

# Appendix F

## JLUS Data & Analysis Osceola County, Florida

This section was downloaded from the Central Florida Regional Planning Council's website <http://www.cfrpc.org/JLUS-AvonParkAFR/> . A number of sections were removed from this Data and Analysis. Although the stricken Sections and Appendices supported the overall August 2010 JLUS, they were not Specific to Osceola County and therefore not used as supporting documents for creation of the Osceola County JLUS 2012. The sections not included are shown in ~~strike through~~ on the following Table of Contents, which was brought forward from the August 2010 JLUS:

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# JOINT LAND USE STUDY

# JLUS

AVON PARK AIR FORCE RANGE



TETRA TECH



AUGUST 2010

# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

Prepared For:

Avon Park Air Force Range Joint Land Use Study Policy Committee

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# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

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## APPENDICES

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## EXECUTIVE SUMMARY

### PURPOSE

The Joint Land Use Study (JLUS) program managed by the Office of Economic Adjustment (OEA), Office of the Secretary of Defense, is a Department of Defense initiative providing grants to state and local governments to participate with military installations in developing land use plans compatible with their mission. The JLUS program encourages cooperative land use planning between military installations and the adjacent communities so future community growth and development are compatible with the training and operational missions of the installation. It is more inclusive in scope than just noise and accident potential, and is more public in nature than the traditional Air Installations Compatible Use Zones (AICUZ) program. Similar to the AICUZ program, the JLUS is a cooperative land use planning effort between the affected local government(s) and neighboring military installation(s). The difference is that a local or regional agency takes the lead in conducting the JLUS. The JLUS process typically involves various local community interests along with the military installation, and the study is a locally-produced product. Under this arrangement, there is a greater assurance that compatible land use controls will be adopted.

### PROGRAM GOALS AND ACTIONS

The Avon Park Air Force Range (APAFR) JLUS has the following goals:

- Collaborate with local cities and counties within the project study area including portions of Polk, Osceola, Highlands, and Okeechobee Counties and the Cities of Avon Park, Frostproof, and Sebring to conduct the Study

- Protect the health, safety and welfare of the civilian and military communities
- Identify appropriate regulatory and non-regulatory measures to ensure compatibility between existing and future land uses
- Increase communication and cooperation between APAFR and neighboring local governments
- Protect and promote the present and future operational capabilities of APAFR

This report identifies the existing environment in the study area, current conflicts between land uses and Range operations, and potential future impacts. The report also presents strategies to minimize current problems, encourage compatible future development and prevent incompatible future development. There are also recommendations and responsibilities assigned to the Range in this report.

### APPROACH

The approach to this report is intended to describe and analyze the issues pertaining to existing and future conditions, and make recommendations for each jurisdiction independently. The organization of each of the seven individual sections by county or city provides a user-friendly document for the public and direct access to appropriate information for each jurisdiction.

The approach for the APAFR JLUS is based on three key elements summarized below and in Figure ES-1:

- Identify the Issues for Each Jurisdiction
- Develop Potential Strategies to Address the

Figure ES-1: JLUS Approach Simplified



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## Identified Issues

- Provide Recommendations for Each Jurisdiction Issues. Based on information provided by APAFR and meetings and discussions with the APAFR JLUS Working Group which includes representatives from each jurisdiction in the study area and APAFR, issues were identified with respect to encroachment around APAFR. During the various public meetings and Public Workshops, the issues were identified and explained. Table ES-1 provides a matrix identifying the issues with respect to each jurisdiction presented at public workshops. Figure ES-2 includes a summary of all issues for the various jurisdictions listed together beneath the “Identify Issues for Each Jurisdiction” box. All of the issues

listed do not necessarily apply to each jurisdiction.

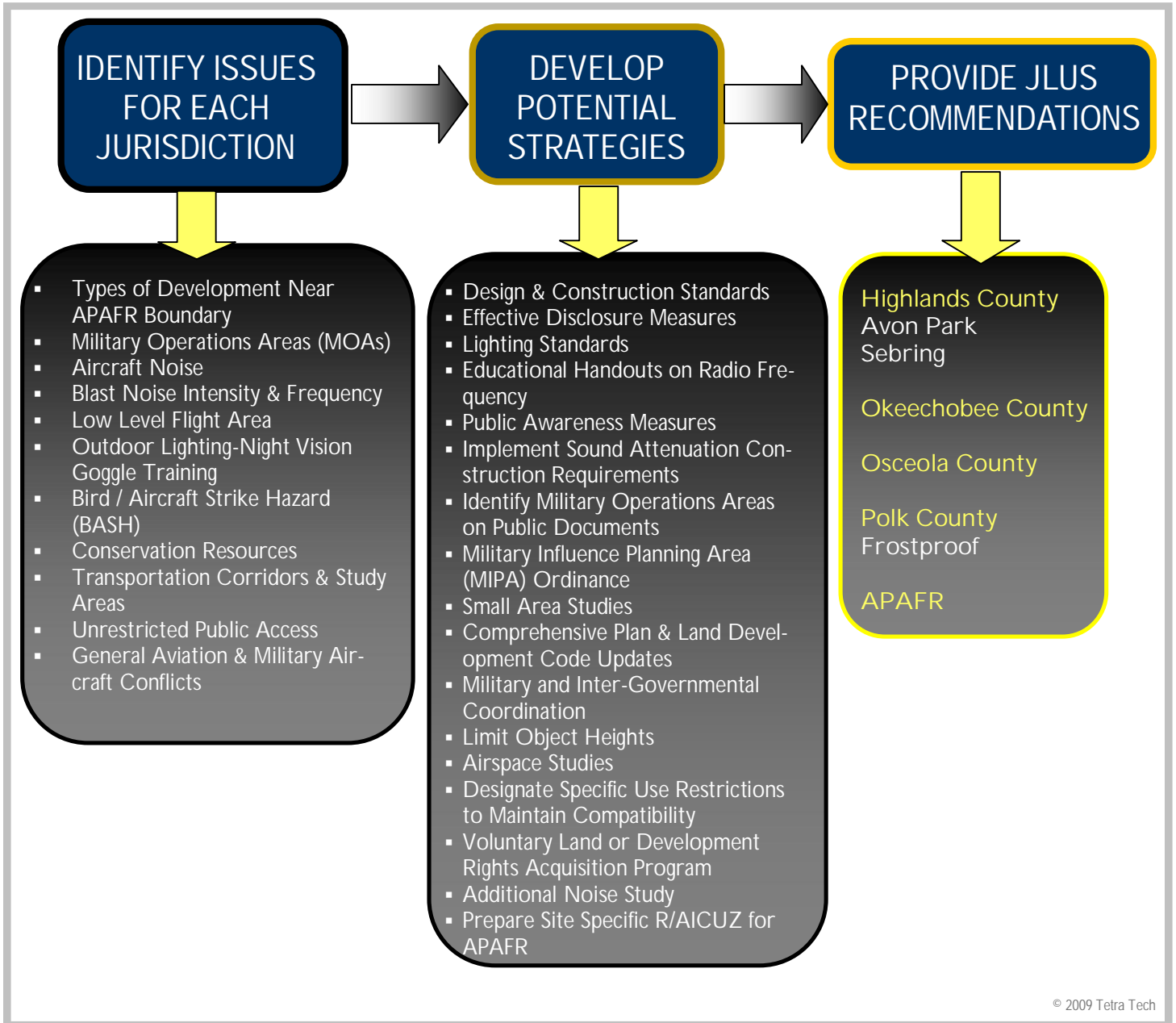
Potential Strategies. A menu of potential strategies related to land use and policies and procedures was developed with opportunities to address the various issues. This menu was also presented to the Working Group, Policy Committee, and at public workshops showing the means and methods analyzed as part of the APAFR JLUS to address the issues. Figure ES-3 also includes a summary of the potential strategies developed under the “Develop Potential Strategies” box.

APAFR JLUS Recommendations. Recommendations for each jurisdiction are provided at the end of each section of the report. The recommendations are focused on addressing the issues identified by

Table ES-1: APAFR JLUS Identified Issues by Jurisdiction—January 2010

Brief Description	Jurisdiction						
	Highlands County	Avon Park	Sebring	Okeechobee County	Osceola County	Polk County	Frostproof
Military Operation Areas (MOA)	√	√	√	√	√	√	√
Buffer Area	√			√	√	√	
Low Level Flight Areas	√			√	√	√	
Aircraft Noise	√			√	√	√	
Blast Noise	√	√	√	√	√	√	√
Outdoor Lighting—Night Vision Training Areas	√			√	√	√	
Bird / Aircraft Strike Hazards (BASH)	√			√	√	√	
Conservation Resources	√			√	√	√	
Transportation Interchanges &/or Corridors	√	√	√	√	√	√	√
Public Access	√			√	√	√	
General Aviation and Military Aircraft Conflicts	√	√	√	√	√	√	√

Figure ES-2: APAFR JLUS—Issues Identified and Menu of Potential Strategies to Address the Issues



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# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

the analyses performed. Specific details are provided as needed to help ensure a clear vision of how the recommendations can be implemented. For many of the recommendations, examples of successful implementation are provided as guides for the jurisdictions.

Table ES-2 provides a summary matrix of the recommendations by jurisdiction.

The APAFR JLUS was created through the collaborative efforts of the public, APAFR JLUS Policy Committee, and the APAFR JLUS Working Group.

Public and Project Meetings. As of June 1, 2010, there have been 28 meetings including eight Public Workshops, four Policy Committee Meetings, four Working Group Meetings and 12 presentations to public and civic organizations. The following provides a list of meetings for the APAFR JLUS where the presentation was the only purpose or was part of another regularly scheduled meeting.

The first round of Public Workshops provided the public with an overview of the JLUS and the Range and explained the military, environmental, ranching, archeological and recreational activities occurring on the Range. Displays from the Range were available for viewing during an open house prior to presentations by the Range Commander and CFRPC staff and a time for questions and comments.

<u>Date</u>	<u>Public Workshop Description</u>
12 Jan 10	Polk County/Frostproof
14 Jan 10	Highlands County/Avon Park/Sebring
19 Jan 10	Osceola County
28 Jan 10	Okeechobee County

The second round of Public Workshops focused on providing the public an opportunity to comment on the proposed JLUS recommendations. Display boards with draft recommendations and data utilized in the study preparation were available for viewing prior to presentations by CFRPC staff and the Range Commander.

<u>Date</u>	<u>Public Workshop Description</u>
20 April 10	Osceola County
22 April 10	Polk County/Frostproof

- 26 April 10 Okeechobee County
- 10 May 10 Highlands County/Avon Park/Sebring

Policy Committee Meetings:

- 28 Jan 09
- 17 June 09
- 06 Nov 09
- 26 March 10

Working Group Meetings:

- 30 Sept 08
- 30 Oct 08
- 23 Oct 09
- 22 Jan 10

Public Presentations:

- Dec 08 – Jan 09: Appearances before each County/City Commission (Highlands, Polk, Osceola and Okeechobee Counties and Avon Park, Sebring and Frostproof)
- 20 May 09: Highlands County Retired Military Officers Association
- 04 June 09: Highlands County Natural Resources Advisory Commission
- 26 Aug 09: Polk County Airport Zoning Board
- 09 Nov 09: Highlands County Association of Homeowners
- 20 May 10: Heartland Association of Realtors

There have been one-on-one project meetings with staff from the seven jurisdictions and APAFR during the initial data collection phase and to discuss the issues, analysis, strategies and recommendations. Additional public outreach has also included press releases to local media outlets, responses to queries from interested citizens, activation of a JLUS website, published JLUS brochure, and participating in local planning studies in several of the jurisdictions.

APAFR JLUS Policy Committee. The APAFR JLUS Policy Committee was created to set policy





Table ES-2: APAFR JLUS Recommendation Summary Matrix by Jurisdiction

JURISDICTION		Polk County	Frostproof	Osceola County	Highlands County	Avon Park	Sebring	Okeechobee County	APAFR	
SUMMARY OF RECOMMENDATIONS	ENVIRONMENTAL	Explore Methods to Control Birds & Wildlife Near APAFR	✓	✓	✓	✓	✓	✓	✓	
		Develop and Distribute BASH Educational Material								✓
		Continue & Support Ongoing APAFR Environmental Stewardship Program	✓	✓	✓	✓	✓	✓	✓	✓
		Develop Plan for Critical Areas Supporting Military Readiness and/or Environmental Conservation	✓	✓	✓	✓	✓	✓	✓	✓
	NOISE	Implement Noise Attenuation Standards for New Construction in MIPA I and II	✓		✓	✓			✓	
		Update JLUS Document with Results from Noise Study	✓	✓	✓	✓	✓	✓	✓	✓
		Conduct Noise Study								✓
		Seek Funding for Updated Noise Study	✓	✓	✓	✓	✓	✓	✓	✓
	LAND USE	Limit Object Heights in Military Influence Planning Areas (MIPA)	✓		✓	✓			✓	
		Establish MIPA Overlay Districts I, II and III	✓	✓	✓	✓	✓	✓	✓	
		Revise Compatible Land Use Ordinances	✓		✓	✓			✓	
		Update Comprehensive Plan & Land Development Code (LDC) to Strengthen Uses Compatible to APAFR Missions	✓	✓	✓	✓	✓	✓	✓	
		Monitor Land Use at/near Transportation Corridors and/or Hubs	✓	✓	✓	✓	✓	✓	✓	✓
		Identify Military Operations & High Noise Areas on Public Documents	✓		✓	✓			✓	
		Implement Lighting Measures to Avoid Glare & Reflection	✓		✓	✓			✓	
		Implement Effective Disclosure Measures	✓	✓	✓	✓	✓	✓	✓	
	COORDINATION	Participate and Encourage Public to Participate in Preparation of RAICUZ / AICUZ	✓	✓	✓	✓	✓	✓	✓	
		Monitor Recertification of Runway and Seek Funding for the Preparation of APAFR's RAICUZ / AICUZ Programs								✓
		Formalize Policy to Implement Cross-Jurisdictional Collaboration & Coordination	✓	✓	✓	✓	✓	✓	✓	✓
		Evaluate Opportunities to Manage Public Access	✓		✓	✓			✓	✓
		Implement Public Awareness Measures	✓	✓	✓	✓	✓	✓	✓	✓
		Continue Ongoing Coordination with FAA	✓	✓	✓	✓	✓	✓	✓	✓
		Continue Collaboration with CFRPC as Facilitator of JLUS Implementation Activities	✓	✓	✓	✓	✓	✓	✓	✓
		Adopt Resolution Supporting JLUS Recommendations & Implementation	✓	✓	✓	✓	✓	✓	✓	

decisions regarding this document. The Policy Committee is comprised of one representative from each of the four counties and three cities, a representative from the APAFR, a representative from the Central Florida Regional Planning Council (CFRPC), and numerous state and federal agencies. The specific members of the Committee include the following:

- Barbara Stewart, Commissioner, Highlands County
- Ray Domer, Commissioner, Okeechobee County
- Fred Hawkins, Jr., Commissioner, Osceola County
- Edwin Smith, Commissioner, Polk County
- Brenda Gray, Deputy Mayor, Avon Park
- Tenny Croley, City Manager, Frostproof
- George Hensley, Mayor, Sebring
- Tom Champeau, Florida Fish & Wildlife
- Danny Kushmer, Southwest Florida Water Management District
- Lt. Col. Charles MacLaughlin, USAF APAFR
- Tricia Martin, Director, The Nature Conservancy
- John Morgan, South Florida Water Management District
- Dan Murphy, Exec Director, Highlands County Economic Development Commission
- Pat Steed, Executive Director, CFRPC
- Ben Walker, FDOT

[APAFR JLUS Working Group](#). The staff behind the support of the APAFR JLUS was the Working Group. The Working Group's role was to support the effort of the preparation of the APAFR JLUS through assistance with data collection including GIS mapping, attendance at Working Group meetings, review of JLUS issues, review of potential JLUS strategies, and review of the JLUS recommendations. The Working Group was comprised of representatives from multiple jurisdictions and agencies including the following:

- Avon Park Correctional Institution
- APAFR
- US Navy Integrated Training Brach
- Office of Economic Adjustment
- Florida Army National Guard
- Science Applications International Corporation
- Avon Park Youth Academy
- Highlands County
- Sebring Regional Airport
- Okeechobee County
- Osceola County
- Florida's Turnpike Enterprise
- Polk County
- FDOT
- East Central Florida Regional Planning Council
- City of Frostproof
- City of Avon Park
- City of Sebring
- CFRPC
- Florida Department of Community Affairs
- The Nature Conservancy
- South Florida Water Management District (SFWMD)
- Southwest Florida Water Management District (SWFWMD)





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## 1.0 GENERAL INFORMATION

### 1.0.1 What Is a Joint Land Use Study?

The Joint Land Use Study (JLUS) program managed by the Office of Economic Adjustment (OEA), Office of the Secretary of Defense, is a Department of Defense initiative that provides grants to state and local governments to participate with military installations in developing land use plans compatible with their mission.

The JLUS program encourages cooperative land use planning between military installations and the adjacent communities so that future community growth and development are compatible with the training and operational missions of the installation. It is more inclusive in scope than just noise and accident potential, and is more public in nature than the Air Installations Compatible Use Zones (AICUZ) program. Similar to the AICUZ program, the JLUS is a cooperative land use planning effort between the affected local government(s) and neighboring military installation(s). The difference is that a local or regional agency takes the lead in conducting the JLUS. The JLUS process typically involves various local community interests along with the military installation, and the study is a locally-produced product. Under this arrangement, there is a greater assurance that compatible land use controls will be adopted.

### 1.0.2 Avon Park Air Force Range Mission

APAFR plays an important role in the training of the men and women that defend our nation. The largest bombing and gunnery range east of the Mississippi River, APAFR has approximately 400 square miles of restricted airspace and 1,000 square miles of military operating area. Location in central Florida in Polk and Highlands Counties, and adjacent to Osceola and Okeechobee Counties, APAFR's 106,000 acres provide an important training facility for active duty, guard, and reserve military units from the Army, Navy, Air Force, Marines, and Coast Guard.

The Range hosts civilian public safety and homeland security unit training including the South Florida Community College Law Enforcement Academy's training

activities. The Range is also home to other organizations, such as:

- The State of Florida Juvenile Academy
- The Florida National Guard
- The Avon Park Correctional Institution

Other programs that contribute to the economies of Highlands and Polk County include outdoor recreation, cattle grazing, forest management, and timber sales. The Range's environmental stewardship program protects the unique plant and animal habitats and cooperates with The Nature Conservancy and Archbold Biological Station to study and protect the rare plants and endangered species inhabiting the Range.

### 1.0.3 Why Is a Joint Land Use Study Needed?

The primary purpose of the JLUS is for the local governments to develop compatible land use plans and land development regulations for the properties adjacent to and affected by Avon Park Air Force Range (APAFR) and its operations.

The JLUS is studying the planned land uses in the area that surround the Range, and the military training needs of the armed forces, to determine their compatibility. The study is designed to protect public health, safety and welfare while safeguarding the ability of the military services and homeland security agencies to provide needed training.



Military operations can present noise and other safety concerns for civilian communities. Conversely, urban development near the perimeter of military ranges can impact the viability of the installation and its mission. Development can be affected by low level flight patterns in military operating areas

and required clear zones for airport runway approaches. The purpose of the JLUS is to protect the health, safety and welfare of the civilian communities relative to aircraft approach and departure routes, and discourage incompatible development in high noise areas and accident potential zones. The JLUS investigates how to protect the Range's ability to conduct effective training of homeland security, public safety, and military personnel.

## 1.0.4 Study Goals and Actions

The APAFR JLUS has the following goals:

- Collaborate with local cities and counties within the project study area including portions of Polk, Highlands, Osceola, and Okeechobee Counties and the Cities of Avon Park, Frostproof, and Sebring to conduct the Study.
- Protect the health, safety and welfare of residents living or working near the APAFR.
- Promote comprehensive community planning.
- Coordinate the local jurisdiction's comprehensive plans with APAFR's comprehensive plans.
- Identify appropriate regulatory and non-regulatory measures to ensure compatibility between existing and future land uses.
- Increase communication and cooperation between APAFR and neighboring counties.
- Protect and promote the present and future operational capabilities of APAFR.

To achieve these goals, the following general steps have been identified:

- Establish a Policy Committee comprised of officials from local governments, APAFR, State of Florida, and other appropriate agencies to review and approve specific planning methodologies and implementation strategies.
- Establish a Working Group comprised of professionals and citizens from local communities. The Group provides technical expertise and advises the Policy Committee.
- Evaluate existing and future operations and requirements of APAFR's operations.

- Evaluate existing and future land uses adjacent to and affected by APAFR's operations.
- Evaluate existing and proposed land use regulations to determine how conflicts are currently addressed, and identify gaps.
- Identify new land use regulations to ensure compatibility between existing and future land uses and air operations.

