

## SECTION 5

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### Affected Environment

#### 5.1 Introduction

This section will provide data and supporting documentation for environmental resources that could be affected by the Proposed Action. As stated within FAA Order 1050.1E: “this section shall succinctly describe existing environmental conditions of the potentially affected geographic area(s).”<sup>1</sup> Since the affected environment section focuses only on existing environmental resources, this section will discuss the following environmental resources for the project area that may be affected due to the no action or Proposed Action:

- Air Quality
- Biotic Resources (this section includes the impact categories Biotic Resources, Wetlands, State-listed Species & Federally-listed Species)
- Coastal Zone Management
- Compatible Land Use
- Historic, Architectural, and Archeological Resources
- Floodplains
- Noise
- Water Quality

FAA Order 5050.4B states that “for resources not affected, the following statement is sufficient: ‘the no action, Proposed Action, and reasonable alternatives would not affect: [list the resources.]’<sup>2</sup> The following is a list of resources that the No Action and/or the Proposed Action would not affect:

- **Coastal Barriers** – The Proposed Action and the no action alternatives are not located within the Coastal Barrier Resource System as defined by the Department of the Interior (DOI) under The Coastal Barrier Resources Act of 1982.
- **Farmland** – The Natural Resource Conservation Service (NRCS) has oversight over the regulations pertaining to farmlands under the Farmland Protection Policy Act and federal designations of Prime and Unique farmlands under the Code of Federal Regulations. **Figure 5.1-1** provides a graphic that displays the NRCS designation of farmlands for the Proposed Action site. “Important farmlands” are not found within the Proposed Action site.

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<sup>1</sup> FAA Order 1050.1E 405e

<sup>2</sup> FAA Order 5050.4B 706e

**Figure**  
**5.1-1 Farmland and Land Use in the Project**  
**Area**

- **Wild and Scenic Rivers** – The Department of the Interior (National Park Service (NPS), USFWS, or Bureau of Land Management (BLM), and the Department of Agriculture (US Forest Service) have oversight of the Wild and Scenic Rivers Act of 1968 and 36 CFR, Part 297 Subpart A Water Resources Actions. The DOI and the Department of Agriculture (DOA) also oversee the Wild and Scenic River Guidelines for Eligibility, Classification and Management of River Areas<sup>3</sup>. The FAA is required to determine if the Proposed Action or the no action alternative would affect a designated area under the National Wild and Scenic River System (WSRS) or a free-flowing water body designated under the National Rivers Inventory (NRI). **Figure 5.1-2** shows that the nearest designated water body under the WSRS is over 18 miles north of the Proposed Action site and no impacts to WSRS or NRI designated water bodies are expected.

The following environmental impact categories will be discussed in Section 6 “Environmental Consequences” of this document, since the environmental resources impacted in these categories will be a result of the implementation/construction of the Proposed Action and are not part of the existing affected environment resource.

- Construction
- Section 4(f)
- Energy Supplies, Natural Resources, and Sustainable Development
- Environmental Justice
- Hazardous Materials
- Induced Socioeconomics
- Light Emissions and Visual Effects
- Social Impacts
- Solid Waste
- Cumulative Impacts

## 5.2 Project Location & Vicinity

The Proposed Action site is located within the property boundary of OIA. OIA is located in central Florida, Orange County (see **Figure 5.2-1**) and is within the political jurisdiction of The City of Orlando. The Proposed Action site is located east of the existing airfield area, and consists of approximately 1,325 acres (see **Figure 5.2-2**). The Proposed Action is bounded to north by the Beach Line Expressway (State Road 528), to the east by Narcoossee Rd (SR 15), to the south by Dowden Rd., and to the west by the airport operations area (AOA) including runway 17L-35R. OIA property falls under the jurisdiction of the City of Orlando’s local land use controls and growth management and environmental regulations established by the State of Florida.

<sup>3</sup> 47 Federal Register 39454 dated September 7, 1982.

**Figure**  
**5.1-2 OIA Vicinity to Wild and Scenic Rivers**

**Figure**  
**5.2-1 Vicinity Map**

**Figure**  
**5.2-2 Projected Location Map**

Directly east of Narcoossee Rd., there are two planned use development areas (Ball Bay PD and Livina PD) that consist of a mix of commercial, office, and residential uses. To the south of the Proposed Action are residential areas including the North Lake Park community (part of the Lake Nona DRI development area). There are also recently developed commercial uses bounding the southeast portion of the project site along Narcoossee Rd.

### 5.3 Background Information of Past, Present and Reasonably Foreseeable Future Actions

This section provides a brief history of past FAA environmental approvals at OIA, and current City of Orlando land use and zoning designations for the Proposed Action site. It also provides a summary of actions by Orange County and private entities that are currently underway or planned in the foreseeable future in the vicinity of the Proposed Action. There have been several focused land use studies that either include or are in close proximity to the Proposed Action site. The primary ones include the City of Orlando’s Southeast Orlando Sector Plan (Sector Plan) and Orange County’s Innovation Way, that provide the reader with background information for the types of uses planned within or around the Proposed Action site. This section also briefly describes the current status of OIA’s State of Florida Development of Regional Impact approvals and other large scale Developments of Regional Impact development areas in the vicinity of the Proposed Action site.

#### 5.3.1 Past Environmental Approvals at OIA

Since 1990, the FAA has issued environmental approvals for two major projects at OIA. The first was for the development of the Fourth Runway (9,000 foot Runway 17L-35R) and the Midfield Development Area (area between the third and fourth runways). The FAA issued a Finding of No Significant Impact (FONSI) and Record of Decision (ROD) for this project in July 1990. The project included taxiways, navigation aids, AARFF facility, drainage and flood control systems and land acquisition necessary for the runway and related mitigation areas. All of the actions associated with this approval have been completed with the exception of some midfield (non-airfield) development areas.

The second environmental approval was for the South Terminal Complex. The FAA issued a Finding of No Significant Impact (FONSI) and Record of Decision (ROD) for this project in August, 1998. The project included the development of a South Terminal Complex, related support areas, and environmental mitigation. The design portion of the project has taken place and site work has been initiated, however, ~~due to the current activity demand at the airport, downturn in the economy,~~ construction of the South Terminal complex has not begun.

Both of these projects were also approved by the City of Orlando under the State of Florida’s Development of Regional Impact (DRI) process. Development Orders associated with both projects were issued by the City.

**Comment [VL1]:** Or do you mean forecast operators? Clarify.  
**Comment [sbb2R1]:** See revised text.

### 5.3.2 Current Zoning – Proposed Action Site

The current City of Orlando Zoning map ([November 8, 2010](#)) for the Proposed Action area is depicted in **Figure 5.3-1**.<sup>4</sup> The Proposed Action site currently has a mixture of ~~seven-six (76)~~ zoning designations. It should be noted that some of the zoning districts contain an “AN” which means they are part of an established noise overlay zone from GOAA’s FAA approved Federal Aviation Regulation (FAR) Part 150 Noise Study. Below is a list of the current zoning designations for the Proposed Action site shown in Figure 5.3-1.

- Airport Support Designation – High Intensity (ASD-2)
- Airport Support Designation – High Intensity with Aircraft Noise Overlay (ASD-2AN)
- Airport Support Designation – Medium Intensity (ASD-1)
- Airport Support Designation – Medium Intensity with Aircraft Noise Overlay (ASD-1AN)
- ~~Conservation (C)~~
- Holding or No City Zoning (H or No City Zoning)
- Industrial Park (IP)

Comment [VL3]: Is there a revised Figure 5.3-1?

Comment [sbb4R3]: yes

Comment [VL5]: Explain the change from the Draft EA.

Comment [sbb6R5]: See added footnote.

Zoning district descriptions are found within the City of Orlando’s Land Development Code. A detailed description from the City’s *Land Development Code* is located in **Appendix E**.

### 5.3.3 Future Land Use – Proposed Action Site

To comply with Florida’s growth management statutes, every jurisdiction’s required comprehensive plan must have a Future Land Use Element that includes goals, objectives, policies, future land use descriptions, and a Future Land Use Map (FLUM). A future land use designation indicates the anticipated, ultimate use for a property along with the density or intensity of development. Future land use designations provide the framework for establishing detailed land regulations (including zoning), which can specify allowable uses, prohibited uses, heights, and setbacks among other things.

