

## CHAPTER EIGHT

### ENVIRONMENTAL OVERVIEW

#### 8.1 INTRODUCTION

In addition to identifying airport projects that are financially and technically sound, an important part of the master planning process is ensuring that future airport developments minimize impacts to the environment. Council on Environmental Quality (CEQ) 1501.2 states, “Agencies shall integrate the National Environmental Policy Act (NEPA) process with other planning at the earliest possible time to insure that planning and decisions reflect environmental values, to avoid delays later in the process, and to head off potential conflicts.” Accordingly, identifying potential environmental impacts of proposed airport projects has become an integral part of the master planning process. This environmental overview has been prepared to identify potential environmental impacts associated with the proposed airport improvement projects for Flagler County Airport and to discuss potential mitigation measures that will be considered to minimize these impacts. This chapter examines the potential environmental impacts associated with the recommended development alternative (Alternative 5) presented in Chapter Six. The recommended development alternative (Alternative 5) includes the following improvements:

#### **Recommended Airside Improvements**

- Development of a new 7,000-foot long runway, oriented 11/29
- Installation of a precision approach on the new runway
- Construction of an Air Traffic Control Tower

#### **Recommended Landside Improvements**

- Construction of 62 additional T-hangars
- Construction of 16 additional conventional hangars
- Construction of apron space adequate for an additional 103 tie-down spaces
- Construction of new terminal/administration building at 12,500 square feet
- Construction of 180 additional automobile parking spaces

This environmental review was conducted in accordance with FAA Order 5050.4A, “Airport Environmental Handbook,” which requires the analysis of the following environmental impact categories:

- Noise
- Compatible Land Use
- Social Impacts
- Induced Socioeconomic Impacts
- Air Quality
- Water Quality
- Department of Transportation Act, Section 4(f) (recodified at 49 USC, Subtitle I, Section 303)
- Historic, Architectural, Archaeological, and Cultural Resources

- Biotic Communities/Endangered and Threatened Species of Flora and Fauna
- Wetlands
- Floodplains
- Coastal Zone Management Program
- Coastal Barriers
- Wild and Scenic Rivers
- Farmlands
- Energy Supply and Natural Resources
- Light Emissions
- Solid Waste Impacts
- Construction Impacts

In addition, two additional environmental categories have been included for consideration in environmental documents since the publication of FAA Order 5050.4A, “Airport Environmental Handbook.” These categories include: potential cumulative impacts and Environmental Justice impacts resulting from the proposed action. Each of these environmental impact areas is discussed in further detail in this chapter. The *Airport Environmental Handbook* outlines types of impacts and thresholds that determine if an impact is considered to be significant. In general, projects fall into one of the following three categories:

Categorical Exclusions – Projects that are categorically excluded include those actions that have been found under normal circumstances to have no potential for significant environmental impact.

Actions Normally Requiring an Environmental Assessment – Projects that normally require an environmental assessment are actions that have been found to sometimes have significant environmental impacts.

Actions Normally Requiring an Environmental Impact Statement (EIS)- If a project is found to have significant impacts during the preparation of an Environmental Assessment, the FAA can determine that an Environmental Impact Statement is required to investigate in greater detail a project’s potential environmental impacts.

According to the *Airport Environmental Handbook*, an environmental assessment is required to secure federal funding participation in the following projects:

- Development of a new runway
- Major extension of an existing runway
- Runway strengthening that would result in a 1.5 DNL or greater increase in noise over any noise sensitive area located within the 65 DNL contour
- Construction or relocation of a service road that intersects a public access road that affects the capacity of such public road.
- Land acquisition in association with any of the above, land acquisition when residential units are relocated, when there are insufficient comparable replacement residential units,

when there is a major disruption of business activities, or acquisition that involves lands covered under U.S. Department of Transportation Section 303.

- Establishment of an instrument landing system (ILS) or approach lighting system
- An airport development action that falls within the scope of various extraordinary circumstances as defined by the FAA. These actions include properties protected by the Historic Preservation Act; controversial environmental grounds; significant impacts on natural, ecological, cultural, or scenic resources; use of wetlands; conversion of prime farmlands; impacts to endangered species, etc.

This environmental overview does not constitute a formal Environmental Assessment (EA) or Environmental Impact Statement (EIS). For those proposed airport projects that are not categorically excluded from further environmental review, additional environmental analyses will be conducted and documented in a formal Environmental Assessment (EA) or Environmental Impact Statement (EIS). The following projects may require an Environmental Assessment (EA).

- The construction of a new runway 11/29
- Opening of new development areas north of existing Runway 11/29 and south of Taxiway A
- Installation of MALSR approach lighting and precision approach on the new runway
- Construction of a road to connect to Belle Terrace Parkway

## 8.2 ENVIRONMENTAL IMPACT CATEGORIES

The following sections discuss the preliminary evaluation of the recommended development alternative (Alternative 5) for each of the environmental impact categories included in the *Airport Environmental Handbook*.

### 8.2.1 Noise

Noise impact from aircraft is the most common environmental impact encountered in the vicinity of airports. The FAA's Integrated Noise Model (INM), Version 6.0, was used to develop noise contours at Flagler County Airport for the recommended development alternative (Alternative 5) for the forecast year (2022). The following subsections summarize the physics and measurement of noise, the noise modeling methodology, and the noise impacts for the future year (2022) for the recommended development alternative (Alternative 5).

#### Physics and Measurement of Noise

Sound and noise are physically the same; however, noise is typically defined as unwanted sound. Whether a sound is considered to be a noise is a subjective determination made by the receiver (listener). Sound is measured by its pressure or energy. As a sound source vibrates, it introduces vibrations into the air, causing fluctuations in the atmospheric pressure. The unit of measure for this sound energy is known as a decibel (dB). A decibel is a unit that measures the difference between atmospheric pressure with no sound and the total pressure with the sound. Decibels are logarithmic and, therefore, cannot be added to produce a total. For example, two 70 dB sound

sources added together produce a total sound energy of 73 dB. When the decibel count goes up by ten, the perceived sound is two times as loud. The decibel scale from zero to 120 covers most of the range of everyday sounds, as shown in **Table 8-1**.

