

Y:\Planning\CRG AMPU\Figures\Chapter 5\Dwgs\Fig 5-4_2006 CIVILIAN.dwg February 18 2009-12:59

5.1.2.3 Civilian School Regulation Zones

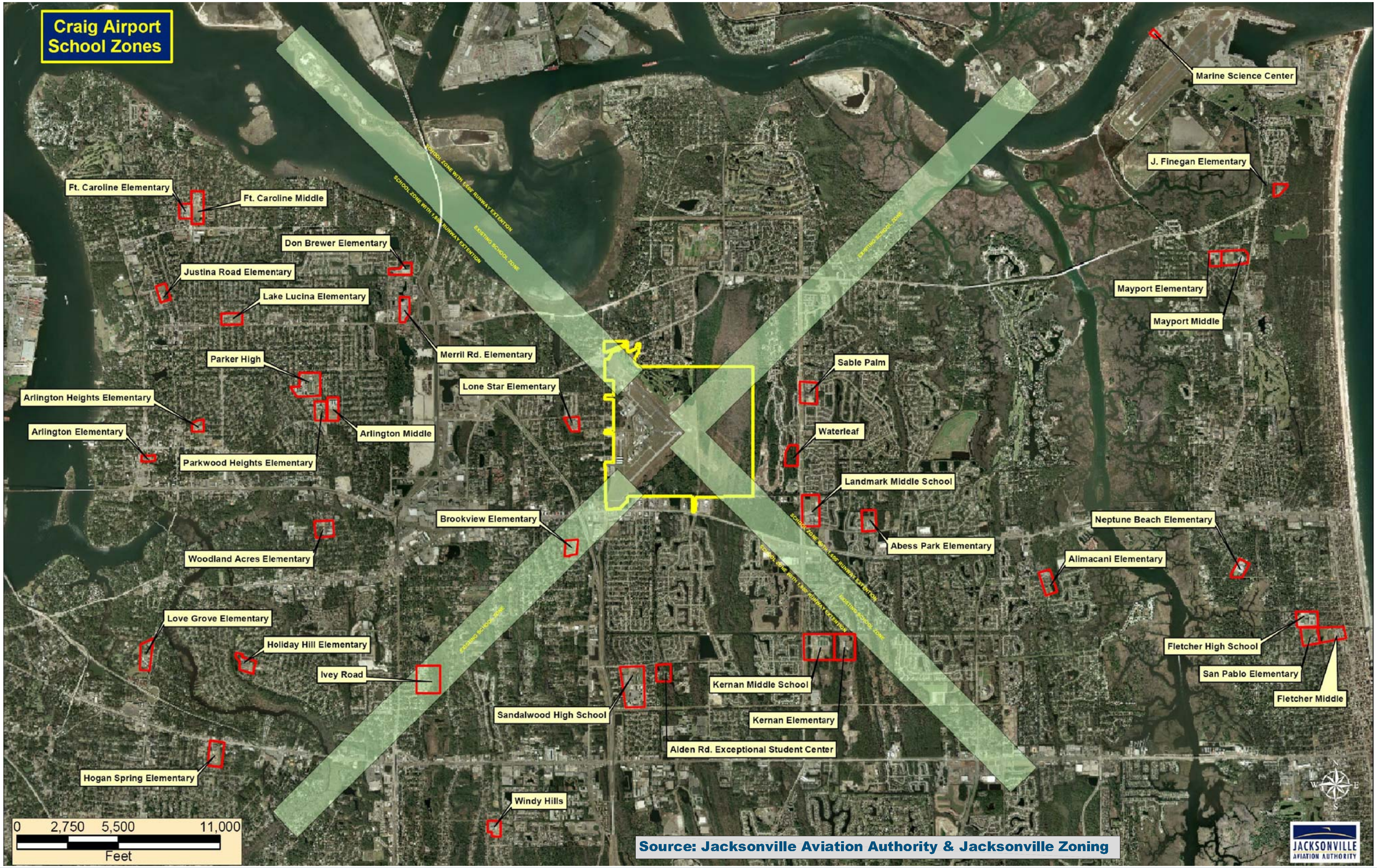
School Regulation Zones are areas defined in FS 333.03 and Part 10. School sites are regulated based upon their relationship with existing or planned runways as shown in the FAA approved Master Plan/Airport Layout Plan (ALP). As outlined in both City of Jacksonville Zoning and Florida Statute 333, 'no new educational facility, either public or private, with the exception of aviation school facilities, shall be permitted within an area extending along the centerline of any runway. The school zone is defined as the area measured from the end of the runway and extending outward for a distance of five statute miles and having a width of one half the runway length'.[3] The existing school zone dimensions at CRG for Runways 5, 14, 23 and 32 are 2,000 feet in width and 26,400 feet in length as shown in **Figure 5.5**.

Exceptions approving construction of an educational facility within the delineated area shall only be granted when the planning commission and/or City Council make specific findings detailing how the public policy reasons for allowing construction outweigh health and safety concerns prohibiting such a location. Currently two schools, Brookview Elementary and Ivey Road Schools, are located within the school regulation zone for Runway 5-23. These schools were constructed prior to the implementation of the school regulation zone in the City Zoning Code (Part 10). Kernan Elementary only has a small corner of its existing property (the parking area) currently located within the school regulation zone for Runway 32.

5.1.3 Runway Length Requirements

As discussed in **Chapter 4**, *Facility Requirements*, and **Appendix E**, *Runway Length Justification*, a runway extension to provide 5,600 feet would accommodate the majority of current business aircraft using CRG on a regular basis at an estimated 60 percent useful load factor. CRG's present runway lengths of approximately 4,000 feet[4] require current business operators to sacrifice cargo, fuel or passengers in order to operate on the shorter runways. Further, an extension to Runway 32 will decrease aircraft noise currently impacting contiguous residential properties and noise sensitive institutions as identified in **Figure 5.2**, *Existing Land Use*.

[3] Part 10, Section 656.1009, Ordinance 2006-1225-E, pg. 33, March 27, 2007
[4] According to November 2007 survey data and Federal Aviation Administration Airport Facilities Data, 2007, usable pavement on Runway 5-23 is 4,004 feet and on Runway 14-32 is 4,008 feet.


Craig Airport School Zones
Marine Science Center
J. Finegan Elementary
Mayport Elementary
Mayport Middle
Ft. Caroline Elementary
Ft. Caroline Middle
Don Brewer Elementary
Justina Road Elementary
Lake Lucina Elementary
Merril Rd. Elementary
Parker High
Lone Star Elementary
Arlington Heights Elementary
Arlington Middle
Arlington Elementary
Parkwood Heights Elementary
Sable Palm
Waterleaf
Landmark Middle School
Abess Park Elementary
Neptune Beach Elementary
Brookview Elementary
Woodland Acres Elementary
Alimacani Elementary
Love Grove Elementary
Holiday Hill Elementary
Ivey Road
Sandalwood High School
Kernan Middle School
Kernan Elementary
Alden Rd. Exceptional Student Center
Fletcher High School
San Pablo Elementary
Fletcher Middle
Hogan Spring Elementary
Windy Hills
0 2,750 5,500 11,000
Feet
Source: Jacksonville Aviation Authority & Jacksonville Zoning
JACKSONVILLE AVIATION AUTHORITY

The runway length requirement was limited to aircraft with maximum takeoff weights (MTOWs) equal or less than 60,000 pounds based upon existing pavement strength and existing and forecast fleet mix demand. Thus, aircraft weighing more than 60,000 pounds would be limited from using the airport. Currently 2 percent (approximately 100 annual operations) of turbojet aircraft operations at CRG are performed by C-II aircraft. By 2026, the number of operations performed by C-II aircraft is forecast to increase to 3.78 percent (or approximately 627 annual operations).

The primary source for determining runway length requirements at CRG was **FAA AC 150/5325-4B**, *Runway Length Requirements for Airport Design*. Additional sources used to provide supplemental data included:

- Aircraft Manufacturer Operating Specifications,
- Airport Property Survey Data, November 2007
- National Climatic Data Center Official Temperature Data for Craig Municipal Airport,
- FAA Central Region, Airport Planning Division, Runway Takeoff and Landing Length Adjustment Spreadsheets,
- FAA Southern Regional Guidance Letter (RGL 01-2), and
- *FAA Airport Design Software*, Version 4.2D, 2005.

Using guidance provided in **FAA AC 150/5325-4B**, the runway length for CRG was determined as outlined in both **Chapter 4** and **Appendix E**, *Runway Length Analysis*. The following factors obtained from the November 2007 airfield property survey and official National Climatic Data Center records were used to determine the required runway length needed to accommodate the family of design airplanes using and anticipated to use CRG over the twenty-year planning period:

- Airport Elevation = 41 feet above mean sea level
- Mean Maximum Temperature of Hottest Month (August 2006) = 92.7° F, and
- Runway Gradient difference between high and low points (Runway 14-32) = 10 feet

The critical design airplanes at CRG were based upon jet aircraft operations during the base year (2006). In 2006, very light jets (VLJs) were not operating at the airport. However, based upon information obtained from existing and anticipated users of the airport, the introduction of VLJ aircraft to the jet fleet mix at CRG was considered inevitable. **Table 5-3**, *Critical Design Aircraft*, provides existing and forecast operations of jet aircraft currently operating at CRG.

TABLE 5-3 CRITICAL DESIGN AIRPLANES				
Critical Design Aircraft	**ARC**	**2006 Operations[1]**	**2011 Operations[2]**	**2026 Operations[2]**
VLJs	A-I	0	92	465
Subtotal A-I Aircraft		**0**	**92**	**465**
Cessna 501	B-I	282	473	0*
Dassault Falcon 10	B-I	107	181	697
MU300	B-I	404	679	1,311
Cessna 525 (CJ1)	B-I	407	685	1,311
Subtotal B-I Aircraft		**1,200**	**2,018**	**3,319**
Cessna 525A (CJ2)	B-II	239	411	730
Cessna 525B (CJ3)	B-II	44	76	135
Cessna 550	B-II	287	494	878
Cessna 560 XL	B-II	608	1,046	1857
Cessna 560	B-II	1469	2,528	4493
Dassault Falcon 2000EX	B-II	10	17	30
Dassault Falcon 50	B-II	48	83	150
Dassault Falcon 50EX	B-II	8	14	24
Subtotal B-II Aircraft		**2,713**	**4,670**	**8,297**
Beechjet 400A	C-I	213	399	1,010
Israel Westwind	C-I	70	130	103
Learjet 31/31A	C-I	181	339	539
Learjet 35	C-I	121	227	804
Learjet 45	C-I	322	602	1,430
Subtotal C-I Aircraft		**907**	**1,697**	**3,886**
Cessna 650	C-II	10	20	64
Cessna 680	C-II	13	25	77
Cessna 750 (Citation X)	C-II	20	43	133
Challenger (Series 600)	C-II	19	38	118
Dassault Falcon 900EX	C-II	38	76	235
Subtotal C-II Aircraft		**100**	**202**	**627**
Total Turbojet		**4,920**	**8,679**	**16,594**

Notes:
[1] Based upon historic information obtained from FAA, 2006 GCR Operations Database, CRG ATCT, and tenant information.
[2] 2011 and 2020 forecast operations based upon approved fleet mix forecast from Chapter 3 and 2005 Craig Airport FAR Part 150 Comparative Noise Study.
*Cessna 501 is an older plane which is likely to be replaced by combination of VLJs, Citationjets, etc.
Source: The LPA Group Incorporated, 2007

Tables 3-1, *Airplanes that Make Up 75 Percent of the Fleet*, and 3-2, *Remaining 25 Percent of Airplanes that Make Up 100 Percent of Fleet*, of the Runway Design AC were reviewed based upon existing and future fleet mix. Five aircraft were listed in Table 3-2 of this AC. Therefore, according to the AC "if airplanes under evaluation are listed in Table 3-2, then Figure 3-2 should be used to determine the runway length".[5]

[5] FAA AC 150/5325-4B, page 9

Using Figure 3-2, *100 Percent of Fleet at 60 or 90 Percent Useful Load*, and applying the airport elevation (41 feet) and mean maximum temperature (92.7° F), an unadjusted runway length of 5,540 feet was determined at 60 percent load factor. To provide an adjusted runway length, as outlined in Step 5 of the advisory circular, 10 feet for every foot runway grade change (difference between highest and lowest points) must be added to the unadjusted runway length determined using Figure 3-2. Since the grade change of Runway 14-32 is 10 feet (based upon November 2007 survey data), an additional 100 feet must be added to the calculated runway length. This results in a total runway design length of 5,640 feet.

The advisory circular also allows an adjustment of 15 percent for wet and slippery pavement associated with turbojet powered landing operations. By regulation, the runway length for turbojet powered airplanes obtained from the "60 percent useful load" curves are increased by 15 percent or up to 5,500 feet, whichever is less.[6] Since the calculated runway length exceeds 5,500 feet, then the final recommended length for CRG is 5,640 feet. Given that Runway 14-32's usable runway length is approximately 4,008 feet, a deficiency of 1,632 feet currently exists.

Previous studies, including the 2001 Master Plan Update and 2006 FAR Part 150 Study, recommended a total available runway length of 6,000 feet using the runway length guidance previously outlined in FAA AC 150/5325-4A. This guidance recommended evaluating individual aircraft requirements based upon adjusted manufacturer data. Applying this methodology to existing jet aircraft operating at CRG resulted in adjusted runway takeoff lengths between 3,273 and 7,878 as shown in **Table 5-4**.

[6] FAA AC 150/5225-4B, Page 10, paragraph 304 (b)

TABLE 5-4 TURBOJET AIRCRAFT ADJUSTED TAKEOFF LENGTH REQUIREMENTS					
			Required Runway Takeoff Length (feet)		
Critical Design Aircraft[1]	ARC	MTOW	ISA[2]	Adjusted (Dry Pavement)[3]	Adjusted (Wet Pavement)[4]
VLJs (Eclipse 500)	A-I	5,995	2,342	2,846	3,273
Cessna 501	B-I	10,600	2,830	3,418	3,931
Cessna 525 (CJ1)	B-I	10,400	3,080	3,712	4,268
Cessna 525B (CJ3)	B-II	13,870	3,180	3,829	4,403
Cessna 525A (CJ2)	B-II	12,500	3,360	4,040	4,646
Learjet 31/31A	C-I	16,500	3,500	4,204	4,835
Cessna 560	B-II	16,830	3,520	4,228	4,862
Cessna 560 XL	B-II	19,200	3,590	4,310	4,956
Cessna 550	B-II	14,800	3,600	4,321	4,970
Cessna 680 (Sovereign)	C-II	30,300	4,000	4,790	5,509
Beechjet 400A	C-I	16,100	4,169	4,989	5,737
MU300	B-I	14,630	4,300	5,142	5,913
Learjet 45	C-I	20,200	4,439	5,305	6,101
Dassault Falcon 10	B-I	18,740	4,450	5,318	6,116
Dassault Falcon 50	B-II	37,480	4,890	5,834	6,709
Dassault Falcon 50EX	B-II	40,780	4,890	5,834	6,709
Learjet 35	C-I	18,300	5,000	5,963	6,857
Cessna 750 (Citation X)	C-II	36,100	5,140	6,127	7,046
Cessna 650 (Citation VI)	C-II	23,000	5,150	6,139	7,060
Dassault Falcon 900EX	C-II	48,300	5,215	6,215	7,147
Israel Westwind	C-I	23,500	5,250	6,256	7,194
Challenger (Series 600)	C-II	48,200	5,700	6,784	7,801
Dassault Falcon 2000EX	B-II	35,800	5,757	6,851	7,878

Notes:
[1]Sorted by Takeoff Length Requirement
[2] ISA represents manufacturer's balanced takeoff field length requirements at 59° F, Sea Level, Zero gra dient change, dry pavement, etc.
[3]Adjusted (Dry Pavement) refers to balanced takeoff field length adjusted for airport elevation (41 feet), mean maximum temperature (92.7° F), and runway gradient change (10 feet)
[4]Adjusted (Wet Pavement) adds additional 15 percent to accommodate wet pavement conditions.
Sources: FAA Central Region Takeoff Length Adjustment Spreadsheet, Aircraft Manufacturer Data, and The LPA Group Incorporated, 2007

Legend:

(yellow)	Aircraft able to takeoff within 4,000 feet
(light blue)	Aircraft able to takeoff within 6,000 feet
(green)	Reduced Takeoff Usable Load Required
(red outline)	Aircraft with greatest number of operations in 2006, base year

In evaluating individual aircraft requirements, a 6,000 foot runway provides users greater operating flexibility. However based upon FAA guidance previously discussed, a 5,600 foot runway is recommended by this plan as the minimum runway length necessary to accommodate currently operating aircraft as well as forecast operational demand.

Considering anticipated demand and airport design group C-II standards, airfield alternative minimum requirements were based upon the following:

- Primary runway 5,600 x 100 feet
- Crosswind runway 4,000 x 100 feet, and
- Taxiways, both primary and secondary, 35 feet wide

Using these requirements and information provided in previous studies, airfield alternatives were developed.

5.2 General

The primary outcome of the Master Plan study is the development of a long-term airport configuration presented graphically in the Airport Layout Plan Set, and a financially feasible implementation plan. The ALP provides graphical guidance for airport short and long-term development while identifying FAA and FDOT eligible projects.

5.2.1 No-Build Alternative

Aside from considering those options that would supplement or enhance the operational capacity of CRG, the consequences of a "no-build" alternative were reviewed. The "no-build" alternative essentially considers keeping the airport in its present condition without any further improvements to the existing facilities. Any evaluation of alternatives should include a "no build" alternative. At CRG, this alternative would effectively reduce the safety of operations under certain weather conditions and/or aircraft emergencies, reduce the quality of services being provided to the general traveling public, and potentially impact the airport's ability to attract new business and support economic development for all of Jacksonville.

The primary result of the no-build alternative would be to maintain the current condition that does not provide the minimum runway length as recommended by FAA for aircraft currently using the airport and, therefore, will not safely accommodate forecast demand. This impacts the airport's ability to accommodate airport users and the community as a whole. Due to aircraft operations and CRG's importance as a reliever airport for JAX, the "do-nothing" scenario is not recommended if feasible solutions exist.

Expanding facilities at the airport are necessary to accommodate growth over the next 20 years. To ignore this would restrict the growth of aviation in the local area and region, which in turn, would reflect on commerce and economic growth. In addition, the airport has made assurances to the FAA in accepting past federal grants for airport improvement projects that the facility would be operated at all times in a safe and serviceable condition. Therefore, the "do-nothing" alternative is considered neither prudent nor feasible, nor is it consistent with the long-term goals of JAA in providing aviation services to the City of Jacksonville.

5.2.2 Engineering Materials Arresting System Alternative

Based upon a request from members of the Jacksonville community, the use of EMAS was evaluated in place of a runway extension. An Engineering Materials Arresting System uses crushable concrete of closely controlled strength and density placed at the end of the runway to stop or greatly slow an aircraft that overruns the runway.[7] An overrun occurs when an aircraft surpasses the pavement confines of a runway environment (pavement) and proceeds into an unpaved area of the airfield not designed for aircraft use (unpaved shoulders and runway safety areas).

According to standards set forth in **FAA Advisory Circular (AC) 150/5300-13**, *Airport Design*, **FAA Order 5200.8**, *Runway Safety Area Program*, **FAA Order 5200.9**, *Financial Feasibility and Equivalency of Runway Safety Area Improvements and Engineered Material Arresting Systems*, and **FAA AC 150/5220-22A**, *Engineering Material Arresting Systems for Aircraft Overruns*, current FAA policy requires that EMAS will be considered only when it is not practicable (i.e. incompatible terrain, highways, etc.) for the airport to meet the standard runway safety area. The Runway Safety Area requirement is in place in case an aircraft overruns, undershoots or veers off the side of a paved runway. "EMAS is used only in cases where land is not available or where it would be very expensive for the airport to buy the land off the end of the runway."[8]

EMAS can be installed at non-Part 139 (General Aviation/non-commercial airports), however, only when it is not practical or financially feasible to meet standard runway safety area requirements[9] through any other means. To date the only General Aviation airport that uses EMAS is Greenville Downtown Airport (GMU)[10] in South Carolina since it was impossible to obtain the land necessary to meet the required safety area.

According to **FAA AC 150/5300-13**, Craig Airport can and does have land available to meet the safety area requirements for a C-II airport with lower than 3/4 statute mile visibility:

Runway Safety Area Prior to Landing Threshold = 500 x 600 feet
Runway Safety Area beyond Runway End = 500 x 1,000 feet

[7] Created by Engineering Arresting Systems Corporation (ESCO) and is the only system that currently meets FAA Standards (Federal Aviation Administration Fact Sheet, October 2, 2007)

[8] FAA Order 5200.9, Financial Feasibility and Equivalency of Runway Safety Area Improvements and Engineered Arresting Systems, and Federal Aviation Administration Fact Sheet, October 2, 2007

[9] FAA Advisory Circular 150/5300-13, Chapter 3, *Runway Design*.

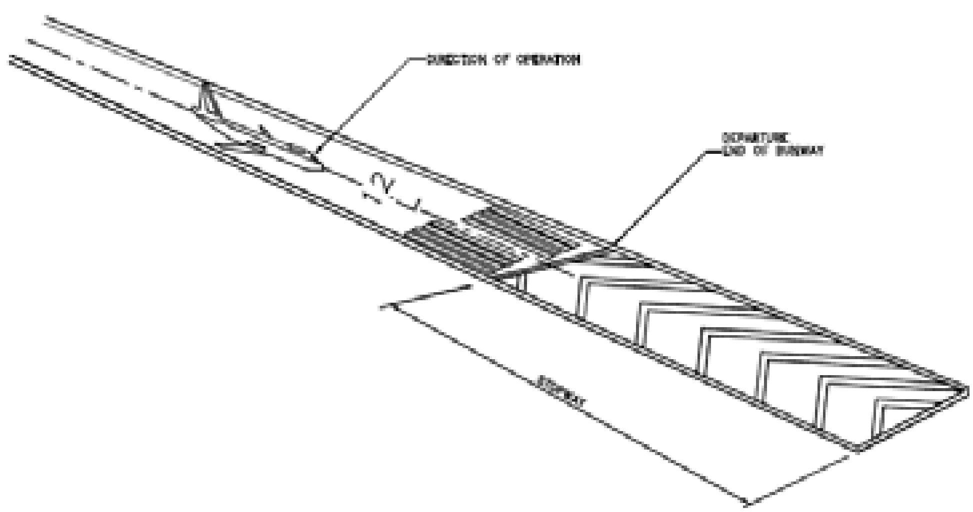
[10] Greenville-Downtown Airport primary runway, Runway 1-19, is 5,393 feet in length. Use of EMAS was the result of two accidents involving business jet aircraft (one being a Lear 35) and timing. The project came to be during a time when FAA was sued over not enforcing safety areas from the air carrier Arkansas accident. The topography of GMU includes a 25' runway abutment 300' from the runway end with a heavy travel pass-through road between I-385 and the runway end; which the City did not want to close and too expensive to tunnel. (Source: South Carolina DOT)

Therefore the use of EMAS is not viable.

5.2.3 Runway Overrun or Stopway Alternative

Another request from the community concerned the use of stopways or overruns in lieu of a runway extension. The term overrun typically refers to a stopway. A stopway is defined as "a paved area beyond the takeoff runway, centered on the extended runway centerline, and designated by the airport owner for use in decelerating an airplane during an aborted takeoff. It must be at least as wide as the runway and able to support an airplane during an aborted takeoff without causing structural damage to the aircraft. However, their limited use and high construction cost, when compared to a full strength runway that is usable in both directions, makes their construction less cost effective. "[11] (See **Figure 5.6**)

Figure 5.6
Stopway



Source: FAA AC 150/5300-13, Chapter 3, Page 23, Figure 3-8

Further a stopway cannot be used for additional available takeoff length nor is it considered as part of the accelerate stop distance available (ASDA). ASDA refers to the distance

[11] FAA AC 150/5300-13, Chapter 3, Page 32.

required for an aircraft to accelerate from brake release to V_1 (Decision Speed) and decelerate to a stop, plus safety factors (15 percent of total runway available).[12]

Therefore, in order to provide a safer operational flying environment (landings and takeoffs) for aircraft operating or anticipated to operate at CRG, then a runway extension is necessary to accommodate the adjusted takeoff length requirements necessary during normal operating conditions.

It should be pointed out that any development proposed in the Master Plan evolves from an analysis of projected needs over a set timeframe. Even though the needs were determined by reliable methods, it cannot be assumed that future events will not change these needs. The Master Plan attempts to develop a viable methodology to accommodate existing and anticipated demand over the next 20-years. Still no plan should be adopted that requires the expensive commitment of resources without the certainty of need. Therefore, the recommended plan should provide JAA with the flexibility to adjust to the demands of the market either through the shifting of projects or reconfiguration of development based upon unanticipated demand.

5.3 Recommended Development

The planning team received input from JAA, the Craig Airport Master Plan Technical Advisory Committee (TAC), City of Jacksonville Planning Department, the Craig Citizens Advisory Committee, public input, and FAA and FDOT guidance. Based upon this input, a preferred aviation development concept for the airport was developed. This concept forms the basis of the Airport Layout Plan and implementation plan. The Craig Airport recommended development considered existing and future aircraft and capacity demand issues. The preferred airfield alternative includes a 1,600 foot extension to Runway 32. Using 600 foot declared distances on both Runways 14 and 32, this development will provide 5,600 feet of takeoff distance and 5,000 feet on either Runway 14 or 32 for landing. This runway configuration is discussed in detail in **Section 5.5**, *Airfield Alternatives*.

5.3.1 Long Term Development

As discussed in **Appendix C**, *Demand Capacity Analysis*, the annual operations at CRG in 2006 were 83 percent of Annual Service Volume calculated for the airport. FAA recommends evaluating possible airfield improvements that could improve capacity when a threshold of 80 percent ASV is exceeded. Several alternatives were considered including a shift of Runway 5-23 approximately 501 feet to the southwest, the viability of constructing a new parallel runway and the use of additional capacity at other regional airports.

While the shifting of Runway 5-23, as recommended in the 2001 Master Plan, was considered, this would not provide any significant increase in capacity versus the cost of the

[12] FAA AC 150/5300-13, Appendix 14, Declared Distances.

project. The parallel runway alternative would also be expensive to implement, and would either impact land set aside for aviation hangar development or increase impacts to environmentally sensitive lands. JAA has determined the most viable alternative for long-term runway capacity is to use the existing excess capacity at Cecil Field to accommodate long-term operational growth in the region.

As traffic increases at CRG over the ASV of the existing runway system, JAA will have to implement operational controls at CRG such as limiting touch and go operations during busy periods. Eventually, as activity grows, some operators may choose to relocate to other area airports as a market driven break on traffic growth at CRG. JAA believes the extension of Runway 14-32 to 5,600 feet will solve the existing need for additional runway length, and is, therefore, the most important project for long-term development at CRG.

5.3.2 Additional Airfield Development

In conjunction with the extension of Runway 14-32, several taxiway improvements are recommended including an extension of Taxiway A, realignment of Taxiway A-3, construction of southeast parallel taxiway to Runway 5-23 (designated as Taxiway "L") and associated connectors. Further, it is recommended that current Taxiways C (Charlie), E (Echo), and F (Foxtrot) be renamed as connector taxiways to avoid any confusion to operators since typically parallel taxiways are named with a letter and connectors are named with a letter and number designator (i.e. A-1). Further airfield improvements include providing access to new hangar development, pavement improvements along the north, central and east quadrants of the airfield, improved airside and landside access, and expanded fuel facilities.

Non-aviation development was also recommended east of Runway 5-23 contiguous to proposed GA development. Recommended on-airport aviation and non-aviation development was designed to provide JAA with the flexibility to accommodate existing and future market demand. Proposed development is being coordinated with an amendment to the City of Jacksonville's Comprehensive Plan based upon an extension of 5,600 feet to Runway 14-32. This runway length, however, will impose certain conditions upon current and future aircraft operations as outlined in **Appendix E**, *Runway Length Analysis*.

5.4 Development Considerations

The Facility Requirements analysis (Chapter 4) identified several areas where airfield and associated landside improvements and enhancements were considered as either necessary or of benefit to the overall operational efficiency of the airport. Three major functional areas: airside (runways, taxiways, and navigational aids), landside (hangars, automotive parking, etc.) and general airport requirements (ground access and land use) were considered in identifying the development alternatives. Prior to determining the final alternatives, aviation-specific requirements were analyzed. In general, similar criteria were used to measure the effectiveness and the feasibility of the various growth options available, which are grouped into the following four general categories:

- **Operational –** the selected development alternative should be capable of meeting the airport's facility needs as identified for the planning period. Preferred options should resolve any existing or future deficiencies as indicated by Federal Aviation Administration (FAA) design, safety and security criteria.
- **Environmental –** Airport growth and expansion may impact both the airport and surrounding environs; therefore, the selected plan should seek to mitigate impacts both within and adjacent to the airport properties. Alternatives should also seek to obtain a reasonable balance between expansion needs and off-site acquisition and relocation needs while being sensitive to potential environmental impacts.
- **Cost** - Some alternatives may result in excessive costs as a result of expansive construction, acquisition and/or other development requirements. In order for a preferred alternative to best serve the airport and the community, it must satisfy development needs at a feasible cost.
- **Feasibility –** The alternative concepts should be acceptable to the FAA, FDOT, JAA, COJ and the larger community served by the airport and should be economically feasible while meeting a variety of diversified objectives.

These evaluation criteria address economic, operational, environmental and other issues which are crucial to strategic long-term planning decisions. The following sections apply the evaluation criteria to determine those alternatives which best meet the airport's planning goals and development needs.

5.4.1 City of Jacksonville Planning and Development

Development at CRG must be consistent with federal guidance, Florida Statutes, Florida Growth Management Laws and concurrency requirements and the FDOT Transportation Plans. Relevant sections of these documents related specifically to land development in and around civilian airports are provided in **Appendix K**, *Key Sections of Florida Public Law*.

The existing COJ 2010 Comprehensive Plan (Comp Plan) supports the continued development of Craig Airport but contains a restriction that limits the extension of any of the runways at the airport. Another provision of the Florida Growth Management Law that specifically impacts airport development is the need to provide concurrency for infrastructure necessary to support proposed development before it can actually be constructed. This law was specifically amended by the Legislature in 2007 to exempt airport terminals, hangars and air cargo facilities from concurrency requirements. However, this will still impact the airport's ability to develop airport property for non-aviation revenue generating purposes. Detailed trip generation information will be required for this type of development to move forward.

Members of the First Coast Metropolitan Planning Organization (MPO) and the City of Jacksonville Planning Department as well as airport staff participated on the Master Plan Technical Advisory Committee to provide input into the planning process with regard to all of these laws.

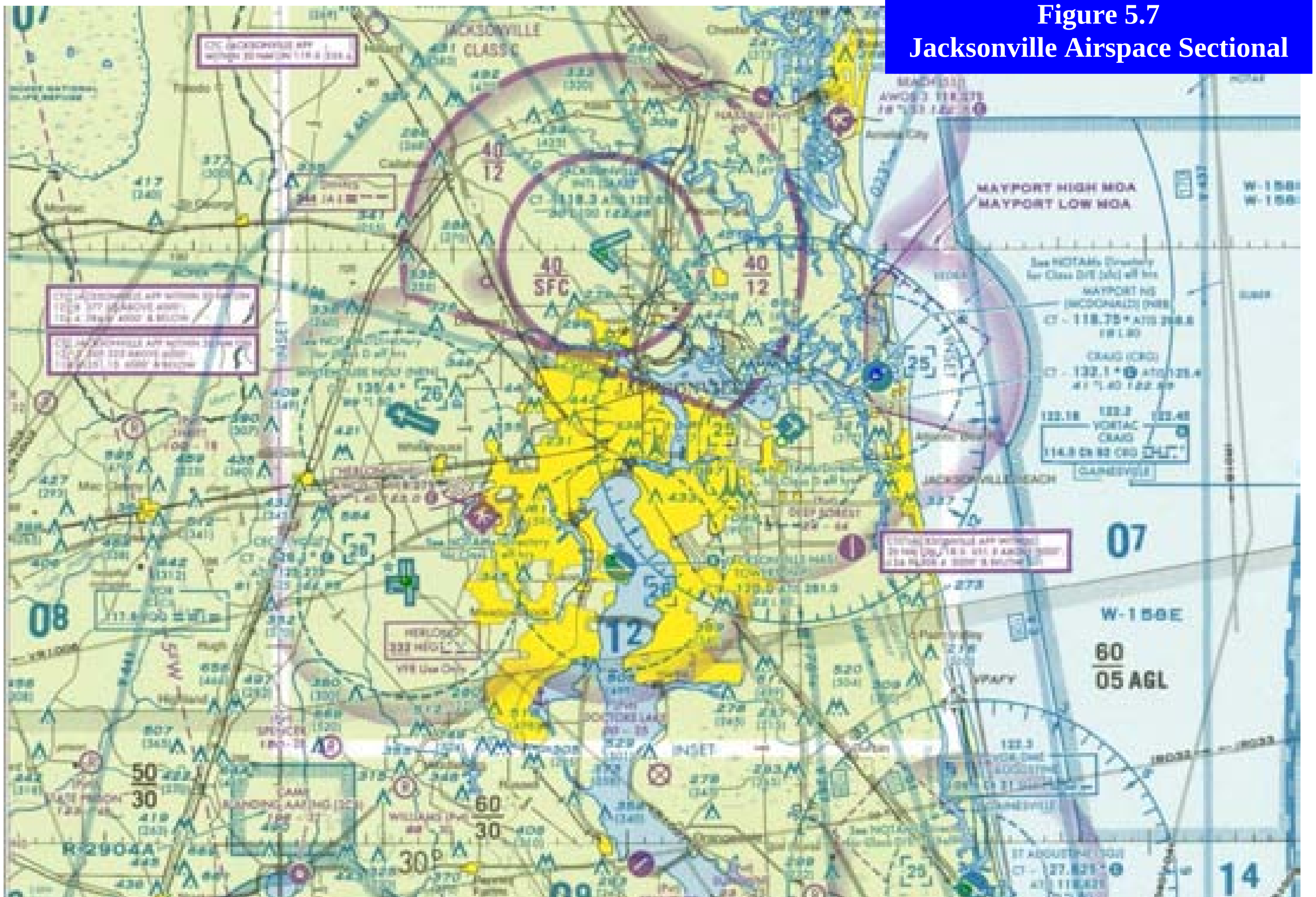
5.4.2 Airspace Restrictions

The evaluation of viable airfield alternatives at CRG is also dependent upon departure and approach limitations based not only on physical obstructions and noise mitigation procedures but also on airspace restrictions and approach procedures associated with nearby commercial and military airfields.

- **Other Airports**

  Craig Airport is bordered on three sides by controlled or special use military airspace. To the northeast is Naval Air Station Mayport, to the northwest is Jacksonville International Airport and Airport Radar Service Area (ARSA) and to the west-southwest by the Naval Air Station Jacksonville and Jacksonville Navy Airport Traffic Area. **Figure 5.7** provides a graphical representation of the airspace surrounding the airport. As a result, these operational constraints impact airfield development as well as approach and departure procedures.

Figure 5.7
Jacksonville Airspace Sectional



Source: FAA Jacksonville Sectional, SkyVector.com, August 2007

✈ Towers and Bridges

In addition to various airspace restrictions, five towers are located within 4.5 miles of the airport. Two of the towers are over 1,000 feet in height and, therefore, penetrate the airport's FAR Part 77 surface. As a result, these penetrations preclude the use of an instrument approach providing visibility of less than 1 statute mile to Runway 5.

✈ Air Traffic Patterns and Noise Abatement Procedures

Noise compatibility issues related to airport operations are continuing to be addressed through the efforts of JAA, the City of Jacksonville and the FAA Air Traffic Control Tower. Based upon the 2006 Craig Airport Part 150 Study approved by FAA and other noise studies conducted in 1999, JAA has implemented a number of measures to address and reduce aircraft noise impacts on surrounding communities. VFR operational noise mitigation procedures as shown in the Part 150 Study are included in **Figures 5.8 through 5.11**. In addition, the airport provides noise abatement pilot handouts to encourage pilots to voluntarily follow flight procedures to limit noise impacts.

The Part 150 Study identified two primary ways of reducing aircraft noise impacts. The first involves the modification of aircraft approach and departure procedures in order to lessen the impact on noise sensitive areas. The second is managing how property located around the airport is used while promoting development which is compatible with airport operations. The Part 150 Study identified three areas of concern, identified below, which were considered as part of the airfield alternative development since the FAA only recognizes noise impacts that fall within the 65 DNL contours. The Part 150 also identified areas outside these contours that are subject to frequent overflights, which has resulted in residents perceiving that they are also impacted. Thus, the primary areas of concern identified in the FAR Part 150 study include: [13]

- Aircraft departing Runway 32 and flying over the Holly Oaks area,
- Aircraft arriving to Runway 14 over the Holly Oaks area, and
- Aircraft ILS arrivals to Runway 32 over the Kensington Area, especially during early morning or late night arrivals.

[13] Chapter 11, Operational Noise Mitigation Procedures, Craig Airport FAR Part 150 Study - Noise Exposure Maps and Noise Compatibility Program, 2006

Centerline of Helicopter Noise Abatement Flight Corridors

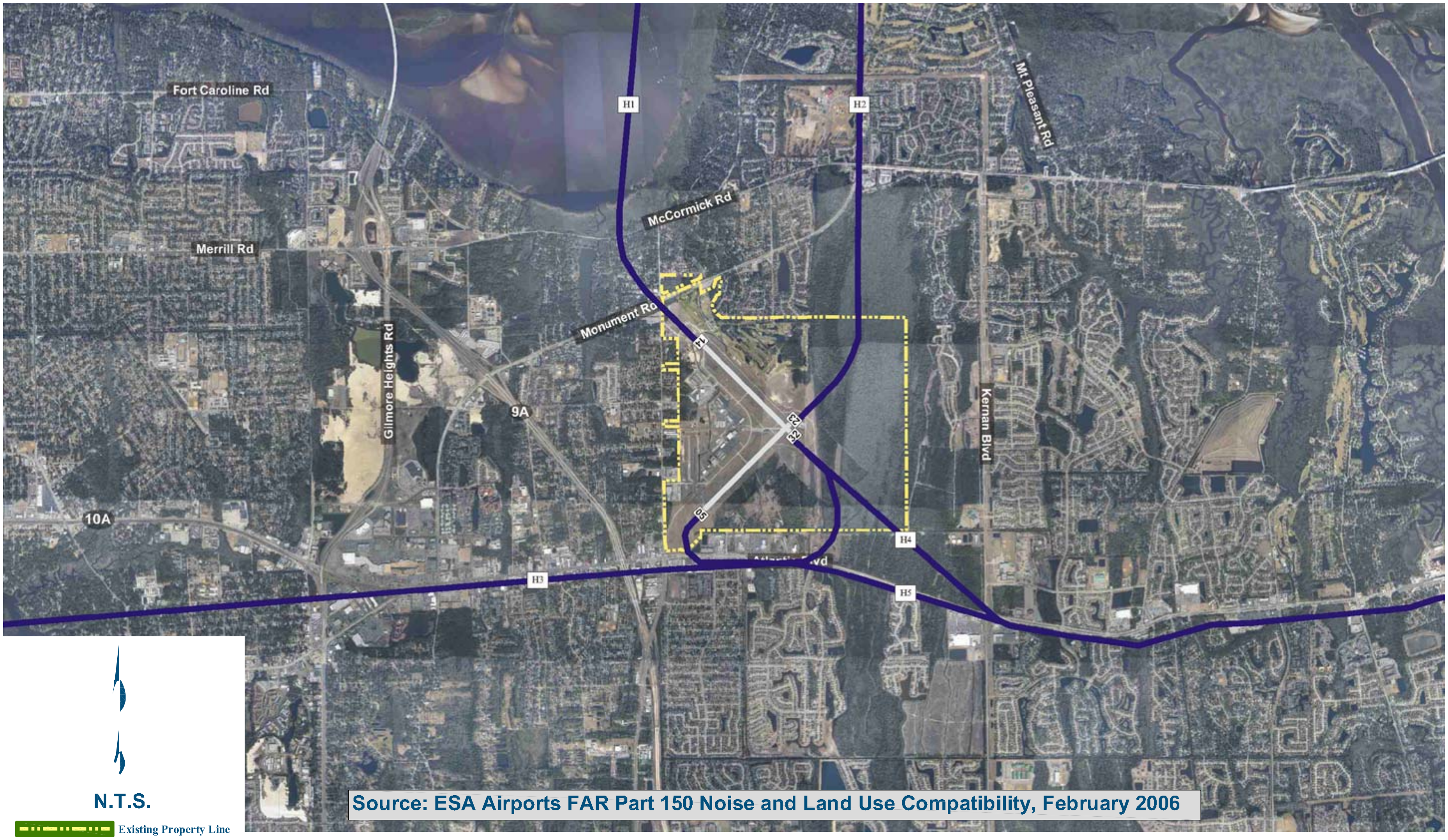
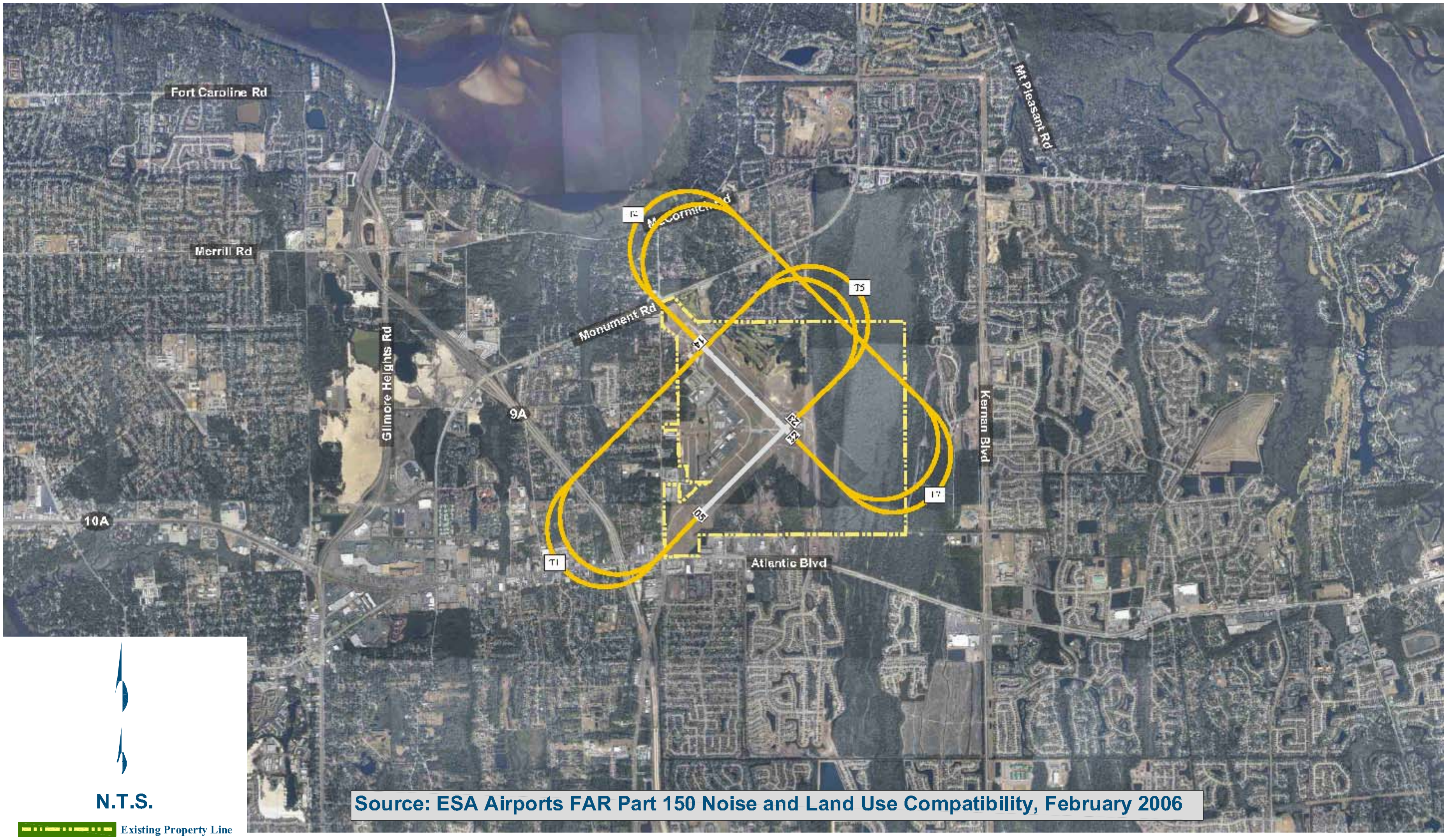


Figure 5-8

JACKSONVILLE AVIATION AUTHORITY

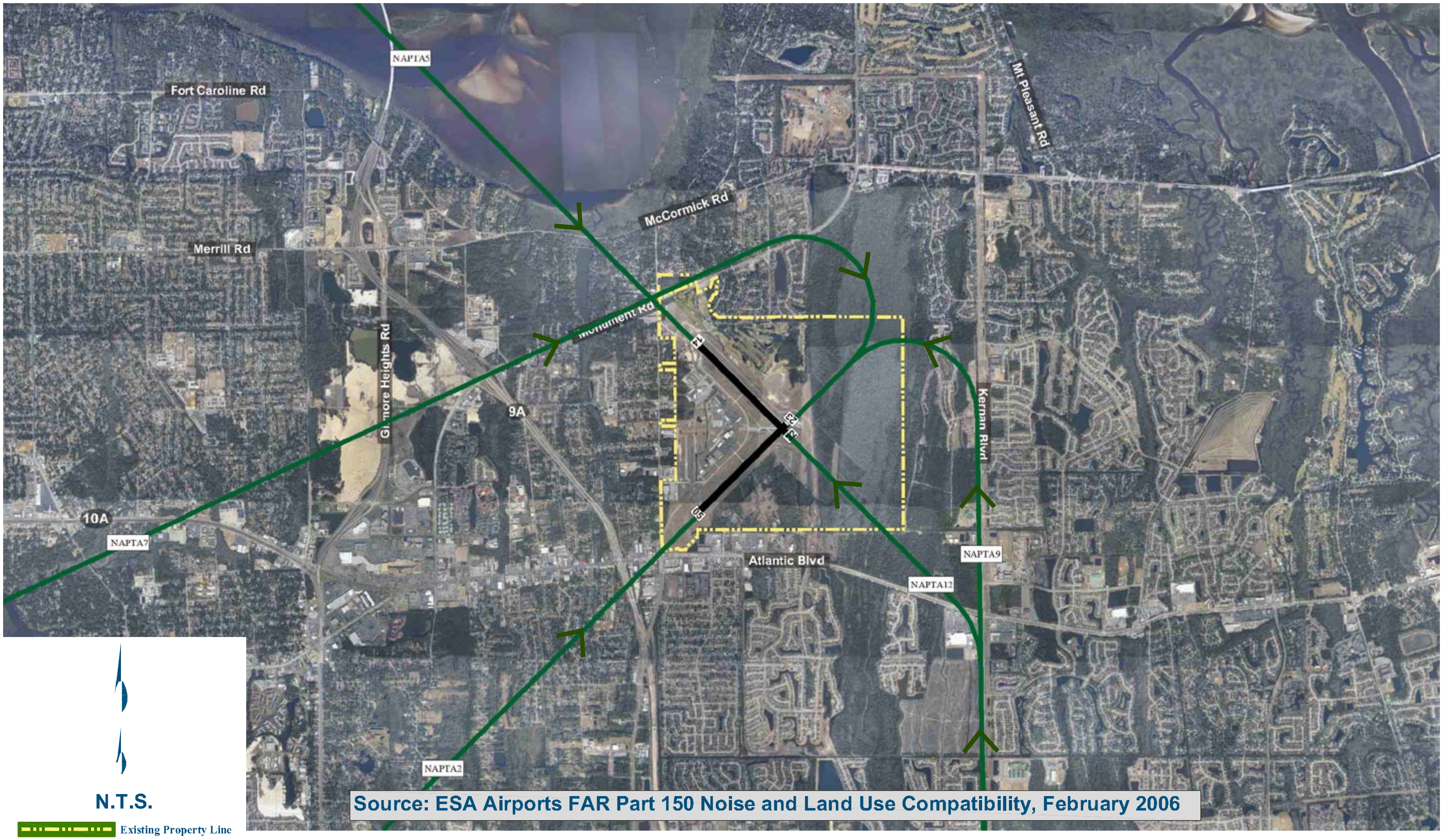
Centerline of VFR Noise Abatement Training Touch and Go Corridors



LPA

Figure 5-9

VFR Noise Abatement Arrival Flight Tracks



VFR Noise Abatement Departure Flight Tracks

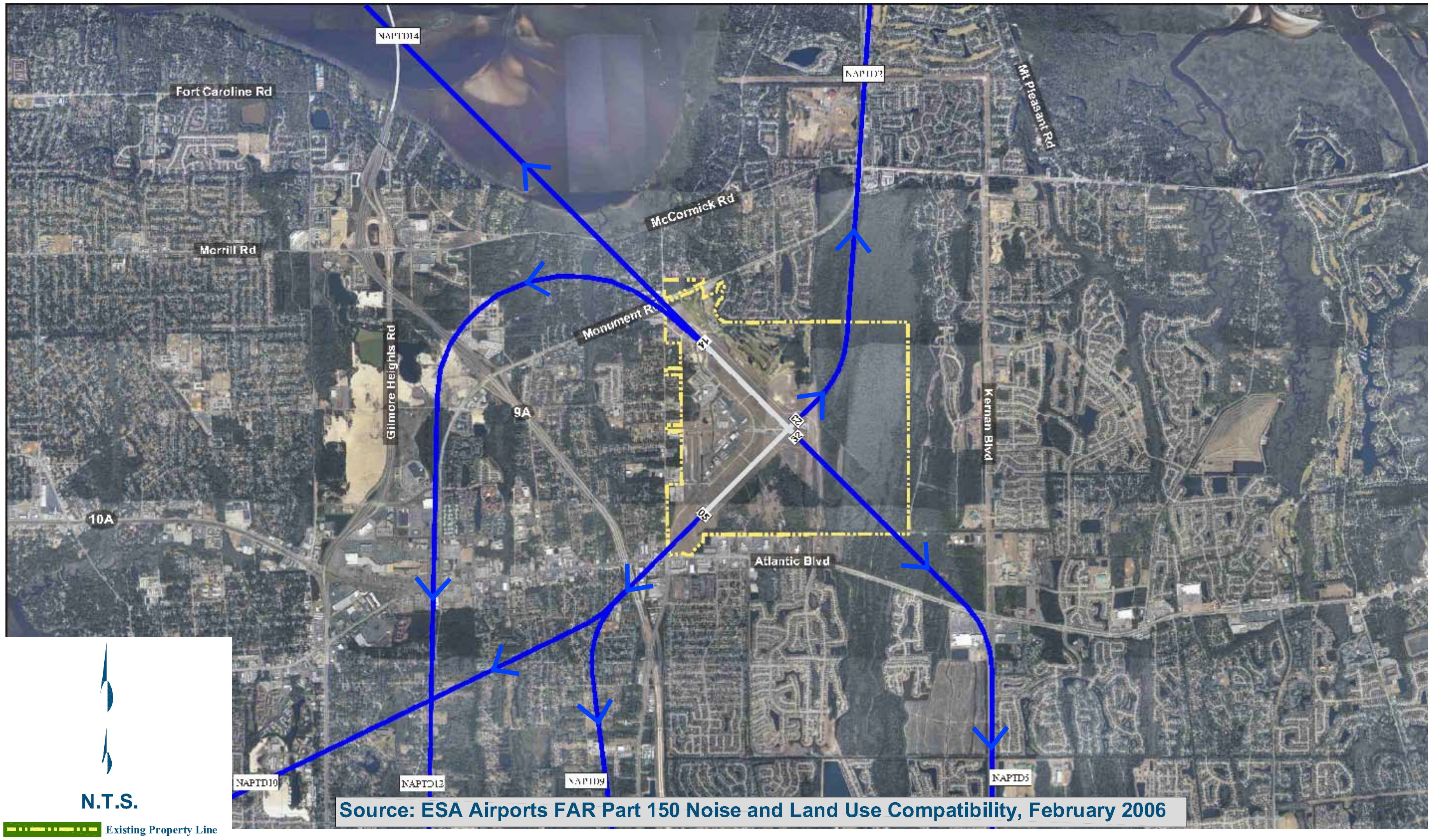


Figure 5-11

Based upon this data, future airport development alternatives considered both existing and future noise mitigation initiatives designed to lessen the impacts to communities surrounding the airport.

5.4.5 Environmental Considerations

In addition to the residential population adjacent to the airport, existing airport property specifically north and east of Runway 14-32 consists of wetlands and wildlife habitats. This area was previously documented as environmentally important with documented sites of cultural resources. Although the land beyond Runway 32 was previously disturbed by the installation of the approach lighting system, future airfield and landside alternative options considered the impact of future development and demand on this property. Based upon the recommended airside and landside improvements, an environmental overview is provided to identify potential environmental impacts.

5.5 Airside Alternatives

The airfield alternatives described in this study assume the use of Runway 14-32 as the primary runway due to wind and operational requirements. Once evaluated, the runway alternatives were refined to address airfield capacity and access issues. These airside alternatives primarily address the need to improve aircraft movements on and off the runways through the provision of by-pass taxiways, runway configuration, and additional run-up areas.

5.5.1 Airfield Development Alternatives

As discussed previously, CRG has two intersecting, active runways oriented in a closed "V" configuration. Both runways are approximately 4,000 feet in length and 100 feet in width. If the cost of runway improvements, maintenance and noise impacts were not taken in to consideration, the development of runway alternatives at CRG would be numerous. Since several runway length alternatives were provided in the 2006 Part 150 Noise Study, these alternatives were used as the basis for runway alternative evaluation.

Five airfield alternatives were identified in the Part 150 study including the 2001 Master Plan Recommended Development scenario as outlined below:

2001 Master Plan Configuration
- 2,000 foot extension to Runway 32
- 1,000 foot displacement to both ends of Runway 14-32

Configuration A
- 500 foot extension and displacement to Runway 14
- 2,000 foot extension and displacement to Runway 32

Configuration B
- 500 foot extension and displacement to both ends of Runway 14-32

Configuration C

- 500 foot extension and displacement to Runway 14
- 1,000 foot extension and displacement to Runway 32

Configuration D

- 250 foot extension and displacement to Runway 14
- 1,250 foot extension and displacement to Runway 32

Based upon the runway length evaluation provided in **Chapter 4** and **Appendix E**, *Runway Length Justification*, a runway length of at least 5,600 feet[14] is recommended to accommodate existing and forecast aircraft demand. Therefore, the 2001 Master Plan Configuration and Part 150 Configuration A were modified to consider a 1,600 foot extension and 600 foot displaced threshold to Runway 32.

The forecast provided in **Chapter 3** represents an unconstrained forecast of future demand. The unconstrained forecast considered three years (calendar years 2004, 2005, and 2006) of detailed historical instrument operational data, and applied the following forecast information to determine the 2020 and 2026 fleet mix:

- 2007-2020 FAA Aerospace Forecasts,
- 2020, 2025, & 2030 Long-Term FAA Aerospace Forecasts,
- National Business Aircraft Association Factbook, 2003
- Honeywell Aerospace's 12th Annual Business Aviation Outlook, and
- Rolls Royce, "The Market for Business Jets 2003-2022".

Further during the forecast analysis, it was determined that a variety of larger GA aircraft already operate at CRG without the extension. Therefore, it is anticipated that the difference in fleet mix and operations between the constrained (without the extension) and unconstrained (with the extension) will be less than recorded in the 2001 master plan update and 2006 FAR Part 150 Study as shown in **Table 5-5**.

[14] Although AC 150/5325-4B recommends a runway length of 5,640 feet, JAA has based its planning on a 5,600 foot runway to keep the length on an even basis.

TABLE 5-5 FORECAST JET AIRCRAFT OPERATION COMPARISON		
	2001 Master Plan Update/FAR Part 150 Study	**2006 Master Plan Update**
2020 Total Constrained Operations	226,427	211,026
2020 Constrained Jet Operations	28,879	13,557
Percent Jet Operations	12.75%	6.4%
2020 Total Unconstrained Operations	231,423	212,332
2020 Total Unconstrained Jet Operations	33,875	14,863
Percent Jet Operations	14.6%	7%
Difference between Constrained and Unconstrained Jet Operations	**4,996**	**1,306**
Sources: 2001 Craig Airport Master Plan Update, 2006 FAR Part 150 Comparative Noise Study and The LPA Group Incorporated, 2007		

Using the parameters outlined in the approved *2006 FAR Part 150 Noise and Land Use Compatibility Study (*2006 Part 150 Study) and the approved fleet mix forecast provided in Chapter 3 of this report, constrained and unconstrained operations of helicopter, multi-engine and single-engine piston, and turboprop aircraft was determined. However, in reviewing historic fleet mix and operations as well as the FAA worldwide micro jet forecast, it was determined that jet operations associated with ARC A-I, B-I and B-II would remain consistent between the unconstrained and constrained 2020 fleet mix forecast. It is instead anticipated that the limited runway length ("Constrained") would impact the growth of C-I and C-II aircraft operations. In reviewing similarly sized airports around the country and based upon current aircraft demand, constrained C-I annual average annual operational growth from 2013 to 2026 would decrease from 3 percent to 2 percent annually whereas C-II operations will decrease from an anticipated 6 percent to 1 percent. A comparison of the constrained and unconstrained fleet mix forecast based upon the FAA approved forecasts provided in Chapter 3 of this report were modeled as illustrated in **Table 5-6,** *2020 INM Fleet Mix Forecast.*

TABLE 5-6 2020 INM FLEET MIX FORECAST			
INM Combined Fleet Mix	**ARC**	**Constrained Operations**	**Unconstrained Operations**
CNA172		54,769	54,769
CNA206		25,106	25,106
CNA20T		3,249	3,249
GASEPF		17,004	17,004
GASEPV		25,148	25,148
Total Single-Engine Piston		**125,276**	**125,276**
BEC58P		41,915	41,915
CNA441		10,749	10,749
DHC6		10,081	10,081
EMB120		64	64
HS748A		890	890
Total Multi-Engine Piston & Turboprop		63,700	63,700
VLJs	A-I	283	283
Dassault Falcon 10	B-I	664	664
MU300	B-I	1,248	1,248
Cessna 525 (CJ1)	B-I	1,248	1,248
Cessna 525A (CJ2)	B-II	674	674
Cessna 525B (CJ3)	B-II	125	125
Cessna 550	B-II	810	810
Cessna 560 XL	B-II	1,714	1,714
CESSNA 560	B-II	4,144	4,144
Dassault Falcon 2000EX	B-II	27	27
Falcon 50/50EX	B-II	160	160
Beechjet 400A	C-I	576	860
Israel Westwind	C-I	59	88
Learjet (Models 31, 31A, 35 and 45)	C-I	1,579	2,359
Cessna 650/680	C-II	55	103
Cessna 750 (Citation X)	C-II	52	97
Challenger (Series 600)	C-II	46	86
Falcon 900EX	C-II	92	172
Total Jet		**13,557**	**14,863**
S70		765	740
A109		762	737
EC130		2,158	2,173
B206L		4,809	4,844
Total Helicopter		**8,493**	**8,493**
Total		**211,026**	**212,332**

Note: Due to rounding, numbers may not sum up.
Source: The LPA Group Incorporated, 2007

Runway utilization, flight track and nighttime use percentages employed to evaluate the recommended airfield development are consistent with those developed in the long-term noise analysis outlined in the approved *2006 FAR Part 150 Noise and Land Use Compatibility Study (*2006 Part 150 Study*)*. Applying the assumptions used in the FAR Part 150 in addition to a series of various input factors related to: runway orientation and use; future aircraft operations and fleet mix; time of day/night of operations; and stage lengths of aircraft, 2020 noise contours (60, 65, 70 and 75 DNL) were developed for both the unconstrained and constrained fleet mix forecasts.

A full description of the Long-Term Noise Assumptions is provided in **Appendix F** of this report. Although the long-range forecast and fleet mix within this report differ from those outlined in the Part 150, they are based upon current operational data and aircraft fleet mix information and mimic the approved methodology used in the Part 150 Study. Further, this analysis includes the introduction of very light jets. Although VLJs were discussed in the long-term noise section of the 2006 Part 150 Study, they were not included in the modeling since operations and noise implications were anticipated to be minimal.

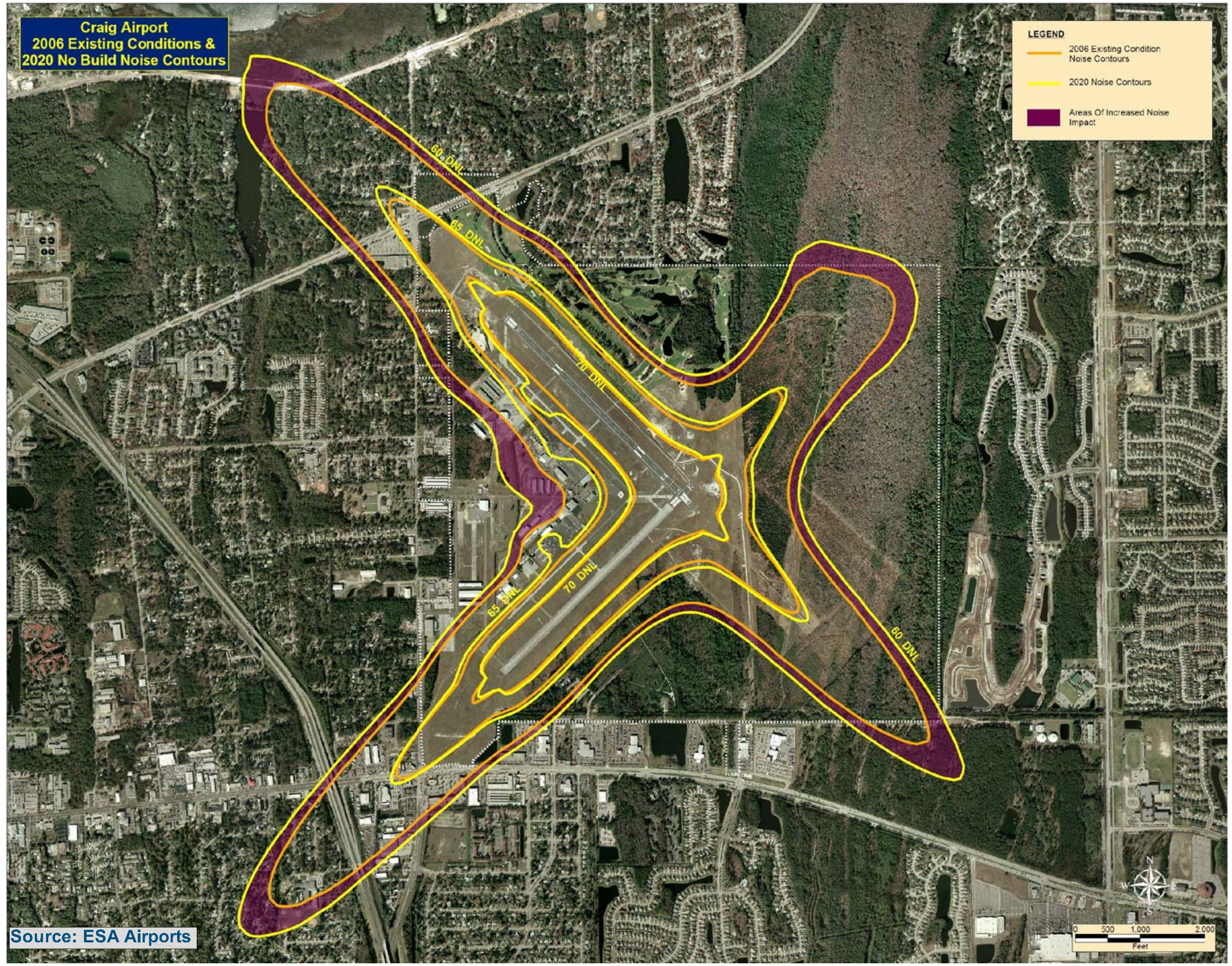
Figures 5.12, *2006 Existing Conditions & 2020 No Build Noise Contours*, and **5.13**, *2020 Noise Contours – No Build Compared to 1,600-Foot Extension*, illustrate areas of impact based upon the constrained and unconstrained fleet mix forecasts. As shown in **Figure 5.13**, the level of noise exposure will decrease with a runway extension in terms of both area and associated population. **Table 5-7** provides a comparison of total acres impacted relating to the 2020 constrained fleet mix forecast (no runway extension) and unconstrained fleet mix forecast (1,600 foot runway extension) for DNL contours of 60, 65, 70 and 75.

TABLE 5-7
2020 NOISE EXPOSURE AREAS

DNL Range	Total Acres		Acres within 5 DNL Interval	
	Constrained Fleet Mix (No Extension)	Unconstrained Fleet Mix (1,600 ft Extension)	Constrained Fleet Mix (No Extension)	Unconstrained Fleet Mix (1,600 ft Extension)
60-65	1204	796	1207	791
65-70	408	238	417	227
70-75	170	89	189	96
75+	80	80	93	93

Source: ESA Airports, 2008

Further in order to effectively compare the findings of the Master Plan to the FAR Part 150 Study, two different protocols for parcels and population were used to determine potential noise impacts. Protocol 1 assumed a parcel would be impacted if more than a third of the parcel fell within the contour boundary. **Table 5-8** provides a comparison of the potential impacts to parcels and population based upon the Protocol 1 noise assumptions associated with the baseline existing, 2020 constrained and unconstrained fleet mix forecast.