Prior to the completion of the City of Orlando’s Southeast Sector Plan (Sector Plan) in 1999, the Proposed Action site had no future land use designations. As a result of the Sector Plan, future land use designations were assigned to all the parcels within the Sector Plan study area including the Proposed Action site (details on the Sector Plan are found in section 5.3.3). **Figure 5.3-2** depicts the current FLUM map within the City of Orlando’s Growth Management Plan. The most recent FLUM (effective ~~March 2, 2006~~ [November 10, 2010](#)) designates the following ~~four-five (54)~~ uses in the Proposed Action site (see **Figure 5.3-2**)<sup>5</sup>:

<sup>4</sup> [The City of Orlando updated the zoning map for the East Airfield Area after GOAA received the Conceptual ERP Permit from the SFWMD. The Draft EA document zoning map showed areas of conservation. The updated zoning map removed the conservation areas consistent with the wetland impact and mitigation information approved by the SFWMD.](#)

<sup>5</sup> [The City of Orlando updated the FLUM effective November 10, 2010 upon receipt of the SFWMD Conceptual ERP Permit. The Draft EA FLUM showed areas designated under the heading of “Primary Conservation Network/Wetlands” \(PCN\). The City of Orlando’s Future Land Use Element Policy 4.1.11 provides GOAA the ability to remove the PCN land use from their property after SFWMD permits are obtained \(See section 6.20 local review for more information\).](#)

- Airport Support District – High Intensity
- Airport Support District – Medium Intensity
- ~~Conservation~~
- Lake/Conservation
- Public/Recreational & Institutional

**Figure (11x17)**  
**5.3-1 City of Orlando Zoning**

Figure (11x17)

## 5.3-2 City of Orlando FLUM

More details on the future land use designations are found in the Future Land Use Element, *Orlando Growth Management Plan*, dated August 6, 2007 and can be located on the City of Orlando's City Planning website: <http://www.cityoforlando.net/planning/cityplanning/GMP.htm>.

### 5.3.4 Southeast Orlando Sector Plan (Sector Plan)

The City of Orlando identified the southeast sector of the City as a future growth corridor with OIA as the primary economic and employment generator. The Sector Plan includes: the construction of expanded terminal facilities, new on-site roadways, transit linkages, airport-related office uses and industrial development. Recognizing the need for area property owners to work together to address the future, the City of Orlando began the study process by defining a 19,300-acre area to be included in the Southeast Orlando Sector Plan. The area's property owners (including GOAA) actively participated in the planning process during the late 1990's, which defined how to: balance land uses, link land uses to transportation, preserve natural systems, and incorporate design principles to create a sense of community. As a result of this initiative, a framework for guiding future development activity for this area was incorporated into the City's Growth Management Plan and Land Development Code<sup>6</sup>.

The Sector Plan was adopted in 1999 and includes land use designations along with policies and guidelines for future development. The Sector Plan identifies specific land uses and guidance for this area to be incorporated into the City of Orlando's Future Land Use Map. **Figure 5.3-3** depicts the original 1999 Sector Plan future land use designations. There have been subsequent Sector Plan updates and revisions since the original 1999 Sector Plan. One of the major changes to the Proposed Action location that resulted from those revisions includes the change of land use designation for a portion of the OIA property along Dowden Road. This area was changed from Airport Support District - High Intensity to the current future land use designation of Airport Support District – Medium Intensity in 2006. This change to the Sector Plan, initiated by GOAA, was intended to provide a land use buffer between the residential areas to the south and the Airport Support District-High Intensity Uses. The most recent version of the Sector Plan land use designation map is dated April 2008 (see **Figure 5.3-4**).

Currently, the majority of the Proposed Action site has a future land use designation of Airport Support District - High Intensity with the areas surrounding Dowden Road identified as Airport Support District - Medium Intensity. ~~In addition, areas are labeled as Water Body and Primary Conservation Network / Wetlands. In relation to the future land use designation of Primary Conservation Network / Wetlands, the Sector Plan has a reference Note I on the plan:~~

~~“Note I: The PCN [Primary Conservation Network] boundaries are conceptual only and will be finalized as more accurate environmental information becomes available.”~~

**Comment [VL7]:** Hasn't this been revised and shouldn't this be explained?

**Comment [sbb8R7]:** Yes, this information has been deleted and a footnote has been added to Section 5.3.3 to explain the change.

<sup>6</sup> Chapter 68 of the City of Orlando Municipal Code

**Figure**  
**5.3-3 1999 Southeast Orlando Sector Plan**

**Figure (11x17)**  
**5.3-4 2008 Southeast Orlando Sector Plan**

Back

~~The City of Orlando is currently in the process of amending the Future Land Use Map in regards to the Primary Conservation Network / Wetlands areas within the East Airfield Development Area (see Section 6.20.1 under “Local Level Review” for further details).~~

Comment [VL9]: Explain changes since the draft.

Comment [sbb10R9]: See footnote in section 5.3.3

There is a small portion of the project site near the southern extent of the project boundary that is identified as “Public Institutional.” This area was previously the site for the Lake Nona Water Treatment Plant which was decommissioned. The property was transferred to GOAA as part of the 1999 Narcoossee Road Widening Agreement between GOAA and City of Orlando. GOAA will seek a future land use change to Airport Support District High Intensity for this property during the DRI approval process.

The project site is also identified as a key link in the area’s future transportation network. The planned conceptual transportation corridors are shown as elements of the Sector Plan’s future land use map (refer to corridor and roadway elements of Figure 5.3-4). Potential rail corridors are shown along State Road 528/Beach Line Expressway (project site’s northern boundary) and within the site’s southern section. Also, “transit/increased density corridors” are shown, running along Narcoossee Road (project site’s eastern boundary).

## 5.3.5 Regional Planning & Surrounding Area Development

### Development of Regional Impact

~~Proposed Actions in Florida that are large enough to have regional impacts are designated a Development of Regional Impact (DRI). The Regional Planning Council (RPC) leads the review of DRI projects, serving as the clearinghouse for all agency and local government comments. From this review, a set of recommendations are passed along to the local jurisdiction for consideration in the final set of approval conditions, known as a Development Order. The Development Order for this project will be executed by the City of Orlando. This review process has been in place since 1972.~~

Under Florida law, certain developments, referred to as DRIs, Development of Regional Impact, require review by Regional Planning Councils (RPC), various resource agencies, and the Florida Department of Community Affairs (DCA) prior to local government and approval through the issuance of a local development order. According to Section 380.06, Florida Statutes, any development which, because of its character, magnitude, or location, would have a substantial effect upon the health, safety, or welfare of citizens of more than one county constitutes a Development of Regional Impact (DRI). Section 380.0651, Florida Statutes, provides that any development which exceeds the thresholds established in that section is required to undergo a DRI level of review established in Section 380.06, Florida Statutes.

Unlike other local development orders, developments subject to DRI level of review prepare and submit a comprehensive application, know as an “Application for Development Approval” (ADA) to the local government, the RPC and DCA. The RPC will distribute the application to state resource agencies such as the Water Management Districts, Department of Environmental Protection, Fish and Wildlife Conservation Commission, and the Department of Transportation, and adjacent local governments, including cities and counties. The RPC will receive and evaluate agency and local government comments to develop a series of recommended conditions for the

local government to consider in issuing a final development order for the proposed project. In addition, DCA will review the ADA and agency comments and analyze the project impacts, if any upon regional and statewide resources under the standards for such established in Chapter 9J-2, Florida Administrative Code (FAC). Standards in Chapter 9J-2 FAC include Listed Plant and Wildlife Resources; Archaeological and Historical Resources; Hazardous Material Usage, Potable Water, Wastewater and Solid Waste Facilities; Transportation; Air Quality; and Adequate Housing, as may be applicable. DCA will likewise provide comments and recommended conditions using the standards established in Chapter 9J-2, Florida Administrative Code, for local government consideration when issuing a development order. Generally, the RPC will conduct a public hearing where the applicant and the public may provide testimony and evidence regarding the proposed development's impacts, if any, on regional or statewide resources, and the RPC report and recommended conditions of approval. Finally, prior to issuing a development order, the local government will notice and conduct at least one public hearing regarding the proposed development. Under the DRI level of review process, in considering whether the development shall be approved, denied, or approved subject to conditions, restrictions, or limitations, the local government shall consider whether, and the extent to which the development is consistent with the local comprehensive plan and local land development regulations, the report and recommendations of the regional planning agency, and the State Comprehensive Plan. The DRI review process has been in place since 1972.