**TABLE 8-1  
 COMMON SOUND LEVELS**

Decibels	Common Aircraft Sound Level	Common Sound Levels
110	Concorde Landing (3,300 Feet From Rwy End)	Rock Band
100		Power Lawnmower (at 50 Feet) Ambulance Siren (at 100 Feet)
90	727-200 Takeoff (4 Miles From Start of Roll)	Noisy Cocktail Bar Diesel Truck, 40 mph (at 50 Feet)
80	A320 Takeoff (21,000 Feet From Start of Roll)	Automobile, 65 mph (at 50 Feet)
70	757-200 Takeoff (4 Miles From Start of Roll)	Noisy Restaurant
60	Cessna 172 Landing (3,300 Feet From Rwy End)	Normal Conversation (at 3 Feet)
50	Piper Twin Comanche Takeoff at 2 miles	Dishwasher Next Room
40		Conference Room
30		Bedroom at Night
20		Recording Studio
10		Barely Audible

Source: Minneapolis-Saint Paul International Airport, Part 150 Update, HNTB and California California Airport Land Use Planning Handbook (January 2002)

Use of DNL as the Standard Descriptor for Aviation Noise

In 1981, the Federal Aviation Administration (FAA) formally adopted the day-night average sound level (DNL) as the single system for determining exposure of individuals to airport noise. DNL is the 24-hour average sound level, in decibels, obtained from the accumulation of all sound events. This includes the addition of a 10-decibel penalty for sounds occurring at night between 10 p.m. and 7 a.m. The weighting of nighttime events accounts for the usual increased interfering effects of noise during the night, when ambient levels are lower and people are trying to sleep. According to the FAA, DNL is the most widely accepted descriptor for aviation noise based on the following characteristics:

- DNL is a measurable quantity
- DNL is relatively simple to understand and use by airport planners and the public who are not familiar with acoustics or acoustical theory;
- DNL provides a simple method to compare the effectiveness of alternative airport scenarios;
- DNL is the best measure of noise exposure to identify significant impacts on the human environment;
- By Federal interagency agreement, DNL is the best descriptor of all noise sources for land use compatibility planning; and
- DNL is the only metric with a substantial body of scientific survey data on the reactions of people to noise.

Noise Contour Generation

Noise contours for the forecasted year (2022) were generated using the Integrated Noise Model (INM) Version 6.0, the FAA’s state-of-the-art approved computer model that is used to predict the noise impacts that occur as a result of aircraft operations. The INM program predicts the values or contours of equal noise exposure for select points on the ground. Noise contours were modeled for two DNL levels, 65 and 75. Noise-sensitive land uses, such as residences, hospitals, libraries, and schools, are generally considered unacceptable for noise levels greater than 75 DNL. A sound level over 65 DNL, but less than 75 DNL, is normally considered unacceptable for residential land uses. Such uses can be made acceptable with proper noise insulation techniques. Data from a number of sources are required in order to use the INM in the analysis of aircraft noise. The necessary data used in generating the noise contours include: aircraft activity levels, fleet mix, flight track utilization patterns, and time of operation. The data that were used to produce noise contours for the Airport are summarized below:

*Aircraft Activity*

Average annual daily aircraft activity was forecasted for 2022 for the Airport Master Plan Update. The operational data shown in **Table 8-2** were input into the INM.

**TABLE 8-2  
 OPERATIONS PROJECTIONS-LOCAL AND ITINERANT**

<b>Year</b>	<b>Total Operations</b>	<b>Local Operations</b>	<b>Local Percentage</b>	<b>Itinerant Operations</b>	<b>Itinerant Percentage</b>
2003	215,328	99,050	46%	116,277	54%
2004E	215,300	99,038	46%	116,262	54%
2007	234,600	96,200	41%	138,400	59%
2012	273,200	95,600	35%	177,600	65%
2017	320,200	105,700	33%	214,500	67%
2022	372,600	123,000	33%	249,600	67%

Source: FAA-APO Terminal Area Forecast (TAF)  
 Wilbur Smith Associates

*Fleet Mix*

Fleet mix refers to the various categories of aircraft operating at the Airport. Fleet mix projections were also developed as part of the demand forecasting phase of the Master Plan Update. These data are presented in **Table 8-3**.

**TABLE 8-3  
 OPERATIONAL FLEET MIX**

Year	Single-Engine		Multi-Engine/ Turboprop		Jet		Helicopter		Other		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	
2003	43	69%	4	6%	1	2%	4	6%	10	16%	62
2004E	55	71%	8	11%	3	3%	2	2%	10	13%	78
2007	57	67%	7	8%	6	7%	4	5%	11	13%	85
2012	63	64%	10	10%	8	8%	5	5%	13	13%	99
2017	73	63%	13	11%	9	8%	5	4%	16	14%	116
2022	87	64%	16	11%	10	8%	5	4%	17	13%	135

Source: Wilbur Smith Associates

*Runway End Utilization*

Runway end utilization assumptions were based on discussions with Airport management and a review of historical wind conditions.

*Approach and Takeoff Profiles*

Approach and takeoff profiles identify aircraft altitudes along the flight path. Standard approach and takeoff profiles are incorporated in the INM and used for this analysis.

*Flight Tracks*

Flight tracks are the projections on the ground of an aircraft’s path. Flight paths are unique for each flight due to meteorological conditions, aircraft type, stage length, and pilot judgment. Generalized flight track assumptions were developed for the Airport based on historical operational conditions, as well as anticipated patterns.