Craig Airport
2006 Existing Conditions &
2020 No Build Noise Contours
LEGEND
2006 Existing Condition Noise Contours
2020 Noise Contours
Areas Of Increased Noise Impact
60 DNL
65 DNL
70 DNL
70 DNL
65 DNL
60 DNL
Source: ESA Airports

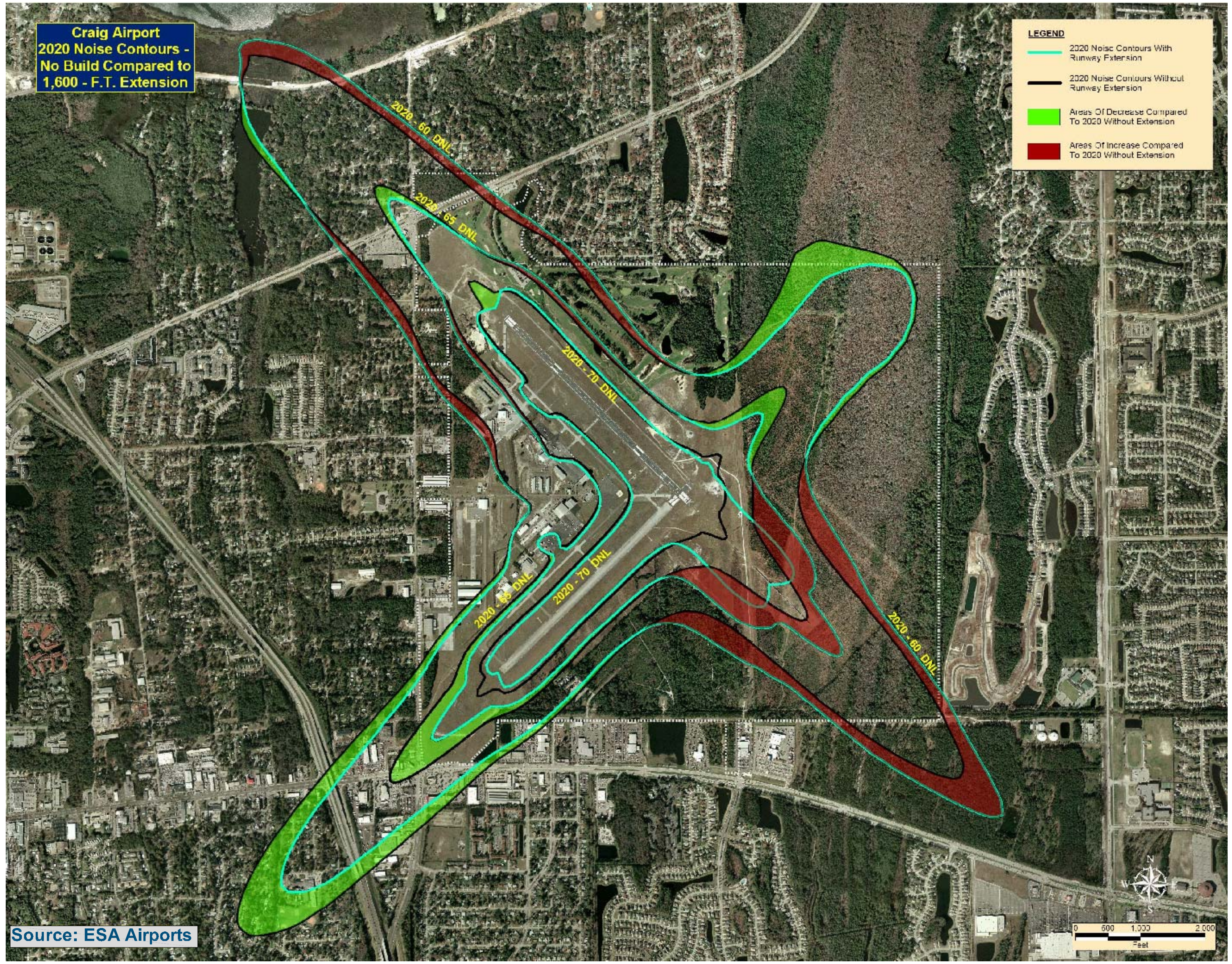

Craig Airport
2020 Noise Contours -
No Build Compared to
1,600 - F.T. Extension
LEGEND
2020 Noise Contours With Runway Extension
2020 Noise Contours Without Runway Extension
Areas Of Decrease Compared To 2020 Without Extension
Areas Of Increase Compared To 2020 Without Extension
2020 - 60 DNL
2020 - 65 DNL
2020 - 70 DNL
2020 - 70 DNL
2020 - 65 DNL
2020 - 60 DNL
N
S
W
E
0
500
1,000
2,000
Feet
Source: ESA Airports

TABLE 5-8 PROTOCOL 1 POPULATION IMPACT POTENTIAL			
Noise Contour	**Baseline Existing**	**2020 Constrained**	**2020 Unconstrained**
Parcels - 1/3 or more of the parcel falls into the Contour			
60-65 DNL	183	261	223
65-70 DNL	0	5	0
70-75 DNL	0	0	0
Population			
60-65 DNL	459	655	560
65-70 DNL	0	13	0
70-75 DNL	0	0	0
Source: ESA Airports, 2008			

The second protocol assumes that a parcel is impacted if it is touched by the contour. Three sets of contours as shown in **Table 5-9** were compared, the existing baseline, the 2020 constrained (no extension), and the 2020 unconstrained (1,600 foot extension) in an effort to provide an accurate comparison of future noise and noise notice zones.

TABLE 5-9 PROTOCOL 2 POPULATION IMPACT POTENTIAL			
Noise Contour	**Baseline Existing**	**2020 Constrained**	**2020 Unconstrained**
Parcels included if contour touches parcel			
60-65 DNL	203	285	242
65-70 DNL	0	6	0
70-75 DNL	0	0	0
Population			
60-65 DNL	510	715	607
65-70 DNL	0	15	0
70-75 DNL	0	0	0
Source: ESA Airports, 2008			

As demonstrated in **Tables 5-7** through **5-9**, the total area impacted by noise actually decreases as a result of the runway extension; thereby decreasing the noise impacts to the surrounding population especially to the residential areas northwest of Runway 14.

Runway 14-32 pavement consists of six inch thick asphalt and a lime rock sub base, and was rehabilitated in 2005. Taxiways A and B as well as connector taxiway pavements were rehabilitated in 2007. As a result, both parallel taxiways A and B, associated connectors and Runway 14-32 can support 30,000 pound single-wheel and 60,000 pound dual wheel aircraft operations. Thus, all proposed airside development will be built to the same design and construction specifications.

Order of magnitude cost estimates for Airfield Alternatives 1 and 2 include project costs related to the proposed runway development only in order to provide an accurate comparison between alternatives. Projects required for both alternatives, such as an environmental assessment and perimeter road relocation, are included in **Table 5-10**, *Preferred Airside Order of Magnitude Cost Estimate*, only.

5.5.1.1 Airfield Alternative 1 - "Modified" 2001 Master Plan Configuration

The 2001 Master Plan Configuration recommended a 2,000 foot extension to Runway 32 to provide a total takeoff length of 6,000 feet. The current analysis based on FAA AC 150/5325B recommends a minimum runway length of 5,600 feet as illustrated in **Figure 5.14**.

An extension on Runway 32 is favored because:

- Runway 32 is currently equipped with an ILS system
- No significant airspace obstructions are within the approach to Runway 32
- The approach to Runway 32 provides the least environmental impact to noise sensitive areas surrounding the airport, and
- The proposed runway extension, safety area, and all runway approach and departure protection zones (RPZs) can be accommodated within the existing airport property line.

In addition, 600-foot displaced landing thresholds are recommended on both Runways 14 and 32 to decrease noise exposure to neighboring communities northwest and southeast of the airport. By applying declared distances, this alternative provides an available takeoff distance of 5,600 feet and landing distance available of 5,000 feet.

Typically the use of declared distances is limited to cases of existing constrained airports where it is impracticable to provide runway safety area, runway object free area or the runway protection zone as required in **FAA AC 150/5300-13**, *Airport Design*. In the case of CRG, declared distances are used to mitigate noise impacts associated with aircraft operations on Runway 14-32 while increasing safety during landing and take-off in wet conditions and during aircraft emergencies. JAA recognizes that FAA does not consider the current conditions at CRG as impacting surrounding communities with aircraft noise because the current 65 DNL noise

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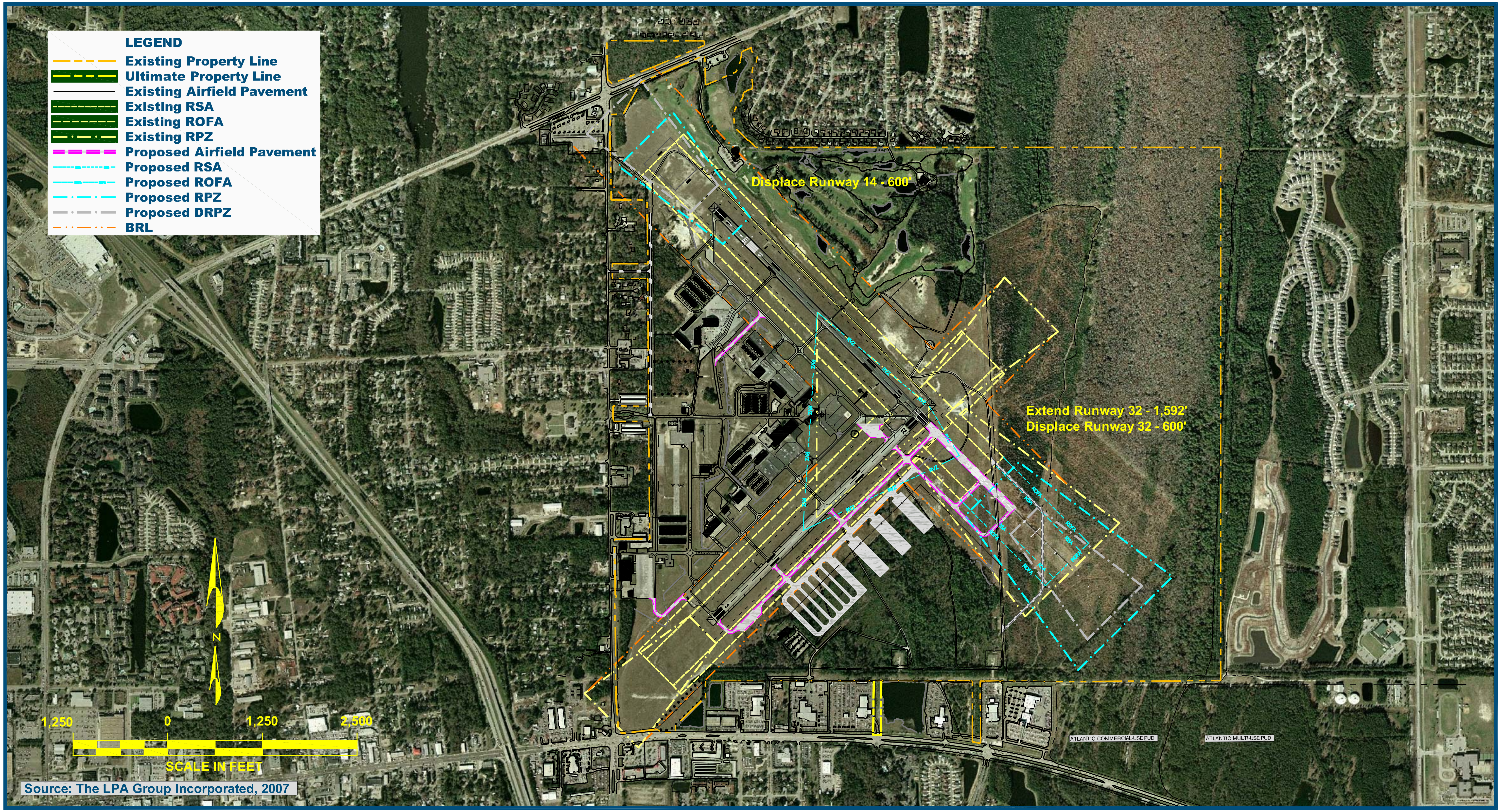
Airfield Alternative 1



LPA

Figure 5-14

contour does not leave the airport property boundary and the 5-year 65 DNL contour only impacts a maximum of five residential properties beyond the airport property boundary. However, the Part 150 study developed for CRG shows that the limited impacts in 2009 will continue to expand further into the Holly Oaks community unless the runway is extended and the declared distance concept is used to lessen the noise impacts.

Use of declared distances allows the airport to determine what portions of an operational runway can be considered to satisfy an aircraft's accelerate-stop, takeoff, and landing distance requirements while still complying with standard RSA requirements. The runway options proposed in this master plan use declared distances to reduce noise impacts to the surrounding communities.

A brief description of each declared distance is denoted in the following.

Takeoff Run Available (TORA) — the distance to accelerate from brake release to lift-off plus safety factors.

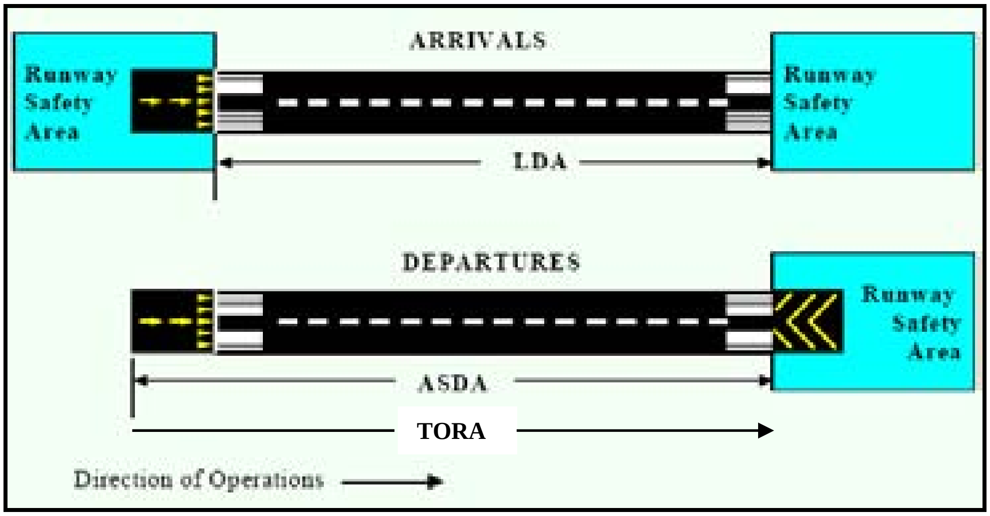
Takeoff Distance Available (TODA) — the distance to accelerate from brake release past lift-off to start of takeoff climb plus safety factors.

Accelerate-Stop Distance Available (ASDA) — the distance to accelerate from brake release to V_1 and then decelerate to a stop, plus safety factors.

Landing Distance Available (LDA) — the distance from the threshold to complete the approach, touchdown, and decelerate to a stop, plus safety factors.

A sample graphic showing declared distance for arrivals and departures in shown in **Figure 5.15**, *Declared Distances Sample Schematic*.

Figure 5.15, Declared Distances Sample Schematic



Source: The LPA Group, FAA Presentation (Airports Annual Conference), 2007

Applying the declared distance methodology to Airfield Alternative 1 provides the following takeoff and landing distances as shown in **Table 5-10**, *Declared Distance Dimensions*.

TABLE 5-10
AIRFIELD ALTERNATIVE 1
DECLARED DISTANCE DIMENSIONS

Declared Distance	Runway 14	Runway 32
TORA	5,600'	5,600'
TODA	5,600'	5,600'
ASDA	5,600'	5,600'
LDA	5,000’	5,000’

Source: The LPA Group Incorporated, FAA AFD, 2007

As shown in **Figure 5.14**, Taxiway A will be extended an additional 2,150 feet to the southeast to provide full parallel access to Runway 14-32. Major projects associated with Runway Alternative 1 include the following:

- 1,600 foot extension to Runway 32
- Mark 600 foot displaced landing thresholds on Runways 14 and 32
- Remark runway to include extension
- Add HIRLs to Runway 32 extension
- Relocate ILS glideslope antenna
- Relocate and install in-pavement MALSR lighting on Runway 32
- Relocate PAPI-4 on Runways 14 and 32

- Relocate REILs on Runway 14
- Add signage (i.e. distance-to-go signs, information signs, etc.)
- Construct 2,150 foot Taxiway A extension
- Construct two connector taxiways, and
- Add MITLs and pavement markings to Taxiway A extension and connector taxiways

Preliminary order of magnitude costs in 2007 dollars associated with Airfield Alternative 1 are provided in **Table 5-11**. Order of magnitude costs include estimates for survey and design, permitting, engineering, inspection and testing, airport administration, 15 percent contingency fee and estimated wetland mitigation.

TABLE 5-11
AIRFIELD ALTERNATIVE 1 - MODIFIED 2001 RUNWAY 14-32 MASTER PLAN CONFIGURATION
PRELIMINARY ORDER OF MAGNITUDE CONSTRUCTION COSTS IN 2007 DOLLARS

Project Description	Estimated Cost
Runway 32 and Taxiway A Extension[1]	$9,100,000
Conduit and Cable	$40,000
Drainage	$200,000
Markings Removal	$50,000
Pavement Markings, including displaced thresholds	$70,000
Runway Edge Lights	$16,000
Runway Threshold Lights	$1,200
Taxiway Edge Lights	$34,000
Taxiway Guidance Signs	$10,000
Relocate Glideslope Antenna	$100,000
Relocate REILs - Runway 14	$5,000
Relocate PAPIs - Runway 14 and 32	$100,000
Relocate MALSR (includes in-pavement lighting)[2]	$400,000
Construct connector taxiway to Runway 32, includes edge lights	$115,000
Clear Obstructions to Runway 32	$82,000
Runway Information Signs	$11,500
Subtotal	$10,334,700
Engineering Design Fee (7%)	$723,429
Construction Management/Inspection (6%)	$620,082
Estimated Total Construction	$11,678,211
Contingency (15%)	$1,751,732
Wetland Mitigation	$5,536,300
Estimated Order of Magnitude Costs	**$18,966,243**

Notes:
[1]Includes ~$5.8 million for 5 ft depth cut and fill costs based upon LPA Jacksonville Engineer Estimates
[2]MALSR Lights are currently located on top of 30 by 60 ft wide concrete posts. Since the approach area is wet and swampy, cost includes not only in-pavement lighting but cost of concrete to elevate lights, etc.
Source: The LPA Group Incorporated 2007

Thus, based upon the proposed development, an order of magnitude cost of approximately $19 million is anticipated. Key strengths and weaknesses associated with Airfield Alternative 1 are listed below:

AIRFIELD ALTERNATIVE 1 MODIFIED 2001 RUNWAY 14-32 MASTER PLAN CONFIGURATION	
Strengths	**Weaknesses**
1. Provides takeoff length of 5,600 feet. 2. Provides landing length of 5,000 feet. 3. Accommodates ARC C-II aircraft takeoff and landing length requirements. 4. Based upon forecast demand, anticipate decreased noise impacts to surrounding communities. 5. Maintains precision instrument approach to Runway 32, and non-precision approach to Runway 14 6. Taxiway A extension provides full parallel access 7. Requires no additional land acquisition 8. Runway 32 approach and departure RPZs remain on airport property 9. Runway and taxiway extension provide access to southeast portion of airfield	1. Requires relocation of glideslope antenna and in-pavement MALSR equipment 2. Requires significant "cut and fill" since construction site is wet 3. Requires relocation of PAPIs on Runway 14 and 32. 4. Requires relocation of REILs - Rwy 14 5. Estimated Cost = $18.9 Million 6. Wetland Mitigation will likely be required.
Source: The LPA Group Incorporated, 2007	

5.5.1.2 Airfield Alternative 2 - "Modified" Part 150 Configuration A

Airfield Alternative 2 is based upon the Runway Alternative Configuration A outlined in the 2006 FAR Part 150 Study. This alternative recommends a 500 foot extension to Runway 14 as well as a 1,600 foot extension to Runway 32, thus providing a total usable pavement length of 6,100 feet as shown in **Figure 5-16**, *Airfield Alternative 2*. However, displaced landing thresholds of 500 feet on Runway 14 and 600 feet on Runway 32 are recommended to limit existing and potential noise exposure to noise sensitive facilities and communities adjacent to the airport property. As outlined in Airfield Alternative 1, declared distances is applied to provide takeoff and landing lengths associated with Airfield Alternative 2. Declared distance operating lengths for Airfield Alternative 2 are provided in **Table 5-12**, *Declared Distance Information*.

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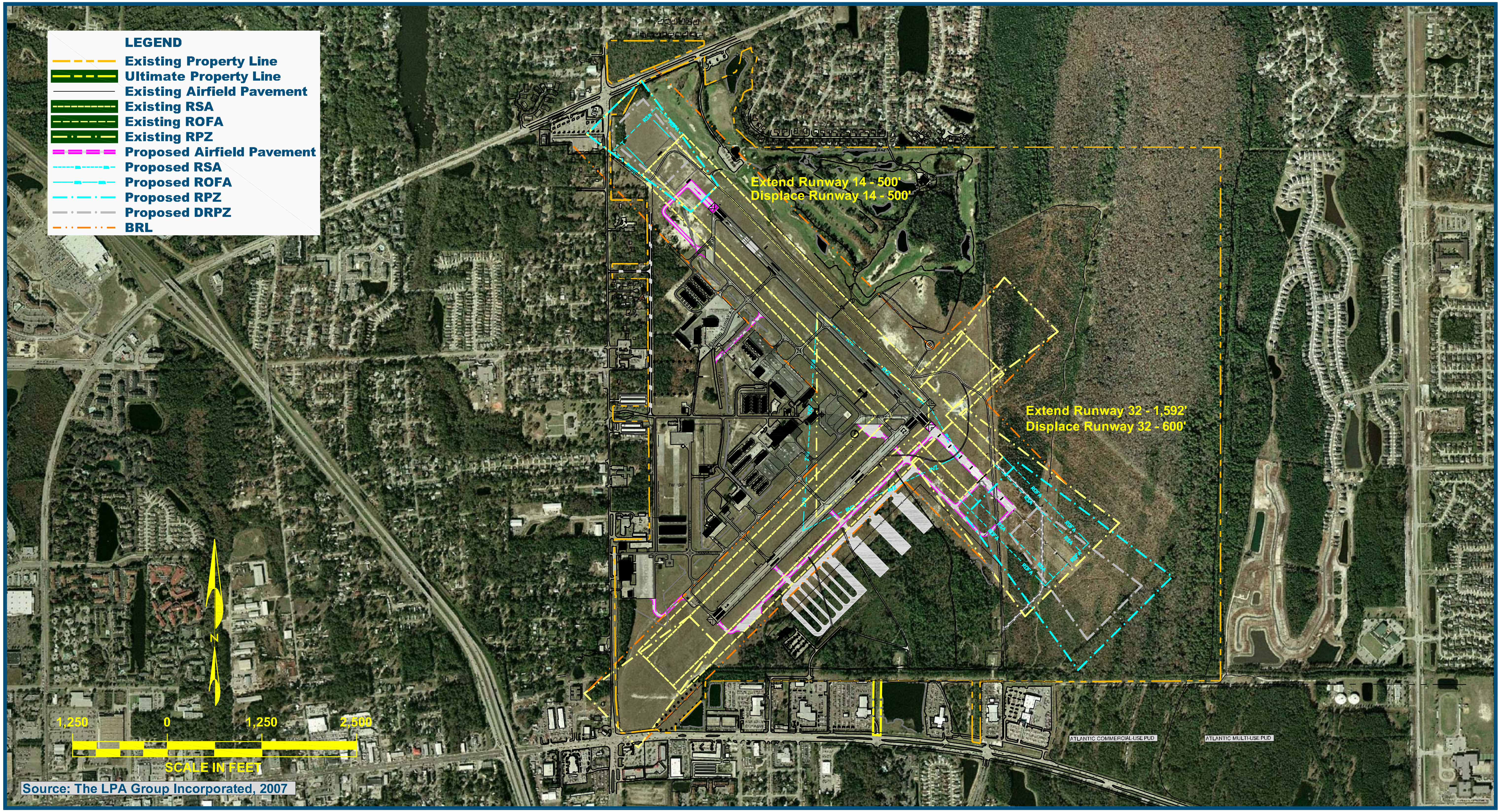
Airfield Alternative 2



Source: The LPA Group Incorporated, 2007

LPA

Figure 5-16

TABLE 5-12 AIRFIELD ALTERNATIVE 2 DECLARED DISTANCE INFORMATION		
Declared Distance	**Runway 14**	**Runway 32**
TORA	6,100’	6,100’
TODA	6,100’	6,100’
ASDA	6,100’	6,100’
LDA	5,600'	5,500'
Source: The LPA Group Incorporated and FAA AFD, 2007		

Under Airfield Alternative 2, available takeoff distance on both Runways 14 and 32 is 6,100 feet which easily accommodates existing and anticipated C-II aircraft over the twenty-year planning period. Applying the displaced landing thresholds provides 5,600 feet of landing length on Runway 14 and 5,500 feet of landing length on Runway 32. However, the noise impacts to properties to the northwest of the airfield are unlikely to decrease since the landing threshold remains at its current location on Runway 14.

Major projects specific to Airfield Alternative 2 include:
- 2,100 foot extension to Runway 14-32, including HIRLs
- Relocate Localizer Antenna
- Relocate Glideslope Antenna
- Relocate PAPI-4 on Runway 32
- Install Threshold Lights
- Relocate/Install in-pavement MALSR - Runway 32
- Remove and Remark Runway Pavement, includes displaced thresholds
- Construct 2,650 ft extension Taxiway A and three connector taxiways
- Install MITLs and taxiway markings, and
- Add taxiway and runway signage

Anticipated costs associated with Airfield Alternative 2 development in 2007 dollars is provided in **Table 5-13**, *Airfield Alternative 2 - Order of Magnitude Costs*. All order of magnitude costs include estimates for survey and design, permitting, engineering, inspection and testing, airport administration, 15 percent contingency fee and estimated wetland mitigation.

TABLE 5-13 AIRFIELD ALTERNATIVE 2 - PART 150 CONFIGURATION A PRELIMINARY ORDER OF MAGNITUDE CONSTRUCTION COSTS IN 2007 DOLLARS	
Project Description	**Estimated Cost**
Runway 32 and Taxiway A Extension[1]	$9,100,000
Runway 14 and Taxiway A Extension	$2,000,000
Construct one connector taxiway, including edge lighting	$115,000
Conduit and Cable	$55,300
Drainage Improvements	$250,000
Pavement Markings Removal	$50,000
Pavement markings, including displaced thresholds	$105,000
Relocate localizer antenna	$100,000
Relocate Glideslope Antenna	$100,000
Relocate PAPI-4 - Runway 32	$50,000
Runway Threshold Lights	$2,400
Runway Edge Lights	$25,000
Taxiway Edge Lights	$46,000
Taxiway Guidance Signs	$15,000
Runway Information Signs (5)	$18,750
Clear Obstructions Runway 32	$82,000
Relocate MALSR (in-pavement lighting)[2]	$500,000
Subtotal	$12,614,450
Engineering Design Fee (7%)	$883,012
Construction Management/Inspection (6%)	$756,867
Estimated Total Construction	$14,254,329
Contingency (15%)	$2,138,149
Wetland Mitigation	$5,536,300
Estimated Order of Magnitude Costs	**$21,928,778**

Notes:
[1]*Includes $~5.8 million for cut* and fill costs on extension of Runway 32 only based upon Engineer's Estimates
[2]MALSR Lighting costs includes both in-pavement lighting, relocation, and concrete piers for lights located in wet approach zone.
Source: The LPA Group Incorporated 2007

Based upon existing issues and forecast demand, the following strengths and weaknesses associated with Airfield Alternative 2 are outlined in the table below:

RUNWAY ALTERNATIVE 2 "PART 150 CONFIGURATION A"	
Strengths	**Weaknesses**
1. Provides takeoff length of 6,100 feet. 2. Provides landing length of 5,600 feet on Runway 14 and 5,000 feet on Runway 32. 3. Accommodates ARC C-II aircraft takeoff and landing length requirements. 4. Maintains precision instrument approach to Runway 32, and non-precision approach to Runway 14 5. Taxiway A extension provides full parallel access 6. Runway and taxiway extension provide access to southeast portion of airfield	1. Requires installation of in-pavement MALSR 2. Requires relocation of localizer and glideslope antennas 3. Requires relocation of PAPIs on Runway 32 4. Anticipated to increase noise exposure to residential communities northwest of the airport 5. Moves airport operations closer to residential locations north and west of the airfield. 6. Requires significant cut and fill 7. Costs approximately $3 million more than Alternative 1
Source: The LPA Group Incorporated, 2007	

5.5.1.3 Refined/Selected Airfield Alternative

A combination of elements from the two airfield alternative concepts presented was recommended to serve as the framework for future development. The concepts were evaluated within this section to weigh the inherent strengths and weaknesses of each in comparison against the other. Concepts were evaluated within the following categories:

- Flexibility/Planning Requirements
- Phasing/construction
- Environmental effects
- Operational effectiveness and Safety considerations
- Off Airport Land Use and Airport Zoning
- Fiscal Viability, and
- Community acceptance.

Flexibility/Planning Requirements

In general, this pertains to the total growth potential, including demand, safety and security requirements, and design standards, the ability to accommodate unforeseen changes, as well as ability to conform with local, regional and state transportation planning efforts. Based upon forecast operations and fleet mix data, both Airfield Alternatives 1 and 2 accommodate the requirements of an ARC C-II design aircraft. Although Alternative 2 does provide longer takeoff and landing lengths compared to Alternative 1, it is unlikely to obtain acceptance by the community. Further, based upon the noise contours provided in the FAR Part 150 Study, a decrease in the 65 DNL noise contour to the northwest of the airport is unlikely since the landing threshold will remain at its current location on Runway 14.

Phasing/Construction

The evaluation criteria primarily associated with this category include: the ability to phase construction and expand incrementally, the costs associated with construction, impacts to existing facilities, and any engineering difficulties anticipated as part of the build-out. Both Airfield Alternatives 1 and 2 require a major construction effort primarily associated with the extension of Runway 14-32 as well as Taxiway A. However, phasing and construction impacts are anticipated to be less with Airfield Alternative 1 since the extension of both Runway 14-32 and Taxiway A occurs on the southeast portion of the airfield only. As a result, construction impacts to the north and west sections of the airfield will be limited.

Typically, the localizer antenna associated with the ILS system is located on the extended runway centerline outside the runway safety area between 1,000 to 2,000 feet beyond the stop end of the runway. Since Airfield Alternative 2 recommends a 500 foot extension to Runway 14, the localizer antenna must be relocated[15]. Further, since it is not practicable to locate the antenna beyond the end of the RSA due to limited available property and the location of several major roadways, the localizer would need to be offset to the side to keep it clear of the RSA and to minimize the potential hazard to aircraft. Thus, the localizer critical area could require aircraft to hold on short on Taxiway A so as not to interfere with the signal.

[15] Relocating the localizer antenna as part of Runway Alternative 2 is based upon discussions with *Technical Operations and Facilities* and *NAVAID Siting Divisions*, FAA Atlanta (August 2007) and data provided in FAA AC 150/5300-13, *Airport Design*, "Localizer Antenna", pg. 62.

Operational Performance and Safety Considerations

Operational performance compares the overall operational efficiency of the proposed runway layouts based upon compatibility with long-range airfield demand as well as FAA airport design requirements. Both runway alternatives are designed to meet ARC C-II design requirements. Further, the increased available takeoff and landing distances will allow aircraft to operate at higher load factors and operating distances. Both alternatives are also compatible with JAA's long-range planning efforts and FAA operating recommendations.

Providing a 600 foot displaced landing threshold on Runway 14, as shown in Airfield Alternative 1, allows aircraft using a 3.0 degree glideslope on approach to maintain a higher altitude over the residential communities located northwest of the airport. As a result of aircraft maintaining a higher altitude, it was determined that the 60 DNL noise contour would shift toward the south decreasing the current number of homes impacted by aircraft noise.

Off Airport Land Use and Airport Zoning

As discussed in **Section 5.1.2**, **On and Off Airport Land Use and Zoning**, land use around the Craig Airport is defined by noise notice zones, height and hazard zones, and school regulation zones. In reviewing the potential impacts associated with the proposed extension even with the conservative 90 percent utilization of Runway 14-32 by jet aircraft, the impacts to the surrounding land use has either decreased or negligible when compared to existing conditions.

Noise and Noise Notice Zones

As shown in **Figure 5.17**, *2020 Noise Notice Zone*, and in **Appendix F**, *Long-Term Noise Assumptions*, the noise contours and associated zones shift eastward thus decreasing the impact to the surrounding communities and noise sensitive facilities, i.e. schools and churches. It has further been verified that residential communities located northwest and southwest of the airport will benefit from the proposed extension since it shifts noise areas currently impacting their communities onto the airport property. Further in evaluating the 2020 unconstrained fleet mix forecast, no homes fall within the 65 DNL contour which is the FAA's defined level of noise exposure. Thus the recommended runway configuration outlined in this master plan update when compared to other alternatives, including the constrained scenario, was determined to have a smaller overall impact to property and population and provides the means to reduce noise exposure within the 60-65 DNL range within the short and long-term.

2020 Noise Notice Zone

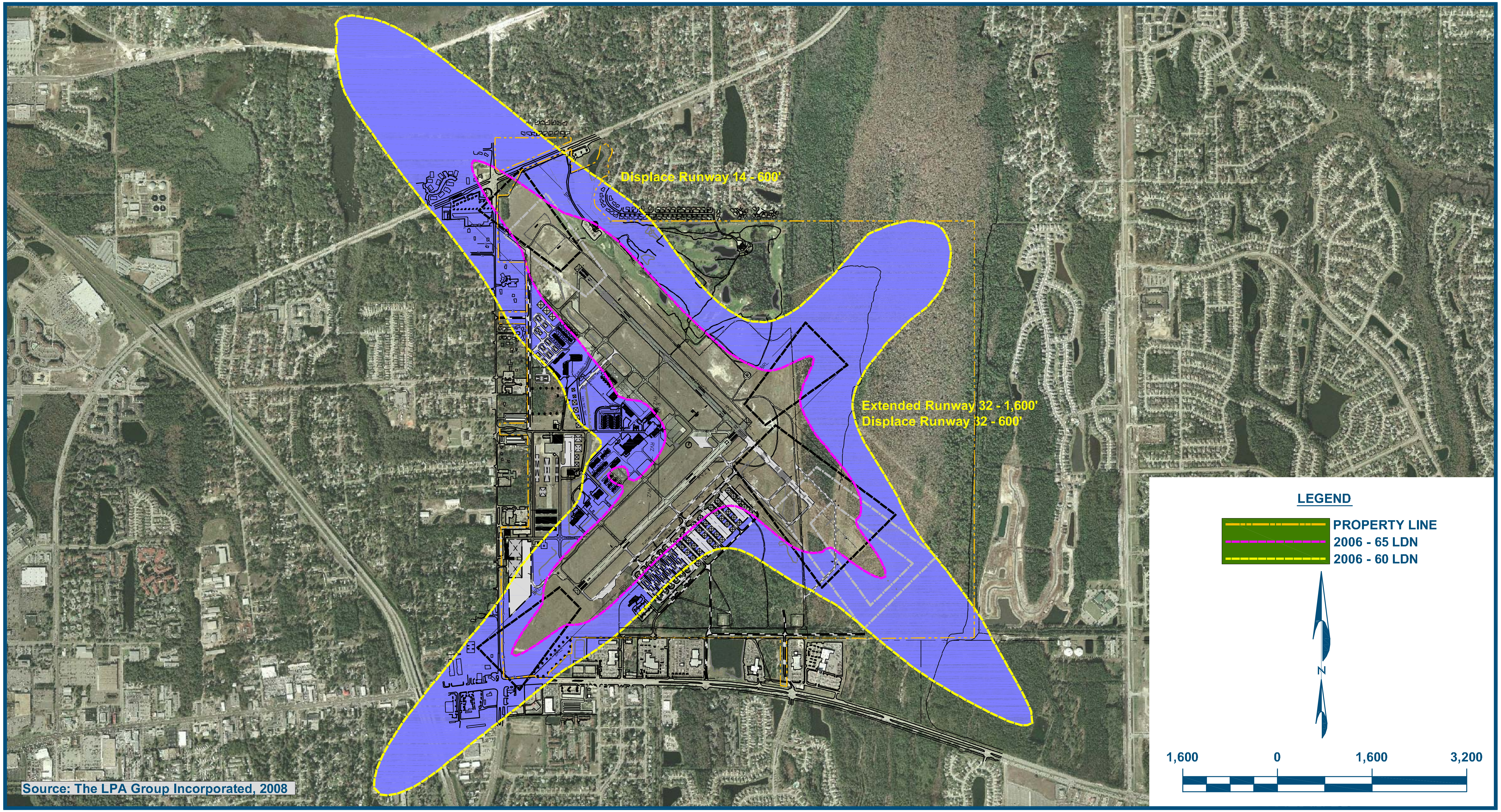


Figure 5-17

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Height and Hazard Zones

As shown in Chapter 656 of the City of Jacksonville land use ordinance, the height and hazard zones surrounding an airport are defined under Title 14, Code of Federal Regulations, Part 77 guidelines. As a result of the proposed extension and displaced landing threshold on Runway 32, the approach surface shifted approximately 1,000 feet to the southeast, as shown in **Figure 5.18**, in order to ensure that Part 77 guidelines are not exceeded and that the minimum vectoring descent altitude is maintained. A cursory review of the proposed approach has shown no existing obstructions which could negatively impact the existing instrument approach to Runway 32. Further, the proposed approach slope allows for the safe operation of aircraft to and from the airport while limiting the noise impacts to the surrounding communities.

School Regulatory Zones

The extension of Runway 14-32 to a total length of 5,600 feet increases the school regulation zone width associated with Runways 14 and 32 from 2,000 feet wide to 2,300 feet wide as shown in **Figure 5.19**. As a result, a corner of the Landmark Middle School property (**Figure 5.20**) and a slightly larger corner of the Kernan Elementary School property (**Figure 5.21**) would be included in the school regulation zone as dictated by Florida Statute 333.03 and City of Jacksonville Zoning. However, as shown in both Figures 5.20 and 5.21, no buildings or playground areas would be located within the expanded regulation area.

In an effort to protect the safety of both the schools and the airport, JAA coordinated this issue with Karen Kuhlman, Director Real Estate and Agency Coordination. (Note: The referenced letter is included in **Appendix H**, *Key Participants, Public Comments and Participation,* of this report.) In all cases, no school building or playground areas would be located within the expanded regulation zone, which was confirmed by the letter from Ms. Kuhlmann. The letter specifically states that upon review, “In each case only one corner of the property is impacted. The impacted areas do not include any buildings or areas of student congregations. We do not feel that the impact is significant enough to oppose the extension of the runway and we will urge the School Board to take no action.”[16] Based upon this coordination with the Duval County School Board and City of Jacksonville Planning, no impact to Landmark Middle or Kernan Elementary Schools was determined. JAA will undertake any additional due diligence, if required, during the environmental assessment phase of the runway extension project.

[16] Ms. Karen S. Kuhlmann, Director, Real Estate and Agency Liaison, Duval County Public Schools, Letter dated September 12, 2008

Existing vs. 2020 Civilian Height and Hazard Zone

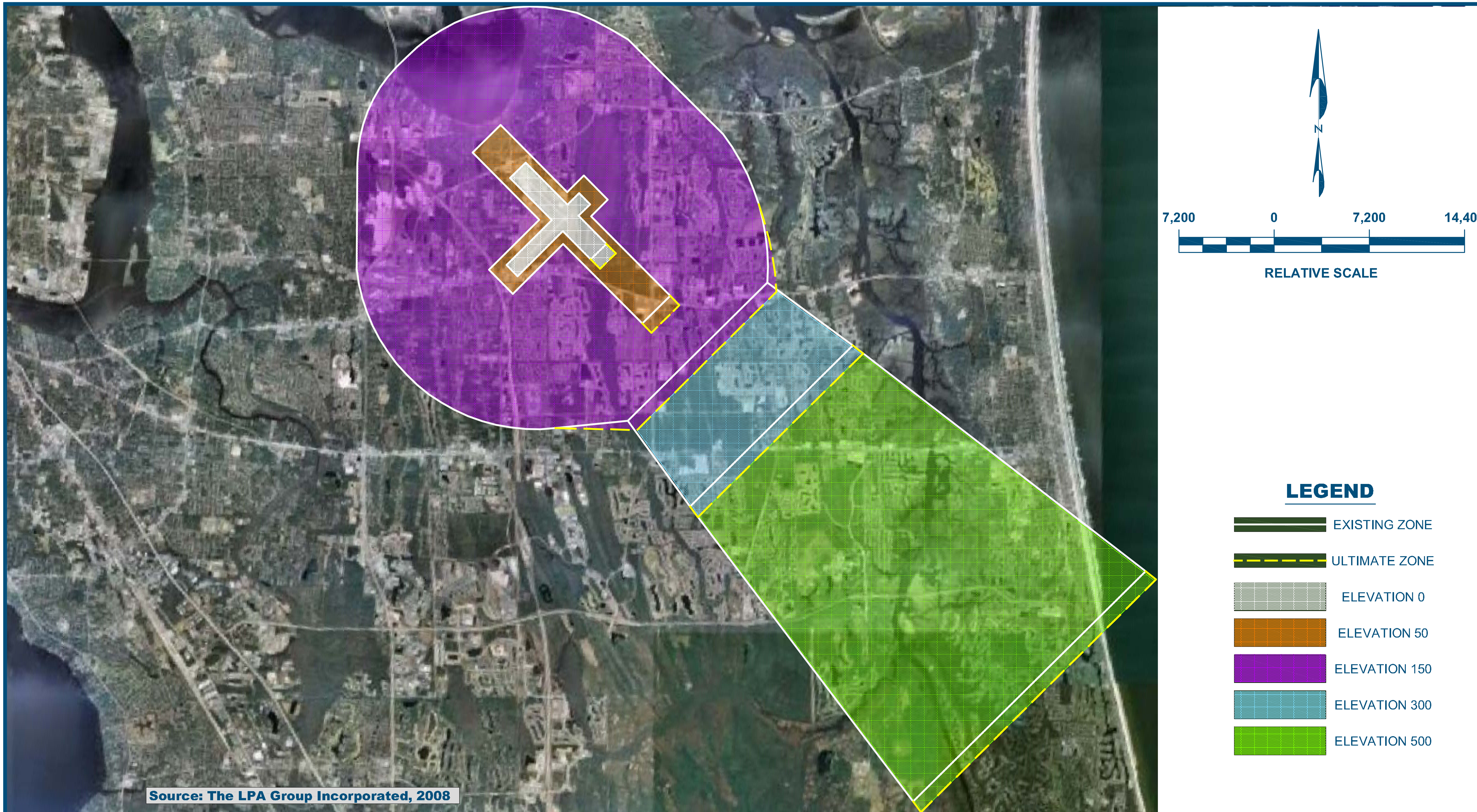

Figure 5-18

Future School Zones with 1,600' Extension

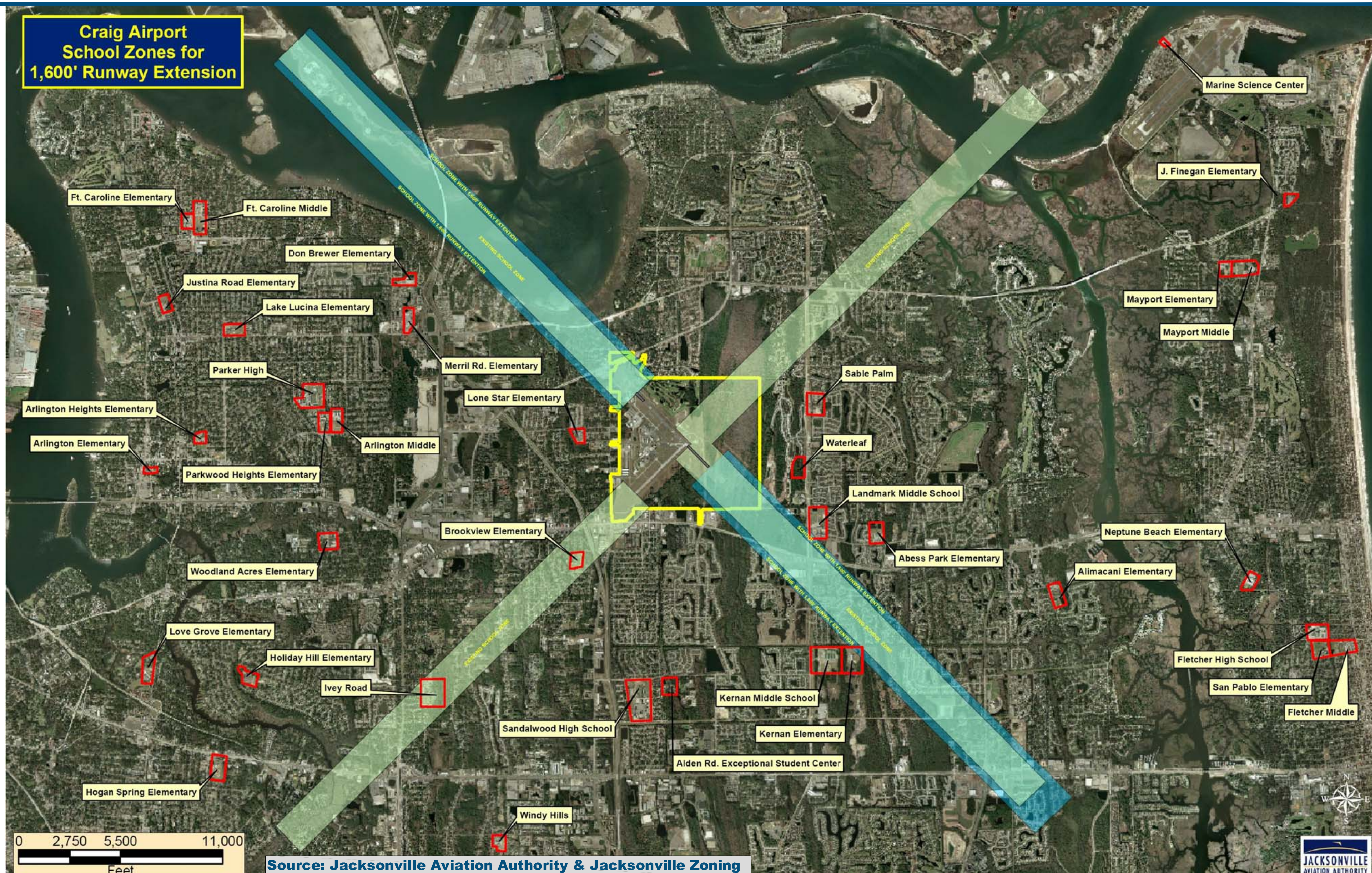

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Figure 5-19

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Landmark Middle School Future Impacts

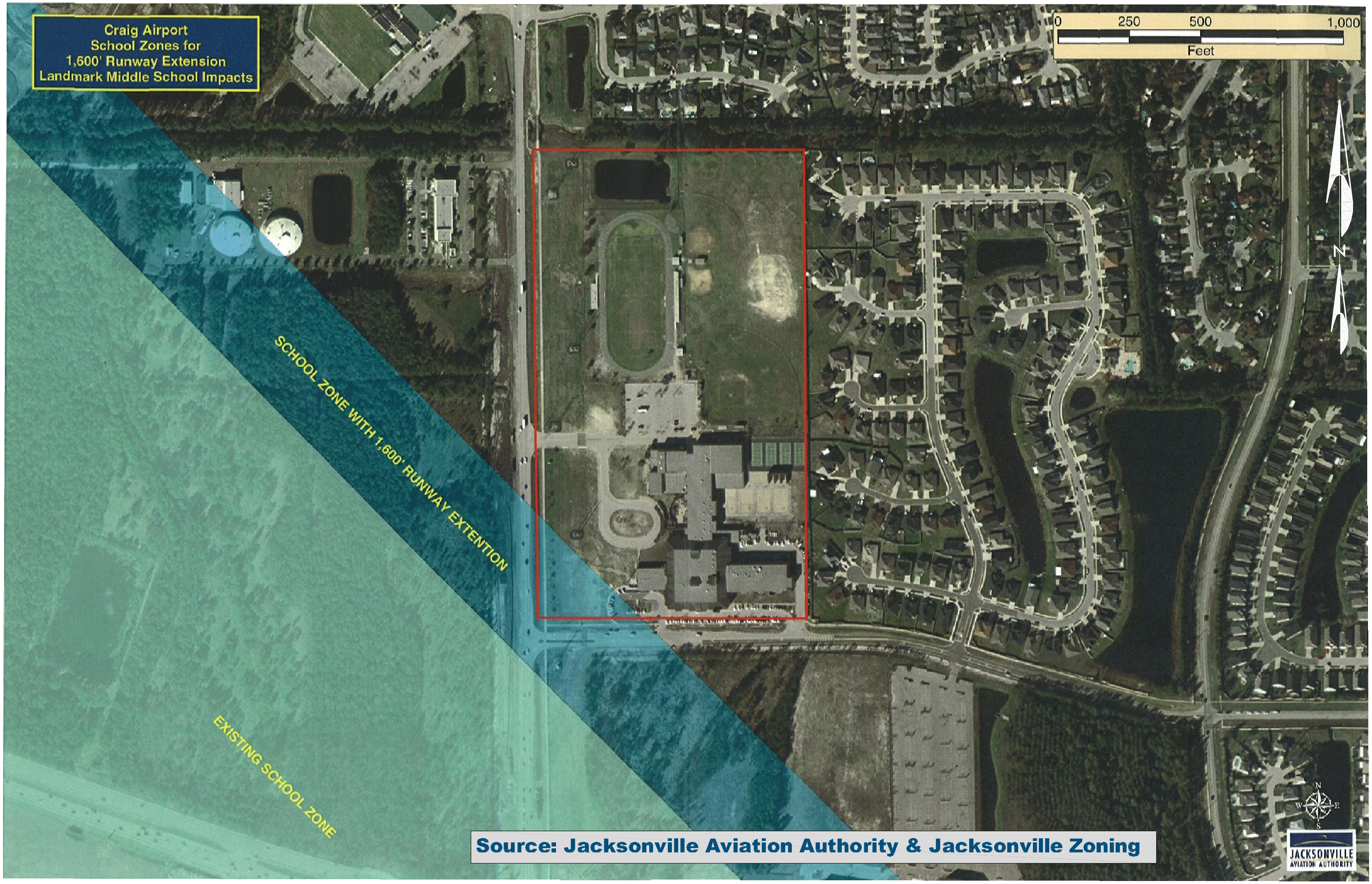

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Figure 5-20

Craig Airport School Zones for 1,600' Runway Extension Kernan Elementary & Middle School Impacts
0
250
500
1,000
Feet
N
EXISTING SCHOOL ZONE
SCHOOL ZONE WITH 1,600' RUNWAY EXTENTION
Kernan Middle School
Kernan Elementary School
Source: Jacksonville Aviation Authority & Jacksonville Zoning
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Figure 5-21

Environmental Impacts

A general assessment of potential impacts was evaluated to determine the degree to which proposed development will impact the surrounding environs as outlined in **FAA Order 1050.1** and **FAA Order 5050.4**. Further an environmental assessment (EA) according to **FAA Order 5050.4B**, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, and **Order 1050.1E**, *Environmental Impacts*, is typically warranted when a major runway extension is recommended. "A runway extension, typically identified as an action "normally" requiring an Environmental Assessment (EA), could be considered categorically excluded development, if it does not meet the definition of being a "major runway extension". All runway extensions are not defined as "major". A "major runway extension" is not runway length specific but is defined as an extension that increases noise by 1.5 DNL or greater over any noise sensitive areas located within the 65 DNL contour. It can also be defined as major if it: causes effects on the use of land protected by the Section 4(f) 1966 DOT Act, as amended; includes properties listed or eligible for listing on the National Register of Historic Places or properties of state or local historical/cultural significance; and/or affects land protected under the Farmland Protection Policy Act, wetlands, coastal zones, floodplains, and federally listed endangered or threatened species."[17] Since both Airfield Alternatives 1 and 2 recommend an extension to Runway 14-32, an environmental assessment could be required. However, the decision to apply a Categorical Exclusion, EA or Environmental Impact Statement (EIS) is at the discretion of the FAA Airports District Office.

However, based upon **FAA Order 1050.1 and 5050.4**, both alternatives will have construction impacts and disturb undeveloped property south of the Runway 32 threshold. Airfield Alternative 2 would also impact undeveloped property north of the Runway 14 threshold. Both airfield concepts will have construction and construction noise impacts, but these impacts will be limited to the property south and east of Runway 32 on Airfield Alternative 1. Since the property prior to the Runway 32 threshold is wet and the elevation slopes down to a low of approximately 30 feet, it was determined that:

- ✈ Alternative 1 will require approximately 150,000 CY of organic material removed, and approximately 430,000 CY of fill associated with Runway 32 and Taxiway A extensions, whereas
- ✈ Alternative 2 will also require approximately 150,000 CY of organic material removed and approximately 430,000 CY of fill associated with the extension of Runway 32 and Taxiway A to the southeast. But Alternative 2 also requires an estimated 16,500 CY cut and fill associated with the extension of Runway 14 and Taxiway A to the northwest.

[17] Environmental Policy, Federal Aviation Administration and Department of Transportation

According to the Part 150 Study, it was determined that "a runway extension could reduce levels of noise exposure both in terms of area and population".[18] Thus, using the conservative assumption denoted in Table 14-3 of the 2006 FAR Part 150 Study and the unconstrained fleet mix forecast developed in this master plan update, even with 90 percent of jet activity on Runway 14-32, noise exposure to residents within the Holly Oaks subdivision decreases. Further, any reduction in this runway utilization percentage will result in an additional reduction in noise exposure within the Holly Oaks subdivision as a result of the recommended extension. Even with higher jet volumes, a 90 percent utilization of Runway 14-32 by jet aircraft, and the reduction of the runway extension and displaced landing thresholds as compared to the runway recommendation in the Part 150 Study, the noise over the Holly Oaks subdivision would still decrease as a result of the extension. This will be further evaluated as part of the Environmental Assessment process.

Fiscal Viability

Using the preliminary order of magnitude construction costs prepared as part of the airfield alternatives analysis, this evaluation considers the respective cost advantages and disadvantages of both alternative concepts in addition to likely funding sources to determine the viability of the proposed development. The order of magnitude costs associated with Runway Alternative 1 are approximately $3 million less that those for Alternative 2.

Based upon forecast demand and critical aircraft requirements, it is unlikely that FAA and FDOT will recommend funding of Runway Alternative 2 since: (1) the length exceeds FAA determined runway length requirements at 60 percent usable load; and (2) the anticipated cost of a 500 foot extension on Runway 14 does not provide any significant operational improvements. The proposed 1,600 foot extension to Runway 32 adequately accommodates both existing and future demand. Therefore, it is anticipated based upon historic and current funding priorities that Airfield Alternative 1 is a more viable alternative. However, before either design or construction can begin with FAA funding, a FAA Cost Benefit analysis will be required.

Community Recommendations/Acceptance

JAA has worked diligently for the last 35 years to develop a runway extension program at CRG to provide the minimum runway length recommended by FAA for the types of aircraft now operating at Craig while recognizing the surrounding communities concerns about noise and increasing aircraft size. JAA will continue to hold community workshops and other outreach measures to ensure the airport is the best neighbor possible with the surrounding communities.

[18] Craig Airport FAR Part 150 Study - Noise Exposure Maps and Noise Compatibility Program, Chapter 14, Long Term Noise Exposure, page 14-4, February 2006

5.5.2 Airfield Capacity Improvements

There are two measures of airfield capacity that must be analyzed for CRG. The first has to do with the length of the runways to serve the type of traffic using the airport. This capacity issue has already been discussed with a recommended increase in runway length to 5,600 feet to serve the current and future aircraft mix at CRG.

The second is the total number of aircraft operations that the runway system at the airport can support. The runway system at CRG currently consists of two runways of approximately 4,000 feet each. These runways intersect within 1,200 feet of the Runway 23 and 32 ends. Based upon current operations, the use of land and hold short procedures (LAHSO) and the calculated annual service volume (ASV) of 196,000 annual operations, the airport currently exceeds 83 percent of the ASV. ASV is not the actual capacity of the airport but an FAA measure of the operations that could use the airport without any undue delay. The FAA recommends that additional capacity measures be developed when an airport exceeds 80 percent of ASV.

ASV can be increased by a number of measures including the addition of high-speed taxiways, holding bays, landing and navigational aids and changes in air traffic procedures. However, the most significant increase in ASV results from the construction of a parallel runway.

5.5.2.1 Runway Capacity Improvements

To provide any measurable increase in the hourly aircraft operational capacity at CRG, an additional runway parallel to one of the existing runways would have to be constructed. A closely spaced parallel at 1,200 foot lateral separation would be required. This would increase the ASV of the runway system from the current 196,000 to approximately 260,000. Several of the past CRG Master Plans had proposed a parallel runway option.

Another method of theoretically increasing the annual ASV would be to relocate Runway 5-23 500 feet to the southeast of it current location. This would remove the current intersecting runway condition and could increase ASV to 215,000 annual operations. This development was proposed in the 2001 Master Plan Update.

This Master Plan does not recommend the shift of Runway 5-23 because this alternative would not provide any significant increase in ASV capacity in relation to the cost of the project. This plan also recognizes that the cost of a new parallel runway along with the impacts to the community from an increase in operations to over 260,000 annual operations also limits the probability of this alternative. JAA believes the long-term solution to ASV capacity at Craig will come from using the operational capacity at Cecil Field and other area airports to support the growth in regional operations.

However, this does not lessen the need for a runway extension at Craig to safely handle the aircraft currently using the airport and forecast to use the airport in the future. The most important improvement at CRG is to lengthen Runway 14-32 to 5,600 feet to provide the FAA recommended runway length for these aircraft.

5.5.2.2 Taxiway Capacity Improvements

The construction of additional connector taxiways at varying intervals along the length of the runway decreases aircraft occupancy time and, therefore, increases runway capacity. Taxiway improvements include the addition of high-speed taxiways and/or 90° degree taxiway connectors. However, according to **FAA AC 150/5300-13**, a 600-foot runway-to-taxiway separation distance is necessary for an efficient acute-angled exit taxiway, which includes a reverse curve for "double-back" operations. Further high speed taxiways are primarily used at commercial service airports with total available runway length of 8,000 feet or greater, and to expedite aircraft turning off the runway at ground speeds up to 40 knots. However, according to FAA Southern Region, the overall cost, runway-to-taxiway separation as well as aircraft operational requirements do not justify the installation of high speed taxiways at GA airports and are, therefore, not recommended or federally funded.[19]

The location of the exit taxiway affects the overall capacity of the runway. According to **AC 150/5300-13,** *Airport Design***, Appendix 9**, each 100 foot reduction of the distance from the threshold to the exit taxiway reduces occupancy time by approximately 3/4 of a second for each aircraft using that taxiway. However, the runway occupancy time for each additional aircraft overrunning the new exit taxiway increases runway occupancy time by 3/4 of a second for each 100 feet beyond the new location to the next available exit taxiway.[20]

Review of the exit taxiway cumulative utilization percentages as listed in **Appendix 9** of the Airport Design AC reveals that 100 percent of ADG A, 98 percent of ADG B, and 8 percent of ADG C aircraft at a minimum of 20 MPH (17.39 knots) can exit at or before a right angled exit located 4,000 feet from the threshold under dry runway conditions only[21]. However, these percentages are based upon aircraft maximum takeoff weights (MTOWs) less than or equal to 300,000 pounds.

[19] High-speed taxiways according to FAA Southern Region should be used for commercial airports only since the cost and operational requirements are not justified for general aviation airports.
[20] FAA AC 150/5300-13, Appendix 9, Page 142, Paragraph 3.
[21] FAA AC 150/5300-13, Appendix 9, Table A9-1, Exit Taxiway Cumulative Utilization Percentages.

Since aircraft at CRG are limited to less than 60,000 pounds MTOW, a calculation based upon existing critical aircraft was used to determine the appropriate location of exit taxiways. According to **Appendix 9**, a right angled exit taxiway should be located at the distance it would take an aircraft to decelerate comfortably to a taxiing speed of 20 MPH (approximately 17.39 knots) or less before initiating a change of direction. Results of these calculations are shown in **Table 5-14**. These results assume a constant rate of deceleration on the runway of eight feet per second or 43.5 knots per foot.

The median of the calculated distances is approximately 3,681 and 4,233 feet for a runway exit speed of 20 MPH. It is reasonable to assume that the optimum points to begin turning off the runway centerline are located approximately between 2,015 and 5,080 feet from runway ends. Pilots can always correct aircraft landing distances by adjusting their decelerating speeds though the application of brake pressure or the deployment of spoilers.

Given the existing airfield configuration and the current locations of the FBOs and other general aviation facilities, exit taxiways should be located approximately 2,900 feet from the runway landing thresholds. Exit taxiways are illustrated in **Figure 5-23,** *Preferred Airfield Alternative.*

TABLE 5-14
EXIT TAXIWAY LOCATIONS ASSOCIATED WITH CRITICAL DESIGN AIRCRAFT

Critical Design Aircraft	ARC	Stall Speed (Vso)	Approximate Touchdown Speed[1]	Taxiway Exit Location from Runway End (Exit runway @ 20 MPH or 17.39 knots)[2]	
				Dry Pavement	Wet Pavement[3]
Learjet 31/31A	C-I	53	64	2,010	2,312
VLJs (Eclipse 500)	A-I	66	79	2,689	3,092
Dassault Falcon 10	B-I	80	96	3,420	3,933
Cessna 525A (CJ2)	B-II	81	97	3,472	3,993
Cessna 525 (CJ1)	B-I	82	98	3,524	4,053
Beechjet 400A	C-I	82	98	3,524	4,053
Cessna 525B (CJ3)	B-II	83	100	3,576	4,112
MU300	B-I	84	101	3,628	4,172
Falcon 50	B-II	84	101	3,628	4,172
Falcon 50EX	B-II	84	101	3,628	4,172
Challenger (Series 600)	C-II	84	101	3,628	4,172
Dassault Falcon 2000EX	B-II	85	102	3,681	4,233
Falcon 900EX	C-II	85	102	3,681	4,233
Cessna 501	B-I	86	103	3,733	4,293
Cessna 550	B-II	86	103	3,733	4,293
Cessna 560 XL	B-II	86	103	3,733	4,293
Cessna 560	B-II	86	103	3,733	4,293
Israel Westwind	C-I	96	115	4,255	4,893
Learjet 35	C-I	96	115	4,255	4,893
Cessna 680 (Sovereign)	C-II	97	116	4,307	4,953
Learjet 45	C-I	99	119	4,411	5,073
Cessna 650 (Citation VI)	C-II	99	119	4,411	5,073
Cessna 750 (Citation X)	C-II	99	119	4,411	5,073
	Aircraft able to exit runway at 20 MPH under 4,000 feet without using thrust reversers or application of heavy brake pressure				
	Aircraft able to exit runway at 20 MPH under 5,600 feet without applying heavy brake pressure or deployment of thrust reversers.				
	Aircraft in each ARC category with greatest number of operations in 2006, base year				

Notes:
[1]Touchdown Speed is equal to 1.2 x Stall Speed
*[2]Taxiway Exit at 17.39 knots equals (Touchdown speed - 17.39 knots) * 43.5 knots per foot*
[3]Taxiway Exits with wet or contaminated pavement require additional 15% length
Source: Aircraft Manufacturer Performance Manuals, AC 150/5300-13, Appendix 9, Flight Safety Foundation and The LPA Group Incorporated, 2007

5.5.2.3 Additional Taxiway Improvements

Consideration should be given to extending Taxiway B to the south to provide access to the southern portion of the airfield and access to existing Building 607. In addition to the extension of Taxiway B, construction of a parallel taxiway east of Runway 5-23 is also recommended. This taxiway will provide access to the south and east side of the airport property as well as access to Taxiway A and Runway 32.

JAA has also requested the realignment of a portion of existing Taxiway A-3, which is currently located on the Craig Air Center ramp. In order to provide for expanded GA development, a realignment of A-3 along the south side of apron area on top of an existing drainage ditch is recommended. Based upon information obtained from JAA's engineering department, the preliminary cost of such an improvement including the installation of twin 6 x 4 box culvert and associated excavation and embankment is approximately $2 million.

In addition as part of the recommended extension of Taxiway A to the south and east, a provision should be made for the development of a new run-up area along the extension of Taxiway A. Currently, the area south and west of Runway 23 provides sufficient room for the holding of small aircraft. Also when Runway 32 is extended, the existing entrance taxiways to Runway 32 could serve as a point for short-field takeoffs by smaller aircraft. It is also recommended that Taxiways E, F and C be renamed as Taxiways A-6, B-6, and B-7, respectively, since they are connector taxiways providing access to parallel Taxiways A and B. Recommended airfield improvements are illustrated in **Figure 5-23**, *Preferred Airfield Alternative*.

5.5.2.4 Navigational Aids

Typically the addition of various navigational aids, including instrument landing systems, GPS, VOR and NDB approaches in conjunction with physical taxiway and runway improvements can often improve airfield capacity. However, approaches and departures at CRG are impacted by noise abatement procedures in addition to obstructions within the approach paths to Runways 5, 23 and 14. Therefore, the only navigational aid improvements recommended is the addition of runway end identification lights (REILs) on Runway 5 which will improve visibility during low-light conditions.

5.5.3 Preferred Airfield Alternative Development

The recommended airfield development alternative for Craig Municipal Airport includes an extension of Runway 14-32 by 1,600 feet (Airfield Alternative 1). The findings provided herein correlate with the recommendations of the 2001 Master Plan Update and the 2006 FAR Part 150 Study.

This proposed development reinforces the needs of all airport constituencies and provides the most reasonable and fiscally responsible development scenario for the airport's short and long-term requirements within the Jacksonville aviation system. Further, this alternative provides noise reduction benefits to communities located to the northwest, northeast and southwest of the airfield. **Figure 5-23** provides a graphical representation of recommended airfield development.

5.5.3.1 Environmental Overview

The extension of Runway 32 will impact the southeastern portion of the existing airport property boundary. This section of the airport consists of freshwater marshes, a mixed scrub shrub wetland, mixed hardwood wetland forest, and an herbaceous upland. The proposed development would likely have impact to wetlands, uplands, and associated wildlife that utilize these habitats. Preliminary impact and mitigation data associated with the runway extension are provided in **Table 5-15, and shown in Figure 5-22**. This information will be refined as part of the environmental assessment process.