## 1.0.5 Study Products and Benefits

The APAFR JLUS identifies the existing environment in the study area, any current conflicts between land uses and Range operations, and potential future impacts. The report will also present strategies to minimize current problems, encourage compatible future development and prevent incompatible future development. Benefits of the Study include:

- Improved intergovernmental relationships with respect to land use planning and development regulations.
- Improved communications among local governments, APAFR, and local neighborhoods.
- Increased awareness of potential conflicts between land development and APAFR.
- Improved local land development regulations.
- Protection of current and future military missions at APAFR.
- Address the community's health, safety, and welfare concerns.

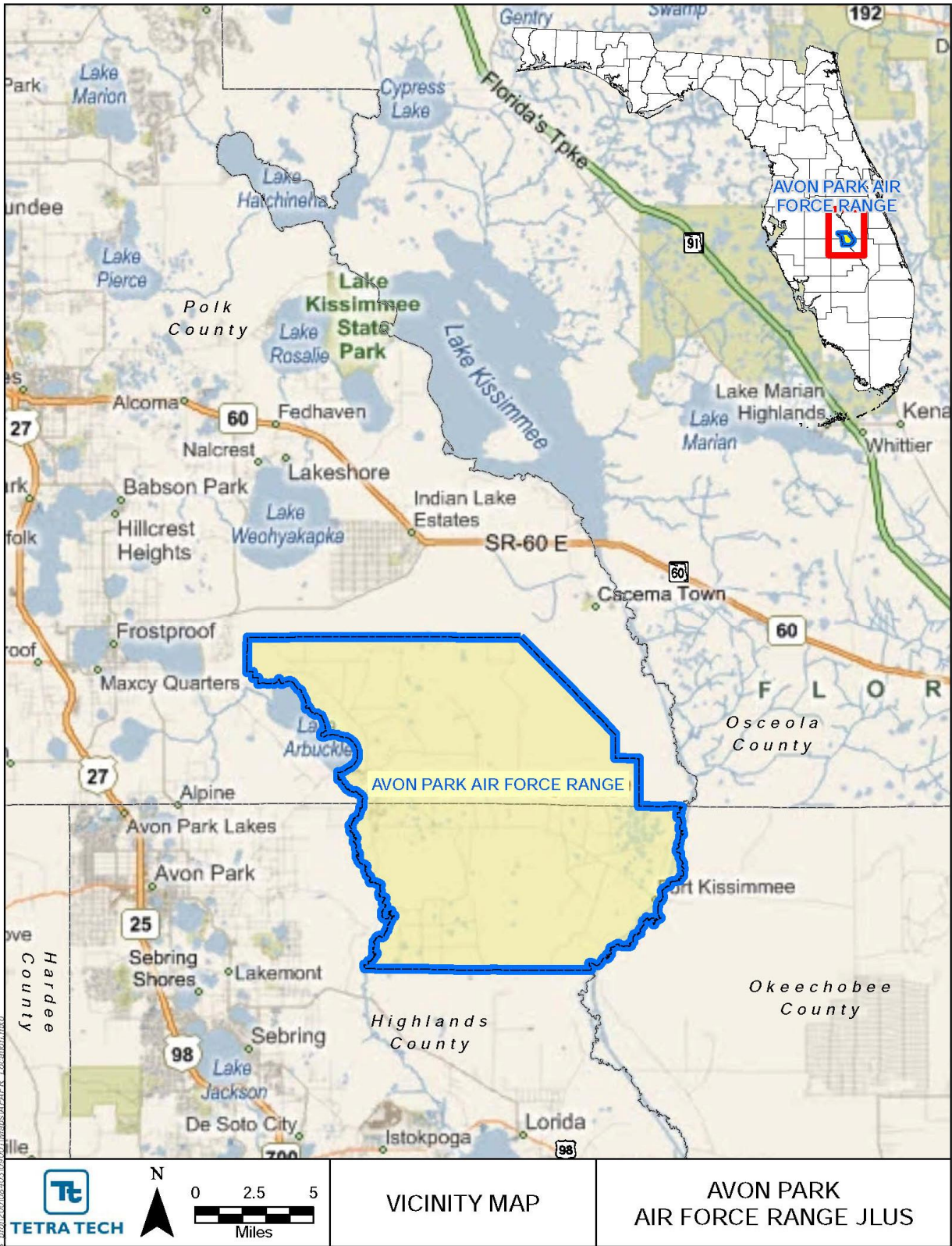
## 1.1 APAFR LOCATION AND MISSION

### 1.1.1 History

APAFR is a United States Air Force range located east of the City of Avon Park as shown in [Figure 1-1](#). APAFR was first opened during World War II under the name of Avon Park Army Air Field. The Third Air Force used the airfield for training B-17 air crews in air-to-ground bombing and for antisubmarine patrols. After World War II ended, the base

# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

Figure 1-1: APAFR Location Map





was closed and placed in a caretaker status. In 1949, the base was transferred to the newly created US Air Force. It was then renamed Avon Park Air Force Base. In 1956, the base was renamed again to Avon Park Air Force Range. At this time a major improvement program was begun. At its height, the base spread across 218,000 acres (340 mi<sup>2</sup>). Over the succeeding years the US Air Force declared a portion of the land surplus and disposed of it. The last major divestment in 1983 brought the Range to its current size.

## 1.1.2 APAFR Size and Military Operations

APAFR consists of approximately 106,000 acres of land of which about 82,000 acres are open to the public for recreation. APAFR includes Avon Park Air Force Auxiliary Field (also known as MacDill AFB Auxiliary Field). The airfield consists of an 8,000 ft main runway, an operational control tower, an aircraft rescue and firefighting facility and limited ramp and hangar facilities. There are no published instrument approach procedures and the airfield is limited to VFR operations only.

The host unit for the APAFR is the Deployed Unit Complex (DUC), 23rd Wing, Detachment 1, which is a unit of the 23rd Wing (23 WG), an Air Combat Command (ACC) composite fighter and rescue wing located at Moody Air Force Base, Georgia. In addition to the Avon Park Air Force Range, the DUC also oversees a flight line facility at nearby MacDill AFB for transient military flight crews, maintenance crews and aircraft utilizing the APAFR. This permits visiting squadrons to have ready access to APAFR while concurrently taking advantage of the more robust billeting and maintenance support capabilities at MacDill. This combination of facilities provides extensive, diversified and convenient training airspace and ranges with unique training capabilities for military air, ground, and air-to-ground training.

Some unique features found at APAFR include:

- Joint Use Range. APAFR is a joint use facility.

It is routinely used by the Army, Navy, Special Operations Command, the Coast Guard as well as the US Air Force. It also hosts several multi-service exercises annually.

- Multiple Targets, Impact Areas and Approach. Air-to-ground ordnance is expended on six impact areas. Participating aircraft can attack targets from omni-directional approaches.
- Restricted Airspace Complex. APAFR lies under contiguous elements of Restricted Airspace that extend well beyond the range boundary. R-2901C is adjacent to R-2901A beginning at the northern range boundary and extends in a northerly direction, merging with R-2901D, then E for roughly 17 miles beyond the range boundary. R2901A and F extend beyond the southern boundary in a southeasterly direction merging with R-2901G, H and I for approximately 18 miles. The eastern boundary of the range and airspace is flanked by the Avon Park East and Basinger Military Operations Areas (MOA's).
- Multiple County Jurisdictions. The range is located in two counties and adjacent to two other counties. The northern portion of the Range falls within Polk County which also borders the range on the north and northwest; the southern portion is in Highlands County, which also borders it to the south and southwest; Okeechobee



APAFR is the largest aerial bombing and gunnery range east of the Mississippi River and is used by various military units from all services including Air Force, Navy, Marines, Air and Army National Guard, Army Airborne and Ranger units, and Army Reserve.



# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

County borders the range to the southeast; and Osceola to the northeast. Private land abuts the range on its northern, western and southern boundaries. The lands adjacent to the eastern boundary are owned by the South Florida Water Management District.

- **Public Access.** Nearly 100,000 acres of the range are open to public access when military activities allow. Public recreational activities include hunting, fishing, camping, and hiking and nature study areas. Cattle grazing leases encompass more than 96,000 acres and timber sales take place on approximately 40,000 acres of range land. The range also includes an airfield, cantonment area, and adult and youth correctional facilities.
- **Compatible Land Uses.** The Air Force engages in land management activities that protect endangered species and their habitats, manage forest lands for timber production, provide cattle grazing through leases with local cattlemen and protect cultural resources and wetlands.
- **Airfield MacDill Auxiliary Airfield.** The airfield is located within the Main Base area. The primary runway 05/23 is 7,984 feet long and 150 feet wide, with high intensity lighting, Pulse Light Approach Stop Indicator (PLASI) and rotating beacon. There is no taxiway lighting. A second 5,384 feet long landing surface 14/32 is not maintained or swept. The airfield has no traffic controllers. Landings on the airfield must be requested 24 hours in advance and visual flight rules apply.
- **Cantonment Area:** The cantonment area is divided into 2 primary locations, an area near to the front gate and an area adjacent to the airfield. The cantonment area is the critical support hub of the range. The front gate area contains support facilities, including temporary housing and dining, recreational and administrative facilities. Also within this area are the Avon Park Youth Academy and the Avon Park Correctional Institution. Both are state facilities located on former federal lands. The airfield area

contains the facilities for Base operations support functions.

APAFR is the largest aerial bombing and gunnery range east of the Mississippi River and is used by various military units from all services: Air Force, Navy, Marines, Air and Army National Guard units, Army Airborne and Ranger units, and the Army Reserve. Normal hours of operation for Avon Park Air Force Range are Monday through Friday, 60 hours per week.

Throughout its history, a wide variety of high explosive and inert/practice ordnance has been delivered at APAFR by many different fixed- and rotary wing aircraft. Today, APAFR is used for air-to-air combat and air-to-ground inert / practice bombing and gunnery training by DOD aircrews, but is no longer authorized for the use of air-to-ground high explosive (HE) bomb delivery from fixed-wing aircraft. Air Force AC-130s are authorized for, and fire, air-to-ground HE warhead rounds including 25-millimeter (mm), (40mm and 105mm ammunition types). Among the many DOD users of APAFR, Navy aircrews currently use APAFR for inert / practice ordnance delivery during integrated and sustainment training, each event requiring the use of Avon Park



APAFR's land management program includes the protection and management of threatened and endangered species and their habitat, protection of wetlands and other outstanding natural areas, cattle grazing, production and harvesting of timber and public recreation, as well as identification and protection of cultural resources.

from four to eight days. Other DOD military units conduct a variety of other training activities at APAFR, including HE artillery firing, small arms firing, troop maneuvers, search-and-rescue operations, joint service exercises, and other ground training exercises.

### 1.1.3 Range Assets

APAFR is divided into a number of different areas delineated to support APAFR's military mission as shown in Figure 1-2. There are four active air-to-ground impact areas, comprised of approximately 21,000 acres. These areas include two scorable tactical, air-to-ground ordnance impact areas (Echo and Foxtrot) and two scorable conventional, air-to-ground ordnance impact areas (Charlie and Bravo). These impact areas are also known as North Conventional (Bravo), North Tactical (Foxtrot), South Conventional (Charlie), and South Tactical (Echo). A conventional impact area has specific targets that require the aircrews to fly specific flight patterns. Tactical areas are designed for aircrews to practice aircraft combat tactics. Aircrews are authorized to maneuver their aircraft using random attack patterns within the Restricted Airspace prior to releasing their ordnance on approved targets.

Within these impact areas, approximately 90 targets, such as simulated airfields, mock villages, military vehicles, aircraft, missiles, and convoys, are available for air-to-ground and ground-to-ground training primarily using inert/practice bombs and gunnery. Two helicopter "free-fire zones" are used for helicopter gunnery training. Inside these zones, helicopters may fire at any numbered or unnumbered target. In addition, laser buffer zones are shown for the Bravo/Foxtrot and Charlie/Echo impact areas. These zones are established to keep personnel out of an area during the use of potential sight damaging laser targeting that is employed during laser and laser-guided bomb (LGB) use at APAFR.

In addition to the four active air-to-ground impact areas, four other impact areas have been or are currently being used for training exercises: Alpha,

OQ, Delta and Oscar impact areas. The Alpha impact area was officially opened in 1942 and was the first target area at APAFR. The area was inactivated in the 1960's and, except for a single live ordnance drop activity in the 1970's by the Navy; it has not been used since that time.

The OQ Range was constructed in the late 1940s for gunnery training. OQ was used as a Florida Army National Guard (FLARNG) live impact area until the 1980s. Currently, the impact area is used as a "para-drop" training area where personnel or cargo are delivered to the area by a parachute from an aircraft in flight (USAF 2000). A small arms range up to 50 caliber munitions was constructed on a portion of the site by the Florida Army National Guard.

Delta impact area is an inactive tactical area contiguous on the east with Charlie Range that contained numerous tactical targets (USAF 1997). No information is available on when the area was first used for tactical training. It is currently inactive.

Constructed in 1985, Oscar Range was a conventional range consisting of a strafe pit and conventional circle target. It was closed to air-to-ground training in 1993 (USAF 2000); however, existing buildings and structures are currently used by ground special operations training (347WG Det 1 1999). In 2006, a rail mounted moving target to serve helicopter gunnery operations was constructed and the range was re-opened for that use.

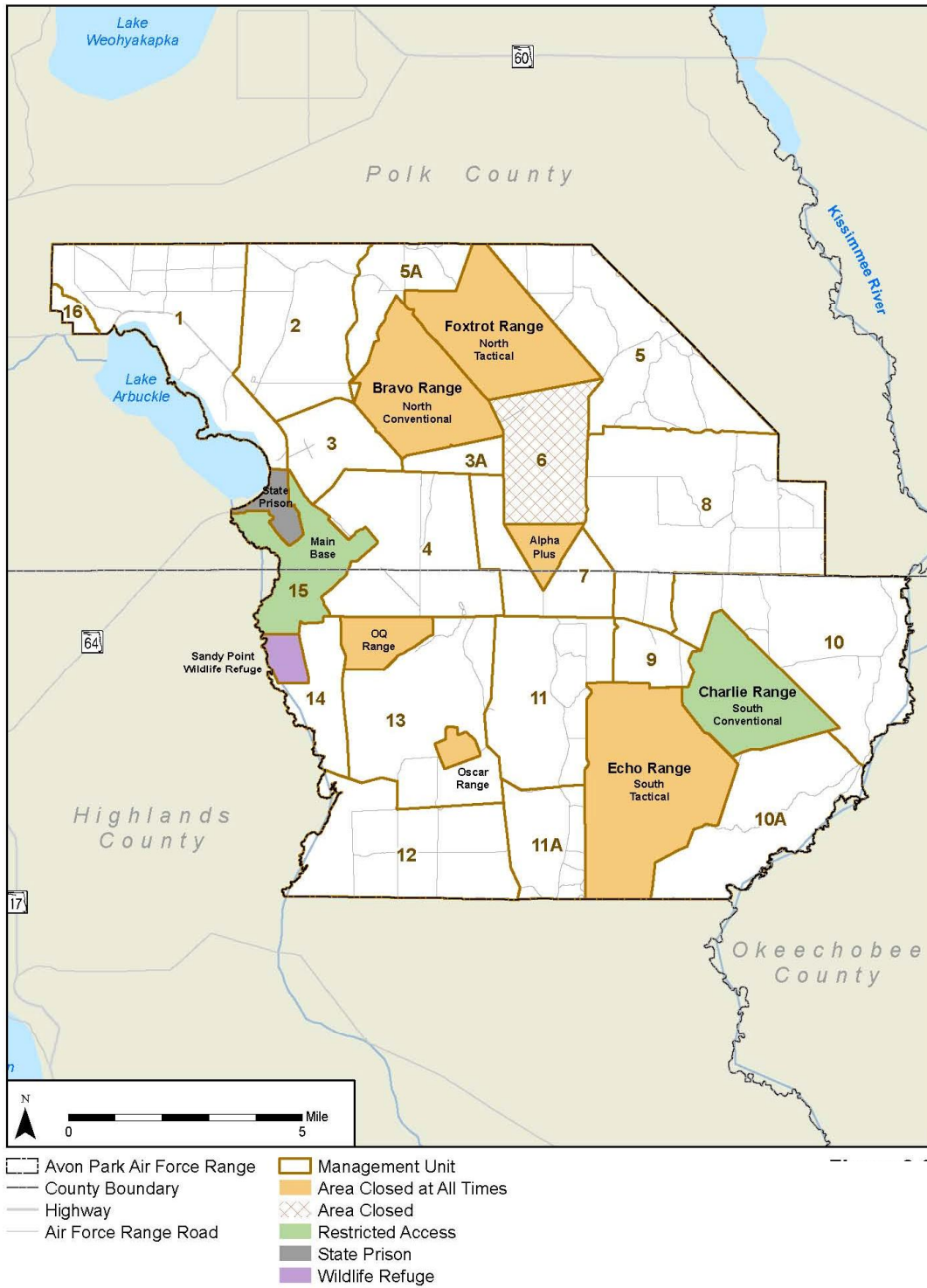
### 1.1.4 Range Utilization

Although the Range experienced a reduction in use from a high of 25,000 Air Combat Command (ACC) sorties per year in mid-1990's to less than 3,000 at the beginning of this decade, the realignment of the fighter wings at MacDill and Homestead Air Force Bases (AFBs) along with units from all other services have increased these numbers to approximately 13,000 sorties in 2009.

An emerging use of the APAFR is for multi-unit and

# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

Figure 1-2: APAFR Range Assets and Management Areas (Source: US Air Force).



# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

multi-service training exercises that integrate forces to simulate the total battlefield scenario. Since FY 2004, up to four exercises annually have been conducted. Typically these activities last one week.

Future activities at APAFR should remain consistent, or at least not exceed, the historic use when MacDill and Homestead AFBs were fully operational. It can be assumed that continued use by other services will continue.

**Major Users.** The major users of the impact areas are the 23rd Wing from Moody AFB, 482nd Wing from Homestead ARB, the 301 RQS from Patrick AFB, and numerous Special Operations and higher headquarters exercises and operations. APAFR was recently designated Avon Park Air Ground Training Complex (AAGTC) enabling realistic joint, interagency, and multinational war fighting. AAGTC builds on the existing Range capabilities and focuses on Combat Search and Rescue (CSAR), Close Air Support (CAS), and Special Operations Training. The Navy also uses the Range for delivery of inert/practice ordnance for integrated and sustainment phases of their Fleet Readiness Training Plan (FRTTP). Weekday use of the Range is principally by Air Force and Air Force Reserves while the weekend use is primarily by the Florida Army National Guard (FLARNG). The FLARNG is a tenant of APAFR.

**Range Training Operations.** The major users of the Range primarily conduct air-to-ground ordnance delivery to satisfy training requirements. Range training operations are summarized below.

- Air Force Special Operations Command (AFSOC) Training. This military training includes AFSOC personnel conducting classified special operations training approximately three times per month. Airspace missions are performed using all R-2901 and the MacDill Auxiliary Airfield runway only. No one is on the ground except at the Auxiliary Field (Stewart 2003; Beers 2004).
- Close Air Support (CAS). This military training includes terminal air controllers (TACs) who operate on foot potentially within and outside the existing impact areas. TACs provide direction to incoming aircraft on the delivery of munitions in support of Army ground commanders. These activities occur on all tactical ranges, specifically in areas identified as observation points. TACs use all-terrain vehicles for maneuvering around the range.
- Combat Search and Rescue (CSAR). This military training includes personnel practicing escape and evasion techniques that usually involves aerial pickup by helicopters under simulated combat conditions and could involve the use of other vehicles such as ATVs. These activities are conducted at both tactical ranges (Foxtrot and Echo) and all helicopter landing zones.
- FLARNG Artillery Training. This military training involves approximately 430 members of FLARNG performing battalion-level, live-fire training with 105mm Howitzers two to three times per year. The FLARNG deploys three firing batteries each with 80 to 100 members that may fire from three points within Management Units 3A, 4, 6, or 7 into the Bravo/Foxtrot HE artillery impact area. The remaining members of the battalion remain in the same management unit as the members of the firing batteries, but at different firing points.
- FLARNG Multiple Launch Rocket System (MLRS) Training: The MLRS is a highly mobile, highly automated, self-loading and self-aiming, rapid-fire system that has the capability to fire surface-to-surface rockets. FLARNG currently performs battery-level training at Avon Park Air Force Range and performs maneuver exercises using tracked and wheeled vehicles at a number of maneuver points.
- FLARNG Mortar Training: This military training involves approximately 40 members of FLARNG performing platoon-level, live-fire training with mortars two to three times per year. They deploy three teams that may fire from three points within Management Unit 3A into the Bravo/Foxtrot HE artillery impact area.



# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

- Forward Observing (FO): This military training is similar to CAS, except that FLARNG personnel supporting indirect artillery fire training conduct this activity. The forward observers are located within view of the target and the fall of the shot in the HE impact area on Bravo/Foxtrot.
- Parachute Jumping: This military training includes paratroopers jumping from aircraft to conduct CAS, CSAR, FO, and other military training operations. Jumpers land in drops zones located near Foxtrot range, on Echo range, and in other areas throughout Avon Park Air Force Range.
- Security Forces Training: This scenario includes 12 to 30 security force specialists who operate on foot, within areas of APAFR including impact areas. They fire small arms weapons and could use vehicles such as ATVs in traveling to or from Foxtrot and Echo ranges, where the training occurs.
- Air-ground Bombing: The typical air-to-ground bombing mission is conducted on the tactical and conventional ranges. The mission is changing from low altitude approach and release with unguided munitions to high altitude release with precision guided munitions.
- Unmanned Aircraft Systems (UAS) Operations. As Unmanned Aerial Vehicles (UAVs) and Unmanned Combat Aerial Vehicles (UCAVs) are integrated further into the tactical mission of all services, their prominence in the air-to-ground fight is growing and will continue to grow. They will need to be integrated into the training environment both as reconnaissance and strike platforms. What makes the Avon Park Air Force Range so well suited to UAV operations is the airfield within restricted airspace completely under the control of the range operating agency. The combination of this element with the deployment capabilities of the DUC at MacDill AFB makes APAFR a unique asset where UAV units can deploy and operate their UAVs remotely or locally.
- Bare Base Training. Avon Park has a unique

asset. Very few ranges have a complete airfield within their restricted airspace. This airfield is an excellent location to conduct bare base training. Avon Park Air Force Range has supported some of this training in the past but the new focus in the Air Force on the Expeditionary Air Force will turn into a need for additional training opportunities.

## 1.1.5 Range Land Use Areas

There are three generalized land use areas within the range boundaries: training areas, developed area, and buffer area.

Training Areas. Avon Park Air Force Range has approximately 21,000 acres of impact area used for air-to-ground and ground-to-ground weapon training including the use of inert/practice and explosive ordnance and small arms. Military training trails, firing points, maneuvering points, mortar points, and bivouac areas are outside the ordnance impact areas. Lands that are not otherwise restricted by their military use are used and managed for mixed uses including natural resources benefits such as endangered species and wetlands protection, recreation, cattle grazing, and timber production.

Training areas also exist outside the ordnance impact areas and include access trails, firing points, maneuvering areas and points, mortar points, landing and drop zones, and bivouac areas. Ground training includes infantry, field artillery; air defense using artillery, mortars, machine guns, and small arms; and CSAR.

Avon Park Air Force Range has 14 helicopter landing zones and 15 drop zones that are used, in part, for CSAR training; a 3,000-foot assault air strip; land navigation areas; and ground training areas used by the FLARNG. The 3rd Battalion of the 116th Field Artillery Regiment (3-116th), FLARNG, provides long-range indirect fire support to the 1st Infantry Division using the MLRS. The 3-116th is currently authorized to train one battery per weekend, two

# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

weekends per month for seven months annually in maneuvering operations. They rotate the use of 19 MLRS maneuvering areas (MAs) shown on [Figure 1-3 – Avon Park Range Inventory](#).

**Developed Area.** The developed area (or Main Base) of Avon Park Air Force Range occupies approximately 3,320 acres and includes the airfield complex. The Cantonment Area part of the Main Base occupies approximately 2,770 acres and includes the airfield and all buildings except the prison and youth academy. Thirty-five (35) buildings and facilities are within the Cantonment Area, including the Unit Training Equipment Site where the FLARNG locates and maintains its vehicles. The airfield, designated MacDill Auxiliary Field, consists of one 8,000-foot runway (150 feet wide) and aircraft arresting barriers. The airfield can support aircraft weighing up to 150,000 pounds. One additional 5,000-foot runway (150 feet wide), that has no arresting barriers and is not maintained or swept, is used by fixed-wing aircraft conducting special operations and only during extreme emergency situations. Rotary-wing aircraft are authorized to use this runway.

In 1951, the U.S. Bureau of Prisons began to operate a prison in the developed area of the base (USACE 1999). This prison, the Avon Park Correctional Institution (AVPCI) is on state land and is operated by the State of Florida Department of Corrections. It typically houses 1,200 to 1,300 inmates. The Avon Park Youth Academy, a facility for approximately 200 troubled youths, occupies the former Air Force family housing area within the correctional institution area. The State of Florida Department of Juvenile Justice operates the Youth Academy on land deeded to Highlands County. These two facilities occupy approximately 550 acres.

**Buffer Areas.** The remaining land within the installation is considered safety buffer zone, primarily for air-to-ground operations. The Air Force carries out an active land management program throughout the installation, as mission requirements permit. Activi-

ties carried out under this program include protection and management of threatened and endangered species and their habitat, protection of wetlands and other outstanding natural areas, cattle grazing, production and harvesting of timber and public recreation, as well as identification and protection of cultural resources. It is important to note that these areas serve as safety buffer zones but are also routinely used for other types of ground operations and training activities such as survival training and search and rescue operations.

## 1.1.6 Recreation and Other Non-Training Land Uses

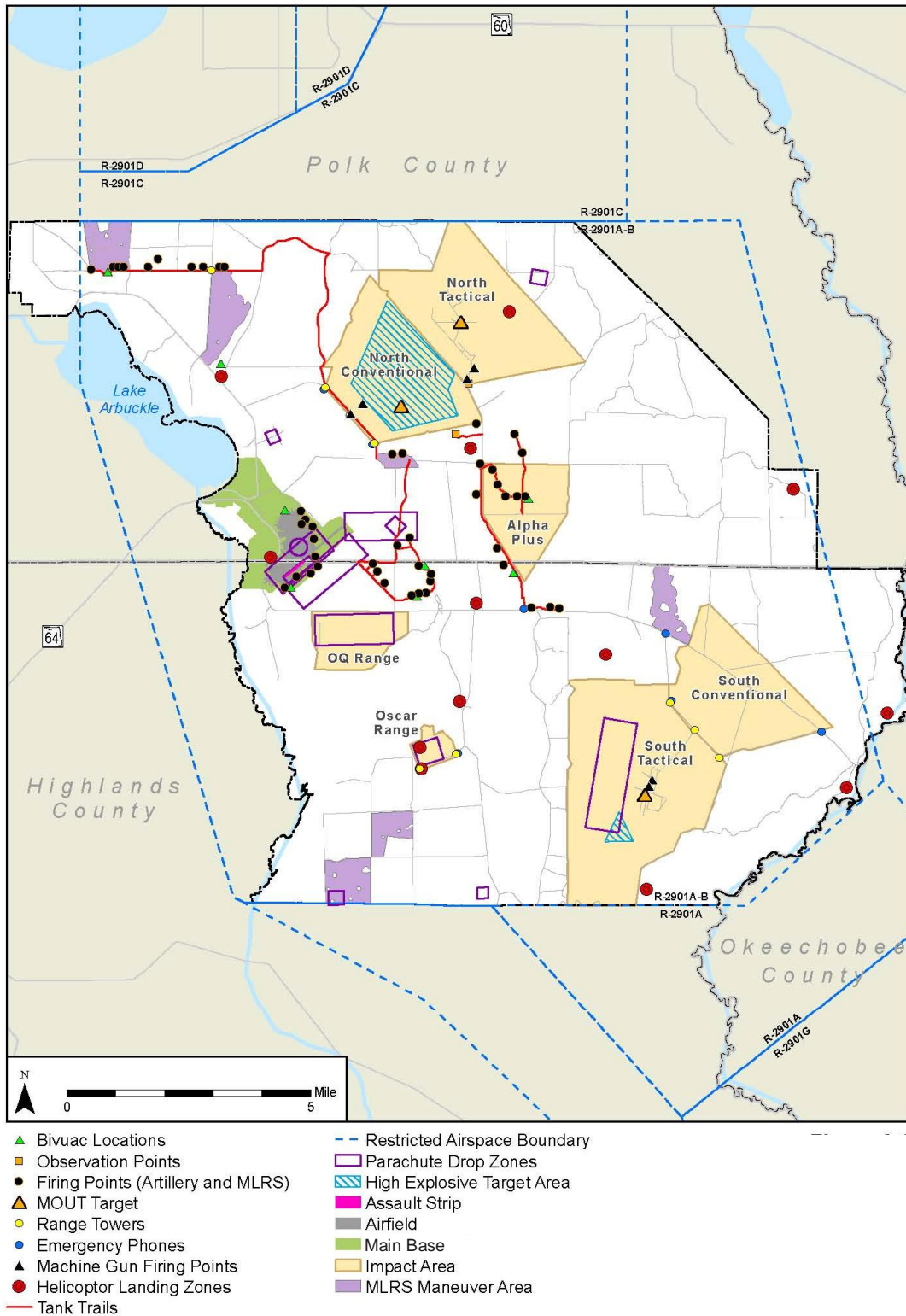
The Avon Park Air Force Range has approximately 78,000 acres of land open to the public for outdoor recreation activities. Land management activities at Avon Park are in accordance with AFI 13-212 and are guided by Avon Park Range Integrated Natural Resource Management Plan. For management purposes the Range is divided into 20 Management Units. These areas were developed to manage the resource and provide safe access to users. [Table 1-1 – Avon Park Air Force Range Land Use \(Acreage\)](#) identifies each management unit, size and primary land use function.

## 1.2 FLORIDA STATUTE 163.3175 - FOCUS ON COMPATIBLE LAND USE PLANNING

In order to protect important military and state assets such as APAFR, the Florida Legislature enacted a law in 2004 that acknowledged the potential for negative impacts to occur when incompatible land development occurs close to military installations (Florida Statute 163.3175). The legislation found it “desirable for the local governments in the state to cooperate with military installations to encourage compatible land use, help prevent incompatible encroachment, and facilitate the continued presence of major military installations in this state.”

# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

Figure 1-3: APAFR Range Inventory (Source: US Air Force).



# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

Table 1-1: APAFR Land Use (Acreage) (Source: US Air Force)

Management Area	Area	Forestry	Grazing	Hunting	Camping	Ground Training	Air-to Ground Training
1	7,101	3,928	7,080	7,101	31	Authorized	
2	5,312	2,769	5,304	5,312		Authorized	
3	2,143	762	2,123	2,143		Authorized	
3A	806	425	806	806		Authorized	
4	6,011	1,607	5,849	6,011	32	Authorized	
5	6,923	2,462	6,917	6,923		Authorized	
5A	2,175	1,477	2,162	2,175		Authorized	
6	3,395	1,552	3,395	3,395		Authorized	
7	2,828	1,125	2,801	2,828	31	Authorized	
8	10,013	4,021	10,012	10,013		Authorized	
9	1,311	499	1,310	1,311		Authorized	
10	7,292	2,638	7,281	7,292	16	Authorized	
10A	5,151	175	5,137	5,151	36	Authorized	
11	5,211	1,499	5,193	5,211	11	Authorized	
11A	2,484	949	2,470	2,484		Authorized	
12	5,969	2,127	5,945	5,969		Authorized	
13	7,537	848	7,399	7,537	27	Authorized	
14	1,947	157	1,368	1,394		Authorized	
15	2,811	38	808	2,811	6	Authorized	
16	345	196	343	345		Authorized	
North Impact Area	8,238	3,462	3,245			Authorized	Authorized
South Impact Area	10,517	937	5,981			Authorized	Authorized
Alpha	784	344	774				
Oscar	334	2	334			Authorized	Authorized
Total	106,638	33,998	94,036	86,212	190	103,200	18,755

Note: Permitted activities such as Forestry, Grazing, Hunting, and Camping area authorized IAW AFI I3-212.



## 1.2.1 Growth of Local Communities Surrounding APAFR

The population surrounding APAFR has experienced significant growth in the last decade. In an attempt to guide this growth wisely, each of the four counties (Highlands, Okeechobee, Osceola, and Polk, ) and three cities (Avon Park, Frostproof, and Sebring) developed future land use scenarios. These scenarios (some pending approval) provide approved uses for parcels of land by assigning a land use code, such as residential or agricultural. The future land use assigned to a parcel can greatly influence the level of compatibility between it and nearby military installations.

## 1.2.2 Joint Land Use Study (JLUS) Program

The DoD Office of Economic Adjustment (OEA) recognizes the importance of local land use decisions to military installations. To foster cooperation and understanding OEA administers the JLUS program. "A JLUS is produced by and for the local jurisdiction (s). It is intended to benefit both the local community and the military installation by combining the work of the AICUZ program with the JLUS program. The JLUS program is a basic planning process designed to identify encroachment issues confronting both the civilian community and the military installation and to recommend strategies to address the issues in the context of local comprehensive/general planning programs" (OEA, 2006).

To help provide a unified voice in addressing JLUS issues in the surrounding area, the APAFR JLUS is being guided by the APAFR JLUS Technical Committee and the APAFR JLUS Policy Committee.

## 1.2.3 Range Buffering Through Conservation

In 2009, The Nature Conservancy (TNC) conducted a study of conservation opportunities that could be used to protect military facilities from incompatible development. (Ecological Assessment of Potential Conservation Opportunities for Military Base Buffering in Florida, The Nature Conservancy, 2009) The study included the Avon Park Air Force Range

and examined land areas surrounding the Range with significant conservation value that would be of interest to the Florida Forever Program, a state-funded effort to purchase land to protect critical natural and hydrological resources. Avon Park Air Force Range is located on a unique geological formation known as the Lake Wales Ridge. Home to many threatened and endangered species, the Lake Wales Ridge has been the focus of environmental preservation efforts both on and off the Range. The TNC study rated Areas of Conservation Significance (ACS) within a 10-mile buffer surrounding the Range. A figure in each jurisdiction's chapter of this report shows these ACS areas and their priority ranking.

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## SECTION 6 - OSCEOLA COUNTY



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## 6.1 INTRODUCTION

Osceola County was formed in 1887. It is bordered by Polk, Lake, Orange, Okeechobee, Indian River, Brevard and Highlands Counties. The County is a Charter County and an administrative subdivision of the State of Florida. There are two incorporated areas-Kissimmee and St. Cloud. The unincorporated areas of Osceola County include Buenaventura Lakes, Campbell, Celebration, Deer Park, Harmony, Holopaw, Kenansville, Poinciana and Yeehaw Junction. The County also includes a special taxing district (created for Walt Disney World) called Reedy Creek Improvement District.

As of the 2000 census, there were 172,493 people, 60,977 households, and 45,062 families residing in the County. The U.S. Census Bureau 2005 estimate for the County is a population of 244,045. The population density was 258 people per square mile. There were 72,293 housing units at an average density of 130 per square mile.

There were 60,977 households, out of which 36.40% had children under the age of 18 living with them, 56.10% were married couples living together, 12.80% had a female householder with no husband present, and 26.10% were non-families. 19.10% of all households were made up of individuals and 7.00% had someone living alone who was 65 years of age or older. The average household size was 2.79 and the average family size was 3.18.

The population distribution was 26.80% under the age of 18, 9.30% from 18 to 24, 31.00% from 25 to 44, 21.60% from 45 to 64, and 11.40% who were 65 years of age or older. The median age was 35 years.

Figure 6-1 shows Osceola County in relation to APAFR.

## 6.2 ISSUES

Based on information provided by APAFR and workshops and discussions with the public, JLUS Policy Committee and JLUS Working Group, issues were

identified with respect to encroachment on APAFR. During the numerous Public workshops, Policy Committee meetings, and Working Group meetings, the issues for the County were identified and explored. Appendix A—APAFR JLUS Public Presentations provides copies of this information plus all public presentations included with this study.

The following are the issues identified for the County with respect to APAFR's mission activities:

- Development Near APAFR's Boundary
- Airspace Controls
- Blast Noise
- Low Level Flight Areas
- Aircraft Noise
- Bird / Aircraft Strike Hazards (BASH)
- Lighting
- Conservation Resources
- Transportation Interchanges and/or Corridors
- Public Access

Each issue listed above is described further in the following subsections with descriptions and graphics providing additional information.

### 6.2.1 Development Near APAFR's Boundary

Development near the boundary of a military reservation can create security concerns, promote excessive light during nighttime hours, and/or encourage other encroachments. For the County, development around APAFR's perimeter is an obvious concern and can be managed by recognizing and implementing necessary land use controls. Figure 6-2 shows the portions of the County currently within approximately three miles of APAFR's boundary.

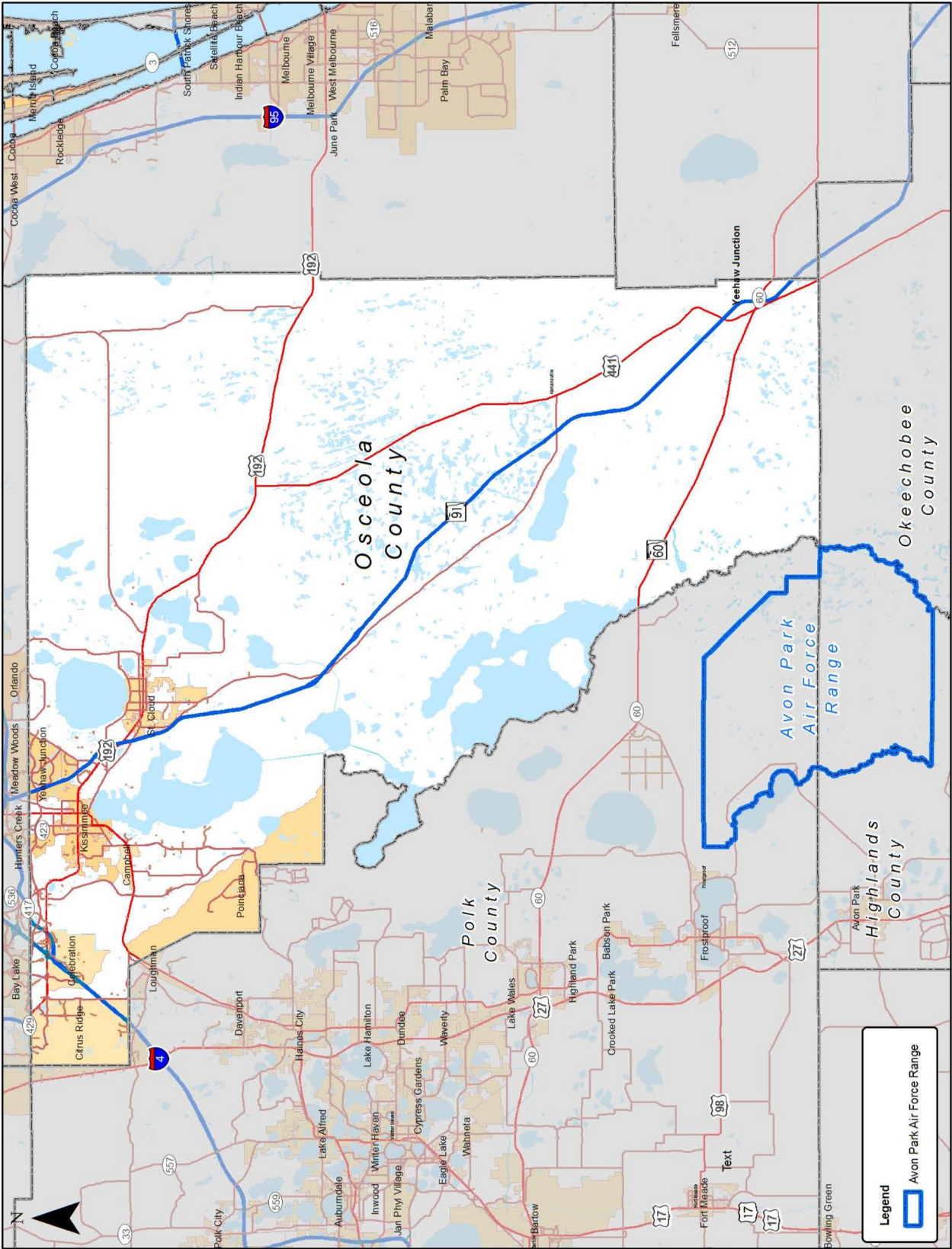
### 6.2.2 Airspace Controls

In addition to 106,034 acres of ground Range assets, APAFR's air-to-ground training operations are further enhanced by overlying restricted airspace, military training routes (MTRs), and Military Operations Areas (MOAs). According to the Federal Aviation Administration (FAA), restricted airspace is an



# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

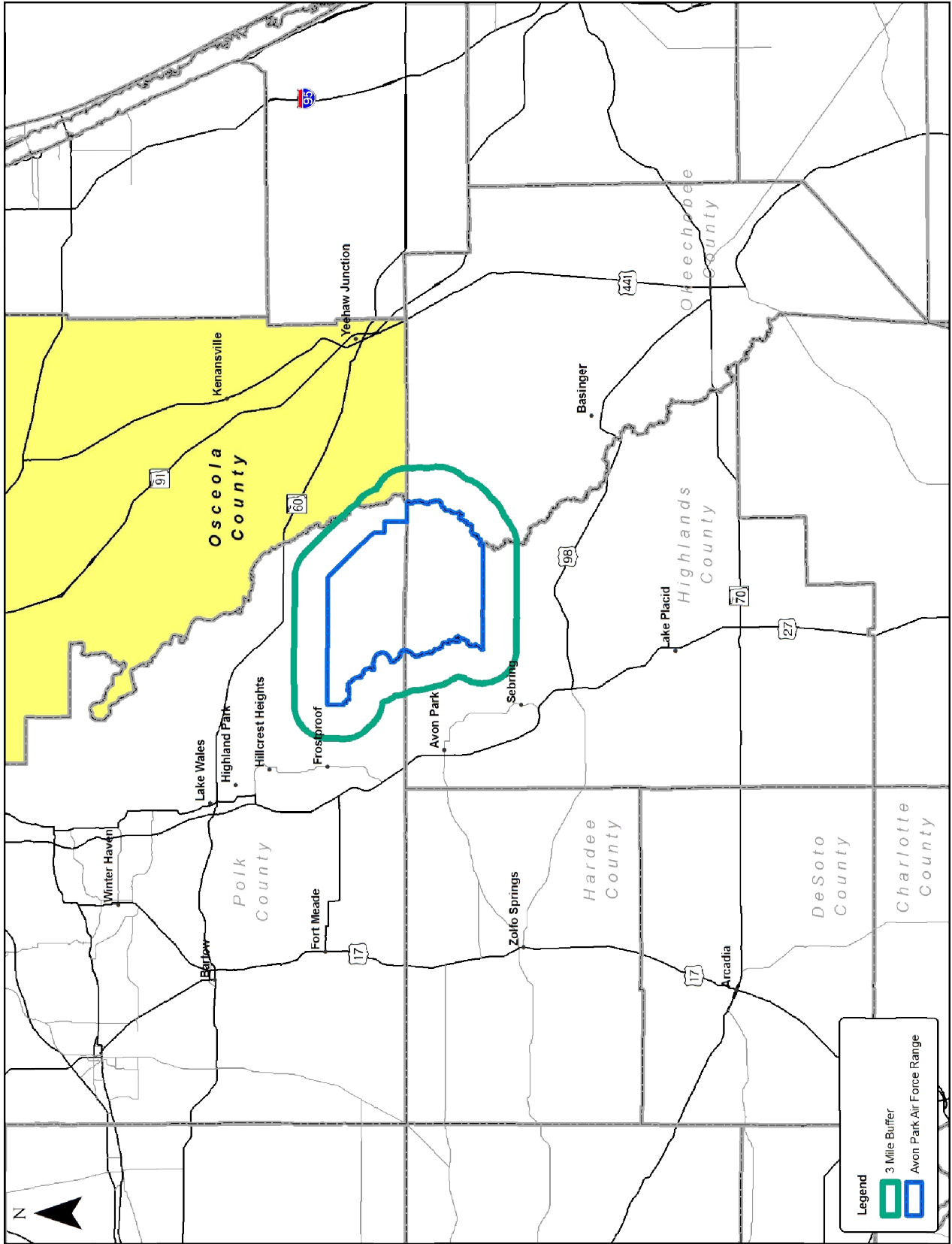
Figure 6-1: Osceola County—County Limits



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Figure 6-2: 3 - Mile Land Use Buffer from APAFR Boundary



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# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

area of airspace denoted by the existence of unusual, often visible, hazards to aircraft such as artillery firing, aerial gunnery, or guided missiles. The FAA also views penetration of restricted airspace without authorization from the local controlling agency as being potentially extremely hazardous to the aircraft and its occupants. Restricted airspace is depicted on aeronautical charts with the letter “R” followed by a serial number.