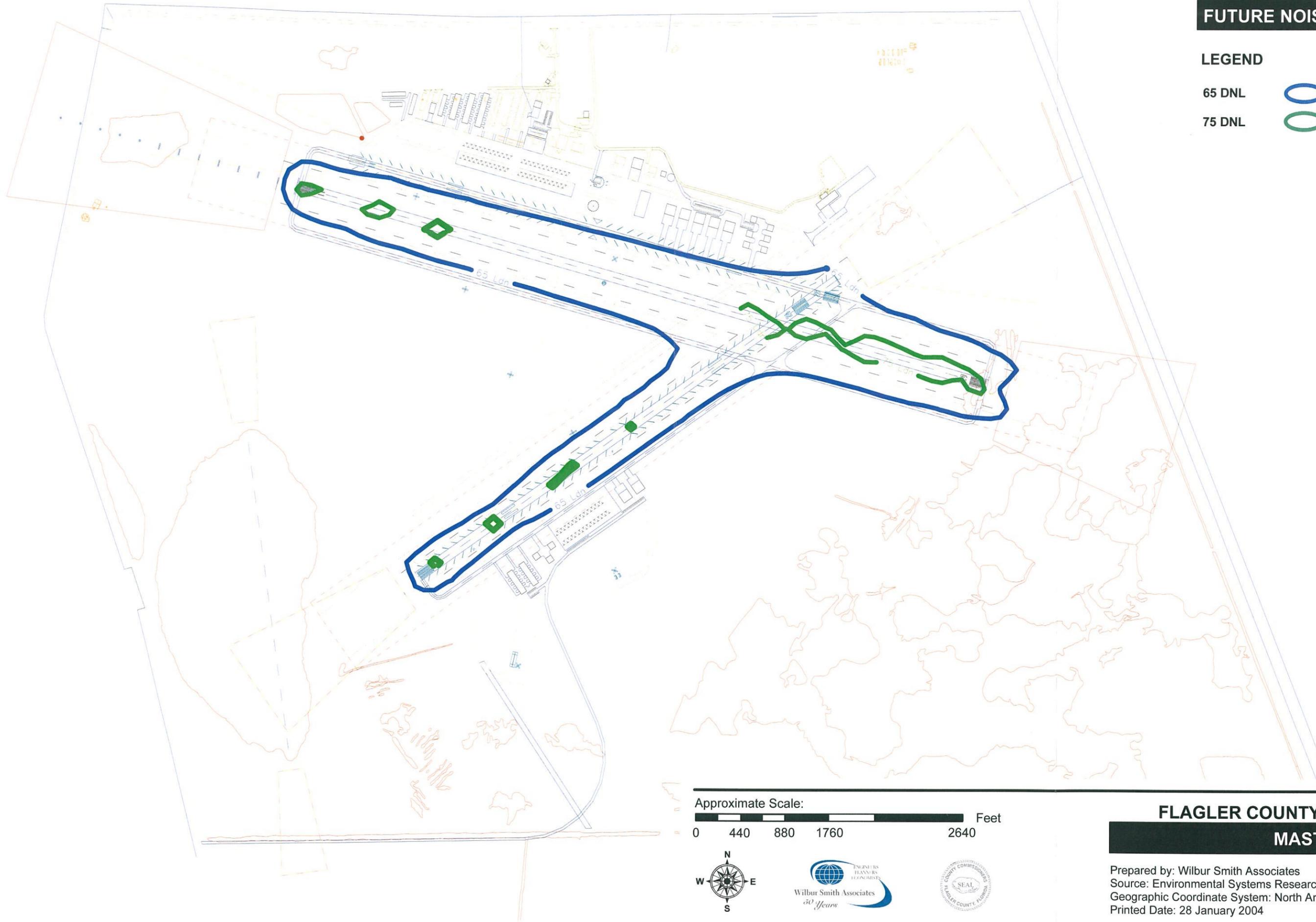
*Noise Impacts*

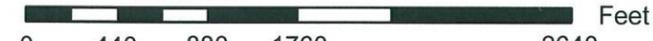
The noise exposure contours developed for the Airport for the recommended Build Alternative (Alternative 5) are shown in **Exhibit 8-1**. The noise contours developed for future year 2022 for the recommended Build Alternative, Alternative 5, indicate that there will be no noise impacts to adjacent residential areas, Flagler Palm Coast High School on State Road (S.R.) 100, or other sensitive land uses since the 65 DNL noise contour is almost completely within the Airport boundaries.

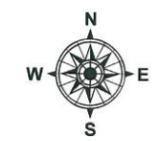
**FUTURE NOISE IMPACT**

**LEGEND**

- 65 DNL 
- 75 DNL 



Approximate Scale:  Feet



**FLAGLER COUNTY AIRPORT  
MASTER PLAN**

Prepared by: Wilbur Smith Associates  
 Source: Environmental Systems Research Institute, 2002  
 Geographic Coordinate System: North American 1983  
 Printed Date: 28 January 2004

### 8.2.2 Compatible Land Use

FAA Order 5050.4A states that the compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of noise impacts related to that airport. If the noise analysis concludes that there is no significant impact, a similar conclusion usually can be made with regard to compatible land use. Land use impacts also can occur if the proposed projects exceed the threshold of significance for other impact areas that have land use ramifications, including disruption of communities, relocation, and induced socioeconomic impacts (FAA's *Airport Environmental Handbook*, Chapter 5).

Land use in the vicinity of Flagler County Airport is primarily residential and commercial development. Residential development occurs east of Seminole Woods Parkway, located east of the Airport, and south of the Iroquois Canal, that forms the southernmost boundary of the Airport. Property along State Road (S.R.) 100 that borders the Airport to the north is primarily commercial use. The Flagler Palm Coast High School and administration buildings are located on the north side of S.R. 100, across from the airport entrance road. The Florida Hospital-Flagler is located on the north side of S.R. 100, approximately one mile east of the Airport. The land immediately east and southeast of the Airport is currently wooded but is zoned Industrial-Planned Unit Development. Low-density residential areas are located east of Seminole Woods Parkway. Low-density residential areas are also located west of Belle Terre Parkway and south of the Iroquois Canal. A buffer of open space that is zoned Agricultural lies immediately west of the Airport.