The RPC for the Orlando area is the East Central Florida Regional Planning Council (ECFRPC). Due to OIA's size and acreage, it has historically qualified for DRI review. Currently, the OIA Development Order Historically, development at OIA, has been governed by a City of Orlando Development Order which has been subject to DRI level review in accordance with Section 380.06, Florida Statutes. The OIA Development Order presently governing the development for OIA is the (1999 Amended and Restated Development Order (Amended and Restated DO) and) does not include the Proposed Action site. To proceed with development of the Proposed Action, GOAA will comply with the DRI statutory requirements and review process for the may submit a notice of proposed change process to amend ment of the their OIA Amended and Restated Development Order to incorporate Proposed Action local current local development order to include the project site. As with the current Amended and Restated DO, any amendment to the Amended and Restated DO to incorporate the Proposed Action will be reviewed and approved by the City of Orlando.

Comment [VL11]: May? Need to expand this discussion to discuss the schedule and what would be analyzed i.e. traffic impacts.

Comment [sbb12R11]: Please see added information above related to DRI.

## Orange County's Innovation Way

Following the adoption of the City's Sector Plan, Orange County completed a similar regional study in 2005 for the area between the Sector Plan study area and the University of Central Florida (located near the Seminole County line). The County's study area became known as Innovation Way, which is shown in **Figure 5.3-5**. The purpose of this study was to define the physical and functional way the area would develop, including a "high tech" corridor. After initial evaluations, the study focused on a smaller area, bounded by: the Osceola County line (on the south), State Road 528/Beach Line Expressway (on the north), Toll Road 417 and Narcoossee Road (on the west), and the Econlockhatchee River (on the east). Within this area, a corridor was defined centered around the new

**Figure**  
**5.3-5 Innovation Way**

Innovation Way Boulevard, which will eventually connect to Dowden Road at Narcoossee Road. Conceptual scenarios were created, examining the locations of future development and preservation. The higher density development would be concentrated within the corridor area.

While the Innovation Way study area is located some distance east of the project site, there are some provisions that directly affect the project site. The main east-west roadway (known as Innovation Way Boulevard) is expected to extend westward (outside the study area) and line up with Dowden Road at Narcoossee Road. A potential transit corridor also follows this alignment, leading to the project site.

### Other Area Development Activities

Located to the south of the Proposed Action site, Lake Nona DRI is a 6,917 acre planned development (PD) area with a mixture of land uses including residential, school, retail, airport support district – industrial, office, and hotel. It received the initial DRI approval in 1983. A recent change to the Lake Nona DRI is the development of a medical campus (southern portion of the development area) which will include: the University of Central Florida nursing and medical schools, the Veterans Administration Hospital, and the Burnham Institute. In addition to the Lake Nona community, there are other development activities and planned developments surrounding the Proposed Action site which also include a mix of land uses. **Figure 5.3-6** shows the following development areas near the Proposed Action site:

- Lake Nona DRI
- Randal Park PD
- East Park PD
- Eagle Creek DRI
- Bal Bay PD
- La Vina PD
- Lee Vista DRI
- Vista Park PD

## 5.4 Environmental Resources

This section describes the existing environmental resources that may be affected by the Proposed Action or no action alternative. As mentioned in Section 5.1, the following categories will be included in this section:

- Air Quality
- Biotic Resources (this section includes Biotic Resources, Wetlands, State-listed Species & Federally-listed Species)
- Coastal Zone Management
- Compatible Land Use
- Historic and Archeological
- Floodplains
- Noise
- Water Quality

**Figure**  
**5.3-6 Other Development Areas**

## 5.4.1 Air Quality

Air quality is a function of both the rate and location of pollutant emissions under the influence of meteorological conditions and topographic features effecting pollutant movement and dispersal. Atmospheric conditions such as wind speed, wind direction, atmospheric stability, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants, and consequently air quality.

There are three sets of Federal guidelines, or requirements, that together determine the need for, define the type(s) of, and establish the extent of an air quality assessment for airport-related actions and projects. These are FAA Orders 1050.1E, 5050.4B, and the Federal Clean Air Act (CAA) General Conformity Rule that applies in areas classified by the U.S. Environmental Protection Agency (EPA) to be nonattainment for any of the criteria air pollutants. The City of Orlando and Orange County have been designated “attainment” areas by the EPA meaning that they meet the National Ambient Air Quality Standards (NAAQS) and thus, the conformity rule does not currently apply.

Currently, the Proposed Action area is virtually undeveloped and does not generate aviation activity and minimal surface vehicle traffic is associated with the site. Therefore, for the purposes of this assessment, the air quality analyses were performed ~~for~~ only for the aircraft activity and surface vehicle activity related to the Proposed Action build-out (see Section 6.0).

**Table 5.4-1** presents ambient air quality monitoring data for the years 2006-2008 from the air monitoring stations operated by the Florida Department of Environmental Protection (DEP) in Orange County. Notably, the DEP operated five air monitoring stations within Orange County during this time period and the air pollutant lead (Pb) was not monitored.

## 5.4.2 Biotic Resources

Biotic resources are defined by the FAA’s Environmental Desk Reference as “various types of flora (plants) and fauna (fish, birds, reptiles, amphibians, marine mammals, coral reefs, etc.) in a particular area. The term also means, rivers, lakes, wetlands, forests, upland communities, and other habitat types supporting flora and aquatic and avian fauna.”<sup>7</sup> This section describes existing biotic resources in the project site that may be affected by the Proposed Action or No Action alternative. While this section includes information on wetland and federally-listed species, the environmental consequences discussion in Section 6.0 will address these topics separately from biotic resources to address specific regulations.

<sup>7</sup> FAA Environmental Desk Reference for Airport Actions (2007).

**TABLE 5.4-1  
 AMBIENT AIR QUALITY MONITORING DATA (2006-2008)**

Pollutant	Averaging Time	Threshold	Measured Levels
CO	1-hour average <sup>1</sup>	35 ppm	4.2 ppm
	8-hour average <sup>1</sup>	9 ppm	2.3 ppm
NO <sub>2</sub>	Annual Arithmetic Mean	0.053 ppm	0.009 ppm
SO <sub>2</sub>	Annual Arithmetic Mean	0.03 ppm	0.001 ppm
	24-hour average <sup>1</sup>	0.14 ppm	0.003 ppm
	3-hour average <sup>1</sup>	0.5 ppm	0.01 ppm
O <sub>3</sub> <sup>2</sup>	8-hour average <sup>2</sup>	0.075 ppm (2008 standard)	0.075 ppm <sup>4</sup>
	8-hour average <sup>3</sup>	0.08 ppm (1997 standard)	
PM <sub>10</sub>	24-hour average <sup>5</sup>	150 µg/m <sup>3</sup>	63 µg/m <sup>3</sup> <sup>8</sup>
PM <sub>2.5</sub>	24-hour average <sup>5</sup>	35 µg/m <sup>3</sup>	24.7 µg/m <sup>3</sup> <sup>9</sup>
	Annual Arithmetic Mean <sup>7</sup>	15 µg/m <sup>3</sup>	9.31 µg/m <sup>3</sup> <sup>8</sup>
Pb	Rolling 3-month average	0.15 µg/m <sup>3</sup>	Not measured

- 1 Not to be exceeded more than once per year.
- 2 To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm.
- 3 To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.
- 4 Meets but does not exceed the 2008 standard.
- 5 Not to be exceeded more than once per year on average over three years.
- 6 To attain this standard, the 3-year average of the 98<sup>th</sup> percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m<sup>3</sup>.
- 7 To attain this standard, the 3-year average of the weighted annual mean PM<sub>2.5</sub> concentrations from single or multiple-community-oriented monitors must not exceed 15.0 µg/m<sup>3</sup>.
- 8 Maximum recorded level at any monitor within Orange County from 2006 to 2008.
- 9 Maximum recorded 98<sup>th</sup> percentile at any monitor within Orange County from 2006 to 2008.

ppm = parts per million  
 µg/m<sup>3</sup> = micrograms per cubic meter

SOURCE: United States Environmental Protection Agency, 2009.