TABLE 5-15
CRAIG AIRPORT RUNWAY EXTENSION
PRELIMINARY IMPACT/MITIGATION SUMMARY

Wetland Impacts (acres)	Impact Type (Fill vs. Clear)	Mitigation Ratios	Credits Required	Total Estimated Cost
11.93	Fill	3:1	35.79	
4.94	Fill	2:1	9.88	
4.16	Clear	1.5:1	6.24	
48.75	Clear	1:1	48.75	
69.78			**100.66**	**$5,536,300.00**

Notes:
1. *Assumed $55,000/credit at a permitted mitigation bank.*
2. *Does not include controlled emergency access road.*
3. *Impact/Mitigation estimates do not include secondary impacts*

Source: Environmental Resource Solutions Incorporated, 2008

Runway 32 Extension Wetland Mitigation Area

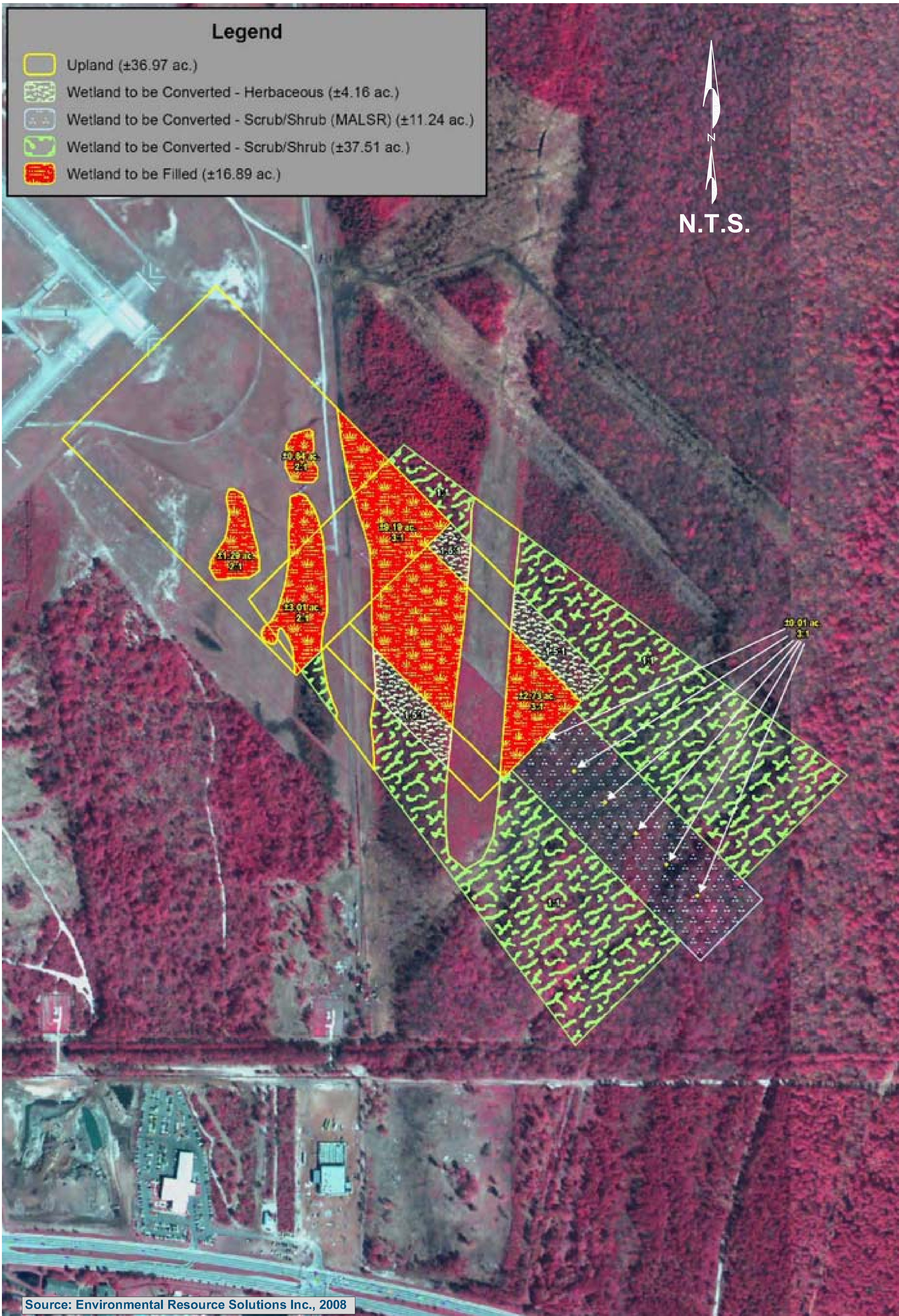
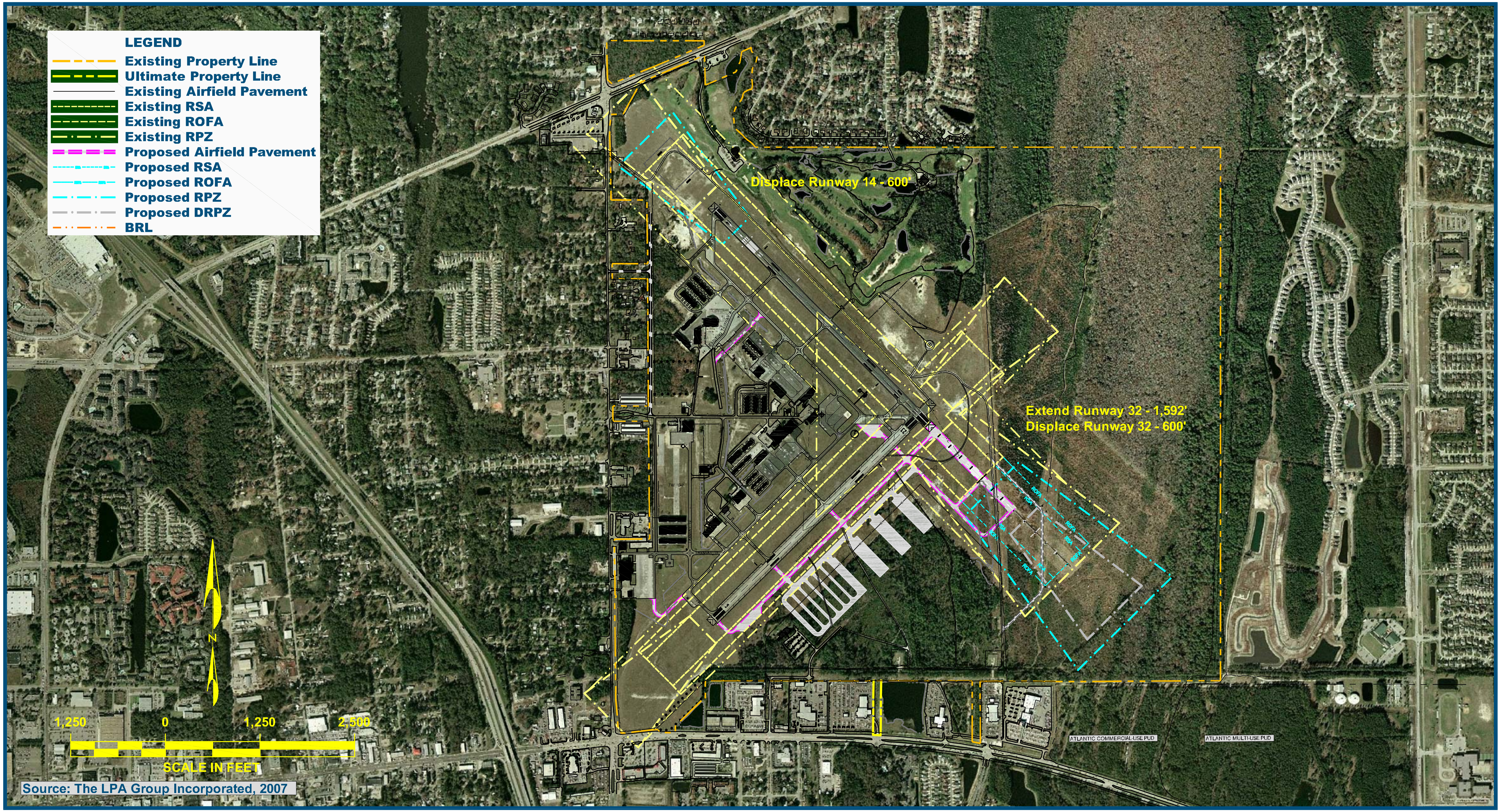


Figure 5-22

Preferred Airfield Alternative



Source: The LPA Group Incorporated, 2007

Regulatory Requirements

An environmental assessment would be required to determine if the proposed development would have significant impacts. Provided that suitable mitigation for the environmental impacts associated with the runway extension is provided then the proposed project would likely result in a *Finding of No Significant Impacts (FONSI).*

State and Federal Permits

An ERP is required to meet stormwater runoff treatment, water quality, and wetland protection regulations. Should the results of the environmental assessment determine the presence of gopher tortoise and their habitat or the presence of other protected species, species-specific surveys maybe required to meet federal and state protected species regulatory requirements. Mitigation and permits may be required to compensate for any impact to protected species by the United States Fish and Wildlife Service (FWS) for federally protected species. Similarly, permits and mitigation maybe be required by FFWCC for state protected species.

5.5.3.4 Preliminary Order of Magnitude Costs

Order of magnitude costs associated with the preferred airfield development concept, which includes costs associated with extension of Runway 14-32, development of a south Runway 5-23 parallel taxiway, and other associated development, are provided in **Table 5-16** to assist JAA in project phasing and funding initiatives related to this development. Preliminary environmental costs are based upon an estimated project area of 69.78 acres of wetlands associated with the runway extension. All order of magnitude costs include estimates for survey and design, permitting, engineering, inspection and testing, airport administration as well as a 15 percent contingency fee.

TABLE 5-16 PRELIMINARY ORDER OF MAGNITUDE CONSTRUCTION COSTS IN 2007 DOLLARS PREFERRED AIRFIELD DEVELOPMENT CONCEPT	
Projects	**Estimated Cost**
Runway 32 and Taxiway A Extension	$9,100,000
Fence Removal	$33,000
Chainlink Fence with Barbed Wire - Runway 14-32	$90,000
Conduit and Cable - Runway 14-32	$40,000
Drainage - Runway 14-32	$200,000
Markings Removal- Runway 14-32	$50,000
Pavement Markings - Runway 14-32	$70,000
Runway Edge Lights - Extension Runway 14-32	$16,000
Runway Threshold Lights - Runway 14	$1,200
Taxiway Edge Lights - Taxiway A Extension	$34,000
Taxiway Guidance Signs-Extension Runway 14-32	$10,000
Relocate Glideslope Antenna	$100,000
Relocate REILs - Runway 14	$5,000
Relocate PAPIs - Runway 14 and 32	$100,000
Relocate MALSR (includes in-pavement lighting)[1]	$400,000
Construct connector taxiway to Runway 32, includes edge lights	$115,000
Clear Obstructions to Runway 32	$82,000
Runway Information Signs	$11,500
Airfield Sign Upgrades (LED) and Electrical Vault Work	$240,000
Realign Taxiway A-3 and associated drainage improvements	$2,000,000
Construct connector taxiway from Taxiway B to Building 607	$260,000
Construct southeast parallel taxiway east of Runway 5-23, includes lights and markings	$2,500,000
Install REILs on Runway 5, includes conduit and cable	$80,000
Construct holding pad on Taxiway A	$25,000
Construct holding pad on new parallel Taxiway	$25,000
Rehabilitate Runway 5-23	$2,500,000
Relocate Fenceline	$200,000
Subtotal Construction Costs	$18,287,700
Engineering Design Fee (7%)	$1,280,139
Construction Management/Inspection (6%)	$1,097,262
Environmental Assessment - Runway 14-32	$950,000
Environmental Survey and Permitting (no stormwater)	$200,000
Tree Survey	$100,000
69.78 Acres Wetland Mitigation (Runway and Taxiway Extension only)	$5,536,300
Acquire Existing Runway 14 Avigation Easement (~0.55 Acres)	$16,500
Acquire Existing Runway 5 Avigation Easement (~ 4 Acres)	$121,200
Estimated Airfield Development Project Cost	$27,552,801
Contingency (15%)	$4,132,920
Total Development Costs	**$31,685,721**

Notes:[1]MALSR estimated costs based upon light relocation, in-pavement lighting costs, as well as installation of concrete piers to support lights located in wet approach zone.
Source: The LPA Group Incorporated 2007

5.6 Pavement Maintenance Requirements

Pavement maintenance and overlays are typically performed every ten years. In reviewing CRG's pavement maintenance history, with the exception of Runway 14-32 and the northeast apron, previous pavement improvements to the majority of the airfield are more than 10 years old. In some cases, such as the Sky Harbor aprons, the pavement is more than 20 years old. Thus, pavement maintenance improvements to existing airfield facilities are required during the twenty-year planning period. Based upon the Jacksonville Aviation Authority Capital Improvement Program, several pavement rehabilitation projects are included in the JAA Capital Improvements Work Program, March 2007, as shown in **Table 5-17**.

TABLE 5-17
JAA WORK PROGRAM
PAVEMENT REHABILITATION PROJECTS

UPIN #	FDOT #	Project Description	Sponsor Year	Estimated Cost
Airfield				
PFL0001888	216984 3	Rehab Taxiway A and B	2007	$400,000
PFL0001885		Rehab Sky Harbor Ramp	2009	$550,000
PFL0001887	216984 2	Design/Rehab/Overlay Rwy 5/23[1]	2009/2010	$1,425,000
Landside				
PFL0001912		Roadway/Parking Pavement Overlay	2010	$750,000
PFL0004153		Perimeter Road Rehabilitation - Phase 2	2013	$250,000
			Total	**$3,375,000**

Notes:
[1] Every Ten Years pavement will be rehabilitated
Source: JAA Capital Improvement Plan Summary, March 2007

Additional pavement rehabilitation will be required every ten years as part of long-term planning development, and therefore will be included in the implementation plan provided in **Chapter 7** of this report.

5.7 On-Airport Land Use

The land use analysis identifies aviation operating zones, including runways, taxiways, safety areas, etc., existing lease parcels currently on the airport, general aviation development areas and non-aviation development areas.

Using guidance provided in **FAA's AC 150/5020-1**, *Noise Control and Compatibility Planning for Airports*, CRG can support a variety of aviation and non-aviation land uses including general aviation and corporate aviation development, non-aviation commercial/industrial development, mixed use, in addition to areas of low population density including golf courses, limited agricultural, etc. **Figure 5.24,** *Existing On-Airport Land Use,* provides a graphical presentation of current on-airport land use as well as identifies potential use and property to be acquired.

5.7.1 Development Zones

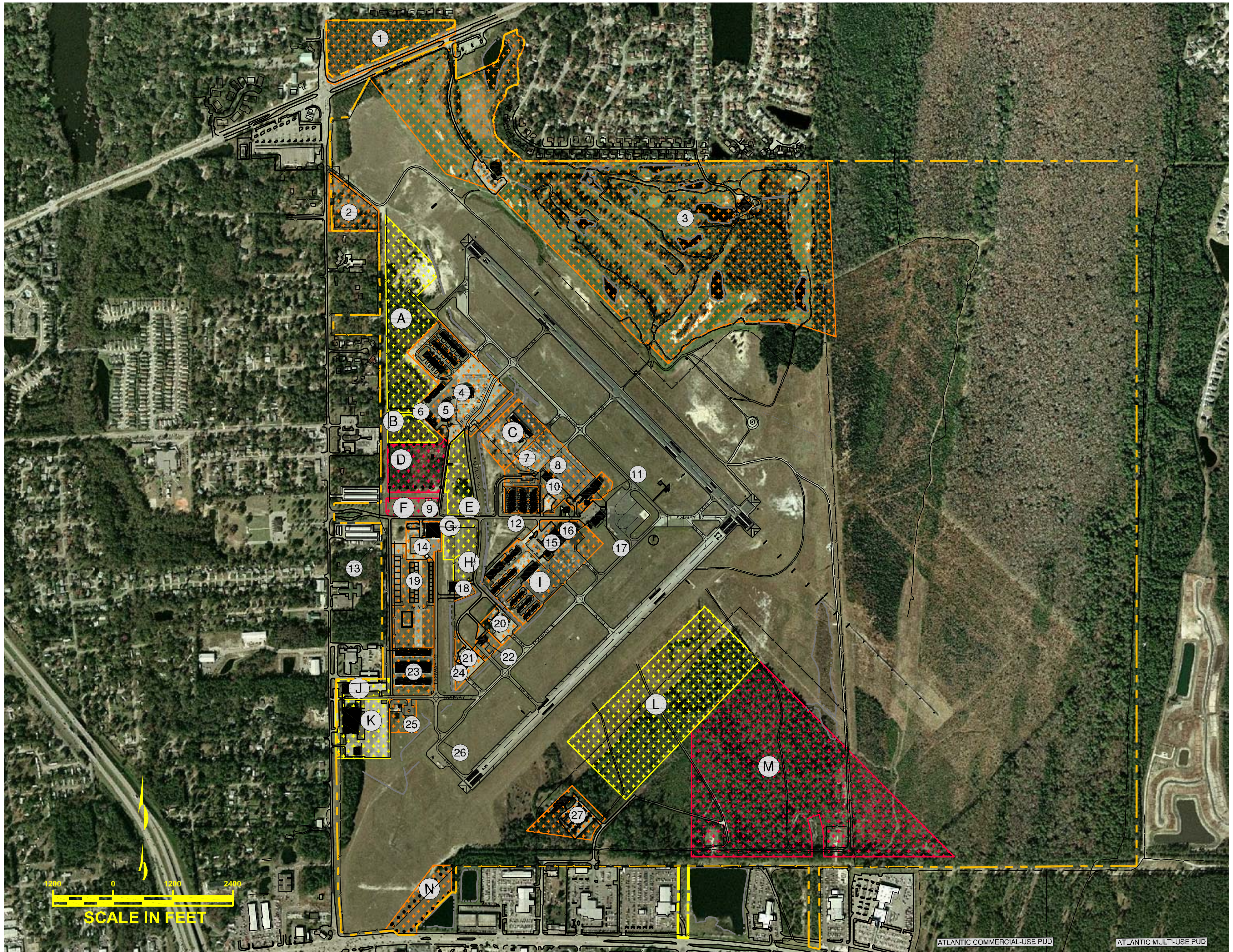
Prior to the development of alternatives, it was important to identify developable tracts of land that currently reside on airport property that coordinate with the preferred airfield development. Many factors contribute to a land's development ability including: potential wetland impacts, distance to utilities, grading requirements, vehicular access, compatible zoning, and proximity to runways and taxiways. Based on these factors, the entire airport property was scrutinized collectively and then divided into zones of development. Each zone was then identified by a letter and given a respective ranking in parenthesis.

Tracts that were ideally situated due to vehicular access, minimal grade requirements, proximity to utilities, and that had airfield access were given an (H) to identify a high priority development zone, meaning that proposed projects could occur in the short to mid-term development period (2007-2015). Those that had more than one deficiency such as lack of vehicular access and utility access were considered a low priority with development likely to occur beyond the twenty year planning period. Tracts that lacked only one desirable feature were designated as (M) for medium priority development. Development within these areas would be anticipated to occur once development within the high priority areas is exhausted. Therefore, proposed development would likely occur within the late mid and long-term (2016-2026) development period. Tracks that did not meet any of the desirable development criteria were not identified since these areas cannot be developed or should be developed only after existing development options have been exhausted.

Areas designated as airfield encompass airfield safety areas, building restriction areas, runway visibility zones, and other non development zones on the airport based upon the preferred airfield alternative development. **Figure 5.25** graphically illustrates the various potential development zones on existing airport property.

JACKSONVILLE AVIATION AUTHORITY

Existing On-Airport Land Use



Source: The LPA Group Incorporated, 2007

EXISTING LEASEHOLD DATA TABLE			
AREA	DESCRIPTION	AREA	DESCRIPTION
1	FUTURE NON-AVIATION RETAIL	15	SKY HARBOR
2	LANDMARK NON-AVIATION (CRG-28)	16	SILVER STATE
3	MILLCOVE GOLF NON-AVIATION (CRG-24)	17	JAA ADMINISTRATION/ NFFT (CRG-3)
4	CRAIG AIR CENTER (CRG-1)	18	MARCO
5	JU DCA (CRG-1)	19	INTERNATIONAL AIR CARRIERS
6	CORPORATE AIRWAYS (CRG-1)	20	COJ/JSO
7	NEFC/BRAGG	21	WILLIAM VICTOR HANGAR
8	SKY HARBOR (CRG-2)	22	MOSQUITO CONTROL
9	CIVIL AIR PATROL	23	HANGAR CONGLOMERATE
10	ATP	24	RIESER BURGAN
11	FAA/ATC (CRG-4)	25	CAC FUEL FARM
12	CRAIG MAINTENANCE	26	JEA EASEMENT
13	SPRINT TOWER NON-AVIATION	27	GOLD CLUB (NON-AVIATION)
14	MALONE		

SOURCE: JAA BUSINESS DEVELOPMENT LEASEHOLD INFORMATION, AUGUST 2007

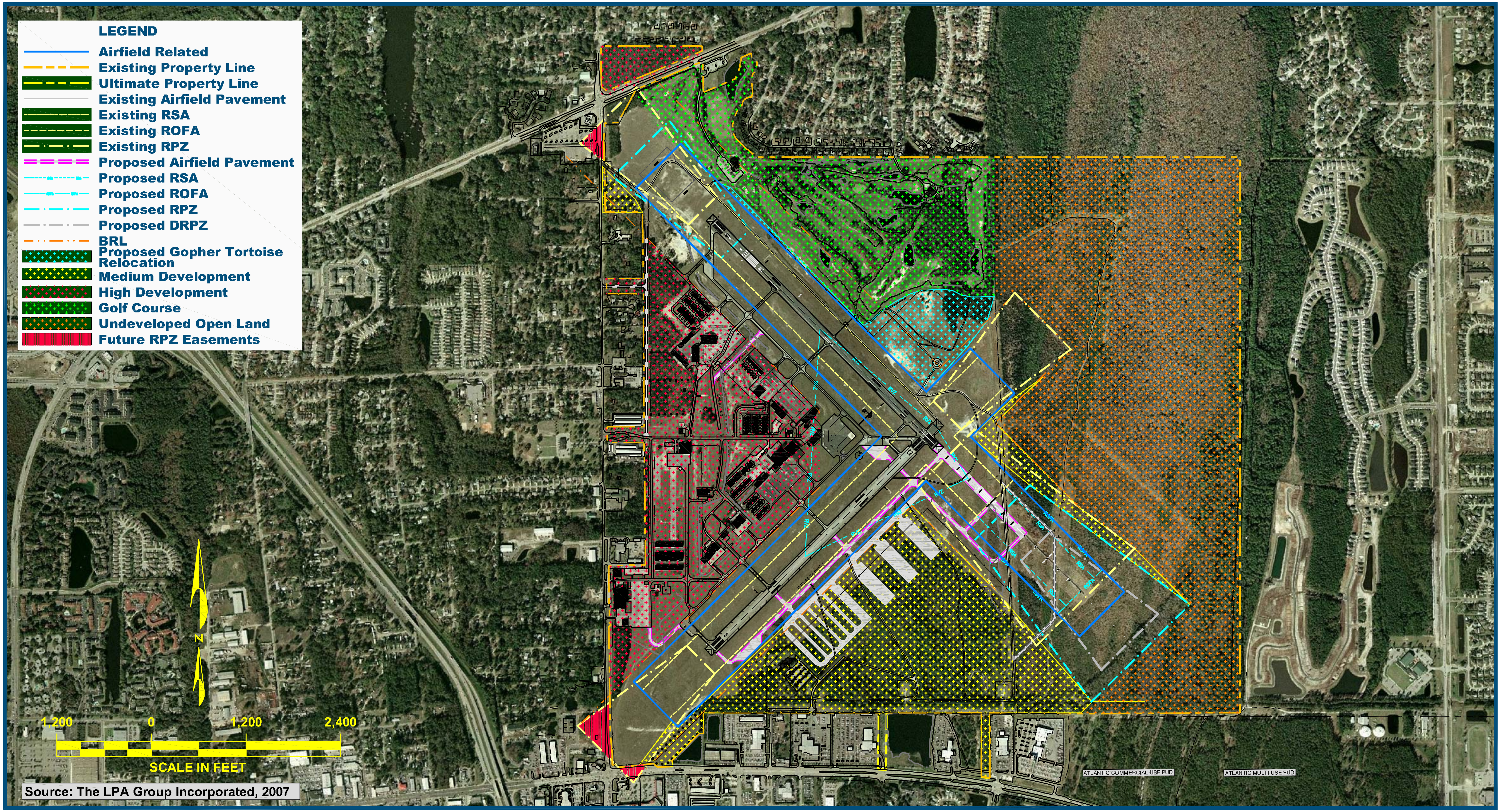
AVAILABLE LEASEHOLD AREAS			
AREA	DESCRIPTION	AREA	DESCRIPTION
A	CRG -23	H	CRG-17
B	CRG -22	I	CRG-2
C	CRG-1	J	CRG-12
D	CRG-21 (NON-AVIATION)	K	CRG-11
E	CRG-20	L	CRG-25
F	CRG-19 (NON-AVIATION)	M	CRG-27 (NON-AVIATION)
G	CRG-18	N	CRG-26 (NON-AVIATION)

SOURCE: JAA BUSINESS DEVELOPMENT LEASEHOLD MAP, AUGUST 2007

LEGEND

- Available Aviation Related Property
- Available Non-Aviation Related
- Existing Leases
- Existing Property Line

Figure 5-24



Source: The LPA Group Incorporated, 2007

Figure 5-25

5.8 Landside Development

Proposed landside development was designed to provide effective coordination with proposed airfield development, surrounding airspace, off-airport zoning and long-term JAA and City of Jacksonville planning requirements. Existing and proposed on-airport development includes:

- GA facilities
- Support facilities
- Surface access, and
- Non-aviation, commercial development

The focus of this section is to identify and analyze land use and facility development to provide compatible land use with future aviation operations. Two general aviation development concepts, based upon the constrained and unconstrained forecasts of apron and hangar storage demand provided in **Chapter 4**, *Demand Capacity and Facility Requirements*, were created for the identified High and Mid-Development Zones.

Building area concepts were developed with the goal of creating a facilities plan that exhibits the following characteristics:

- <u>Flexibility</u>: A plan that is demand-responsive and can adjust over time to changes in quantifiable demands as well as changes in the nature of demand.
- <u>Vision</u>: A plan that addresses probable future aviation trends and technologies, as well as trends in other transportation arenas.
- <u>Definition</u>: A plan that sets a sure course of action for the short-range, and is clearly supported and realistic.
- <u>Order</u>: A plan that views each part of the landside system as a interrelated part of the whole airport and regional transportation system
- <u>Balance</u>: A plan that can extend the landside to its required fullest extent while maintaining balance with the capacity of the fully expanded airside.
- <u>Convenience</u>: A plan that enables CRG and its tenants to achieve a high level of public service.
- <u>Stability</u>: A plan that properly guides future growth that CRG and its tenants may require over time.
- <u>Economic Soundness</u>: A plan that enables CRG and its tenants to prosper.
- <u>Suitability</u>: A plan that meets the needs of JAA, City of Jacksonville, and existing and future airport tenants and users.

Turboprop and jet aircraft growth was based upon the **FAA Aerospace Forecast 2007-2020** fleet mix forecast, data provided by other airports in the region, survey data provided by existing CRG tenants, and NBAA Surveys related to turbine powered GA aircraft used for business transportation. This data is provided in **Appendix E** of this report.

Table 5-18 presents a cursory summary of estimated facility requirements derived from the previous chapter. Although specific years were used to identify forecast levels of development, these years merely represent “triggers” which may or may not coincide with the year that will require the expansion or upgrade of major facilities at the airport. These requirements were used as the basis for the formulation and evaluation of concept building area concepts.

Although it appears that no additional apron space is required to accommodate based and transient aircraft parking demand, rehabilitation of existing pavement west and southwest of Taxiways B and A, respectively, will be required. Rehabilitation of the existing pavement will allow for the reconfiguration of existing tie-downs to accommodate forecast aircraft parking requirements. Any additional pavement required in the long term will be associated with additional facilities (i.e. hangar and corporate aviation development).

Land parcels that are adjacent and/or have the ability to access the runway and taxiway system should be reserved for aviation related expansion, while the remaining properties should be evaluated for "highest and best use" which could include aviation or non-aviation development. Based upon the development zone criteria shown in **Figure 5.25**, *Development Zones*, aviation and non-aviation concepts were evaluated based upon existing and future demand as identified in **Table 5-18** and **Chapter 4**, *Demand Capacity and Facility Requirements*. Further, alternative concepts were developed to provide JAA the flexibility of accommodating shifts in market demand over the twenty-year planning period.

The development of realistic economic opportunities will require close coordination with JAA Staff and City of Jacksonville Planning to ensure that JAA's efforts, as suggested in this study, are coordinated with the City of Jacksonville's Comprehensive Plan.

TABLE 5-18 FACILITY REQUIREMENTS SUMMARY					
Requirements	**Existing**	**2006**	**2011**	**2016**	**2026**
General Aviation					
Terminal building (SF)		7,737	8,874	9,946	11,681
Parking Spaces (Based and Transient)		264	297	330	407
Public Parking (Based and Transient) (SY)		10,575	11,881	13,200	16,285
General Aviation Hangars Required					
T-Hangars	107	141	152	196	286
Conventional Hangars	13	10	13	16	21
Corporate Hangars	1	14	17	22	29
Tie-Down Apron Space (SY)					
Transient Aircraft Apron Requirements	83,150	12,054	13,733	15,005	16,730
Based Aircraft Apron Requirements	56,880[1]	27,900	30,000	22,200	19,200
Aircraft Storage Capacity	313[2]	119	128	106	99
Total Apron Space	140,030	39,954	43,733	37,205	35,930

Notes:
[1]Existing Based Aircraft Apron includes 54,880 SY of apron associated with former U.S. Army Helipad facilities
[2]Existing aircraft tie-down storage is based upon Army Helicopters and single and multi-engine aircraft of 12,500 lbs or less
Source: The LPA Group Incorporated and Craig Airport Management, 2007

5.8.1 High Priority Development Zones (Years 2007-2015)

High priority development zones include land tracts which provide vehicular access, minimal grade requirements, proximity to utilities, and airfield access. Areas designated for high development include property east of St. Johns Bluff Road, west of Taxiway B and southwest of Taxiway A that include existing GA and support facilities.

Due to the proximity of the airfield, the majority of development should be aviation related. This area is best suited as a location for additional flight schools, maintenance operations, hangars or other airfield related facilities.

As part of the high priority general aviation development, several rehabilitation and pavement related improvements were recommended. These projects include:

- Hangar demolition
- Apron pavement rehabilitation
- Roadway and parking improvements, and
- Improvements to security fencing and electrical vault.

Hangar Demolition

During the review of existing facilities and information obtained from JAA, several existing hangar facilities have reached or exceeded their useful lifespan. As a result, it is considered more cost effective to demolish these facilities and redevelop the areas based upon highest and best aviation use. Hangar demolition includes a number of T-hangar units owned and operated by Sky Harbor and Craig Air Center, the airport's current fixed based operators (FBOs). In addition, Building 607, which was previously used by the Florida Army National Guard, is vacant. This property based upon discussions with JAA's Properties Department could be a prime site for an aviation school or maintenance operation. Thus, demolition of Building 607 is recommended to allow for reconfiguration of this property.

Aprons

At the time of this writing, there are currently five separate apron tie-down facilities as shown in **Table 5-19**.

TABLE 5-19
EXISTING APRON/AIRCRAFT TIE-DOWN FACILITIES FOR SMALL AIRCRAFT

Description	Size (S.Y.)	Aircraft Storage Capacity[1]
Tie Downs – Craig Air Center	25,780	95
Tie Downs – Sky Harbor	54,870	140
Itinerant Apron	2,500	8
JAA Helipad	2,000	3
Building 607[2]	54,880	67
Total	**140,030**	**313**

Notes:
[1]Aircraft Storage Capacity is based upon average small aircraft tie-down requirements of approximately 300 SY
[2]Size of Building 607 verified with Airport Manager
Source: JAA Airport Records and The LPA Group, 2007

Although additional apron tie-down facilities are not warranted according to forecast demand, the current condition and orientation of the existing tie-down facilities could be improved and reoriented to accommodate the existing and forecast fleet mix. Although the majority of based and transient tie-down demand will continue to be associated with single and multi-engine aircraft, increased parking demand associated with transient turboprop and jet operations is anticipated. Thus, as part of the recommended apron pavement rehabilitation, tie-down spots should be reconfigured to accommodate larger aircraft when needed. Based upon an average tie-down size of 680 SY, approximately 240 aircraft can be accommodated. Rehabilitated apron and tie-down parking configurations are provided in **Table 5-20**.

TABLE 5-20 REHABILITATED APRON/AIRCRAFT TIE-DOWN FACILITIES		
Description	**Size (S.Y.)**	**Aircraft Storage Capacity**
Tie Downs – Craig Air Center	25,780	38[1]
Tie Downs – Sky Harbor	54,870	81[1]
Itinerant Apron	2,500	4[1]
JAA Helipad	2,000	3
Building 607	54,880	81[1]
Total	**140,030**	**240**

Notes:
[1]Used average tie-down size of 680 SY based upon ramp requirements for piston and jet aircraft (360 + 1000)/2
Sources: FAA AC 150/5300-13 and The LPA Group Incorporated, 2007

Land Acquisition

Although GA Alternative 1 denotes substantial improvements, all development areas shown were planned within the existing airport boundaries and therefore do not require additional land acquisition.

Automobile Parking

As with the construction of any new facilities, additional parking will be required for each type of development shown. Aircraft storage and commercial developments shown each have their own designated parking facilities which are included as part of the leasehold development.

Roadway, Access and Signage

Many of the hangar improvements shown in Alternative 1 utilize existing roadway infrastructure for access. Hangars on the northside may be accessed via Aviation Drive, Charles Lindburgh Road and the proposed West Parallel Service Road, which runs parallel to the St. John's Bluff Road. Access to southside development is obtained via the existing Airport Service Road, Aviation Drive, and the relocated Wright Brothers Road. An additional access road connecting St. John's Bluff and the proposed northwest Service Road will provide access to proposed aviation and non-aviation commercial development as well as T-Hangar facilities north and west of the Craig Air Center.

Preliminary order of magnitude construction costs related to generalized high priority development are provided in **Table 5-21**.

TABLE 5-21 HIGH PRIORITY GENERAL AVIATION PRELIMINARY ORDER OF MAGNITUDE CONSTRUCTION COST ESTIMATES (2007 DOLLARS)	
Project	**Estimated Cost**
Hangar Demolition	
Demolish Box Hangars (Bldgs 12-16)	$100,000
Rehabilitate T-Hangars (Bldgs 5-8, 21-23 & 32, 33, & 44)	$2,500,000
Demolish T-Hangar 11	$100,000
Demolish Building 40	$100,000
Building Rehabilitation	
Rehabilitate Building 2[1]	$80,000
Pavement Rehabilitate	
Rehabilitate Sky Harbor Ramp[1]	$550,000
Rehabilitate Building 607 Apron	$750,000
Rehabilitate Craig Air Center Ramp	$550,000
Rehabilitate Ramp by Building 26 (Mosquito Control)	$550,000
Roadway Improvements	
Construct West Access Service Road	$1,800,000
Roadway and Parking Pavement Overlay[1]	$1,000,000
Relocate and Rehab Perimeter Road[1]	$1,250,000
Westside Road North Expansion[1]	$750,000
Construct additional entrance road	$1,300,000
Expand Airport Parking	$2,500,000
Support Facilities	
Security Fencing Relocation	$1,000,000
Upgrade Electrical Vault	$500,000
Estimated Construction Costs	*$15,380,000*
Surveying & Design Testing	$922,800
Allowance for Permitting Fees[1]	$1,538,000
Engineering	$2,153,200
Inspection & Testing	$1,538,000
Airport Administration	$230,700
Preliminary Estimate of Project Cost	$21,762,700
Contingency	$3,264,405
Estimated Order of Magnitude Costs	**$25,027,105**

Notes:
[1]Project included in February 2008 JACIP, JAA 2007
Sources: JAA and The LPA Group Incorporated, 2007

Environmental Overview

The proposed site for General Aviation (GA) Development is located along the western limits of the airport. The majority of the proposed development is located on previously disturbed uplands where the land has been cleared in preparation for construction. These areas of proposed GA Development do not contain wetlands or suitable habitat for protected species. Therefore, no wetland or protected species impacts are anticipate as a result of development.

However, a portion of the GA Development Area located at the northwestern section consists of undisturbed land. The northern most portion of the undeveloped area contains a mixed forested wetland and the remaining portion consists of a mixed hardwood and coniferous upland forest. In Florida, wetlands are typically utilized by wading birds and other wetland dependent animals some of which may be federally or state protected. The upland forest at this proposed site has the potential to contain suitable habitat for protected species, specifically the gopher tortoise (*Gopherus polyphemus).* A preliminary field survey of a portion of this area confirmed the presence of gopher tortoise burrows. Therefore, development of this portion of the GA Development Area would result in potential impacts to a wetland or protected species.

Regulatory Requirements

FAA National Policy Order 1050.1E Change 1 is the order that contains policies and procedures for compliance with the National Environment Policy Act (NEPA). Environmental survey and documentation would be required to determine if the proposed project would have a significant effect on the human environment. Based upon the literature review and preliminary field environmental survey, projects for the proposed GA development located on previously disturbed uplands would be most likely processed as a *Categorical Exclusion (FAA Order 1050.1E Change 1 Chapter 310).* The proposed development located on wetlands and undisturbed upland has the potential for wetland and protected species impacts and would likely require documentation for a *Categorical Exclusion with Environmental Conditions or an Environmental Assessment depending on the area of wetland impact and type of Dredge and Fill permit and State ERP permit required..*

State Permits

According to Florida Administrative Code (F.A.C.) Chapter 40C-4, Environmental Resource Permits for Surface Water Management Systems, the proposed development would require a St. John's River Water Management District (SJRWMD) Environmental Resource Permit (ERP) in order to meet stormwater runoff treatment, water quality, and wetland impact and mitigation regulatory requirements. The ERP application also serves as an application for a United States Army Corps of Engineers (COE) Dredge and Fill (Section 404) permit.

Impact to gopher tortoise and their habitat would require a gopher tortoise relocation permit from the Florida Fish and Wildlife Conservation Commission (FFWCC) and relocation of gopher tortoise that currently inhabits the project area to a State-approved gopher tortoise preserve.

Federal Permit

Executive Order 11990, *Protection of Wetlands,* mandates that each federal agency take action to minimize the destruction, loss, or degradation of wetlands, and preserve and enhance their natural values. On the federal level, wetlands are regulated according to Section 404 of the Clean Water Act, which requires a United States Army Corps of Engineers (COE) permit for dredging and filling activities that take place in Waters of the United States. Therefore, this project would require a dredge and fill (Section 404) permit from the COE. The ERP application also serves as an application for a COE Dredge and Fill permit.

Preliminary environmental order of magnitude costs are provided in **Table 5-22**.

TABLE 5-22
GENERAL AVIATION - HIGH PRIORITY DEVELOPMENT
PRELIMINARY ENVIRONMENTAL ORDER OF MAGNITUDE COST ESTIMATES

Project	Estimated Cost	
	Without Wetland or Gopher Tortoise Impacts	With Wetland and Gopher Tortoise Impacts
Categorical Exclusion	$3,000	$0
Environmental Survey and Report	$10,000	$0
Environmental Assessment	$0	$75,000
Environmental surveys and permitting (no stormwater)	$0	$50,000
Wetland Mitigation	$0	$75,000
Gopher Tortoise survey, permitting and relocation	$0	$30,000
Preliminary Cost Estimate	**$13,000**	**$230,000**

Source: The LPA Group Incorporated, 2007

5.8.1.1 General Aviation Alternative 1

General Aviation (GA) Alternative 1 coincides with the development facility requirements outlined in **Chapter 4**, *Demand/Capacity and Facility Requirements*.

Land at an airport that is not needed for the ultimate development of airfield facilities is commonly used for economic development opportunities. Those areas that are adjacent and/or have the ability to access the runway and taxiway system should be reserved for aviation related expansion, while the rest can be used for compatible non-aviation related facilities. Primarily, this section identifies and evaluates the opportunities that are possible given the previous alternative analyses. The development of realistic economic opportunities will require close coordination with JAA Staff to ensure that efforts suggested within this study are coordinated with the City of Jacksonville.

Within the High-Development Zone, several areas were identified as readily available for aviation related and/or non-aviation related development. The locations for these areas are depicted on **Figure 5.26**, *GA Alternative 1 - High Development*.

Area A

Due to the proximity of this land to the airfield, only aviation related facilities should be considered in the future for Area A. This area would better serve as a location for additional T-Hangar development. While it would be preferable to keep small aircraft in that area, hangars could be provided to accommodate ADG II aircraft.

Area B

Area B which includes the existing Craig Air Center leasehold (leasehold 5) and Jacksonville University Delta Connection Academy (JU DCA) (leasehold 6) provides direct access to Taxiway A. Therefore, this area should continue to be reserved for commercial aviation uses. Buildings or hangars to be built in that area should not exceed a certain height to avoid encroachment of the transitional and inner approach surfaces, and tie-down parking should be reconfigured to accommodate the forecast increase in ADG I and II aircraft. In addition, due to the age of T-Hangar storage facilities on the existing leasehold (leasehold 9), it is recommended that these facilities be demolished and rebuilt to accommodate existing and forecast storage demand.

Area C

Area C could serve a variety of purposes. The northeast part of this area could accommodate businesses that do require airside frontage while the western portion should be reserved for development not requiring airside frontage. According to the JAA Properties department, Area C is currently reserved for aviation use. Due to its proximity to existing aircraft apron and proposed taxiways, this property could be used for aircraft storage.

Area D

Area D which currently consists of leasehold parcels CRG-21 (leasehold 10), CRG-19 (leasehold 17) and Civil Air Patrol (leasehold 13) and is designated by JAA Business Development for non-aviation related business development. The area's proximity to the airport entrance road and proposed internal roadway improvements would make it an ideal area for aviation or non-aviation businesses that do not require airside frontage, such as a restaurant or aviation supply facility.

Areas E and F

The extension of Taxiway A-3 and the relocation of Wright Brothers Road have opened the areas E and F for future aviation development. Due to the proximity to the airport entrance road and FBO facilities, these areas should be reserved for aviation commercial development.

Based upon the recommendation to demolish aging T-Hangar facilities adjacent to Taxiways A and B, it is recommended that nested T-Hangars be constructed within Areas E and F. Since T-Hangar taxilanes and aircraft separation requirements are smaller than corporate jet aircraft, this will allow more efficient use of this space as well as consolidating the majority of T-Hangar development within the central portion of the high development zone as shown in **Figure 5.26**.

Area G

Area G could serve a variety of purposes. With the proposed extension of Taxiway B, Area G could be used for businesses that require airside frontage including a flight school, aviation maintenance facility or possibly an additional FBO. This area is currently designated as two lease parcels designated as CRG 12 and 11.

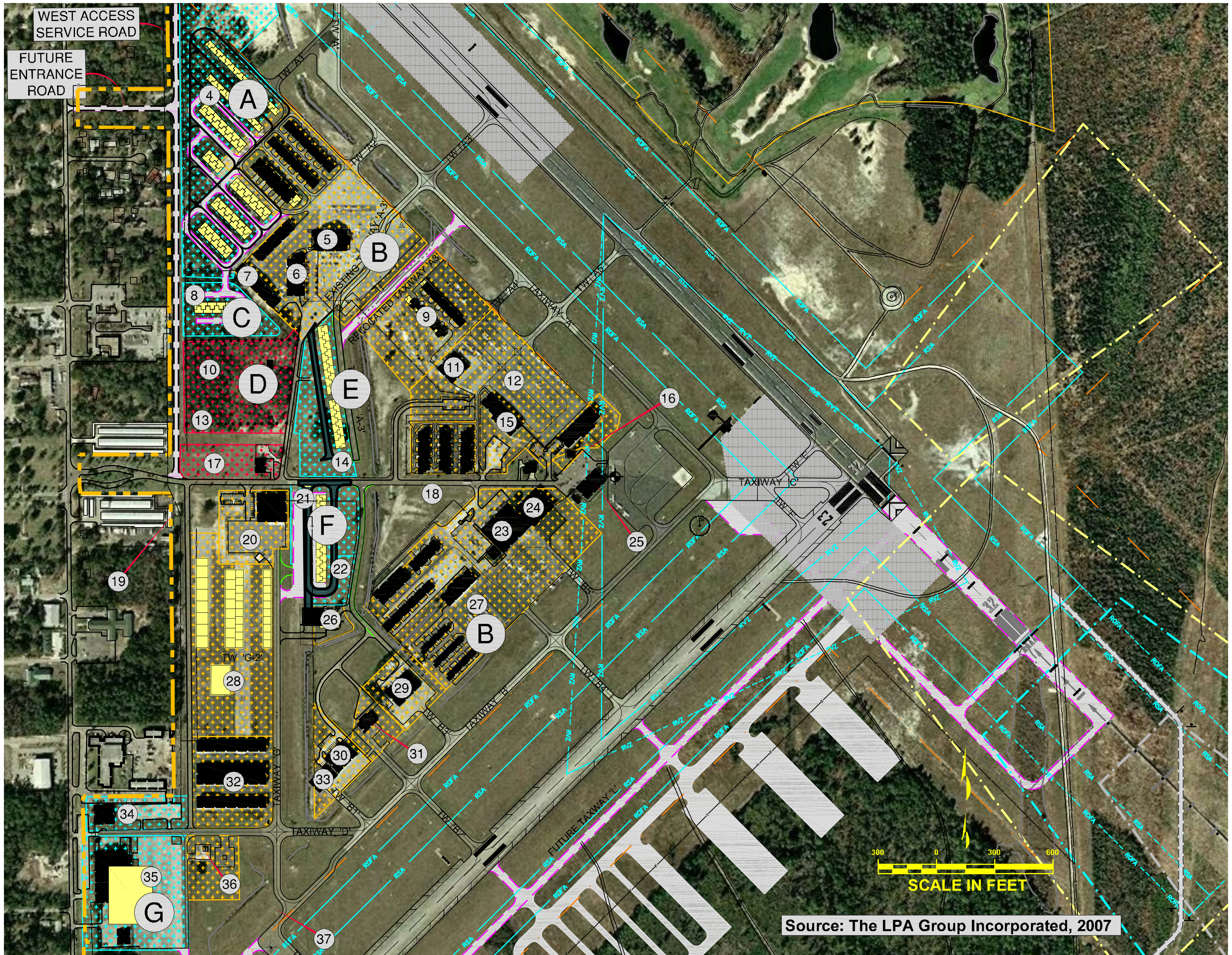
In addition to proposed development within Areas A through G, existing T-Hangar facilities located adjacent to Taxiways A and B should be replaced to accommodate short and mid-term hangar demand. Since several of the existing T-Hangar facilities are reaching the end of their useful life in the next five to ten years, replacement and reconfiguration of the existing T-Hangars is warranted and is included in the order of magnitude cost estimates.

Order of Magnitude Costs

Development cost estimates shown in order of magnitude costs are outlined in **Table 5-23.** These estimates are based upon projects which are likely to be funded by JAA rather than through private development. Proposed development in Areas A, B, C, E and F are primarily associated with T-Hangar development; the costs of which could be born by a private entity (i.e. Craig Air Center) or by the airport itself. Non-aviation development is not included in the preliminary order of magnitude cost estimates since JAA will not pay for any non-aviation related development.

Previous discussions with JAA revealed that management would prefer that aircraft storage development be managed by either one of the existing FBOs or a new tenant. However, for comparison purposes only, costs associated with hangar development are provided. All order of magnitude costs include estimates for survey and design, engineering, inspection and testing, airport administration as well as a 15 percent contingency fee.

GA Alternative 1 - High Development



EXISTING LEASEHOLD DATA TABLE			
LEASEHOLD #	DESCRIPTION	LEASEHOLD #	DESCRIPTION
4	CRG 23	21	CRG-18
5	CRG-1 CRAIG AIR CENTER	22	CRG-17
6	CRG-1 JU DCA	23	SKY HARBOR
7	CRG-1 CORPORATE AIRWAYS	24	SILVER STATE
8	CRG -22	25	CRG-3 JAA ADMINISTRATION/ NFFT
9	CRG-1	26	MARCO
10	CRG-21	27	CRG-2
11	NEFC/BRAGG	28	INTERNATIONAL AIR CARRIERS
12	CRG-2 SKY HARBOR	29	COJ/JSO
13	CIVIL AIR PATROL	30	WILLIAM VICTOR HANGAR
14	CRG-20	31	MOSQUITO CONTROL
15	ATP	32	HANGAR CONGLOMERATE
16	CRG-4 FAA/ATC	33	RIESER BURGAN
17	CRG-19	34	CRG-12
18	CRAIG MANTENANCE	35	CRG-11
19	SPRINT TOWER	36	CAC FUEL FARM
20	MALONE	37	JEA EASEMENT

POTENTIAL DEVELOPMENT SITES	
A	Proposed Nested T-Hangar Development (Aircraft Class I and II)
B	Refurbished T-Hangars
C	Proposed Nested T-Hangar Development (Aircraft Class I and II)
D	Aviation or Non-Aviation Business Development (ie: Restaurants, Aviaonics Shop, etc.)
E	Proposed Nested T-Hangar Development (Aircraft Class I and II)
F	Proposed Nested T-Hangar Development (Aircraft Class I and II)
G	Aviation Business Development (ie: Maintenance Facility or School)

LEGEND

- Available Aviation Related Property
- Available Non-Aviation Related
- Existing Leases
- Existing Property Line

TABLE 5-23 GA ALTERNATIVE 1 - HIGH PRIORITY DEVELOPMENT PRELIMINARY ORDER OF MAGNITUDE CONSTRUCTION COSTS (2007 DOLLARS)	
Project	**Estimated Cost**
Area A, includes taxilanes	
New Construction:	
16-unit Nested T-Hangar (Class II)	$960,000
12-unit nested T-Hangar (Class II)	$720,000
Three 10-unit nested T-Hangars (Class II)	$1,200,000
8-unit nested T-Hangar (Class II)	$480,000
4-unit nested T-Hangar (Class II)	$720,000
Taxilanes	$1,500,000
*Replacement Construction**	
16-unit nested T-Hangar (Class I)	$720,000
12-unit nested T-Hangar (Class I)	$540,000
4-unit single sided T-Hangar (Class I)	$180,000
Area B - Replacement Construction	
Two 10-Unit nested T-Hangars (Class I)	$450,000
Area C	
6-Unit Nested T-Hangars (Class II)	$360,000
Area E	
16-unit nested T-Hangar (Class II)	$960,000
12-unit nested T-Hangar (Class II)	$720,000
Area F	
20-unit nested T-Hangar (Class II)	$1,200,000
Area G	
Design and Construct Corporate Hangar (240 x 240 SF) Construction and parking	$4,723,200
GA Alternative 1 Approximate Total Construction Cost	$15,433,200
Surveying & Design Testing	$925,992
Allowance for Permitting Fees	$1,234,656
Engineering	$2,160,648
Inspection & Testing	$1,543,320
Airport Administration	$231,498
Preliminary Estimate of Project Cost	$21,529,314
Contingency	$3,229,397
Preliminary Order of Magnitude Construction Costs	**$24,758,711**

Notes:
[1]Cost estimate from JAA 2007 JACIP and FDOT Work Program
**Pavement costs not included since part of pavement rehabilitation projects provided in Table 5-14*
Sources: JAA Capital Improvement Plan Summary, February 2008 and The LPA Group, Inc. 2008

The strengths and weaknesses associated with this alternative are highlighted in **Table 5-24**. **Figure 5.26** illustrates the proposed layout of GA Alternative 1-High Development.

TABLE 5-24 GA ALTERNATIVE 1 - HIGH DEVELOPMENT STRENGTHS AND WEAKNESSES	
Strengths	**Weaknesses**
Anticipated demand is accommodated throughout the planning period.	Some airport land is not allocated for future use.
A majority of the most developable airport land has been allocated for future use.	Hangar storage facilities primarily limited to T-hangars related to single and multi-engine demand.
Developments shown cause minimal environmental impacts.	May impact Gopher Tortoise habitat and on-airport drainage.
Provides leaseholds for future aviation and non-aviation use.	
Source: The LPA Group Incorporated 2007	

5.8.1.2 General Aviation Alternative 2

General Aviation Alternative 2 presents facilities based upon shifts in the market demand that may require more corporate and conventional hangar rather than T-Hangar facilities. As noted in GA Alternative 1, land at an airport that is not needed for the ultimate development of airfield facilities is commonly used for economic development opportunities and, therefore, are used for non-aviation related development. Several areas were identified as readily available for aviation related and/or non-aviation related development.

It is anticipated that the proposed extension of Runway 14-32 would result in additional demand for both corporate and conventional aircraft storage facilities. Based upon the age of existing facilities as well as access, this alternative shows large hangar development adjacent to Taxiways A and B and relocates T-Hangar and smaller hangar facilities further infield since they require less area for aircraft taxiing and storage. The locations for these areas are depicted on **Figure 5.27.**

<u>**Area A**</u>

Due to the proximity of this land to the airfield, only aviation related facilities should be considered in the future for Area A. This area would better serve as a location for aviation development, including a combination of T-Hangar facilities (ADG I and II) and corporate hangar development.

However, based upon the age of the existing T-Hangars adjacent to Taxiway A, demolition of the existing T-Hangars and replacement with conventional/corporate hangar space is considered a cost effective and more efficient use of the existing leasehold.

Area B

Area B is reserved for future aviation development to coordinate with previous taxiway and entrance road improvements. According to JAA Properties Department, the area could be subdivided into various sized leaseholds to accommodate tenant requirements. The proposed development shows the addition of nine corporate/conventional hangars of varying capacity, which could be used to accommodate aircraft storage, office space, avionics operations, etc. Development of this area is dependent upon tenant demand and requirements.

Area C

Area C could serve a variety of purposes. With the proposed extension of Taxiway B, Area C could be used for businesses that require airside frontage including a flight school, aviation maintenance facility or an additional FBO in combination with additional GA storage facilities, including ADG I T-Hangars or box hangars. This area is currently designated as two lease parcels designated as CRG 35.

Area D

Due to the proximity of this land to the airfield, only aviation related facilities should be considered in the future for Area D. This area would better serve as a location for additional aircraft storage development. Based upon existing leasehold information, this parcel (leasehold 4) is available for lease. Due to the parcels proximity to Taxiway A and Runway 14-32, varying sized corporate hangar facilities are recommended. This area would be designed to accommodate larger multi-engine piston and turbine aircraft storage needs.

Area E

As noted earlier, Area E could serve a variety of purposes. Since this parcel has been designated for aviation related use, hangar facilities, which exceed forecast mid-term demand, were recommended. Again, this parcel will front the proposed extension of the northwest airport access road, so the location may also be a viable location for an aviation operation or business that does not need direct access to the runway.

Area F

Area F which currently consists of leasehold parcels CRG-21 (10), CRG-19 (17) and Civil Air Patrol (13) and is designated by JAA Business Development for non-aviation related business development. The area's proximity to the airport entrance road and proposed internal roadway improvements would make it an ideal area for aviation or non-aviation businesses that do not require airside frontage, such as a restaurant or aviation supply facility.

Order of Magnitude Costs

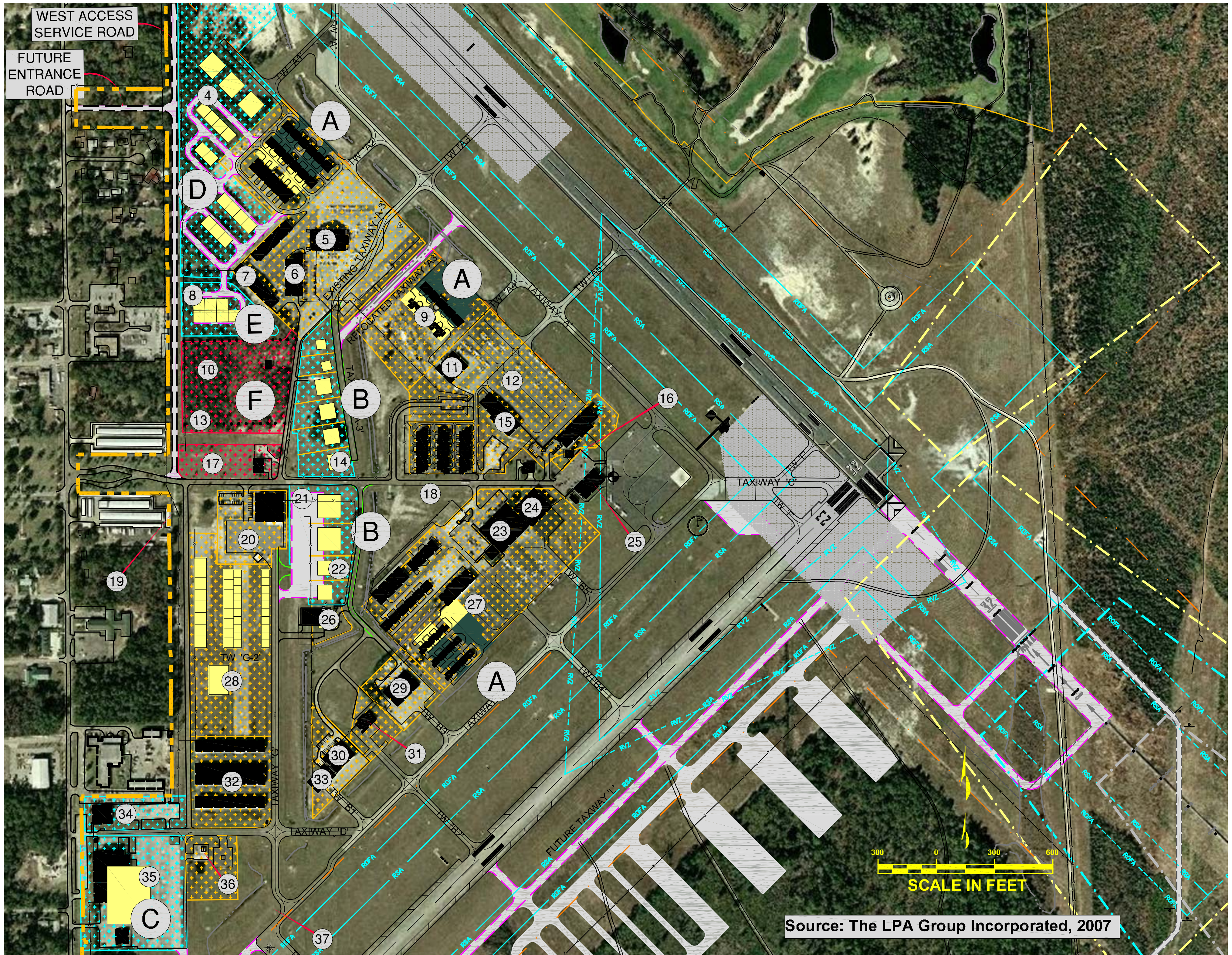
Development cost estimates shown in order of magnitude costs are outlined in **Table 5-27**. These order of magnitude costs include some projects previously recommended and are currently included in Craig Airport's JACIP and FDOT Work Program. Further, proposed development in specific areas of the airport, mainly Areas A, B, C, D, E and F are reserved for aviation and non-aviation commercial development. It is likely that these parcels will be developed by private entities who will acquire land leases from the airport. However, for comparison purposes, preliminary order of magnitude construction costs were developed related to proposed aviation related development shown in **Figure 5.27** All order of magnitude costs include estimates for survey and design, engineering, inspection and testing, airport administration as well as a 15 percent contingency fee.

TABLE 5-25
GA ALTERNATIVE 2 - HIGH PRIORITY DEVELOPMENT
PRELIMINARY ORDER OF MAGNITUDE CONSTRUCTION COSTS
(2007 DOLLARS)

Project	Estimated Cost
Area A*, includes Taxilanes	
6 100 x 100 Corporate Hangars	$970,000
Area B	
2 120 x 120 Corporate Hangars	$2,700,000
6 80 x 80 Corporate Hangars	$3,600,000
2 50 x 50 Box Hangars	$517,000
Total Apron and Taxilanes	$610,000
Total Auto Parking	$90,000
Area C*	
Design and Construct Corporate Hangar (240 x 240 SF) Construction and parking	$4,723,200
Area D	
13 50 x 50 Box Hangars	$3,000,000
3 80 x 80 Corporate Hangars	$1,800,000
Total Apron and Taxilanes	$445,000
Total Auto Parking	$60,000
Area E	
7 50 x 50 Box Hangars	$1,700,000
Total Apron Area	$172,000
Approximate Total Preliminary Construction Cost	$20,387,200
Surveying & Design Testing	$1,223,232
Allowance for Permitting Fees	$1,630,976
Engineering	$2,854,208
Inspection & Testing	$2,038,720
Airport Administration	$305,808
Preliminary Estimate of Project Cost	$28,440,144
Contingency	$4,266,022
Preliminary Order of Magnitude Construction Costs	**$32,706,166**

Notes:
*Pavement project is already included in General High Priority Development Cost Estimates.
Sources: JAA Capital Improvement Plan Summary, March 2007 and The LPA Group Incorporated Engineers Estimates, 2007

GA Alternative 2 - High Development



Source: The LPA Group Incorporated, 2007

EXISTING LEASEHOLD DATA TABLE

LEASEHOLD #	DESCRIPTION	LEASEHOLD #	DESCRIPTION
4	CRG 23	21	CRG-18
5	CRG-1 CRAIG AIR CENTER	22	CRG-17
6	CRG-1 JU DCA	23	SKY HARBOR
7	CRG-1 CORPORATE AIRWAYS	24	SILVER STATE
8	CRG -22	25	CRG-3 JAA ADMINISTRATION/ NFFT
9	CRG-1	26	MARCO
10	CRG-21	27	CRG-2
11	NEFC/BRAGG	28	INTERNATIONAL AIR CARRIERS
12	CRG-2 SKY HARBOR	29	COJ/JSO
13	CIVIL AIR PATROL	30	WILLIAM VICTOR HANGAR
14	CRG-20	31	MOSQUITO CONTROL
15	ATP	32	HANGAR CONGLOMERATE
16	CRG-4 FAA/ATC	33	RIESER BURGAN
17	CRG-19	34	CRG-12
18	CRAIG MANTENANCE	35	CRG-11
19	SPRINT TOWER	36	CAC FUEL FARM
20	MALONE	37	JEA EASEMENT

POTENTIAL DEVELOPMENT SITES

A	Corporate Hangar Development (100' x 100')
B	Corporate Hangar
C	Aviation Business and Aircraft Storage
D	Aircraft Storage Box Hangar Corporate
E	Conventional Hangars and Aviation Business Development
F	Non-Aviation (ie:Restaurant) or Aviation Development

LEGEND

- Available Aviation Related Property
- Available Non-Aviation Related
- Existing Leases
- Existing Property Line

LPA

Figure 5-27

Strengths and Weaknesses

The strengths and weaknesses associated with this alternative are highlighted in **Table 5-26**. **Figure 5.27** illustrates the proposed layout of GA Alternative 2 - High Development.

TABLE 5-26
GA ALTERNATIVE 2 - HIGH DEVELOPMENT
STRENGTHS AND WEAKNESSES

Strengths	Weaknesses
Unanticipated demand is accommodated through the short and mid-term.	Some airport land is not allocated for future use.
The majority of developable airport property is allocated for future aviation use.	Requires demolition of existing facilities
Developments shown cause minimal environmental impacts.	Replaces nested T-Hangars with box hangars
Hangar facilities are sized to accommodate a wide range of aircraft storage and business needs.	
Areas are reserved for future drainage.	
Reserves areas for corporate, conventional and box hangar development to accommodate possible shift in based aircraft demand.	

Source: The LPA Group Incorporated 2007

5.8.2 Medium Priority Development Zones (Years 2016-2026)

Medium development zones include tracts that lack one desirable feature, such as access. Based upon proposed airfield development, medium development zones at CRG include undeveloped property south and east of Runway 5-23 and the extension of Taxiway A. Based upon existing leaseholds and available property, a mixed use of aviation and non-aviation related facilities provides the highest and best use of this property. Aviation related development is recommended to encompass the property adjacent to the runways and taxiways; whereas the property north of the car dealerships adjacent to Atlantic Boulevard could be used as a commercial business park.

In order to develop this property for aviation and non-aviation use, several projects are required no matter what aviation related configuration is recommended. In order to develop the south side facilities, the following projects will be required including:

- Southside Taxiway Construction
- Security Fencing Relocation
- Drainage improvements
- Extension of General Doolittle Drive
- Acquisition of property for South Access Road
- South Access Road Development
- Construction of Business Park Entrance Road, and

- Utilities and infrastructure improvements

Airside Access

Key to the development of aviation facilities is construction of airside access to Runways 5-23 and 14-32. With the proposed extension of both Runway 32 and Taxiway A, a south side parallel taxiway should be constructed at a 300 foot centerline separation from Runway 5-23 and be approximately 3,750 feet in length to provide access to Runway 32. The south side taxiway (referred to as Taxiway "L") will be constructed of asphalt with a 35-foot width, equipped with medium intensity taxiway lights and lighted identification signs, and appropriate markings (including aircraft hold bars) and signage since it would intersect with the extension of Taxiway A.

Landside Access

Access to existing leases within the Mid-Development Zone is currently provided via General Doolittle Drive and Atlantic Boulevard. Access to any proposed aviation and non-aviation development will require an extension of General Doolittle Drive. In addition to the extension of Doolittle Drive, an additional access road, referred to as Commerce Park Entrance Road, would run parallel to Atlantic Boulevard north of the existing car dealerships within JAA's existing property boundary. Property should be reserved to provide roadway expansion, including turning lanes, beyond the twenty-year planning span of this document. As part of aviation and non-aviation development, an access road should be constructed to provide entry to Atlantic Boulevard. However, development will need to be coordinated with the City of Jacksonville Planning Department and FDOT since the proposed road provides access to non-aviation related facilities. JAA must coordinate with COJ to determine if proposed development can be supported by the existing road network, water, sewage and related infrastructure.

Utilities, Infrastructure and Traffic Concurrency

As part of any development, infrastructure will need to be put into place to accommodate planned development. The infrastructure needs, however, will be dependent upon development since an aircraft storage hangar will not require the same level of utilities that a fixed based operator or office facility would require. Although aviation facilities are exempt from transportation concurrency requirements as outlined in HB7203 of the Florida Growth Management Code, JAA must still coordinate planned growth with the City of Jacksonville and County to accommodate water, sewer and electrical requirements.

Further, the proposed commerce/business park is not exempt from the transportation concurrency requirements. Concurrency, in terms of traffic, means that enough road facilities need to be available to accommodate the additional level of traffic generated by new development. If the road systems cannot accommodate anticipated traffic related to the development or the road system cannot be improved to a level that could accommodate such demand within six years by financial commitments made by the City, County, State or developer, then development will not be approved.

Concurrency helps balance the timing and sequencing of development in relation to transportation improvements, such as new streets and traffic signals. However, concurrency only applies to arterial streets; local streets are not included in concurrency requirements.

Land Acquisition

Proposed land acquisition is related to surface access road improvements. JAA currently owns property which was originally purchased to provide access to Atlantic Boulevard. However, due to commercial development south of the airport, the location of this corridor will no longer provides adequate access. Unless access changes are negotiated with the property owner of the car dealership, another option would be for JAA to sell this property and acquire the property east of the existing drainage pond. This corridor, as shown in **Figure 5.28**, will provide both right and left turn access to and from Atlantic Boulevard. JAA will need to coordinate with both the City of Jacksonville and Florida Department of Transportation to evaluate the feasibility of such future development as well as the long-term impact on the capacity of Atlantic Boulevard.

Environmental Overview

Long Term Hangar Development is proposed within an undeveloped area that contains mixed scrub-shrub wetlands, forested mixed wetland, mixed hardwood wetland, and pine flatwoods. As discussed earlier, wetlands provide habitat to wading birds and other animals that may be protected. The pine flatwoods at this project area may contain suitable habitat for protected species. Potential impacts to wetlands and protected species are anticipated as a result of the proposed development.

Regulatory Requirements

An environmental survey and documentation would be necessary to determine if the proposed development would have a significant effect on the human environment. According to the results of the literature review, the proposed development has the potential for wetland and protected species impacts and would likely required documentation for a *Categorical Exclusion with Environmental Conditions or an Environmental Assessment dependent on the type of federal and state permit required..*

State Permit

The proposed development would also require an ERP from SJRWMD, in order to meet wetlands, stormwater runoff treatment, and water quality regulatory requirements.

Federal Permit

The proposed development would require a dredge and fill permit from the COE.

Order of Magnitude Cost Estimates

Preliminary construction order of magnitude costs related to any proposed GA development were provided in **Table 5-27**. In addition, since approximately 60.6 acres of previously undeveloped property is impacted, preliminary environmental costs are also provided. However, prior to permitting and design, an environmental survey and tree survey must be performed. Since a truly accurate cost cannot be provided until such surveys are performed, the anticipated cost of development may be higher than those provided in **Table 5-27**.

TABLE 5-27 MID-PRIORITY DEVELOPMENT PRELIMINARY ORDER OF MAGNITUDE COSTS (2007 DOLLARS)	
Project	**Estimated Cost**
Roadway Improvements	
Extend General Doolittle Drive	$1,300,000
Construct Southside Access Road[1]	$1,333,333
Acquire land associated with Access Road[1]	$1,000,000
Business Park Access Road	$2,000,000
Support Facilities	
Security Fencing Relocation	$800,000
Drainage Improvements[1]	$500,000
Utilities/Infrastructure Improvements	$1,300,000
Preliminary Construction Costs	$8,233,333
Surveying & Design Testing	$494,000
Allowance for Permitting Fees	$658,667
Engineering	$1,152,667
Inspection & Testing	$823,333
Airport Administration	$123,500
Estimated Construction Order of Magnitude Costs	$11,485,500
Environmental Assessment	$200,000
Tree Survey	$25,000
Environmental Survey and Permitting (no stormwater)	$150,000
Wetland Mitigation	$8,000,000
Gopher Tortoise survey, permitting and relocation	$80,000
Preliminary Project Costs	$31,426,000
Contingency	$4,713,900
Order of Magnitude Costs	**$36,139,900**

Notes:
[1]Projects already included in CRG JACIP, February 2008.
Sources: JAA Capital Improvement Plan Summary, February 2008 and The LPA Group Incorporated Engineers Estimates, 2007

5.8.2.1 General Aviation Alternative 1 - Mid-Development

GA Alternative 1 - Mid-Development like GA Alternative 1 - High Development is based upon the fleet mix and facility requirements outlined in Chapters 3 and 4. Based upon forecast operations, average annual growth of piston operations is approximately 1.36 percent per year and jet operations (including turboprop) are anticipated to increase approximately 3.53 percent per year. Although an increase in jet and turboprop operations is anticipated, single and multi-engine piston aircraft are still expected to account for the majority of operations and based aircraft at CRG throughout the twenty year planning period.