The future year 2022 noise contours for the recommended Build Alternative (Alternative 5) were analyzed to evaluate the impact of aircraft noise on sensitive land uses in the Airport area. FAA Advisory Circular 150/5020-1, *Noise Control and Compatibility Planning for Airports*, has identified land use compatibility guidelines that relate types of land uses to airport noise levels. Noise-sensitive land uses, such as residential areas, hospitals, and schools, are generally considered unacceptable for noise levels greater than 75 DNL. A sound level over 65 DNL, but less than 75 DNL, is normally considered unacceptable for residential land uses, however, such uses can be made acceptable with proper noise insulation techniques.

**Table 8-4** identifies the land uses compatible with day-night average sound levels.

**TABLE 8-4  
 LAND USE COMPATIBILITY WITH  
 YEARLY DAY-NIGHT AVERAGE SOUND LEVELS**

Land Use	Yearly day-night average sound level (DNL) in decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
<b>RESIDENTIAL</b>						
Residential other than Mobile Homes and Transient Lodging	Y	N (1)	N (1)	N	N	N
Mobile Home Parks	Y	N	N	N	N	N
Transient Lodgings	Y	N (1)	N (1)	N (1)	N	N
<b>PUBLIC USE</b>						
Schools	Y	N (1)	N (1)	N	N	N
Hospitals and Nursing Homes	Y	25	30	N	N	N
Churches, Auditoriums, and Concert Halls	Y	25	30	N	N	N
Government Services	Y	Y	25	30	N	N
Transportation	Y	Y	Y (2)	Y (3)	Y (4)	Y (4)
Parking	Y	Y	Y (2)	Y (3)	Y (4)	N

**Source: Federal Aviation Administration FAR 14 CFR Part 150**

- 1 – Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor noise level reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assumed mechanical ventilation and closed windows year-round. However, the use of NLR criteria will not eliminate outdoor noise problems.
- 2 – Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.
- 3 - Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.
- 4 - Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

Based on these guidelines, all land uses are considered compatible with yearly day-night sound levels below 65 DNL. Under the recommended Build Alternative (Alternative 5) for future year 2022 conditions, there will be no sensitive land uses within the 65 DNL contours. Therefore, there are no incompatible land uses in the vicinity of the Flagler County Airport.

### 8.2.3 Social Impacts

A social impact analysis was conducted to determine the potential effect of the proposed airport development on the human environment. The types of social impacts that were considered include:

- Relocation of residences and/or businesses
- Alterations in traffic patterns that may permanently or temporarily restrict traditional community access
- Division or disruption of established communities
- Disruption of orderly, planned development
- Creation of appreciable change in employment

Each of these potential impacts is discussed below:

Alteration in traffic patterns that may permanently or temporarily restrict traditional community access: The implementation of the recommended alternative (Alternative 5) will not result in an alteration in traffic patterns that may permanently or temporarily restrict traditional community access. The only change to the local road network will be the connection of a new road from the Airport to Belle Terre Parkway. This new roadway will facilitate access to the Airport from the areas south and west of the Airport.

Division or disruption of established communities: Under the recommended alternative, Alternative 5, the Runway Protection Zone (RPZ) for Runway 11 affects approximately 20 single-family home parcels west of Belle Terre in Quail Hollow. Approximately 15 of the 20 are currently vacant lots. While the FAA recommends purchasing all land underneath RPZs, there is no absolute requirement to do so. It is anticipated that the Flagler County Airport will maintain aviation easements to protect the airplane approach corridors rather than purchasing the affected homes or lots. Therefore, the implementation of the recommended alternative (Alternative 5) will not result in the division or disruption of established communities.

Disruption of orderly, planned development: The recommended alternative, Alternative 5, will not result in the disruption of orderly, planned development in the vicinity of the Airport since the development will occur primarily within Airport property and the properties affected by the RPZ will not be acquired.

Creation of appreciable employment: The construction of the airport development projects will result in the creation of short-term construction-related jobs in Flagler County. However, the number of jobs that will be created will not result in significant economic changes in Flagler County as a result of the airport development projects.

#### **8.2.4 Induced Socioeconomic Impacts/Cumulative Impacts**

Induced socioeconomic and cumulative impacts are evaluated to adequately assess the economic consequences and social ramifications of airport development. Induced socioeconomic and cumulative impacts on surrounding communities include: shifts in patterns of population movement and growth, changes in public service demands; and changes in business and economic activity. Cumulative impacts occur if the proposed airport development projects, combined with other local development projects, such as road improvements or economic development projects, create significant socioeconomic impacts for the surrounding area.

The proposed airport development projects at Flagler County Airport will not result in shifts in patterns or population movement and growth. The projects occur primarily on Airport-owned land. The proposed airport improvement projects will not require an expansion of utilities or public safety services, including fire and police service, that are currently available at the Airport. In addition, the proposed airport development will not result in significant economic changes. There will be some construction-related economic benefits to Flagler County. It is not anticipated that there will be a significant number of long-term airport jobs created by the projects that would impact the local economy. The airport projects will increase the Airport's utilization by business jets and may encourage the location of businesses in Flagler County. However, these economic impacts, while beneficial to the local economy, are not expected to be significant enough to result in shifts in population or changes in local land use.

According to Mr. Jim Jarrell, Airport Manager for Flagler County Airport, there are two major economic development projects currently being planned for areas in close vicinity to Flagler County Airport. These include the Town Center Project and Grand Haven Community. The Town Center Project encompasses a approximately 1,557 acres and is located on the north side of S.R. 100, between Belle Terre Parkway and Interstate 95, immediately north of Flagler County Airport. This project is planned in three phases and will create a traditional mixed-use downtown area for the City of Palm Coast. The development includes residential, office, retail, and institutional uses, as well as hotels and a nursing home. It is to be completed by year 2020. The Grand Haven Community is a private golf course/residential community to be located between Palm Coast Parkway and S.R. 100, east of Flagler County Airport. This development will include a golf course and approximately 750 residential units. These projects could result in cumulative impacts to local business and economic activity, as well as traffic, air, and water quality impacts. The potential cumulative impacts of the proposed airport improvement projects and the Airport-area development will be assessed in detail in the Environmental Assessment for the proposed projects at Flagler County Airport.