The DoD, in conjunction with the FAA, has established Special Use Airspace (SUA) to separate military sortie operations from other non-compatible aviation activities. The designation of SUAs identifies for other users the areas where such activity occurs, provides for segregation of that activity from other users, and allows charting to keep airspace users informed of potential hazards. Special use airspace includes: Restricted airspace, Prohibited airspace, MOAs, Warning Areas, Alert Areas, Temporary Flight Restriction (TFR), and Controlled Firing Areas.

The SUA overlying APAFR and its immediate surroundings includes Restricted Airspace R-2901 complex and six military operations areas: Avon North, Avon South, Avon East, Lake Placid, Basinger, and Marian. Restricted airspace R-2901 complex, including subareas R-2901A through

R-2901I, is used by aircraft to maneuver into position for bombing patterns and simulated attacks on Avon Park Air Force Range’s six weapons impact areas. Entry into R-2901 from the north involves MTRs IR-046, 047, and 051 and VR-1098. Aircraft from the south use MTRs IR-049 and 050 and VR-1088 and 1098. These military training routes are scheduled by MacDill AFB. Total airspace covers approximately 2,200 square miles and is shown in [Figure 6-3](#).

Aircraft from all branches of the service—especially Air Force aircraft based at Homestead ARB, Patrick AFB, and Moody AFB—use the Range’s SUA. The operations conducted include laser operations, chaff and flare training, inert/practice ordnance deliveries, drop zone and landing zone operations, and assault field operations.

Military Operations Areas (MOA). A MOA is airspace established outside Class A airspace to separate or segregate certain non-hazardous military activities from instrument flight rule (IFR) traffic and to identify for visual flight rule (VFR) traffic where these activities are conducted (USDOT 2000). The R-2901 complex is surrounded by six MOAs, which provide range-supporting airspace (See [Table 6-1](#)). The Avon North MOA borders the Restricted Airspace on the north; the Avon East MOA borders the

Table 6-1: Description of Military Operations Areas (MOAs). (Source: US Air Force.)

Airspace	Airspace Floor (feet)	Airspace Ceiling (feet)	Area (acres)	Controlling ARTCC
Avon North	5,000 MSL	17,999 MSL	79,423	Miami
Avon South	5,000 MSL	17,999 MSL	98,752	Miami
Avon East	500 AGL	13,999 MSL	31,359	Miami
Lake Placid	7,000 MSL	17,999 MSL	919,676	Miami
Basinger	500 AGL	5,000 MSL	35,776	Miami
Marian	500 AGL	5,000 MSL	173,567	Miami

Sources: USDOT 2000  
 Note: (a) Lake Placid Air Traffic Control Assigned Air Spaces (ATCAA) overlies MOA extending vertical limit of airspace to 23,000 feet MSL.  
 Key: AGL = Above ground level.  
 ARTCC = Air Route Traffic Control Center.  
 MSL = Mean sea level.







Restricted Airspace on the northeast; the Avon South MOA overlies the southern portion of the Restricted Airspace complex. The Basinger MOA borders the Restricted Airspace on the southeast. The Marian MOA borders the eastern boundaries of the Avon East and Basinger MOAs. The Lake Placid MOA borders the entire western side of the R-2901 complex.

**Flight Operations.** All aircraft operating at APAFR are transient aircraft; they fly in from off-site military installations such as MacDill AFB, Patrick AFB, and Homestead ARB. During the baseline year of CY 2000 only the F-16, A-10A, C-130, C-141B, and H-60 (Air Force) used the airfield facilities. Fixed-wing traffic accounts for about 75% of the total annual operations at the airfield, and rotary-wing traffic accounts for 25%. While only five different types of aircraft used the airfield during baseline year 2000, other aircraft have also used the airfield in the past, such as: F-15, F-117, B-52, B-1, F-14, F/A-18, P-3, S-3, C-5, C-17, UH-1, AH-1, and AH-64 (Wyle 2004a).

Numerous airfields and several federal airways ("Victor" routes) are within the vicinity of APAFR. One of the airfields in Osceola County, Blanket Bay Airport, is located to the north of the Avon East and Marian MOAs. Of the 19 total airfields near APAFR, 15 are private, three are public, and two are heliports. Although River Ranch Resort Airport, located approximately 9 miles northeast of the Bravo impact area, is not within an SUA associated with the use of APAFR, aircrews using the Range are alerted to its presence. [Figure 6-4](#) shows the airfields within close proximity to the APAFR.

Although no federal airways pass through the Restricted Airspace, several federal airways pass through the MOAs along the perimeter of the Restricted Airspace. Military pilots using APAFR are aware of, and are alerted to, the possible presence of civil traffic in these areas.

## 6.2.3 Blast Noise

Noise produced by artillery fire and detonation of air-to-ground or ground-to-ground live ammunition, such as shell bursts, surface blasting, cratering charges and aircraft bombs and rockets are analyzed differently than other noise sources such as aircraft engines. This is because of the significantly higher energy created at low frequencies by these blasts. The higher energy blasts can induce structural vibrations which may generate additional annoyance to people, beyond the audibility of the sound created by the blast. Noise contours resulting from the firing of projectiles from weapons (muzzle blast at firing points) and the detonation of high explosive ordnance from aircraft in the vicinity of the targets extend beyond APAFR's boundary and are depicted in [Figure 6-5](#) (Air Force 2008).

- Peak levels between 0-115 decibel (dB) Peak present a low risk of noise complaints (comparable to Noise Zone 1)
- Peak levels between 115-130 dB Peak present a moderate risk of noise complaints (comparable to Noise Zone 2)
- Peak levels between 130-140 dB Peak present a high risk of noise complaints and possibilities of damage claims (comparable to Noise Zone 3)

Note - Peak Levels above 140dB Peak represents the threshold for permanent physiological damage to unprotected human ears. They also represent a high risk of physiological and structural damage claims (Wyle 2005 and AR 200-1 13 Dec 2007, Ch 14).

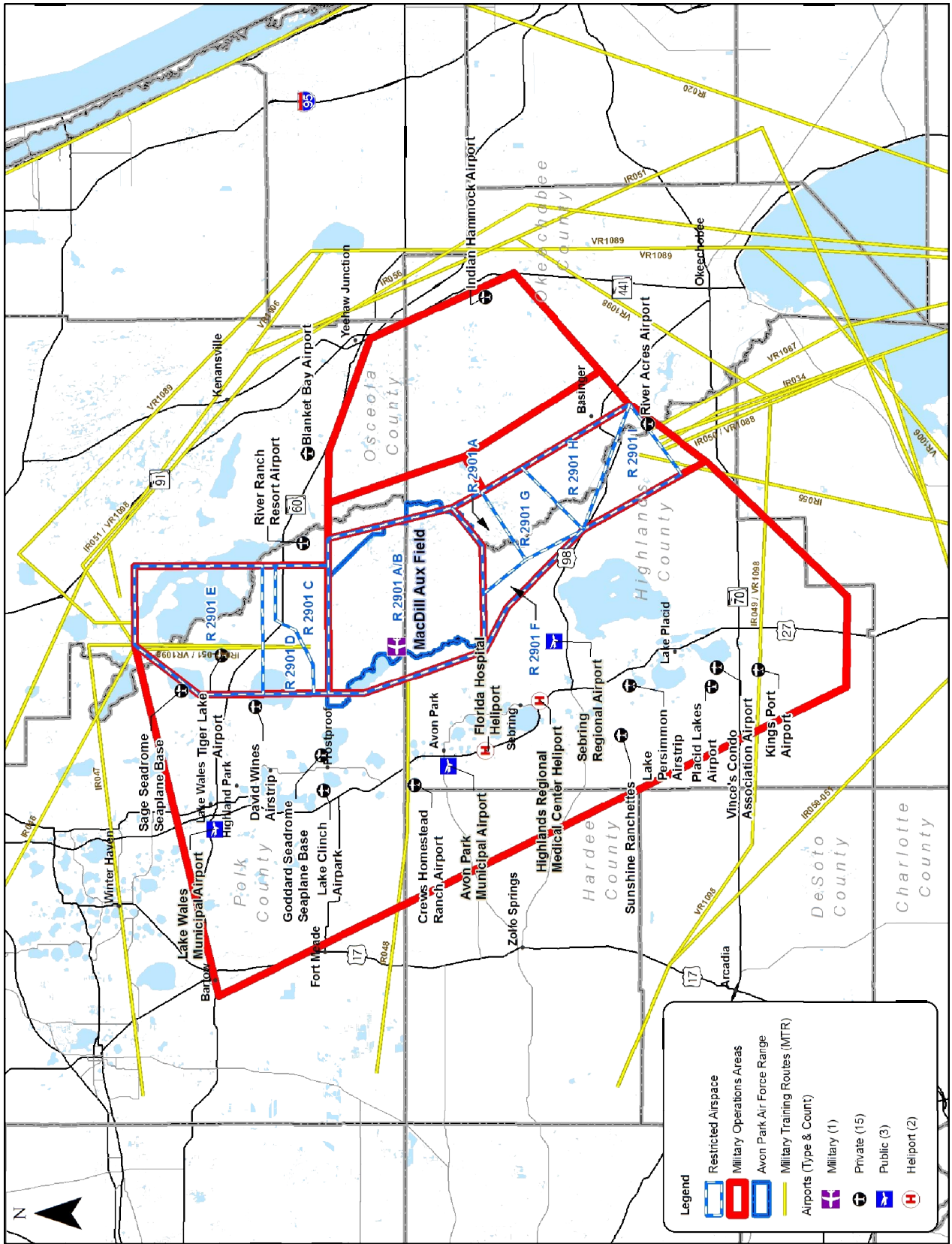
## 6.2.4 Low Level Flight Areas

Multiple types of aircraft conduct training operations within the low altitude tactical navigation areas are shown in [Figure 6-6](#) as Avon North and Avon East. If population density increases underneath the low level training areas, the required altitude for flight operations is subject to being adjusted upwards to meet federal regulations and to minimize noise and



# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

Figure 6-4: Private Airfields in Close Proximity to APAFR



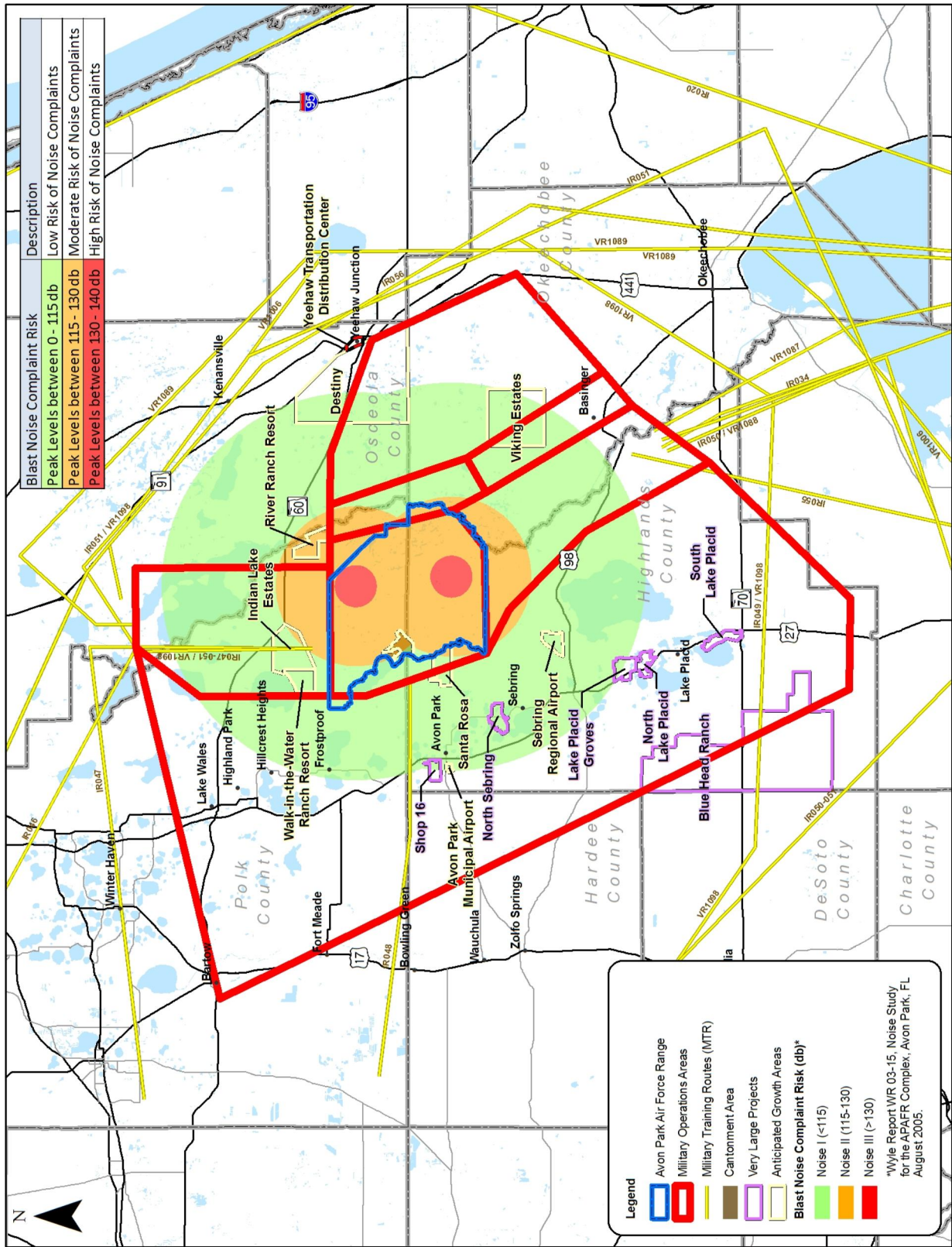
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# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

Figure 6-5: Risks of Blast Noise Complaints

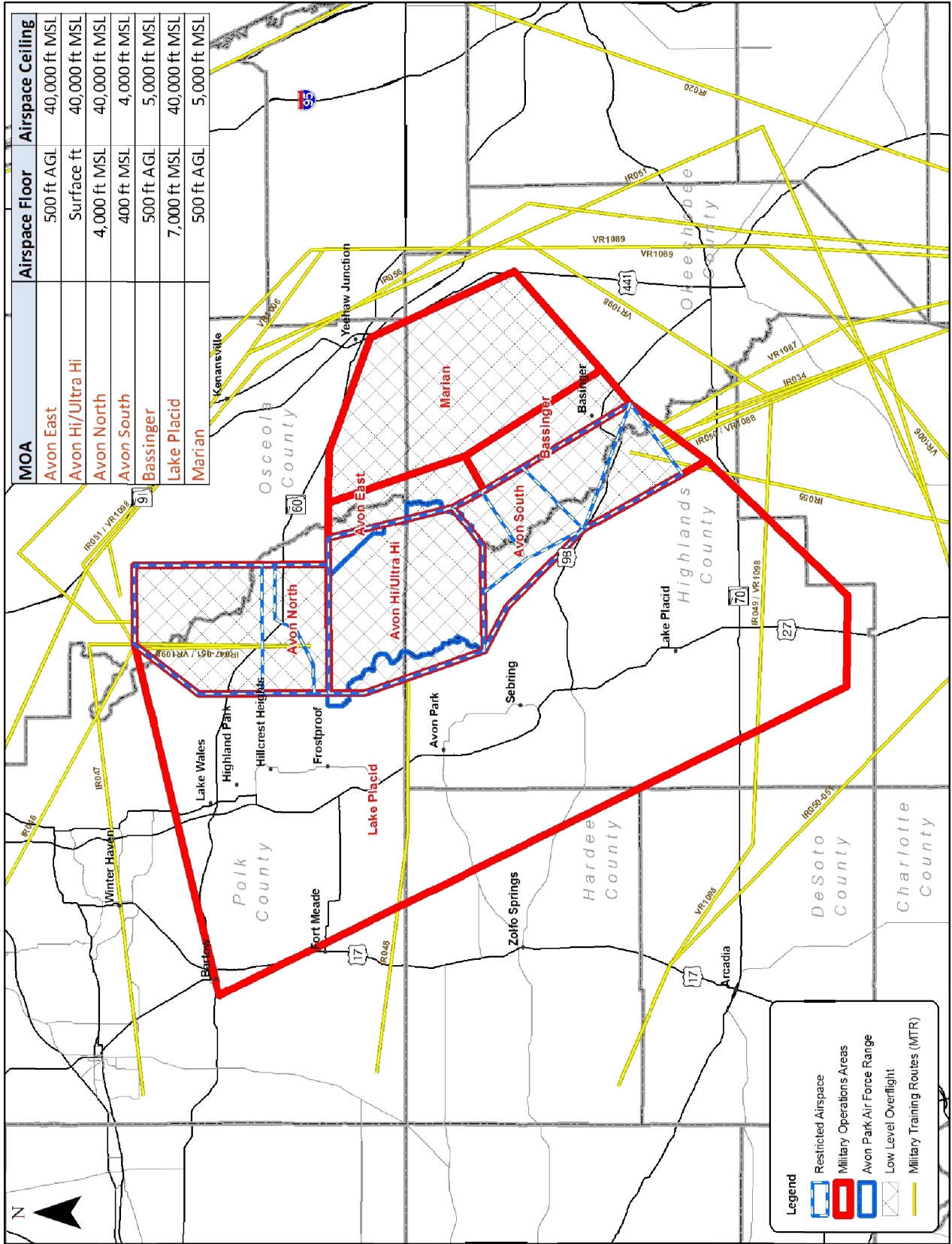






# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

Figure 6-6: Low Level Over Flight





risk to the population underneath. Increases in altitude would severely impact the training capability of the military utilizing APAFR.

## 6.2.5 Aircraft Noise

Department of Defense (DoD) Instruction for aircraft noise assessment divides noise exposure into three Noise Zones:

- Noise Zone 1, Day/Night Level (DNL) <65, is an area of minimal impact where limited noise reduction (or sound attenuation) may be recommended.
- Noise Zone 2, DNL 65-75, is an area of moderate impact where some land use controls are needed.
- Noise Zone 3, DNL >75, is the most severely affected area and requires the greatest degree of land use controls to encourage compatibility.

Figure 6-7 shows the aircraft noise on record for missions at APAFR.