As a result, hangar and apron storage development within the mid-development zone is based upon the anticipated storage needs of these generally smaller aircraft.

As stated earlier in this report, additional property is not needed to accommodate long-term airfield facility requirements (i.e. taxiway improvements, runway extension, etc.). Typically, property adjacent to airfield facilities, such as taxiways, apron, etc. should be reserved for aviation related expansion. Additional property could be used for commercial aviation facilities which do not need direct access to the airfield or for compatible non-aviation development. Therefore, based upon existing and forecast demand and issues impacting airport operations, several areas within the Mid-Development Zone were identified as available for either aviation or non-aviation use as shown in **Figure 5.28**.

Area A

Aviation related facilities should be considered adjacent to proposed Taxiway "L". Based upon anticipated demand and the length of Runway 5-23, this area could be developed to accommodate hangar storage for ADG I and II aircraft. The construction of 75 ft x 75 ft corporate hangars would provide airport management the flexibility of accommodating both piston and small jet aircraft storage needs. Development of this area could be phased to accommodate both demand and financial feasibility. Further, by providing individual lease holdings, JAA has the ability to offer individuals either private aviation development (land lease only) or traditional hangar storage rental.

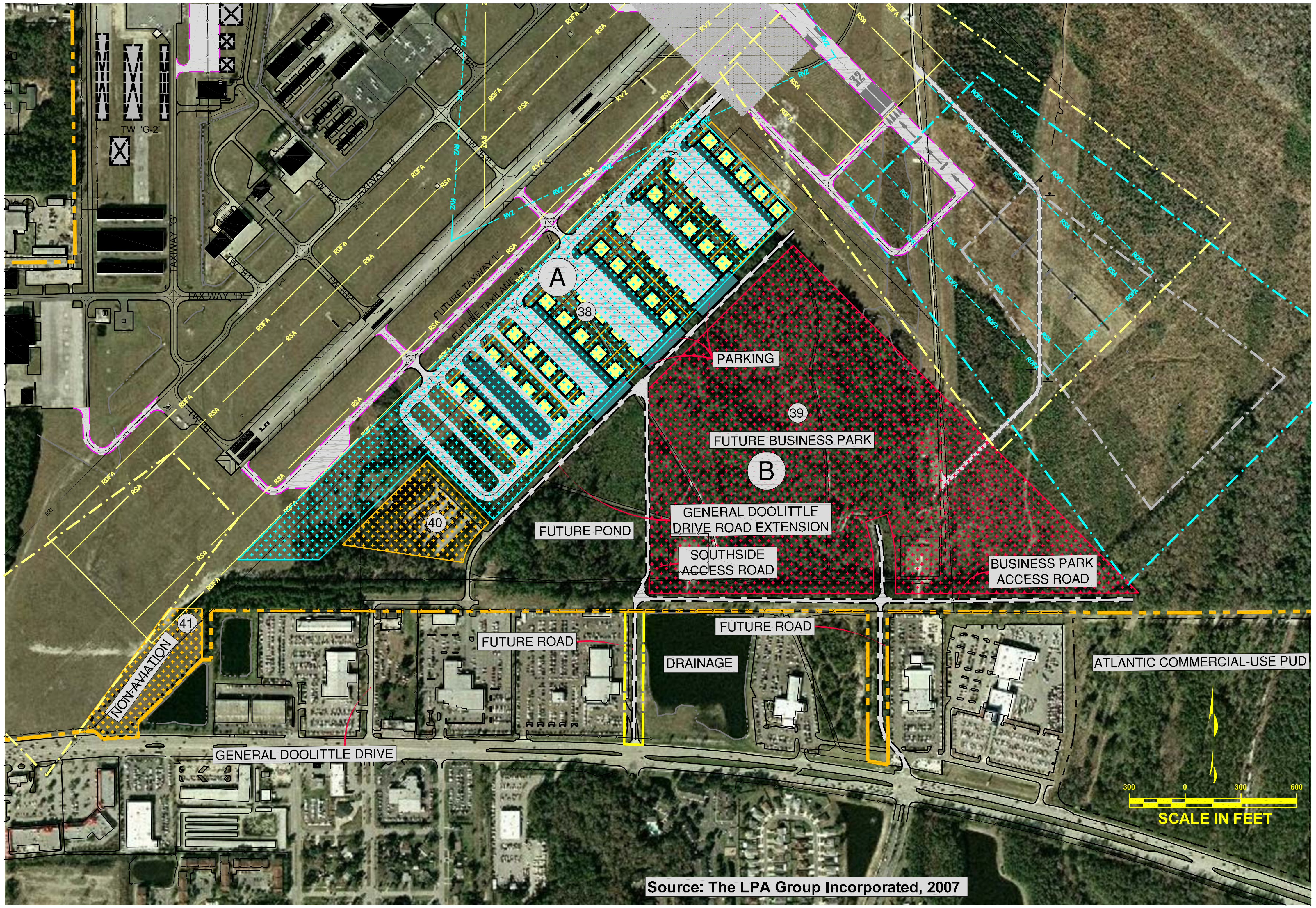
Area B

Area B is currently designated by JAA Business Development for non-aviation commercial and consists of 76.8 acres of undeveloped uplands. Commercial development within Area B is based upon demand, and development will be contingent upon installation of utilities and other support infrastructure. Since this area is designated for commercial non-aviation development, development costs are anticipated to be privately funded. Therefore, cost estimates for this area will only consider installation of support infrastructure.

Aprons

Apron needs based upon the approved forecast operations and fleet mix can be accommodated with the reconfiguration of existing apron and tie-down facilities located in the High-Development Zone. As a result, proposed apron area within the Mid-Development Zone is limited to apron associated with hangar development options.

GA Alternative 1 - Mid Development



EXISTING LEASEHOLD DATA TABLE			
LEASEHOLD #	DESCRIPTION	LEASEHOLD #	DESCRIPTION
38	CRG-25		
39	CRG-27		
40	GOLD CLUB		
41	CRG-26		

POTENTIAL DEVELOPMENT SITES

A	Box Hangars with Apron (75' X 75')
B	Non-Aviation (76.8 acres), Commerce/Business Development

LEGEND

- Available Aviation Related Property
- Available Non-Aviation Related
- Existing Leases
- Existing Property Line
- Ultimate Property Line

Automobile Parking

Automobile parking associated with Area B will be developed in conjunction with the commerce park development, and will be designed to accommodate planned development.

Surface parking associated with proposed aviation development is to be constructed south of the proposed aviation development and adjacent to the extension of General Doolittle Drive. Consolidating surface parking will limit the use of automobile parking in and around the proposed hangar development as well as mitigate and potential environmental impacts.

Order of Magnitude Costs

Table 5-28 provides order of magnitude construction costs for anticipated airport funded projects in 2007 dollars. Costs associated with development of a commerce or industrial park were not included since they are demand based and will likely be funded through private development. All order of magnitude costs include estimates for survey and design, permitting, engineering, inspection and testing, airport administration as well as a 15 percent contingency fee.

TABLE 5-28 GA ALTERNATIVE 1 - MID PRIORITY DEVELOPMENT PRELIMINARY ORDER OF MAGNITUDE CONSTRUCTION COSTS (2007 DOLLARS)	
Project	**Estimated Cost**
GA Facilities	
Area A, includes taxilanes	
50 75' x 75' Box Hangars	$29,000,000
Taxilane Construction	$690,000
Apron Construction	$3,600,000
Airport Parking	$1,200,000
Preliminary Construction Cost Estimate	$34,490,000
Surveying & Design Testing	$2,069,400
Allowance for Permitting Fees	$2,759,200
Engineering	$4,828,600
Inspection & Testing	$3,449,000
Airport Administration	$517,350
Subtotal	$48,113,550
Contingency	$7,217,033
Estimated Total Cost	**$55,330,583**
Source: The LPA Group Incorporated 2007	

Strengths and Weaknesses

Identified strengths and weaknesses associated with GA Alternative 1-Mid-Development Zone are provided in **Table 5-29**. While this list may not be exhaustive, it identifies major opportunities or issues associated with proposed development.

TABLE 5-29 STRENGTHS AND WEAKNESSES GA ALTERNATIVE 1 - MID-DEVELOPMENT ZONE	
Strengths	**Weaknesses**
Entire Airport is planned for future demand increases and non-aviation related development opportunities.	Highest environmental impacts due to undeveloped land.
Development is demand based, and anticipated to consist of private development.	Requires land acquisition to provide access from Atlantic Boulevard.
Provides additional revenue generation opportunities.	Infrastructure improvements (i.e. utilities and roads) need to be "in place" before development may occur.
Provides an additional sound buffer between the airport and nearby communities.	
Source: The LPA Group Incorporated 2007	

5.8.2.2 General Aviation Alternative 2 - Mid-Development

This alternative, like GA Alternative 2 - High Priority Development, assumes a shift in the market causing an increased demand for larger aircraft storage facilities as well as T-Hangar facilities as shown in **Figure 5.29**. Proposed corporate hangar development is provided adjacent to the extension of Runway 32 and Taxiway A, whereas T-Hangar development is shown adjacent to future Taxiway L and Runway 5-23.

As denoted in **Figure 5.25**, *Development Zones*, aviation related facilities are best developed adjacent to the airfield to facilitate the movement of aircraft and avoid excessive taxiing. Also, within the CRG airport property boundary, several acres of undeveloped land south of the proposed aviation development could be developed as an industrial business park providing homes for aviation and non-aviation related businesses. Further, since this is a compatible land use, development will also provide an additional buffer between the airport and the surrounding residential communities.

Area A

Area A due to its proximity to proposed Taxiway "L" and Runway 5-23 should be designated for aviation use only. Since Runway 5-23 will remain at 4,000 feet, development of additional T-Hangar facilities to accommodate both Group I and II aircraft will provide enough aircraft storage space to accommodate anticipated and unforeseen demand. Further, this will allow airport management to reconfigure current and future airfield leaseholds adjacent to Taxiways A and B to accommodate commercial aviation and aircraft storage facilities.

Area B

Area B coincides with the extension of both Runway 32 and Taxiway A. As stated in Alternative 2 - High Development Zone, development of corporate or aviation commercial facilities adjacent to Taxiways A and B will allow the airport to accommodate potential increases in corporate jet activity. Further, development associated with corporate aircraft would provide direct access to Taxiway A as well as Runway 14-32.

Area C

Area C is a 76.8 acre undeveloped leasehold area currently designated for non-aviation development. In evaluating the topography, distance from the airfield and possible environmental impacts, development of this area as either a commerce or industrial park would provide the highest and best use. Such development would be demand based, involve private funds, as well as areas for drainage and wildlife relocation and mitigation. Again, since development of this area is demand based and dependent upon private development, cost estimates other than potential infrastructure improvements (i.e. roadways, utilities, etc.) were considered in the order of magnitude cost estimates.

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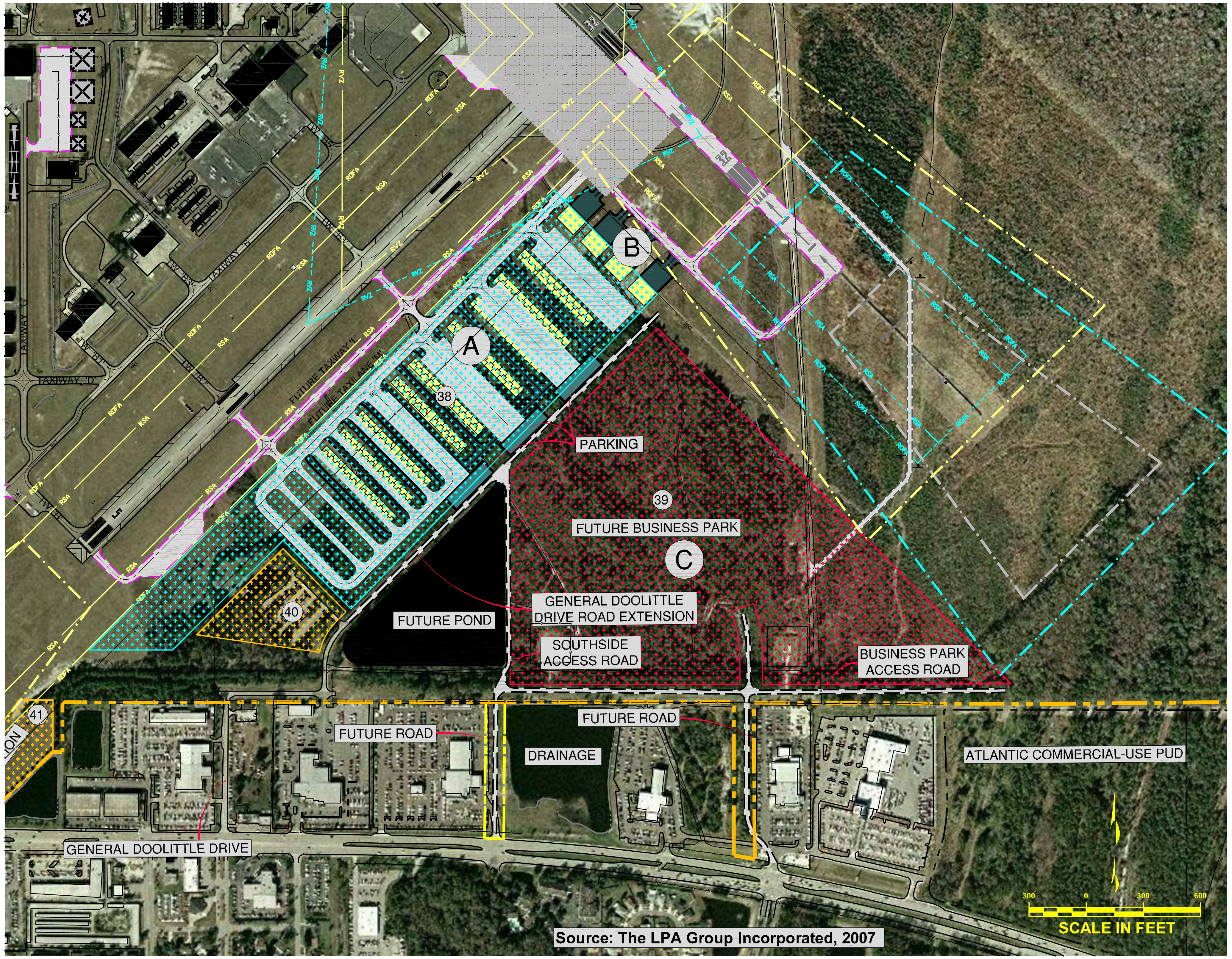
GA Alternative 2 - Mid Development



EXISTING LEASEHOLD DATA TABLE

LEASEHOLD #	DESCRIPTION	LEASEHOLD #	DESCRIPTION
38	CRG-25		
39	CRG-27		
40	GOLD CLUB		
41	CRG-26		

POTENTIAL DEVELOPMENT SITES

A	T-Hangar Development Aircraft Category I and II
B	Corporate Hangar Development (100 x 125)
C	Non-Aviation (76.8 acres), Industrial/Commerce Park

LEGEND

- Available Aviation Related Property
- Available Non-Aviation Related
- Existing Leases
- Existing Property Line
- Ultimate Property Line

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Figure 5-29

Aprons

Apron needs based upon the approved forecast operations and fleet mix can be accommodated with the reconfiguration of existing apron and tie-down facilities located in the High-Development Zone. As a result, proposed apron area within the Mid-Development Zone is limited to apron associated with hangar development options.

Automobile Parking

As with the construction of any new facility, additional parking will be required for each type of development shown. The corporate and commercial developments each have their own designated parking lots located in the nearby vicinity. Additional parking provisions for T-Hangars were also provided north of the extension of General Doolittle Blvd. Automobile parking associated with the Commerce Park development will coincide with office or warehouse development, and, therefore, cannot be estimated at this time.

Order of Magnitude Costs

Order of magnitude costs associated with GA Alternative 2 - Mid-Development Zone are provided in **Table 5-30** in 2007 dollars. Development currently listed in the Craig Airport JACIP (June 2007) and FDOT work program were reevaluated and incorporated, if justified, into the cost estimates. Major projects associated with planned development are outlined in **Table 5-30**. All order of magnitude costs include estimates for survey and design, permitting, engineering, inspection and testing, airport administration as well as a 15 percent contingency fee.

TABLE 5-30 GA ALTERNATIVE 2- MID PRIORITY DEVELOPMENT PRELIMINARY ORDER OF MAGNITUDE CONSTRUCTION COSTS (2007 DOLLARS)	
Project	**Estimated Cost**
GA Facilities	
Area A, includes taxilanes	
7 12-unit T-Hangars (Class I)	$3,780,000
7 10-unit T-Hangars (Class I)	$3,150,000
4 20-unit T-Hangars (Class II)	$4,800,000
Taxilane Construction	$1,800,000
Airport Parking	$1,500,000
Area B	
7 100' x 125' Corporate Hangars	$8,400,000
Apron Development	$1,700,000
Airport Parking	$2,322,000
Preliminary Construction Cost Estimate	$27,452,000
Surveying & Design Testing	$1,647,120
Allowance for Permitting Fees	$2,196,160
Engineering	$3,843,280
Inspection & Testing	$2,745,200
Airport Administration	$411,780
Subtotal	$38,295,540
Contingency	$5,744,331
Estimated Order of Magnitude Construction Cost	**$44,039,871**
Source: The LPA Group Incorporated, 2007	

Strengths and Weaknesses

Identified strengths and weaknesses associated with GA Alternative 2 are provided in **Table 5-31**. While this list may not be exhaustive, it identifies major opportunities or issues associated with the proposed development.

TABLE 5-31
STRENGTHS AND WEAKNESSES
GA ALTERNATIVE 2 - MID-DEVELOPMENT ZONE

Strengths	Weaknesses
Provides for ultimate aviation build-out.	Highest environmental impacts due to undeveloped land.
Development is demand based, and anticipated to consist of private development.	Requires land acquisition to provide access from Atlantic Boulevard.
Provides additional revenue generation opportunities.	Infrastructure improvements (i.e. utilities and roads) need to be "in place" before development may occur.
Provides an additional sound buffer between the airport and nearby communities.	
Segregates Small GA development from Corporate Development.	

Source: The LPA Group Inc. 2007

5.9 Support Facilities

Although not indicated on the various alternatives shown in this chapter, expansion and growth of airport support facilities are necessary to account for increases in aviation activity which will result from the proposed development options. The following paragraphs highlight potential improvements to various support facilities including: security fencing, fuel storage, and air traffic control tower.

5.9.1 Security and Fencing

Security fencing should be modified and/or installed to include the entire airport property including the unfenced area adjacent to the Mills Cove Gulf Course. To date, fencing has not been installed between the Golf Course and airfield since it would impact navigational equipment associated with the approach to Runway 14. Therefore, a plastic or composite fence should be considered for this location since this material will not affect the approach signals. Fencing is recommended since it will provide protection to both the airport and users property by keeping wildlife away from aircraft and unauthorized individuals from gaining access to the airfield. Security and maintenance access should be provided through perimeter roads inside and along the fence line. In addition, all future property acquired by the Airport and all new construction, especially associated with the Airport Operating Area (AOA) should be fenced. Restricted access points should be installed to ensure the security of the airfield, and all airside buildings and or parking area should have adequate security fencing, controlled access gates and overhead lighting.

5.9.2 Fuel Storage

Existing fuel storage and distribution is predominantly provided by Craig Air Center and Sky Harbor Aviation fixed based operators (FBOs). In addition, Sterling Flight Training, William Victor Aviation, and well as the City of Jacksonville Sheriff's Office also are equipped with fuel storage tanks.

Both Sky Harbor and Craig Air Center are each equipped with 10,000 gallon Jet A and AvGas fuel tanks in addition to 5,000 gallon avgas self-fuel facilities, and are the primary providers of aviation fuel at CRG. Discussions with the FBO revealed that fuel deliveries typically occur on a monthly basis. However, it is not uncommon to see bi-monthly deliveries of Jet A fuel depending upon traffic volume. Fuel storage requirements are typically based upon maintaining a two-week supply of fuel during an average month; however, more frequent deliveries can reduce the fuel storage requirement. Based upon the constrained and unconstrained forecasts of fuel demand with a 14-day reserve as shown in **Table 5-32**, anticipated demand in the short term necessitates the construction on additional Jet A and 100LL fuel storage facilities. If, however, CRG and the local operators agree to a more frequent fuel deliveries, than additional Jet A and Avgas storage facilities will be required later in the planning period.

TABLE 5-32
AVIATION FUEL STORAGE DEMAND
AVERAGE PEAK MONTH

Fuel Demand	Existing	Forecast			
	2006	2011	2016	2021	2026
AvGas Requirements					
Total AvGas Per Day (GAL)	1,421	1,651	1,907	2,289	2,768
14 Day Reserve	19,893	23,112	26,693	32,047	38,757
Jet A Requirements					
Jet A Demand per Day (Gal)	3,540	3,867	5,407	7,886	9,880
14 Day Fuel Reserve	49,557	54,142	75,698	110,405	138,320

Sources: Sky Harbor and Craig Air Center fuel records and The LPA Group Incorporated, 2007

5.9.3 Air Traffic Control Tower

Northeast Florida airspace is one of the most intensively used areas in the nation because of the high concentration of military bases and training activities. Military operations occurring within the northeast Florida region are under control of JAX ATC. Control of the airspace from the surface to 10,000 feet is delegated to the Jacksonville TRACON.

The CRG ATCT is located in the landside center of the airport adjacent the transient apron. The Tower is operational Monday through Friday from 0600 to 2300 (6:00 AM to 11:00 PM) and 0700-2200 (7:00 AM to 10:00 PM) on Saturday and Sunday. ATCT oversees aircraft flying within CRG's Class D airspace as well as vehicles and aircraft operating on the ground within the defined movement area.

Although an extension of Runway 14-32 is recommended, the current location and height of the air traffic control tower at CRG is adequate.

5.10 Recommended Airport Development

The preceding sections identified and analyzed several planning alternatives based on meeting the identified facility needs of the airport while maintaining operational efficiency and the required safety standards. These alternatives were presented to the Technical Advisory Committee and to JAA staff for their review and discussion during the alternatives evaluation.

The Recommended Airport Development Plan, **Figure 5.30**, illustrates development and facility improvements to not only meet the forecast demand presented in **Chapter 3**, but to ultimately ensure competitiveness and financial viability for the airport, and provide the airport and surrounding community with the greatest overall benefit considering the goals of JAA.

Preliminary order of magnitude costs associated with the recommended airport development is provided in **Table 5-33**. However, this list is not exhaustive. The preferred development option will attempt to identify the majority of projects required based upon demand and proposed development. This information is provided in detail in **Chapter 7**, *Airport Implementation Plan*, for the short, mid and long-term planning periods.

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Preferred Airport Development

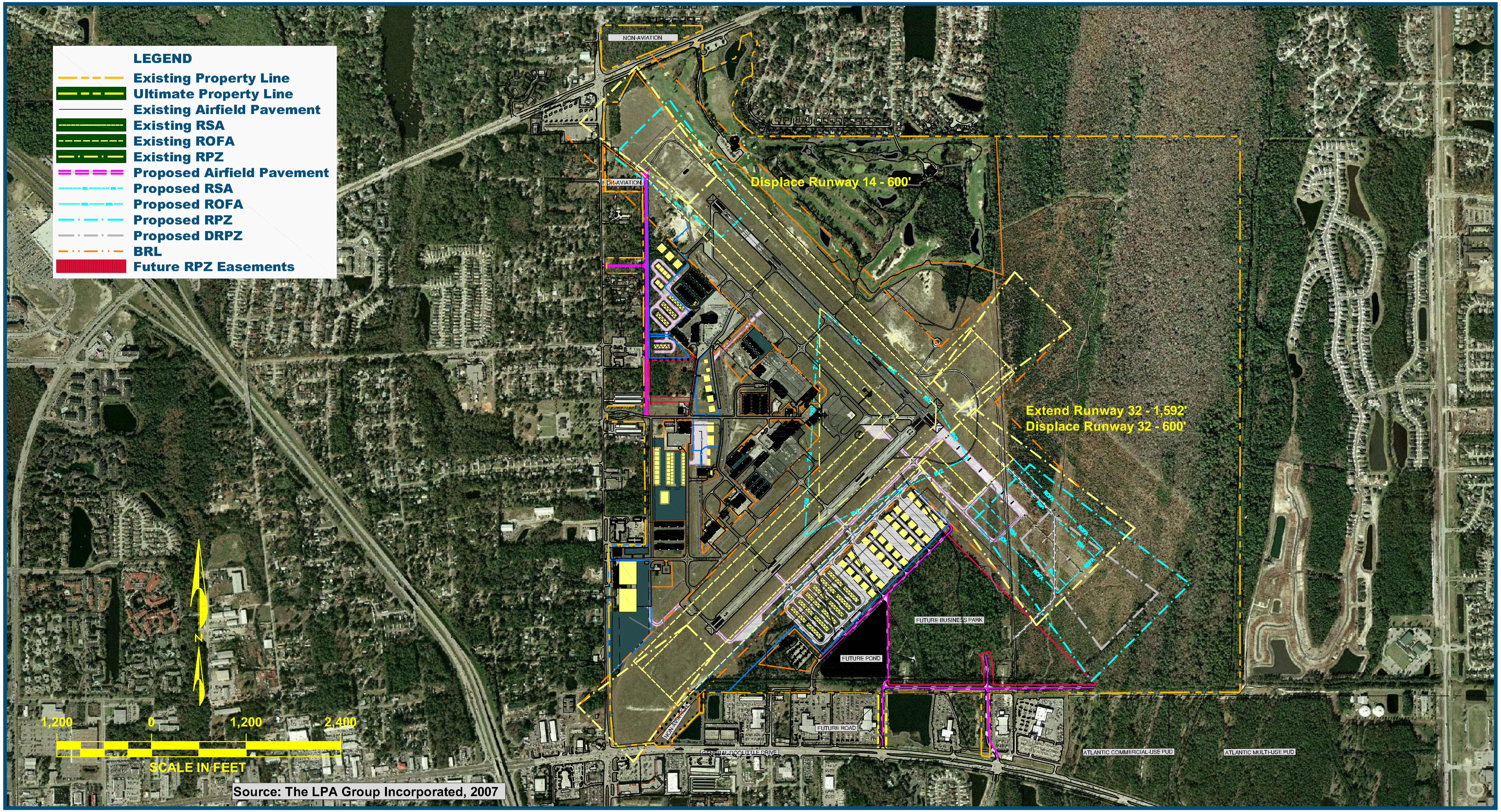

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Figure 5-30

TABLE 5-33 RECOMMENDED AVIATION DEVELOPMENT PRELIMINARY ORDER OF MAGNITUDE COSTS (2007 DOLLARS)	
Project	**Estimated Cost**
Airfield Improvements	
Runway 32 and Taxiway A Extension[1]	$9,100,000
Fence Removal	$33,000
Chainlink Fence with Barbed Wire - Runway 14-32	$90,000
Conduit and Cable - Runway 14-32	$40,000
Drainage - Runway 14-32	$200,000
Markings Removal- Runway 14-32	$50,000
Pavement Markings - Runway 14-32	$70,000
Runway Edge Lights - Extension Runway 14-32	$16,000
Runway Threshold Lights - Runway 14	$1,200
Taxiway Edge Lights - Taxiway A Extension	$34,000
Taxiway Guidance Signs-Extension Runway 14-32	$10,000
Relocate Glideslope Antenna	$100,000
Relocate REILs - Runway 14	$5,000
Relocate PAPIs - Runway 14 and 32	$100,000
Relocate MALSR (includes in-pavement lighting)	$400,000
Construct connector taxiway to Runway 32, includes edge lights	$115,000
Clear Obstructions to Runway 32	$82,000
Runway Information Signs	$11,500
Realign Taxiway A-3 and associated drainage improvements	$2,000,000
Airfield Sign Upgrades (LED) and Electrical Vault Work	$240,000
Construct connector taxiway from Taxiway B to Building 607	$260,000
Construct Southeast parallel taxiway east of Runway 5-23, includes lights and markings	$2,500,000
Install REILs on Runway 5, includes conduit and cable	$80,000
Construct holding pad on Taxiway A	$25,000
Construct holding pad on new parallel Taxiway	$25,000
Rehabilitate Runway 5-23[1]	$2,500,000
Relocate Fenceline	$200,000
Subtotal Construction Costs	$18,287,700
Engineering Design Fee	$1,280,139
Construction Management/Inspection	$1,097,262
Estimated Total Construction	**$20,665,101**
General Aviation Development	
High-Priority Zone	
3 80 x 80 Corporate Hangars	$1,800,000
6 50 x 50 Box Hangars	$1,500,000
Total Apron and Taxilanes	$294,371
Total Auto Parking	$60,000
3 10-unit T-Hangars (Class I)	$1,350,000
12-Unit T-Hangar (Class II)	$720,000
3 10-Unit T-Hangars (Class II)	$1,800,000

TABLE 5-33 RECOMMENDED AVIATION DEVELOPMENT PRELIMINARY ORDER OF MAGNITUDE COSTS (2007 DOLLARS)	
Project	**Estimated Cost**
2 4-unit T-Hangars (Class II)	$480,000
2 120 x 120 Corporate Hangars	$2,700,000
6 80 x 80 Corporate Hangars	$3,600,000
2 50 x 50 Box Hangars	$517,000
Total Apron and Taxilanes	$610,000
Total Auto Parking	$90,000
2 Corporate Hangars (240 x 240 SF) Construction and parking	$9,446,400
4 8-unit T-Hangar (Class II)	$1,920,000
3 8-unit T-Hangars (Class I)	$1,080,000
1 12-unit T-Hangar (Class I)	$540,000
Hangar Demolition	
Demolish Box Hangars (Bldgs 12-16)	$100,000
Rehabilitate T-Hangars (Bldgs 5-8, 21-23 & 32, 33, & 44)	$2,500,000
Demolish T-Hangar 11	$100,000
Demolish Building 40	$100,000
Building Rehabilitation	
Rehabilitate Building 2	$80,000
Pavement Rehabilitate	
Rehabilitate Sky Harbor Ramp	$550,000
Design & Rehab Hangar 607 Apron[1]	$750,000
Rehabilitate Craig Air Center Ramp	$550,000
Rehabilitate Ramp by Building 26 (Mosquito Control)	$550,000
Roadway Improvements	
Construct West Access Service Road	$1,800,000
Roadway and Parking Pavement Overlay[1]	$1,000,000
Relocate and Rehab Perimeter Road[1]	$1,250,000
Westside Road North Expansion[1]	$750,000
Construct additional entrance road	$1,300,000
Expand Airport Parking	$2,500,000
Support Facilities	
Security Fencing Relocation	$1,000,000
Upgrade Electrical Vault	$500,000
Estimated High Priority Construction Costs	**$43,887,771**
Mid-Priority Development Zone	
Roadway Improvements	
Extend General Doolittle Drive	$1,300,000
Construct Southside Access Road	$1,333,333
Acquire land associated with Access Road	$1,000,000
Business Park Access Road	$2,000,000
Support Facilities	
Security Fencing Relocation	$800,000
Drainage Improvements	$500,000
Utilities/Infrastructure Improvements	$1,300,000
General Aviation Development	

TABLE 5-33 RECOMMENDED AVIATION DEVELOPMENT PRELIMINARY ORDER OF MAGNITUDE COSTS (2007 DOLLARS)	
Project	**Estimated Cost**
35 75 x 75 Corporate Hangars	$20,125,000
6 12-unit T-Hangars (Class II)	$4,320,000
6 10-unit T-Hangars (Class II)	$3,600,000
Construct Apron	$1,600,000
Taxilane Construction	$1,200,000
Automobile Parking	$1,548,000
Estimated Mid Priority Construction Costs	**$40,626,333**
Total General Aviation Development	**$84,514,104**
Engineering Design Fee	$5,915,987
Construction Management/Inspection	$5,070,846
GA Preliminary Construction Costs	$95,500,938
Total Preliminary Construction Costs	$116,166,039
Allowance for Permitting Fees	$9,293,283
Surveying & Design Testing	$6,969,962
Inspection & Testing	$11,616,604
Airport Administration	$1,742,491
Total Estimated Preliminary Construction Costs	**$145,788,378**
Property Acquisition	
Acquire Existing Runway 14 Avigation Easement (~0.55 Acres)	$16,500
Acquire Existing Runway 5 Avigation Easement (~ 4 Acres)	$121,200
Property Acquisition Subtotal	**$137,700**
Environmental	
Airfield	
Environmental Assessment - Runway 14-32	$950,000
Environmental Survey and Permitting (no stormwater)	$200,000
Tree Survey	$100,000
Wetland Mitigation	$5,500,000
Airfield Subtotal	**$6,750,000**
High Development Zone	
Categorical Exclusion or Environmental Assessment	$3,000 - $75,000
Environmental Survey/Report or Environmental Survey and Permitting (no Stormwater)	$10,000-$50,000
Wetland Mitigation	$0-$75,000
Gopher Tortoise survey, permitting and relocation	$0 -$30,000
High Development Zone Subtotal	$13,000 - $230,000
Mid-Development Zone	
Environmental Assessment	$200,000
Tree Survey	$25,000

TABLE 5-33 RECOMMENDED AVIATION DEVELOPMENT PRELIMINARY ORDER OF MAGNITUDE COSTS (2007 DOLLARS)	
Project	**Estimated Cost**
Environmental Survey and Permitting (no stormwater)	$150,000
Wetland Mitigation	$8,000,000
Gopher Tortoise survey, permitting and relocation	$80,000
Mid-Development Zone Subtotal	**$8,455,000**
Environmental Subtotal	$15,218,000-$15,435,000
Long-Term Development Subtotal	$161,144,078-$161,361,078
Contingency (15%)	$24,171,612-24,204,162
Estimated Total Order of Magnitude Costs	**$185,315,690-$185,565,240**

Notes:
[1]Projects already included in CRG February 2008 JACIP
Sources: JAA Engineering Department and The LPA Group Incorporated, 2007/08

5.11 Summary

The process utilized in assessing airside and landside development alternatives involved an analysis of long-term requirements and growth potential. Current Airport design standards were reflected in the analysis of runway and taxiway needs, with consideration given to the safety areas required by the FAA in runway approaches. As design standards are further modified in the future, revisions may need to be made in the plan, which could affect future development options.

As any good long-range planning tool, the final master-planning concept should remain flexible to unique opportunities that may be presented to the Airport. It should also be kept in mind that changes in market conditions such as aircraft operations may dictate the acceleration or delay of projects.

The preferred alternative will be further refined in the development of Craig Municipal Airport's Layout Plan (ALP). In addition, cost estimates, phasing, and funding options for the projects identified in the preferred alternative are further refined and illustrated in the Implementation Chapter of this Master Plan report.

CHAPTER SIX
Airport Layout Plan

The Airport Plans set is at the heart of the master plan document. Information presented in this Master Plan report was pictorially summarized in the Airport Plans set. Major improvements outlined in the preferred concepts for land use, GA terminal area, and other major functional areas on the Airport are incorporated into the updated Airport Layout Plan (ALP). The ALP set is the primary tool used by airport management, FAA and FDOT to guide growth at CRG for the 20-year planning period. Various drawings depict the master plan update recommendations with regard to aviation development for the short-, intermediate-, and long-term.

In order to provide uniformity in the development of the Airport Plans set and to simplify agency review, the Federal Aviation Administration (FAA) requests that planners follow a general format for the presentation of specific information. The recommended format is outlined in the FAA **Advisory Circular (AC) 150/5070-6B, "Airport Master Plans".** The ALP set for Craig Airport was prepared in conformance with FAA established criteria, and the completed Southern Region Checklist is provided in Appendix J of this report.

The ALP set includes the following individual drawing sheets:

- Cover Sheet (Sheet 1)
- Airport Layout Plan Sheet (Sheet 2)
- General Aviation Terminal Area Drawing (Sheet 3)
- Airport Airspace Drawings, (Sheets 4-6)
- Inner Portion of the Approach Surface Drawing - Runway 32 (Sheet 7)
- Inner Portion of the Approach Surface Drawing - Runway 14 (Sheet 8)
- Inner Portion of the Approach Surface Drawing - Runway 5 (Sheet 9)
- Inner Portion of the Approach Surface Drawing - Runway 23 (Sheet 10)
- Airport Land Use Drawing (Sheets 11-12)
- Airport Property Map (Sheet 13)

These drawings were developed and produced as a set using AutoCAD 2008 from an aerial photo provided by JAA, and NAD 83 and NAVD 88 survey data. Reduced reproductions of the drawings are included in this chapter for illustration purposes only.

A full-size set (24" by 36" format) of the drawings will be submitted to the FAA for approval. An approved ALP is perhaps the single most important planning tool since the drawings provide airport management graphical guidance on future development given existing external constraints.

6.1 Cover Sheet

The cover sheet (Sheet 1) serves as the ALP drawing set cover and provides basic information required under the FAA ALP guidelines including:

- location and airport vicinity maps
- project name,
- federal and state grant numbers,
- associated City and State,
- sponsor name and logo, and the party responsible for preparing the ALP set
- an index of individual drawing sheets as well as
- IFR and All Weather Wind Roses and data tables.

6.2 Airport Layout Drawing Sheet

The ALP drawing as shown in Sheet 2 depicts all existing facilities and proposed development, to scale, over the 20-year master planning time period. It provides clearance and dimensional information required to show conformance with applicable FAA design standards as outlined in **FAA AC 150/5300-13, Change 11**. The ALP also reflects changes in the physical features on the airport and critical land use changes near the airport that may impact navigable airspace or the ability of the airport to operate. The features of the ALP include, but are not limited to: runways, taxiways, hold aprons, lighting, navigational aids, terminal facilities, hangars, other airport buildings, aircraft parking areas, automobile parking, and airport access elements.

Key dimensional criteria are included for the airfield geometry. This includes, but is not limited to, the size of the runways and various taxiways, runway safety areas and runway object free areas, building restriction lines, and navigational aid critical areas, and other dimensional data recommended by the FAA. Airport coordinates, runway end elevations, runway high and low points, true azimuths for each runway, are also included on the drawing set. Included on the ALP sheet are various data tables required in the FAA checklist. These tables include: Airport Data Table, Runway Data Table, Building Data Table and Declared Distance Table.

Based upon discussions with the Jacksonville Aviation Authority (JAA), major airfield improvements include a 1,600 foot extension to Runway 14-32 and pavement extensions to Taxiway A. General aviation facility improvements include various hangar (i.e. T-hangar, corporate, conventional, etc.), apron and building development as well as associated taxiway, parking and surface access projects.

6.3 General Aviation Terminal Area Drawing

The terminal area plan for Craig Airport was updated to reflect existing and future proposed GA development as identified in previous chapters of this study. Sheet 3 provides a detailed drawing of both existing and proposed GA development based upon improvements shown in the ALP sheet. These improvements include: apron parking facilities, aircraft storage, surface access and support facilities. The terminal concept focuses on the development of GA facilities over the 20-year planning period.

6.4 Airport Airspace Drawings

The Airport Airspace Drawings (Sheets 4 through 6) reflect obstructions affecting navigable airspace as defined in Federal Aviation Regulations (FAR) Part 77. Part 77 was adopted by the FAA to enhance the safe operation of aircraft in the airspace around an airport**.** Sheets 4 through 6 illustrate the airspace contours consistent with the imaginary surfaces as defined above. These contours are shown in 50-foot intervals as denoted on the plan sheets. Subpart C of FAR Part 77 establishes standards for determining obstructions to air navigation. These regulations enable the establishment of imaginary surfaces, which no object, manmade or natural, should penetrate. FAR Part 77 surfaces are utilized in making zoning and land use planning decisions related to areas adjacent to an airport to protect the navigable airspace from encroachment by hazards that would potentially affect the safety of airport operations.

The FAR Part 77 Imaginary Surfaces Plan depicts the physical features of the area around the airport including existing obstructions that penetrate the surfaces. The specific imaginary surfaces, which should be protected from obstructions, include:

Primary Surface - A rectangular area symmetrically which is located about each runway centerline and extending a distance of 200 feet beyond each runway threshold. Width of the Primary Surface is based on the type of approach a particular runway has, while the elevation is the same as that of the runway centerline at all points.

Horizontal Surface – A level oval-shaped area situated 150 feet above the airport elevation, extending 5,000 or 10,000 feet outward, depending on the runway category and approach procedure available.

Conical Surface - Extends outward for a distance of 4,000 feet beginning at the outer edge of the Horizontal Surface, and sloping upward at a ratio of 20:1.

Approach Surfaces - These surfaces begin at the end of the Primary Surface (200 feet beyond the runway threshold) and slope upward at a ratio determined by the runway category and type of approach available to the runway. The width and elevation of the inner end conforms to that of the Primary Surface while approach surface length and width of the outer end are governed by the runway category and approach procedure available.

Transitional Surface - A sloping area beginning at the edges of the Primary and Approach Surfaces and sloping upward and outward at a ratio of 7:1 until it intersects the Horizontal Surface.

6.5 Inner Portion of the Approach Surface Drawings

The Inner Portion of the Approach Surface drawing shows both plan and profile views for each runway's RPZ and approaches as shown on the ALP. The purpose of these plans is to locate and document existing objects, which represent obstructions to navigable airspace, and existing and proposed approach slopes for each runway. Additionally, the drawings show the ground profile and terrain features along the extended centerline of each runway end. The Inner Portion of the Approach Surface Drawings for Runways 32, 14, 5 and 23 are shown in Sheets 7 through 10, respectively.

6.6 Airport Land Use Drawings

The Land Use drawings depict existing and recommended land use within the airport property boundary as well as parcels contiguous to the airport. Proposed on-airport and contiguous land use was obtained from information provided by the Jacksonville Aviation Authority, City of Jacksonville Planning Department and recommendations outlined in this master plan update. The drawings also include the land use controls within the 60 to 65 DNL contour based upon the City of Jacksonville Zoning Code. This information was used to develop future on-airport land use while minimizing the need for future land acquisition or easements.

The land use drawings, Sheets 11 and 12, depict the existing and future land use of all land in and within the vicinity of the airport. The utilization of this land is represented by several use categories, including Aviation, Non-Aviation, Industrial and Commerce Park, which are labeled in the legend of each drawing. The land use plans have been developed through coordination with the City of Jacksonville to include existing city plans and ensure accuracy. Additionally, the existing (2007) and future (2020) noise contours (60, 65, 70 and 75 DNL) as provided in **Appendix F**, *Airport Noise Analysis*, were superimposed onto Sheets 11 and 12, respectively, to ensure that appropriate aviation-compatible zoning is maintained.

6.7 Airport Property Map

The Airport Property Map (previously referred to as Exhibit A) defines the existing airport boundary for CRG in a graphical and tabular form. The purpose of the drawing and associated tables, as shown in Sheet 13, is to identify historic and future property obtained with federal funds and illustrates major airport facilities, both existing and future, for reference purposes. The property map also identifies contiguous property. No property acquisition is required as a result of recommended airfield developed outlined in this master plan, including the extension of Runway 32. Property acquisition or an avigation easement is recommended for the existing Runway 14 and Runway 5 Runway Protection Zones. One corner of each RPZ in the controlled activity area is not owned or controlled by the Authority. However, all of the Object Free Area and Object Free Area Extension for all runways is owned and controlled by the Authority. Known metes and bounds data is depicted, but have not been field verified as part of this study.

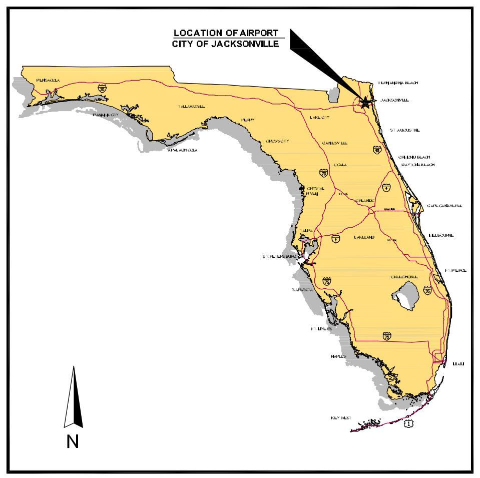
6.8 Summary

The Airport Plans Set is intended to depict the airport's capital development program in graphical form. Preliminary plans were presented to the Jacksonville Aviation Authority management staff, technical advisory committee members, including CACAC and CPAC members, Jacksonville City Council and the City of Jacksonville Planning Department for review and approval. This data was incorporated into the airport plan set to reflect approved airport development for the twenty-year planning period.

AIRPORT LAYOUT PLAN SET

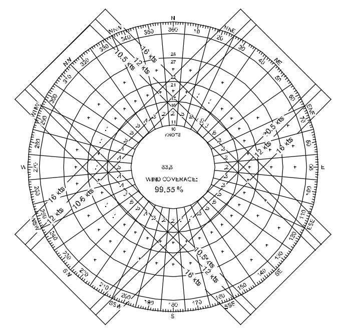
CRAIG MUNICIPAL AIRPORT

JACKSONVILLE, FLORIDA

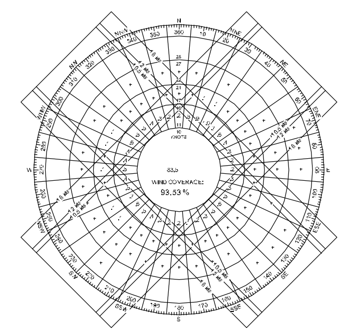


SOURCE: LPA GROUP
FEBRUARY 2008

LOCATION MAP
NOT TO SCALE



All Weather Windrose			
	Wind Coverage %		
Crosswind Component (kts/mph)	Runway 5-23	Runway 14-32	Combined
10.5/12.08	93.65	91.77	99.55
12/13.81	95.42	94.03	99.85
16/18.41	99.35	99.18	99.98

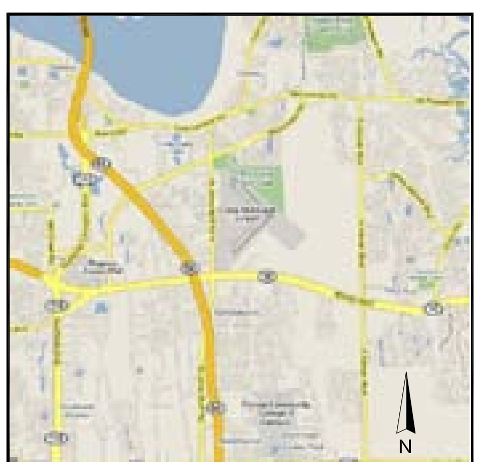


VFR Windrose			
	Wind Coverage %		
Crosswind Component (kts/mph)	Runway 5-23	Runway 14-32	Combined
10.5/12.08	93.53	91.60	99.56
12/13.81	95.33	93.90	99.86
16/18.41	99.36	99.18	99.99

Wind Data Source:
National Climatic Data Center
Station 72206 - Jacksonville, Florida
Years (1996 - 2005)

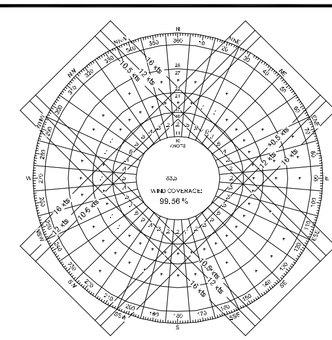
Notes

Wind Roses generated using FAA Airport Design 4.2d.



SOURCE: GOOGLE MAPS
FEBRUARY 2008

VICINITY MAP
NOT TO SCALE



IFR Windrose			
	Wind Coverage %		
Crosswind Component (kts/mph)	Runway 5-23	Runway 14-32	Combined
10.5/12.08	93.53	91.6	99.56
12/13.81	95.33	93.9	99.86
16/18.41	99.36	99.18	99.99

INDEX TO DRAWINGS

FAA A.I.P. Project Number: 3-12-0033-017-2006
F.D.O.T. #: 409963-1-9401

February 2008

PREPARED BY:

THE LPA GROUP INCORPORATED
Aviation Consultants

ATLANTA, GA BATON ROUGE, LA CHARLESTON, SC CHARLOTTE, NC COLUMBIA, SC GREENSBORO, NC JACKSONVILLE, FL KNOXVILLE, TN MOBILE, AL ORLANDO, FL RALEIGH, NC RICHMOND, VA SARASOTA, FL TALLAHASSEE, FL TAMPA, FL WEST PALM BEACH, FL

LEGEND

DESCRIPTION	EXISTING	ULTIMATE
AIRPORT REFERENCE POINT		
BUILDINGS		
BUILDINGS - OFF AIRPORT		
PAVEMENT		
FENCE		
PROPERTY LINE		
RPZ		
DEPARTURE RPZ		
DRAINAGE AREAS		
EASEMENT		
RUNWAY MARKINGS		
NAVAID CRITICAL AREA		
PAPI-4		
REILS		
GLIDESLOPE		
MALSR		
RSA	RSA	RSA
ROFA	OFA	OFA
RVZ	RVZ	RVZ
BRL (SEE NOTE 7)	BRL	BRL

RUNWAY DATA

STAGE		EXISTING		ULTIMATE		EXISTING		ULTIMATE	
RUNWAY		5	23	5	23	14	32	14	32
RUNWAY LENGTH		4,004'	4,004'	NO CHANGE	NO CHANGE	4,004'	4,004'	5,600'	5,600'
RUNWAY WIDTH		100'	100'	NO CHANGE	NO CHANGE	100'	100'	NO CHANGE	NO CHANGE
PAVEMENT TYPE		ASPHALT	ASPHALT	NO CHANGE	NO CHANGE	ASPHALT	ASPHALT	NO CHANGE	NO CHANGE
PAVEMENT LOADING (THOUSANDS)		S - 30	S - 30	NO CHANGE	NO CHANGE	S - 30 / D - 60	S - 30 / D - 60	NO CHANGE	NO CHANGE
RUNWAY LIGHTING		MIRLS	MIRLS	NO CHANGE	NO CHANGE	HIRLS	HIRLS	NO CHANGE	NO CHANGE
RUNWAY MARKINGS		NON-PRECISION	NON-PRECISION	NO CHANGE	NO CHANGE	NON-PRECISION	PRECISION	NO CHANGE	NO CHANGE
APPROACH LIGHTING		N/A	N/A	NO CHANGE	NO CHANGE	N/A	MALSR	NO CHANGE	NO CHANGE
TAXIWAY WIDTH		35'	35'	NO CHANGE	NO CHANGE	35'	35'	NO CHANGE	NO CHANGE
TAXIWAY LIGHTING		MITL	MITL	NO CHANGE	NO CHANGE	MITL	MITL	NO CHANGE	NO CHANGE
AIRCRAFT APPROACH CATEGORY		C	C	NO CHANGE	NO CHANGE	C	C	NO CHANGE	NO CHANGE
AIRPLANE DESIGN GROUP		II	II	NO CHANGE	NO CHANGE	II	II	NO CHANGE	NO CHANGE
CRITICAL AIRCRAFT		DESIGN SEPARATIONS: CESSNA 560 (B-II); PAVEMENT STRENGTH & APPROACH SPEED: LEARJET 45 (C-I)	DESIGN SEPARATIONS: CESSNA 560 (B-II); PAVEMENT STRENGTH & APPROACH SPEED: LEARJET 45 (C-I)	NO CHANGE	NO CHANGE	DESIGN SEPARATIONS: CESSNA 560 (B-II); PAVEMENT STRENGTH & APPROACH SPEED: LEARJET 45 (C-I)	DESIGN SEPARATIONS: CESSNA 560 (B-II); PAVEMENT STRENGTH & APPROACH SPEED: LEARJET 45 (C-I)	DESIGN & APPROACH SPEED: CESSNA 750 (C-II); PAVEMENT STRENGTH: FALCON 900 EX (C-II)	DESIGN & APPROACH SPEED: CESSNA 750 (C-II); PAVEMENT STRENGTH: FALCON 900 EX (C-II)
RUNWAY END ELEVATION (NAVD 88)		40.1' AMSL	40.3' AMSL	NO CHANGE	NO CHANGE	32.0' AMSL	40.3' AMSL	NO CHANGE	40.3' AMSL
DISPLACED THRESHOLD ELEVATION (NAVD 88)		N/A	N/A	NO CHANGE	NO CHANGE	N/A	N/A	36.0'	40.3'
EFFECTIVE GRADIENT		-0.005%	+0.005%	NO CHANGE	NO CHANGE	-0.21%	+0.21%	NO CHANGE	NO CHANGE
TOUCHDOWN ZONE ELEVATION (NAVD 88)		NO CHANGE	NO CHANGE	NO CHANGE	NO CHANGE	36.0'	42.0'	36.0'	40.3'
APPROACH VISIBILITY MINIMUMS		VISUAL	VISUAL	NO CHANGE	NO CHANGE	≥ 1-MILE	≥ 1/2-MILE	NO CHANGE	NO CHANGE
NAVIGATIONAL AND VISUAL AIDS		PAPI-4	PAPI-4 & REILS	PAPI-4 & REILS	NO CHANGE	PAPI-4 & REILS	PAPI & MALSR	NO CHANGE	NO CHANGE
APPROACH SLOPE		20:1	20:1	NO CHANGE	NO CHANGE	34:1	50:1	NO CHANGE	NO CHANGE
FAR PART 77 CATEGORY		B(V)	B(V)	NO CHANGE	NO CHANGE	NPIR	PIR	NO CHANGE	NO CHANGE
OBJECT FREE AREA (OFA) WIDTH		800'	800'	NO CHANGE	NO CHANGE	800'	800'	NO CHANGE	NO CHANGE
OFA LENGTH BEYOND RUNWAY END		1,000'	1,000'	NO CHANGE	NO CHANGE	1,000'	1,000'	NO CHANGE	NO CHANGE
RUNWAY SAFETY AREA (RSA) WIDTH		500'	500'	NO CHANGE	NO CHANGE	500'	500'	NO CHANGE	NO CHANGE
RSA LENGTH PRIOR TO LANDING THRESHOLD		1,000'	1,000'	NO CHANGE	NO CHANGE	1,000'	1,000'	NO CHANGE	NO CHANGE
RSA LENGTH BEYOND RUNWAY END		1,000'	1,000'	NO CHANGE	NO CHANGE	1,000'	1,000'	NO CHANGE	NO CHANGE
OBSTACLE FREE ZONE (OFZ) WIDTH		400'	400'	NO CHANGE	NO CHANGE	400'	400'	NO CHANGE	NO CHANGE
OFZ LENGTH BEYOND RUNWAY END		200'	200'	NO CHANGE	NO CHANGE	200'	2,600'	NO CHANGE	NO CHANGE
RUNWAY END (NAD 83)	LATITUDE	30° 19' 44.010" N	30° 20' 12.030" N	NO CHANGE	NO CHANGE	30° 20' 37.617" N	30° 20' 09.554" N	30° 20' 33.375" N	30° 20' 02.570" N
	LONGITUDE	81° 31' 08.170" W	81° 30' 35.860" W	NO CHANGE	NO CHANGE	81° 31' 08.240" W	81° 30' 35.909" W	81° 31' 03.356" W	81° 30' 27.864" W
DISPLACED THRESHOLD (NAD 83)	LATITUDE	N/A	N/A	NO CHANGE	NO CHANGE	N/A	N/A	30° 20' 33.415"	30° 20' 02.608"
	LONGITUDE	N/A	N/A	NO CHANGE	NO CHANGE	N/A	N/A	81° 31' 03.402"	81° 30' 27.907"

MODIFICATIONS TO STANDARDS

DESCRIPTION	CRITERIA	STANDARD	REQUESTED	EXISTING	FAA APPROVAL
NONE	NONE	NONE	NONE	NONE	NONE

AIRPORT DATA

CITY: JACKSONVILLE COUNTY: DUVAL STATE: FLORIDA

DESCRIPTION		EXISTING	ULTIMATE
AIRPORT ELEVATION (NAVD 88)		41 FT AMSL	NO CHANGE
MEAN MAXIMUM TEMPERATURE (AUGUST)		92.7° F	NO CHANGE
MAGNETIC DECLINATION (2008)		5.4° W	NO CHANGE
AIRPORT REFERENCE POINT (NAD 83)	LAT.	30° 20' 10.800" N	30° 20' 8.300" N
	LONG.	81° 30' 52.000" W	81° 30' 49.370" W
AIRPORT REFERENCE CODE		C II	C II
CRITICAL AIRCRAFT		DESIGN SEPARATIONS: CESSNA 560 (B-II); PAVEMENT STRENGTH & APPROACH SPEED: LEARJET 45 (C-I)	DESIGN & APPROACH SPEED: CESSNA 750 (C-II); PAVEMENT STRENGTH: FALCON 900 EX (C-II)
AIRPORT & TERMINAL NAVAIDS		ILS, GPS, VORTAC	NO CHANGE
SERVICE LEVEL		RELIEVER	NO CHANGE

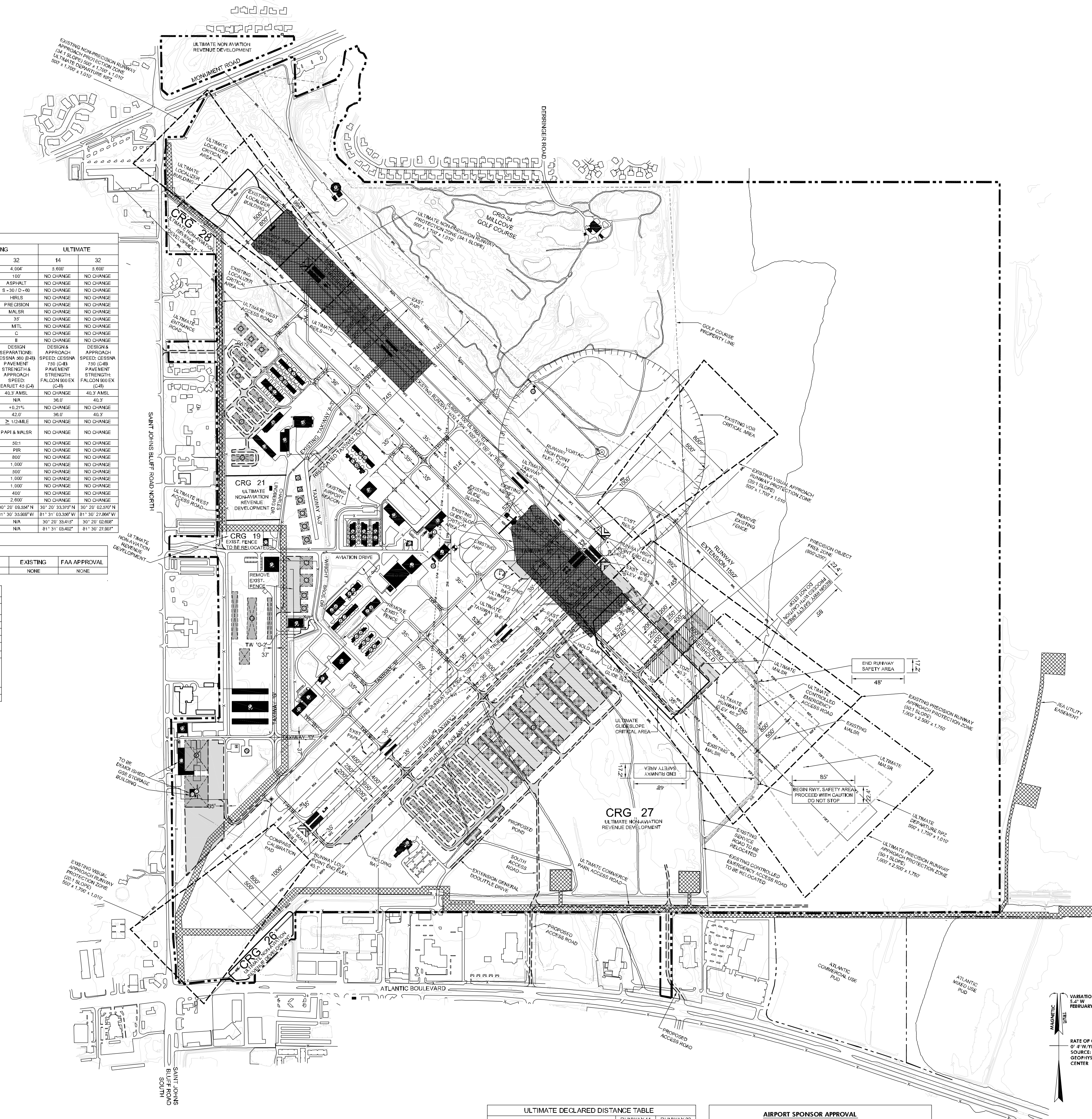
EXISTING BUILDING TABLE

#	LEASE NO.	DESCRIPTION	≈ TOP ELEV.
1	CRG-29	CONTROL TOWER	81' MSL
2	CRG-3	JAA ADMINISTRATION / NFFT	56' MSL
3	CRG-2	SKY HARBOR	60' MSL
4	CRG-2	SKY HARBOR	60' MSL
5	CRG-2	SKY HARBOR BLD - 2	54' MSL
6	CRG-2	SKY HARBOR BLD - 4	64' MSL
7	CRG-2	SKY HARBOR BLD - 5	64' MSL
8	CRG-2	SKY HARBOR BLD - 7	64' MSL
9	CRG-2	SKY HARBOR ABC T-HGRS	59' MSL
10	CRG-2	SKY HARBOR TB HGRS	57' MSL
11	CRG-2	SKY HARBOR PORT-A-PORT HGRS	59' MSL
12	CRG-5	COJ / JSO	54' MSL
13	CRG-6	MOSQUITO CONTROL	52' MSL
14	CRG-7	WILLIAM VICTOR HANGAR	52' MSL
15	CRG-8	RIESER BURGAN	52' MSL
16	CRG-9	GOLD CLUB	64' MSL
17	CRG-11	BUILDING #607 & GSE STORAGE BUILDING	70' MSL
18	CRG-12	OLD OPS BLD	62' MSL
19	CRG-13	CRAIG HGR CONG, LLC	54' MSL
20	CRG-15	STERLING FLT / MALONE AIR CENTER	64' MSL
21	CRG-19	CIVIL AIR PATROL	62' MSL
22	CRG-4	CRAIG MAINTENANCE	52' MSL
23	CRG-2	SKY HARBOR / ATP	55' MSL
24	CRG-2	SKY HARBOR / NEFC / BRAGG	55' MSL
25	CRG-1	CRAIG AIR CENTER / JU / DCA	52' MSL
26	CRG-1	CRAIG AIR CENTER	54' MSL
27	CRG-1	CRAIG AIR CENTER / CORPORATE AIRWAYS	52' MSL
28	CRG-14	EAGLE AVIATION JAX (TO BE CONSTRUCTED)	TBD
29	CRG-10	CRAIG AIR CENTER FUEL FARM	48' MSL
30	CRG-3	JPA ELECTRICAL VAULT	48' MSL
31	CRG-16	MARCO ORTH (UNDER CONSTRUCTION)	TBD
32	CRG-24	MILL COVE GC OFFICE	68' MSL
33	CRG-1	CRAIG AIR CENTER T-HGRS	57' MSL
34	CRG-2	SKY HARBOR STERLING CONDO HGRS	64' MSL
35		JAA ELECTRICAL VAULT	50' MSL
36	CRG-1	CRAIG AIR CENTER HANGAR OFFICES	60' MSL
37	CRG-2	SKY HARBOR CONVENTIONAL HANGAR	60' MSL

ULTIMATE BUILDING TABLE

A	TBD	T-HANGARS	TBD
B	TBD	BOX HANGAR	TBD
C	CRG-11	MAINTENANCE HANGAR	TBD
D	TBD	CORPORATE HANGAR	TBD
E	TBD	REFURBISHED T-HANGAR	TBD

SOURCES: CRG ALP SHEET 2, THE LPA GROUP INCORPORATED, 2008



ULTIMATE DECLARED DISTANCE TABLE

DESCRIPTION	RUNWAY 14 (ULTIMATE)	RUNWAY 32 (ULTIMATE)
TAKEOFF RUN AVAILABLE (TORA)	5,600'	5,600'
TAKEOFF DISTANCE AVAILABLE (TODA)	5,600'	5,600'
ACCELERATE STOP DISTANCE AVAILABLE (ASDA)	5,600'	5,600'
LANDING DISTANCE AVAILABLE (LDA)	5,000'	5,000'

NOTE: THERE ARE CURRENTLY NO DECLARED DISTANCE STANDARDS IN PLACE.

AIRPORT SPONSOR APPROVAL

THIS AIRPORT DRAWING IS APPROVED BY:

(SIGNATURE) ____________________ DATE: __________

NAME: ____________________

TITLE: ____________________

JACKSONVILLE AVIATION AUTHORITY

CRAIG AIRPORT

JACKSONVILLE, FLORIDA

THE LPA GROUP
TRANSPORTATION CONSULTANTS

ATLANTA, GA • BATON ROUGE, LA • CHARLESTON, SC
CHARLOTTE, NC • CHICAGO, IL • COLUMBIA, SC
GREENSBORO, NC • JACKSONVILLE, FL • KNOXVILLE, TN
MOBILE, AL • ORLANDO, FL • RALEIGH, NC • RICHMOND, VA
SARASOTA, FL • TALLAHASSEE, FL • TAMPA, FL • WEST PALM BEACH, FL

Designer: APN
Technician: APN
Checked by: TF
Project Number: PL502024

NOTES

1. COORDINATES SHOWN HEREON ARE IN NAD83.
2. ELEVATIONS SHOWN HEREON ARE IN NAVD88 AND ARE ABOVE MEAN SEA LEVEL (AMSL).
3. SEE AIRPORT PROPERTY MAP FOR PROPERTY LINE METES AND BOUNDS.
4. NO OFZ OBJECT PENETRATIONS.
5. NO THRESHOLD SITING PENETRATIONS.
6. SEE DRAWING 13, AIRPORT PROPERTY MAP, FOR COMPLETE AIRPORT PROPERTY, EASEMENT, AND RUNWAY PROTECTION ZONE BOUNDARIES.
7. THE BUILDING RESTRICTION LINE WAS ESTABLISHED BASED UPON PRIMARY AND PART 77 SURFACE REQUIREMENTS NEEDED TO CLEAR:
   20' BUILDINGS / HANGARS - RUNWAY 5-23
   35' BUILDINGS / HANGARS - RUNWAY 14-32
8. APRON AREA DIMENSIONS SHOWN ON TERMINAL AREA DRAWING (SHEET 3).
9. AIRCRAFT HOLD BAR ON TAXIWAY 'A' ADDED TO AVOID PENETRATION OF 34:1 AND 20:1 VISIBILITY SURFACE.
10. EXISTING SERVICE ROAD & FENCELINE RELOCATED TO ALLOW EXTENSION OF RUNWAY 32 AND LIMIT IMPACT TO GLIDE SLOPE CRITICAL AREA.
11. ANY PROPOSED HANGAR / BUILDING DEVELOPMENT WILL REQUIRE A NOTICE OF PROPOSED ON-AIRPORT CONSTRUCTION, INCLUDING SHADOW STUDY, TO BE COMPLETED AND APPROVED BY F.A.A.

CONSTRUCTION NOTICE REQUIREMENT

To protect operational safety and ultimate 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.