#### **8.2.5 Environmental Justice Impacts**

The Department of Transportation (DOT) Order 5680.1 was issued April 15, 1997 to comply with the Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations. This Order requires DOT to identify and address disproportionately high and adverse human health or environmental effects of their policies or programs on minorities or low-income populations. Environmental Justice impacts

are to be considered early in project planning to ensure that impacts to minority and low- income populations are considered in the evaluation of project alternatives.

The proposed airport development projects will not result in any disproportionate adverse impacts to minority and low-income populations because there will be no significant impacts off airport property to adjacent residential areas.

### **8.2.6 Air Quality**

The National Environmental Policy Act of 1969 (NEPA), the Clean Air Act (CAA), as amended and Title 49 U.S.C. 47106 (c) (1) (B), as amended (formerly sections 509 B) (5) and (B) (7) of the Airport and Airway Improvement Act of 1982, as amended; PL 97-248) are the primary laws that apply to air quality. NEPA requires Federal agencies to prepare an environmental document (i.e. environmental impact statement (EIS) or environmental assessment (EA) for major Federal actions that have the potential to affect the quality of the environment, including air quality.

The Clean Air Act (CAA) established National Ambient Air Quality Standards (NAAQS) for six pollutants, termed “criteria pollutants.” The six pollutants are: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), particulates (PM 10 and PM 2.5, and sulfur dioxide (SO<sub>2</sub>). The CAA requires each state to adopt a plan (State Implementation Plan or SIP) to achieve the NAAQS for each pollutant within timeframes established under the CAA.

Title 49 U.S.C. 47106 (c) (1) (B), as amended formerly sections 509 (B) (5) and (B) (7) of the Airport and Airway Improvement Act of 1982, as amended; PL 97-248) requires that the DOT/FAA may not approve a grant application for an airport development project involving the location of the airport, runway, or major runway extension, unless the Governor of the State in which the project is located certifies that there is reasonable assurance that the project will be located, designed, constructed, and operated in compliance with applicable air quality standards. Certification must be obtained from the Governor of the State prior to FAA approval of the project.

Flagler County Airport is located in Flagler County, which is currently in compliance with each of the National Air Quality Standards (NAAQS) for criteria pollutants. The NAAQS contained in the Federal Clean Air Act, as amended by the United States Congress in 1970, 1977, and 1990 are permitted levels for pollutants which must be met in order for a region to be in attainment for that pollutant. NAAQS standards are established for Carbon Monoxide (CO), Sulfur Dioxide (SO<sub>2</sub>), Nitrogen Dioxide (NO<sub>2</sub>), lead (Pb), ozone (O<sub>3</sub>), and particulate matter (pm<sub>10</sub>).

FAA Order 5050.4A, *Airport Environmental Handbook* indicates that if the proposed Federal action is in a state which does not have applicable indirect source review (ISR) requirements, then the projected airport activity levels are examined to determine if a detailed air quality analysis is required. The State of Florida does not have indirect source review requirements. Therefore, the determination of whether or not a detailed air quality analysis is required for Flagler County Airport is based on the annual aircraft operations at the Airport. Based on the guidelines provided in FAA Order 5050.4A, *Airport Environmental Handbook*, the threshold for

air quality impacts at general aviation airports is attained when airports are projected to have greater than 180,000 operations forecast annually. If this threshold is met, air quality impacts could occur and a detailed air quality analysis is required.

Flagler County is in attainment for all Federal and state air quality criteria. However, Flagler County Airport is projected to have greater than 180,000 general aviation operations over the 20-year planning period. Therefore, a detailed air quality analysis will be performed during the preparation of the Environmental Assessment for the proposed airport improvements to determine whether or not the airport improvements will result in significant air quality impacts. In accordance with 49 U.S.C. 47106 (C)(1)(B), certification must be obtained from the Governor of Florida which states that the project will be located, designed, constructed, and operated in compliance with applicable air quality standards.

### **8.2.7 Drainage/Hydrology and Water Quality**

Flagler County is located in the Atlantic Coastal Lowlands physiographic zone. Flagler County Airport is located in the Eastern Valley, the largest geomorphic feature in the County. This valley is approximately 20 miles wide and contains most of the low wetlands of Flagler County. Elevations in this region range from 5 to 28 feet above mean sea level.

The soils on Flagler County Airport are classified as the Myakka-Smyrna-Valkaria soils complex. This complex consists of nearly level, poorly drained soils that are underlain by sandy material. These soils are on broad flatwoods that are interspersed with depressional areas and small swamps that are ponded for long periods of time.

Flagler County Airport drains into the Iroquois Canal, located at the southernmost boundary of the Airport property. The canal was established for flood control purposes and is only lowered in the event of a hurricane.

A master surface water management system is to be constructed to allow for the future development of the eastern portion of Airport property. The Airport plans to construct a closed storm sewer system across the Airport's developable property to the existing Airport drainage channel that runs from north-to-south and outlets into the Iroquois Canal. This channel also serves State Route 100. This flow will then be routed to the eastern drainage channel, which flows south to a proposed detention pond. The pond will drain directly into the Iroquois Canal. (Flagler County Airport Application #4-035-76127-2, January 2003).

Stormwater runoff from the new runway and other Airport improvements will be handled by the proposed drainage system for Flagler County Airport. If additional capacity to the system is needed to control the quantity or quality of runoff, it will be determined during the design phase and increases in capacity, as appropriate, to the proposed drainage system will be designed and constructed. All proposed Airport projects are required to meet the current rules and criteria of the St. Johns River Water Management District. Additionally, any future development will require a National Pollutant Discharge Elimination System permit.

### **8.2.8 Department of Transportation Act, Section 303(c) Lands**

The Department of Transportation Act of 1966, Section 303 (c) prohibits the taking of public parkland, recreation areas, wildlife and waterfowl refuges, or historic sites unless there is “no feasible and prudent alternative.” There are no Section 303 (c) lands adjacent to the Airport that will be impacted by the proposed airport improvements.