## Habitat

Currently, the Proposed Action site consists primarily of pasture land that is leased by GOAA for cattle grazing and sod farming. The Proposed Action site also includes areas of wetlands, uplands, open water, and conveyance ditches. Natural vegetation, pasture areas, and water habitats found on the project site would be considered typical either currently or historically for the surrounding area. Habitat mapping of the project site has been completed in accordance with Florida Land Use, Cover and Forms Classification System<sup>8</sup> (FLUCFCS) and estimated acres for each classification of land use have been calculated. Due to differing state and federal review criteria in determining jurisdictional wetlands for the 1,325 acre site, two separate acreage tables are provided below. Following the tables are the descriptions of the FLUCFCS areas identified on the Proposed Action site. **Table 5.4-2** provides the estimated acres and percent areal coverage for each FLUCFCS code based on federal wetland jurisdiction determination. **Table 5.4-3** provides the estimated acres and percent coverage for each FLUCFCS code based on state wetland jurisdiction. **Figure 5.4-1** (a and b) **5.4-2** (a and b) illustrate these areal coverages pursuant to federal and state wetland jurisdictional criteria respectively.

<sup>8</sup> Florida Land Use, Cover and Forms Classification System (Florida Department of Transportation, Jan 1999)

**Figure (11x17)**  
**5.4-1a ACOE FLUCFCS Map**

**Figure (11x17)**  
**5.4-1b ACOE FLUCFCS Map**

Figure (11x17)  
**5.4-2a SFWMD FLUCFCS Map**

**Figure (11x17)**  
**5.4-2b SFWMD FLUCFCS Map**

**TABLE 5.4-2  
USACE SUMMARY OF FLUCFCS COVERAGE FOR PROPOSED ACTION SITE**

FLUCFCS Code	Description	Approximate Acreage <sup>a</sup>	Percent Land Area <sup>b</sup>
211	Improved Pastures	661.06	49.9%
212	Unimproved Pasture	19.86	1.5%
320	Shrub and Brushland	99.47	7.5%
321	Palmetto Prairies	26.41	2.0%
411	Pine Flatwoods	126.39	9.5%
434	Hardwood-Coniferous Mixed	1.34	0.1%
510	Streams and Waterways/Man-Made Ditches/Swales	27.76	2.1%
516	Ditches	0.56	0.0%
520	Lakes	19.85	1.5%
524	Lakes Less than 10 Acres (4 Hectares) which are Dominant Features/Cattle Ponds	0.43	0.0%
534	Reservoirs Less than 10 Acres (4 Hectares) which are Dominant Features/Stormwater Ponds	25.66	1.9%
611	Bay Swamps	1.98	0.1%
613	Gum Swamps	0.83	0.1%
619	Exotic Wetland Hardwoods	0.17	0.0%
620	Wetlands Coniferous Forests	11.53	0.9%
621	Cypress	170.91	12.9%
631	Wetland Shrub	56.02	4.2%
641	Freshwater Marshes	12.91	1.0%
6419	Buttonbush	1.08	0.1%
643	Wet Prairies	7.14	0.5%
740	Disturbed Land	25.09	1.9%
811	Airports	29.07	2.2%
<b>Total</b>		<b>1325.52</b>	<b>100.00%</b>

a The acreages provided are approximate and subject to change based on agency verification of the upland / wetland limits.  
b. Actual summation of % land cover equals 99.90% due to small percentages being represented for the values of 0.0%. This table is consistent with information provided in US USACE Individual Permit Application No. SAJ-2006-2640 (IP-JSC).

SOURCE: Breedlove, Dennis & Associates, Inc.

**TABLE 5.4-3  
SFWMD SUMMARY OF FLUCFCS COVERAGE FOR PROPOSED ACTION SITE**

FLUCFCS Code	Description	Approximate Acreage <sup>a</sup>	Percent Land Area <sup>b</sup>
211	Improved Pastures	663.39	50.05%
212	Unimproved Pasture	19.87	1.50%
320	Shrub and Brushland	111.67	8.42%
321	Palmetto Prairies	26.41	1.99%
411	Pine Flatwoods	128.54	9.70%
434	Hardwood-Coniferous Mixed	1.57	0.12%
510	Streams and Waterways/Man-Made Ditches/Swales	25.62	1.93%
516	Ditches	0.56	0.04%
520	Lakes	19.85	1.5%
524	Lakes Less than 10 Acres (4 Hectares) which are Dominant Features/Cattle Ponds	0.43	0.03%
534	Reservoirs Less than 10 Acres (4 Hectares) which are Dominant Features/Stormwater Ponds	25.66	1.94%
611	Bay Swamps	2.47	0.19%
613	Gum Swamps	0.79	0.06%
619	Exotic Wetland Hardwoods	0.45	0.03%

**TABLE 5.4-3  
 SFWMD SUMMARY OF FLUCFCS COVERAGE FOR PROPOSED ACTION SITE**

FLUCFCS Code	Description	Approximate Acreage <sup>a</sup>	Percent Land Area <sup>b</sup>
620	Wetlands Coniferous Forests	11.53	0.87%
621	Cypress	180.21	13.60%
631	Wetland Shrub	24.93	1.88%
641	Freshwater Marshes	19.86	1.50%
6419	Buttonbush	1.08	0.08%
643	Wet Prairies	6.45	0.49%
740	Disturbed Land	25.09	1.89%
811	Airports	29.09	2.19%
<b>Total</b>		<b>1325.52</b>	<b>100.00%</b>

a. The acreages provided are approximate and subject to change based on agency verification of the upland / wetland limits.  
 b. This table is consistent with information provided in SFWMD ERP Application No. 060331-11.

SOURCE: Breedlove, Dennis & Associates, Inc.

## Upland Community Descriptions

Upland communities on the project site consist of the following cover types: Improved Pastures (211), Unimproved Pastures (212), Shrub and Brushland (320), Palmetto Prairies (321), Pine Flatwoods (411), Hardwood-Coniferous Mixed (434), Disturbed Land (740), and Airports (811).

The Improved Pastures (211) encompasses the majority of the property. The pasture is actively being grazed and contains an herbaceous stratum including bahiagrass (*Paspalum notatum*), bermudagrass (*Cynodon dactylon*), and tropical Mexican clover (*Richardia brasiliensis*). Several small swales were noted throughout the pasture which serve to store and convey water following rainfall events.

The Unimproved Pastures (212) are comprised of herbaceous taxa including bahiagrass, broomsedge bluestem (*Andropogon virginicus*), blue maidencane (*Amphicarpum muhlenbergianum*), cogongrass (*Imperata cylindrica*), and spadeleaf (*Centellaasiatica*). Wax myrtle (*Myrica cerifera*), slash pine (*Pinus elliottii*), and groundsel tree (*Baccharis halimifolia*) were also observed scattered throughout this land use.

The Shrub and Brushlands (320) were observed to have dominant shrub taxa including wax myrtle with lesser numbers of groundsel tree and red maple (*Acer rubrum*). The herbaceous understory consisted of blackberry (*Rubus* sp.), broomsedge bluestem, blue maidencane, and bahiagrass.

The Palmetto Prairies (321) are also utilized by the cattle on-site for grazing. Saw palmetto (*Serenoa repens*) is the dominant shrub in this area with an herbaceous understory of primarily wiregrass (*Aristida beyrichiana*). Other vegetative taxa observed included broomsedge bluestem, bahiagrass, blackberry, and pawpaw (*Asimina* sp.).

The canopy in the Pine Flatwoods (411) consists of longleaf pine (*Pinus palustris*) and slash pine with a dominant shrub layer of saw palmetto. The subcanopy and additional shrub taxa include wax myrtle, loblolly bay (*Gordonia lasianthus*), gallberry (*Ilex glabra*), and fetterbush (*Lyonia lucida*)

in areas with a higher water table and a variety of oaks (*Quercus* sp.) such as myrtle oak (*Quercus myrtifolia*), Chapman's oak (*Quercus chapmanii*), and turkey oak (*Quercus laevis*) in areas that contain soils with a lower water table. The dominant herbaceous species is wiregrass with scattered pawpaw, blackberry, and bracken fern (*Pteridium aquilinum*).