REVISIONS

No.	Description	Date	By

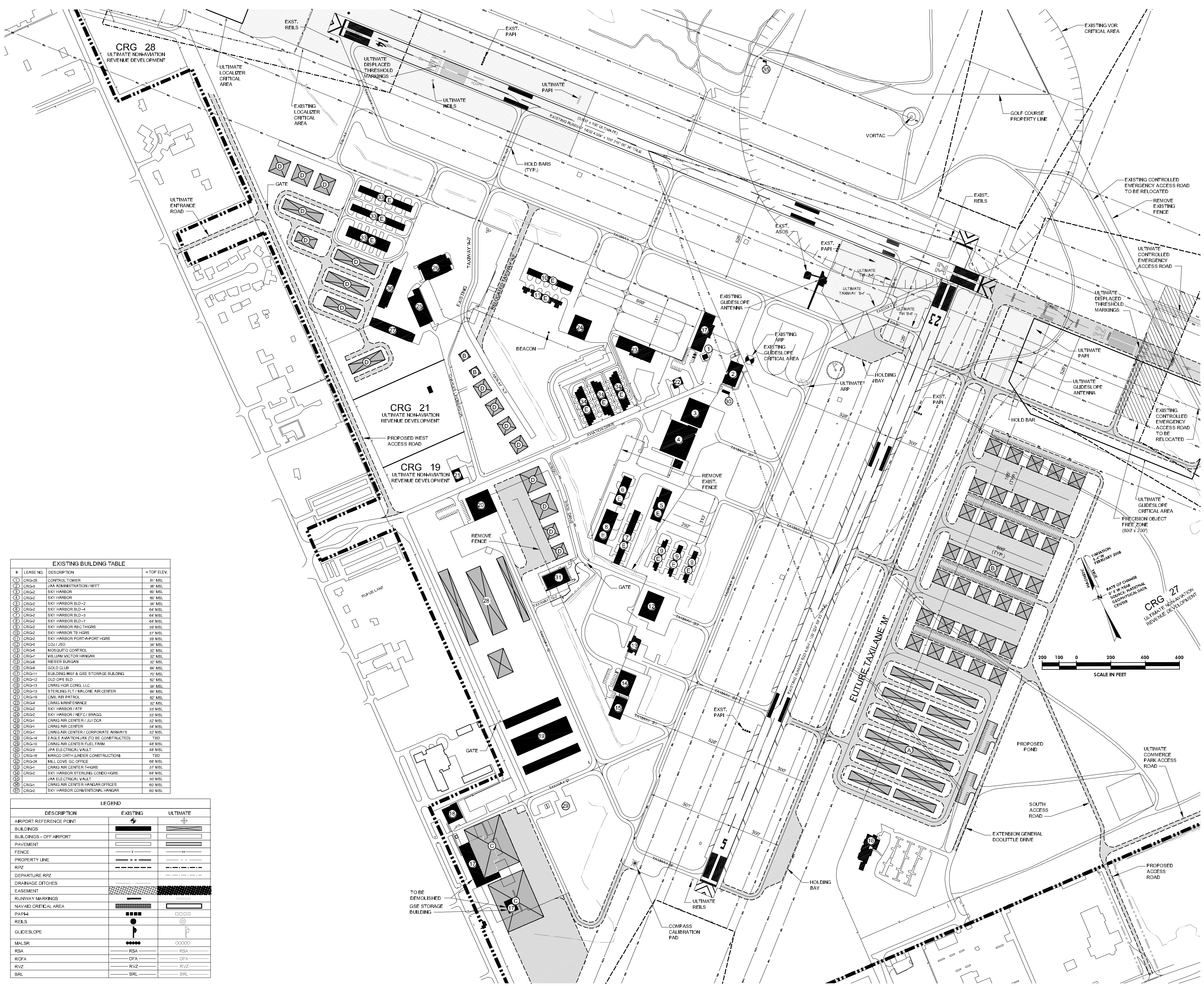
Project Name: **MASTER PLAN UPDATE**

Drawing Name: **AIRPORT LAYOUT PLAN DRAWING**

FAA A.I.P. Project Number: 3-12-0033-017-2006

Autocad Drawing Reference: Y:\Planning\CRG AMPU\CRG ALP\drawings\2008 ALP\02-CRG-ALP.dwg

Date: FEBRUARY 2008
Division: PLANNING
Scale: 1" = 400'
Drawing Number: 2



EXISTING BUILDING TABLE			
#	LEASE NO.	DESCRIPTION	≈ TOP ELEV.
1	CRG-29	CONTROL TOWER	81' MSL
2	CRG-3	JAA ADMINISTRATION / NFFT	56' MSL
3	CRG-2	SKY HARBOR	60' MSL
4	CRG-2	SKY HARBOR	60' MSL
5	CRG-2	SKY HARBOR BLD - 2	54' MSL
6	CRG-2	SKY HARBOR BLD - 4	64' MSL
7	CRG-2	SKY HARBOR BLD - 5	64' MSL
8	CRG-2	SKY HARBOR BLD - 7	64' MSL
9	CRG-2	SKY HARBOR ABC T-HGRS	59' MSL
10	CRG-2	SKY HARBOR TB HGRS	57' MSL
11	CRG-2	SKY HARBOR PORT-A-PORT HGRS	59' MSL
12	CRG-5	COJ / JSO	54' MSL
13	CRG-6	MOSQUITO CONTROL	52' MSL
14	CRG-7	WILLIAM VICTOR HANGAR	52' MSL
15	CRG-8	RIESER BURGAN	52' MSL
16	CRG-9	GOLD CLUB	64' MSL
17	CRG-11	BUILDING #607 & GSE STORAGE BUILDING	70' MSL
18	CRG-12	OLD OPS BLD	62' MSL
19	CRG-13	CRAIG HGR CONG, LLC	54' MSL
20	CRG-15	STERLING FLT / MALONE AIR CENTER	64' MSL
21	CRG-19	CIVIL AIR PATROL	62' MSL
22	CRG-4	CRAIG MAINTENANCE	52' MSL
23	CRG-2	SKY HARBOR / ATP	55' MSL
24	CRG-2	SKY HARBOR / NEFC / BRAGG	55' MSL
25	CRG-1	CRAIG AIR CENTER / JU / DCA	52' MSL
26	CRG-1	CRAIG AIR CENTER	54' MSL
27	CRG-1	CRAIG AIR CENTER / CORPORATE AIRWAYS	52' MSL
28	CRG-14	EAGLE AVIATION JAX (TO BE CONSTRUCTED)	TBD
29	CRG-10	CRAIG AIR CENTER FUEL FARM	48' MSL
30	CRG-3	JPA ELECTRICAL VAULT	48' MSL
31	CRG-16	MARCO ORTH (UNDER CONSTRUCTION)	TBD
32	CRG-24	MILL COVE GC OFFICE	68' MSL
33	CRG-1	CRAIG AIR CENTER T-HGRS	57' MSL
34	CRG-2	SKY HARBOR STERLING CONDO HGRS	64' MSL
35		JAA ELECTRICAL VAULT	50' MSL
36	CRG-1	CRAIG AIR CENTER HANGAR OFFICES	60' MSL
37	CRG-2	SKY HARBOR CONVENTIONAL HANGAR	60' MSL

LEGEND		
DESCRIPTION	EXISTING	ULTIMATE
AIRPORT REFERENCE POINT		
BUILDINGS		
BUILDINGS - OFF AIRPORT		
PAVEMENT		
FENCE	x	xx
PROPERTY LINE		
RPZ		
DEPARTURE RPZ		
DRAINAGE DITCHES		
EASEMENT		
RUNWAY MARKINGS		
NAVAID CRITICAL AREA		
PAPI-4		
REILS		
GLIDESLOPE		
MALSR		
RSA	RSA	RSA
ROFA	OFA	OFA
RVZ	RVZ	RVZ
BRL	BRL	BRL

JACKSONVILLE AVIATION AUTHORITY

CRAIG AIRPORT
JACKSONVILLE, FLORIDA

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Designer: APN
Technician: APN
Checked by: TF
Project Number: PL502024

NOTES

THERE ARE NO OFZ OBJECT PENETRATIONS OTHER THAN FRANGIBLE NAVAIDS.

CONSTRUCTION NOTICE REQUIREMENT

To protect operational safety and ultimate 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.

REVISIONS			
No.	Description	Date	By

Project Name:
MASTER PLAN UPDATE

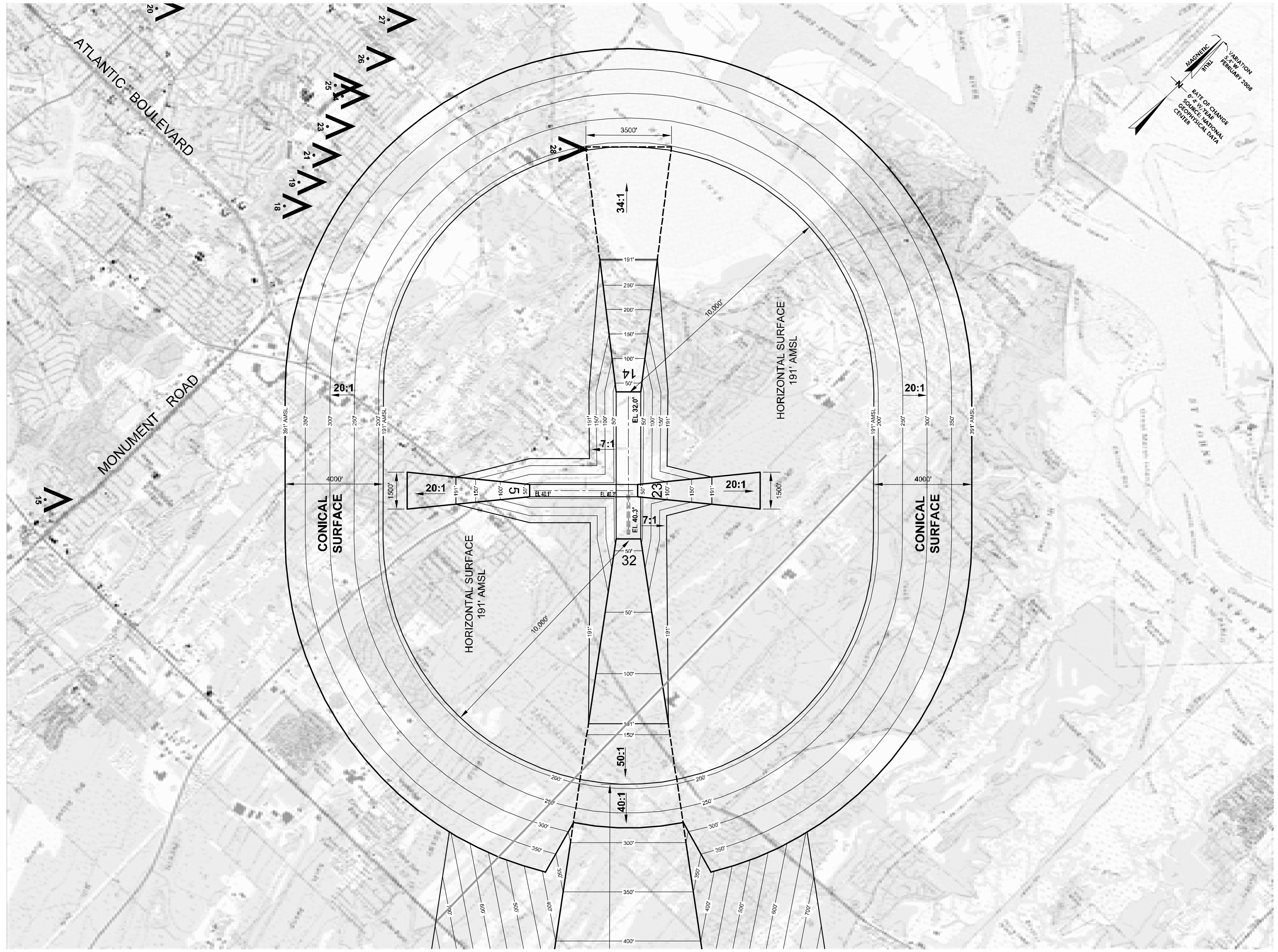
Drawing Name:
TERMINAL AREA DRAWING

FAA A.I.P. Project Number: 3-12-0033-017-2006

Autocad Drawing Reference: Y:\Planning\CRG AMPU\CRG ALP\drawings\2008 ALP\03-CRG-Terminal Plan.dwg

Date: FEBRUARY 2008
Division: PLANNING

Scale: 1" =200'
Drawing Number: 3



SOURCE: USGS MAP DATA
MAYPORT, FL - CREATED 1964; REVISED 1992
EASTPORT FL - CREATED 1964; REVISED 1992
ARLINGTON, FL - CREATED 1964; REVISED 1992
JACKSONVILLE BEACH, FL - CREATED 1964; REVISED 1992
BAYARD, FL - CREATED 1993
PALM VALLEY, FL - CREATED 1964; REVISED 1992
MICKLER LANDING, FL - CREATED 1964; REVISED 1992

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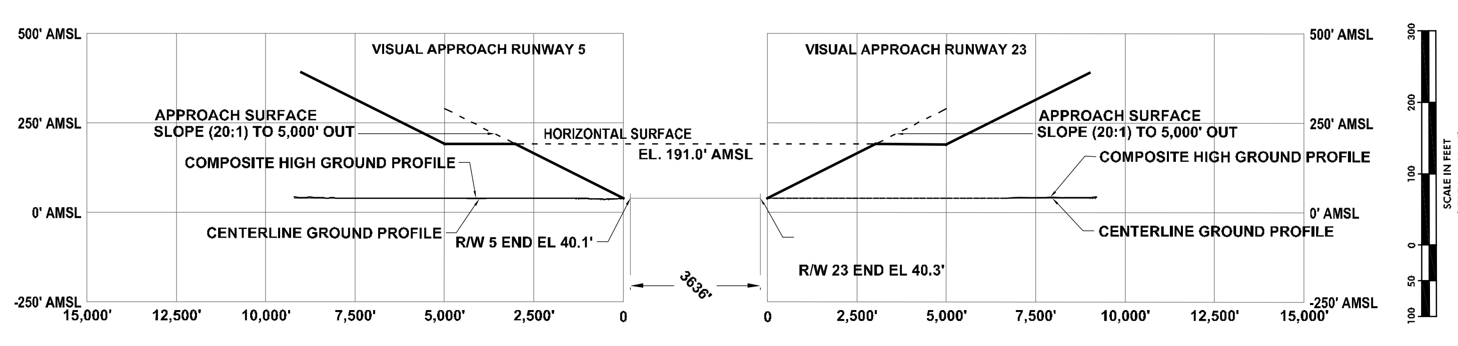
SCALE IN FEET
(HORIZONTAL / PLAN SCALE)



PROFILE VIEW (RUNWAY 5)

PROFILE VIEW (RUNWAY 23)

#	TYPE	OBSTRUCTION ELEVATION	EXISTING ALLOWABLE PART 77 ELEV.	EXISTING PART 77 PENETRATION	ULTIMATE ALLOWABLE PART 77 ELEV.	ULTIMATE PART 77 PENETRATION	DISPOSITION
28	TOWER	276 AMSL	205.42 AMSL	70.58'	NO CHANGE	NO CHANGE	FAA STUDY COMPLETED

#	CITY	TYPE	AGL	AMSL	LIGHTING	MARKING	FAA STUDY #
15	ARLINGTON	TOWER	150	198	DUAL, RED WITH MEDIUM INTENSITY WHITE STROBE	NO	00SO1378
18	JACKSONVILLE	T-L TWR	154	154			00SO6335
19	JACKSONVILLE	T-L TWR	189	189			00SO6335
20	JACKSONVILLE	BRIDGE	490	490	HIGH INTENSITY WHITE STROBE LIGHTING	NO	91SO0478
21	JACKSONVILLE	T-L TWR 2	229	232		NO	00SO6335
23	JACKSONVILLE	T-L TWR 2	312	316		NO	00SO6335
24	JACKSONVILLE	T-L TWR 2	312	314		NO	00SO6335
25	JACKSONVILLE	CRANE	207	216	RED LIGHTING	NO	87SO2492
26	JACKSONVILLE	T-L TWR 2	229	238		NO	00SO6335
27	JACKSONVILLE	T-L TWR	194	196			00SO6335
28	JACKSONVILLE	TOWER	270	276	MEDIUM INTENSITY WHITE STROBE LIGHTING	NO	93SO1821

JACKSONVILLE AVIATION AUTHORITY

CRAIG AIRPORT
JACKSONVILLE, FLORIDA

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MOBILE, AL • ORLANDO, FL • RALEIGH, NC • RICHMOND, VA
SARASOTA, FL • TALLAHASSEE, FL • TAMPA, FL • WEST PALM BEACH, FL

Designer: APN
Technician: APN
Checked by: TF
Project Number: PL502024

NOTES

1. ALL ELEVATIONS ARE BASED ON NAVD88, ABOVE MEAN SEA LEVEL (AMSL).
2. OBSTRUCTIONS TAKEN FROM: DIGITAL OBSTACLE FILE (DOF) DATED MARCH 12, 2006.
3. SEE INNER PORTION OF THE APPROACH SURFACE PLAN VIEW DETAILS FOR CLOSE-IN OBSTRUCTIONS.
4. HEIGHT RESTRICTION ZONING IS REGULATED ACCORDING TO THE STATUTES CONTAINED IN CHAPTER 656 PART 10 OF THE CITY OF JACKSONVILLE ZONING CODE TITLED "REGULATIONS RELATED TO AIRPORTS AND LANDS ADJACENT TO".

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.

REVISIONS

No.	Description	Date	By

Project Name: MASTER PLAN UPDATE

Drawing Name: AIRPORT AIRSPACE DRAWING (1 OF 3)

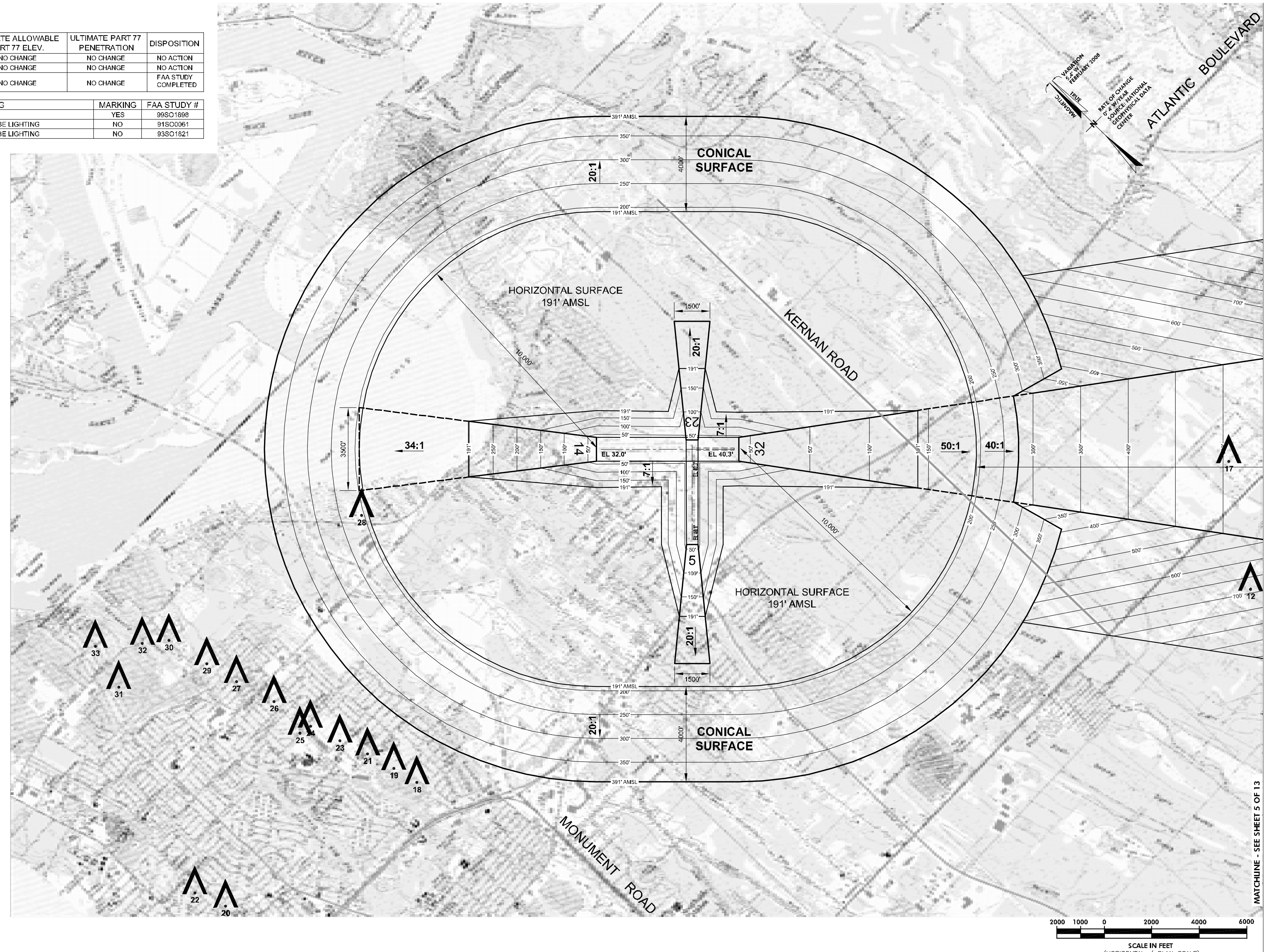
FAA A.I.P. Project Number: 3-12-0033-017-2006

Autocad Drawing Reference: Y:\Planning\CRG AMPU\CRG ALP\drawings\2008 ALP\04-06-CRG-Airport Airspace Dwgs.dwg

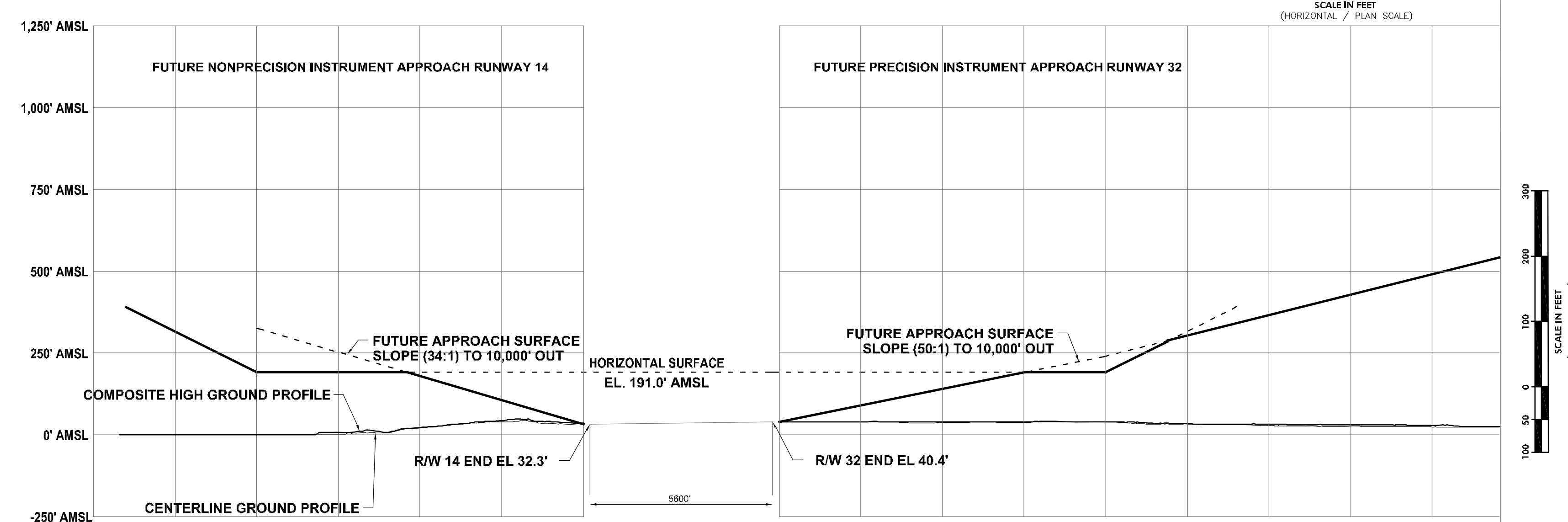
Date: FEBRUARY 2008
Division: PLANNING
Scale: AS SHOWN
Drawing Number: 4

#	TYPE	OBSTRUCTION ELEVATION	EXISTING ALLOWABLE PART 77 ELEV.	EXISTING PART 77 PENETRATION	ULTIMATE ALLOWABLE PART 77 ELEV.	ULTIMATE PART 77 PENETRATION	DISPOSITION
12	TOWER	321	674.98	NO PENETRATION	NO CHANGE	NO CHANGE	NO ACTION
17	TOWER	215	506.09	NO PENETRATION	NO CHANGE	NO CHANGE	NO ACTION
28	TOWER	276	205.42	70.58	NO CHANGE	NO CHANGE	FAA STUDY COMPLETED

#	CITY	TYPE	AGL	AMSL	LIGHTING	MARKING	FAA STUDY #
12	ATLANTIC BEACH	TOWER	317	321	RED LIGHTING	YES	99SO1898
17	JACKSONVILLE	TOWER	203	215	MEDIUM INTENSITY WHITE STROBE LIGHTING	NO	91SO0061
28	JACKSONVILLE	TOWER	270	276	MEDIUM INTENSITY WHITE STROBE LIGHTING	NO	93SO1821



SOURCE: USGS MAP DATA
MAYPORT, FL - CREATED 1964; REVISED 1992
EASTPORT FL - CREATED 1964; REVISED 1992
ARLINGTON, FL - CREATED 1964; REVISED 1992
JACKSONVILLE BEACH, FL - CREATED 1964; REVISED 1992
BAYARD, FL - CREATED 1993
PALM VALLEY, FL - CREATED 1964; REVISED 1992
MICKLER LANDING, FL - CREATED 1964; REVISED 1992



JACKSONVILLE AVIATION AUTHORITY

CRAIG AIRPORT
JACKSONVILLE, FLORIDA

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MOBILE, AL • ORLANDO, FL • RALEIGH, NC • RICHMOND, VA
SARASOTA, FL • TALLAHASSEE, FL • TAMPA, FL • WEST PALM BEACH, FL

Designer: APN
Technician: APN
Checked by: TF
Project Number: PL502024

NOTES

1. ALL ELEVATIONS ARE BASED ON NAVD88, ABOVE MEAN SEA LEVEL (AMSL).
2. OBSTRUCTIONS TAKEN FROM: DIGITAL OBSTACLE FILE (DOF) DATED MARCH 12, 2006.
3. SEE INNER PORTION OF THE APPROACH SURFACE PLAN VIEW DETAILS FOR CLOSE-IN OBSTRUCTIONS.
4. HEIGHT RESTRICTION ZONING IS REGULATED ACCORDING TO THE STATUTES CONTAINED IN CHAPTER 656 PART 10 OF THE CITY OF JACKSONVILLE ZONING CODE TITLED "REGULATIONS RELATED TO AIRPORTS AND LANDS ADJACENT TO".

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.

REVISIONS			
No.	Description	Date	By

Project Name: **MASTER PLAN UPDATE**

Drawing Name: **AIRPORT AIRSPACE DRAWING (2 OF 3)**

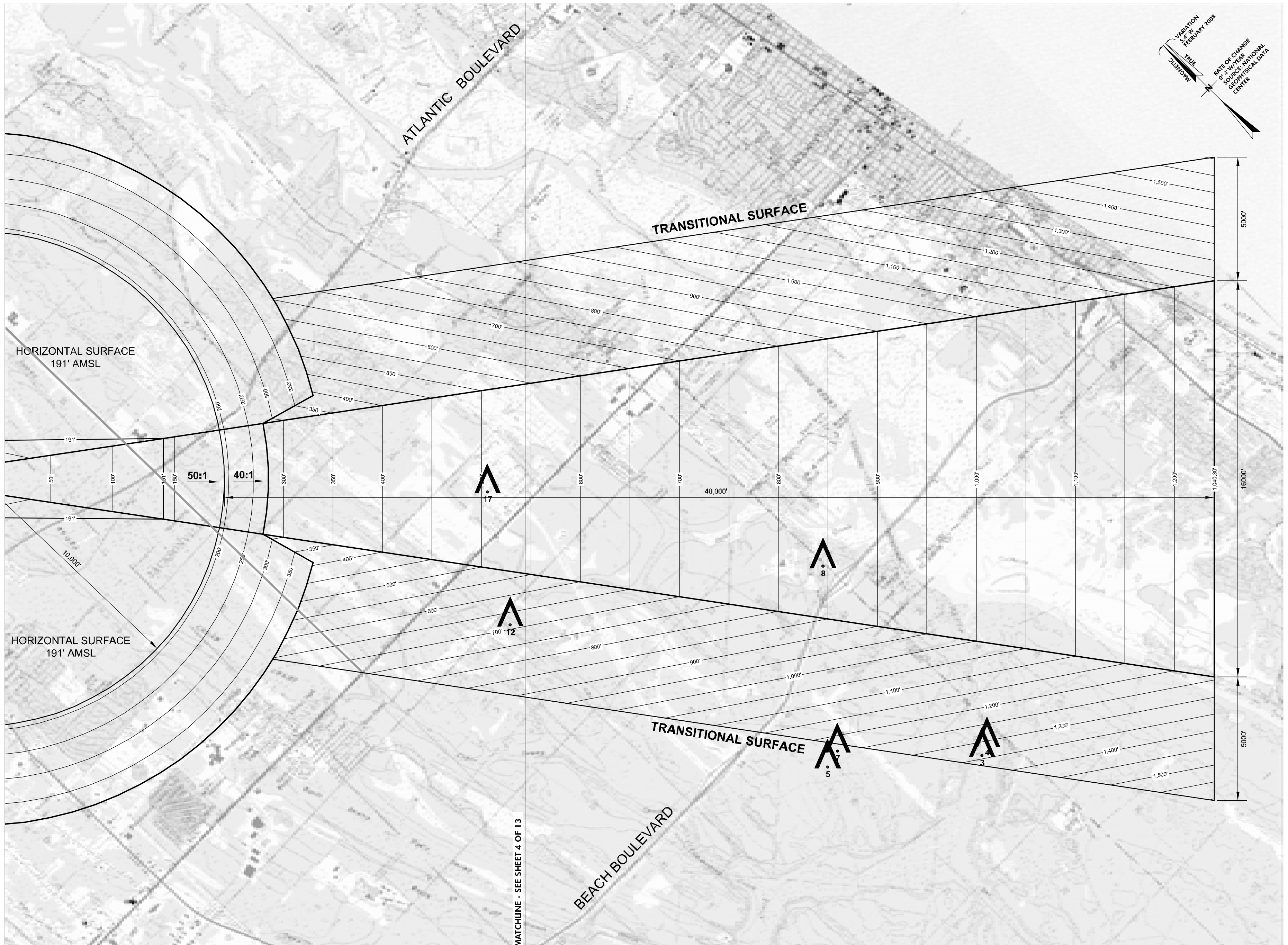
FAA A.I.P. Project Number: 3-12-0033-017-2006

Autocad Drawing Reference: Y:\Planning\CRG AMPU\CRG ALP\drawings\2008 ALP\04-06-CRG-Airport Airspace Dwgs.dwg

Date: FEBRUARY 2008
Division: PLANNING
Scale: AS SHOWN
Drawing Number: 5

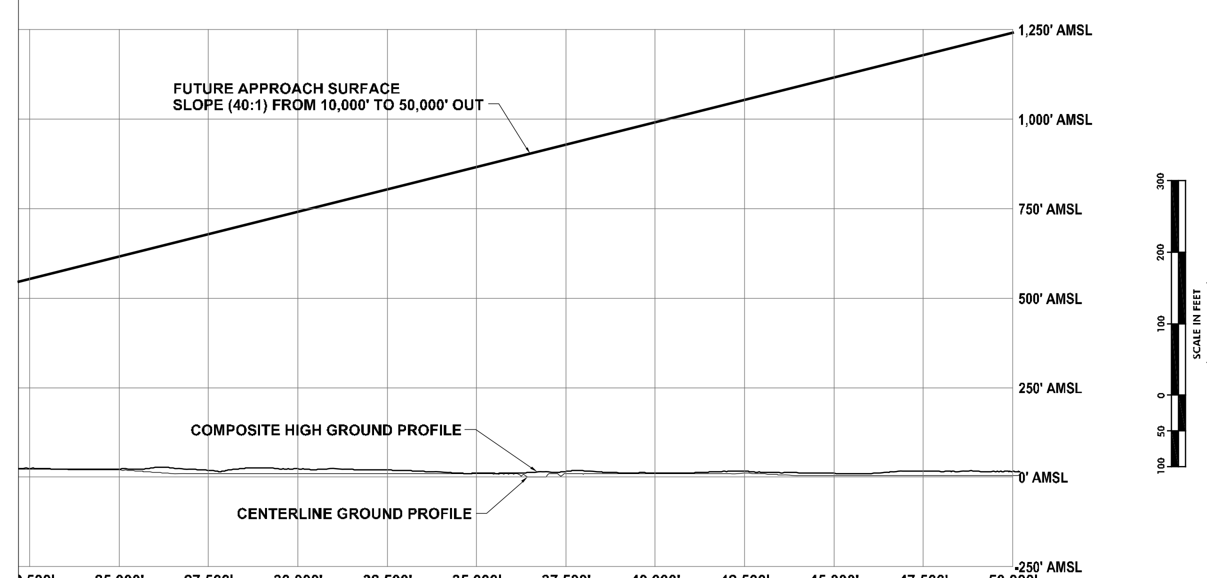
JACKSONVILLE AVIATION AUTHORITY

CRAIG AIRPORT
JACKSONVILLE, FLORIDA



SOURCE: USGS MAP DATA
MAYPORT, FL - CREATED 1964; REVISED 1992
EASTPORT FL - CREATED 1964; REVISED 1992
ARLINGTON, FL - CREATED 1964; REVISED 1992
JACKSONVILLE BEACH, FL - CREATED 1964; REVISED 1992
BAYARD, FL - CREATED 1993
PALM VALLEY, FL - CREATED 1964; REVISED 1992
MICKLER LANDING, FL - CREATED 1964; REVISED 1992

2000 1000 0 2000 4000 6000
SCALE IN FEET
(HORIZONTAL / PLAN SCALE)



#	TYPE	OBSTRUCTION ELEVATION	EXISTING ALLOWABLE PART 77 ELEV.	EXISTING PART 77 PENETRATION	ULTIMATE ALLOWABLE PART 77 ELEV.	ULTIMATE PART 77 PENETRATION	DISPOSITION
3	TOWER	330	1,369.76	NO PENETRATION	NO CHANGE	NO CHANGE	NO ACTION
4	TOWER	337	1,323.87	NO PENETRATION	NO CHANGE	NO CHANGE	NO ACTION
8	TOWER	268	845.04	NO PENETRATION	NO CHANGE	NO CHANGE	NO ACTION
12	TOWER	321	674.98	NO PENETRATION	NO CHANGE	NO CHANGE	NO ACTION
17	TOWER	215	506.09	NO PENETRATION	NO CHANGE	NO CHANGE	NO ACTION

#	CITY	TYPE	AGL	AMSL	LIGHTING	MARKING	FAA STUDY #
3	PONTE VEDRA	TOWER	320	330	DUAL, RED WITH MEDIUM INTENSITY WHITE STROBE	NO	05SO5678
4	PONTE VEDRA	TOWER	323	337	RED LIGHTING	YES	00SO4719
5	JACKSONVILLE	TOWER	300	306	RED LIGHTING	YES	81SO1651
7	JACKSONVILLE BC	TOWER	273	283	RED LIGHTING	YES	07SO1946
8	ATLANTIC BEACH	TOWER	258	268	DUAL, RED WITH MEDIUM INTENSITY WHITE STROBE	NO	01SO7716
12	ATLANTIC BEACH	TOWER	317	321	RED LIGHTING	YES	99SO1898
17	JACKSONVILLE	TOWER	203	215	MEDIUM INTENSITY WHITE STROBE LIGHTING	NO	91SO0061

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Designer: APN
Technician: APN
Checked by: TF
Project Number: PL502024

NOTES

1. ALL ELEVATIONS ARE BASED ON NAVD88, ABOVE MEAN SEA LEVEL (AMSL).
2. OBSTRUCTIONS TAKEN FROM: DIGITAL OBSTACLE FILE (DOF) DATED MARCH 12, 2006.
3. SEE INNER PORTION OF THE APPROACH SURFACE PLAN VIEW DETAILS FOR CLOSE-IN OBSTRUCTIONS.
4. HEIGHT RESTRICTION ZONING IS REGULATED ACCORDING TO THE STATUTES CONTAINED IN CHAPTER 656 PART 10 OF THE CITY OF JACKSONVILLE ZONING CODE TITLED "REGULATIONS RELATED TO AIRPORTS AND LANDS ADJACENT TO".

CONSTRUCTION NOTICE REQUIREMENT

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REVISIONS

No.	Description	Date	By

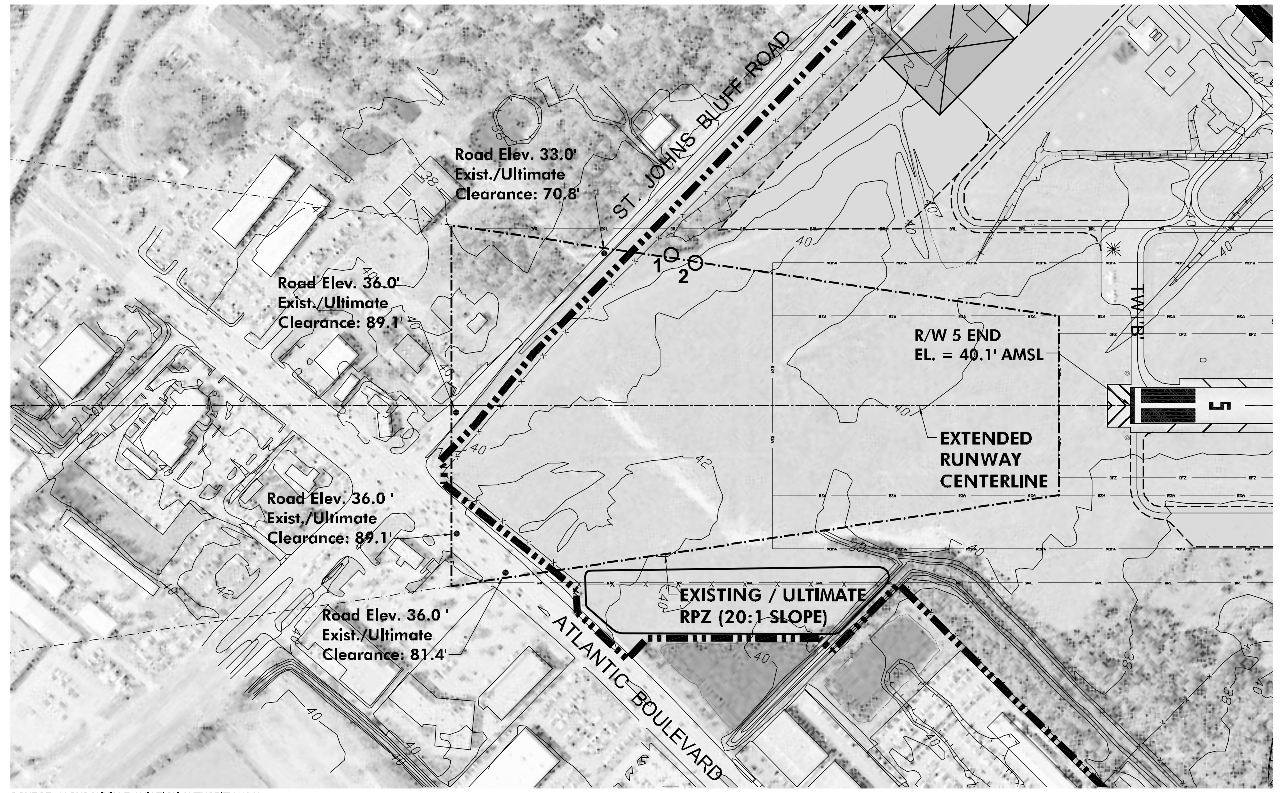
Project Name: **MASTER PLAN UPDATE**

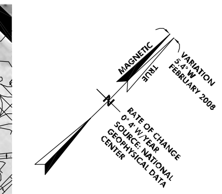
Drawing Name: **AIRPORT AIRSPACE DRAWING (3 OF 3)**

FAA A.I.P. Project Number: 3-12-0033-017-2006

Autocad Drawing Reference: Y:\Planning\CRG AMPU\CRG ALP\drawings\2008 ALP\04-06-CRG-Airport Airspace Dwgs.dwg

Date: FEBRUARY 2008
Division: PLANNING
Scale: AS SHOWN
Drawing Number: 6

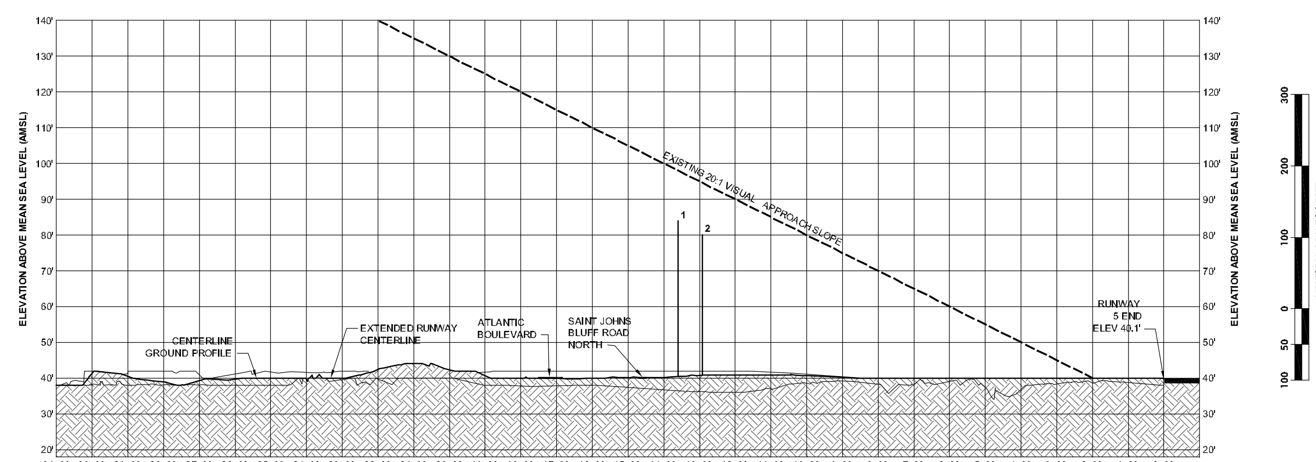




SOURCE: JACKSONVILLE AVIATION AUTHORITY (JAA)
(AERIAL 2007 UPDATED) MARCH 28, 2007

200 100 0 200 400 600
HORIZONTAL SCALE IN FEET

RUNWAY 5 INNER APPROACH PLAN VIEW



RUNWAY 5 INNER APPROACH PROFILE VIEW

#	TYPE	OBSTRUCTION ELEVATION	EXISTING ALLOWABLE PART 77 ELEV.	EXISTING PART 77 PENETRATION	FUTURE ALLOWABLE PART 77 ELEV.	FUTURE PART 77 PENETRATION	DISPOSITION
1	TREE	84.00'	64.60'	19.40'	NO CHANGE	NO CHANGE	TRIM \ REMOVE
2	TREE	80.00'	90.95'	NO PENETRATION	NO CHANGE	NO CHANGE	NO ACTION

SOURCE: L D BRADLEY LAND SURVERYORS (OCTOBER, 2007)

LEGEND

- AIRPORT PROPERTY LINE
- 550 EXISTING CONTOURS
- O 41 OBSTRUCTION
- RSA EXISTING RSA
- OFA EXISTING OFA
- RVZ EXISTING RVZ
- BRL EXISTING BRL
- RSA ULTIMATE RSA
- OFA ULTIMATE OFA
- RVZ ULTIMATE RVZ
- BRL ULTIMATE BRL

JACKSONVILLE AVIATION AUTHORITY

CRAIG AIRPORT
JACKSONVILLE, FLORIDA

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MOBILE, AL • ORLANDO, FL • RALEIGH, NC • RICHMOND, VA
SARASOTA, FL • TALLAHASSEE, FL • TAMPA, FL • WEST PALM BEACH, FL

Designer: APN
Technician: APN
Checked by: TF
Project Number: PL502024

NOTES

1. ELEVATIONS SHOWN ARE REFERENCED TO THE NAD88 AND DISPLAYED IN FEET ABOVE MEAN SEA LEVEL (AMSL). HEIGHT ABOVE THE SLOPE AS INDICATED IN TABLES ARE DISPLAYED IN FEET AS CALCULATED ABOVE THE THRESHOLD HEIGHT AND ARE ONLY APPROXIMATE.
2. HORIZONTAL COORDINATES ARE IN NAD83.
3. OBSTACLE LOCATIONS AND THEIR RESPECTIVE ELEVATIONS WERE OBTAINED FROM A SURVEY PERFORMED BY L.D. BRADLEY LAND SURVEYORS, DATED NOVEMBER 2007.
4. BRL SHOWN IS FOR A 20 FOOT BUILDING.
5. ROAD ELEVATIONS ARE ADJUSTED 15' UPWARD TO ACCOMODATE MOBILE OBJECTS THAT WOULD NORMALLY TRAVERSE THE ROAD.

CONSTRUCTION NOTICE REQUIREMENT

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REVISIONS

No.	Description	Date	By

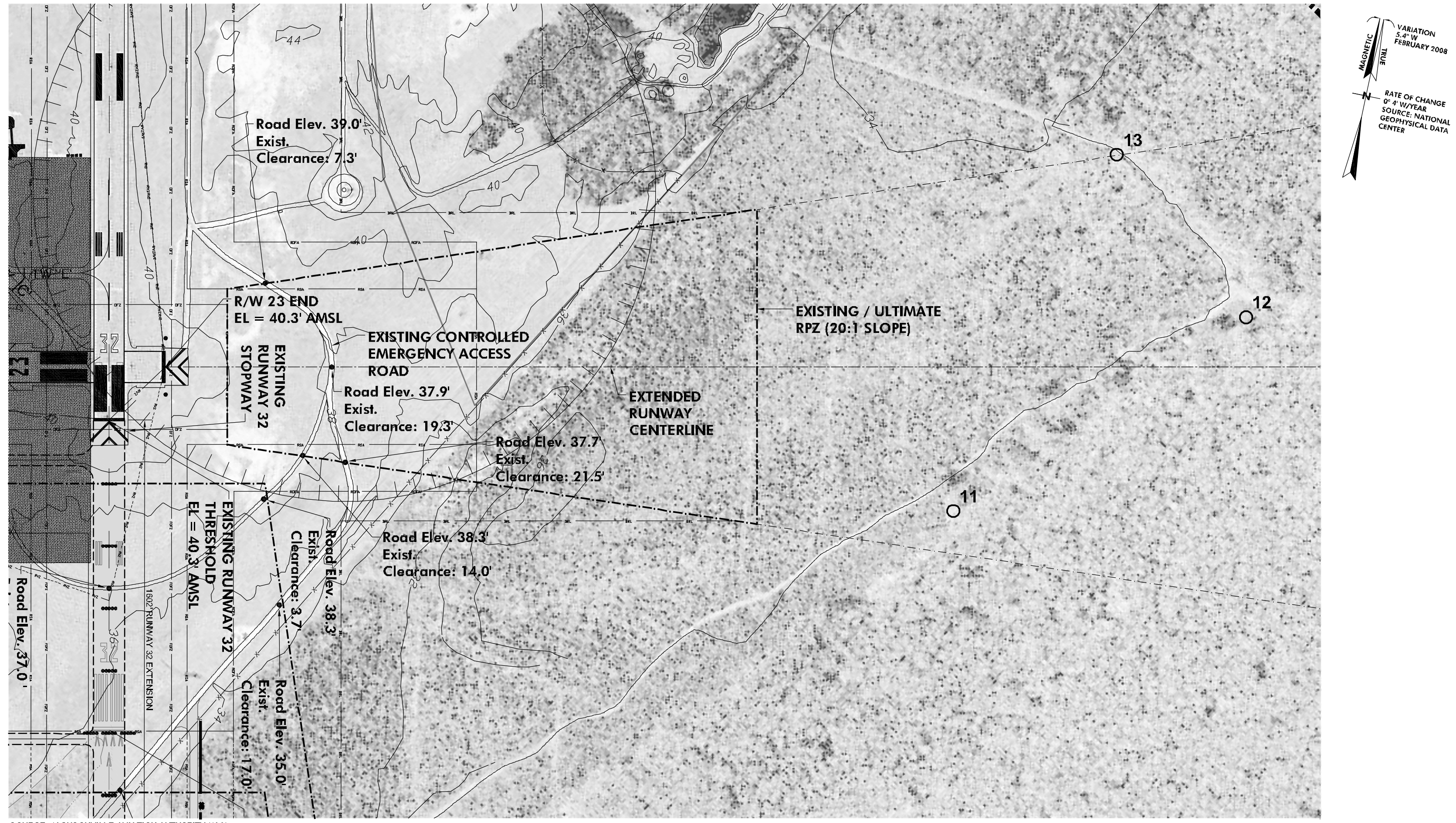
Project Name: **MASTER PLAN UPDATE**

Drawing Name: **INNER PORTION OF THE APPROACH SURFACE DRAWING - RUNWAY 5**

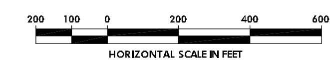
FAA A.I.P. Project Number: 3-12-0033-017-2006

Autocad Drawing Reference: Y:\Planning\CRG AMPU\CRG ALP\drawings\2008 ALP\07-10-CRG-Inner Approach Dwgs.dwg

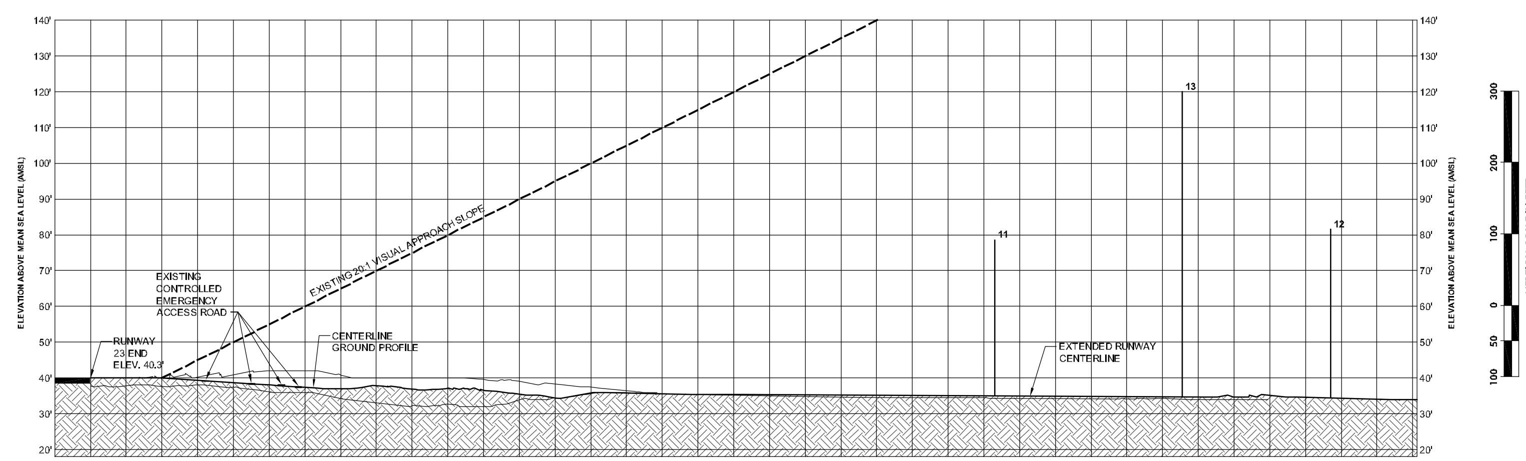
Date: FEBRUARY 2008
Division: PLANNING
Scale: AS SHOWN
Drawing Number: 7



SOURCE: JACKSONVILLE AVIATION AUTHORITY (JAA)
(AERIAL 2007 UPDATED) MARCH 28, 2007



RUNWAY 23 INNER APPROACH PLAN VIEW



RUNWAY 23 INNER APPROACH PROFILE VIEW

#	TYPE	OBSTRUCTION ELEVATION	EXISTING ALLOWABLE PART 77 ELEV.	EXISTING PART 77 PENETRATION	FUTURE ALLOWABLE PART 77 ELEV.	FUTURE PART 77 PENETRATION	DISPOSITION
11	TREE	78.5'	156.82'	NO PENETRATION	NO CHANGE	NO CHANGE	NO ACTION
12	TREE	81.5'	203.82'	NO PENETRATION	NO CHANGE	NO CHANGE	NO ACTION
13	TREE	120.0'	183.05'	NO PENETRATION	NO CHANGE	NO CHANGE	NO ACTION

SOURCE: L D BRADLEY LAND SURVERYORS (OCTOBER, 2007)

LEGEND

- AIRPORT PROPERTY LINE
- 550 EXISTING CONTOURS
- 41 OBSTRUCTION
- RSA EXISTING RSA
- OFA EXISTING OFA
- RVZ EXISTING RVZ
- BRL EXISTING BRL
- RSA ULTIMATE RSA
- OFA ULTIMATE OFA
- RVZ ULTIMATE RVZ
- BRL ULTIMATE BRL

JACKSONVILLE AVIATION AUTHORITY

CRAIG AIRPORT
JACKSONVILLE, FLORIDA

THE LPA GROUP
TRANSPORTATION CONSULTANTS

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MOBILE, AL • ORLANDO, FL • RALEIGH, NC • RICHMOND, VA
SARASOTA, FL • TALLAHASSEE, FL • TAMPA, FL • WEST PALM BEACH, FL

Designer: APN
Technician: APN
Checked by: TF
Project Number: PL502024

NOTES

1. ELEVATIONS SHOWN ARE REFERENCED TO THE NAD88 AND DISPLAYED IN FEET ABOVE MEAN SEA LEVEL (AMSL). HEIGHT ABOVE THE SLOPE AS INDICATED IN TABLES ARE DISPLAYED IN FEET AS CALCULATED ABOVE THE THRESHOLD HEIGHT AND ARE ONLY APPROXIMATE.
2. HORIZONTAL COORDINATES ARE IN NAD83.
3. OBSTACLE LOCATIONS AND THEIR RESPECTIVE ELEVATIONS WERE OBTAINED FROM A SURVEY PERFORMED BY L.D. BRADLEY LAND SURVEYORS, DATED NOVEMBER 2007.
4. BRL SHOWN IS FOR A 20 FOOT BUILDING.
5. ROAD ELEVATIONS ARE ADJUSTED 15' UPWARD TO ACCOMODATE MOBILE OBJECTS THAT WOULD NORMALLY TRAVERSE THE ROAD.

CONSTRUCTION NOTICE REQUIREMENT

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REVISIONS

No.	Description	Date	By

Project Name: **MASTER PLAN UPDATE**

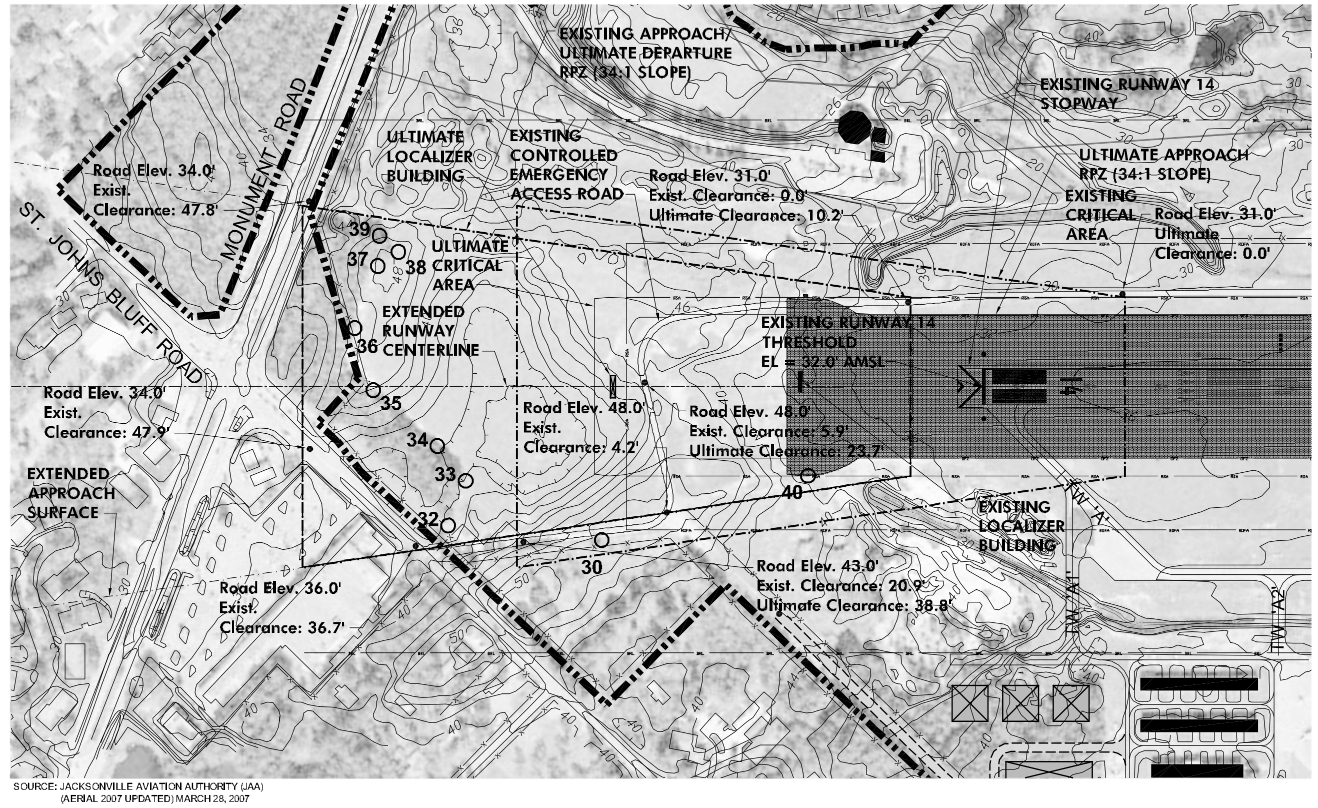
Drawing Name: **INNER PORTION OF THE APPROACH SURFACE DRAWING - RUNWAY 23**

FAA A.I.P. Project Number: 3-12-0033-017-2006

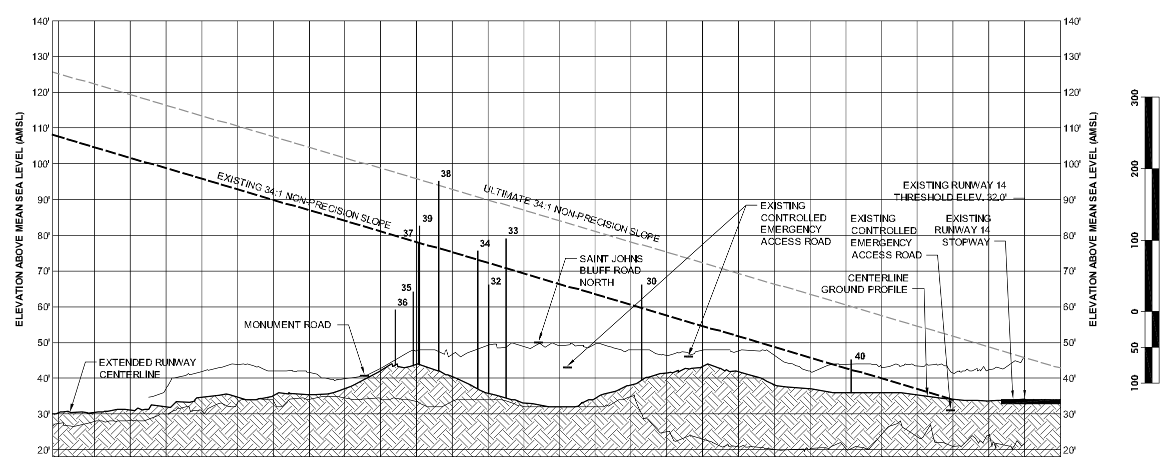
Autocad Drawing Reference: Y:\Planning\CRG AMPU\CRG ALP\drawings\2008 ALP\07-10-CRG-Inner Approach Dwgs.dwg

Date: FEBRUARY 2008 | Division: PLANNING

Scale: AS SHOWN | Drawing Number: 8



RUNWAY 14 INNER APPROACH PLAN VIEW



RUNWAY 14 INNER APPROACH PROFILE VIEW

#	TYPE	OBSTRUCTION ELEVATION	EXISTING ALLOWABLE PART 77 ELEV.	EXISTING PART 77 PENETRATION	FUTURE ALLOWABLE PART 77 ELEV.	FUTURE PART 77 PENETRATION	DISPOSITION
30	TREE	66.0'	57.39'	8.61'	75.04'	NO PENETRATION	TRIM \ REMOVE
32	TREE	66.0'	70.30'	NO PENETRATION	87.67'	NO PENETRATION	NO ACTION
33	TREE	79.0'	68.59'	10.41'	86.23'	NO PENETRATION	TRIM \ REMOVE
34	TREE	75.5'	70.92'	4.58'	88.57'	NO PENETRATION	TRIM \ REMOVE
35	TREE	64.0'	76.19'	NO PENETRATION	93.84'	NO PENETRATION	NO ACTION
36	TREE	59.0'	77.72'	NO PENETRATION	95.36'	NO PENETRATION	NO ACTION
37	TREE	77.5'	75.82'	1.68'	93.46'	NO PENETRATION	TRIM \ REMOVE
38	TREE	90.5'	74.13'	16.37'	91.78'	NO PENETRATION	TRIM \ REMOVE
39	TREE	82.5'	75.67'	6.83'	93.32'	NO PENETRATION	TRIM \ REMOVE

SOURCE: L D BRADLEY LAND SURVERYORS (OCTOBER, 2007)

LEGEND

- AIRPORT PROPERTY LINE
- 550 EXISTING CONTOURS
- 41 OBSTRUCTION
- RSA EXISTING RSA
- OFA EXISTING OFA
- RVZ EXISTING RVZ
- BRL EXISTING BRL
- RSA ULTIMATE RSA
- OFA ULTIMATE OFA
- RVZ ULTIMATE RVZ
- BRL ULTIMATE BRL

JACKSONVILLE AVIATION AUTHORITY
CRAIG AIRPORT
JACKSONVILLE, FLORIDA

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MOBILE, AL • ORLANDO, FL • RALEIGH, NC • RICHMOND, VA
SARASOTA, FL • TALLAHASSEE, FL • TAMPA, FL • WEST PALM BEACH, FL

Designer: APN
Technician: APN
Checked by: TF
Project Number: PL502024

NOTES

1. ELEVATIONS SHOWN ARE REFERENCED TO THE NAD88 AND DISPLAYED IN FEET ABOVE MEAN SEA LEVEL (AMSL). HEIGHT ABOVE THE SLOPE AS INDICATED IN TABLES ARE DISPLAYED IN FEET AS CALCULATED ABOVE THE THRESHOLD HEIGHT AND ARE ONLY APPROXIMATE.
2. HORIZONTAL COORDINATES ARE IN NAD83.
3. OBSTACLE LOCATIONS AND THEIR RESPECTIVE ELEVATIONS WERE OBTAINED FROM A SURVEY PERFORMED BY L.D. BRADLEY LAND SURVEYORS, DATED NOVEMBER 2007.
4. BRL SHOWN IS FOR A 35 FOOT BUILDING.
5. ROAD ELEVATIONS ARE ADJUSTED 15' UPWARD TO ACCOMODATE MOBILE OBJECTS THAT WOULD NORMALLY TRAVERSE THE ROAD.

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.