In addition to noise zones, areas of concern may be defined where all land uses are considered to be compatible (less than 65 DNL) but some degree of land use controls is recommended in order to protect the long term viability of the range and ensure public safety; such as areas subject to frequent aircraft overflight and noise exposure. These areas may align with critical ingress and egress corridors or areas under MOAs and MTRs that provide participating aircraft access to the range. There are currently no Noise Zones associated with APAFR impacting the County.

## 6.2.6 Bird / Aircraft Strike Hazards (BASH)

A bird strike hazard exists at APAFR due to the presence of resident and migratory bird populations, and the abundance of habitat existing on and in the immediate vicinity of the range. Significant water bodies include Lake Arbuckle, Arbuckle Creek, and the Kissimmee River. Numerous swamps and marshes throughout the area also provide aquatic

habitat. Over 82,000 acres of APAFR (approximately 79% of range property) remain in a natural vegetative state. Additionally, other bird attractants such as landfills can attract birds creating an incompatibility with military operations. For example, the Avon Park Correctional Institution maintains a landfill approximately 3 miles west of APAFR's Bravo Range, which serves as an attractant to vultures, gulls, and raptors. Figure 6-8 shows the locations of solid waste landfills and construction and demolition landfills, in the vicinity of APAFR based on data obtained from the Florida Department of Environmental Protection (FDEP). This data includes Active and Proposed Solid Waste Facilities according to the FDEP.

## 6.2.7 Lighting

Outdoor lights can cause difficult and unsafe flying conditions when located near airfields or within Military Training Routes used during night hours with night vision equipment. Ground lighting can interfere with a pilot's vision or with night vision instrumentation or equipment. Ground lighting may also cause confusion with approach landing patterns (Santa Rosa 2003). Examples of ground lighting that can interfere with night vision equipment are residential street lighting, stadium lighting, amusement parks, golf courses and driving ranges (if lit at night), and parking lot lighting. Mobile lights (from sources such as motor vehicles or roaming spotlights) can also cause pilot disorientation and difficulty with night vision equipment. APAFR's Restricted Airspace areas (R 2901 A-I) are the locations where this type of training occurs as shown in Figure 6-9.

Training for night operations is mission-essential for many APAFR tenants. Light encroachment can be light trespass, glare, sky glow or any unintended consequence from artificial lighting. Light trespass is illuminating areas not intended. Glare results from overly bright lights and interferes with vision. Sky glow is the illumination of the sky from artificial sources.



# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

Figure 6-7: Aircraft Noise

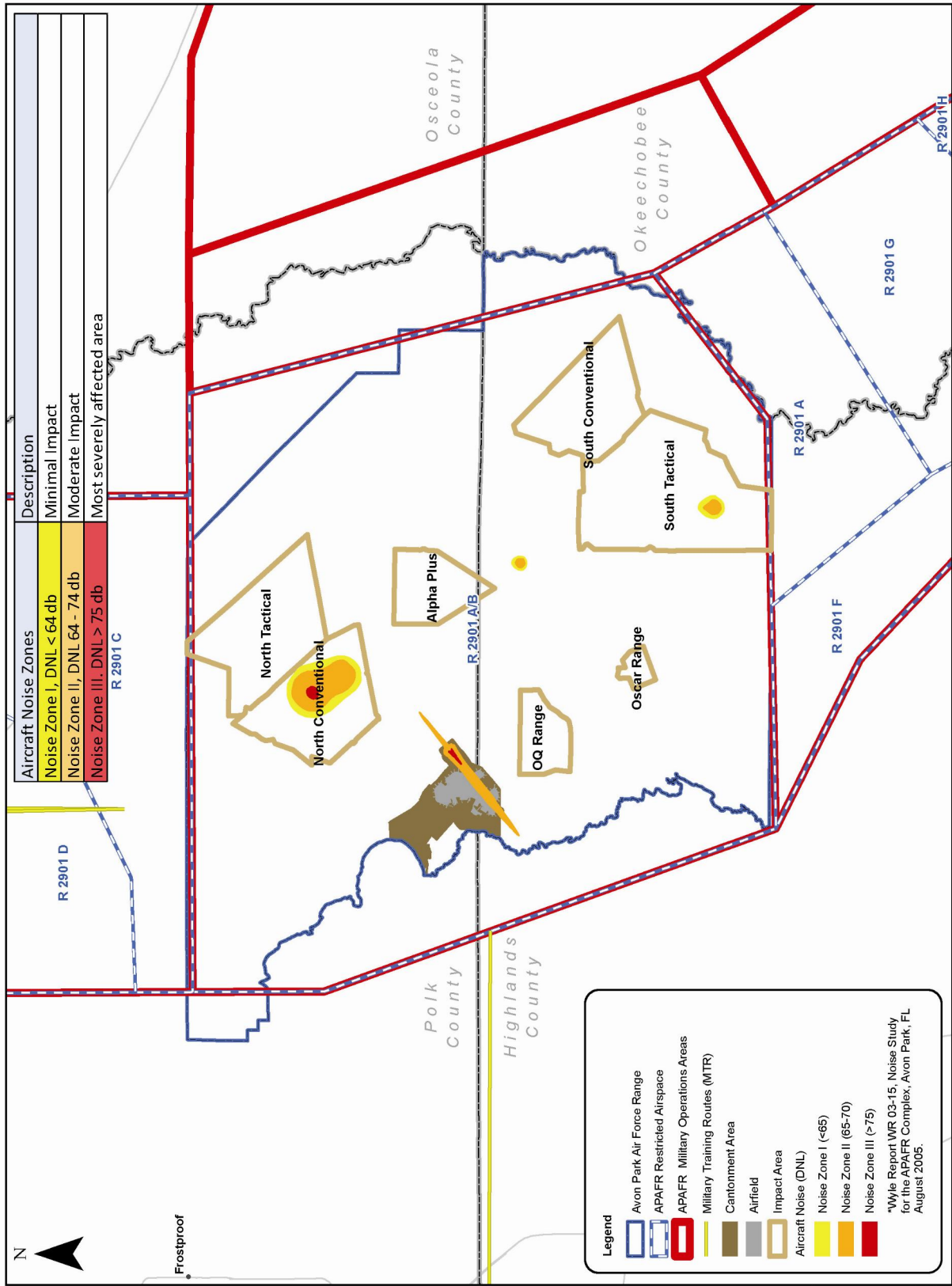
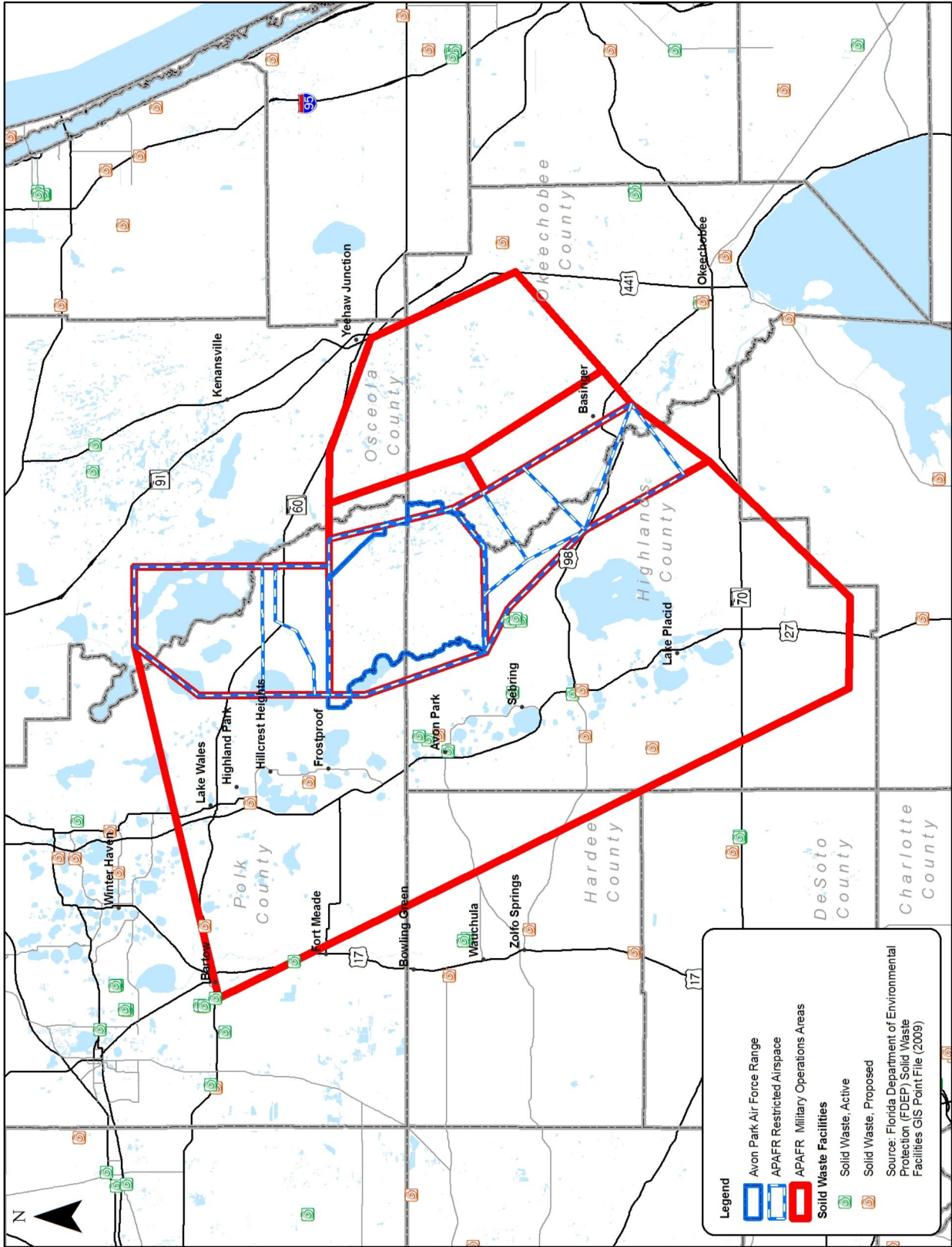






Figure 6-8: Active and Proposed Solid Waste Facilities (Source: FDEP)



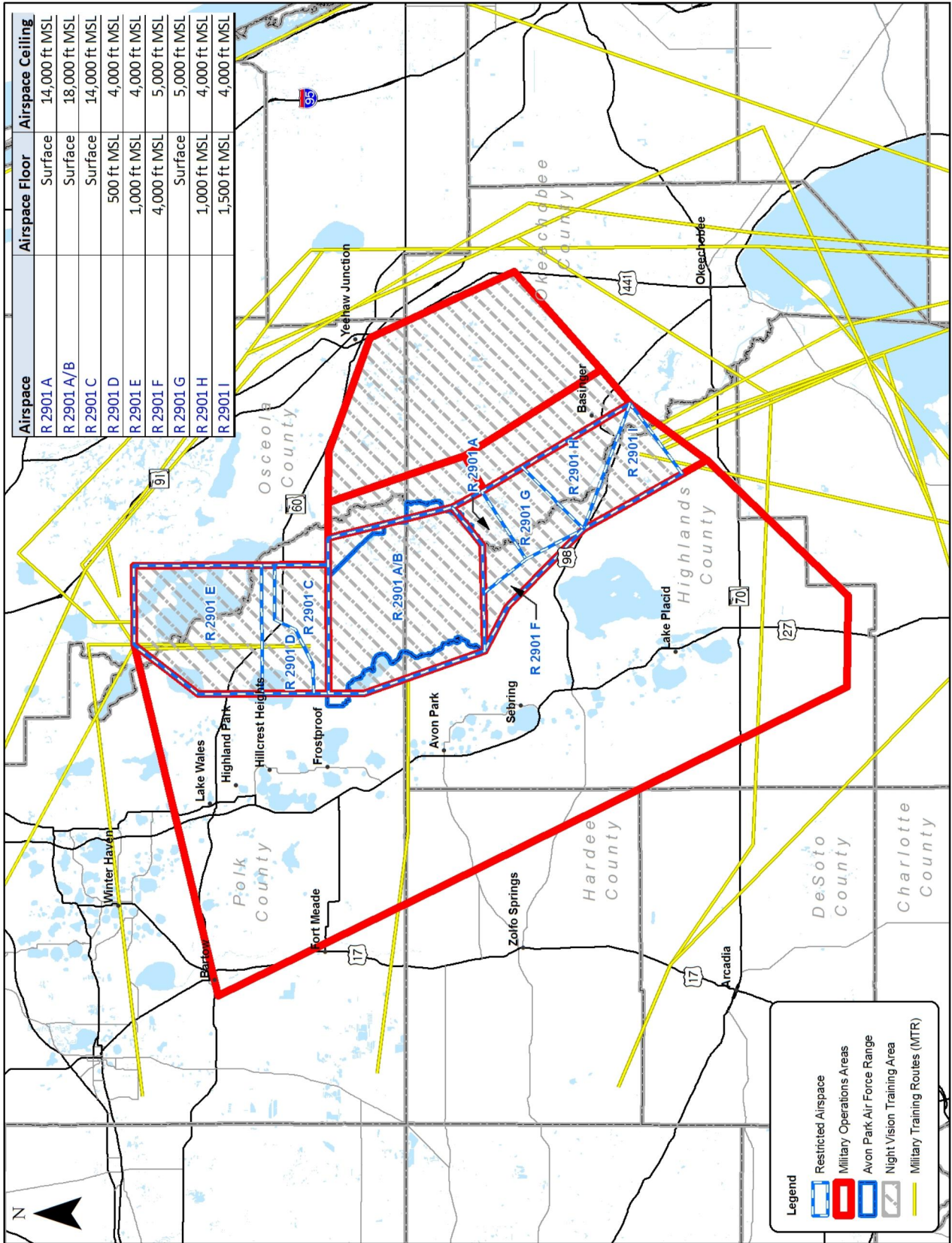
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# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

Figure 6-9: Night Vision Training Areas Near APAFR



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## 6.2.8 Conservation Resources

In addition to recreation uses, the property at APAFR is also managed for natural resources benefits, including income generating endeavors such as cattle grazing and forest management.

Cattle Grazing. Approximately 96,000 acres are leased for cattle grazing. The program is implemented in accordance with annual grazing management plans considering herd management needs and natural resource conservation. The cattle grazing program at APAFR is self-sustaining. Approximately \$150,000 is generated annually from grazing leases. Receipts are used to maintain facilities and improvements, as well as for salaries of personnel hired to implement the program. The indirect benefit of cattle grazing includes construction and maintenance of fencing as well as wildfire hazard reduction.

Forest Management. Over 35,000 acres are managed for production of wood fiber. Slash pines are planted on 18,000 acres and are clear cut and replaced at a rate of 250 to 350 acres per year. The remaining 19,000 acres are managed naturally through selective thinning. Forest management is also a self-sustaining program, generating over \$350,000 annually. Income from timber sales pays for the personnel to manage the program and funds the road and trail network necessary to support the program. Forest Management personnel and equipment also support the Range's land management program. Under federal law, four percent of the net income from timber sales is returned to local counties.

Endangered Species. There are numerous federal and state listed species, both plant and animal occurring on the Range. The Air Force has an active management program that monitors individual species' populations and implements management activities to maintain habitat quality for these species.

Wetlands and Floodplain Protection. Over 50 percent of the installation is classified as wetland or

floodplain. The Air Force has inventoried and mapped these sites, as required by federal law (Air Force 2008).

Conservation Through Fire Management. Florida Statutes recognize prescribed burning as being in the public interest and therefore it does not constitute a public or private nuisance when conducted under applicable state air pollution statutes and rules.

The County should pursue mechanisms such as deed restrictions on lots or acreages in areas that may experience smoke and air particulates from prescribed burning on agricultural and conservation lands on the Range. Buyers and potential buyers should be informed of the use of fire management programs such as prescribed burns on the Range and be told that they may experience smoke and odors from these fire management practices.

Figure 6-10 provides the various conservation resources in and around APAFR.

## 6.2.9 Transportation Interchanges and/or Corridors

The concern with transportation interchanges and corridors is based more upon the secondary effects than initial implementation efforts. The construction of new roadway interchanges and/or corridors will promote new development or redevelopment in their vicinity. With respect to APAFR, it is important new interchanges and corridors are planned to avoid the secondary growth nearby that could create an incompatibility issue with the military's mission at APAFR. Figure 6-11 shows the primary arterial roads near APAFR and the study area for the proposed Heartland Coast to Coast Transportation facility.

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# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

Figure 6-10: Conservation Resources In and Around APAFR

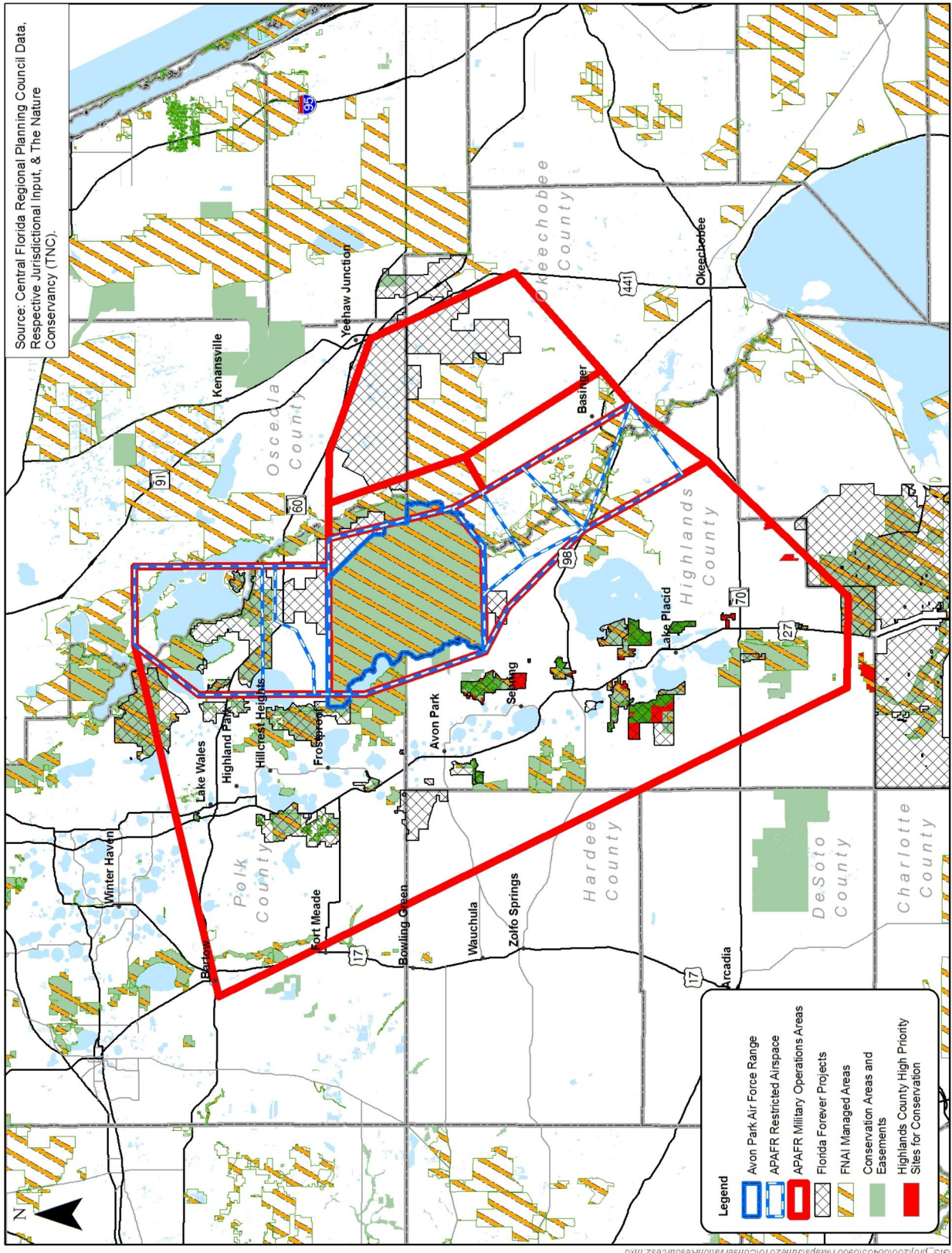
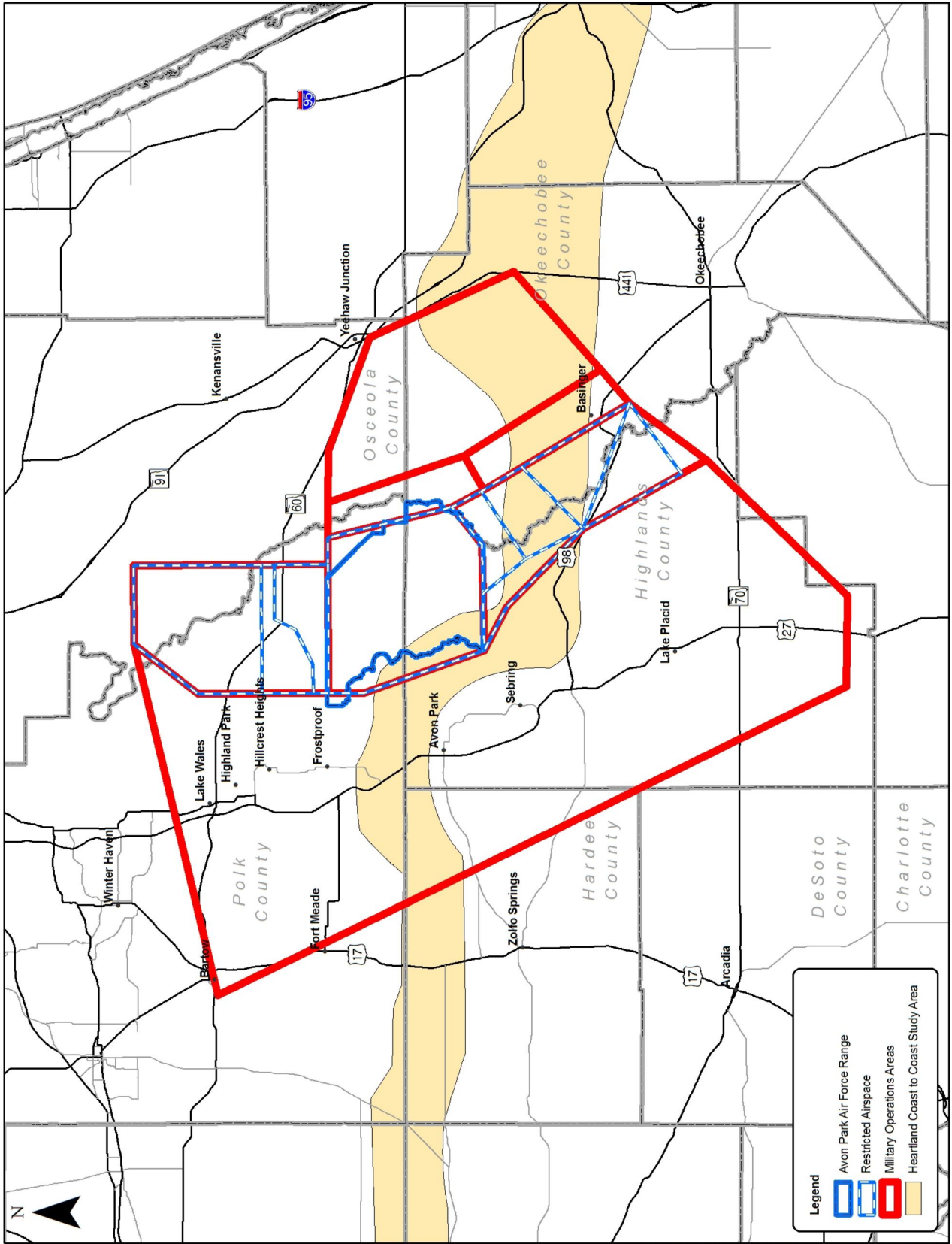