### **8.2.9 Historic, Architectural, Archaeological, and Cultural Resources**

The National Historic Preservation Act of 1966 (NHPA), as amended, provides for the preservation of properties that are eligible for inclusion in the National Register of Historic Places (NRHP). In addition, Section 106 of the NHPA directs the heads of Federal agencies, Federal departments, or independent agencies that have direct or indirect jurisdiction over a Federal or Federally assisted undertaking to “take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register.”

The Archaeological and Historic Preservation Act of 1974 provides for the survey, recovery, and preservation of significant scientific, prehistorical, archaeological, or paleontological data when such data may be destroyed or irreparably lost due to a Federal, Federally licensed, or Federally funded project.

The Florida Department of State, Division of Historical Resources was contacted to determine the presence of any known historical or archaeological sites within or adjacent to Flagler County Airport. The Florida Master Site File lists two previously recorded archaeological sites within the Airport property. Neither of these sites would be impacted by construction of the proposed airport improvement projects. Since the Airport property has not been completely surveyed, there may be other unrecorded archaeological sites or historical structures that could be impacted by the proposed project. Therefore, it is recommended that a more detailed archaeological investigation be completed as part of the Environmental Assessment for the proposed airport improvement projects.

### **8.2.10 Biotic Communities/Endangered and Threatened Species of Flora and Fauna**

Section 7 of the Endangered Species Act (ESA), as amended, applies to Federal agency actions and requires each agency, generally the lead agency, to ensure that any action the agency authorizes, funds, or carries out is not likely to jeopardize the continued existence of any Federally listed endangered or threatened species or result in the destruction or adverse modification of critical habitat. In addition, the Fish and Wildlife Coordination Act requires that agencies consult with the State wildlife agencies and the Department of the Interior (FWS) concerning the conservation of wildlife resources where the water of any stream or other water body is proposed to be controlled or modified by a Federal agency or any public or private agency operating under a Federal permit.

The vegetative cover of Flagler County Airport is a mixture of wetlands and upland habitats. These vegetative communities are still found on the undeveloped portions of the airport property.

Indigenous and introduced grasses and scrubs are found throughout the infield, runway and terminal area, and the hangar portions of the Airport. Vegetation along the east and south property lines of the Airport consist of coniferous plantations, pine flatwoods, wetland coniferous forest and wetland forested mixed vegetation. There are some cypress bayheads and small freshwater marshes interspersed through this area. Mixed wetlands predominated with some freshwater marshes on the west side of the property, just north of Gore Lake.

Coordination received from the Florida Natural Areas Inventory (FNAI) indicates that Flagler County Airport is located on or very near a significant region of scrub habitat, a natural community in decline that provides important habitat for several rare animal and plant species. The FNAI database indicated that portions of the site appear to be located on or near Potential Natural Areas (PNA). PNAs are lands that appear to be relatively intact areas of natural vegetation based on aerial photography, as determined by FNAI scientists. PNAs are not a regulatory designation but are identified for conservation planning purposes. These PNA are priority 4 and may include the following community types: scrub, wet flatwoods, swamp, floodplain strand swamp, basin swamp or mesic flatwoods. In addition to the PNAs that have been identified by the FNAI, there are several plant and animal species that are identified as endangered or threatened species or species of special concern that have been known to occur on the Airport property. These species include the Gopher Tortoise (*Gopherus polyphemus*), which is identified as a Species of Special Concern by the State of Florida; the Celestial Lilly (*Nebastylis floridana*), listed as an Endangered Species by the State of Florida; and the Lake-side Sunflower (*Helianthus camosus*), listed as an Endangered Species by the State of Florida. In addition, portions of the Airport property are located on or near a potential habitat associated with a know occurrence of the wood stork (*Mycteria Americana*). (See Correspondence from Edwin A. Abbey, Environmental Reviewer, Florida Natural Areas Inventory, dated April 7, 2004, included in **Appendix A**). A complete list of rare species and natural communities that have been documented or reported in Flagler County is provided in **Appendix A**.

There are several bird and reptile species on the U.S. Fish and Wildlife Service's (USFWS) list of threatened and endangered species that could occur within Flagler County. This list is provided in **Appendix A**. Of these species, the following species could occur within the project area: the Bald Eagle (*Haliaeetus leucocephalus*), the Florida Scrub-jay (*Aphelocoma coerulescens*), the Wood Stork (*Mycteria Americana*), the Red-Cockaded Woodpecker (*Picoides borealis*), and the Eastern Indigo Snake (*Dymarchon corais couperi*). (<http://northflorida.fws.gov/CountyList/Flagler.htm>) The 1997 *Flagler County Airport Master Plan* indicated that wood storks have historically been found on the Airport property. The 1997 Master Plan also indicated that Sandhill Cranes were historically found on Airport property. These birds are listed as threatened by the State of Florida

The Florida Fish and Game Commission provided correspondence for the 1997 Master Plan that stated that breeding records for loggerhead shrike and Bachman's sparrow were recorded during the Florida Breeding Bird Atlas project of 1985-91 in the vicinity of the study site. The loggerhead shrike is a Federally-listed endangered bird species but is not shown to inhabit Florida at the current time on the USFWS website. The Bachman's sparrow is a state-listed endangered species. Recent correspondence received from the Florida Fish and Wildlife Conservation Commission indicated that no records from the Florida Fish and Wildlife

Conservation Commission-Office of Environmental Service's database were located within the project area. However, the Florida Fish and Wildlife Conservation Commission indicated that a strategic habitat conservation area for American swallow tailed kite has been located within or adjacent to the project area. (See letter from Erika S. Pittman, Records Technician, Florida Fish and Wildlife Conservation Commission, dated April 6, 2004, included in **Appendix A**).

The Airport property and the additional areas to be acquired for the proposed airport improvement projects will be surveyed for the presence of the above species prior to development. This survey will be coordinated with the U.S. Fish and Wildlife Service. If any state or Federally-listed species are identified within the project area for the airport improvement projects, further coordination will be undertaken with the U.S. Fish and Wildlife Service and the Florida Fish and Wildlife Conservation Commission. Every effort will be made to avoid, wherever possible, impacts to these species and/or their habitat during the design and construction of the airport improvement projects. Where impacts are unavoidable, appropriate mitigation plans will be developed in consultation with regulatory officials.