REVISIONS

No.	Description	Date	By

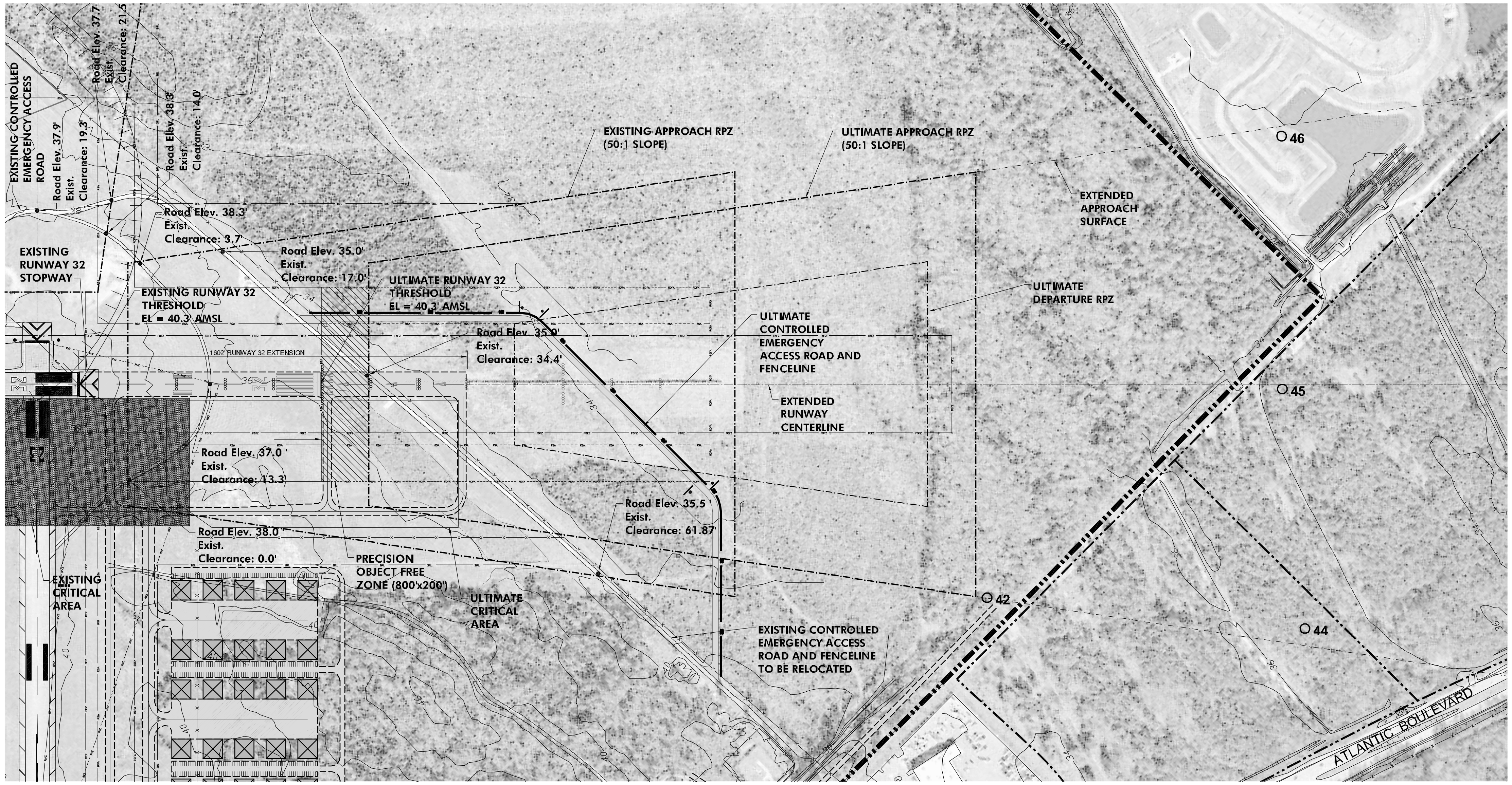
Project Name: MASTER PLAN UPDATE

Drawing Name: INNER PORTION OF THE APPROACH SURFACE DRAWING - RUNWAY 14

FAA A.I.P. Project Number: 3-12-0033-017-2006

Autocad Drawing Reference: Y:\Planning\CRG AMPU\CRG ALP\drawings\2008 ALP\07-10-CRG-Inner Approach Dwgs.dwg

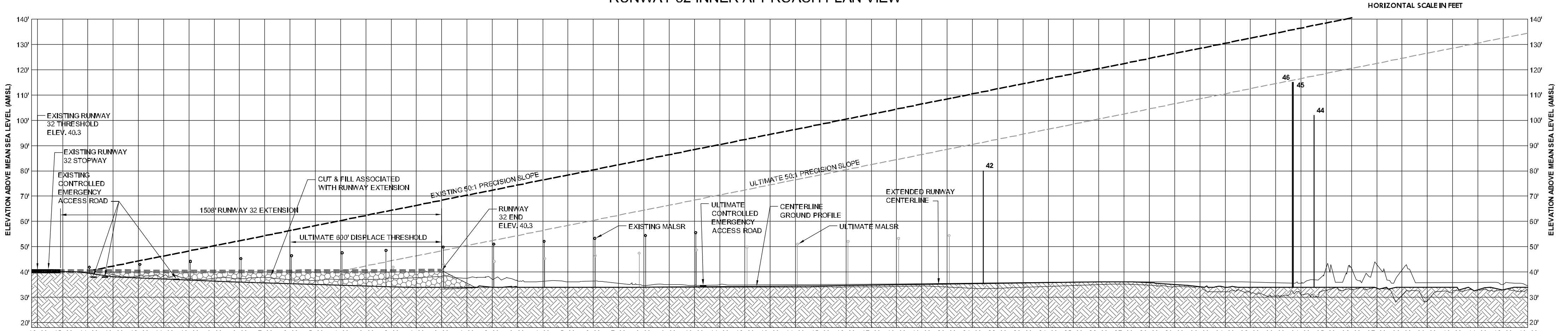
Date: FEBRUARY 2008
Division: PLANNING
Scale: AS SHOWN
Drawing Number: 9



SOURCE: JACKSONVILLE AVIATION AUTHORITY (JAA) (AERIAL 2007 UPDATED) MARCH 28, 2007

HORIZONTAL SCALE IN FEET

RUNWAY 32 INNER APPROACH PLAN VIEW



RUNWAY 32 INNER APPROACH PROFILE VIEW

#	TYPE	OBSTRUCTION ELEVATION	EXISTING ALLOWABLE PART 77 ELEV.	EXISTING PART 77 PENETRATION	FUTURE ALLOWABLE PART 77 ELEV.	FUTURE PART 77 PENETRATION	DISPOSITION
42	TREE	80.0'	111.06'	NO PENETRATION	91.22'	NO PENETRATION	NO ACTION
44	TREE	102.0'	137.25'	NO PENETRATION	117.41'	NO PENETRATION	NO ACTION
45	TREE	115.0'	135.38'	NO PENETRATION	115.54'	NO PENETRATION	TRIM \ REMOVE
46	TREE	115.0'	135.32'	NO PENETRATION	115.48'	NO PENETRATION	TRIM \ REMOVE

SOURCE: L D BRADLEY LAND SURVERYORS (OCTOBER, 2007)

LEGEND

- AIRPORT PROPERTY LINE
- 550 EXISTING CONTOURS
- 41 OBSTRUCTION
- RSA EXISTING RSA
- OFA EXISTING OFA
- RVZ EXISTING RVZ
- BRL EXISTING BRL
- RSA ULTIMATE RSA
- OFA ULTIMATE OFA
- RVZ ULTIMATE RVZ
- BRL ULTIMATE BRL

JACKSONVILLE AVIATION AUTHORITY

CRAIG AIRPORT
JACKSONVILLE, FLORIDA

THE LPA GROUP
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MOBILE, AL • ORLANDO, FL • RALEIGH, NC • RICHMOND, VA
SARASOTA, FL • TALLAHASSEE, FL • TAMPA, FL • WEST PALM BEACH, FL

Designer: APN
Technician: APN
Checked by: TF
Project Number: PL502024

NOTES

1. ELEVATIONS SHOWN ARE REFERENCED TO THE NAD88 AND DISPLAYED IN FEET ABOVE MEAN SEA LEVEL (AMSL). HEIGHT ABOVE THE SLOPE AS INDICATED IN TABLES ARE DISPLAYED IN FEET AS CALCULATED ABOVE THE THRESHOLD HEIGHT AND ARE ONLY APPROXIMATE.
2. HORIZONTAL COORDINATES ARE IN NAD83.
3. OBSTACLE LOCATIONS AND THEIR RESPECTIVE ELEVATIONS WERE OBTAINED FROM A SURVEY PERFORMED BY L.D. BRADLEY LAND SURVEYORS, DATED NOVEMBER 2007.
4. BRL SHOWN IS FOR A 35 FOOT BUILDING.
5. ROAD ELEVATIONS ARE ADJUSTED 15' UPWARD TO ACCOMODATE MOBILE OBJECTS THAT WOULD NORMALLY TRAVERSE THE ROAD.

CONSTRUCTION NOTICE REQUIREMENT

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REVISIONS

No.	Description	Date	By

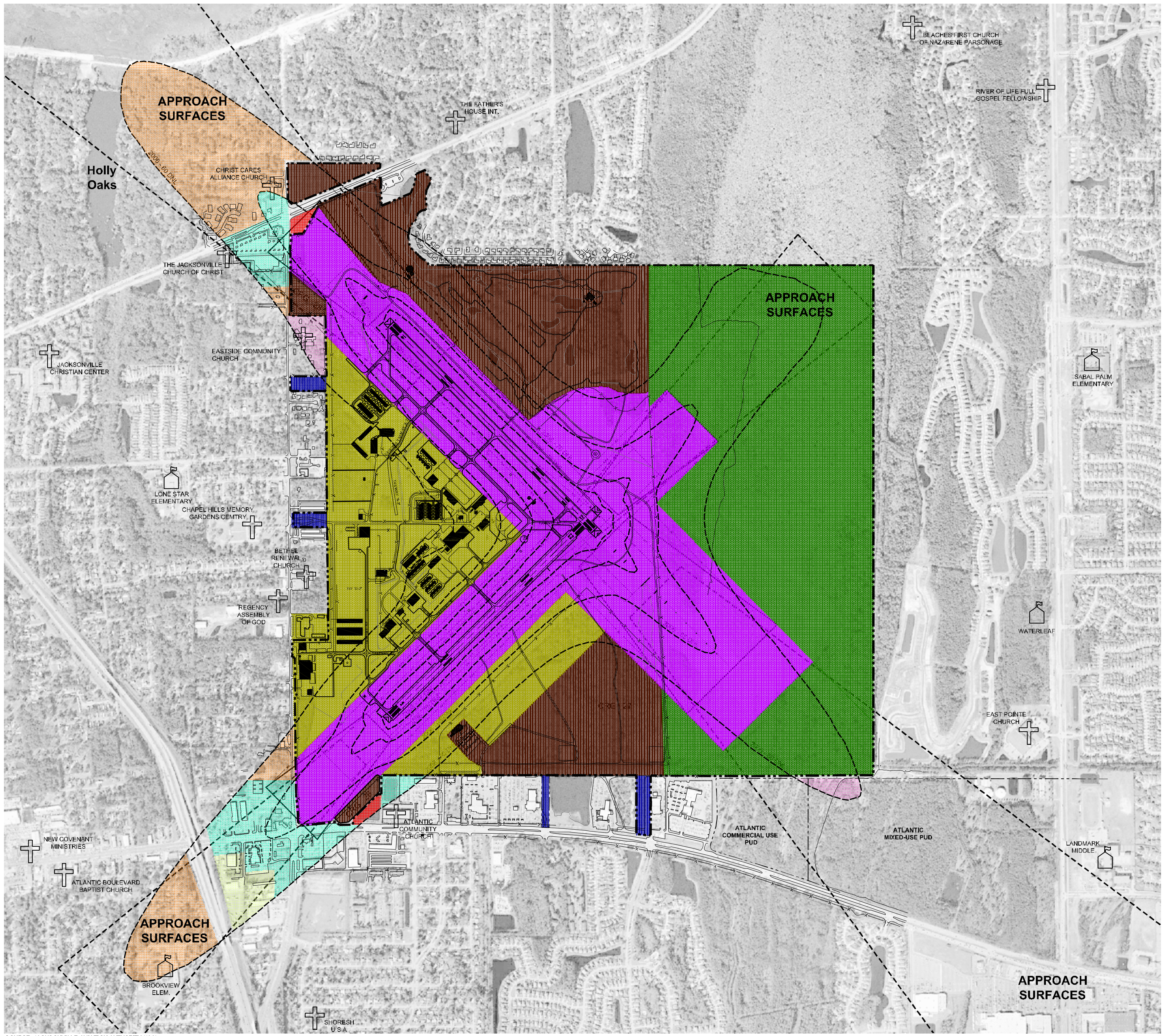
Project Name: **MASTER PLAN UPDATE**

Drawing Name: **INNER PORTION OF THE APPROACH SURFACE DRAWING - RUNWAY 32**

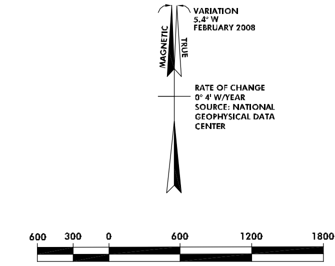
FAA A.I.P. Project Number: 3-12-0033-017-2006

Autocad Drawing Reference: Y:\Planning\CRG AMPU\CRG ALP\drawings\2008 ALP\07-10-CRG-Inner Approach Dwgs.dwg

Date: FEBRUARY 2008
Division: PLANNING
Scale: AS SHOWN
Drawing Number: 10



SOURCE: JACKSONVILLE AVIATION AUTHORITY (JAA)
(AERIAL 2007 UPDATED) MARCH 28, 2007



ON-AIRPORT LEGEND

- 2006 - 65 DNL — NOISE CONTOURS
- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- AVIATION RELATED DEVELOPMENT
- AIRFIELD RELATED DEVELOPMENT
- NON AVIATION REVENUE PRODUCING DEVELOPMENT
- UNDEVELOPED OPEN SPACE
- ACCESS

OFF-AIRPORT LEGEND WITHIN THE 60 DNL CONTOUR

- PBF - PUBLIC FACILITIES
- BP - BUSINESS PARK
- RLD = RESIDENTIAL LIGHT DENSITY
- LI = LIGHT INDUSTRIAL
- CGC = COMMUNITY / GENERAL COMMERCIAL

JACKSONVILLE
AVIATION AUTHORITY

CRAIG AIRPORT
JACKSONVILLE, FLORIDA

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MOBILE, AL • ORLANDO, FL • RALEIGH, NC • RICHMOND, VA
SARASOTA, FL • TALLAHASSEE, FL • TAMPA, FL • WEST PALM BEACH, FL

Designer: APN
Technician: APN
Checked by: TF
Project Number: PL502024

NOTES

1. FLORIDA STATUTE 333.03 AND PART 10, SECTION 656, OF THE CITY OF JACKSONVILLE ZONING CODE ADDRESS OFF-AIRPORT LAND USE AND ZONING CONTIGUOUS TO A PUBLIC USE AIRPORT, AND ESTABLISHES CONTROLS WITHIN NOISE, AIRPORT HEIGHT AND HAZARD, AND SCHOOL REGULATION ZONES TO PROMOTE THE HEALTH, SAFETY AND GENERAL WELFARE OF INHABITANTS AND VISITORS.

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.

REVISIONS

No.	Description	Date	By

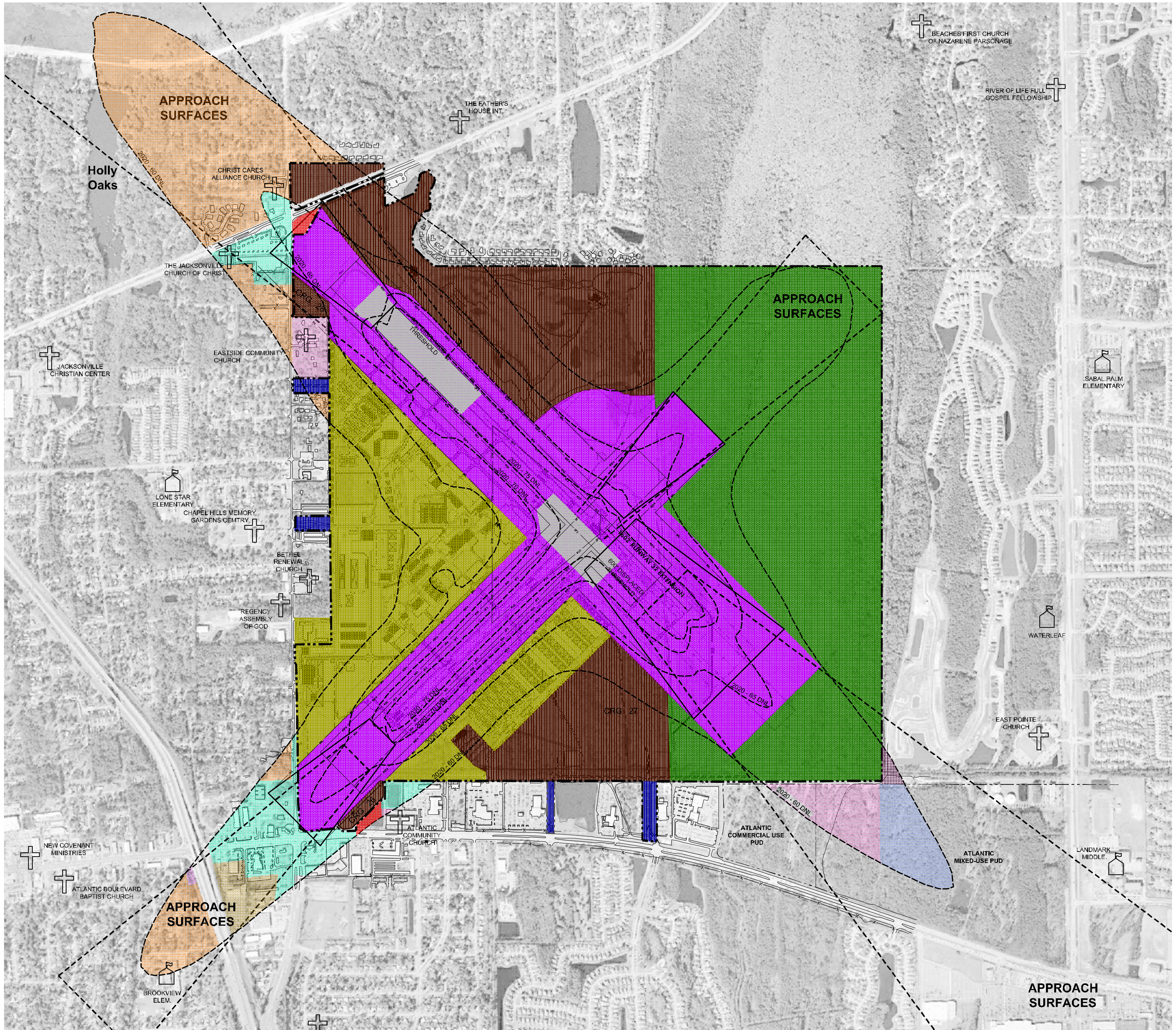
Project Name: MASTER PLAN UPDATE

Drawing Name: EXISTING ON-AIRPORT LAND USE DRAWING (2006 NOISE CONTOUR)

FAA A.I.P. Project Number: 3-12-0033-017-2006

Autocad Drawing Reference: Y:\Planning\CRG AMPU\CRG ALP\drawings\2008 ALP\11-CRG-Landuse.dwg

Date: FEBRUARY 2008
Division: PLANNING
Scale: 1" = 600'
Drawing Number: 11



SOURCE: JACKSONVILLE AVIATION AUTHORITY (JAA) (AERIAL 2007 UPDATED) MARCH 28, 2007

VARIATION 5.4° W FEBRUARY 2005

RATE OF CHANGE 0° 4' W/YEAR SOURCE: NATIONAL GEOPHYSICAL DATA CENTER

600 300 0 600 1200 1800

SCALE IN FEET

ON-AIRPORT LEGEND

- 2020 - 65 DNL — NOISE CONTOURS
- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- AVIATION RELATED DEVELOPMENT
- AIRFIELD RELATED DEVELOPMENT
- NON AVIATION REVENUE PRODUCING DEVELOPMENT
- UNDEVELOPED OPEN SPACE
- ACCESS

OFF-AIRPORT LEGEND WITHIN THE 60 DNL CONTOUR

- PBF - PUBLIC FACILITIES
- BP - BUSINESS PARK
- RPI = RESIDENTIAL - PROFESSIONAL INSTITUTIONAL
- RLD = RESIDENTIAL LIGHT DENSITY
- LI = LIGHT INDUSTRIAL
- CGC = COMMUNITY / GENERAL COMMERCIAL
- LDR = LOW DENSITY RESIDENTIAL

JACKSONVILLE AVIATION AUTHORITY

CRAIG AIRPORT

JACKSONVILLE, FLORIDA

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MOBILE, AL • ORLANDO, FL • RALEIGH, NC • RICHMOND, VA
SARASOTA, FL • TALLAHASSEE, FL • TAMPA, FL • WEST PALM BEACH, FL

Designer: APN

Technician: APN

Checked by: TF

Project Number: PL502024

NOTES

1. 2020 NOISE CONTOURS WERE PROVIDED AS A COMPARISON TO APPROVED 2006 FAR PART 150 NOISE STUDY AS REQUIRED BY CITY OF JACKSONVILLE 2010 COMPREHENSIVE PLAN.
2. THE PART 150 2020 NOISE CONTOURS BASED UPON 2,000' EXTENSION TO RUNWAY 32 AND 1,000' DISPLACED LANDING THRESHOLDS ON RUNWAY 14 AND 32
3. 2007 MASTER PLAN 2020 NOISE CONTOURS BASED UPON 1,592' EXTENSION TO RUNWAY 32 AND ONLY 600' DISPLACED LANDING THRESHOLDS ON RUNWAYS 14 AND 32.
4. FLORIDA STATUTE 333.03 AND PART 10, SECTION 656, OF THE CITY OF JACKSONVILLE ZONING CODE ADDRESS OFF-AIRPORT LAND USE AND ZONING CONTIGUOUS TO A PUBLIC USE AIRPORT, AND ESTABLISHES CONTROLS WITHIN NOISE, AIRPORT HEIGHT AND HAZARD, AND SCHOOL REGULATION ZONES TO PROMOTE THE HEALTH, SAFETY AND GENERAL WELFARE OF INHABITANTS AND VISITORS.

CONSTRUCTION NOTICE REQUIREMENT

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REVISIONS

No.	Description	Date	By

Project Name: MASTER PLAN UPDATE

Drawing Name: ULTIMATE ON-AIRPORT LAND USE DRAWING (2020 NOISE CONTOUR)

FAA A.I.P. Project Number: 3-12-0033-017-2006

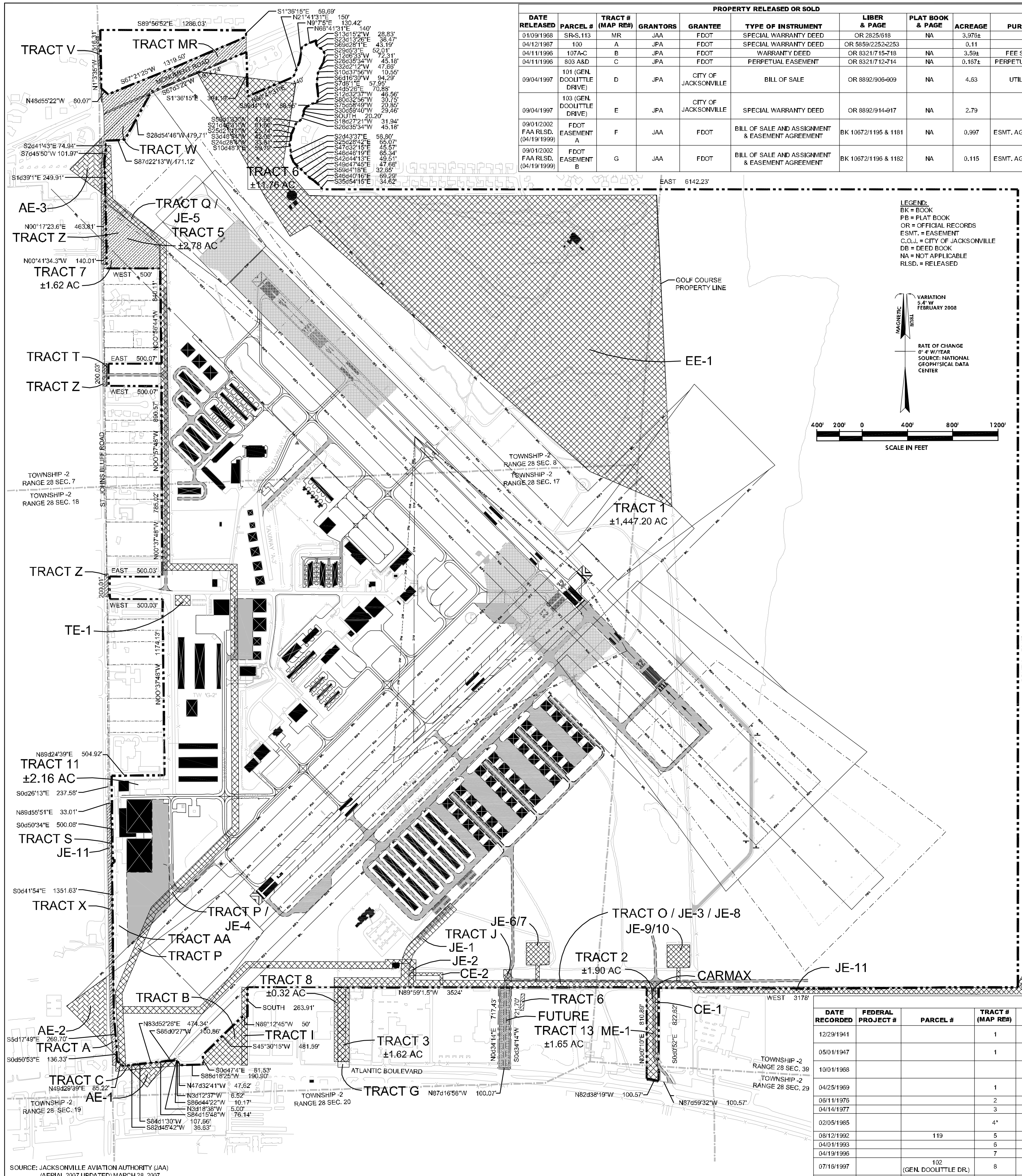
Autocad Drawing Reference: Y:\Planning\CRG AMPU\CRG ALP\drawings\2008 ALP\11-CRG-Landuse.dwg

Date: FEBRUARY 2008

Division: PLANNING

Scale: 1" = 600'

Drawing Number: 12



SOURCE: JACKSONVILLE AVIATION AUTHORITY (JAA)
(AERIAL 2007 UPDATED) MARCH 28, 2007

PROPERTY RELEASED OR SOLD

DATE RELEASED	PARCEL #	TRACT # (MAP RE#)	GRANTORS	GRANTEE	TYPE OF INSTRUMENT	LIBER & PAGE	PLAT BOOK & PAGE	ACREAGE	PURPOSE
01/09/1968	SR-S.113	MR	JAA	FDOT	SPECIAL WARRANTY DEED	OR 2825/618	NA	3,976±	
04/12/1987	100	A	JPA	FDOT	SPECIAL WARRANTY DEED	OR 5859/2252-2253		0.11	
04/11/1996	107A-C	B	JPA	FDOT	WARRANTY DEED	OR 8321/715-718	NA	3.59±	FEE SIMPLE
04/11/1996	803 A&D	C	JPA	FDOT	PERPETUAL EASEMENT	OR 8321/712-714	NA	0.167±	PERPETUAL ESMT.
09/04/1997	101 (GEN. DOOLITTLE DRIVE)	D	JPA	CITY OF JACKSONVILLE	BILL OF SALE	OR 8892/906-909	NA	4.63	UTILITIES
09/04/1997	103 (GEN. DOOLITTLE DRIVE)	E	JPA	CITY OF JACKSONVILLE	SPECIAL WARRANTY DEED	OR 8892/914-917	NA	2.79	
09/01/2002 FAA RLSD. (04/19/1999)	FDOT EASEMENT A	F	JAA	FDOT	BILL OF SALE AND ASSIGNMENT & EASEMENT AGREEMENT	BK 10672/1195 & 1181	NA	0.997	ESMT. AGREEMENT
09/01/2002 FAA RLSD. (04/19/1999)	FDOT EASEMENT B	G	JAA	FDOT	BILL OF SALE AND ASSIGNMENT & EASEMENT AGREEMENT	BK 10672/1196 & 1182	NA	0.115	ESMT. AGREEMENT

PROPERTY RELEASED OR SOLD

DATE RELEASED	PARCEL #	TRACT # (MAP RE#)	GRANTORS	GRANTEE	TYPE OF INSTRUMENT	LIBER & PAGE	PLAT BOOK & PAGE	ACREAGE	PURPOSE
09/01/2002 FAA RLSD. (04/19/1999)	FDOT EASEMENT C	H	JAA	FDOT	BILL OF SALE AND ASSIGNMENT & EASEMENT AGREEMENT	BK 10672/1197 & 1183	NA	2.473	ESMT. AGREEMENT
09/01/2002 FAA RLSD. (04/19/1999)	FDOT EASEMENT D	I	JAA	FDOT	BILL OF SALE AND ASSIGNMENT & EASEMENT AGREEMENT	BK 10672/1198 & 1184	NA	0.781	ESMT. AGREEMENT
09/01/2002 FAA RLSD. (04/19/1999)	FDOT EASEMENT E	J	JAA	FDOT	BILL OF SALE AND ASSIGNMENT & EASEMENT AGREEMENT	BK 10672/1199 & 1185	NA	0.110	ESMT. AGREEMENT
09/01/2002 FAA RLSD. (04/19/1999)	JEA EASEMENT F	K	JAA	CITY OF JACKSONVILLE	BILL OF SALE AND ASSIGNMENT & EASEMENT AGREEMENT	BK 10672/1200 & 1186 DB 1101/298	NA	1.51	UTILITY ESMT.
09/01/2002 FAA RLSD. (04/19/1999)	JEA EASEMENT G	L	JAA	CITY OF JACKSONVILLE	BILL OF SALE AND ASSIGNMENT & EASEMENT AGREEMENT	BK 10672/1201 &1187	NA	0.03	UTILITY ESMT.
09/01/2002 FAA RLSD. (04/19/1999)	JEA EASEMENT H	M	JAA	CITY OF JACKSONVILLE	BILL OF SALE AND ASSIGNMENT & EASEMENT AGREEMENT	BK 10672/1202 &1188	NA	2.76	UTILITY ESMT.
09/01/2002 FAA RLSD. (04/19/1999)	JEA EASEMENT I	N	JAA	CITY OF JACKSONVILLE	BILL OF SALE AND ASSIGNMENT & EASEMENT AGREEMENT	BK 10672/1203 & 1189 DB 934/272	NA	TBD	UTILITY ESMT.
09/01/2002 FAA RLSD. (04/19/1999)	JEA EASEMENT 1	O	JAA	CITY OF JACKSONVILLE	BILL OF SALE AND ASSIGNMENT & EASEMENT AGREEMENT	OR 747/449; BK 10672/1193 &1179	PB 19/25	TBD	UTILITY ESMT.
09/01/2002 FAA RLSD. (04/19/1999)	JEA EASEMENT 2	P	JAA	CITY OF JACKSONVILLE	BILL OF SALE AND ASSIGNMENT & EASEMENT AGREEMENT	BK 10672/1194 &1180	PB 38, PAGES 44, 44A & 44B	11.17	UTILITY ESMT.
09/01/2002 FAA RLSD. (04/19/1999)	JEA EASEMENT 3	Q	JAA	CITY OF JACKSONVILLE	BILL OF SALE AND ASSIGNMENT & EASEMENT AGREEMENT	BK 10672/1194 &1181	PB 19/25	TBD	UTILITY ESMT.
01/13/2003	807A	R	JAA	CITY OF JACKSONVILLE	TRANSFER AGREEMENT	DB 934/272	PB 19/25	0.059	DRAINAGE ESMT.
01/13/2003	807B	S	JAA	CITY OF JACKSONVILLE	SEE NOTE D	DB 934/272	PB 19/25	0.074	SEE NOTE A
FAA RLSD. 01/13/2003	819	T	JAA	CITY OF JACKSONVILLE	SEE NOTE D	DB 1048/427	PB 19/25	0.023	SEE NOTE B
SEE NOTE E	820	U	JAA	C.O.J.	SEE NOTE D	DB 934/272	PB 19/25	0.023	SEE NOTE C
01/05/2004 FAA RLSD. (01/13/2003)	118	V	JAA	CITY OF JACKSONVILLE	FEE SIMPLE TITLE CONVEYED TO CITY (CORRECTIVE SPECIAL WARRANTY DEED 07/01/2004)	DB 934/272; 11953/1604-06	PB 31/51-51A	0.21	ST. JOHNS BLUFF ROAD EXPANSION
01/05/2004 FAA RLSD. (01/13/2003)	119	W	JAA	CITY OF JACKSONVILLE	FEE SIMPLE TITLE CONVEYED TO CITY (CORRECTIVE SPECIAL WARRANTY DEED 07/01/2004)	OR 11953/1607 DB 934/272; DB 1048/427	PB 19/25	2.78	ST. JOHNS BLUFF ROAD EXPANSION
01/05/2004 FAA RLSD. (01/13/2003)	128	X	JAA	CITY OF JACKSONVILLE	FEE SIMPLE TITLE CONVEYED TO CITY (CORRECTIVE SPECIAL WARRANTY DEED 07/01/2004)	OR 11953/1608 DB 938/76; DB 934/272	PB 19/25	1.89	ST. JOHNS BLUFF ROAD EXPANSION
01/05/2004 FAA RLSD. (01/13/2003)	129	Y	JAA	CITY OF JACKSONVILLE	FEE SIMPLE TITLE CONVEYED TO CITY (CORRECTIVE SPECIAL WARRANTY DEED 07/01/2004)	OR 11953/1609 DB 1048/427	PB 19/25	0.16	ST. JOHNS BLUFF ROAD EXPANSION
01/05/2004 FAA RLSD. (01/13/2003)	130	Z	JAA	CITY OF JACKSONVILLE	FEE SIMPLE TITLE CONVEYED TO CITY (CORRECTIVE SPECIAL WARRANTY DEED 07/01/2004)	OR 11953/1610 DB 1048/427	PB 19/25; PB 32/38	0.16	ST. JOHNS BLUFF ROAD EXPANSION
01/05/2004 FAA RLSD. (01/13/2003)	199	AA	JAA	CITY OF JACKSONVILLE	BILL OF SALE	OR 8326/1503-04; OR 7394/2370; DB 934/272; DB 1048/427	NA	2.78	ST. JOHNS BLUFF ROAD EXPANSION
	804	AB	JAA	CITY OF JACKSONVILLE	TRANSFER AGREEMENT		NA	TBD	DRAINAGE ESMT.

PROGRAMMED PROPERTY ACQUISITIONS

TRACT # (MAP RE#)	JAA PROJECT #	OWNER	TITLE	ACREAGE	SURVEYED	APPRAISED	REASON	REFERENCE #
13	PFL0007048	ALGAE VENTURES INC.	FEE SIMPLE	±1.65	NO	TBA	SOUTH ACCESS ROAD	162230 0000

PROGRAMMED EASEMENT ACQUISITIONS

TRACT # (MAP RE#)	JAA PROJECT #	OWNER	TITLE	ACREAGE	SURVEYED	APPRAISED	REASON	REFERENCE #
AE-1	PFL0001559	FIRST COAST ENERGY LLP	AVIGATION EASEMENT		NO	TBA	RPZ-RUNWAY 5	162394 0000
	PFL0001559	DZ PLAZA I LLC ET AL	AVIGATION EASEMENT		NO	TBA	RPZ-RUNWAY 5	162396 0000
			E-1 TOTAL	0.55				
AE-2	PFL0001559	RIC PROPERTIES LTD	AVIGATION EASEMENT		NO	TBA	RPZ-RUNWAY 5	163182 0000
	PFL0001559	ITANI YEHIA & KAWKAB	AVIGATION EASEMENT		NO	TBA	RPZ-RUNWAY 5	163194 0000
	PFL0001559	ITANI YEHIA	AVIGATION EASEMENT		NO	TBA	RPZ-RUNWAY 5	163181 0000
	PFL0001559	ITANI YEHIA ET AL	AVIGATION EASEMENT		NO	TBA	RPZ-RUNWAY 5	163180 0000
	PFL0001559	IRENE P. SALTZMAN	AVIGATION EASEMENT		NO	TBA	RPZ-RUNWAY 5	163179 0000
	PFL0001559	IRENE P. SALTZMAN	AVIGATION EASEMENT		NO	TBA	RPZ-RUNWAY 5	163193 0000
	PFL0001559	IRENE P. SALTZMAN	AVIGATION EASEMENT		NO	TBA	RPZ-RUNWAY 5	163195 0000
	PFL0001559	IRENE P. SALTZMAN	AVIGATION EASEMENT		NO	TBA	RPZ-RUNWAY 5	163192 0000
	PFL0001559	IN TOWN SUITES AT ATLANTIC BLVD LLC	AVIGATION EASEMENT		NO	TBA	RPZ-RUNWAY 5	163200 0000
			E-2 TOTAL	2.46				
AE-3	PFL0001560	PREM & POOJA LLC	AVIGATION EASEMENT		NO	TBA	RPZ-RUNWAY 14	161300 0010
	PFL0001560	MONUMENT POINT PLAZA	AVIGATION EASEMENT		NO	TBA	RPZ-RUNWAY 14	161302 0000
			E-3 TOTAL	1.58 AC				

OTHER EASEMENT INTERESTS

Parcel	Map Reference	Width	TOTAL ACRES	USE	GRANTEE	LIBER & PAGE	PLAT BOOK & PAGE	RECORDED DATE	EXPIRES
800 (Gen. Doolittle Dr.)	JE-1		2.76±	GRANT OF EASEMENT (UTILITY EASEMENT)	CITY OF JACKSONVILLE	BK 8892/911	NA	09/04/1997	PERMANENT
800 (Gen. Doolittle Dr.)	JE-2		0.32±	GRANT OF EASEMENT (UTILITY EASEMENT)	CITY OF JACKSONVILLE	BK 8892/912	NA	09/04/1997	PERMANENT
803	JE-3	VARIABLE	0.29±	INGRESS/EGRESS	JEA	BK 9114/1395	NA	10/28/1999	PERMANENT
816	JE-4	VARIABLE	4.106±	DRAINAGE EASEMENT	JEA	BK 9114/1395-96	NA	10/28/1999	PERMANENT
NA	ME-1	101.34 FT	12.1±	GRANT OF EASEMENT-UTILITIES	MATHENY IMPORTS, INC.	BK 9560/212-214	NA	01/26/2000	PERMANENT
NA	JE-3	30 FT	0.097±	GRANT OF EASEMENT-PUBLIC UTILITIES	CITY OF JACKSONVILLE	BK 10171/997	PB 19/25	09/01/2001	PERMANENT
NA	JE-4	30 FT	0.09±	GRANT OF EASEMENT-PUBLIC UTILITIES	CITY OF JACKSONVILLE	BK 10181/998	PB 19/25	09/01/2001	PERMANENT
NA	JE-5	60 FT	20.4	GRANT OF EASEMENT-PUBLIC UTILITIES	CITY OF JACKSONVILLE	BK 10181/999	PB 19/25	09/01/2001	PERMANENT
WELLSITE 1	JE-6		0.92	GRANT OF EASEMENT	JEA	BK 10181/1003	PB 19/25	09/01/2001	PERMANENT
ESMT WELLSITE 1	JE-7		0.10	GRANT OF EASEMENT	JEA	BK 10181/1004	PB 19/25	09/01/2001	PERMANENT
60 FT EASEMENT	JE-8		20.4	GRANT OF EASEMENT	JEA	BK 10181/1005	PB 19/25	09/01/2001	PERMANENT
WELLSITE 2	JE-9		0.92	GRANT OF EASEMENT	JEA	BK 10181/1009	PB 19/25	09/01/2001	PERMANENT
ESMT WELLSITE 2	JE-10		0.09	GRANT OF EASEMENT	JEA	BK 10181/1010	PB 19/25	09/01/2001	PERMANENT
60 FT EASEMENT	JE-11		20.39	GRANT OF EASEMENT	JEA	BK 10181/1011	PB 19/25	09/01/2001	PERMANENT
NA	CE-1			PIPELINE / DRAINAGE EASEMENT	CARMAX AUTO SUPERSTORES AND REGENCY MOTOR COMPANY INC.	OR 4176/500	NA	09/02/2003	PERMANENT
NA	CE-2			SEWER EASEMENT	COGGIN HONDA SEWER EASEMENT		NA		PERMANENT

TITLE INTEREST IN FEE & AVIGATION EASEMENT RIGHTS

DATE RECORDED	FEDERAL PROJECT #	PARCEL #	TRACT # (MAP RE#)	GRANTORS	GRANTEE	TYPE OF INSTRUMENT	LIBER AND PAGE	PLAT BOOK AND PAGE	ACREAGE FEE	ACREAGE EASEMENT	PURPOSE
12/29/1941			1	S&H CO. OF FLORIDA CORPORATION (2-PARCELS)	CITY OF JACKSONVILLE	DEED	DB 934/272-273	PB 19/25			
05/01/1947			1	UNITED STATES WAR DEPARTMENT (SURPLUS PROPERTY ACT OF 1944)	CITY OF JACKSONVILLE	CANCELLATION OF LEASE AND QUIT CLAIM DEED	N/A	N/A	1,278		
10/01/1968				CITY OF JACKSONVILLE	JAA	INSTRUMENT OF TRANSFER & CONVEYANCE	2946/951-952				
04/25/1969			1	CITY OF JACKSONVILLE	JAA	SPECIAL WARRANTY DEED	2999/676-692 (CRAIG AIRPORT LISTED AS PARCEL 2)		1,447.20		
06/11/1976			2	THE CITY NATIONAL BANK OF MIAMI	JAA	TRUSTEE'S DEED			1.9		
04/14/1977			3	MR. 7 MRS. C. JONES	JAA	W.D.	4365/599		1.62		
02/05/1985			4*	JPA	FDOT	DEED OF RELEASE	5924/456-458 (PARCEL 100)		0.11		
08/12/1992		119	5	MS. L.T. PERMENTER	JAA	WARRANTY DEED	OR 7394/2370	PB 19/25	2.78		
04/01/1993			6	DONALD N. COPPEDGE	JAA	BILL OF SALE	NA	NA	11.17±		
04/19/1996			7	DONALD N. AND TEREASA P. MITCHELL	JAA	WARRANTY DEED	8326/1503-04	PB 19/25			
07/16/1997		102 (GEN. DOOLITTLE DR.)	8	COPPEDGE PARTNERSHIP	JAA	BILL OF SALE	8892/888-889		0.32		
10/28/1998		111	9	JPA; MONUMENT ROAD GOLF CLUB, INC; AND AMERICAN NATIONAL BANK OF FLORIDA-SOUTHTRUST BANK	JACKSONVILLE TRANSPORTATION AUTHORITY	FEE SIMPLE	BOOK 9114/1393	NA	0.1245±		
10/28/1998		112	10	JPA; MONUMENT ROAD GOLF CLUB, INC; AND AMERICAN NATIONAL BANK OF FLORIDA-SOUTHTRUST BANK	JACKSONVILLE TRANSPORTATION AUTHORITY	FEE SIMPLE	BOOK 9114/1393	NA	0.3776±		
12/30/2002		120	E-3	BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENTS TRUST FUND OF THE STATE OF FLORIDA	JAA	AVIGATION EASEMENT	OR 2891/800-803	PB 19/25		0.47	EASEMENT
10/28/2003		227	11	CITY OF JACKSONVILLE	JAA	WARRANTY DEED	OR 3319/354		2.16		PURCHASE OF FARNG
12/30/2002		808	E-4	TRUSTEES OF THE INTERNAL IMPROVEMENT FUND STATE OF FLORIDA	JAA	AVIGATION EASEMENT (6/14/2004-SPECIAL WARRANTY DEED)	OR 2891/800-803	PB 19/25		0.069	DRAINAGE EASEMENT
6/14/2004		NA	12	CITY OF JACKSONVILLE	JAA	SPECIAL WARRANTY DEED	OR 10867/960				

*Note: Tract 4 released to FDOT in 1987; now identified as Tract A

EXISTING 2008 PROPERTY LINE
PROPOSED PROPERTY LINE
EASEMENT TO BE ACQUIRED
PROPERTY TO BE ACQUIRED
EXISTING EASEMENTS
PROPERTY TRANSFERRED / SOLD

NOTES:

1. THIS IS A SURFACE SURVEY ONLY UNDERGROUND IMPROVEMENTS, IF ANY, WERE NOT LOCATED.
2. THIS SURVEY WAS PREPARED WITH THE BENEFIT OF A TITLE SEARCH.
3. PLANE COORDINATES ARE BASED ON THE FLORIDA STATE PLANE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83)1999 ADJUSTMENT, TRANSVERSE MERCATOR PROJECTION.

JACKSONVILLE AVIATION AUTHORITY
CRAIG AIRPORT
JACKSONVILLE, FLORIDA

THE LPA GROUP
TRANSPORTATION CONSULTANTS
ATLANTA, GA • BATON ROUGE, LA • CHARLESTON, SC
CHARLOTTE, NC • CHICAGO, IL • COLUMBIA, SC
GREENSBORO, NC • JACKSONVILLE, FL • KNOXVILLE, TN
MOBILE, AL • ORLANDO, FL • RALEIGH, NC • RICHMOND, VA
SARASOTA, FL • TALLAHASSEE, FL • TAMPA, FL • WEST PALM BEACH, FL

Designer: APN
Technician: APN
Checked by: TF
Project Number: PL502024

NOTES

A = TRANSFER TO CITY OF JACKSONVILLE FOR ST. JOHNS BLUFF WIDENING PROJECT

B = CITY OF JACKSONVILLE FOR ST. JOHNS BLUFF WIDENING PROJECT

C = CITY OF JACKSONVILLE FOR ST. JOHNS BLUFF WIDENING PROJECT

D = TRANSFER AGREEMENT (CORRECTIVE GRANT OF EASEMENT 07/01/2004)

E = FAA RELEASED 01/13/2003

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.

REVISIONS

No.	Description	Date	By

Project Name: MASTER PLAN UPDATE

Drawing Name: AIRPORT PROPERTY MAP DRAWING

FAA A.I.P. Project Number: 3-12-0033-017-2006

Autocad Drawing Reference: Y:\Planning\CRG AMPU\CRG ALP\drawings\2008 ALP\13-CRG-Property Map.dwg

Date: FEBRUARY 2008
Division: PLANNING
Scale: 1" = 400'
Drawing Number: 13

CHAPTER SEVEN
CAPITAL IMPROVEMENT PLAN AND CASH FLOW ANALYSIS

7.1 General

The primary objective of this chapter is to analyze the financial feasibility of developing projects included in the Capital Improvement Program (CIP) for Craig Airport (CRG). The preceding chapters of this master plan update identified existing and future demand as well as facilities needed to accommodate current and projected service levels. As discussed in **Chapter 5**, *Airport Alternatives Analysis*, recommended development includes an extension to Runway 32, 600 foot displaced landing thresholds on Runways 14 and 32, in addition to several airside, landside and support facility improvements. Based upon projects identified in Chapter 5, a financially feasible and maximum build-out, twenty-year capital improvement program was developed for CRG.

7.2 Capital Improvement Program

The Capital Improvement Program (CIP), including the development schedule and project cost summaries, is presented in the following sections for each development phase (short, mid and long). Improvements presented in the CIP for each period assume the maximum anticipated federal and state participation based upon the FAA National Priority Rating. Using the National Priority System in **Appendix I**, and the current CRG FDOT Work Program (2006-2013), **Table 7-1**, the funding feasibility of planned projects was determined.

In addition to the projects outlined in the FDOT Work Program, JAA has compiled a list of projects based upon development outlined in the 2001 master plan update as well as existing demand. The joint automated capital improvement program (JACIP) for Craig Airport, as shown in **Table 7-2**, outlines anticipated cost estimates and funding sources for planned projects at CRG through the year 2020. Both the FAA and FDOT encourage airports to use the findings outlined in their most recent master plan update or ALP update to populate the JACIP databases. Airports may not have exact cost estimates beyond the five year time period, but rough estimates of future project costs are acceptable for long-range planning.

TABLE 7-1
CRAIG AIRPORT FDOT WORK PROGRAM (2007-2013)

	Project Information				Requested Funding					
Fiscal Year	UPIN #	Project #	Project Title	Cost Estimate	FDOT Design	FDOT Construction	FDOT Total	FAA	JAA	Total
2007	PFL0001899	2169692-94-01	Design & Construct Taxiway B & G	$589,400.00	$0.00	$294,700.00	$294,700.00	$0.00	$294,700.00	$589,400.00
2007	PFL0001888	2169843-94-01	Rehabilitate Taxiway A	$60,000.00	$10,000.00	$0.00	$10,000.00	$0.00	$50,000.00	$60,000.00
			Total 2007	**$649,400.00**	**$10,000.00**	**$294,700.00**	**$304,700.00**	**$0.00**	**$344,700.00**	**$649,400.00**
2008	PFL0001459	2169691-94-01	Craig - Upgrade Electrical Vault and Lights RW 14-32	$150,000.00	$25,000.00	$0.00	$25,000.00	$0.00	$125,000.00	$150,000.00
2008	PFL0001888	2169843-94-01	Rehabilitate Taxiway A	$152,860.00	$0.00	$0.00	$0.00	$152,860.00	$0.00	$152,860.00
			Total 2008	**$302,860.00**	**$25,000.00**	**$0.00**	**$25,000.00**	**$152,860.00**	**$125,000.00**	**$302,860.00**
2009	PFL0001887	2169842-94-01	Overlay Runway 5-23	$300,000.00	$50,000.00	$0.00	$50,000.00	$0.00	$250,000.00	$300,000.00
2009	PFL0001888	2169843-94-01	Rehabilitate Taxiway A	$130,000.00	$0.00	$85,000.00	$85,000.00	$0.00	$45,000.00	$130,000.00
2009	PFL0001459	2169691-94-01	Craig - Upgrade Electrical Vault and Lights RW 14-32	$950,000.00	$0.00	$0.00	$0.00	$950,000.00	$0.00	$950,000.00
			Total 2009	**$1,380,000.00**	**$50,000.00**	**$85,000.00**	**$135,000.00**	**$950,000.00**	**$295,000.00**	**$1,380,000.00**
2010	PFL0001887	2169842-94-01	Overlay Runway 5-23[1]	$1,900,000.00	$0.00	$0.00	$0.00	$1,900,000.00	$0.00	$1,900,000.00
2010	PFL0001459	2169691-94-01	Craig - Upgrade Electrical Vault and Lights RW 14-32[2]	$850,000.00	$50,000.00	$425,000.00	$475,000.00	$0.00	$375,000.00	$850,000.00
			Total 2010	**$2,750,000.00**	**$50,000.00**	**$425,000.00**	**$475,000.00**	**$1,900,000.00**	**$375,000.00**	**$2,750,000.00**
2011	PFL0001887	2169842-94-01	Overlay Runway 5-23	$1,600,000.00	$100,000.00	$800,000.00	$900,000.00	$0.00	$700,000.00	$1,600,000.00
			Total 2011	**$1,600,000.00**	**$100,000.00**	**$800,000.00**	**$900,000.00**	**$0.00**	**$700,000.00**	**$1,600,000.00**
2012			No Projects Programmed				**$0.00**		**$0.00**	
2013			No Projects Programmed				**$0.00**		**$0.00**	

Notes:
1 FAA will not participate in Runway 5-23 even though the work program indicates that FAA funding is possible.
2 Electrical Vault FY 2010 FDOT funding will be reprogrammed if FY 2009 FAA funding is received.
Source: JAA FDOT Work Program, 2007

TABLE 7-2 CRAIG AIRPORT JOINT AUTOMATED CAPITAL IMPROVEMENT PROGRAM 2008-2020									
Sponsor ID	**1204**								
NPIAS #	**12-0033**								
Site No:	**3251.*A**								
			Priority			**Sponsor Requested Funding Breakdown**			
UPIN #	**FDOT #**	**Project Description**	**FAA**	**Sponsor**	**Year**	**Federal**	**State**	**Local**	**Total**
PFL0001459	216969 1	Upgrade Runway Lighting	72	C2008-	2008	$150,000	$500,000	$500,000	$1,150,000
PFL0001892	-	Comprehensive Planning	58	NA	2008	$0	$0	$25,000	$25,000
PFL0001893	-	Environmental Planning	68	NA	2008	$0	$0	$25,000	$25,000
PFL0006075	-	Rehab of Building 2	34	C2008-	2008	$0	$0	$80,000	$80,000
		Yearly Total - 2008				**$150,000**	**$500,000**	**$630,000**	**$1,280,000**
PFL0001887	216984 2	Design/Rehab/Overlay Rwy 5-23	72	C2009-3	2009	$0	$1,000,000	$1,000,000	$2,000,000
PFL0001892	-	Comprehensive Planning	58	NA	2009	$0	$0	$25,000	$25,000
PFL0001893	-	Environmental Planning	68	NA	2009	$0	$0	$25,000	$25,000
PFL0007004	-	Purchase and Install Flight Tracking Equipment	63	2009-2	2009	$0	$250,000	$250,000	$500,000
PFL0007016	-	Purchase of Security Cameras	43	2009-4	2009	$0	$200,000	$200,000	$400,000
PFL0007020	-	Environmental Assessment Runway 14-32 Extension	68	2009-1	2009	$475,000	$0	$25,000	$500,000
		Yearly Total - 2009				**$2,375,000**	**$512,500**	**$562,500**	**$3,450,000**
PFL0001892	-	Comprehensive Planning	58		2010	$0	$0	$25,000	$25,000
PFL0001893	-	Environmental Planning	68	NA	2010	$0	$0	$25,000	$25,000
PFL0007026	-	Blast Fence Runway 14-32	41	2010-2	2010	$475,000	$12,500	$12,500	$500,000
PFL0007029	-	Design Runway 14-32 Extension	50	2010-1	2010	$950,000	$0	$50,000	$1,000,000
PFL0007044	-	Relocate Taxiway A-3 & Drainage Improvements	50	2010-3	2010	$950,000	$25,000	$25,000	$1,000,000
		Yearly Total - 2010				**$2,375,000**	**$62,500**	**$112,500**	**$2,550,000**
CRG294	(1)	Demo Existing T-Hangars	0	C2011-4-	2011	$0	$50,000	$50,000	$100,000
PFL0001885	-	Rehab Sky Harbor Ramp	62	2011-3	2011	$0	$275,000	$275,000	$550,000
PFL0001892	-	Comprehensive Planning	58		2011	$0	$0	$25,000	$25,000
PFL0001893	-	Environmental Planning	68	NA	2011	$0	$0	$25,000	$25,000
PFL0007045	-	Construct Runway 14-32 Extension	50	2011-1	2011	$8,550,000	$0	$450,000	$9,000,000
PFL0007048	-	Acquire Land for Southside Access Road	40	2011-2	2011	$950,000	$25,000	$25,000	$1,000,000
		Yearly Total - 2011				**$9,500,000**	**$575,000**	**$625,000**	**$10,700,000**
PFL0001470	(1)	Design Southside Access Road	23	2012-4	2012	$0	$150,000	$150,000	$300,000
PFL0001912	-	Roadway/Parking Pavement Overlay	23	2012-3	2012	$0	$500,000	$500,000	$1,000,000
PFL0005605	-	Security Fencing Phase III	43	2012-2	2012	$0	$500,000	$500,000	$1,000,000
PFL0007210	-	Design & Rehab Hangar 607 Apron	62	2012-4	2012	$712,500	$18,750	$18,750	$750,000
		Yearly Total - 2012				**$712,500**	**$1,168,750**	**$1,168,750**	**$3,050,000**
CRG283	(1)	Land Acquisition Runway 5 RPZ	41	2013-2	2013	$0	$500,000	$500,000	$1,000,000
PFL0001884	-	Design & Construct Corporate Hangar	0	2013-4	2013	$0	$700,000	$700,000	$1,400,000

TABLE 7-2 CRAIG AIRPORT JOINT AUTOMATED CAPITAL IMPROVEMENT PROGRAM 2008-2020										
Sponsor ID	**1204**									
NPIAS #	**12-0033**									
Site No:	**3251.*A**									
			Priority			**Sponsor Requested Funding Breakdown**				
UPIN #	**FDOT #**	**Project Description**	**FAA**	**Sponsor**	**Year**	**Federal**	**State**	**Local**	**Total**
PFL0001935	(1)	Airport Master Plan Update (2013)	68	2013-1	2013	$150,000	$75,000	$75,000	$300,000
PFL0007138	-	Rehab Runway 14-32	72	2013-5	2013	$0	$1,837,500	$1,837,500	$3,675,000
PFL0007215	-	Construct Southside Access Road	23	2013-3	2013	$0	$600,000	$600,000	$1,200,000
		Yearly Total-2013				**$150,000**	**$3,712,500**	**$3,712,500**	**$7,575,000**
CRG293	-	Southside FBO Site/GA Development	34	2014-3	2014	$0	$200,000	$200,000	$400,000
PFL0001457	-	Construct Corporate/T-Hangars	0	2014-7	2014	$0	$1,250,000	$1,250,000	$2,500,000
PFL0001896	-	Construct Southside Development Area T-Hangars	0	2014-6	2014	$0	$500,000	$500,000	$1,000,000
PFL0001898	(1)	Southside Parallel Taxiway	50	2014-1	2014	$950,000	$25,000	$25,000	$1,000,000
PFL0001899	(1)	Design and Construct Perimeter Road - Phase 1	22	2014-5	2014	$0	$500,000	$500,000	$1,000,000
PFL0001918	-	Airport Drainage	45	2014-2	2014	$0	$500,000	$500,000	$1,000,000
PFL0004159	-	Relocate Lindberg Road	23	2014-4	2014	$0	$250,000	$250,000	$500,000
		Yearly Total - 2014				**$950,000**	**$3,225,000**	**$3,225,000**	**$7,400,000**
PFL0001559	-	Runway 5 Easement	45	2015-5	2015	$0	$100,000	$100,000	$200,000
PFL0001560	-	Runway 14 Easement	45	2015-1	2015	$0	$700,000	$700,000	$1,400,000
PFL0001881	-	Construct Corporate Hangars #53 and 54	0	2015-X	2015	$0	$750,000	$750,000	$1,500,000
		Yearly Total - 2015				**$0**	**$1,550,000**	**$1,550,000**	**$3,100,000**
CRG292	-	Southside GA Development	0	2016-1	2016	$150,000	$160,000	$160,000	$470,000
PFL0001041	-	Land Acquisition for Approaches	45	C2016	2016	$0	$300,000	$300,000	$600,000
PFL0001458	-	Construct Corporate Hangars	34	2016-1	2016	$0	$1,000,000	$1,000,000	$2,000,000
PFL0002341	(1)	Westside Road North Extension	23	C2016-	2016	$0	$375,000	$375,000	$750,000
PFL0004153	-	Perimeter Road Rehab-Phase 2	22	2016-2	2016	$0	$125,000	$125,000	$250,000
		Yearly Total - 2016				**$150,000**	**$1,960,000**	**$1,960,000**	**$4,070,000**
PFL0001936	-	Airport Master Plan Update (2016)	68	2016-X	2017	$150,000	$75,000	$75,000	$300,000
		Yearly Total - 2017				**$150,000**	**$75,000**	**$75,000**	**$300,000**
PFL0001880	-	Construct Corporate Hangars	0	2009-2	2018	$0	$500,000	$500,000	$1,000,000
		Yearly Total - 2018				**$0**	**$500,000**	**$500,000**	**$1,000,000**
CRG315	-	Shift Runway 5-23 to the Southwest	53	2020-1	2020	$150,000	$0	$200,000	$350,000
		Yearly Total - 2020				**$150,000**	**$0**	**$200,000**	**$350,000**
		Airport Total				**$16,962,500**	**$14,141,250**	**$14,671,250**	**$45,775,000**

Note: (1) FDOT FIN Number assigned in JACIP in error.
Source: Jacksonville Aviation Authority, JACIP March 2008

7.2.1 Project Cost Estimates

Cost estimates were developed for each project from 2008 through 2026. The projected costs were based on the preliminary layouts developed as part of the Alternatives Analysis. Estimated quantities of major items, such as pavement or fill material, were used in conjunction with unit cost values to determine construction cost for mobilization, drainage (where applicable), and engineering services.

Cost estimates include various soft costs as shown in **Table 7-3**, such as engineering design, permitting, airport administration, etc., which are included on all construction related projects.

TABLE 7-3
CONSTRUCTION ENGINEERING SOFT COST PERCENTAGES

Soft Cost	Percentage
Engineering Design Fee	7%
Construction Management/Inspection	6%
Allowance for Permitting Fees	3%
Surveying & Design Testing	6%
Inspection & Testing	10%
Airport Administration	1.50%
Total Soft Costs	**33.5%**

Source: The LPA Group Incorporated, 2008

In addition to the engineering soft costs applied to all construction projects, a 15 percent contingency fee was applied to all capital improvement projects with the exception of specific environmental projects to account for unknown factors including fuel costs, increases in raw materials, permitting issues, etc. The contingency factor was not applied to environmental related projects, such as wetland mitigation, since a contingency was already built into the base price estimates.

It should be noted that the CIP cost estimates are provided in 2008 dollars, and anticipated federal (including GA Entitlement and Discretionary Funding), state, local and private/third party participation is based upon the FAA funding priority level (see **Appendix I**) as well as maximum funding participation (i.e. 95 percent federal and 2.5 percent state and 2.5 percent local or 50 percent state and 50 percent local). Further, the short, mid and long-term CIP incorporates projects currently within the FDOT Work Program (**Table 7-1**).

7.2.2 Project Phasing

Project phasing was prepared based upon facility requirements related to the twenty-year operational forecasts and long-term capacity and demand. Since actual activity levels realized may vary, it is important that project staging remains sensitive to such variations. The recommended project development schedule was refined through discussions with airport management and JAA. As a result, project timelines were established in order of priority during each short-, intermediate-, and long-term phase.

Projects phased within the master plan CIP may differ from the March 2008 JACIP and FDOT work program due to changing needs and facility requirements which were identified in Chapters 4 and 5 of this report. The resulting list of prioritized improvements was determined based upon the urgency of need, ease of implementation, logic of project sequencing, and airport staff input. The objective was to establish an efficient order for project development and implementation that satisfied the forecast aviation activity for CRG and the needs expressed by airport staff. The development schedule is divided into three general stages: the short-term (2008-2011), the mid-term (2012-2016) and the long-term (2017-2026).

7.2.3 Project Funding

Airport development is funded by four main funding sources. These include federal, state, local (sponsor) and private funding sources. Public grants and airport revenue bonds provide most of the capital funding, while user charges generally cover an airport's operating expenses and the debt service for airport bonds.

It is important to note that airport capital improvements are typically financed through state and federally imposed user fees and from funds generated from airport operations. Airport capital improvements are not funded from tax levies on the general public. Typically, airports such as CRG will receive FAA GA Entitlement Grants (under AIR-21) in the amount of $150,000 per year. Discretionary funds are distributed based upon established FAA priorities (as shown in **Appendix I**, *FAA Project Priority Rates*) that are related to achieving capacity, safety and noise compatibility objectives as directed by Congress. GA airports do not usually get discretionary funds unless the project has a very high priority number (i.e. 70 or better).

7.2.3.1 Federal Funding

In 1982, the passage of the Federal Airport and Airway Improvement Act enabled the federal government 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 projected growth of civil aviation. The Act provides funds for airport planning and development projects at airports included in the National Plan of Integrated Airport Systems (NPIAS) in the form of the Airport Improvement Program (AIP) grants.

User fees collected under the Airport and Airway Trust Fund Act provide a source of revenues used to fund AIP projects. Congress and the FAA decide the apportionment of these revenues and categorize them into two broad categories: Entitlements and Discretionary.

Entitlement Funding

Entitlement funding are divided among primary airports, General Aviation, cargo service airports and state block grants based on aviation activity and service levels. The 1999 reauthorization of AIP legislation (AIR 21) set aside, for the first time, GA entitlement funding specifically reserved for GA airports. Eligible airports, based upon annual operations, may receive up to $150,000 per year for eligible FAA projects or 20 percent of the 5-year cost of the need listed in the most recently published NPIAS. However, the distribution of funding for non-primary commercial service, general aviation and reliever airports is based not on annual operations but rather on the Airport's service area and/or population compared to similar airports within the 50 States, District of Columbia and Puerto Rico as stated within Title 49 U.S.C. Section 47114(d).

Discretionary Funding

Discretionary funds are distributed based on established FAA priorities to any eligible airport and assist the FAA in achieving its capacity, safety and noise compatibility objectives. Representative projects eligible for discretionary funding include: new runways, taxiways and non-exclusive aprons, navigational aids, primary access roads, etc. In addition, the sequencing of key projects within the Capital Improvement Program recognizes that permitting, utility infrastructure, environmental planning studies, drainage plans, and similar work must first be funded before actual design and construction of certain larger facilities can proceed (such as runway improvements, taxiways, hangar construction and others).

As a result, priority FAA project costs are eligible up to 95 percent with the remaining 5 percent typically shared between the FDOT and Airport Sponsor. Under the Vision 100 program, the federal match for AIP eligible projects increased temporarily from 90 percent to 95 percent. The Vision 100 program was scheduled to expire in 2008; however, to date, no agreement has been made regarding the federal match for AIP eligible projects. As a result, 95 percent was used to determine estimated federal funding on future AIP eligible projects throughout the twenty year planning period.

Applying FAA National Priority Rankings, projects with a priority ranking of less than 70 unless associated with the primary Runway, 14-32, would be unlikely to obtain FAA discretionary funding. Further, improvements to Runway 5-23 and associated taxiways were also deemed ineligible for FAA funding since Runway 14-32 is considered the primary runway because it is the instrument approach runway.

Based upon the design requirements outlined in **FAA 150/5325-4B**, *Runway Length Analysis*, FAA will only participate in the funding of a 1,500 foot extension to Runway 14-32 rather than the recommended 1,600 foot extension. The reasoning behind this decision, which is discussed in detail in **Appendix E**, is because the anticipated critical aircraft/family of aircraft (C-II) does not exceed the substantial operating threshold of 500 operations by the year 2011. Therefore, it is FAA's position that they will only participate in the funding of a 5,500 foot runway. As a result, engineering estimates calculated a $100,000 difference between the 1,600 foot and 1,500 foot extensions, which was used to calculate FAA discretionary funding participation. See footnotes within **Tables 7-5**, *Mid-Term Maximum Feasible Capital Improvement Program*, and **7-11**, *Mid-Term Financially Feasible Capital Improvement Program*.

Facilities and Equipment Spending

In addition to AIP grants, the FAA may also provide funding to airports via FAA Facilities and Equipment (F&E) spending. 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.

7.2.3.2 State Funding

The Florida Department of Transportation (FDOT) annually funds a state-sponsored airport development program supported by statewide aviation fuel taxes. The program generates over $100 million per year. The FDOT assists publicly-owned Florida airports that are under public operational and developmental control. To be eligible for funds, an airport must have an approved airport master plan/layout plan and the project must be consistent with the airport's role defined in the Florida Aviation System Plan. FDOT's grant program includes four major categories: airport planning, airport improvement, land acquisition and airport economic development. In general, only capital projects on airport property and any services that lead to capital projects are eligible, such as planning and design services. Eligible off-airport projects normally include purchases of mitigation land, noise mitigation, purchase of aviation easements, and certain access projects.

The FDOT will participate in projects not funded with FAA monies typically on a 50-50 to 80-20 basis, depending upon the nature and eligibility requirements of the project as well as airport use and ownership, whether GA or commercial service. According to the **Florida Aviation Project Handbook,** FDOT, July 2002, general aviation airports can receive up to 80 percent of project costs if federal funding is not available. Commercial Service airports, on the other hand, may receive up to 50 percent.

Although CRG is designated as a general aviation airport, it is owned and operated by the Jacksonville Aviation Authority which also owns and operates Jacksonville International Airport. Therefore, according to the FDOT District 2 representative, funding is based upon the Commercial Service Airport requirements, which is one-half of the local share when federal funding is available or up to 50 percent of project costs when federal funding is not available. Typically, projects funded through this aviation development program are developed on a pay-as-you-go basis.

FDOT has developed a computer program in conjunction with the FAA, the Joint Automated Capital Improvement Program (JACIP), as a tool to assist airports in coordinating their capital improvement program with the FAA and FDOT. Neither FAA nor FDOT have available resources to fund every project in the JACIP.

FDOT uses the projects included in the JACIP along with discussions with the airport staff to prioritize projects into the FDOT Work Program. The Work Program includes five years of projects that have been approved for funding if funds are approved by the Legislature for the current year. FDOT also includes projects that are proposed for funding for the sixth year. Project funding is locked for projects in the current year and the next year. Changes to the FDOT work program for projects in this period require special approval by the Governor's Office and are difficult to execute. Changes to projects in years three – five are allowed if the new projects are in the JACIP and are coordinated with FDOT staff. New projects are usually added to the Work Program in the new sixth year from projects in the JACIP.

When projects are eligible for FAA funding FDOT will program design funds in year one then program the remaining 50 percent of the project without FAA funds in year three. This allows the third year funds to be reprogrammed if full FAA funding is received in year two.

The FDOT funding schedule is less responsive to emerging market needs in Year one and two but more responsive in years three to six. The current six year FDOT work Program is included in **Table 7-1**. Although some state funding is anticipated for projects shown in the CRG JACIP **(Table 7-2)** for years 2012 and 2013, no projects are currently assigned in the FDOT Work Program. As a result state funding may be greater or lesser than currently shown based on project priority and FAA funding received.

7.2.3.3 Local (Sponsor) Funding

JAA is anticipated to fund the local match of the project costs through the airport general fund or through alternative funding sources. JAA typically tries to program approximately $500,000 annually for improvements and maintenance at CRG, which is shown starting from FY 2014. However, funding may increase or decrease based upon project priorities and federal, state and third-party funding available.

The JAA share of funding is anticipated to come from two sources: JAA annual net remaining revenues and unrestricted cash flow. Net remaining revenues refers to revenues produced from leases; whereas, unrestricted cash flow refers to funding from alternate sources, either through the JAA general fund, private investment, etc. The ability of JAA to spend airport earnings and reserves for capital projects at Cecil Field, Herlong, Craig and JIA is controlled by the Signatory Airline Agreement, the Bond Resolution and by the strategic direction of the JAA Board. However, the Signatory Airlines, commercial service airlines operating from JIA that have a Signatory Airport Agreement with JAA, have no responsibility to pay for costs attributed to Excluded Cost Centers.

Excluded cost centers include ground transportation, non-aviation and specific aviation facilities, Craig Airport, Herlong Airport and Cecil Field. As a result, JAA uses the balances of its funds after operating expenses and required transfers are made to pay the sponsor's share of capital improvements at the Excluded Cost Centers. In addition, revenues obtained from airport improvements will also be used to facilitate the capital improvements at the airport.

Revenues that CRG generates now and in the future are anticipated to be obtained primarily from lease agreements, fuel flowage fees and license agreement fees. Additional revenues will come from miscellaneous revenues and charges as well as option fees. Option fees at airports such as CRG typically refer to lease hold options. Lease hold options can consist of tenants leasing land but owning the facilities with the option of the facility reverting back to the airport after a specified time, or the tenant leases a facility or piece of land with the option to purchase.