The Hardwood-Coniferous Mixed (434) areas contain slash pine and Virginia live oak (*Quercus virginiana*) with herbaceous taxa including bahiagrass, broomsedge bluestem, blue maidencane, cogongrass, and spadeleaf.

The Disturbed Land (740) area occurs in the northwest portion of the Project Site. There is active demolition work in the area. Vegetation is sparse with bahiagrass predominating.

Throughout the Project Site are areas utilized for Airports (811) operations. These contain buildings with maintained bahiagrass and scattered trees including live oak, laurel oak (*Quercus laurifolia*), and ornamentals.

## Wetland Community Descriptions

Wetland communities/cover types on the project site consisted of the following: Streams and Waterways/Man-Made Ditches/Swales (510), Ditches (516), Lakes (520), Lakes Less than 10 Acres (4 Hectares) which are Dominant Features/Cattle Ponds (524), Reservoirs Less than 10 Acres (4 Hectares) which are Dominant Features/Stormwater Ponds (534), Bay Swamps (611), Gum Swamps (613), Exotic Wetland Hardwoods (619), Wetland Coniferous Forests (620), Cypress (621), Wetland Shrub (631), Freshwater Marshes (641), Buttonbush (6419), and Wet Prairies (643) (see Figure 5.4-1).

Several surface waters are located within the property boundaries. These include man-made ditches (510), Ditches (516), Lakes (520), cattle ponds (524), and stormwater ponds (534). The maintained areas adjacent to these surface water features are included in the acreages for this land use. The stormwater ponds and cattle ponds contain a variety of wetland vegetation such as spadeleaf, manyflower marshpennywort (*Hydrocotyle umbellata*), torpedograss (*Panicum repens*), umbrellasedge (*Fuirena scirpoidea*), duck potato (*Sagittaria latifolia*), and American white waterlily (*Nymphaea odorata*) in the open water. The ditches/swales contain spadeleaf, soft rush (*Juncus effusus*), dotted smartweed (*Polygonum punctatum*), and bahiagrass.

The Cypress (621) canopy is made up of cypress (*Taxodium* sp.), with loblolly bay, red maple, and sweetbay (*Magnolia virginiana*) scattered throughout the subcanopy and within the transitional zones. The groundcover species are sparse due to the dense canopy and included netted chain fern (*Woodwardia areolata*), Virginia chain fern (*Woodwardia virginica*), wild taro (*Colocasia esculenta*), and witchgrass (*Dichanthelium* sp.).

The Wetland Shrub (631) habitat has a vegetation layer consisting primarily of wax myrtle, groundsel tree, saw palmetto, and gallberry. The herbaceous species included seedbox (*Ludwigia alternifolia*), sweetscent (*Pluchea odorata*), bushy bluestem (*Andropogon glomeratus*), wiregrass, manyflower marshpennywort, broomsedge bluestem, and soft rush.

The Wet Prairies (643) are dominated by dotted smartweed, soft rush, wiregrass, spadeleaf, manyflower marshpennywort, broomsedge bluestem, bushy bluestem, maidencane (*Panicum hemitomon*), yelloweyed grass (*Xyris* sp.), fascicled beaksedge (*Rhynchospora fascicularis*), creeping primrosewillow (*Ludwigia repens*), climbing dayflower (*Commelina diffusa*), and spikerush (*Eleocharis* sp.).

The Freshwater Marshes (641) cover types include bushy bluestem, saw palmetto, wax myrtle, false reinorchid (*Habenaria* sp.), soft rush, floating marshpennywort (*Hydrocotyle ranunculoides*), spikerush, water spangles (*Salvinia minima*), hempvine (*Mikania* sp.), tropical soda apple (*Solanum viarum*), yelloweyed grass, spadeleaf, creeping primrosewillow, maiden fern (*Thelypteris* sp.), St. John's-wort (*Hypericum* sp.), and swamp bay (*Persea palustris*) seedlings.

The Buttonbush (6419) freshwater marsh is dominated by common buttonbush (*Cephalanthus occidentalis*) with scattered wax myrtle, saw palmetto, and groundsel tree at the edges. Herbaceous taxa includes sand cordgrass (*Spartina bakeri*), maidencane, spikerush, spadeleaf, combleaf mermaidweed (*Proserpinaca pectinata*), carpetgrass (*Axonopus* sp.), broomsedge bluestem, and blue maidencane.

The Bay Swamps (611) is dominated by sweetbay with shrub species of wax myrtle and sweetbay seedlings. Herbaceous vegetation includes soft rush, Asian marshweed (*Limnophila sessiliflora*), climbing hempvine (*Mikania scandens*), water spangles, creeping primrosewillow, and manatee mudflower (*Micranthemum glomeratum*).

The Gum Swamps (613) cover type contains canopy vegetation dominated by blackgum (*Nyssa sylvatica* var. *sylvatica*). Shrub and herbaceous species include wax myrtle, Peruvian primrosewillow (*Ludwigia peruviana*), maidencane, pickerelweed (*Pontederia cordata*), blue waterhyssop (*Bacopa caroliniana*), clustered sedge (*Carex glaucescens*), and bushy bluestem.

The Exotic Wetland Hardwoods (619) is dominated by Chinese tallowtree (*Sapium sebiferum*) with a wax myrtle shrub layer. Herbaceous species include soft rush, Virginia chain fern, and Peruvian primrosewillow.

The canopy of the Wetland Coniferous Forests (620) is dominated by loblolly pine with a subcanopy of swamp bay, saw palmetto, and wax myrtle. Herbaceous vegetation includes false reinorchid, tropical soda apple, yelloweyed grass, spadeleaf, creeping primrosewillow, maiden fern, St. John's-wort, and swamp bay seedlings.

## Existing Conservation Areas on the Airport

There ~~are~~ **is one** existing conservation easements on OIA property **recorded in favor of the SFWMD**. **Figure 5.4-3** depicts areas on OIA property that are currently under a conservation easement.

**Comment [VL13]:** Discuss who holds the easement(s) and what it or they are for.

**Comment [sbb14R13]:** See added information and revised graphic.

Figure (11x17)

## 5.4-3 Existing Conservation Areas at OIA

[Back](#)

## Plants

Numerous plant species (ground cover, shrub, and trees) currently exist in the habitat types mentioned in the above sections; upland communities and wetlands communities. The Proposed Action would remove the majority of the existing habitat types. **Table 5.4-4** provides a list of Federal or state listed plant species that may occur on the project site. The likelihood of occurrences listed within the table is based on a comparison of the known habitat types for these taxa and the habitats found with the overall project site, the quantity, quality, and adjacency of these habitats, as well as observations of any taxa observed during field reconnaissance. No listed species were observed on site during the reconnaissance. The likelihood for occurrence for listed taxa was rated as high, medium, low, or unlikely based on knowledge of a taxon's habitat preference and site conditions. A likelihood of occurrence given as "unlikely" indicates that no, or very limited, suitable habitat for this taxon exists on-site. Table 5.4-4 provides information on both state and federal listings of plant species.

## Wildlife

The project site currently supports wildlife utilization for native and non-native species commonly found in the area. **Table 5.4-5** lists the direct observations of wildlife that have been documented by Breedlove, Dennis & Associates, Inc. staff during field reconnaissance events. Due to proposed removal of the majority of the current habitat coverage, the Proposed Action may affect common species of wildlife present or observed on the site or species that utilize the site intermittently.

Site reviews of the project site were conducted during the development of SFWMD and USACE permitting documents (approximately 2006-2009) to determine occurrence or potential occurrence of federal or state protected wildlife species. Based on the results of the on-site reconnaissance efforts (observations or evidence i.e., scat, vocalizations, tracks), review of maps, and relevant databases, the project site does provide suitable habitat for some protected species. Protected wildlife species that may occur on the project site or in the project vicinity of the project are listed in Table 5.4-6. The likelihood of occurrences listed within the table is based on a comparison of the known habitat use by these taxa and the habitats found with the overall project site, the quantity, quality, and adjacency of these habitats, as well as observations of any taxa observed during field reconnaissance. The likelihood for occurrence of listed taxa was rated as high, medium, low, or unlikely based on knowledge of a taxon's habitat preference and site conditions. A likelihood of occurrence given as "unlikely" indicates that no, or very limited, suitable habitat for this taxon exists on-site. **Table 5.4-6** provides information on both state and federal listings of wildlife species.