### **8.2.11 Wetlands**

Executive Order (E.O.) 11990, "Protection of Wetlands," DOT Order 5660.1A, the Rivers and Harbors Act of 1899, and the Clean Water Act, Section 404 address activities in wetlands. E.O. 11990 requires Federal agencies to ensure that their actions minimize the destruction, loss, or degradation of wetlands. It also assures the protection, preservation, and enhancement of the Nation's wetlands to the fullest extent practicable during the planning, construction, funding, and operation of transportation facilities and projects (7 CFR Part 650.26, August 6, 1982). DOT Order 5660.1A sets forth DOT policy that transportation facilities should be planned, construction, and operated to assure protection and enhancement of wetlands.

The recommended development alternative (Alternative 5) will impact approximately 34 acres of existing wetland areas. The wetlands to be impacted on the Runway 11 end of the relocated runway are classified as mixed wetland hardwoods and the wetlands to be impacted on the Runway 29 end are wetland forested mixed. A detailed wetlands identification and delineation study will be required as part of the Environmental Assessment for the runway relocation project. Prior to construction, a Joint Application for an Environmental Resource Permit/Authorization to Use Sovereign Submerged Lands/Federal Dredge and Fill Permit will be required. This joint application is reviewed and approved by the Florida Department of Environmental Protection (DEP), the St. Johns River Water Management District (SJRWMD), and the U.S. Army Corps of Engineers (USCOE). As part of the Joint Application, a wetlands mitigation plan will be prepared to identify mitigation for the wetland impacts. In accordance with Section 401 of the Clean Water Act, a Water Quality Certification also will be required from the Florida DEP.

### **8.2.12 Floodplains and Aquifers**

Executive Order 11988 directs Federal agencies to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by floodplains. Agencies are required to make a finding that

there is no practicable alternative before taking action that would encroach on a base floodplain based on a 100-year flood (7 CFR Section 650.250).

According to the Flood Insurance Rate Map (FIRM) for Flagler County, Florida, a 100-year floodplain extends along the west side of the Airport. The construction of the new 7,000-foot long runway will encroach into the floodplain; therefore, a more detailed floodplain analysis will be conducted as part of the Environmental Assessment (EA) for the proposed new runway. Based on the detailed floodplain analysis, a determination will be made of whether the new runway will result in a significant floodplain encroachment. The EA also will identify appropriate mitigation measures to be included in the design of the airport improvement projects that will minimize impacts to the floodplain.

Flagler County has adopted a zoning ordinance to reduce flood hazards. Zoning Ordinance 6.04.02 specifies that any new construction of residential and non-residential construction shall have the lowest floor, including the basement no lower than one (1) foot above the base flood elevation. Non-residential construction located in all A floodplain zones may be floodproofed in lieu of being elevated provided that all areas of the structure below the required elevation are watertight with walls substantially impermeable to the passage of water, and use structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effect of buoyancy. This would apply to the construction of the proposed terminal/administration building.

The ground water system of Flagler County consists of three main aquifer systems. They are the surficial aquifer system that is comprised of surface and ground water; an intermediate aquifer system; and the Floridian aquifer system. The surficial aquifer system is the uppermost freshwater aquifer in Flagler County. The surficial aquifer system is not confined and is recharged primarily by rainfall percolating through the surficial sediments and, to a lesser extent, by seepage upward from the underlying Floridian aquifer system. The surficial aquifer system can yield water suitable for consumption but in some areas it has high concentrations of iron and tannic acid that affect the taste of the water.

The intermediate aquifer system is primarily within the sediments of the Hawthorn Group, which consist of sand and shell fragments and some silt and clay. The aquifer ranges from 5 to 80 feet thick and yields good water quality that is used by domestic and municipal users. This system is the major source of water supply for the SW wellhead of the Palm Coast Utility Corporation, which serves the Flagler County Airport area.

The Floridian aquifer system is the major source of water for irrigation, public uses, and industry in Flagler County. It ranges in depth from 80 to 190 feet and is recharged by the overlying surficial and intermediate aquifers. (*Soil Survey for Flagler County, Florida*)

To ensure that the proposed airport improvement projects do not adversely impact water quality of the aquifer system in Flagler County, the design of the new runway and associated airport projects must comply with SJRWMD's requirements and regulations for development in aquifer recharge areas.

### **8.2.13 Coastal Zone Management Program/Coastal Barriers**

Flagler County Airport is not within the coastal area of Flagler County. Therefore, the proposed airport development for the Flagler County Airport will not affect areas under the jurisdiction of the Coastal Zone Management Program and the Coastal Barriers Resources Act of 1982.

### **8.2.14 Wild and Scenic Rivers**

The Wild and Scenic Rivers Act (P.L. 90-542, as amended) protects rivers that are listed on the National Inventory of Wild and Scenic Rivers. There are rivers listed on the National Inventory of Wild and Scenic Rivers on or adjacent to Flagler County Airport. In addition, there are no rivers currently listed in the Florida Wild and Scenic Rivers Program on or adjacent to the Airport.

### **8.2.15 Prime and Unique Farmlands**

The Farmland Protection Policy Act (FPPA) regulates Federal actions with the potential to convert farmland to nonagricultural uses. Correspondence received from the Natural Resources Conservation Service (NRCS) indicated that there are no prime or unique farmland soils in Flagler County. (See letter from Thomas W. Cheyne, District Conservationist, NRCS, dated April 12, 2004, included in **Appendix A**). In addition, no farmland is to be converted to other uses either directly or indirectly through induced development.

### **8.2.16 Energy Supply and Natural Resources**

FAA Order 1053.1, *Policies and Procedures for Energy Planning and Conservation*, provides for assessing energy demands related to airport improvement projects. The effects of airport development on the energy supply typically relate to the amount of energy required for:

- Stationary facilities (such as terminal building heating and cooling and airfield lighting)
- Movement of air and ground materials

The effects of airport development on natural resources typically relate to basic materials, such as gravel, fill dirt, etc., that are required for construction.