Land leases associated with planned corporate, conventional and T-hangar development is anticipated to provide a portion of the local revenue necessary to implement the overall Master Plan development program. Further, currently undeveloped property and existing lease parcels designated for non-aviation use are likely to provide additional sources of revenue while increasing the sustainability of the airport over the long-term. Any anticipated funding shortfalls specifically within the short to mid-term will require JAA to provide additional funding or to find alternative funding sources. In addition, the portion of FAA Discretionary funding available will depend upon the priority rating of the project (70 or higher unless associated with improvements to the primary runway). Therefore, the financial feasibility of each project must be considered at the time of the grant application in order to determine project eligibility and implementation.

7.2.3.4 Other Funding Sources

Several federal and state assistance funding sources (other than FAA and FDOT Aviation) are available to JAA. Some of these include:

- Transportation Act of the 21st Century (TEA-21) – Airports eligible for access road development and intermodal-related projects.
- Florida Economic Development Transportation Fund Agency – Administered by Enterprise Florida, Inc. This program provides funding to local governments for transportation projects serving as an inducement for a company's Florida location, retention and expansion project.

These funds have limited dollar available to airports and specific funding requirements that limit their usefulness to most development projects.

7.2.3.5 Third Party/Private Development

In addition, capital improvement projects benefiting only a private tenant or group of private tenants, normally will not garner funding from the FAA, FDOT, or the airport sponsor. However, projects that serve aviation functions and generate revenue can attract private investment. The potential for private funding was considered in the development of the capital improvement plan, and many projects, especially hangar development on the airfield, are likely to be funded by private entities.

7.2.4 Maximum Capital Improvement Plan Development

The short, mid and long-term maximum funding development, shown in **Tables 7-4**, **7-5**, and **7-6**, respectively, provide federal, state and local funding, including anticipated private funding for economic enhancement projects, based upon the project's maximum eligibility according to the FAA project priority rating system. Projects in the short and mid-term are also shown in order of priority with funding based upon project eligibility and funding requested in the current FDOT Work Program.

As previously stated, FDOT funding is programmed six (6) years into the future, and is locked to the programmed projects two (2) years into the future. Thus, typically, no new funding can be added until after the six (6) year cycle. However, based upon the needs of the community and JAA, this master plan has identified several projects that will be required within the short and early mid-term which are not currently included in the FDOT Work Program but could be eligible for both federal and state funding based upon funding priority levels. As a result, both the maximum (**Tables 7-4 through 7-6**) and financially feasible (**Tables 7-10 through 7-12**) capital improvement programs include projects listed in the

FDOT Work Program as well as projects identified within this master plan. However, according to FDOT representatives, the FDOT will not participate in any project associated with the extension of Runway 14-32 even though eligible for state funding since the recommendation currently conflicts with the City of Jacksonville Comprehensive Plan.

The implementation plan presented herein describes the staging of proposed improvements, based upon need, prerequisite projects and anticipated funding, provides the basic financial requirements of each, and identifies various means of funding these improvements. In addition to planned improvements, routine pavement maintenance, equipment purchases, and master plan updates are programmed to occur in both the mid and long-term phasing periods. Therefore, it is important to note that priorities for development shown in both the mid and long-term could change as this timeframe draws near, since another master plan update will likely be undertaken prior to planned development.

It is the intent of this implementation plan to provide general financial guidance to Craig Airport and JAA staff in making policy decisions regarding the recommended development of the airport over the 20-year planning period.

TABLE 7-4
SHORT-TERM PROPOSED CAPITAL IMPROVEMENT PLAN (2008-2011)
MAXIMUM FUNDING

LEGEND:
- [(1)]**In JAA March 2008 Work Program**
- [(2)]**GA Entitlement Funding**
- [(3)]**Included FDOT Work Program**

							Federal Funding Match				Local Funding Match	
Year	**UPIN #**	**FDOT WP #**	**Sponsor Priority Ranking**	**FAA Feasibility (Numerical Ranking)**	**Development Item Description**	**Development Costs & Contingencies (2008)**	**FAA Entitlement**	**FAA Discretionary**	**Total FAA**	**State**	**JAA**	**Third Party**
2008	PFL0001892	-	NA	58	Comprehensive Planning [(1)]	$25,000	$0	$0	$0	$0	$25,000	$0
2008	PFL0001893	-	NA	68	Environmental Planning [(1)]	$25,000	$0	$0	$0	$0	$25,000	$0
2008	-	-	-	68	Cost Benefit Analysis	$40,000	$0	$38,000	$38,000	$0	$2,000	$0
2008	PFL0007020	-	2009-1	68	Environmental Assessment Runway 14/32 Extension [(1 & 2)]	$950,000	$150,000	$760,000	$910,000	$0	$40,000	$0
2008	PFL0001459	2169691-94-01	-	72	Upgrade Electrical Vault and Lights RW 14/32	$150,000	$0	$0	$0	$25,000	$125,000	$0
					Yearly Total - 2008	**$1,190,000**	**$150,000**	**$798,000**	**$948,000**	**$25,000**	**$217,000**	**$0**
2009	PFL0001892	-	NA	58	Comprehensive Planning [(1)]	$25,000	$0	$0	$0	$0	$25,000	$0
2009	PFL0001893	-	NA	68	Environmental Planning [(1)]	$25,000	$0	$0	$0	$0	$25,000	$0
2009	-	-	Airfield	68	Environmental Survey and Permitting (no stormwater)	$200,000	$150,000	$47,500	$197,500	$0	$2,500	$0
2009	-	-	Airfield	68	Tree Survey	$100,000	$0	$95,000	$95,000	$0	$5,000	$0
2009	-	-	-	76	Wetland Mitigation - Runway 14/32	$1,375,000	$0	$1,306,250	$1,306,250	$0	$68,750	$0
2009	PFL0001887	2169842-94-01	-	72	Overlay Runway 5/23	$300,000	$0	$0	$0	$150,000	$150,000	$0
2009	PFL0001459	2169691-94-01	-	72	Upgrade Electrical Vault and Lights RW 14/32 [(1, 2, & 3)]	$1,000,000	$0	$950,000	$950,000	$0	$50,000	$0
					Yearly Total - 2009	**$3,025,000**	**$150,000**	**$2,398,750**	**$2,548,750**	**$150,000**	**$326,250**	**$0**
2010	PFL0007029	-	2010-1	56	Design Runway 14/32 Extension and Taxiway A [(1 & 2)]	$1,018,512	$0	$967,586	$967,586	$0	$50,926	$0
2010	PFL0001892	-	-	58	Comprehensive Planning [(1)]	$25,000	$0	$0	$0	$0	$25,000	$0
2010	PFL0001893	-	NA	68	Environmental Planning [(1)]	$25,000	$0	$0	$0	$0	$25,000	$0
2010	-	-	-	76	Wetland Mitigation - Runway 14/32 [(2)]	$1,375,000	$0	$1,306,250	$1,306,250	$0	$68,750	$0
2010	-	-	-	45	Drainage - Runway 14-32	$307,050	$150,000	$0	$150,000	$0	$157,050	$0
2010	PFL0001887	2169842-94-01	-	72	Overlay Runway 5/23	$0	$0	$0	$0	$0	$0	$0
2010	PFL0001459	2169691-94-01	-	72	Upgrade Electrical Vault and Lights RW 14/32	$0	$0	$0	$0	$0	$0	$0
					Yearly Total - 2010	**$2,750,562**	**$150,000**	**$2,273,836**	**$2,423,836**	**$0**	**$326,726**	**$0**
2011	PFL0007029	-	2010-1	56	Design Runway 14/32 Extension and Taxiway A [(1)]	$1,018,512	$0	$967,586	$967,586	$25,463	$25,463	$0
2011	PFL0001892	-	-	58	Comprehensive Planning [(1)]	$25,000	$0	$0	$0	$0	$25,000	$0
2011	PFL0001893	-	NA	68	Environmental Planning [(1)]	$25,000	$0	$0	$0	$0	$25,000	$0
2011	-	-	-	76	Wetland Mitigation - Runway 14/32	$1,375,000	$0	$1,306,250	$1,306,250	$0	$68,750	$0
2011	PFL0001887	2169842-94-01	-	72	Overlay Runway 5/23	$1,600,000	$0	$0	$0	$900,000	$700,000	$0
2011	-	-	-	84	Install REILs on Runway 5, includes conduit and cable	$122,820	$0	$116,679	$116,679	$3,071	$3,071	
2011	-	-	-	0	12-Unit T-Hangar (Class II)	$1,105,380	$0	$0	$0	$0	$0	$1,105,380
2011	-	-	-	0	3 10-Unit T-Hangars (Class II)	$2,763,450	$0	$0	$0	$0	$0	$2,763,450
2011	-	-	-	0	2 4-unit T-Hangars (Class II)	$736,920	$0	$0	$0	$0	$0	$736,920
					Yearly Total - 2011	**$8,772,082**	**$0**	**$2,390,515**	**$2,390,515**	**$928,533**	**$847,283**	**$4,605,750**
					Total Short-Term Costs	**$15,737,643**	**$450,000**	**$7,861,101**	**$8,311,101**	**$1,103,533**	**$1,717,259**	**$4,605,750**

Notes:
FDOT Funding based upon total amount provided for the years 2008-2011
FDOT Funding Locked through 2010
Sources: JAA FDOT Work Program, JACIP (March 2008), Historical Funding, FAA Project Priority Funding and The LPA Group, 2008

TABLE 7-5
MID-TERM PROPOSED CAPITAL IMPROVEMENT PLAN (2012-2016)
MAXIMUM FUNDING

LEGEND:
[1]In JAA March 2008 Work Program
[2]GA Entitlement Funding
[3]Included FDOT Work Program

							Federal Funding Match				Local Funding Match	
Year	UPIN #	FDOT WP #	Sponsor Priority Ranking	FAA Feasibility (Numerical Ranking)	Development Item Description	Development Costs & Contingencies (2008)	FAA Entitlement	FAA Discretionary	Total FAA	State	JAA	Third Party
2012	-	-	-	43	Fence Removal	$50,663	$0	$0	$0	$25,332	$25,332	$0
2012	PFL0007044	-	2010-3	50	Relocate Taxiway A-3 & Drainage Improvements (1 & 2)	$1,919,063	$300,000	$0	$300,000	$809,531	$809,531	$0
2012	PFL0007029	-	2010-1	72	Design Runway 14/32 Extension and Taxiway A (1)	$1,018,512	$0	$967,586	$967,586	$0	$50,926	$0
2012	PFL0007026	-	2010-2	41	Blast Fence Runway 14/32 (1)	$500,000	$0	$0	$0	$250,000	$250,000	$0
2012	-	-	-	76	Wetland Mitigation - Runway 14/32 (2)	$1,375,000	$0	$1,306,250	$1,306,250	$0	$68,750	$0
2012	PFL0001887	2169842-94-01	-	72	Overlay Runway 5/23	$447,397	$0	$0	$0	$223,699	$223,699	$0
2012	CRG294	217028 1	C2011-4-	0	Demolish T-Hangars (Bldgs 5-8, 21-23, 32, 33, & 44) (1)	$1,535,250	$0	$0	$0	$0	$0	$1,535,250
					Yearly Total - 2012	**$6,845,885**	**$300,000**	**$2,273,836**	**$2,573,836**	**$1,308,562**	**$1,428,237**	**$1,535,250**
2013	PFL0007045	-	2011-1	50	Construct Runway 14/32 and Taxiway A Extension - Phase I (1)	$5,473,740	$0	$5,152,553	$5,152,553	$0	$321,187	$0
2013	-	-	-	48	Relocate MALSR (includes in-pavement lighting)	$614,100	$150,000	$433,395	$583,395	$0	$30,705	$0
2013	-	-	-	84	Conduit - Runway 14-32	$46,058	$0	$43,755	$43,755	$0	$2,303	$0
2013	-	-	-	84	Cable - Runway 14-32	$14,585	$0	$13,856	$13,856	$0	$729	$0
2013	-	-	-	84	Runway Edge Lights - Extension Runway 14-32	$24,564	$0	$23,336	$23,336	$0	$1,228	$0
2013	-	-	-	50	Runway Threshold Lights - Runway 14	$1,842	$0	$1,750	$1,750	$0	$92	$0
2013	-	-	-	79	Taxiway Edge Lights - Taxiway A Extension	$52,199	$0	$49,589	$49,589	$0	$2,610	$0
2013	-	-	-	0	1 12-unit T-Hangar (Class I)	$829,035	$0	$0	$0	$0	$0	$829,035
2013	-	-	-	0	3 8-unit T-Hangars (Class I)	$1,658,070	$0	$0	$0	$0	$0	$1,658,070
2013	-	-	-	0	3 10-unit T-Hangars (Class I)	$2,072,588	$0	$0	$0	$0	$0	$2,072,588
					Yearly Total-2013	**$10,786,780**	**$150,000**	**$5,718,233**	**$5,868,233**	**$0**	**$358,854**	**$4,559,693**
2014	PFL0007045	-	2011-1	50	Construct Runway 14/32 and Taxiway A Extension - Phase 2 (1)	$5,473,740	$150,000	$5,010,053	$5,160,053	$0	$313,687	$0
2014	-	-	-	47	Construct holding pad on Taxiway A	$38,381	$0	$36,462	$36,462	$0	$1,919	$0
2014	-	-	-	48	Relocate Glideslope Antenna	$153,525	$0	$145,849	$145,849	$0	$7,676	$0
2014	-	-	-	84	Relocate REILs - Runway 14	$7,676	$0	$7,292	$7,292	$0	$384	$0
2014	-	-	-	84	Relocate PAPIs - Runway 14 and 32	$153,525	$0	$145,849	$145,849	$0	$7,676	$0
2014	-	-	-	61	Environmental surveys and permitting (no stormwater)	$50,000	$0	$47,500	$47,500	$1,250	$1,250	$0
2014	-	-	-	61	Gopher Tortoise survey, permitting and relocation	$30,000	$0	$28,500	$28,500	$750	$750	$0
2014	-	-	-	61	Environmental Assessment	$75,000	$0	$71,250	$71,250	$1,875	$1,875	$0
2014	PFL0004159	-	2014-4	23	Relocate Lindberg Road (1)	$742,242	$0	$0	$0	$371,121	$371,121	$0
					Yearly Total - 2014	**$6,724,089**	**$150,000**	**$5,492,755**	**$5,642,755**	**$374,996**	**$706,338**	**$0**
2015	PFL0001899	216969 2	2014-5	22	Design and Construct Controlled Emergency Access Road (1 & 2)	$335,392	$0	$0	$0	$167,696	$167,696	$0
2015	-	-	-	47	Install 8 lighted signs associated with Emergency Access Road and RSA	$30,705	$0	$0	$0	$15,353	$15,353	$0
2015	-	-	2014	74	Markings Removal- Runway 14-32	$94,878	$50,000	$40,135	$90,135	$0	$4,744	$0
2015	-	-	2014	74	Pavement Markings - Runway 14-32	$119,750	$100,000	$13,762	$113,762	$0	$5,987	$0
2015	-	-	2014	47	Install Runway Information Signs - Runway 14-32	$17,655	$0	$0	$0	$0	$17,655	$0
2015	-	-	2012	47	Taxiway Guidance Signs-Extension Runway 14-32	$11,514	$0	$0	$0	$0	$11,514	$0
2015	-	-	-	61	Wetland Mitigation - High Priority Development	$75,000	$0	$72,000	$72,000	$1,500	$1,500	$0
					Yearly Total - 2015	**$684,895**	**$150,000**	**$125,897**	**$275,897**	**$184,549**	**$224,450**	**$0**

TABLE 7-5 MID-TERM PROPOSED CAPITAL IMPROVEMENT PLAN (2012-2016) MAXIMUM FUNDING												
LEGEND:	[1]In JAA March 2008 Work Program											
	[2]GA Entitlement Funding											
	[3]Included FDOT Work Program											
							Federal Funding Match				Local Funding Match	
Year	UPIN #	FDOT WP #	Sponsor Priority Ranking	FAA Feasibility (Numerical Ranking)	Development Item Description	Development Costs & Contingencies (2008)	FAA Entitlement	FAA Discretionary	Total FAA	State	JAA	Third Party
2016	PFL0005605	-	2014	43	Security Fencing Relocation (1)	$219,446	$0	$0	$0	$109,723	$109,723	$0
2016	-	-	2014	43	Chainlink Fence with Barbed Wire - Runway 14-32	$138,173	$0	$0	$0	$0	$138,173	$0
2016	PFL0007016	-	2009-4	43	Purchase of Security Cameras (1 & 2)	$400,000	$0	$0	$0	$200,000	$200,000	$0
2016	PFL0007004	-	2009-2	63	Purchase and Install Flight Tracking Equipment (1 & 2)	$500,000	$0	$475,000	$475,000	$12,500	$12,500	$0
2016	PFL0001457	-	-	0	2 120 x 120 Corporate Hangars (1)	$4,275,610	$0	$0	$0	$0	$0	$4,275,610
2016	-	-	-	0	4 8-unit T-Hangar (Class II)	$2,947,680	$0	$0	$0	$0	$0	$2,947,680
2016	PFL0001458	-	-	0	3 80 x 80 Corporate Hangars	$2,949,642	$0	$0	$0	$0	$0	$2,949,642
2016	-	-	-	0	6 50 x 50 Box Hangars	$2,210,760	$0	$0	$0	$0	$0	$2,210,760
2016	-	-	-	56	Total Apron and Taxilanes (2)	$493,144	$150,000	$0	$150,000	$171,572	$171,572	$0
2016	-	-	-	19	Total Auto Parking	$92,115	$0	$0	$0	$46,058	$46,058	$0
					Yearly Total - 2016	**$14,226,569**	**$150,000**	**$475,000**	**$625,000**	**$539,853**	**$678,025**	**$12,383,692**
					Total Mid-Term Costs	**$39,268,218**	**$900,000**	**$14,085,721**	**$14,985,721**	**$2,407,959**	**$3,395,905**	**$18,478,634**

Notes: FDOT funding locked until 2010

**FAA will participate in 1,500 rather than 1,600 foot extension. Thus, 95% was applied to $10,947,480-($100,000 + Any Entitlement Funding) to determine likely federal discretionary participation.*

FDOT will not participate in any project associated with the extension of Runway 32.

Sources: JAA FDOT Work Program, JACIP (March 2008), Historical Funding, FAA Project Priority Funding and The LPA Group Incorporated, 2008

TABLE 7-6
LONG-TERM PROPOSED CAPITAL IMPROVEMENT PLAN (2017-2026)
MAXIMUM FUNDING

LEGEND:
- [1]In JAA March 2008 Work Program
- [2]GA Entitlement Funding
- [3]Included FDOT Work Program

							Federal Funding Match				Local Funding Match	
Year	**UPIN #**	**FDOT WP #**	**Sponsor Priority Ranking**	**FAA Feasibility (Numerical Ranking)**	**Development Item Description**	**Development Costs & Contingencies (2008)**	**FAA Entitlement**	**FAA Discretionary**	**Total FAA**	**State**	**JAA**	**Third Party**
2017-2026	-	-	-	62	Rehabilitate Ramp by Building 26 (Mosquito Control)	$844,388	$0	$0	$0	$422,194	$422,194	$0
2017-2026	-	-	-	62	Rehabilitate Craig Air Center Ramp	$844,388	$150,000	$0	$150,000	$347,194	$347,194	$0
2017-2026	PFL0001885	-	2011-3	62	Rehab Sky Harbor Ramp (1)	$844,388	$150,000	$0	$150,000	$347,194	$347,194	$0
2017-2026	-	-	-	0	Demolish Box Hangars (Bldgs 12-16)	$153,525	$0	$0	$0	$0	$0	$153,525
2017-2026	PFL0001884	-	-	0	6 80 x 80 Corporate Hangars	$5,899,284	$0	$0	$0	$0	$0	$5,899,284
2017-2026	-	-	-	0	2 50 x 50 Box Hangars	$736,920	$0	$0	$0	$0	$0	$736,920
2017-2026	-	-	-	56	Total Apron and Taxilanes (2)	$1,041,081	$150,000	$0	$150,000	$445,541	$445,541	$0
2017-2026	-	-	-	19	Total Auto Parking	$138,173	$0	$0	$0	$0	$0	$138,173
2017-2026	PFL0002341	-	C2016-	23	Westside Road North Extension (1)	$1,151,438	$0	$0	$0	$575,719	$575,719	$0
2017-2026	-	-	-	40	Acquire Land for Atlantic Blvd Access	$12,420	$0	$0	$0	$0	$12,420	$0
2017-2026	PFL0007048	-	2011-2	40	Acquire Land for Southside Access Road (1)	$276,345	$0	$0	$0	$138,173	$138,173	$0
2017-2026	PFL0001918	-	-	45	Drainage Improvements - South Side (1 & 2)	$767,625	$0	$0	$0	$383,813	$383,813	$0
2017-2026	-	-	-	43	Relocate Fenceline	$219,446	$150,000	$0	$150,000	$34,723	$34,723	$0
2017-2026	PFL0001470	-	2012-4	23	Design Southside Access Road (1)	$461,943	$0	$0	$0	$230,972	$230,972	$0
2017-2026	PFL0001935	-	2013-1	68	Airport Master Plan Update (2013) (1&2)	$300,000	$150,000	$142,500	$292,500	$3,750	$3,750	$0
2017-2026	PFL0007138	-	2013-5	72	Rehab Runway 14/32 (1)	$3,283,252	$150,000	$2,976,589	$3,126,589	$78,331	$78,331	$0
2017-2026	PFL0001912	-	2012-3	23	Roadway/Parking Pavement Overlay (1)	$1,535,250	$0	$0	$0	$767,625	$767,625	$0
2017-2026	PFL0001559	-	2015-5	45	Runway 5 Easement (1)	$69,000	$0	$0	$0	$34,500	$34,500	$0
2017-2026	PFL0001560	-	2015-1	45	Runway 14 Easement (1)	$24,150	$0	$22,943	$22,943	$604	$604	$0
2017-2026	-	-	-	53	Construct connector taxiway to Runway 32, includes edge lights	$299,673	$0	$284,689	$284,689	$7,492	$7,492	$0
2017-2026	-	-	-	0	Construct West Access Service Road	$2,294,150	$0	$0	$0	$1,147,075	$1,147,075	$0
2017-2026	-	-	-	53	Extend Taxiway B and provide connector to Building 607 leasehold	$397,683	$150,000	$0	$150,000	$123,842	$123,842	$0
2017-2026	PFL0007210	-	2012-4	62	Design & Rehab Hangar 607 Apron (1)	$1,151,438	$150,000	$951,366	$1,101,366	$25,036	$25,036	$0
2017-2026	PFL0001881	-	2015-X	0	2 Corporate Hangars (240 x 240 SF) Construction and parking (1)	$16,196,888	$0	$0	$0	$0	$0	$16,196,888
2017-2026	-	-		0	Demolish Building 607 and Shed	$153,525	$0	$0	$0	$76,763	$76,763	$0
2017-2026	PFL0001936	-	2016-X	68	Airport Master Plan Update (2016) (1 & 2)	$300,000	$0	$285,000	$285,000	$7,500	$7,500	$0
2017-2026	-	-	-	47	Airfield Sign Upgrades (LED) and Electrical Vault Work (2)	$368,460	$0	0	$0	$184,230	$184,230	$0
2017-2026	PFL0007215	-	2013-3	23	Construct Southside Access Road (1 & 2)	$1,655,065	$0	$0	$0	$827,533	$827,533	$0
2017-2026	-	-	-	68	Environmental Survey and Permitting (no stormwater) (2)	$150,000	$150,000	$0	$150,000	$0	$0	$0
2017-2026	-	-	-	68	Tree Survey	$25,000	$0	$23,750	$23,750	$625	$625	$0
2017-2026	-	-	-	68	Gopher Tortoise survey, permitting and relocation	$80,000	$0	$76,000	$76,000	$2,000	$2,000	$0
2017-2026	PFL0001898	-	2014-1	50	Southside Parallel Taxiway (1) - Design	$807,778	$0	$767,389	$767,389	$20,194	$20,194	$0
2017-2026	-	-	-	23	Construct additional entrance road	$1,995,825	$0	$0	$0	$997,913	$997,913	$0
2017-2026	-	-	-	19	Airport Automobile Parking - South Side	$898,683	$0	$0	$0	$449,342	$449,342	$0
2017-2026	-	-	-	23	Extend General Doolittle Drive	$2,064,082	$0	$0	$0	$1,032,041	$1,032,041	$0
2017-2026	-	-	-	47	Construct holding pad on Southside Parallel	$38,381	$0	$0	$0	$19,191	$19,191	$0

TABLE 7-6
LONG-TERM PROPOSED CAPITAL IMPROVEMENT PLAN (2017-2026)
MAXIMUM FUNDING

LEGEND:
[1]In JAA March 2008 Work Program
[2]GA Entitlement Funding
[3]Included FDOT Work Program

Year	UPIN #	FDOT WP #	Sponsor Priority Ranking	FAA Feasibility (Numerical Ranking)	Development Item Description	Development Costs & Contingencies (2008)	Federal Funding Match: FAA Entitlement	Federal Funding Match: FAA Discretionary	Total FAA	State	Local Funding Match: JAA	Local Funding Match: Third Party
					Taxiway							
2017-2026	-	-	-	68	Environmental Assessment [2]	$200,000	$0	$190,000	$190,000	$5,000	$5,000	$0
2017-2026	PFL0001898	-	-	72	Southside Parallel Taxiway - Construction [1 & 2]	$2,894,135	$0	$2,749,428	$2,749,428	$72,353	$72,353	
2017-2026	-	-	-	61	Wetland Mitigation - Mid Development	$8,000,000	$0	$7,600,000	$7,600,000	$200,000	$200,000	$0
2017-2026	-	-	-	61	Taxilane Construction	$2,068,163	$0	$1,964,755	$1,964,755	$51,704	$51,704	$0
2017-2026	CRG293	-	-	0	6 12-unit T-Hangars (Class II) [1]	$6,632,280	$0	$0	$0	$0	$0	$6,632,280
2017-2026	-	-	-	20	Utilities/Infrastructure Improvements - South Side	$1,995,825	$150,000	$0	$150,000	$922,913	$922,913	$0
2017-2026	-	-	-	43	Security Fencing Relocation	$1,228,200	$0	$0	$0	$614,100	$614,100	$0
2017-2026	-	-	-	23	Business Park Access Road	$3,175,511	$0	$0	$0	$1,587,756	$1,587,756	$0
2017-2026	PFL0001896	-	-	0	6 10-unit T-Hangars (Class II) [1]	$5,526,900	$0	$0	$0	$0	$0	$5,526,900
2017-2026	PFL0001880	-	-	0	7 75 x 75 Corporate Hangars [1]	$6,132,461	$0	$0	$0	$0	$0	$6,132,461
2017-2026	-	-	-	56	Construct Apron	$1,419,411	$0	$0	$0	$709,706	$709,706	$0
2017-2026	-	-	-	19	Automobile Parking	$449,341	$0	$0	$0	$0	$0	$449,341
2017-2026	CRG 292	-	-	0	7 75 x 75 Corporate Hangars [1]	$6,132,461	$0	$0	$0	$0	$0	$6,132,461
2017-2026	-	-	-	56	Construct Apron	$1,419,411	$0	$0	$0	$709,706	$709,706	$0
2017-2026	-	-	-	19	Automobile Parking	$449,341	$0	$0	$0	$0	$0	$449,341
2017-2026	-	-	-	0	7 75 x 75 Corporate Hangars	$6,132,461	$0	$0	$0	$0	$0	$6,132,461
2017-2026	-	-	-	0	7 75 x 75 Corporate Hangars	$6,132,461	$0	$0	$0	$0	$0	$6,132,461
2017-2026	-	-	-	0	7 75 x 75 Corporate Hangars	$6,132,461	$0	$0	$0	$0	$0	$6,132,461
2017-2026	PFL0004153	-	-	23	Controlled Emergency Access Road Rehabilitation [1]	$112,027	$0	$0	$0	$56,014	$56,014	$0
					Total Long-Term (2017-26)	**$113,712,495**	**$1,500,000**	**$18,034,409**	**$19,534,409**	**$13,660,355**	**$13,672,775**	**$66,844,956**
					Total Costs	**$168,718,356**	**$2,850,000**	**$39,981,231**	**$42,831,231**	**$17,171,847**	**$18,785,938**	**$89,929,340**

Notes:
FDOT Funding based upon total amount provided for the years 2008-2011
FDOT Funding locked through 2010
Sources: JAA FDOT Work Program, JACIP (March 2008), Historical Funding, FAA Project Priority Funding and The LPA Group Incorporated, 2008

7.2.4.1 Maximum Build-out CIP Summary

To meet the anticipated need of $169 Million in improvements, JAA will have access to a variety of funding sources in addition to revenue generated from operating activities. These sources include:

- Airport Improvement Program (Federal Government)
- Florida Department of Transportation (FDOT)
- Jacksonville Aviation Authority
- Private Capital Investments, and
- Other federal, state and regional assistance programs

While significant portions of the improvements are eligible through the federal government's Airport Improvement Program (AIP), FAA does not provide the same priority to general aviation (GA) airports as commercial service airports. The current AIP legislation considers a weighted split of project costs determined by a ratio of federal share to local share, represented by a 95 percent and 5 percent share, respectively. **Table 7-7** summarizes the projected eligible AIP funding for CRG and the projected share of cost.

TABLE 7-7
20-YEAR CAPITAL IMPROVEMENT PROGRAM SUMMARY
MAXIMUM ELIGIBLE FUNDING

Development Period	Total Project Cost	FAA Entitlement	FAA Discretionary	State Share	Local/Other* Share	Third Party
Short-Term	$15,737,643	$450,000	$7,861,101	$1,103,533	$1,717,259	$4,605,750
Mid-Term	$39,268,218	$900,000	$14,085,721	$2,407,959	$3,395,905	$18,478,634
Long-Term	$113,712,495	$1,500,000	$18,034,409	$13,660,355	$13,672,775	$66,844,956
Total for 20-Year CIP	**$168,718,356**	**$2,850,000**	**$39,981,231**	**$17,171,847**	**$18,785,938**	**$89,929,340**

*Notes: *Other Funding Sources includes operating revenues generated by the airport as well as loans, bonds and other funding sources*
Source: The LPA Group Incorporated 2008

In identifying additional projects related to forecast demand, changes to the CRG Airport JACIP are required. **Table 7-8** identifies existing projects within the March 2008 JACIP as well as new projects recommended within this master plan update for the twenty-year planning period.

TABLE 7-8 CHANGES TO JAA WORK PROGRAM AND 2008 FDOT JACIP (2008-2026)						
Notes:	[1] In JAA Work Program					
	[2] GA Entitlement Funding					
	[3] Included FDOT Work Program					
UPIN #	FDOT WP#	Project Description	JAA Work Program and JACIP		Master Plan Update	
			Year	Amount	Year	Amount
PFL0001459	216969 1	Upgrade Runway Lighting	2008	$1,150,000	2008	$150,000
PFL0001892	-	Comprehensive Planning	2008	$25,000	2008	$25,000
PFL0001893	-	Environmental Planning	2008	$25,000	2008	$25,000
PFL0006075	-	Rehab of Building 2	2008	$80,000	-	-
-	-	Cost Benefit Analysis	-	-	2008	$40,000
-	-	Environmental Assessment Runway 14/32 Extension	-	-	-	$950,000
PFL0001887	216984 2	Design/Rehab/Overlay Rwy 5/23	2009	$2,000,000	2009	$300,000
PFL0001892	-	Comprehensive Planning	2009	$25,000	2009	$25,000
PFL0001893	-	Environmental Planning	2009	$25,000	2009	$25,000
PFL0007004	-	Purchase and Install Flight Tracking Equipment	2009	$500,000	2016	$500,000
PFL0007016	-	Purchase of Security Cameras	2009	$400,000	2016	$400,000
PFL0007020	-	Environmental Assessment Runway 14/32 Extension	2009	$500,000	-	-
-	-	Environmental Survey and Permitting (no stormwater)	-	-	2009	$200,000
-	-	Tree Survey	-	-	2009	$100,000
-	-	Wetland Mitigation - Runway 14/32	-	-	2009	$1,375,000
PFL0001892	-	Comprehensive Planning	2010	$25,000	2010	$25,000
PFL0001893	-	Environmental Planning	2010	$25,000	2010	$25,000
PFL0007026	-	Blast Fence Runway 14/32	2010	$500,000	2012	$500,000
PFL0007029	-	Design Runway 14/32 Extension	2010	$1,000,000	2010	$1,018,512
PFL0007044	-	Relocate Taxiway A-3 & Drainage Improvements	2010	$1,000,000	2012	$1,919,063
-	-	Wetland Mitigation - Runway 14/32	-	-	-	$1,375,000
-	-	Drainage - Runway 14-32	-	-	-	$307,050
CRG294	-	Demo Existing T-Hangars	2011	$100,000	2012	$1,535,250
PFL0001885	-	Rehab Sky Harbor Ramp	2011	$550,000	2017-2026	$844,388
PFL0001892	-	Comprehensive Planning	2011	$25,000	2011	$25,000
PFL0001893	-	Environmental Planning	2011	$25,000	2011	$25,000
PFL0007045	-	Construct Runway 14/32 Extension	2011	$9,000,000	2013	$5,473,740
PFL0007048	-	Acquire Land for Southside Access Road	2011	$1,000,000	2017-2026	$276,345
-	-	Design Runway 14/32 Extension and Taxiway A	-	-	2011	$1,018,512
-	-	Wetland Mitigation - Runway 14/32	-	-	2011	$1,375,000
-	-	Overlay Runway 5/23	-	-	2011	$1,600,000
-	-	Install REILs on Runway 5, includes conduit and cable	-	-	2011	$122,820
-	-	12-Unit T-Hangar (Class II)	-	-	2011	$1,105,380
-	-	3 10-Unit T-Hangars (Class II)	-	-	2011	$2,763,450
-	-	2 4-unit T-Hangars (Class II)	-	-	2011	$736,920

TABLE 7-8
CHANGES TO JAA WORK PROGRAM AND 2008 FDOT JACIP (2008-2026)

Notes:	**[1] In JAA Work Program**					
	[2] GA Entitlement Funding					
	[3] Included FDOT Work Program					
UPIN #	**FDOT WP#**	**Project Description**	**JAA Work Program and JACIP**		**Master Plan Update**	
			Year	**Amount**	**Year**	**Amount**
PFL0001470	-	Design Southside Access Road	2012	$300,000	2017-2026	$461,943
PFL0001912	-	Roadway/Parking Pavement Overlay	2012	$1,000,000	2017-2026	$1,535,250
PFL0005605	-	Security Fencing Phase III	2012	$1,000,000	2016	$219,446
PFL0007210	-	Design & Rehab Hangar 607 Apron	2012	$750,000	2017-2026	$1,151,438
-	-	Fence Removal	-	-	2012	$50,663
PFL0007044	-	Relocate Taxiway A-3 & Drainage Improvements	-	-	2012	$1,919,063
PFL0007029	-	Design Runway 14/32 Extension and Taxiway A	-	-	2012	$1,018,512
PFL0007026	-	Blast Fence Runway 14/32	-	-	2012	$500,000
-	-	Wetland Mitigation - Runway 14/32	-	-	2012	$1,375,000
PFL0001887	2169842-94-01	Overlay Runway 5/23	-	-	2012	$447,397
CRG294	-	Demolish T-Hangars (Bldgs 5-8, 21-23, 32, 33, & 44)	-	-	2012	$1,535,250
CRG283	-	Land Acquisition Runway 5 RPZ	2013	$1,000,000	2017-2026	$69,000
PFL0001884	-	Design & Construct Corporate Hangar	2013	$1,400,000	2017-2026	$5,899,284
PFL0001935	-	Airport Master Plan Update (2013)	2013	$300,000	2017-2026	$300,000
PFL0007138	-	Rehab Runway 14/32	2013	$3,675,000	2017-2026	$3,283,252
PFL0007215	-	Construct Southside Access Road	2013	$1,200,000	2017-2026	$1,655,065
PFL0007045	-	Construct Runway 14/32 and Taxiway A Extension - Phase I	-	-	2013	$5,473,740
-	-	Relocate MALSR (includes in-pavement lighting)	-	-	2013	$614,100
-	-	Conduit - Runway 14-32	-	-	2013	$46,058
-	-	Cable - Runway 14-32	-	-	2013	$14,585
-	-	Runway Edge Lights - Extension Runway 14-32	-	-	2013	$24,564
-	-	Runway Threshold Lights - Runway 14	-	-	2013	$1,842
-	-	Taxiway Edge Lights - Taxiway A Extension	-	-	2013	$52,199
-	-	1 12-unit T-Hangar (Class I)	-	-	2013	$829,035
-	-	3 8-unit T-Hangars (Class I)	-	-	2013	$1,658,070
-	-	3 10-unit T-Hangars (Class I)	-	-	2013	$2,072,588
CRG293	-	Southside FBO Site/GA Development	2014	$400,000	2017-2026	$6,632,280
PFL0001457	-	Construct Corporate/T-Hangars	2014	$2,500,000	2016	$4,275,610
PFL0001896	-	Construct Southside Development	2014	$1,000,000	2017-	$5,526,900

TABLE 7-8 CHANGES TO JAA WORK PROGRAM AND 2008 FDOT JACIP (2008-2026)						
Notes:	[1] In JAA Work Program [2] GA Entitlement Funding [3] Included FDOT Work Program					
UPIN #	FDOT WP#	Project Description	JAA Work Program and JACIP		Master Plan Update	
			Year	Amount	Year	Amount
		Area T-Hangars			2026	
PFL0001898	-	Southside Parallel Taxiway	2014	$1,000,000	2017-2026	$2,894,135
PFL0001899	-	Design and Construct Perimeter Road - Phase 1	2014	$1,000,000	2015	$335,392
PFL0001918	-	Airport Drainage	2014	$1,000,000	2017-2026	$767,625
PFL0004159	-	Relocate Lindberg Road	2014	$500,000	2014	$742,242
-	-	Construct Runway 14/32 and Taxiway A Extension - Phase 2	-	-	2014	$5,473,740
-	-	Construct holding pad on Taxiway A	-	-	2014	$38,381
-	-	Relocate Glideslope Antenna	-	-	2014	$153,525
-	-	Relocate REILs - Runway 14	-	-	2014	$7,676
-	-	Relocate PAPIs - Runway 14 and 32	-	-	2014	$153,525
-	-	Environmental surveys and permitting (no stormwater)	-	-	2014	$50,000
-	-	Gopher Tortoise survey, permitting and relocation	-	-	2014	$30,000
-	-	Environmental Assessment	-	-	2014	-
PFL0001559	-	Runway 5 Easement	2015	$200,000	2017-2026	$69,000
PFL0001560	-	Runway 14 Easement	2015	$1,400,000	2017-2026	$24,150
PFL0001881	-	Construct Corporate Hangars #53 and 54	2015	$1,500,000	2017-2026	$16,196,888
-	-	Markings Removal- Runway 14-32	-	-	2015	$94,878
-	-	Pavement Markings - Runway 14-32	-	-	2015	$119,750
-	-	Install Runway Information Signs - Runway 14-32	-	-	2015	$17,655
-	-	Taxiway Guidance Signs-Extension Runway 14-32	-	-	2015	$11,514
-	-	Wetland Mitigation - High Priority Development	-	-	2015	$75,000
		Install 8 lighted signs associated with Emergency Access Road and RSA			2015	$30,705
CRG292	-	Southside GA Development	2016	$470,000	2017-2026	$6,132,461
PFL0001041	-	Land Acquisition for Approaches	2016	$600,000	0	$0
PFL0001458	-	Construct Corporate Hangars	2016	$2,000,000	2016	$2,949,642
PFL0002341	-	Westside Road North Extension	2016	$750,000	2017-2026	$1,151,438
PFL0004153	-	Perimeter Road Rehab-Phase 2	2016	$250,000	2017-2026	$112,027
PFL0005605	-	Security Fencing Relocation	-	-	2016	$219,446
-	-	Chainlink Fence with Barbed Wire - Runway 14-32	-	-	2016	$138,173
PFL0007016	-	Purchase of Security Cameras	-	-	2016	$400,000
PFL0007004	-	Purchase and Install Flight Tracking	-	-	2016	$500,000

TABLE 7-8 CHANGES TO JAA WORK PROGRAM AND 2008 FDOT JACIP (2008-2026)						
Notes:	[1] In JAA Work Program [2] GA Entitlement Funding [3] Included FDOT Work Program					
UPIN #	FDOT WP#	Project Description	JAA Work Program and JACIP		Master Plan Update	
			Year	Amount	Year	Amount
		Equipment				
PFL0001457	-	2 120 x 120 Corporate Hangars	-	-	2016	$4,275,610
-	-	4 8-unit T-Hangar (Class II)	-	-	2016	$2,947,680
PFL0001458	-	3 80 x 80 Corporate Hangars	-	-	2016	$2,949,642
-	-	6 50 x 50 Box Hangars	-	-	2016	$2,210,760
-	-	Total Apron and Taxilanes	-	-	2016	$493,144
-	-	Total Auto Parking	-	-	2016	$92,115
PFL0001936	-	Airport Master Plan Update (2016)	2017	$300,000	2017-2026	$300,000
PFL0001880	-	Construct Corporate Hangars (75 x 75 Corporate Hangars)	2018	$1,000,000	2017-2026	$6,132,461
CRG315	-	Shift Runway 5-23 to the Southwest	2020	$350,000	0	$0
PFL0001899	-	Design and Construct Controlled Emergency Access Road	-	-	2017-2026	$2,365,513
-	-	Rehabilitate Ramp by Building 26 (Mosquito Control)	-	-	2017-2026	$844,388
-	-	Rehabilitate Craig Air Center Ramp	-	-	2017-2026	$844,388
PFL0001885	-	Rehab Sky Harbor Ramp	-	-	2017-2026	$844,388
-	-	Demolish Box Hangars (Bldgs 12-16)	-	-	2017-2026	$153,525
PFL0001884	-	6 80 x 80 Corporate Hangars	-	-	2017-2026	$5,899,284
-	-	2 50 x 50 Box Hangars	-	-	2017-2026	$736,920
-	-	Total Apron and Taxilanes	-	-	2017-2026	$1,041,081
-	-	Total Auto Parking	-	-	2017-2026	$138,173
PFL0002341	-	Westside Road North Extension	-	-	2017-2026	$1,151,438
-	-	Acquire Land for Atlantic Blvd Access	-	-	2017-2026	$12,420
PFL0007048	-	Acquire Land for Southside Access Road	-	-	2017-2026	$276,345
PFL0001918	-	Drainage Improvements - South Side	-	-	2017-2026	$767,625
-	-	Relocate Fenceline	-	-	2017-2026	$219,446
PFL0001470	-	Design Southside Access Road	-	-	2017-2026	$461,943
PFL0001935	-	Airport Master Plan Update (2013)	-	-	2017-2026	$300,000
PFL0007138	-	Rehab Runway 14/32	-	-	2017-2026	$3,283,252
PFL0001912	-	Roadway/Parking Pavement Overlay	-	-	2017-2026	$1,535,250
PFL0001559	-	Runway 5 Easement	-	-	2017-	$69,000

TABLE 7-8 CHANGES TO JAA WORK PROGRAM AND 2008 FDOT JACIP (2008-2026)						
Notes:	[1] In JAA Work Program [2] GA Entitlement Funding [3] Included FDOT Work Program					
UPIN #	FDOT WP#	Project Description	JAA Work Program and JACIP		Master Plan Update	
			Year	Amount	Year	Amount
					2026	
PFL0001560	-	Runway 14 Easement	-	-	2017-2026	$24,150
-	-	Construct connector taxiway to Runway 32, includes edge lights	-	-	2017-2026	$299,673
-	-	Construct West Access Service Road	-	-	2017-2026	$2,294,150
-	-	Extend Taxiway B and provide connector to Building 607 leasehold	-	-	2017-2026	$397,683
PFL0007210	-	Design & Rehab Hangar 607 Apron	-	-	2017-2026	$1,151,438
PFL0001881	-	2 Corporate Hangars (240 x 240 SF) Construction and parking	-	-	2017-2026	$16,196,888
-	-	Demolish Building 607 and Shed	-	-	2017-2026	$153,525
-	-	Airfield Sign Upgrades (LED) and Electrical Vault Work	-	-	2017-2026	$368,460
PFL0007215	-	Construct Southside Access Road	-	-	2017-2026	$1,655,065
-	-	Environmental Survey and Permitting (no stormwater)	-	-	2017-2026	$150,000
-	-	Tree Survey	-	-	2017-2026	$25,000
-	-	Gopher Tortoise survey, permitting and relocation	-	-	2017-2026	$80,000
PFL0001898	-	Southside Parallel Taxiway - Design	-	-	2017-2026	$807,778
-	-	Construct additional entrance road	-	-	2017-2026	$1,995,825
-	-	Airport Automobile Parking - South Side	-	-	2017-2026	$898,683
-	-	Extend General Doolittle Drive	-	-	2017-2026	$2,064,082
-	-	Construct holding pad on Southside Parallel Taxiway	-	-	2017-2026	$38,381
-	-	Environmental Assessment	-	-	2017-2026	$200,000
PFL0001898	-	Southside Parallel Taxiway - Construction	-	-	2017-2026	$2,894,135
-	-	Wetland Mitigation - Mid Development	-	-	2017-2026	$8,000,000
-	-	Taxilane Construction	-	-	2017-2026	$2,068,163
CRG293	-	6 12-unit T-Hangars (Class II)	-	-	2017-2026	$6,632,280
-	-	Utilities/Infrastructure Improvements - South Side	-	-	2017-2026	$1,995,825
-	-	Security Fencing Relocation	-	-	2017-2026	$1,228,200
-	-	Business Park Access Road	-	-	2017-	$3,175,511

TABLE 7-8 CHANGES TO JAA WORK PROGRAM AND 2008 FDOT JACIP (2008-2026)						
Notes:	[1] In JAA Work Program [2] GA Entitlement Funding [3] Included FDOT Work Program					
UPIN #	FDOT WP#	Project Description	JAA Work Program and JACIP		Master Plan Update	
			Year	Amount	Year	Amount
					2026	
PFL0001896	-	6 10-unit T-Hangars (Class II)	-	-	2017-2026	$5,526,900
-	-	Construct Apron	-	-	2017-2026	$1,419,411
-	-	Automobile Parking	-	-	2017-2026	$449,341
CRG 292	-	7 75 x 75 Corporate Hangars	-	-	2017-2026	$6,132,461
-	-	Construct Apron	-	-	2017-2026	$1,419,411
-	-	Automobile Parking	-	-	2017-2026	$449,341
-	-	7 75 x 75 Corporate Hangars	-	-	2017-2026	$6,132,461
-	-	7 75 x 75 Corporate Hangars	-	-	2017-2026	$6,132,461
-	-	7 75 x 75 Corporate Hangars	-	-	2017-2026	$6,132,461
PFL0004153	-	Controlled Emergency Access Road Rehabilitation	-	-	2017-2026	$512,027

Source: Jacksonville Aviation Authority Work Program and JACIP, March 2008 and The LPA Group Incorporated, March 2008

7.2.5 Financially Feasible Capital Improvement Program

The Florida Department of Transportation in conjunction with the FAA requires that a financially (or cost) feasible plan be developed in relation to proposed airport development. The cost-feasible financial plan shall realistically assess project phasing and funding considering available state and local funding as well as the likelihood of federal participation using the FAA's project priority system.

The FDOT recommends that individual projects within the JACIP reflect a best estimate of appropriate funding levels and sources on a year-to-year basis. This determination of anticipated funding should be based upon state and federal funding available, the individual airport's historical funding and ability to produce the local share, and federal entitlement funds that can be reasonably expected.

According to **FDOT Procedure 725-040-040**, *Funding Airport Projects*, "Projects considered to be a high priority by individual airport's planners that cannot be adequately accommodated in the immediate five-year planning window may be recommended for movement to a medium or long-range planning window within the JACIP. In that way, those projects can remain more visible and readily accessible to District and FAA planners should state and/or federal funding levels/priorities change improving the projects' competitiveness for discretionary funds".

Historically, CRG has received annual funding in the amounts of $150,000 from GA Entitlement funding, $500,000 from FDOT funding, and $500,000 from JAA local match. However, FDOT funding is limited within the short-term to projects currently included in the FDOT Work Program. Therefore, projects which are shown in the short-term but are not included in the FDOT Work Program are shown as funded with federal funds, if eligible, or local funding only. As noted earlier, these would include the extension to Runway 32, the environmental assessment, as well as wetland mitigation.

To develop the financially feasible capital improvement program for JAA over the twenty-year planning period, this funding was applied to identify high-priority and cost-effective projects. Therefore, feasible funding sources, as shown in **Table 7-9**, are based upon the CRG FDOT Work Program and historic JAA and FAA GA entitlement funding. FAA Discretionary funding was based upon the FAA Priority Funding system (**Appendix I**) and historic participation on similar projects at CRG. JAA funding for operating and capital projects at CRG must compete with projects at Jacksonville International, Herlong and Cecil Field.

TABLE 7-9
FINANCIALLY FEASIBLE FUNDING PARTICIPATION

	FAA GA Entitlement	FDOT Total Participation[1]	JAA/Local Participation	Total Funding Participation
Short-Term Development (2008-11)	$600,000	$1,839,700	$2,000,000	$4,439,700
Mid-Term Development (2012-16)	$750,000	$2,500,000	$2,500,000	$5,750,000
Long-Term Development (2017-26)	$1,500,000	$5,000,000	$5,000,000	$11,500,000
Total	**$2,850,000**	**$9,339,700**	**$9,500,000**	**$21,689,700**

Notes:
[1]FDOT Participation based upon current Work Program for the years 2008-11
[2]Shows FDOT funding provided if FAA funds are not available
Sources: JAA, FDOT Work Program, May 2007, and The LPA Group Incorporated, 2008

Projects without probable FAA or FDOT funding may have to be deferred to the long-term or removed from the financially feasible work program. Therefore, based upon historic and programmed federal, state and local funding, a financially feasible capital improvement program was developed for the short, mid and long-term planning periods as shown in **Tables 7-10, 7-11 and 7-12**, respectively.

TABLE 7-10 SHORT-TERM PROPOSED CAPITAL IMPROVEMENT PLAN (2008-2011) FINANCIALLY FEASIBLE FUNDING												
LEGEND:	[1]In JAA March 2008 Work Program											
	[2]GA Entitlement Funding											
	[3]Included FDOT Work Program											
							Federal Funding Match				**Local Funding Match**	
Year	**UPIN #**	**FDOT WP #**	**Sponsor Priority Ranking**	**FAA Feasibility (Numerical Ranking)**	**Development Item Description**	**Development Costs & Contingencies (2008)**	**FAA Entitlement**	**FAA Discretionary**	**Total FAA**	**State**	**JAA**	**Third Party**
2008	-	-	2008-1	68	Cost Benefit Analysis	$40,000	$0	$0	$0	$0	$40,000	$0
2008	PFL0007020	-	2008-2	68	Environmental Assessment Runway 14-32 Extension [1 & 2]	$950,000	$150,000	$760,000	$910,000	$0	$40,000	$0
2008	PFL0001459	2169691-94-01	-	72	Upgrade Electrical Vault and Lights RW 14/32 [1& 3]	$150,000	$0	$0	$0	$25,000	$125,000	$0
					Yearly Total - 2008	**$1,140,000**	**$150,000**	**$760,000**	**$910,000**	**$25,000**	**$205,000**	**$0**
2009	-	-	2008-3	68	Environmental Survey and Permitting (no stormwater) [2]	$200,000	$150,000	$0	$150,000	$0	$50,000	$0
2009	-	-	2008-4	68	Tree Survey	$100,000	$0	$0	$0	$0	$100,000	$0
2009	-	-	2009-2	76	Wetland Mitigation - Runway 14-32	$1,375,000	$0	$1,306,250	$1,306,250	$0	$68,750	$0
2009	PFL0001887	2169842-94-01	-	72	Overlay Runway 5/23 [3]	$300,000	$0	$0	$0	$150,000	$150,000	$0
2009	PFL0001459	2169691-94-01	-	72	Upgrade Electrical Vault and Lights RW 14/32 [1& 3]	$1,000,000	$0	$950,000	$950,000	$0	$50,000	$0
					Yearly Total - 2009	**$2,975,000**	**$150,000**	**$2,256,250**	**$2,406,250**	**$150,000**	**$418,750**	**$0**
2010	PFL0007029	-	2009-1	56	Design Runway 14-32 and Taxiway A Extension [1]	$1,018,512	$0	$967,586	$967,586	$0	$50,926	$0
2010	-	-	-	45	Drainage - Runway 14-32 [2]	$307,050	$150,000	$0	$150,000	$0	$157,050	$0
2010	-	-	-	76	Wetland Mitigation - Runway 14-32	$1,375,000	0	$1,306,250	$1,306,250	$0	$68,750	$0
2010	PFL0001887	2169842-94-01	-	72	Overlay Runway 5/23 [3]	$0	$0	$0	$0	$0	$0	$0
2010	PFL0001459	2169691-94-01	-	72	Upgrade Electrical Vault and Lights RW 14/32 [1 & 3]	$0	$0	$0	$0	$0	$0	$0
					Yearly Total - 2010	**$2,700,562**	**$150,000**	**$2,273,836**	**$2,423,836**	**$0**	**$276,726**	**$0**
2011	PFL0007029	-	2009-1	56	Design Runway 14-32 and Taxiway A Extension [1]	$1,018,512	$0	$967,586	$967,586	$0	$50,926	$0
2011	-	-	-	76	Wetland Mitigation - Runway 14-32	$1,375,000	**$0**	$1,306,250	$1,306,250	$0	$68,750	$0
2011	PFL0001887	2169842-94-01	-	72	Overlay Runway 5/23 [1& 3]	$1,600,000	$0	$0	$0	$900,000	$700,000	$0
2011	-	-	-	84	Install REILs on Runway 5, includes conduit and cable	$122,820	$0	$0	$0	$0	$122,820	$0
2011	-	-	-	-	12-Unit T-Hangar (Class II)	$1,105,380	$0	$0	$0	$0	$0	$1,105,380
2011	-	-	-	-	3 10-Unit T-Hangars (Class II)	$2,763,450	$0	$0	$0	$0	$0	$2,763,450
2011	-	-	-	-	2 4-unit T-Hangars (Class II)	$736,920	$0	$0	$0	$0	$0	$736,920
					Yearly Total - 2011	**$8,722,082**	**$0**	**$2,273,836**	**$2,273,836**	**$900,000**	**$942,496**	**$4,605,750**
					Total Short-Term Costs	**$15,537,643**	**$450,000**	**$7,563,922**	**$8,013,922**	**$1,075,000**	**$1,842,971**	**$4,605,750**

Notes:
FDOT Funding based upon total amount provided for the years 2008-2011
FDOT Funding Locked through 2010
FDOT will not participate in any project associated with the Runway 32 extension.
Sources: JAA FDOT Work Program, JACIP (March 2008), Historical Funding, FAA Project Priority Funding and The LPA Group, 2008

TABLE 7-11
MID-TERM PROPOSED CAPITAL IMPROVEMENT PLAN (2012-2016)
FINANCIALLY FEASIBLE FUNDING

LEGEND:
- [1]In JAA March 2008 Work Program
- [2]GA Entitlement Funding
- [3]Included FDOT Work Program

							Federal Funding Match				Local Funding Match	
Year	UPIN #	FDOT WP #	Sponsor Priority Ranking	FAA Feasibility (Numerical Ranking)	Development Item Description	Development Costs & Contingencies (2008)	FAA Entitlement	FAA Discretionary	Total FAA	State	JAA	Third Party
2012	PFL0007044	-	2010	50	Relocate Taxiway A-3 & Drainage Improvements- [1 & 2]	$1,919,063	$300,000	$0	$300,000	$809,531	$809,531	$0
2012	PFL0007029	-	2009-1	56	Design Runway 14-32 and Taxiway A Extension [1]	$1,018,512	$0	$967,586	$967,586	$0	$50,926	$0
2012	-	-	-	43	Fence Removal	$50,663	$0	$0	$0	$25,332	$25,332	$0
2012	PFL0007026	-	2010	41	Blast Fence Runway 14-32 [1]	$500,000	$0	$0	$0	$250,000	$250,000	$0
2012	-	-	-	76	Wetland Mitigation - Runway 14-32	$1,375,000	$0	$1,306,250	$1,306,250	$0	$68,750	$0
2012	PFL0001887	2169842-94-01	2012	72	Overlay Runway 5/23 [1 & 3]	$447,397	$0	$0	$0	$223,699	$223,699	$0
2012	CRG294	-	C2011-4-	0	Demolish T-Hangars (Bldgs 5-8, 21-23, 32, 33, & 44) [1]	$1,535,250	$0	$0	$0	$0	$0	$1,535,250
					Yearly Total - 2012	**$6,845,885**	**$300,000**	**$2,273,836**	**$2,573,836**	**$1,308,562**	**$1,428,237**	**$1,535,250**
2013	PFL0007029	-	2009-1	56	Construct Runway 14-32 and Taxiway A Extension - Phase 1* [1]	$5,473,740	$0	$5,152,553	$5,152,553	$0	$321,187	$0
2013	-	-	-	48	Relocate MALSR (includes in-pavement lighting) [2]	$614,100	$150,000	$0	$150,000	$0	$464,100	$0
2013	-	-	-	84	Conduit - Runway 14-32	$46,058	$0	$0	$0	$0	$46,058	$0
2013	-	-	-	84	Cable - Runway 14-32	$14,585	$0	$0	$0	$0	$14,585	$0
2013	-	-	-	84	Runway Edge Lights - Extension Runway 14-32	$24,564	$0	$0	$0	$0	$24,564	$0
2013	-	-	-	50	Runway Threshold Lights - Runway 14	$1,842	$0	$0	$0	$0	$1,842	$0
2013	-	-	-	79	Taxiway Edge Lights - Taxiway A Extension	$52,199	$0	$0	$0	$0	$52,199	$0
2013	-	-	-	0	1 12-unit T-Hangar (Class I)	$829,035	$0	$0	$0	$0	$0	$829,035
2013	-	-	-	0	3 8-unit T-Hangars (Class I)	$1,658,070	$0	$0	$0	$0	$0	$1,658,070
2013	-	-	-	0	3 10-unit T-Hangars (Class I)	$2,072,588	$0	$0	$0	$0	$0	$2,072,588
					Yearly Total-2013	**$10,786,780**	**$150,000**	**$5,152,553**	**$5,302,553**	**$0**	**$924,534**	**$4,559,693**
2014	-	-	-	84	Relocate REILs - Runway 14	$7,676	$0	$0	$0	$0	$7,676	$0
2014	-	-	-	84	Relocate PAPIs - Runway 14 and 32	$153,525	$0	$0	$0	$0	$153,525	$0
2014	PFL0007029	-	2009-1	56	Construct Runway 14-32 and Taxiway A Extension - Phase 2* [1&2]	$5,473,740	$150,000	$5,010,053	$5,160,053	$0	$313,687	$0
2014	-	-	-	48	Relocate Glideslope Antenna	$153,525	$0	$0	$0	$0	$153,525	$0
2014	-	-	-	47	Construct holding pad on Taxiway A	$38,381	$0	$0	$0	$19,191	$19,191	$0
2014	-	-	-	68	Environmental surveys and permitting (no stormwater)	$50,000	$0	$0	$0	$0	$25,000	$0
2014	-	-	-	68	Gopher Tortoise survey, permitting and relocation	$30,000	$0	$0	$0	$15,000	$15,000	$0
2014	-	-	-	68	Environmental Assessment	$75,000	$0	$0	$0	$0	$37,500	$0
2014	PFL0004159	-	2014-4	23	Relocate Lindberg Road [1]	$742,242	0	0	0	$371,121	$371,121	$0
					Yearly Total - 2014	**$6,724,089**	**$150,000**	**$5,010,053**	**$5,160,053**	**$405,312**	**$1,096,225**	**$0**
2015	PFL0001899	-	2014-5	22	Design and Construct Controlled Emergency Access Road [1]	$335,392	$0	$0	$0	$167,696	$167,696	$0
2015	-	-	-	47	Install 8 lighted signs associated with Emergency Access Road and RSA	$30,705	$0	$0	$0	$15,353	$15,353	$0
2015	-	-	2014	74	Markings Removal- Runway 14-32 [2]	**$94,878**	**$50,000**	$0	$50,000	$0	$44,878	$0
2015	-	-	2014	74	Pavement Markings - Runway 14-32 [2]	$119,750	$100,000	$0	$100,000	$0	$19,750	$0
2015	-	-	2014	47	Install Runway Information Signs - Runway 14-32	$17,655	$0	$0	$0	$0	$17,655	$0
2015	-	-	2012	47	Taxiway Guidance Signs-Extension Runway 14-32	$11,514	$0	$0	$0	$0	$11,514	$0
2015	-	-	-	61	Wetland Mitigation - High Priority Development	$75,000	$0	$0	$0	$37,500	$37,500	$0
					Yearly Total - 2015	**$684,895**	**$150,000**	**$0**	**$150,000**	**$220,549**	**$314,346**	**$0**
2016	PFL0005605	-	2012	43	Security Fencing Relocation [1]	$219,446	$0	$0	$0	$109,723	$109,723	$0

TABLE 7-11 MID-TERM PROPOSED CAPITAL IMPROVEMENT PLAN (2012-2016) FINANCIALLY FEASIBLE FUNDING													
LEGEND:	**[1]In JAA March 2008 Work Program**												
	[2]GA Entitlement Funding												
	[3]Included FDOT Work Program												
							Federal Funding Match				**Local Funding Match**		
Year	**UPIN #**	**FDOT WP #**	**Sponsor Priority Ranking**	**FAA Feasibility (Numerical Ranking)**	**Development Item Description**	**Development Costs & Contingencies (2008)**	**FAA Entitlement**	**FAA Discretionary**	**Total FAA**	**State**	**JAA**	**Third Party**	
2016	PFL0007016	-	2009	43	Purchase of Security Cameras (1)	$400,000	$0	$0	$0	$200,000	$200,000	$0	
2016	PFL0007004	-	2009	63	Purchase and Install Flight Tracking Equipment (1)	$500,000	$0	$0	$0	$250,000	$250,000	$0	
2016	-	-	2014	43	Chainlink Fence with Barbed Wire - Runway 14-32	$138,173	$0	$0	$0	$0	$138,173	$0	
2016	PFL0001457	-	-	0	2 120 x 120 Corporate Hangars (1)	$4,275,610	$0	$0	$0	$0	$0	$4,275,610	
2016	-	-	-	0	4 8-unit T-Hangar (Class II)	$2,947,680	$0	$0	$0	$0	$0	$2,947,680	
2016	PFL0001458	-	-	-	3 80 x 80 Corporate Hangars	$2,949,642	$0	$0	$0	$0	$0	$2,949,642	
2016	-	-	-	-	6 50 x 50 Box Hangars	$2,210,760	$0	$0	$0	$0	$0	$2,210,760	
2016	-	-	-	56	Total Apron and Taxilanes (2)	$493,144	$150,000	$0	$150,000	$171,572	$171,572	$0	
2016	-	-	-	19	Total Auto Parking	$92,115	$0	$0	$0	$46,058	$46,058	$0	
					Yearly Total - 2016	**$14,226,569**	**$150,000**	**$0**	**$150,000**	**$777,353**	**$915,525**	**$12,383,692**	
					Total Mid-Term Costs	**$39,268,218**	**$900,000**	**$12,436,442**	**$13,336,442**	**$2,711,774**	**$4,678,867**	**$18,478,634**	

Notes: FDOT funding locked until 2010

**FAA will participate in 1,500 rather than 1,600 foot extension. Thus, 95% was applied to $10,947,480-($100,000 + Any Entitlement Funding) to determine likely federal discretionary participation.*

Sources: JAA FDOT Work Program, JACIP (March 2008), Historical Funding, FAA Project Priority Funding and The LPA Group Incorporated, 2008

TABLE 7-12
LONG-TERM PROPOSED CAPITAL IMPROVEMENT PLAN (2017-2026)
FINANCIALLY FEASIBLE FUNDING

LEGEND:
- [1]In JAA March 2008 Work Program
- [2]GA Entitlement Funding
- [3]Included FDOT Work Program

							Federal Funding Match				Local Funding Match	
Year	**UPIN #**	**FDOT WP #**	**Sponsor Priority Ranking**	**FAA Feasibility (Numerical Ranking)**	**Development Item Description**	**Development Costs & Contingencies (2008)**	**FAA Entitlement**	**FAA Discretionary**	**Total FAA**	**State**	**JAA**	**Third Party**
2017-2026	PFL0007210	-	2012-4	53	Extend Taxiway B and provide connector to Building 607 leasehold (2)	$397,683	$150,000	$0	$150,000	$123,842	$123,842	$0
2017-2026	PFL0001936	-	2016-X	0	Demolish Building 607 and associated Shed	$153,525	$0	$0	$0	$76,763	$76,763	$0
2017-2026	PFL0007210	-	2012-4	62	Design & Rehab Hangar 607 Apron (1&2)	$1,151,438	$150,000	$0	$150,000	$500,719	$500,719	$0
2017-2026	PFL0001881	-	2015-X	0	2 Corporate Hangars (240 x 240 SF) Construction and parking (1)	$16,196,888	$0	$0	$0	$0	$0	$16,196,888
2017-2026	-	-	-	62	Rehabilitate Craig Air Center Ramp (2)	$844,388	$150,000	$0	$150,000	$347,194	$347,194	$0
2017-2026	-	-	-	0	Demolish Box Hangars (Bldgs 12-16)	$153,525	$0	$0	$0	$0	$0	$153,525
2017-2026	PFL0001884	-	-	0	6 80 x 80 Corporate Hangars	$5,899,284	$0	$0	$0	$0	$0	$5,899,284
2017-2026	-	-	-	0	2 50 x 50 Box Hangars	$736,920	$0	$0	$0	$0	$0	$736,920
2017-2026	-	-	-	56	Total Apron and Taxilanes (2)	$1,041,081	$150,000	$0	$150,000	$445,541	$445,541	$0
2017-2026	-	-	-	19	Total Auto Parking	$138,173	$0	$0	$0	$0	$0	$138,173
2017-2026	PFL0001885	-	2011-3	62	Rehab Sky Harbor Ramp (1&2)	$844,388	$150,000	$0	$150,000	$347,194	$347,194	$0
2017-2026	PFL0001935	-	2013-1	68	Airport Master Plan Update (2013) (1&2)	$300,000	$150,000	$0	$150,000	$75,000	$75,000	$0
2017-2026	PFL0007138	-	2013-5	72	Rehab Runway 14/32 (1&2)	$3,283,252	$150,000	$2,976,589	$3,126,589	$78,331	$78,331	$0
2017-2026	PFL0001559	-	2015-5	45	Runway 5 Easement (1)	$69,000	$0	$0	$0	$34,500	$34,500	$0
2017-2026	PFL0001560	-	2015-1	45	Runway 14 Easement (1)	$24,150	$0	$22,943	$22,943	$604	$604	$0
2017-2026	CRG293	-	-	0	6 12-unit T-Hangars (Class II)	$6,632,280	$0	$0	$0	$0	$0	$6,632,280
2017-2026	PFL0001896	-	-	0	6 10-unit T-Hangars (Class II)	$5,526,900	$0	$0	$0	$0	$0	$5,526,900
2017-2026	-	-	-	23	Extend General Doolittle Drive	$2,064,082	$0	$0	$0	$1,032,041	$1,032,041	$0
2017-2026	-	-	-	68	Environmental Survey and Permitting (no stormwater) (2)	$150,000	$150,000	$0	$150,000	$0	$0	$0
2017-2026	-	-	-	68	Tree Survey	$25,000	$0	$0	$0	$12,500	$12,500	$0
2017-2026	-	-	-	68	Gopher Tortoise survey, permitting and relocation	$80,000	$0	$0	$0	$40,000	$40,000	$0
2017-2026	PFL0001898	-	-	40	Acquire Land for Southside Access Road adjacent to Car Dealership	$12,420	$0	$0	$0	$6,210	$6,210	$0
2017-2026	-	-	-	43	Relocate Fenceline (2)	$219,446	$150,000	$0	$150,000	$34,723	$34,723	$0
2017-2026	-	-	-	68	Environmental Assessment	$200,000	$0	$0	$0	$100,000	$100,000	$0
2017-2026	-	-	-	20	Utilities/Infrastructure Improvements - South Side(2)	$1,995,825	$150,000	$0	$150,000	$922,913	$922,913	$0
					Total Long-Term	**$48,139,646**	**$1,500,000**	**$2,999,531**	**$4,499,531**	**$4,178,073**	**$4,178,073**	**$35,283,969**
					Total Financially Feasible Project Costs	**$102,945,507**	**$2,850,000**	**$22,999,896**	**$25,849,896**	**$7,964,847**	**$10,699,911**	**$58,368,353**

Notes:
FDOT Funding based upon total amount provided for the years 2008-2011
FDOT Funding locked through 2010
Sources: JAA FDOT Work Program, JACIP (March 2008), Historical Funding, FAA Project Priority Funding and The LPA Group Incorporated, 2008

As part of the Jacksonville Aviation System, CRG is eligible for funding through the JAA's general fund. This eligibility is in accordance with JAA's own determination of project priority among all airports within the Jacksonville system. Because both AIP and FDOT funding for Craig Airport will most likely be limited, the Master Plan provides a financially feasible plan based upon probable FAA, FDOT and JAA funding as shown in **Table 7-13**.