### 5.4.3 Coastal Zone Management

The Florida Coastal Management Program (FCMP), administered by the Florida Department of Environmental Protection, has the authority to review federal actions within a coastal zone. The FCMP was developed and is implemented to meet the intent of the Coastal Zone Management Act (CZMA). Under the FCMP, the entire state of Florida is within the coastal zone. Therefore, the Proposed Action will be evaluated within Section 6.0 for potential impacts to the coastal zone under the guidance provided by state statutes.

**TABLE 5.4-4  
 LISTED PLANT SPECIES THAT COULD OCCUR WITHIN THE PROPOSED ACTION SITE**

Common Name	Scientific Name	Habitat of Occurrence	Likelihood of Occurrence	Designation Status <sup>1</sup>	
				USFWS <sup>2</sup>	FDACS <sup>3</sup>
<b>Plants</b>					
Florida bonamia	<i>Bonamia grandiflora</i>	Sand pine scrub, white sands	Unlikely	T	E
Perforate reindeer lichen; deer moss	<i>Cladonia perforata</i>	Restricted distribution; found in scrub, high pine or turkey oak barrens and rosemary balds; well-drained sands.	Unlikely	E	E
Pigeon wing	<i>Clitoria fragrans</i>	Dry sandhills and scrub.	Unlikely	T	E
Beautiful Pawpaw	<i>Deeringothamnus pulchellus</i>	Open slash or longleaf pine flatwoods	Unlikely	E	E
Scrub buckwheat	<i>Eriogonum longifolium</i> var. <i>gnaphalifolium</i>	Dry Pinelands and scrub.	Unlikely	T	E
McFarlin's (scrub) lupine	<i>Lupinus westianus</i> var. <i>aridorum</i>	Sand pine scrub; sandy disturbed edges of scrub or sandhill communities.	Unlikely	E	E
Britton's beargrass	<i>Nolina brittoniana</i>	Dry pinelands and sand pine scrub.	Unlikely	E	E
Papery whitlow-wort	<i>Paronychia chartacea</i>	Sand pine scrub.	Unlikely	T	E
Lewton's polygala	<i>Polygala lewtonii</i>	Dry oak woods, sand scrub, sandhills.	Unlikely	E	E
Florida jointweed	<i>Polygonella basiramia</i>	Pinelands and sand pine scrub.	Unlikely	E	E
Small's jointweed; sandlace	<i>Polygonella myriophylla</i>	Sand pine scrub.	Unlikely	E	E
Scrub plum	<i>Prunus geniculata</i>	Sand pine scrub.	Unlikely	E	E
Wide-leaf warea	<i>Warea amplexifolia</i>	Sandhills; dry pinelands – north and central counties.	Unlikely	E	E

1 E= endangered, T= threatened

2 US Fish and Wildlife Service

3 Florida Department of Agriculture & Consumer Services, Division of Plant Industry -Coile, N.C., and M.A. Garland. 2003. Notes on Florida's endangered and threatened plants (29 January 2005).

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**TABLE 5.4-5  
PROPOSED ACTION SITE WILDLIFE OBSERVATIONS**

<b>Common Name</b>	<b>Scientific Name</b>	<b>Common Name</b>	<b>Scientific Name</b>
<b>Mammals</b>			
Bobcat	<i>Lynx rufus</i>	Raccoon	<i>Procyon lotor</i>
Nine-banded armadillo <sup>1</sup>	<i>Dasypus novemcinctus</i>	Wild boar	<i>Sus scrofa</i>
White-tailed deer	<i>Odocoileus virginianus</i>		
<b>Birds</b>			
Eastern meadowlark	<i>Sturnella magna</i>	Loggerhead shrike	<i>Lanius ludovicianus</i>
American robin	<i>Turdus migratorius</i>	American swallow-tailed kite	<i>Elanoides forficatus</i>
Turkey vulture	<i>Cathartes aura</i>	Northern harrier	<i>Circus cyaneus</i>
Limpkin	<i>Aramus guarana</i>	Tricolored heron	<i>Egretta tricolor</i>
Snowy egret	<i>Egretta thula</i>	White ibis	<i>Eudocimus albus</i>
Black vulture	<i>Coragyps atratus</i>	Barn swallow	<i>Hirundo rustica</i>
Killdeer	<i>Charadrius vociferous</i>	Tufted titmouse	<i>Parus bicolor</i>
Florida sandhill crane	<i>Grus canadensis pratensis</i>	Mottled duck	<i>Anas fulvigula fulvigula</i>
Boat-tailed grackle	<i>Quiscalus major</i>	Woodpecker	<i>Picidae sp.</i>
Cattle egret	<i>Bubulcus ibis</i>	Pine warbler	<i>Dendroica pinus</i>
Red-shouldered hawk	<i>Buteo lineatus</i>	Mourning dove	<i>Zenaidura macroura</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>	Northern cardinal	<i>Cardinalis cardinalis</i>
Common snipe	<i>Gallinago gallinago</i>	Wood stork	<i>Mycteria americana</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>	Belted kingfisher	<i>Ceryle alcyon</i>
Wild turkey	<i>Melagris gallopavo</i>	Blue-gray gnatcatcher	<i>Poliophtila caerulea</i>
Little blue heron	<i>Egretta caerulea</i>	Barred owl	<i>Strix varia</i>
Anhinga	<i>Anhinga anhinga</i>	Northern mockingbird	<i>Mimus polyglottos</i>
Great egret	<i>Casmerodius albus</i>		
<b>Amphibians</b>			
Cricket frog	<i>Acris gryllus</i>	Green tree frog	<i>Hyla cinera</i>
<b>Reptiles</b>			
Gopher tortoise	<i>Gopherus polyphemus</i>		

<sup>1</sup> Denotes exotic species

SOURCE: Breedlove, Dennis & Associates, Inc. SFWMD ERP Application No. 060331-11

**TABLE 5.4-6  
LISTED SPECIES THAT OCCUR IN ORANGE COUNTY - LIKELIHOOD TO OCCUR ON PROJECT SITE**

Common Name	Scientific Name	Habitat of Occurrence	Likelihood of Occurrence on Project Site	Designation Status <sup>1</sup>	
				USFWS <sup>2</sup>	FWC <sup>3</sup>
<b>Amphibians</b>					
Gopher Frog	<i>Rana capito</i>	Sandhills with turkey and bluejack oaks; sand pine scrub, in and around gopher tortoise burrows.	Low		SSC
<b>Birds</b>					
Florida scrub-jay	<i>Aphelocoma coerulescens</i>	Oak scrub with shrubs of live, myrtle, and Chapman's oaks, palmettos and sand pine.	Unlikely	T	T
Limpkin	<i>Aramus guarauna</i>	Slow moving freshwater streams and rivers, swamps, marshes and lakeshores.	Observed		SSC
Kirtland's warbler	<i>Dendroica kirtlandii</i>	Migrant in Florida in a variety of habitats.	Low	E	E
Little blue heron	<i>Egretta caerulea</i>	Shallow freshwater, brackish, and saltwater habitats.	Observed		SSC
Snowy egret	<i>Egretta thula</i>	Ponds, stream banks, marshes, and pastures.	Observed		SSC
Tricolored heron	<i>Egretta tricolor</i>	Ponds, stream banks, marshes, and pastures.	Observed		SSC
White ibis	<i>Eudocimus albus</i>	Freshwater, brackish, and saline environment.	Observed		SSC
Southeastern American kestrel	<i>Falco sparverius paulus</i>	<i>Pine flatwoods, dry prairies.</i>	Low		T
Florida sandhill crane	<i>Grus canadensis pratensis</i>	Wet prairies, marshy lake margins, and low-lying improved cattle pastures.	Observed; Nest		T
Wood stork	<i>Mycteria americana</i>	Wetlands; nesting in cypress swamps.	Observed	E	E
Red-cockaded woodpecker	<i>Picoides borealis</i>	Pinewoods with mature to overmature pines.	Unlikely	E	SSC
Snail kite	<i>Rostrhamus sociabilis plumbeus</i>	Marsh with distant horizon and low vegetative profile.	Low	E	E/CH
Florida burrowing owl	<i>Athene cunicularia floridana</i>	High sandy ground with little growth, particularly prairies, sandhills, and pastures, and on prairie-like expanses of airports, industrial plants, and campuses.	Low		SSC
Least tern	<i>Sterna antillarum</i>	Open, flat beach with coarse sand or shell. Nests seaward of vegetation.	Unlikely		T
Bachman's warbler	<i>Vermivora bachmanii</i>	Variety of woodlands, usually in lowlands.	Unlikely	E	E
<b>Mammals</b>					
Florida mouse	<i>Podomys floridanus</i>	Xeric sand pine scrub in early succession, and longleaf pine/turkey oak.	Low		SSC
Sherman's fox squirrel	<i>Sciurus niger shermani</i>	Sandhills in longleaf pine/turkey oak associations, sand pine scrub and live oak hammocks.	Low		SSC
Florida black bear	<i>Ursus americanus floridans</i>	Swamps, bays, and thickets.	Unlikely		T