It is anticipated that the local power company, Florida Power and Light, will have no difficulty in meeting the energy demands of the proposed stationary facilities or runway lighting. In addition, energy consumption by aircraft and vehicles is not expected to significantly increase due to the proposed Airport development.

It is anticipated that the natural resources required for the construction of the runway and other airport improvements, including gravel, fill, and building supplies, are in available in sufficient quantities locally.

### **8.2.17 Light Emissions**

Light emissions caused by airport-related lighting can create an annoyance to residents in the vicinity of the Airport. In general, however, light emissions created by general aviation airports are minimal. As indicated in FAA Order 5050.4A, light emissions do not result in impacts to adjacent residential communities unless there are unusual circumstances, such as high intensity strobe lighting aimed directly at an individual's house. Therefore, the proposed airport development projects, which include the addition of high intensity runway lights, medium intensity taxiway lights, and approach lights for Runway 11/29, are not expected to result in light emission impacts to adjacent communities.

### **8.2.18 Solid Waste and Hazardous Materials Impacts**

The two statutes of most importance in the construction and operation of airport facilities and navigational aids are the Resource Conservation and Recovery Act (RCRA) (as amended by the Federal Facilities Compliance Act of 1992) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended (also known as Superfund). RCRA governs the generation, treatment, storage, and disposal of hazardous wastes and CERCLA provides for the cleanup of any releases of a hazardous substance (excluding petroleum) into the environment. FAA actions to fund, approve, or conduct an activity require consideration of hazardous material and solid waste impacts.

To identify the presence of known hazardous waste sites within the Airport property that could be impacted by the construction of the proposed improvement projects, the Environmental Protection Agency (EPA) databases for hazardous waste information were searched. These databases include information on hazardous waste generators, as well as hazardous waste sites. Based on this search, no known hazardous waste sites are within the Airport property. Flagler County Airport recently had three 4,000-gallon underground fuel tanks removed from the grassy area adjacent to the aircraft parking area, just west of the Airport Manager's Office. According to the Florida Department of Environmental Protection, Division of Waste Management, there are no discharges recorded for these tanks.

In addition to hazardous waste sites, solid waste impacts must be evaluated in conjunction with airport development. These impacts include:

- Impacts on solid waste generation
- Location of existing solid waste disposal facilities in the vicinity of proposed runways

No significant increases in solid waste generation are anticipated as a result of the proposed airport improvements. The only additional waste that is anticipated is that which will be associated with the construction of the aviation facilities. The existing waste collection and disposal facilities will be adequate to handle the waste associated with the construction of the airport facilities.

FAA Order 5200.5, *FAA Guidance Concerning Sanitary Landfills On or Near Airports* states that "sanitary landfills will be considered as an incompatible use" if located within 1500 meters

(approximately 4921 feet) of all runways planned to be used by piston type aircraft and within 3000 meters (approximately 9843 feet) of all runways planned to be used by turbo aircraft. Airports located closer than these distances to sanitary landfills have an increased risk of bird hazards. The existing Old Kings Road Landfill for Flagler County is located within 10,000 feet of Flagler County Airport; however, according to Mr. Jim Jarrell, the Airport Manager, there have been no reported bird strikes at the Airport within the past three years. Therefore, bird hazards are not a concern at the Airport.

### **8.2.19 Construction Impacts**

Specific impacts that would occur as a result of construction activities include: noise of construction equipment on the site; noise and dust from delivery of materials through local streets; disposal of soil; air pollution from construction equipment exhaust and dust; and water pollution from erosion. These impacts would be temporary in nature and limited to the construction period. To the extent necessary, mitigation of construction impacts would be accomplished by incorporating in the project specifications from the provisions of FAA Advisory Circular 150/5370-10, *Standards for Specifying Construction of Airports* and FAA Advisory Circular 150/5370-10A, *Standards for Specifying Construction of Airports, Item P-156, Temporary Air and Water Pollution, Soil Erosion, and Siltration Control*. Potential construction-related water quality impacts would be minimized through the implementation of a sediment and erosion control plan.

Construction would require workmen and machinery in and around the operations of the Airport. In some cases, runway or taxiway closures may be required for short periods of time. Guidelines, as cited in FAA Advisory Circular 150/5370/22C, *Operation Safety on Airports During Construction*, would be kept to a minimum in an effort to minimize inconvenience to Airport users.

### **REFERENCES**

- FAA Advisory Circular 150/5020-1, *Noise Control and Compatibility Planning for Airports*.
- FAA Advisory Circular, 150/5200-33, *Hazardous Wildlife Attractants On or Near Airports*
- FAA Advisory Circular 150/5370-10, *Standards for Specifying Construction of Airports*.
- FAA, Advisory Circular 150/5370-10A, *Standards for Specifying Construction of Airports, Item P-156, Temporary Air and Water Pollution, Soil Erosion, and Siltration Control*
- FAA Order 1053.1, *Policies and Procedures for Energy Planning and Conservation*.
- FAA Order 5050.4A, *Airport Environmental Handbook*, August 8, 1985.
- FAA Order 5200.5, *FAA Guidance Concerning Sanitary Landfills On or Near Airports*
- Federal Emergency Management Agency, Flood Insurance Rate Map, Flagler County, Florida (Unincorporated Areas, Map Numbers 120085 0085 B and 120085 0095 B, Effective Date: February 5, 1986.

St. Johns River Water Management District, Flagler County Airport Application #4-035-76127-2, January 2003.

Telephone conversation with Mr. Brad Garrity, Florida Department of Environmental Protection, Division of Waste Management, May 2004.

Telephone conversation with Mr. Jim Jarrell, Airport Manager, Flagler County Airport, May 2004.

U.S. Department of Agriculture, Natural Resources Conservation Service, in cooperation with the University of Florida, Institute of Food and Agricultural Sciences, Agricultural Experiment Stations, and Soil Science Department, and the Florida Department of Agriculture and Consumer Services, *Soil Survey of Flagler County, Florida*, October 1997.