TABLE 7-13
20-YEAR CAPITAL IMPROVEMENT PROGRAM SUMMARY
FINANCIALLY FEASIBLE FUNDING

Development Period	Total Project Cost	FAA Entitlement[1]	FAA Discretionary[2]	State Share[3]	JAA Share[4]	Third Party
Short-Term	$15,537,643	$450,000	$7,563,922	$1,075,000	$1,842,971	$4,605,750
Mid-Term	$39,268,218	$900,000	$12,436,442	$2,711,774	$4,678,867	$18,478,634
Long-Term	$48,139,646	$1,500,000	$2,999,531	$4,178,073	$4,178,073	$35,283,969
Total for 20-Year CIP	**$102,945,507**	**$2,850,000**	**$22,999,896**	**$7,964,847**	**$10,699,911**	**$58,368,353**

Notes:
[1]FAA Entitlement typically equals $150,000 per year for GA airports
[2]FAA Discretionary Funding equals approximately 95 percent of funding on projects with FAA Priority Scores of 70 or greater.
[3]FDOT Funding typically equals $500,000 per year.
[4]JAA Funding typically equals $500,000 per year unless there is a high priority project.
**Other Funding Sources includes operating revenues generated by the airport as well as loans, bonds and other funding sources*
Source: The LPA Group Incorporated 2008

The difference between the eligible project funding as shown in **Table 7-7** ($168.7 million) and the financially feasible project funding shown in **Table 7-13** ($102.9 million) is an indication of the private outside funding ($65.8 million) that Craig must identify if all projects identified in the Master Plan are to be undertaken.

7.4 Cash Flow Forecast

The cash flow forecast for CRG is based on the annual forecasts for general aviation operations, based aircraft, fuel flowage demand as described in Chapters 3 and 4 and the requirements of the financially feasible capital improvement program. The forecast also addresses in general terms the financial feasibility of the first 10 years of this development program. Cost projections are based on constant 2007 dollars and include estimated engineering fees and contingencies. Further, conservative funding assumptions based upon historic data were used to determine the anticipated federal, state, local and third party/private participation associated with the cash flow analysis. The projections, however, should be used for planning purposes only and do not imply that funding for these projects will necessarily be available. Each year indicates the initiation of design and/or environmental efforts as identified in the tables. It is assumed however based upon anticipated funding that construction would be undertaken either in the following year or over a multi year period.

For projects where federal funding is unavailable, FDOT may provide up to 50 percent funding. The remaining 50 percent of the project cost must be provided by the Airport Sponsor or from another funding source including private investment. While proposed projects at CRG may be eligible for the maximum FAA and/or FDOT funds based upon the FAA project priority rates, historically General Aviation (GA) airports tend to receive lower priority for these funds compared to commercial airports, which limits projects that can be feasibly developed.

In addition to future capital improvements, projects required to maintain safe and efficient airside and landside facilities must also be considered. Therefore, JAA will continue to assist CRG in meeting the needs of its users over the long-term period. As noted, major structural projects, including runways, taxiways, aprons, and other improvements could include federal funding provided the project scores high enough in the FAA NPIAS priority system to gain limited FAA discretionary funding. The FAA's GA Entitlement funding per year provides $150,000 per year for capital improvement projects.

A stipulation for federal funding requires that the airport sponsor keep the airport facilities in operation for at least 20 years from the date of the last federal grant. Therefore, in addition to projected capital improvements, airport maintenance and operating costs must be considered in determining available funding for the local share of the proposed development. Ideally, the airport's revenues should be structured to reduce the burden of operating expenses on the airport sponsor as well as fund a portion of the capital plan.

Based upon operating revenues and expenses obtained from JAA, a projected cash flow analysis was developed which includes the cost of capital improvements and anticipated revenues associated with such development (i.e. land lease revenues). The financial feasibility assessment focused on the initial ten years of the planning period. The overall purpose was to assess JAA's ability to fund the previously recommended capital development plans through the year 2016. This assessment assumes the maximum discretionary AIP funding is received for those projects with AIP eligibility and priority requirements of 65 or higher and associated with development of the primary runway 14-32.

As part of the cash flow analysis, historic funding participation from FDOT and JAA's General Fund were applied. Based upon historic data, the average annual breakdown of funding for projects at CRG is as follows:

FAA GA Entitlement:	$150,000
FDOT:	$500,000
JAA General Fund:	$500,000

Source: JAA Management, 2008

As a result, JAA is responsible for finding other funding sources, including FDOT, to fund proposed projects through the planning period.

7.4.1 Historical Financial Data

The cash flow forecast is based upon data obtained from financial statements and leasehold information provided by JAA related to the Craig Airport for the period of FY 2005 through 2007. Implicit in this analysis is the assumption that this financial data specifically relates to Craig Airport only and doe not include revenues and expenses from other airports under control of JAA.

Operating revenues at CRG are derived from a variety of sources including: land lease revenues and aviation related revenues including fuel flowage, security, and oil fees as well as some revenue from utilities and limited hangar/building rentals. Operating revenues and expenses for 2005, 2006 and 2007, as shown in **Table 7-14**, were obtained from JAA staff. This information was used as a baseline for the Cash Flow forecast provided in **Table 7-16**.

TABLE 7-14
HISTORIC FINANCIAL STATEMENTS

	FY 2005	FY 2006	FY 2007	2007 Percent of Total
Operating Revenue				
Concessions	78,828.68	98,211.04	98,329.70	17.95%
Fees & Charges	8,084.74	7,760.08	8,495.23	1.55%
Space & Facility Rentals	524,736.22	485,504.63	437,096.44	79.80%
Sale of Utilities	1,069.72	3,000.00	3,000.00	0.55%
Other Miscellaneous Operating Rev	39,462.16	1,570.12	806.93	0.15%
Total Operating Revenue	**652,181.52**	**596,045.87**	**547,728.30**	
Operating Expenses				
Wages & Benefits	245,715.43	285,583.33	240,708.60	70.05%
Services & Supplies	34,706.44	32,514.60	18,005.05	5.24%
Repairs & Maintenance	41,767.63	40,983.97	27,675.14	8.05%
Promotion & Advertising	6,462.31	1,382.36	2,765.02	0.80%
Training	3,233.10	6,037.60	6,058.66	1.76%
Utilities	48,946.65	50,309.10	48,425.00	14.09%
Taxes	-	-	-	-
Total Operating Expenses	**380,831.56**	**416,810.96**	**343,637.47**	
Net Income (Loss)	**271,349.96**	**179,234.91**	**204,090.83**	

Source: Jacksonville Aviation Authority Finance Department, 2007 & 2008

7.4.2 Forecast Methodology

The financial analysis was based upon assumptions and forecasts already contained in the master plan update. However, based upon the current situation facing the aviation industry, including increased fuel costs, security requirements, and the impact of new technology, some modifications were made. Both revenue and expense categories were assumed to increase from the base year by applying a consumer price index of 3.82% which is based upon an average of the past five years. Further growth estimates are based upon the relationships between existing and programmed facilities and operational forecasts. For instance, while land lease revenues were exclusively linked to leasehold space available, fuel sales are directly related to a factor that combines growth rates for airport operations and aircraft size.

In addition, fuel flowage fees and other income and all expense categories were directly related to the growth in airport operations and based aircraft. Further, additional revenue associated with the development of non-aviation facilities were also included in the cash flow analysis.

7.4.2.1 Airport Rates and Charges

Using the methodology outlined in the FDOT *Florida Airport Financial Resource Guide and Master Plan Guidebook*, leases, rates and charges at CRG were established in accordance with aviation and non-aviation categories as follows:

- Aviation - The aviation category includes full service FBOs, specialty FBOs, non-FBOs (e.g. corporate hangars), and any other commercial and non-commercial aeronautical aviation activity.
- Non-aviation - the non-aviation category includes all non-aeronautical uses of the airport land including restaurants, non-aviation related storage, offices, commercial/industrial parks, and other related facilities.

By establishing base rental and other fees at CRG, the consultant can ensure that revenues will be available to offset the cost of maintaining, operating and developing the airport over the proposed twenty year planning period. Although it is unlikely and unnecessary that CRG will become totally self-sufficient, it is recommended that aviation and non-aviation revenue improvements to increase the utility of the airfield to paying customers will likely cover at the least operating expenses and a portion of airport capital improvements in the future. The types of improvements, including necessary land acquisitions, via purchase, easements or other means, were conceived to assist JAA to achieve this goal within the planning period.

7.4.2.2 Operating Revenues and Expenses

In order to forecast future revenues and expenses related to not only increased operations but also anticipated revenues and expenses related to projected building and hangar development as outlined in the CIP, the following assumptions as shown in **Table 7-15** were developed based upon data obtained from airport management and similarly sized airports in the region.

TABLE 7-15 FORECAST ASSUMPTIONS		
		2007 DOLLARS
REVENUES:		
Use of Space and Facility Rentals		
	Non-Aviation Land Leases	$0.20[1] per square foot per month
	Aviation Related Land Leases	$0.17[2] per square foot per month
	Note: Assumed 3.82 percent[3] increase in land and hangar leases every five (5) years	
Current Service Charges		
	Concessions (includes Fuel Flowage Fee)	$0.59 per GA Operation
	Fees & Charges (includes oil and security fees)	$0.05 per GA Operation
	Sale of Utilities (Electricity)	$3000 based upon current lease with North Florida Flight Training with 3.82 percent increase every five years as part of lease renewal.
	Miscellaneous Operating Revenue	1,189 (Average of 2006 and 2007)
EXPENSES:		
	Wages & Benefits	~$60,177 per employee with 2% annual raise
	Services & Supplies	$0.15 per operation
	Repairs & Maintenance	~$104 per based aircraft
	Promotion & Advertising	$0.015 per GA operation
	Training	Varies; maintain at least $4000.00 annually or $1000 per employee
	Utilities	$49,227 (Avg of 2006 & 07) with 3.82% increase every 5 years.
	Taxes	$0.00

Notes:
[1] Based upon historic leasehold information for non-aviation tenants at CRG
[2] Based upon historic leasehold information for aviation related tenants at CRG
Source: JAA Financial and Leasehold information and The LPA Group Incorporated, 2008

Space and Facilities Rentals

Space and facilities rentals consist of two categories: aviation and non-aviation leaseholds. Based upon information obtained from JAA Properties and Accounting departments, leasehold rentals represent almost 80 percent of total revenue generation at CRG. Since JAA has stated that they are primarily interested in providing land leases only, then future revenues were based upon $0.20 square foot monthly charge for non-aviation related leaseholds and a $0.17 square foot monthly charge for aviation related leaseholds. In addition, a 3.82% increase was applied every five years to account for inflation and land values. It is forecast that space and facilities rental revenues associated with aviation and non-aviation related leases will equal $1,270,010 or 89% of total revenues.

Concessions

Projections of revenues associated with concessions (fuel flowage fees) through the year 2026 were based upon existing concession revenues divided by 2006 GA operations to provide a ratio of $0.59. Applying this ratio to forecast GA operations through the year 2026 resulted in $139,508 or 9.78 percent of total anticipated revenues.

Fees and Charges
In 2007, revenues associated with fees and charges were estimated to represent 1.55% of total revenues in 2007. Using the projection of $0.05 per general aviation operation resulted in a projection of $12,276 or 0.85 percent of total projected revenues in 2026.

Sale of Utilities
In fiscal year 2007 (October 2006 through September 2007), the sale of utilities has historically represented electrical power sold to North Florida Flight Training, which has averaged approximately $3,000 per year based upon the existing leasehold agreement. Applying a increase of 3.82 percent every five years as part of anticipated lease renewals, it is anticipated that the sale of utilities will represent approximately 0.24 percent of total revenues or approximately $3,485.

Wages and Benefits
Wages and benefits are directly related to the number of employees currently assigned to the airport. Increases in wages and benefits were attributed to an increase in the number of employees to keep pace with planned development.

Services and Supplies
Projections of services and supplies through the twenty year planning period are based upon the ratio of existing services and supplies as shown in 2007 to general aviation operations. Using a rate of $0.15 per general aviation operation has resulted in a growth of expenses from $18,005 in 2007 to $36,272.98 in 2026.

Repairs and Maintenance
Repairs and maintenance expenses were determined based upon growth in based aircraft. Using the average repairs and maintenance expenses for FYs 2006 and 2007 applied to forecast based aircraft, it is anticipated that repairs and maintenance costs will equal approximately $56,460 by the year 2026 to accommodate aging infrastructure.

Promotions and Advertising
Promotions and advertising expenses were directly related to forecast general aviation operations. Applying a ratio of $0.15 per general aviation operation through the end of the planning period resulted in a promotions and advertising cost estimate of approximately $3,000 in 2026.

Training
Training costs are directly related to the ratio of existing CRG employees. Based upon historic training spending in FY 2005, 2006 and 2007, a training budget of $5,270.24 is forecast to accommodate at least five employees in the year 2026.

Utilities
Utility costs are directly related to airport operating costs primarily related to electricity, water, sewer, etc. It is anticipated based upon growth at similarly sized airports and that future space and facility leases will be related to land only that the cost of utilities at the airport will increase at an average rate of 3.82 percent over the twenty year forecast period. As a result, utilities are anticipated to increase from $48,425 in 2007 to approximately $55,086 in 2026.

7.4.3 Cash Flow Assessment

The first step in this financial assessment was to compile information related to historical income and expenditures at CRG. Using this data as a starting point, future revenue and expenditures were then estimated through 2026. Historically, FDOT and JAA have each provided only $500,000 per year to development projects at CRG. Thus, applying the GA Entitlement Funding of $150,000, FDOT and JAA historical funding, anticipated Federal Discretionary, in addition to private funding, JAA will not require alternative funding sources to accommodate proposed development.

Table 7-16 presents the projected net operating surplus/(deficit) for CRG. The data is based upon CRG's calendar year, and starting values were obtained from the Jacksonville Aviation Authority Finance Department. In addition to the funding obtained from day-to-day operations, the Airport is currently using three (federal grants, state grants, and loans) other sources of funding that allow it to finance the current Capital Improvement Program.

7.5 Summary and Recommendations

Based on the revenue and expense assumptions described herein, the financial model of CRG shows that investments made for the capital improvement plan produce a net positive return, and the capital improvements should be possible to finance based upon the financially feasible CIP forecast. Further if additional funding is obtained or growth exceeds expectations, JAA could initiate projects outlined in **Table 7-17**.

TABLE 7-16
CASH FLOW ANALYSIS (FY 2006-2026)
CRAIG MUNICIPAL AIRPORT

				Short-Term					**Mid-Term**			**Long-Term**
	Base Year	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**	**Years 11-20**
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017-2026**
Based Aircraft	327	335	343	351	359	367	376	386	395	405	416	543
General Aviation Operations	163,988	167,079	170,229	173,438	176,707	180,038	183,325	186,672	190,080	193,550	197,084	237,049
Number of Employees	4	4	4	4	4	4	4	4	4	4	5	5
Estimated Fuel Demand (gals)	296,229	302,413	308,114	313,922	319,840	325,869	331,818	337,876	344,045	350,326	356,721	429,059
REVENUES												
Space and Facilities Rentals												
Commercial Realty Land Lease (Non-Aviation)												
Leasehold CRG-XX (Future CVS Drugstore)	$0	$0	$0	$74,735	$74,735	$74,735	$74,735	$74,735	$74,735	$74,735	$74,735	$773,262
Leasehold CRG-19	$0	$0	$18,567	$18,567	$18,567	$18,567	$18,567	$19,277	$19,277	$19,277	$19,277	$202,452
Leasehold CRG-21	$0	$0	$0	$53,064	$53,064	$53,064	$53,064	$53,064	$55,091	$55,091	$55,091	$574,297
Leasehold CRG-26 (MT)	$0	$0	$0	$0	$0	$0	$0	$0	$42,112	$42,112	$42,112	$424,335
Leasehold CRG-27 (Business Park)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Leasehold CRG-28 (Landmark Property)	$0	$0	$0	$5,486	$5,486	$5,486	$5,486	$5,486	$5,486	$5,486	$5,486	$58,048
												$0
SUBTOTAL NON-AVIATION LEASES	**$0**	**$0**	**$18,567**	**$151,852**	**$151,852**	**$151,852**	**$151,852**	**$152,562**	**$196,701**	**$196,701**	**$196,701**	**$2,032,394**
Aviation Related Land Lease, includes auto parking												
Leasehold CRG 11	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$467,978
Leasehold CRG-12	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$138,298
Leasehold CRG-17	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$83,780
Leasehold CRG-18	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$208,074
Leasehold CRG-20	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$179,378
Leasehold CRG-22	$0	$0	$0	$0	$0	$0	$18,407	$18,407	$18,407	$18,407	$18,407	$193,318
Leasehold CRG-23	$0	$0	$0	$0	$0	$0	$59,224	$59,224	$59,224	$59,224	$59,224	$1,223,289
Leasehold CRG-25	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,838,031
SUBTOTAL AVIATION RELATED LEASES	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$77,631**	**$77,631**	**$77,631**	**$77,631**	**$77,631**	**$4,332,147**
												$0
Existing Space and Facilities Rentals (2007 JAA Financials)	$485,505	$437,096	$495,040	$486,495	$529,240	$533,161	$533,161	$533,161	$533,161	$549,072	$552,993	$5,725,207
TOTAL USE SPACE AND FACILITIES RENTALS	**$485,505**	**$437,096**	**$513,608**	**$638,348**	**$681,093**	**$685,013**	**$762,644**	**$763,353**	**$807,492**	**$823,404**	**$827,324**	**$12,089,748**
Current Service Charges												
Concessions	$98,211	$98,330	$100,183	$102,072	$103,996	$105,956	$107,891	$109,860	$111,866	$113,908	$115,988	$1,286,193
Fees & Charges	$7,760	$8,495	$8,655	$8,819	$8,985	$9,154	$9,321	$9,491	$9,665	$9,841	$10,021	$111,121
Sale of Utilities	$3,000	$3,000	$3,000	$3,000	$3,000	$3,115	$3,115	$3,115	$3,115	$3,115	$3,234	$33,205
TOTAL SERVICE CHARGES	**$108,971**	**$109,825**	**$111,839**	**$113,890**	**$115,981**	**$118,225**	**$120,327**	**$122,466**	**$124,645**	**$126,864**	**$129,242**	**$1,430,519**
												$0
Miscellaneous Income	$1,570	$807	$1,189	$1,189	$1,189	$1,189	$1,189	$1,189	$1,189	$1,189	$1,189	$11,885
TOTAL MISCELLANEOUS INCOME	**$1,570**	**$807**	**$1,189**	**$1,189**	**$1,189**	**$1,189**	**$1,189**	**$1,189**	**$1,189**	**$1,189**	**$1,189**	**$11,885**

TABLE 7-16
CASH FLOW ANALYSIS (FY 2006-2026)
CRAIG MUNICIPAL AIRPORT

		Short-Term					**Mid-Term**					**Long-Term**
	Base Year	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**	**Years 11-20**
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017-2026**
TOTAL OPERATING REVENUES	$596,046	$547,728	$626,635	$753,426	$798,262	$804,426	$884,159	$887,008	$933,326	$951,456	$957,755	$13,532,152
EXPENSES												
Wages & Benefits	$285,583	$240,709	$245,523	$250,433	$255,442	$260,551	$265,762	$271,077	$276,499	$282,028	$359,586	$4,016,117
Services & Supplies	$32,515	$18,005	$26,048	$26,539	$27,040	$27,549	$28,052	$28,564	$29,086	$29,617	$30,158	$334,417
Repairs & Maintenance	$40,984	$27,675	$35,625	$36,460	$37,314	$38,188	$39,146	$40,128	$41,134	$42,166	$43,224	$502,160
Promotion & Advertising	$1,382	$2,765	$2,126	$2,166	$2,207	$2,249	$2,290	$2,331	$2,374	$2,417	$2,461	$27,295
Training	$6,038	$6,059	$6,080	$4,560	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$9,337	$58,562
Utilities	$50,309	$48,425	$49,227	$49,227	$49,227	$49,227	$49,227	$51,107	$51,107	$51,107	$51,107	$536,752
Taxes	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL OPERATING EXPENSES	**$416,811**	**$343,637**	**$364,629**	**$369,385**	**$375,229**	**$381,763**	**$388,476**	**$397,208**	**$404,200**	**$411,336**	**$495,873**	**$5,475,304**
YEARLY NET BALANCE / (LOSS)	**$179,235**	**$204,091**	**$262,006**	**$384,041**	**$423,033**	**$422,663**	**$495,683**	**$489,800**	**$529,126**	**$540,120**	**$461,882**	**$8,056,848**
CAPITAL IMPROVEMENT PROGRAM (CIP)												
Transfers In:												
FAA Entitlement Grant Draws (AIP)	$150,000	$150,000	$150,000	$150,000	$150,000	$0	$300,000	$150,000	$150,000	$150,000	$150,000	$1,500,000
FAA Discretionary Grants	$0	$0	$760,000	$2,256,250	$2,273,836	$2,273,836	$2,273,836	$5,152,553	$5,010,053	$0	$0	$2,999,531
FDOT / State Grant Draws	$175,000	$125,000	$25,000	$150,000	$0	$900,000	$1,308,562	$0	$405,312	$220,549	$777,353	$5,000,000
Private or Third Party Investment	$0	$0	$0	0	$0	$4,605,750	$1,535,250	$4,559,693	$0	$0	$12,383,692	$35,283,969
JAA Participation from General Fund	$175,000	$175,000	$205,000	$418,750	$276,726	$942,496	$1,428,237	$924,534	$1,096,225	$314,346	$915,525	$5,000,000
Operating Balance (if any)	$179,235	$204,091	$262,006	$384,041	$423,033	$422,663	$495,683	$489,800	$529,126	$540,120	$461,882	$8,056,848
Total CIP Transfers	**$679,235**	**$654,091**	**$1,402,006**	**$3,359,041**	**$3,123,594**	**$9,144,745**	**$7,341,567**	**$11,276,580**	**$7,190,715**	**$1,225,015**	**$14,688,451**	**$57,840,349**
Other Funding Participation Required	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total CIP Funds Available	$679,235	$654,091	$1,402,006	$3,359,041	$3,123,594	$9,144,745	$7,341,567	$11,276,580	$7,190,715	$1,225,015	$14,688,451	$57,840,349
Total CIP Project Costs	$500,000	$450,000	$1,140,000	$2,975,000	$2,700,562	$8,722,082	$6,845,885	$10,786,780	$6,724,089	$684,895	$14,226,569	$48,139,646
END BALANCE	**$179,235**	**$204,091**	**$262,006**	**$384,041**	**$423,033**	**$422,663**	**$495,683**	**$489,800**	**$466,626**	**$540,120**	**$461,882**	**$9,700,703**

Source: Jacksonville Aviation Authority and The LPA Group Incorporated, 2008

TABLE 7-17
LONG-TERM PROJECTS (2017-2026)
IF ADDITIONAL FUNDING BECOMES AVAILABLE

LEGEND:
- [1]In JAA March 2008 Work Program
- [2]GA Entitlement Funding
- [3]Included FDOT Work Program

							Federal Funding Match				Local Funding Match	
Year	**UPIN #**	**FDOT WP #**	**Sponsor Priority Ranking**	**FAA Feasibility (Numerical Ranking)**	**Development Item Description**	**Development Costs & Contingencies (2008)**	**FAA Entitlement**	**FAA Discretionary**	**Total FAA**	**State**	**JAA**	**Third Party**
2017-2026	PFL0007048	-	2011-2	40	Acquire Land for Southside Access Road (1)	$276,345	$0	$0	$0	$138,173	$138,173	$0
2017-2026	PFL0001898	-	2014-1	50	Southside Parallel Taxiway (1) - Design	$807,778	$0	$0	$0	$403,889	$403,889	$0
2017-2026	-	-	-	61	Taxilane Construction	$2,068,163	$0	$0	$0	$1,034,082	$1,034,082	$0
2017-2026	PFL0001898	-	-	72	Southside Parallel Taxiway - Construction (1)	$2,894,135	$0	$0	$0	$1,447,068	$1,447,068	$0
2017-2026	-	-	-	47	Construct holding pad on Southside Parallel Taxiway	$38,381	$0	$0	$0	$19,191	$19,191	$0
2017-2026	-	-	-	62	Rehabilitate Ramp by Building 26 (Mosquito Control)	$844,388	$0	$0	$0	$422,194	$422,194	$0
2017-2026	-	-	-	56	Total Apron and Taxilanes	$1,041,081	$0	$0	$0	$445,541	$445,541	$0
2017-2026	-	-	-	19	Total Auto Parking	$138,173	$0	$0	$0	$0	$0	$138,173
2017-2026	PFL0002341	-	C2016-	23	Westside Road North Extension (1)	$1,151,438	$0	$0	$0	$575,719	$575,719	$0
2017-2026	PFL0001918	-	-	45	Drainage Improvements - South Side (1)	$767,625	$0	$0	$0	$383,813	$383,813	$0
2017-2026	PFL0001470	-	2012-4	23	Design Southside Access Road (1)	$461,943	$0	$0	$0	$230,972	$230,972	$0
2017-2026	PFL0001912	-	2012-3	23	Roadway/Parking Pavement Overlay (1)	$1,535,250	$0	$0	$0	$767,625	$767,625	$0
2017-2026	-	-	-	53	Construct connector taxiway to Runway 32, includes edge lights	$299,673	$0	$284,689	$284,689	$7,492	$7,492	$0
2017-2026	-	-	-	0	Construct West Access Service Road	$2,294,150	$0	$0	$0	$1,147,075	$1,147,075	$0
2017-2026	PFL0001936	-	2016-X	68	Airport Master Plan Update (2016) (1)	$300,000	$0	$0	$0	$7,500	$7,500	$0
2017-2026	-	-	-	47	Airfield Sign Upgrades (LED) and Electrical Vault Work	$368,460	$0	$368,460	$368,460	$184,230	$184,230	$0
2017-2026	PFL0007215	-	2013-3	23	Construct Southside Access Road (1)	$1,655,065	$0	$0	$0	$827,533	$827,533	$0
2017-2026	-	-	-	23	Construct additional entrance road	$1,995,825	$0	$0	$0	$997,913	$997,913	$0
2017-2026	-	-	-	19	Airport Automobile Parking - South Side	$898,683	$0	$0	$0	$449,342	$449,342	$0
2017-2026	-	-	-	61	Wetland Mitigation - Mid Development	$8,000,000	$0	$0	$0	$200,000	$200,000	$0
2017-2026	-	-	-	43	Security Fencing Relocation	$1,228,200	$0	$0	$0	$614,100	$614,100	$0
2017-2026	-	-	-	23	Business Park Access Road	$3,175,511	$0	$0	$0	$1,587,756	$1,587,756	$0
2017-2026	PFL0001880	-	-	0	7 75 x 75 Corporate Hangars (1)	$6,132,461	$0	$0	$0	$0	$0	$6,132,461
2017-2026	-	-	-	56	Construct Apron	$1,419,411	$0	$0	$0	$709,706	$709,706	$0
2017-2026	-	-	-	19	Automobile Parking	$449,341	$0	$0	$0	$0	$0	$449,341
2017-2026	CRG 292	-	-	0	7 75 x 75 Corporate Hangars (1)	$6,132,461	$0	$0	$0	$0	$0	$6,132,461
2017-2026	-	-	-	56	Construct Apron	$1,419,411	$0	$0	$0	$709,706	$709,706	$0
2017-2026	-	-	-	19	Automobile Parking	$449,341	$0	$0	$0	$0	$0	$449,341
2017-2026	-	-	-	0	7 75 x 75 Corporate Hangars	$6,132,461	$0	$0	$0	$0	$0	$6,132,461
2017-2026	PFL0004153	-	-	23	Controlled Emergency Access Road Rehabilitation (1)	$112,027	$0	$0	$0	$56,014	$56,014	$0
					Additional Project Costs	**$66,752,103**	**$0**	**$653,149**	**$653,149**	**$13,366,627**	**$13,366,627**	**$31,699,160**

Notes:
FDOT Funding based upon total amount provided for the years 2008-2011
FDOT Funding locked through 2010
Sources: JAA FDOT Work Program, JACIP (March 2008), Historical Funding, FAA Project Priority Funding and The LPA Group Incorporated, 2008

EXECUTIVE SUMMARY

BACKGROUND

Introduction

Jacksonville Aviation Authority operates four airports within its system: Jacksonville International Airport, Cecil Field, Craig Municipal and Herlong. Each airport operates in a specific role within the system. Based upon the National Plan of Integrated Airports Systems (NPIAS) and Florida Aviation System Plan, Craig Airport (CRG) is defined as a reliever airport. Due to its location, size and proximity to downtown Jacksonville, the airport diverts general aviation operations from Jacksonville International Airport. Thus, in 2005, CRG reported approximately 162,000 operations. At the time of this writing, CRG was home to more than 300 based aircraft consisting of single-engine and multi-engine piston, turboprop, turbojet and rotorcraft operations.

In 2007, the Jacksonville Aviation Authority (JAA) undertook an update to the Craig Master Plan. One of the primary reasons for the update was based upon the Federal Aviation Administration (FAA) requirements associated with airports receiving development grants to conduct periodic updates to their airport development plans. Further, the intent of the master plan update was also to incorporate the findings of the 2006 **FAR Part 150 Study**, reexamine aviation activity forecasts and fleet mix, as well as determine the appropriate runway length and facilities needed to accommodate existing and long-term demand in an effort to serve the aviation needs of the Jacksonville community. The plan also examined long-term capacity issues and possible regional solutions.

Key Issues, Goals and Objectives

Since the last master plan update approximately six years ago, several physical and operational adjustments have occurred not only within the Jacksonville Aviation System but within the Jacksonville Metropolitan area and aviation industry as a whole. Some of these changes included: increased use of business aircraft, community and business growth, increased surface congestion, expansion of residential and commercial development adjacent to CRG, introduction of new technology and aircraft, in addition to the impacts of terrorism and rising fuel costs. Thus, JAA, in conjunction with FAA and FDOT, identified key issues specific to Craig Airport that needed to be addressed within this master plan update. These issues included, but were not limited to:

- Updating aviation activity forecasts, fleet mix and identifying critical aircraft;

- Evaluating primary runway length requirements, runway safety area standards, and future airfield capacity;
- Evaluating long-term development options and providing infrastructure improvements to accommodate safety, security and aircraft demand;
- Evaluating potential noise impacts and providing recommendations for airfield noise abatement options;
- Maximizing use of available property and airside access to general aviation and non-aviation facilities;
- Evaluating existing pavement conditions and developing a pavement management plan that maximizes pavement life and funding over time; and
- Evaluating and recommending ground access improvements to existing and future airport development areas and evaluating property transfers or acquisition.

By addressing these and other issues, this Master Plan developed an action plan to address current and future aviation demand at CRG.

The goal of the master plan update was to define current and future aviation demand at CRG, the means and alternatives for addressing this demand, the role of the airport in the local, regional and national aviation system, and the need for and financial feasibility of new infrastructure and airport facilities. The primary objective of the master plan update was to create a twenty year development program that will maintain a safe, efficient, economical, and environmentally acceptable airport facility for the JAA, City of Jacksonville, and Duval County.

A Technical Advisory Committee (TAC), consisting of community leaders, aviation users and members of JAA Staff, was formed to gain input into the role of the airport as well as long-term demand. The TAC considered some of the following items:

- Future activity, including aircraft fleet mix and its impact on facilities;
- Development options at CRG to meet long-range needs (20+ years);
- Evaluation of runway length requirements and associated facilities to accommodate safety requirements, existing and future demand and limit existing noise impacts to surrounding residential communities;
- Options for revenue diversification including aviation and non-aviation development; and
- Development of the airport so that it continues to be compatible with surrounding airspace, local communities and land use/zoning requirements.

Three TAC meetings were held, and public input was achieved through a number of City Council, Citizens Planning Advisory Committee (CPAC) and Craig Airport Citizens Advisory Committee (CACAC) meetings. Input from the Public and TAC contributed to the development of the final master plan recommendations.

Based upon these meetings as well as the findings of the FAR Part 150 Study, the following suggestions were made to JAA:

- A 1,592 foot extension to Runway 14-32 was recommended to accommodate existing and future operations;
- Displaced thresholds were recommended to minimize noise impacts to surrounding communities;
- On-airport development was designed to ARC C-II design requirements;
- Airport development and land use planning was coordinated with the City of Jacksonville Planning Department for inclusion into the City's Comprehensive Plan; and
- Aviation and non-aviation development was considered as part of revenue enhancement and diversification process.

EXISTING FACILITIES

The collection and study of information relating to CRG and the surrounding community provided the basis for the study's development. An inventory of existing conditions was collected to provide insight into how changes, at both the airport and in the surrounding region, impact the type and level of aviation services provided. Facility information from each of the airport's functional areas, airfield and landside, was compiled to prepare a realistic long-term development plan.

Airfield Area

The airport has two active runways:

- Runway 14-32: the primary runway, which is 4,008 ft x 100 ft
- Runway 5-23: the secondary runway, which is 4,004 ft x 100 ft

Both Runways 14-32 and 5-23 are designated to accommodate aircraft meeting ARC C-II design criteria. Moreover, the same Runway Safety Area (RSA) and Object Free Area (OFA) standards are applicable to both runways. Runway 14-32 is also equipped with an instrument landing system providing approximately ½ statute mile visibility in addition to VOR and GPS approaches to both Runways 14 and 32. Issues associated with the runway environment at CRG include airfield capacity and operational limitations by jet aircraft. These activities initiated a runway length analysis.

The runway system at CRG is supported by Taxiways A through G which provide access to several general aviation, fixed based operators (FBOs), and hangar storage facilities as well as airport administration and FAA Air Traffic Control Tower (ATCT) facilities.

Aircraft parking aprons are generally divided into two user categories: Based Aircraft Parking and Transient Aircraft Parking. Transient aircraft parking at CRG is located adjacent to the two local FBO's, Craig Air Center and Sky Harbor Aviation as well as near the intersection of Taxiways B, C and A. Based aircraft tie-down facilities are also located adjacent to the hangar storage facilities along the north and south quadrants of the airfield and adjacent to existing tenant facilities (i.e. North Florida Flight Training, Comair Aviation Academy, etc).

The size and storage capacity of existing airport tie-down apron facilities is provided in **Table 1**.

TABLE 1
EXISTING APRON / AIRCRAFT PARKING AREAS

Description	Size (S.Y.)	Aircraft Storage Capacity
Tie Downs – Craig Air Center	25,780	95
Tie Downs – Sky Harbor	54,870	140
Itinerant Apron	2,500	8
JAA Helipad	2,000	3
Total	**85,150**	**246**

Sources: Jacksonville Aviation Authority and The LPA Group Incorporated, 2007

Landside Area

Landside facilities currently consist of a combination of aviation and non-aviation related facilities, including fuel storage, aircraft storage facilities, aircraft and airport maintenance, and various tenant facilities. As of 2006, the airport was home to 327 based aircraft of which approximately 43 percent (including Building 607) are stored on paved tie-downs[1]. The remaining based aircraft are stored in a combination of T-hangar, corporate and conventional hangar facilities. In addition to hangar space, land leases are provided to private business owners. Aircraft revenues are primarily associated with land leases and fuel revenue fees. Existing (2006) airport building facilities are provided in **Table 2**.

[1] *Craig Municipal Airport*, Florida Community Airport Summary, Florida Department of Transportation, April 2005.

TABLE 2 EXISTING AIRPORT STRUCTURES			
Facility	**Quantity (Total Units)**	**Aircraft Storage Capacity***	**Total S.F.**
10-Unit T-Hangars	50	50	59,179
7-Unit T-Hangars	21	21	13,570
10-Unit Condo Hangars	30	30	34,620
Individual T-Hangars	6	6	5,785
Hangar / Offices	9	57	115,190
Conventional Hangar	2	6	31,500
Offices	2	n/a	11,775
Corporate Hangar	1	4	8,065
Hangar	2	9*	53,810
Storage	1	n/a	2,180
Restaurant	1	n/a	11,290
*Notes: * - aircraft storage capacity does not include Building 607 storage.*			
Sources: Jacksonville Aviation Authority and The LPA Group Incorporated, 2006			

CRG is home to a number of aviation and non-aviation tenants including two FBOs, an air charter operator, Jacksonville Sheriff's flight operations, corporate business operators, as well as four flight training operations. As a result, approximately 55 percent of CRG's operations are attributed to flight training operations with the remaining 45 ascribed to business related operations. Of which, 25 percent of transient general aviation aircraft operations are attributed to jet aircraft.

CRG is located just minutes from the City's beaches and downtown business district. Access to Aviation Drive (the airport entrance road) is provided from St. Johns Bluff Road North. Access to the airport is provided via several state and city roads including County Route (CR) 10 (Atlantic Blvd), State Road (SR) 9A, Beach Blvd, Wonderwood Expressway, Monument Drive, etc.

AVIATION FORECASTS

Historic Demand

The historical number of based aircraft and aircraft operations not only demonstrates the impact CRG has on the Jacksonville market, but it also provides the foundation for aviation activity forecasts. **Table 3** shows historic based aircraft and aircraft operations between 2000 and 2006. The base year for the aviation activity forecasts was 2006; the last full-year of data when this forecast was performed.

TABLE 3
HISTORICAL AVIATION DEMAND

Year	Based Aircraft	Aircraft Operations
2000	223	137,856
2001	304	158,456
2002	319	163,114
2003	353	170,643
2004	319	162,115
2005	327	161,798
2006	**327**	**163,988**
AAGR 2000-2006	**6.59%**	**2.94%**

Source: Craig Airport Records, 2000-2006

A comparison of the estimated traffic count at CRG for 2006 with historic data from the 2007 FAA TAF, FAA Air Traffic Activity Database System (ATADS), which compiles specific operational information from airports that have control tower facilities, and 2005 Florida Aviation System Plan (FASP) revealed some inconsistency. Historic data from those sources indicated a level of operations either below or significantly above operations recorded by CRG ATCT. Since ATCT recorded data at CRG counts only those operations that occurred during times the control tower was operational, historic tower data were benchmarked to FAA TAF and historical airport information to adjust for activity that occurred after hours.

Aviation Demand Forecast

This element of the Master Plan Update used updated projections of aviation activity as a basis for future facility planning at CRG. In an effort to accurately forecast aviation activity, several FAA approved forecast methodologies (regression, trend, share, etc.) were considered. The regression analysis evaluated if there was a correlation between the independent variables, population and per capita income, for both Duval County and the Jacksonville MSA to dependent variables, based aircraft and/or operations. Using the

ANOVA methodology, it was determined that the F statistic was too high and R statistic too low to provide a valid correlation. This may be attributed to the fact that CRG functions as part of the Jacksonville Aviation System. It was determined that both operations and based aircraft are more closely affected by variables related to the airport itself rather than local socioeconomic influences. Thus, the creation of a regression forecast was abandoned.

Instead, this analysis drew upon the most current industry trends as well as information provided by the FAA, FDOT and FASP to define future levels of activity at CRG. It was found that historic and general market trends combined with a market share analysis provided the most logical and realistic forecast of activity at CRG through the twenty year planning period. These findings were presented to FAA, FDOT, JAA, the TAC, CACAC, CPAC and City Council for their consideration and comment.

Considering the impacts of 9/11, the Iraq War, fuel prices, introduction of Very Light Jet (VLJ) aircraft, and the airport's role within the Jacksonville Aviation System, a projection of activity through 2026 was formulated and approved by FAA in February 2007 as shown in **Table 4**.

TABLE 4
SUMMARY OF ACTIVITY FORECASTS

	2006	**2011**	**2016**	**2021**	**2026**
Total Operations	163,988	183,325	200,790	216,325	237,049
Itinerant					
Air Taxi	7,636	8,895	9,234	9,767	10,097
GA	77,330	82,272	85,403	90,332	93,383
Military	11,720	13,255	13,759	14,553	15,045
Total Itinerant Operations	**96,686**	**104,422**	**108,396**	**114,652**	**118,525**
Local					
GA	67,052	75,616	88,688	101,673	118,525
Military	250	0	0	0	0
Total Local Operations	**67,302**	**75,616**	**88,688**	**101,673**	**118,525**
Instrument Operations	34,041	39,692	46,688	54,917	64,596
Peak Hour Operations	88	97	106	116	128
Based Aircraft	327	367	416	475	543

Note: Due to rounding or undisclosed editing, numbers may not sum up. Right hand side of worksheet has embedded formulas for average annual compound growth rate calculations.
FAA Approved – February 2007
Source: The LPA Group Incorporated, 2006

AIRPORT CAPACITY AND FACILITY REQUIREMENTS

Airport Fleet Mix

The airport serves the needs of corporate users and all facets of general aviation, and, as of 2006, was home to 31 turboprop and 12 turbojet aircraft as shown in **Table 5**. However since this writing, the number of based turbojet aircraft has increased to 14 with the addition of a Learjet 45 by PSS World Medical and a Learjet 35 by CAC. Of the 4,920 turbojet operations recorded in 2006, approximately 33.7 percent or 1,662 operations were associated with based turbojet aircraft.

TABLE 5
BASED TURBINE ENGINE AIRCRAFT
2006

Aircraft	ARC	Based Aircraft[1]	Operations
Turbojet Aircraft:			
Mitsubishi MU-300	B-I	3	109
Cessna 501	B-I	1	76
Cessna 525 (CJ1)	B-I	1	110
Cessna 525A (CJ2)	B-II	1	2
Cessna 550	B-II	1	97
Cessna 560	B-II	3	830
Cessna 560 XL	B-II	2	438
	Total Turbojet	**12**	**1,662**
Turboprop Aircraft:			
Lanceair IV[2]	A-I	1	4
Cessna 414A	B-I	1	1
Piper PA-34-220T	B-I	10	8
Piper PA-44-180	B-I	10	5
Piper PA46-500 TP	B-I	8	1
Zenair CH-2000[2]	A-I	1	13
	Total Turboprop	**31**	**32**
	Total Aircraft	**43**	**1,694**

Notes:
[1]*Based Aircraft numbers were obtained from GCR data and limited information provided by existing tenants through December 2006.*
[2]*Designates light sport and experimental turboprop aircraft.*
Sources: Tenant Surveys, Craig Municipal Airport Management, FAA GCR Database 2006, and The LPA Group Incorporated, 2007

Transient turbojet aircraft operations, according to 2006 data (the last full year of available data), are provided in **Table 6**.

TABLE 6 TURBOJET TRANSIENT AIRCRAFT ONLY OPERATIONS 2006		
Aircraft	**ARC**	**Operations[1]**
Cessna 501	B-I	205
Dassault Falcon 10	B-I	107
MU300	B-I	295
Cessna 525 (CJ1)	B-I	297
Cessna 525A (CJ2)	B-II	237
Cessna 525B (CJ3)	B-II	44
Cessna 550	B-II	190
Cessna 560 XL	B-II	170
Cessna 560	B-II	639
Dassault Falcon 2000EX	B-II	10
Falcon 50	B-II	48
Falcon 50EX	B-II	8
Beechjet 400A	C-I	213
Israel Westwind	C-I	70
Learjet 31/31A	C-I	181
Learjet 35	C-I	121
Learjet 45	C-I	322
Cessna 650 (Citation VI)	C-II	10
Cessna 680 (Sovereign)	C-II	13
Cessna 750 (Citation X)	C-II	21
Challenger (Series 600)	C-II	19
Falcon 900EX	C-II	38
		3,258

Notes: [1]Transient Aircraft Data obtained from 2006 GCR Database, FAA ATADS data 2006, and CRG ATCT information
Sources: Tenant Surveys, Craig Municipal Airport Management, FAA GCR Database 2006, and The LPA Group Incorporated, 2007

Table 7 provides the based and transient fleet mix for the base year, 2006.

TABLE 7 BASED AND TRANSIENT FLEET MIX 2006											
		ARC A-I[1]		**ARC B-I**		**ARC B-II**		**ARC C-I**		**ARC C-II**	
	Total Jet Operations	**Ops**	**%[2]**	**Ops**	**%[2]**	**Ops**	**%[2]**	**Ops**	**%[2]**	**Ops**	**%[2]**
Based	1,662	0	0.00%	295	17.75%	1,367	82.25%	0	0	0	0.00%
Transient	3,258	0	0.00%	905	27.78%	1,346	41.31%	907	27.84%	100	3.06%
TOTAL	**4,920**	**0**	**0.00%**	**1,200**	24.39%	**2,713**	55.14%	**907**	18.44%	**100**	2.03%

Notes:
[1]Designates operations associated with experimental jets and very light jets
[2]Percent of operations to total Jet operations
Sources: FAA GCR 2006 Data, FAA ATADS, CRG ATCT Database, Tenant Surveys, The LPA Group Incorporated, 2007

Critical Aircraft

The existing airport reference code is based upon the most demanding aircraft (or group of aircraft) utilizing CRG at the time of the report. According to *Airport Improvement Program Handbook*, **Order 5100.38C**, **FAA Order 5090.3C**, *Field Formulation of NPIAS*, and **FAA AC 150/5325-4B**, *Runway Length Requirements for Airport Design*, 'More than one critical aircraft (most demanding) may control the design of any specific airport's different facility features, such as runway length, strength of paved areas, or lateral separations in airfield layout. In some cases there may be more than one critical aircraft. For instance, pavement strength and layout are frequently dependent upon different aircraft. Airport dimensional standards (such as runway length, width, separation standards, surface gradients, etc.) should be selected which are appropriate for the critical aircraft that will make substantial use (500 or more itinerant operations or scheduled service) of the airport in the planning period.'

In the case of CRG, the current critical aircraft for airfield separation requirements is a B-II of which over 500 operations are associated with the Cessna 560 and 560XL. Pavement strength and runway length requirements are currently determined based upon the C-I family of aircraft of which the Learjet 35 and 45 are considered the most demanding. However, the C-II family of aircraft (consisting of Cessna 650, 680, 750, Challenger 600 and Falcon 900EX aircraft) exceed 500 operations by the year 2022, so the Cessna 750 (Citation X) and Falcon 900EX represent the most demanding, critical aircraft anticipated to operate at CRG within the twenty year planning period.

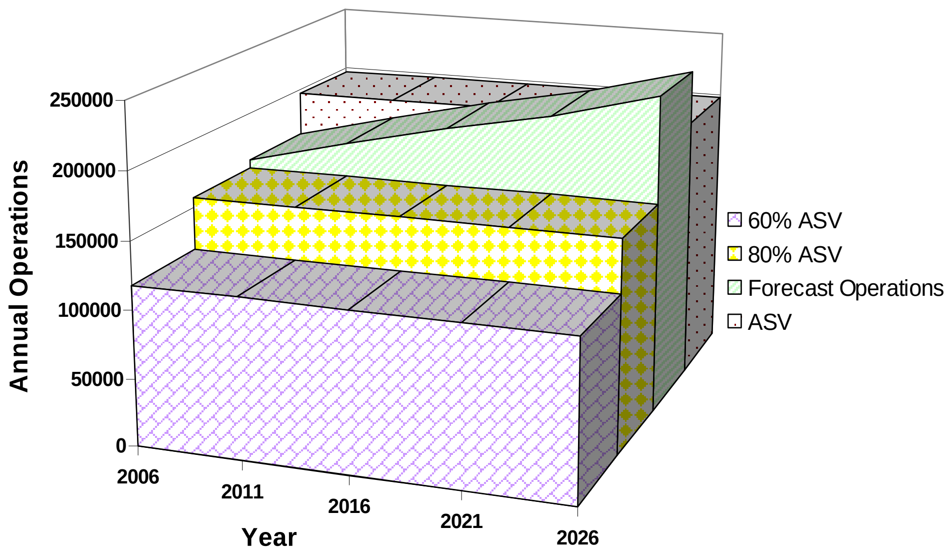
Further in determining the critical aircraft and ARC, airport master plans must be consistent with the aviation systems role for the airport as described in the Florida Aviation System Plan in order for planned improvements to be eligible for state funding. According to the FASP and the FAA National Plan of Integrated Airport Systems, CRG is designated as a reliever airport, which absorbs general aviation operations from busy commercial service airports (i.e. Jacksonville International Airport). Relievers typically have large numbers of based aircraft and high levels of aircraft operations. Since CRG is designated as a reliever, the FASP includes it in the community airport category. In addition the FASP states that the ARC for CRG as defined by **FAA Circular 150/5300-13** is C-II since larger turboprop and corporate style jet (B-II, C-I and C-II) aircraft use the airport on a regular basis.

Demand/Capacity Analysis

The demand/capacity analysis examined the capability of CRG's airfield system to fully support existing activity. It also determined the airfield's ability to meet future demand without causing significant or unacceptable delay or a decrease in the quality of service offered at the airport.

While elements of the FAA's traditional method for assessing airfield capacity were used in this analysis, JAA also considered the cost of capacity improvements versus the expected benefit from imposing alternative courses of action (i.e. shifting Runway 5-23 to the southwest). Thus, the Annual Service Volume (ASV) at CRG was determined to provide a means of estimating the operational limitations of the airfield with increased levels of activity as shown in **Figure 1**.

Figure 1
Airfield Capacity



Source: The LPA Group, Inc. 2007

Capacity planning guidelines suggest that planning for additional capacity should occur when activity levels reach 60 percent of the airfield's annual service volume. The capacity level increases from approximately 83 percent in 2006 to 121 percent in 2026. This increase is attributed to the increase of operational activity at the airport without any changes in airfield capacity. Based on capacity levels shown in **Figure 1**, the airfield capacity at CRG will be constrained. Since CRG is constrained by encroachment surrounding the airport's property boundary and is sensitive to community opinion, any additional capacity projects will relate closely to preserving and enhancing existing airfield infrastructure elements. A detailed demand/capacity analysis is provided in **Appendix C,** *Airport Demand Capacity Analysis***,** of this report.

Facility Requirements

The Master Plan Update evaluated all facilities at CRG, including runway length, general aviation ramps, hangars, the roadway access system, automobile parking, airfield facilities, and support facilities to determine improvements necessary to accommodate existing and anticipated demand.

Recommended key improvements included:

- Extending primary runway 14-32 and Taxiway A;
- Aircraft storage facilities;
- Pavement rehabilitation;
- Navigational, lighting and electrical vault improvements; and
- Surface access improvements, which were evaluated in accordance with FDOT and FAA design requirements.

Table 8 summarizes facility requirements by operational area.

TABLE 8
SUMMARY OF FACILITY REQUIREMENTS

Runways	✈ Routine pavement maintenance for all runways ✈ Extend Runway 14-32 to 5,600 feet ✈ Maintain all imaginary and safety related surfaces ✈ Maintain RPZ and RSA clear of obstacles
Taxiways	✈ Overlay and Remark Taxiways A, B and C[1] ✈ Construct new taxiway connectors from Taxiway A to developable areas, as needed ✈ Rehabilitate taxiway pavements throughout planning period ✈ Extend Taxiway A associated with runway development ✈ Provide stop/hold bars on Taxiway A prior to Runway 32 safety area ✈ Provide run-up pad near extended runway threshold
Additional Airfield Facilities	***Navigational Aids, Lighting and Electrical Vault*** ✈ Add taxiway lights associated with proposed improvements ✈ Relocate Glideslope near Runway 32 ✈ Relocate PAPI-4 on Runways 14 and 32 ✈ Relocate REILs on Runway 14 ✈ Relocate MALSR and REILs on Runway 32 ✈ Add REILs, if possible, to Runway 5 ✈ Update taxiway lighting to LED lights ✈ Maintain all runway and taxiway lighting, as needed ✈ Upgrade electrical vault regulators
	Signage ✈ Add/replace and refurbish airfield signage as necessary ✈ Install Distance to Go Markers and Signage ***Pavement Markings*** ✈ Periodic remarking of all pavement surfaces ✈ Add Runway Hold Lines associated with runway extension
GA Facilities	✈ Rehabilitate existing pavement adjacent to Craig Air Center and Sky Harbor ✈ Rehabilitate or replace 85 T-Hangars ✈ Add approximately fifteen 12-unit T-Hangars ✈ Construct at least 8 Conventional hangars ✈ Construct at least 28 Corporate hangars
Support Facilities	✈ Install additional Jet A fuel tanks ✈ Relocate fenceline associated with development
Access and Infrastructure	✈ Construct additional internal roads north of Airport Road to provide access to additional aviation and non-aviation facilities. ✈ Provide additional parking where needed to accommodate anticipated demand

Note: [1]According to Airport Personnel and 2007 Aerial Image, Taxiways A, C and B are marked to 35 feet but have pavement that extends to 50 feet.
Source: The LPA Group Incorporated, 2007

ALTERNATIVES ANALYSIS

Airfield Improvements

CRG has two intersecting, active runways oriented in a closed "V" configuration. Both runways are approximately 4,000 feet in length and 100 feet in width. If the cost of runway improvements, maintenance and noise impacts were not taken in to consideration, the development of runway alternatives at CRG would be numerous. Since several runway length alternatives were provided in the 2006 Part 150 Noise Study, these alternatives were used as the basis for runway alternative evaluation.

Five airfield alternatives were identified in the Part 150 study including the 2001 Master Plan Recommended Development scenario as outlined below:

2001 Master Plan Configuration:
- 2,000 foot extension to Runway 32
- 1,000 foot displacement to both ends of Runway 14-32

Configuration A:
- 500 foot extension and displacement to Runway 14
- 2,000 foot extension and displacement to Runway 32

Configuration B:
- 500 foot extension and displacement to both ends of Runway 14-32

Configuration C:
- 500 foot extension and displacement to Runway 14
- 1,000 foot extension and displacement to Runway 32

Configuration D:
- 250 foot extension and displacement to Runway 14
- 1,250 foot extension and displacement to Runway 32

Based upon the runway length evaluation, a runway length of at least 5,600 feet[2] was recommended to accommodate existing and forecast aircraft demand. Therefore, the 2001 Master Plan Configuration and Part 150 Configuration A were modified to consider a 1,592 foot extension and 592 foot displaced threshold to Runway 32.

Each alternative was evaluated based upon the following parameters:

- Safety and reliability;
- Cost;
- Compatibility with JAA system role expectations;
- Constructability;
- Environmental impacts;

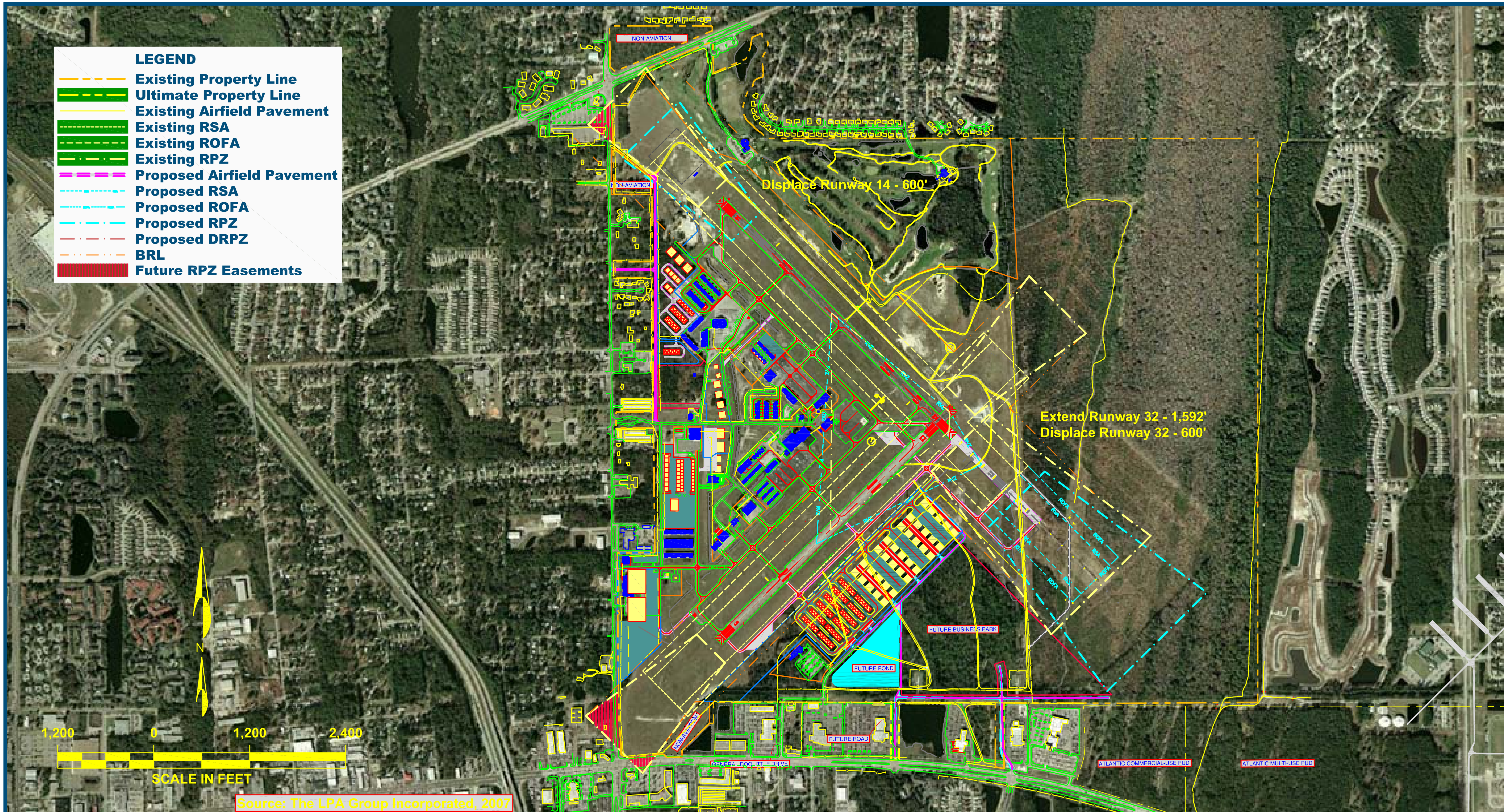
[2] Although AC 150/5325-4B recommends a runway length of 5,640 feet, JAA has based its planning on a 5,600 foot runway to keep the length on an even basis.

- Land-use compatibility;
- Noise; and,
- Operational impacts.

Input from JAA, CPAC, CACAC, City Council and the general public contributed to the refinement of the alternatives analysis. Thus, the preferred development concept, as shown in **Figure 2**, incorporates not only anticipated demand but also considered the surrounding environment and goals of the community. In addition by applying declared distances, the recommended alternative provides an available takeoff distance of 5,600 feet and landing distance available of 5,000 feet while decreasing noise exposure to neighboring communities located to the northwest, northeast and southwest of the airfield. This proposed development reinforces the needs of all airport constituencies and provides the most reasonable and fiscally responsible development scenario for the airport's short and long-term requirements within the Jacksonville aviation system.

JACKSONVILLE AVIATION AUTHORITY

Preferred Airport Development



LPA

Figure 2

General Aviation/Airport Support Facilities

On airport development and land use was identified as either high or medium priority based upon vehicular access, proximity to utilities, environmental impacts, and airfield access. Areas designated for high development include property east of St. Johns Bluff Road, west of Taxiway B and southwest of Taxiway A that include existing GA and support facilities. Due to the proximity of the airfield, the majority of development should be aviation related. This area is best suited as a location for additional flight schools, maintenance operations, hangars or other airfield related facilities. Additional projects include: demolition and rehabilitation of existing hangars, pavement rehabilitation, roadway and parking improvements, as well as relocation of security fence and expansion of electrical vault.

Medium development zones include tracts that lack one desirable feature, such as access. Based upon proposed airfield development, medium development zones at CRG include undeveloped property south and east of Runway 5-23 and the extension of Taxiway A. Based upon existing leaseholds and available property, a mixed use of aviation and non-aviation related facilities provides the highest and best use of this property. Aviation related development is recommended to encompass the property adjacent to the runways and taxiways; whereas the property north of the car dealerships adjacent to Atlantic Boulevard could be used as a commercial business park.

In order to develop this property for aviation and non-aviation use, several projects are required no matter what aviation related configuration is recommended. In order to develop the south side facilities, the following projects will be required including:

- Southside Taxiway Construction
- Security Fencing Relocation
- Drainage improvements
- Extension of General Doolittle Drive
- Acquisition of property for South Access Road
- South Access Road Development
- Construction of Business Park Entrance Road, and
- Utilities and infrastructure improvements

The process utilized in assessing airside and landside development alternatives involved an analysis of long-term requirements and growth potential. Current airport design standards were reflected in the analysis of runway and taxiway needs, with consideration given to the safety areas required by the FAA in runway approaches. As design standards are further modified, revisions may need to be made which could affect future development options. As any good long-range planning tool, the final master planning concept should remain flexible to unique opportunities that may be presented to the airport. It should also be kept in mind that changes in market conditions such as aircraft operations may dictate the acceleration or delay of projects.

IMPLEMENTATION PLAN AND CIP

Based upon anticipated demand and associated facility needs at CRG, an implementation plan was developed to provide general phasing and financial guidance to JAA and airport staff in making policy decisions over the 20 year planning period. The implementation plan stages the proposed improvements based on the interrelationships of individual projects and from the input received from airport staff. The plan also establishes the basic finances for each development item and identifies potential funding sources available.

With the assistance of JAA staff, a list of improvements was prioritized based upon:

- Urgency;
- Ease of Implementation; and,
- Logic of Project Sequencing

Capital Development Plan and Phasing

The proposed project schedule is divided into three general stages: the short-term (2008-2011), intermediate-term (2012-2016), and long-term (2017-2026). Major recommended development over the twenty-year planning period consists of the following projects:

- Runway and Taxiway improvements
- Pavement rehabilitation, expansion and construction;
- Hangar rehabilitation and construction;
- Navigational Aid improvements;
- Airfield utility and drainage improvements;
- Fenceline relocation; and
- Business Park Development

Anticipated project costs in the short, intermediate and long-term planning period are summarized in **Table 9**.

TABLE 9 20-YEAR MAXIMUM DEVELOPMENT CAPITAL IMPROVEMENT PROGRAM	
Development Period	**Project Costs**
Short-Term	$15,737,643
Intermediate-Term	$39,268,218
Long-Term	$113,712,495
Total for 20-Year CIP	**$168,718,356**
Source: The LPA Group Incorporated, 2007	

Funding Sources

To meet the anticipated need of $169 Million in improvements, JAA will have access to a variety of funding sources in addition to revenue generated from operating activities. These sources include:

- Airport Improvement Program (Federal Government)
- Florida Department of Transportation (FDOT)
- Jacksonville Aviation Authority
- Private Capital Investments, and
- Other federal, state and regional assistance programs

While significant portions of the improvements are eligible through the federal government's Airport Improvement Program (AIP), FAA does not provide the same priority to general aviation (GA) airports as commercial service airports. The current AIP legislation considers a weighted split of project costs determined by a ratio of federal share to local share, represented by a 95 percent and 5 percent share, respectively. **Table 10** summarizes the projected eligible AIP funding for CRG and the projected share of cost.

TABLE 10 20-YEAR CAPITAL IMPROVEMENT PROGRAM SUMMARY MAXIMUM ELIGIBLE FUNDING						
Development Period	**Total Project Cost**	**FAA Entitlement**	**FAA Discretionary**	**State Share**	**Local/Other* Share**	**Third Party**
Short-Term	$15,737,643	$450,000	$7,861,101	$1,103,533	$1,717,259	$4,605,750
Mid-Term	$39,268,218	$900,000	$14,085,721	$2,407,959	$3,395,905	$18,478,634
Long-Term	$113,712,495	$1,500,000	$18,034,409	$13,660,355	$13,672,775	$66,844,956
Total for 20-Year CIP	**$168,718,356**	**$2,850,000**	**$39,981,231**	**$17,171,847**	**$18,785,938**	**$89,929,340**

*Notes: *Other Funding Sources includes operating revenues generated by the airport as well as loans, bonds and other funding sources*
FDOT will not participate in any project associated with the Runway 32 extension
Source: The LPA Group Incorporated 2008

As part of the Jacksonville Aviation System, CRG is eligible for funding through the JAA's general fund. This eligibility is in accordance with JAA's own determination of project priority among all airports within the Jacksonville system. Because both AIP and FDOT funding for Craig Airport will most likely be limited, the Master Plan also provides a financially feasible plan based upon probable FAA, FDOT and JAA funding as outlined in **FDOT Procedure 725-040-040**, *Funding Airport Projects*. This funding is summarized in **Table 6**.

TABLE 11 20-YEAR CAPITAL IMPROVEMENT PROGRAM SUMMARY FINANCIALLY FEASIBLE FUNDING						
Development Period	**Total Project Cost**	**FAA Entitlement[1]**	**FAA Discretionary[2]**	**State Share[3]**	**JAA Share[4]**	**Third Party**
Short-Term	$15,537,643	$450,000	$7,563,922	$1,075,000	$1,842,971	$4,605,750
Mid-Term	$39,268,218	$900,000	$12,436,442	$2,711,774	$4,678,867	$18,478,634
Long-Term	$48,139,646	$1,500,000	$2,999,531	$4,178,073	$4,178,073	$35,283,969
Total for 20-Year CIP	**$102,945,507**	**$2,850,000**	**$22,999,896**	**$7,964,847**	**$10,699,911**	**$58,368,353**

Notes:
[1]FAA Entitlement typically equals $150,000 per year for GA airports
[2]FAA Discretionary Funding equals approximately 95 percent of funding on projects with FAA Priority Scores of 70 or greater.
[3]FDOT Funding typically equals $500,000 per year.
[4]JAA Funding typically equals $500,000 per year unless there is a high priority project.
**Other Funding Sources includes operating revenues generated by the airport as well as loans, bonds and other funding sources*
Source: The LPA Group Incorporated 2008

Historically, FDOT and JAA each provide, on average, $500,000 annually to fund various on-airport improvements. The FAA also provides $150,000 annually through the GA Entitlement Program. FAA Discretionary funding is based upon an FAA project priority score of 70 or greater (i.e. primary runway improvements, safety improvements, fence line relocations, etc.).

The difference between the eligible project funding and the financially feasible project funding is an indication of the private outside funding that CRG must identify if all projects in the Master Plan are to be undertaken.

Based upon anticipated funding and planned financially feasible projects as well as operating revenues and expenses, the airport will not require additional funding beyond local, state, federal and third party to accommodate planned development. Further, by the end of 2026, the cash flow analysis shows an ending balance of more than $9 million.

SUMMARY

This Master Plan Update balances needed airport improvements with the goals of both JAA and the community thus providing a consensus on how to best meet future demand. The master plan process included extensive coordination, technical evaluations and community participation. The resulting plan for airport development provides for the future needs of the airport and community as a whole.