**TABLE 5.4-6  
LISTED SPECIES THAT OCCUR IN ORANGE COUNTY - LIKELIHOOD TO OCCUR ON PROJECT SITE**

Common Name	Scientific Name	Habitat of Occurrence	Likelihood of Occurrence on Project Site	Designation Status <sup>1</sup>	
				USFWS <sup>2</sup>	FWC <sup>3</sup>
<b>Reptiles</b>					
American Alligator	<i>Alligator mississippiensis</i>	Wetlands, lakes, and streams	Moderate to high	T(S/A)	SSC
Eastern indigo snake	<i>Drymarchon couperi</i>	Pine flatwoods, tropical hammocks.	Low to Moderate	T	T
Gopher tortoise	<i>Gopherus polyphemus</i>	Xeric; sand pine, longleaf pine, turkey oak, and live oak hammocks and sand pine scrub.	Observed		SSC
Sand skink	<i>Neoseps reynoldsi</i>	Loose sand on high elevation, central Florida ridges; sand pine scrub.	Unlikely	T	T
Florida pine snake	<i>Pituophis melanoleucus mugitus</i>	Sandy habitats, particularly longleaf pine/turkey oak associations.	Moderate		SSC
Short-tailed snake	<i>Stilosoma extenuatum</i>	Longleaf pine/turkey oak association; occasionally in upland hammock and sand pine scrub.	Unlikely		T

1 E= endangered, T= threatened, SSC= species of special concern, CH= critical habitat has been designated

2 US Fish and Wildlife Service

3 Florida Fish and Wildlife Conservation Commission

SOURCE: Breedlove Dennis & Associates SFWMD ERP Application No. 060331-11, US USACE Individual Permit Application No. SAJ-2006-2640 (IP-JSC)

**Figure**  
**5.4-4 Avigation Easement Areas**

## 5.4.4 Compatible Land Use

The Proposed Action site is located just east of Runway 17L-35R and is bordered by the Beachline Expressway on the north, Narcoossee Road on the east, Dowden Road on the south and airport property on the west. The land north of the Beachline Expressway includes a mix of commercial, light industrial and one manufactured home park. The land east of Narcoossee Road is part of the Ball Bay and East Park PD. Currently, three-story apartment buildings are located along Narcoossee Road and single-family residences are located east of the intersection of Narcoossee Road and Dowden Road. The remainder of the PD is generally undeveloped, but is planned to include a mix of single and multi-family residences and supporting commercial uses. South of Dowden Road is a community called Lake Nona. Single family residences are currently located immediately south of Dowden Road, with additional lots cleared and ready for the construction of additional homes. These properties are the closest residential use to Runway 17L-35R and the Proposed Action site and include a "Notice of Proximity to Airport" recorded in the public records of Orange County (see **Figure 5.4-4**)

During the development of the Lake Nona community, the owner, the Lake Nona Land Company, entered into agreements with Orange County for a series of requirements tied to the portion of the development that is closest to OIA. The requirements included recording an Avigation Easement, Waiver of Claim, or Notice of Proximity depending on the properties' proximity to OIA. The limit of the areas covered by these requirements is also shown on Figure 5.4-4.

In terms of an Environmental Assessment, compatible land use is often tied into noise impacts. FAA guidelines indicate that residential or other noise sensitive uses (hospitals, schools, places of worship, etc.) are not compatible with the level of aircraft noise exposure within the 65 DNL. The 2008 DNL contours have been prepared as part of this EA and are described in section 5.4.6. No residential or other noise sensitive uses are within the limits of the 2008 65 DNL contour.

### Noise Overlay Zoning

As part of GOAA's compatible land use efforts, a Federal Aviation Regulation Part 150 Noise and Land Use Compatibility study for OIA was completed in 2001. The study developed long term DNL noise contours which were used as a basis for the City of Orlando and Orange County to revise their aircraft-related noise ordinances for areas around both OIA and Orlando Executive Airports. The DNL contours were used to define a series of a noise overlay zones that require future development be compatible with the future operation of the airport. The overlay zone is shown on **Figure 5.4-5**.

Five individual overlay zones, identified as A through E, were established with each having its own control. The following presents the controls within each zone.

- ZONE A - (75 DNL) - No residential uses allowed.
- ZONE B - (70 DNL) - No new residential uses should occur with the exception of hotel/motel type uses. Avigation easement, waiver of claim and notification to be provided.

**Comment [VL15]:** What noise levels do each one of these zones represent? Explain.

**Comment [sbb16R15]:** DNL levels were added for each Zone.

- ZONE C ~~-(65 DNL)~~ - New residential uses should be avoided and no mobile home development should occur. If current zoning allows for residential development, such development should be limited to rental units only. Avigation easement, waiver of claim and notification to be provided. Minimum residential sound level reduction requirement of 25dB, 30dB preferred.
- ZONE D ~~-(60 DNL)~~ - New residential uses are acceptable. Waiver of claim and notification to be provided. Sound level reduction requirement of 25dB.
- ZONE E ~~-(55 DNL)~~ - New residential uses are acceptable. Notification to be provided for all new development. No residential sound level reduction requirement.

The City of Orlando and Orange County have adopted these controls through ordinance in 1999 and 2000 respectively.

### 5.4.5 Historic, Architectural, and Archeological Resources

From debris, remnants on site, and historical knowledge of the utilization of the site prior to the Airport's ownership, it was determined that a historical and archeological study would be necessary to determine if the Proposed Action would have an affect on any existing historic or archeological resources. Background research from this study, which included a review of the Florida Master Site File (FMSF) and the National Registry of Historic Places (NRHP), indicated that no archaeological sites or historic resources were recorded previously within the Proposed Action site (see **Appendix F** for complete study document). Four previously recorded archaeological sites are located within two miles of the Proposed Action site and a review of relevant site location information for environmentally similar areas within Orange County and the surrounding region indicated a low to moderate probability for the occurrence of aboriginal archaeological sites.

The background research also indicated that sites, if present, would most likely be small lithic or artifact scatters. The potential for historic period archaeological sites was considered likely since the proposed development property has been used as a farm since at least 1947. Examination of 1947 and 1954 aerial maps, as well as the Pine Castle, Fla. United States Geological Survey (USGS) quadrangle map, indicated eight potential historic structures and a series of drainage ditches on the property (PALMM 1947a, 1947b, 1954a, 1954b; USGS 1953).

### 5.4.6 Noise

#### DNL Noise Metric Overview

Cumulative noise metrics have been developed by the FAA to assess community response to noise. They are useful because these scales include the loudness of the noise, the duration of the noise, the total number of noise events (during an average annual day), and the time of day these events occur into one single number rating scale.

Comment [VL17]: Developed by who?

Comment [sbb18R17]: The FAA... see added text.

**Equivalent Noise Level (Leq)** – Leq is the sound level corresponding to a steady-state, A-weighted sound level containing the same total energy as a time-varying signal over a given sample period. Leq is the “energy” average sound level during the time period of the sample.

It is based on the observation that the potential for a noise to impact people is dependent on the total acoustical energy content of the noise.

**Figure (11x17)**  
**5.4-5 Aircraft Noise Overlay Zones**

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**Day-Night Average Sound Level (DNL)** – The DNL metric is a 24-hour, time-weighted energy average noise level based on the A-weighted decibel. It is a measure of the overall noise experienced during an entire day. The time-weighting refers to the fact that noise occurring during certain sensitive time periods is penalized for occurring at these times. In the DNL scale, noise occurring between the hours of 10 p.m. to 7 a.m. is penalized by 10 dB. This penalty was selected to attempt to account for the higher sensitivity and decrease in background noise levels at night. The important concepts of DNL are as follows:

- **Frequency Weighting** - Use of the standard A-weighting which most closely reflects the response to the human ear.
- **Time of Day Weighting** - The 10 dB nighttime penalty accounts for greater sensitivity to noise and/or lower background levels at night.
- **Energy Averaging** - The energy mean is the best single number description of a sound level that varies with time, in terms of average community response.

For assessing long term noise exposure, the DNL is the metric specified by the FAA in their environmental assessments and FAR Part 150 noise compatibility planning process. All federally-funded airport noise and environmental studies use DNL as their primary noise metric. The 65 DNL contour is the level that the FAA uses to define significance.

**Computation of DNL** - In calculating DNL, the Leq level is used as the hourly equivalent sound level. The hourly noise figures are summed for the 15 hours of daylight (7:00:00 a.m. to 9:59:59 p.m.) and added to the sum of Leq hourly figures for the remaining 9 hours of nighttime with a 10 dB penalty added to the nighttime figures. The result is the DNL noise level or a 24 hour summary of noise levels for a given location. When aircraft noise contours are calculated, the noise levels are solely due to the aircraft and do not include background or ambient noise levels.

## **Integrated Noise Model**

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

## **INM Input Data**

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

- Runway use
- Existing 2008 aircraft operations and fleet mix
- Time of day/night operations
- Stage lengths of aircraft

### Existing Operations and Fleet Mix

The existing (2008) operational activity<sup>9</sup> is based on the Air Traffic Activity Data System (ATADS) from the period of 12/1/2007 to 11/30/2008. The ATADS includes the official Federal Aviation Administration’s National Airspace System operational data which is recorded daily by air traffic control personnel. Twelve months of the daily counts were obtained and summed to determine the total operations that occurred over a year as required for input into the INM. The 2008 annual operations data by major aircraft categories are listed in **Table 5.4-7**.

**Comment [VL19]:** Add a footnote reference regarding what the operations were for 2010 and what the difference would be compared to 2008 i.e. FAA’s standard for determining projected forecast consistency (within 10 % +/- for the five-year projection; and within 15 % +/- for the 10 year and beyond projection)

**Comment [sbb20R19]:** See footnote with 2010 operational activity.

**TABLE 5.4-7  
EXISTING AIRCRAFT OPERATIONS**

Year	Air Carrier / Cargo	General Aviation / Air Taxi	Military	Total
2008	294,900	52,774	503	348,177

SOURCE: Air Traffic Activity Data System (ATADS), 12/1/2007 To 11/30/2008

This annual data is then divided by 365 to obtain the number of operations for an average annual day. In 2008, a total of 348,177 operations occurred, which is an average of 954 per day.

For the purposes of preparing noise contours, the data must be further refined into operations by specific aircraft types within each major category. GOAA currently has a Noise and Operations Monitoring System (NOMS) that includes 13 permanent monitor stations surrounding both OIA and Orlando Executive Airport (ORL). For each aircraft operation, the system records the aircraft type, location of the flight track, departure profile, time that the aircraft arrived or departed, the origin or destination and the runway from which each operation occurred. Detailed information used as INM inputs related to aircraft operations, fleet mix, flight tracks, stage lengths, and time of day is included in **Appendix G**.

The runway use is an important element affecting the size and shape of noise contours surrounding an airport. The runway use for departures and arrivals for daytime and nighttime activity is included in **Table 5.4-8**. This runway use was established based on the airport’s NOMS data.

<sup>9</sup> 2010 Actual operations from ATADS indicates 283,284 air carrier operations, 30,694 GA/air taxi operations, and 785 military operations for a total of 314,763 operations.

**TABLE 5.4-8  
 EXISTING 2008 RUNWAY USE**

Flow	Operation Type	Runway	Percent Use Daytime	Percent Use Nighttime
<b>North</b>				
	Departures	36L	8%	10%
		36R	20%	9%
		35L	30%	29%
		35R	1%	<1%
		<b>Total</b>	<b>59%</b>	<b>48%</b>
	Arrivals	36L	5%	8%
		36R	17%	21%
		35L	9%	20%
		35R	11%	4%
		<b>Total</b>	<b>42%</b>	<b>53%</b>
<b>South</b>				
	Departures	18R	8%	14%
		18L	23%	22%
		17R	10%	16%
		17L	<1%	<1%
		<b>Total</b>	<b>41%</b>	<b>52%</b>
	Arrivals	18R	18%	12%
		18L	15%	13%
		17R	11%	19%
		17L	15%	3%
		<b>Total</b>	<b>58%</b>	<b>47%</b>

SOURCE: GOAA NOMS, 12/1/2007 To 11/30/2008

## 2008 DNL Contours

The existing 2008 DNL contours are shown on **Figure 5.4-6**. The contours extend farthest off airport property north of the Runway 18R and 18L thresholds. The contours are smallest off Runway 17L-35R as it is the least used runway at the airport. No residences or other noise sensitive uses are within the limits of the 2008 65 DNL contour.

## 5.4.7 Water Quality

Surface water conveyance on the Proposed Action site consists of stormwater contributions from offsite developed areas and onsite agricultural land uses and wetlands. Stormwater from a developed area to the north of the Proposed Action is routed along the north perimeter of the Proposed Action to the Gee Bee Canal on the west perimeter with ultimate discharge to the Boggy Creek Drainage Basin through an onsite stormwater management system. Stormwater from two small areas of Narcoossee Road on the east perimeter is treated in two stormwater systems on the proposed site with discharges offsite to the Lake Hart Drainage Basin and/or Boggy Creek Basin through the Gee Bee Canal. Stormwater collected from Dowden Road on the southern perimeter of the site is treated onsite with a surface water outfall to on-site wetlands and ultimately, to the Gee Bee Canal. All other stormwater onsite consists of sheetflow into wetlands and upland cut ditches with discharge either to the Gee Bee Canal or to wetlands offsite draining to the Lake Hart Basin. None of the discharges are to Outstanding Florida Waters or Outstanding Natural Resource Waters as designated under the Clean Water Act.

GOAA operates a series of water quality monitoring stations which collect water quality on a continuing basis for temperature, specific conductance, and turbidity. At most of these stations monthly samples are collected and summarized annually<sup>10</sup> (see **Figure 5.4-7**). Most of the sampling locations are internal to the GOAA system of ponds, lakes, and conveyances with the only discharge offsite being through WQ-5. One station, WQ2 is located in the Gee Bee Canal on the west perimeter of the project site. As described above, this canal receives stormwater from developed areas off the Proposed Action site and from on-site if the water stages up to elevation 84.0 NGVD which is near the seasonal high water level in wetlands adjacent to the Gee Bee Canal. Water levels above the elevation 84.0 are released through standpipes into the Gee Bee canal thus maintaining the historic seasonal high water levels in the wetlands. The 2007 monitoring data at WQ2 demonstrated compliance with Class III water quality standards for all parameters except for dissolved oxygen. Overall, the 2007 data demonstrated compliance with the Class III water quality standards at all sampling stations for most parameters. Some exceptions were noted for dissolved oxygen, alkalinity, pH, and turbidity. However, it should be noted that during the year there was no discharge through WQ5 into Boggy Creek.

Soils in the top three to five feet generally consist of clean fine sands. High groundwater conditions prevail over the majority of the project site<sup>11</sup>.

<sup>10</sup> Environmental Management & Design. 2008. Water Quality Data Analysis, 2007 Summary Report. 307 pp.

<sup>11</sup> Nodarse & Associates, Inc. 2006. Report of Preliminary Geotechnical Exploration for Master Stormwater Facility, GOAA Gee Bee Property, City of Orlando, Orange County, Florida. Nodarse Project No. 01-06-0449-101A. September 12, 2006.

**Figure (11x17)**  
**5.4-6 2008 Noise Contours**

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**Figure**  
**5.4-7 Water Quality Monitoring Sites**