Figure 6-11: Primary Arterial Roads and Study Area for the Proposed Heartland Coast to Coast Transportation Facility Near APAFR



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## 6.2.10 Public Access

Access for all recreational pursuits is determined weekly and is dependent on training activities at APAFR. Military exercises can restrict public access to management units or can close the entire Range. Up-to-date information about open/closed areas is posted at the Outdoor Recreation Office where recreation visitors must check in. Access information is also posted on a public website. Because scheduled mission activities typically occur from Monday through Thursday, most recreational use occurs during the weekend. During a typical year, weekend users of the Range can expect the range to be closed approximately 10% of the time. The majority of APAFR users are from Central and South Florida. Impact areas are always closed to recreation visitors.

The recreational opportunities offered by APAFR focus on dispersed, resource-based recreation such as hunting, bird watching, hiking, fishing, and primitive camping. To manage public access, de-conflict public recreation and military use, and protect public safety, the installation has been divided into public management units which are open or closed as directed by planned military uses.

Of APAFR's 106,073 acres, approximately 82,000 acres are now available for recreation. Camping is allowed in four areas totaling approximately 160 acres; hiking occurs on 36 miles of trails; fishing occurs on approximately 5,025 acres of lakes and ponds and along 24 miles of rivers, streams, and canals; and approximately 130 miles of roads provide driving and sightseeing pleasure. Throughout the year, the public can purchase recreation permits allowing fishing, camping, hiking, and bird-watching.

- Camping. Three public use campground areas and a military use campground are located on APAFR:
  - Willingham (near Lake Arbuckle);
  - Morgan Hole (near the center of the range);
  - Fort Kissimmee (on Kissimmee River); and

- Austin Hammock (military use campground, main base area).

In addition to the campground areas, there are two day-use areas at APAFR

- Arnold Hammock (northwest, near Lake Arbuckle); and
- Tomlin Hammock Lake (southwest).

- Fishing. Fishing is available along 24 miles of rivers, streams, and canals and 5,025 acres of ponds and lakes. Three catfish ponds and Tomlin Lake Hammock are stocked and managed for public access. Fishing can occur at any area on APAFR where access is allowed.
- Hunting. Public access to the range for recreational hunting began in 1951. The program was first administered by the Florida Game and Freshwater Fish Commission until 1983 when the Air Force took over management of the program. The Air Force issues recreation permits for public recreation activities. Until recently, annual demand for hunting permits exceeded supply. Increased military activities have impacted demand due to lack of advance planning capabilities (Lichtler 2004).
- Hiking. Over 30 miles of hiking trails are available at the Lake Arbuckle National Recreational Trail. The Arbuckle Nature Trail Boardwalk, the Sandy Point Wildlife Refuge Trail, and the Florida National Scenic Trail. Additionally, Avon Park Air Force Range offers 130 miles of roads for windshield wildlife sightseeing. Four trails at Avon Park Air Force Range are designated for hiking, including a loop trail (northwest corner, part of the Florida National Recreation Trail system), a boardwalk (to observation tower at Lake Arbuckle), a trail at the Sandy Point Area, and the Florida National Scenic Trail. Approximately 11 miles of the Florida National Scenic Trail run through APAFR and this trail is one of eight National Scenic Trails in the United States. The trail generally follows the western edge of the



## AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

Kissimmee River floodplain and is oriented in a north-south direction. The portion of the trail located within Avon Park Air Force Range was incorporated on November 6, 1989, and is cooperatively managed through a certified agreement focusing on protection and management. The Air Force, the USDA Forest Service, and the Florida Trail Association renewed the certified agreement on January 22, 2002. Additionally, the Air Force and the Florida Trail Association developed a cooperative agreement to maintain the trail (Wimmer 2003).

- **Wildlife Observation.** Demand for wildlife observation opportunities and nature study is increasing at Avon Park Air Force Range. A 30-foot observation tower at Lake Arbuckle is a popular year-round site for birdwatchers and organized groups. The 600-acre Sandy Point Area is also popular, receiving a number of visits per year (Air Force 2008).

Figure 6-12 shows the Florida National Scenic Trail running north and south through the southeast section of APAFR as an example of existing hiking trails.

### 6.3 ANALYSIS

To facilitate the analysis of land use for the issues identified in the previous section, the County's Existing Land Use, Zoning Map and Future Land Use Map are provided in Figures 6-13, 6-14, and 6-15, respectively. As previously mentioned, this report covers multiple jurisdictions (counties and cities) with different land use designations adopted for related planning maps (zoning, existing land use, sub-district, and future land use). To facilitate a uniform analysis of land use across the APAFR JLUS study area (4 counties and 3 cities), the zoning/sub-district, existing land use, and future land use map designations were generalized. The analysis is based on the generalized land use designations.

People living or working near a military installation can expect impacts such as noise, smoke, and dust

generated from ground and air operations. Quality of life for those living or working near an installation can be negatively affected when these impacts reach levels creating a nuisance. A potential risk to public safety also exists from the possibility of aircraft crashes or other operational accidents at or near an airfield. The extent and frequency of negative impacts affecting people living near airfields will vary based on the type of aircraft, airfield operating hours, airfield ground activities, frequency of flight, ground training activities, and proximity to the airfield. Future residents choosing to live near APAFR will be impacted by flight and ground activities.

#### 6.3.1 Development Near APAFR's Boundary

The areas of the County within three miles of APAFR's boundary include the extreme southwest corner of the County. The Zoning and Future Land Use Map designation for this area is Agriculture. Since the lands within the 3-mile buffer are solely Agriculture, they provide an opportunity to preserve security and limit encroachment concerns over the long term.

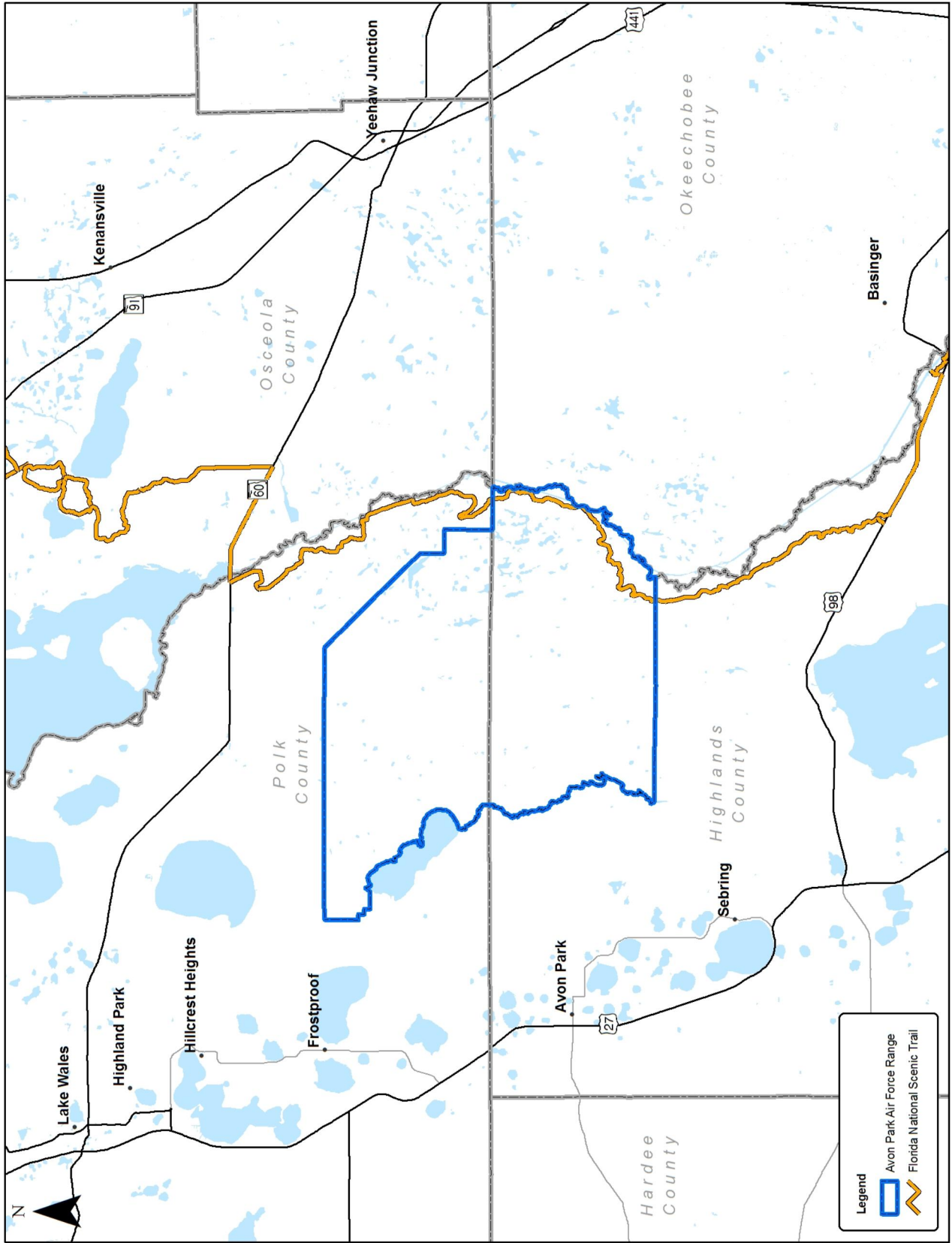
#### 6.3.2 Airspace Controls

The Secretary of the Air Force has issued guidance documents for the planning, operations, management, safety, facilities, and security of Air Force ranges. Air Force Instruction (AFI) 13-212 Addenda A is one such guidance document identifying overflight avoidance areas both on and off APAFR's range. To the north, the avoidance areas include the populated areas of Walk-in-the-Water Ranch Resort, Indian Lake Estates and Westgate River Ranch Resort. To the west and southwest the avoidance areas include the cities of Avon Park and Sebring, Santa Rosa Ranch, and Avon Park Municipal Airport and Sebring Regional Airport. Within the installation's boundaries, aviators are instructed to avoid the cantonment area and MacDill Auxiliary Airfield.





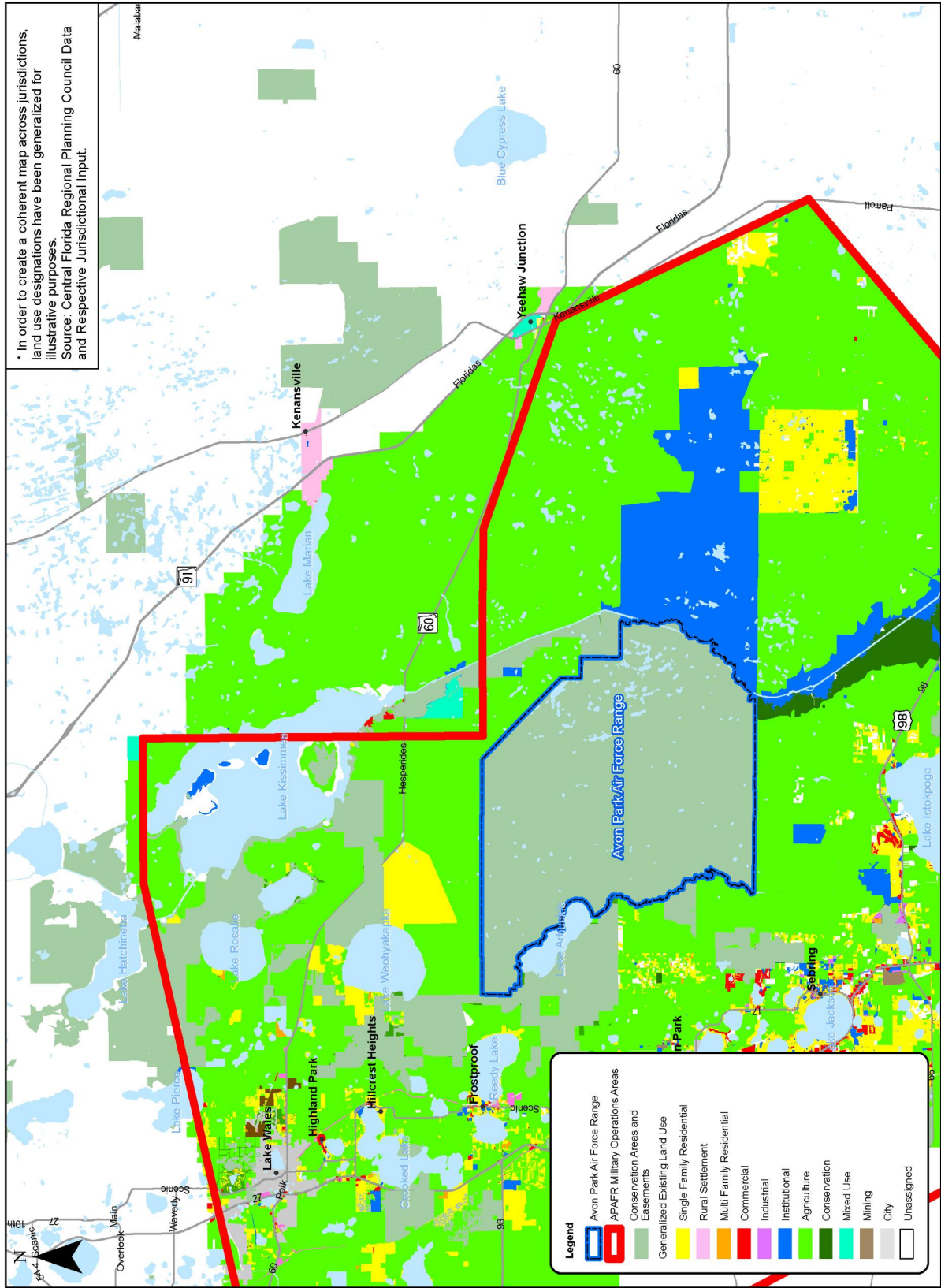
Figure 6-12: Hiking Trail (Florida National Scenic Trail) Across Southeast Corner of APAFR



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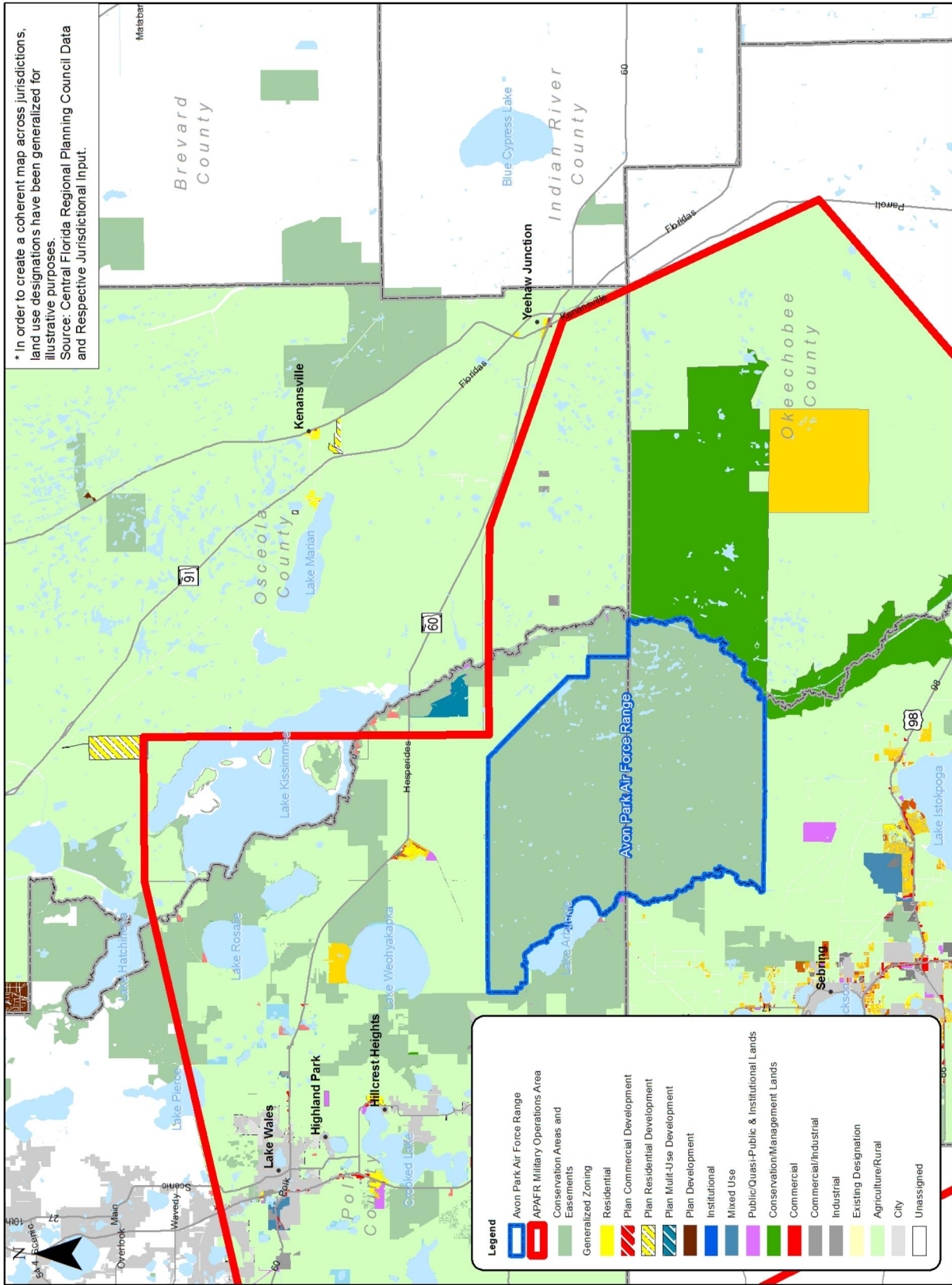
Figure 6-13: Existing Land Use Map





# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

Figure 6-14: Zoning Map

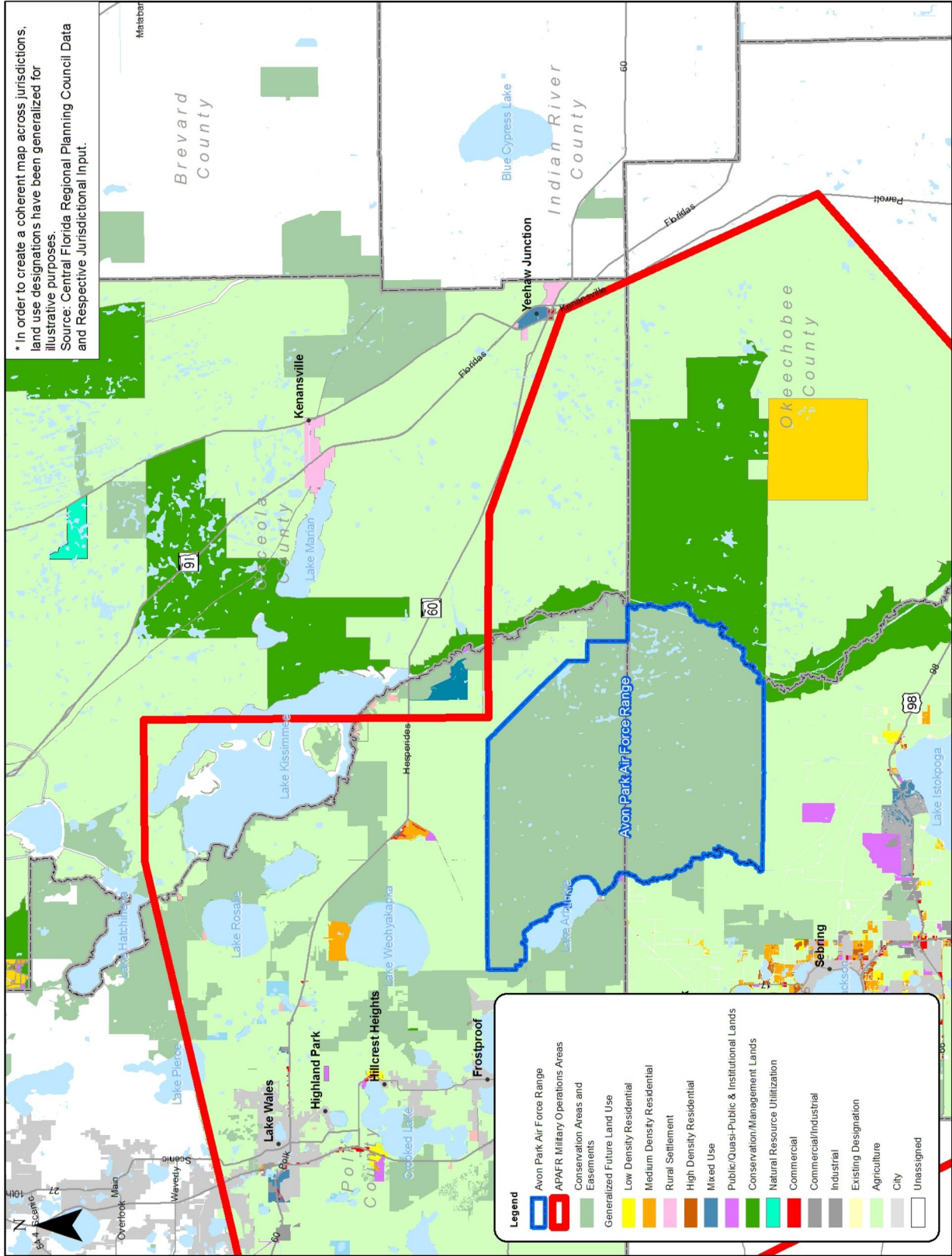






# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

Figure 6-15: Future Land Use Map





### 6.3.3 Blast Noise

The nature of the blast noise in the County is in the low to moderate ranges as previously shown in Figure 6-5. The low range area covers a area of the southwest section of the County. The moderate blast noise area covers a small area just inside the county line over an area of agriculture and conservation lands. The effects in the moderate blast noise area can be expected to present a moderate risk of noise complaints. The effects in the remaining moderate range area are minimal due to the Agriculture and Conservation designations on the County's Future Land Use Map.

### 6.3.4 Low Level Flight Areas

The low level flight training area covers two different portions of southwest Osceola County and includes an airspace floor from the ground surface to an airspace ceiling up to 14,000 feet above mean sea level (MSL). The result of land use in this area may be perceived as a nuisance resulting from low level fixed-wing and rotor aircraft flying overhead and increasing sound and having other effects associated with a low flying aircraft. The majority of this area is Conservation or Agriculture according to the County's Future Land Use Map.

Portions of Restricted Airspace R2901 E lie in Osceola County. R2901 E has an airspace floor elevation at 1,000 feet above ground surface, and therefore, objects extending greater than 400 feet would be incompatible with the Range's current mission in these areas.

### 6.3.5 Aircraft Noise

According to reports provided by APAFR, the only aircraft overflight noise currently modeled for APAFR occurs at the Airfield (see Figure 6-7). The APAFR Airfield has one primary runway with straight-in arrivals and departures by aircraft flying to and from the facility. A limited number of pattern operations are flown to the south of the airfield. Environmental noise mapping software (NOISEMAP 7.2) was used by others to calculate and plot the 65-dBA through 75-dBA contours for the flight opera-

tions at the airfield; these contours are shown in the Noise Exposure Zones. As would be expected from an airfield that has only straight-in arrivals and departures and limited patterns to the southeast of the runway, the contours generally extend straight out from the runway ends. The major contributor to the noise at the airfield is the C-141B, followed by the C-130, and the A-10A (Wyle 2005).

The 65-dBA contour is contained within the range boundary. The 65-dBA noise contour extends about 5,000 feet past the end of Runway 05, and 4,200 feet past the end of Runway 23 where it comes within 2,200 feet of the southwest range boundary. It covers an area of about 388 acres. The 70-dBA contour, which remains very close to the airfield, covers an area of about 146 acres. The 75-dBA contour occurs at the beginning of Runway 23 and covers an area of about 20 acres. This is due to the majority of take-offs being conducted on Runway 23 (Wyle 2005).

### 6.3.6 Bird / Aircraft Strike Hazards (BASH)

Areas identified having potential effects on BASH near APAFR are natural areas. There are no man-made areas such as landfills in the areas of BASH concern (low level flight area) in Osceola County. The natural areas include the area near Lake Kissimmee comprised of open water and marsh areas and Brahma Island. Whereas these areas create compatible land use buffers, they have the potential to create habitats conducive to nesting and rookeries incompatible with the low level approach areas utilized by APAFR.

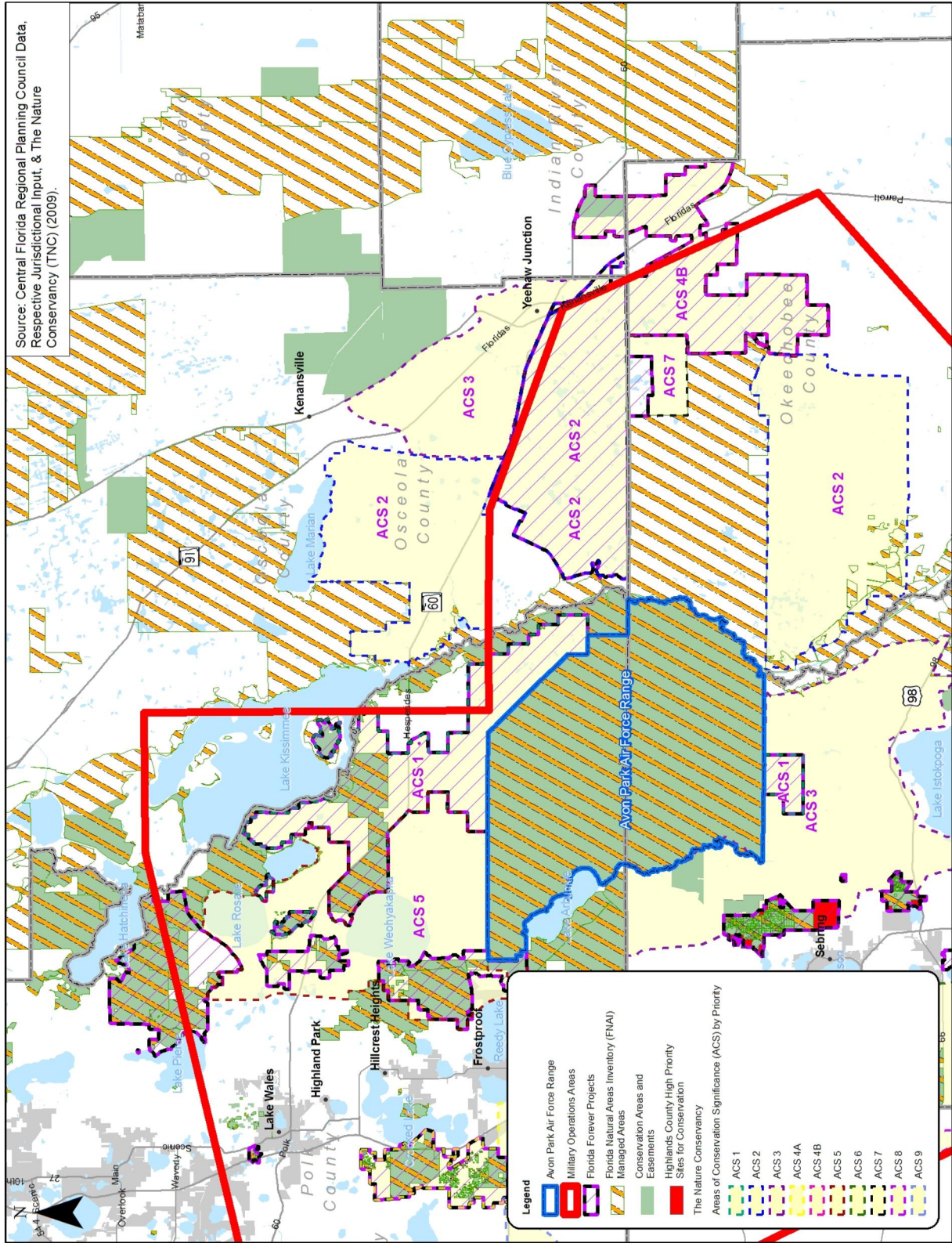
### 6.3.7 Transportation Interchanges and/or Corridors

As previously explained, the secondary effect of new transportation interchanges and/or corridors is the subsequent growth in these areas. With respect to compatible land use near APAFR, future development plans at and near interchanges (new and existing) and along proposed transportation corridors should be coordinated with APAFR and in line with the recommendations found in this report.





Figure 6-17: The Nature Conservancy's Priority Areas of Conservation Significance (ACS) Near APAFR











## SECTION 9 - AVON PARK AIR FORCE RANGE



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## 9.1 INTRODUCTION

APAFR is a United States Air Force range and air-ground training complex, located east of the City of Avon Park as shown in [Figure 9-1](#). APAFR was first opened during World War II under the name of Avon Park Army Air Field. The Third Air Force used the airfield for training B-17 air crews in air-to-ground bombing and for antisubmarine patrols. After World War II ended, the base was closed and placed in a caretaker status. In 1949, the base was transferred to the newly created US Air Force. It was then renamed Avon Park Air Force Base. In 1956, the base was renamed again to Avon Park Air Force Range. At this time a major improvement program was begun. At its height, the base spread across 218,000 acres (880 km<sup>2</sup>). Over the succeeding years the US Air Force declared much of the land surplus and disposed of it. The last major divestment in 1983 brought the Range to its current size.

APAFR consists of approximately 106,000 acres of land of which about 82,000 acres are open to the public for recreation. APAFR includes Avon Park Air Force Auxiliary Field (also known as MacDill AFB Auxiliary Field). The airfield consists of an 8,000 ft main runway, an operational control tower, an aircraft rescue and firefighting facility and limited ramp and hangar facilities. There are no published instrument approach procedures and the airfield is limited to VFR operations only.

The host unit for the APAFR is the Deployed Unit Complex (DUC), 23rd Wing, Detachment 1, which is a unit of the 23d Wing (23 WG), an Air Combat Command (ACC) composite fighter and rescue wing located at Moody Air Force Base, Georgia. In addition to the Avon Park Air Force Range, the DUC also oversees a flight line facility at nearby MacDill AFB for transient military flight crews, maintenance crews and aircraft utilizing the APAFR. This permits visiting squadrons to have ready access to APAFR while concurrently taking advantage of the more robust billeting and maintenance support capabilities at MacDill. This combination of facilities pro-

vides extensive, diversified and convenient training airspace and ranges with unique training capabilities for military air, ground, and air-to-ground training.

## 9.2 ISSUES

Based on information provided by APAFR and workshops with the public, JLUS Policy Committee and JLUS Working Group, issues were identified with respect to encroachment on APAFR. During the numerous Public workshops, Policy Committee meetings, Working Group meetings and Public workshops, the issues were identified and explored. Appendix A—APAFR JLUS Public Presentations provides copies of this information plus all public presentations included with this study.

The following are the issues identified for APAFR with respect to joint land use planning activities:

- [Development Near APAFR's Boundary](#)
- [Airspace Controls](#)
- [Blast Noise](#)
- [Low Level Flight Areas](#)
- [Aircraft Noise](#)
- [Bird / Aircraft Strike Hazards \(BASH\)](#)
- [Lighting](#)
- [Conservation Resources](#)
- [Transportation Interchanges and/or Corridors](#)
- [Public Access](#)

Each issue listed above is described further in the following subsections with descriptions and graphics providing additional information.

### 9.2.1 Development Near APAFR's Boundary

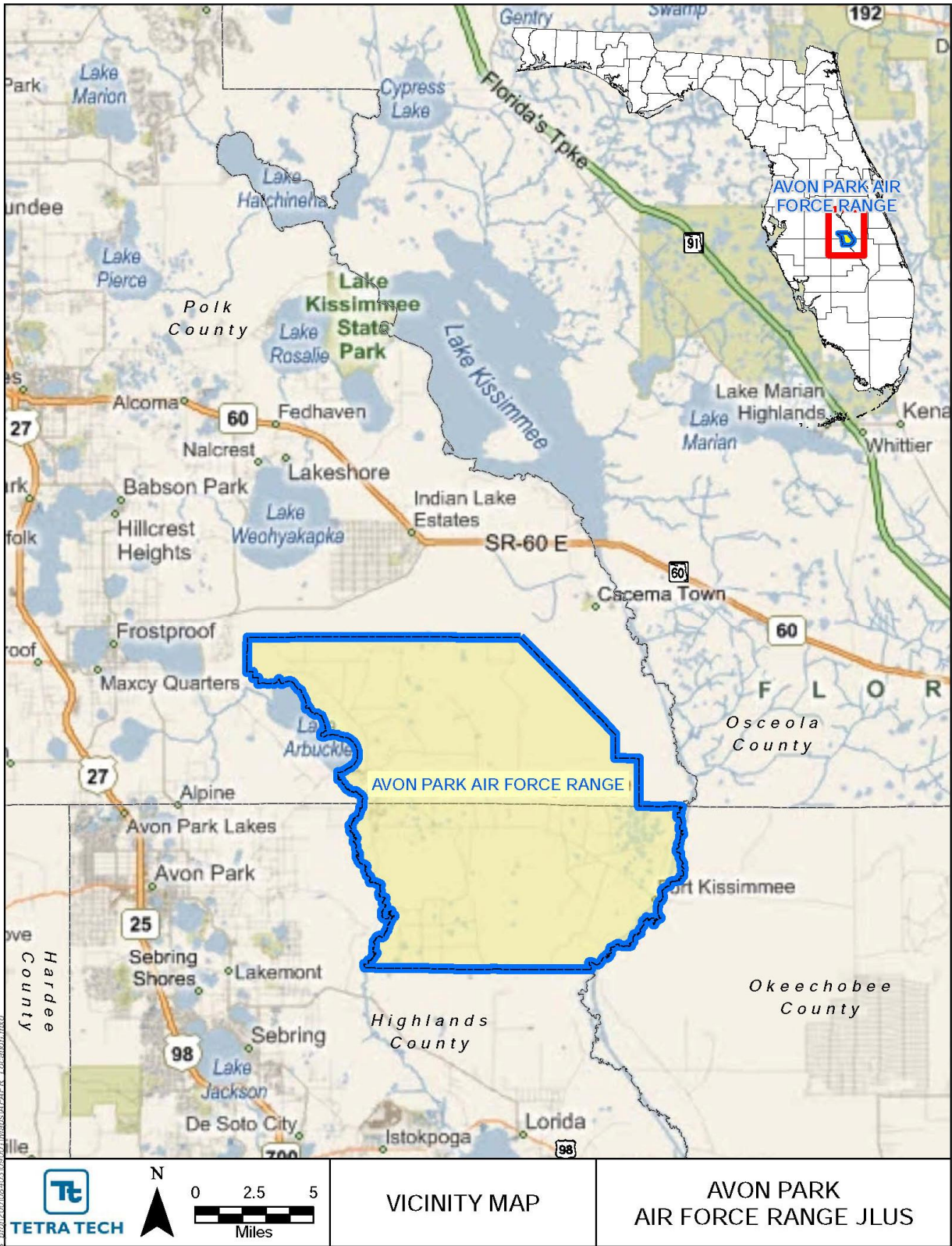
Development near the boundary of a military reservation can create security concerns, promote excessive light during nighttime hours, and/or encourage other encroachments. For APAFR, development around APAFR's perimeter is an obvious concern and can be managed by recognizing and implementing necessary land use controls. [Figure 9-2](#) shows the areas currently within approximately three miles of APAFR's boundary.





# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

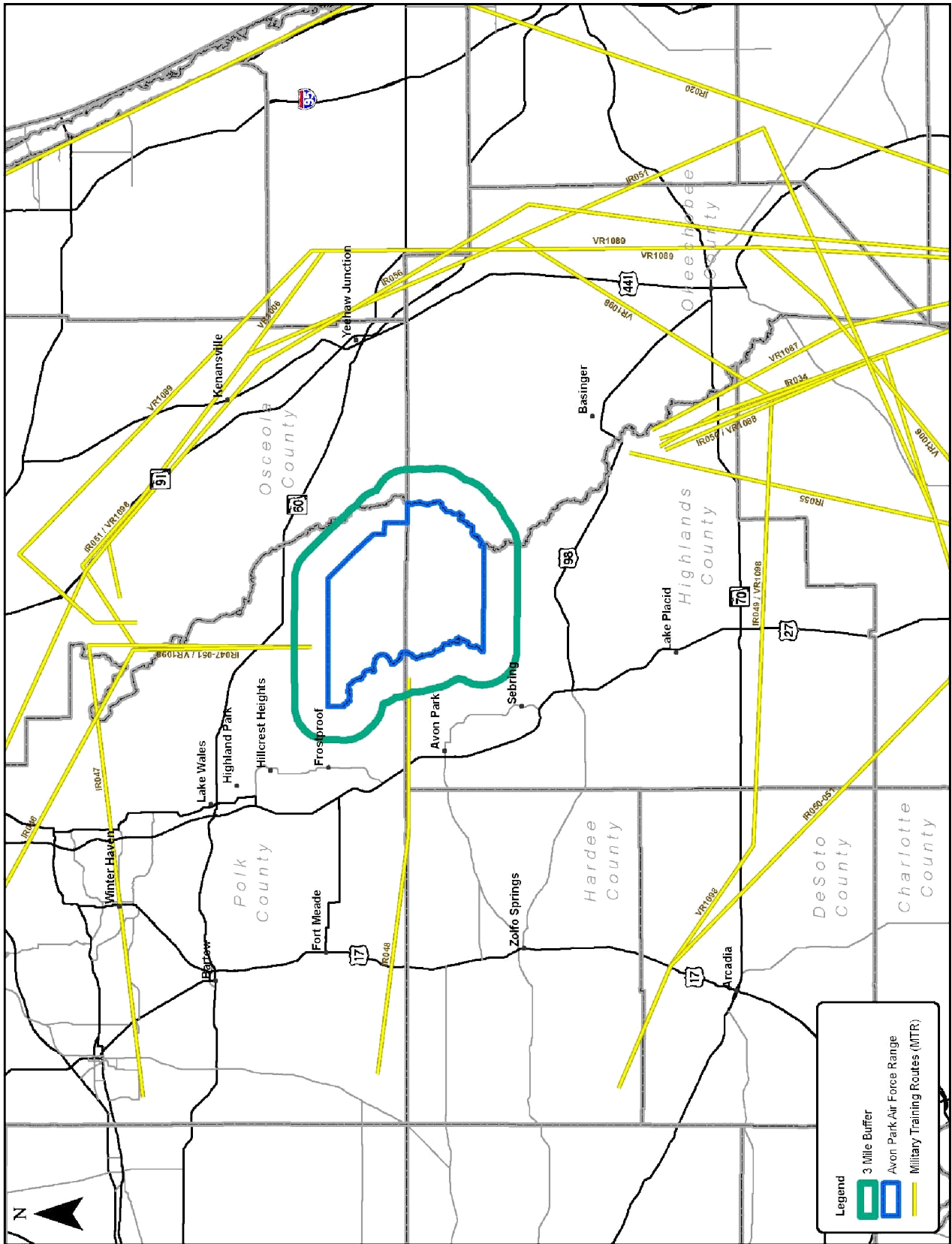
Figure 9-1: Avon Park Range Location Map with Boundary.





# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

Figure 9-2: Three Mile Land Use Buffer Around APAFR Boundary



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# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

## 9.2.2 Airspace Controls

In addition to 106,034 acres on the Range ground assets, APAFR’s air-to-ground training operations are further enhanced by overlying restricted airspace, military training routes (MTRs), and Military Operations Areas (MOAs). According to the Federal Aviation Administration (FAA), restricted airspace is an area of airspace denoted by the existence of unusual, often visible, hazards to aircraft such as artillery firing, aerial gunnery, or guided missiles. The FAA also views penetration of restricted airspace without authorization from the local controlling agency as being potentially extremely hazardous to the aircraft and its occupants. Restricted airspace is depicted on aeronautical charts with the letter “R” followed by a serial number.

The DoD, in conjunction with the FAA, has established Special Use Airspace (SUA) to separate military sortie operations from other non-compatible aviation activities. The designation of SUAs identifies for other users the areas where such activity occurs, provides for segregation of that activity from other users, and allows charting to keep airspace users informed of potential hazards. Special use airspace includes: Restricted airspace, Prohibited airspace, MOAs, Warning Areas, Alert Areas, Temporary Flight Restriction (TFR), and Controlled Firing Areas.

The SUA overlying APAFR and its immediate sur-

roundings includes Restricted Airspace R-2901 complex and six military operations areas: Avon North, Avon South, Avon East, Lake Placid, Basinger, and Marian. Restricted airspace R-2901 complex, including subareas R-2901A through R-2901I, is used by aircraft to maneuver into position for bombing patterns and simulated attacks on Avon Park Air Force Range’s six weapons impact areas. Entry into R-2901 from the north involves MTRs IR-046, 047, and 051 and VR-1098. Aircraft from the south use MTRs IR-049 and 050 and VR-1088 and 1098. These military training routes are scheduled by MacDill AFB. Total airspace covers approximately 2,200 square miles and is shown in Figure 9-3.

Aircraft from all branches of the service—especially Air Force aircraft based at Homestead ARB, Patrick AFB, and Moody AFB—use the Range’s SUA. The operations conducted include laser operations, chaff and flare training, inert/practice ordnance deliveries, drop zone and landing zone operations, and assault field operations.

Military Operations Areas (MOA). A MOA is airspace established outside Class A airspace to separate or segregate certain non-hazardous military activities from instrument flight rule (IFR) traffic and to identify for visual flight rule (VFR) traffic where these activities are conducted (USDOT 2000). The R-2901 complex is surrounded by six MOAs, which provide range-supporting airspace (See Table 9-1).

Table 9-1: Description of Military Operations Areas (MOAs)

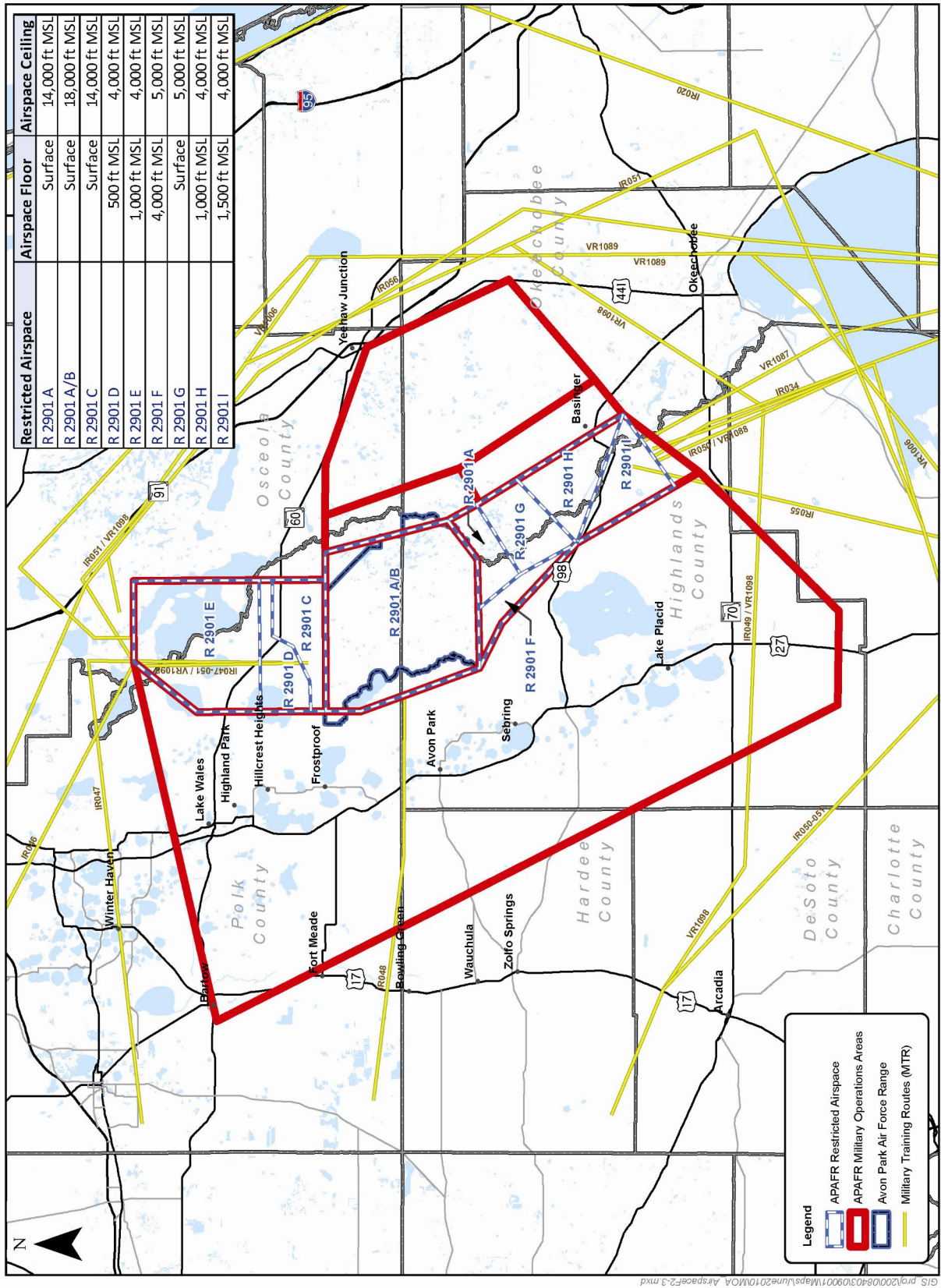
Airspace	Airspace Floor (feet)	Airspace Ceiling (feet)	Area (acres)	Controlling ARTCC
Avon North	5,000 MSL	17,999 MSL	79,423	Miami
Avon South	5,000 MSL	17,999 MSL	98,752	Miami
Avon East	500 AGL	13,999 MSL	31,359	Miami
Lake Placid	7,000 MSL	17,999 MSL	919,676	Miami
Basinger	500 AGL	5,000 MSL	35,776	Miami
Marian	500 AGL	5,000 MSL	173,567	Miami

Sources: USDOT 2000  
 Note: (a) Lake Placid Air Traffic Control Assigned Air Spaces (ATCAA) overlies MOA extending vertical limit of airspace to 23,000 feet MSL.  
 Key: AGL = Above ground level.  
 ARTCC = Air Route Traffic Control Center.  
 MSL = Mean sea level.





Figure 9-3: APAFR Restricted Airspace and MOAs





The Avon North MOA borders the Restricted Airspace on the north; the Avon East MOA borders the Restricted Airspace on the northeast; the Avon South MOA overlies the southern portion of the Restricted Airspace complex. The Basinger MOA borders the Restricted Airspace on the southeast. The Marian MOA borders the eastern boundaries of the Avon East and Basinger MOAs. The Lake Placid MOA borders the entire western side of the R-2901 complex.

Flight Operations. All aircraft operating at APAFR are transient aircraft; they fly in from off-site military installations such as MacDill AFB, Patrick AFB, and Homestead ARB. During the baseline year of CY 2000 only the F-16, A-10A, C-130, C-141B, and H-60 (Air Force) used the airfield facilities. Fixed-wing traffic accounts for about 75% of the total annual operations at the airfield, and rotary-wing traffic accounts for 25%. While only five different types of aircraft used the airfield during baseline year 2000, other aircraft have also used the airfield in the past, such as: F-15, F-117, B-52, B-1, F-14, F/A-18, P-3, S-3, C-5, C-17, UH-1, AH-1, and AH-64 (Wyle 2004a).

Numerous airfields and several federal airways ("Victor" routes) are within the vicinity of APAFR. Seventeen of the airfields are within MOAs and two airfields, River Ranch Resort and Blanket Bay, are located to the north of the Avon East and Marian MOAs. Of the various airfields, 15 are private, three are public, and two are heliports. Although River Ranch Resort Airport, located approximately 9 miles northeast of the Bravo impact area, is not within an SUA associated with the use of APAFR, aircrews using the range are alerted to its presence. [Figure 9-4](#) shows the airfields within close proximity to the APAFR.

Although no federal airways pass through the Restricted Airspace, several federal airways pass through the MOAs along the perimeter of the Restricted Airspace. Military pilots using APAFR are aware of, and are alerted to, the possible presence

of civil traffic in these areas.

### 9.2.3 Blast Noise

Noise produced by artillery fire and detonation of air-to-ground or ground-to-ground live ammunition, such as shell bursts, surface blasting, cratering charges and aircraft bombs and rockets are analyzed differently than other noise sources such as aircraft engines. This is because of the significantly higher energy created at low frequencies by these blasts. The higher energy blasts can induce structural vibrations which may generate additional annoyance to people, beyond the audibility of the sound created by the blast. Noise contours resulting from the firing of projectiles from weapons (muzzle blast at firing points) and the detonation of high explosive ordnance from aircraft in the vicinity of the targets extend beyond APAFR's boundary and are depicted in [Figure 9-5](#) (Air Force 2008).

- Peak levels between 0-115 decibel (dB) Peak present a low risk of noise complaints (comparable to Noise Zone 1)
- Peak levels between 115-130 dB Peak present a moderate risk of noise complaints (comparable to Noise Zone 2)
- Peak levels between 130-140 dB Peak present a high risk of noise complaints and possibilities of damage claims (comparable to Noise Zone 3)

Note - Peak Levels above 140dB Peak represents the threshold for permanent physiological damage to unprotected human ears. They also represent a high risk of physiological and structural damage claims (Wyle 2005 and AR 200-1 13 Dec 2007, Ch 14).

### 9.2.4 Low Level Flight Areas

Multiple types of aircraft conduct training operations within the low altitude tactical navigation area (designated as R 2901A-1) as shown in [Figure 9-6](#). If population density increases underneath the low level training areas, the required altitude for flight

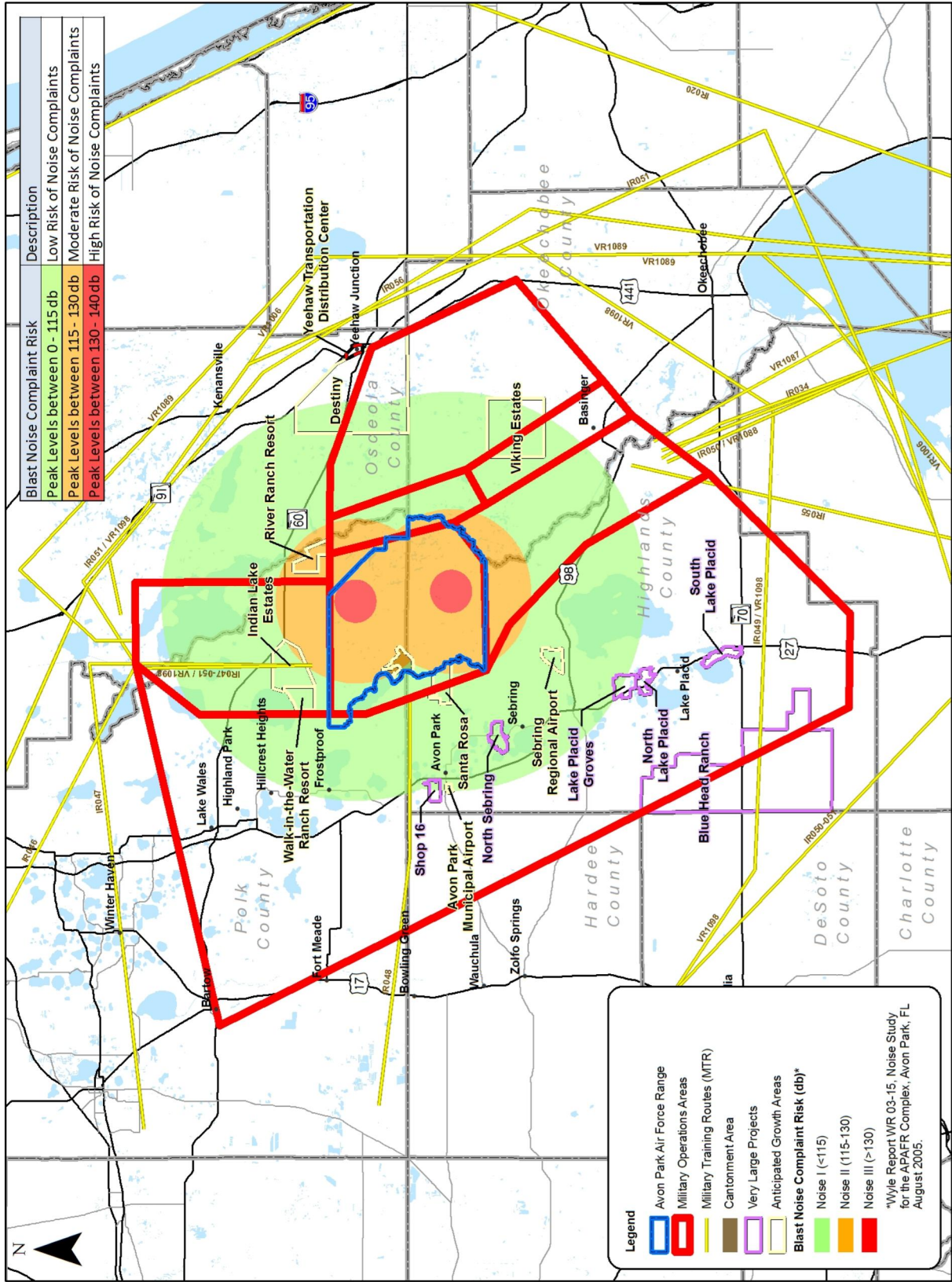








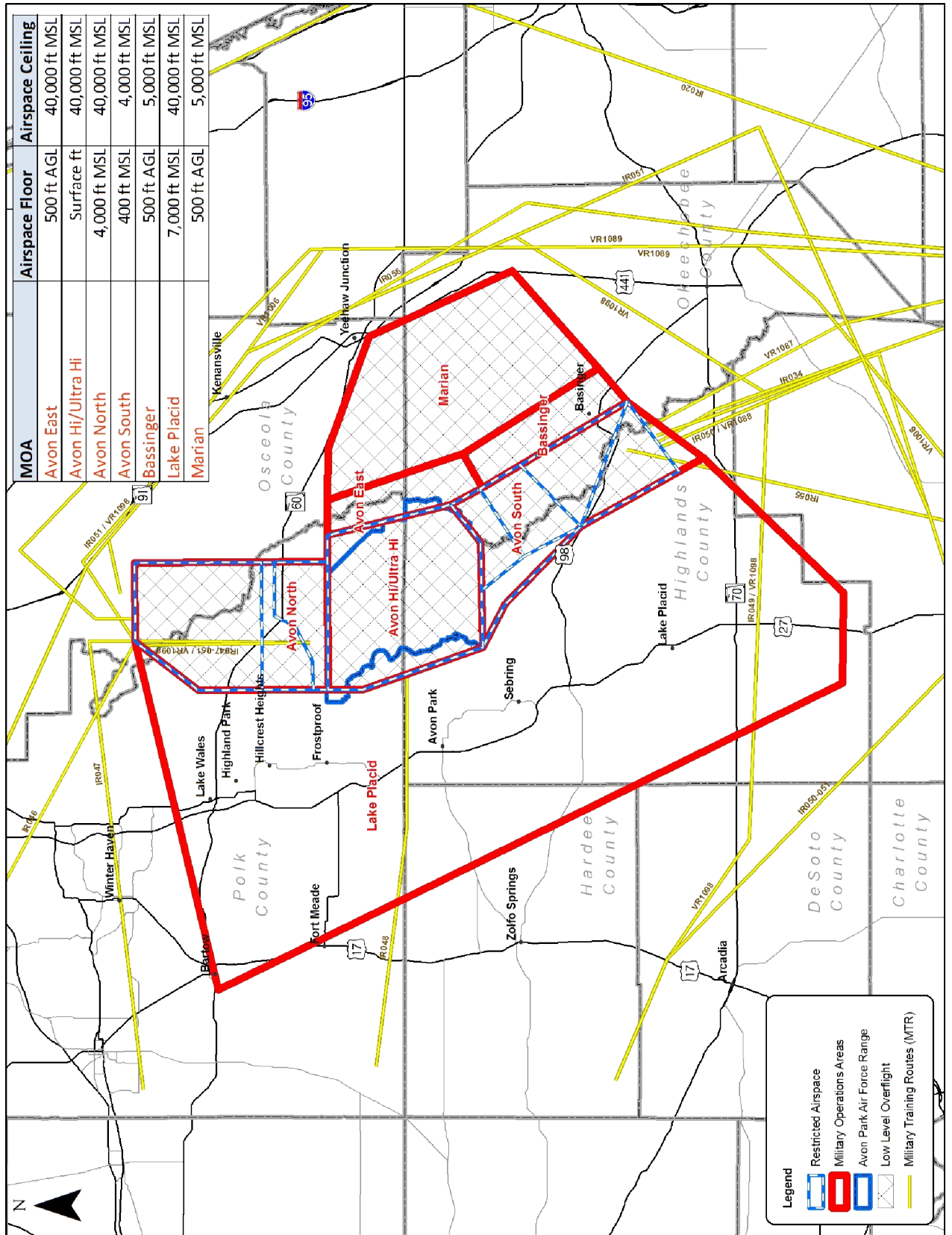
Figure 9-5: Risk of Blast Noise Complaints





# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

Figure 9-6: Low Level Over Flight





operations is subject to being adjusted upwards to meet federal regulations and to minimize noise and risk to the population underneath. Increases in altitude would severely impact the training capability of the military utilizing APAFR.

## 9.2.5 Aircraft Noise

Department of Defense (DoD) Instruction for aircraft noise assessment divides noise exposure into three Noise Zones:

- Noise Zone 1, Day/Night Level (DNL)<65, is an area of minimal impact where limited noise reduction (or sound attenuation) may be recommended.
- Noise Zone 2, DNL 65-75, is an area of moderate impact where some land use controls are needed.
- Noise Zone 3, DNL>75, is the most severely affected area and requires the greatest degree of land use controls to encourage compatibility.

In addition to noise zones, areas of concern may be defined where all land uses are considered to be compatible (less than 65 DNL) but some degree of land use controls is recommended in order to protect the long term viability of the range and ensure public safety; such as areas subject to frequent aircraft overflight and noise exposure. These areas may align with critical ingress and egress corridors or areas under MOAs and MTRs that provide participating aircraft access to the range. There are currently no Noise Zones associated with APAFR impacting areas beyond the installation's boundary from aircraft noise. [Figure 9-7](#) shows the aircraft noise on record for missions at APAFR.

## 9.2.6 Bird / Aircraft Strike Hazards (BASH)

A bird strike hazard exists at APAFR due to the presence of resident and migratory bird populations, and the abundance of habitat existing on and in the immediate vicinity of the range. Significant water bodies include Lake Arbuckle, Arbuckle Creek, and the Kissimmee River. Numerous swamps and

marshes throughout the area also provide aquatic habitat. Over 82,000 acres of APAFR (approximately 79% of range property) remain in a natural vegetative state. Additionally, other bird attractants such as landfills can attract birds creating an incompatibility with military operations. For example, the Avon Park Correctional Institution maintains a landfill approximately 3 miles west of APAFR's Bravo Range, which serves as an attractant to vultures, gulls, and raptors. [Figure 9-8](#) shows the locations of solid waste landfills and construction and demolition landfills, in the vicinity of APAFR based on data obtained from the Florida Department of Environmental Protection (FDEP). This data includes Active and Proposed Solid Waste Facilities according to the FDEP.

## 9.2.7 Lighting

Outdoor lights can cause difficult and unsafe flying conditions when located near airfields or within Military Training Routes used during night hours with night vision equipment. Ground lighting can interfere with a pilot's vision or with night vision instrumentation or equipment. Ground lighting may also cause confusion with approach landing patterns (Santa Rosa 2003). Examples of ground lighting that can interfere with night vision equipment are residential street lighting, stadium lighting, amusement parks, golf courses and driving ranges (if lit at night), and parking lot lighting. Mobile lights (from sources such as motor vehicles or roaming spotlights) can also cause pilot disorientation and difficulty with night vision equipment. APAFR's Restricted Airspace areas (R 2901 A-I) are the locations where this type of training occurs as shown in [Figure 9-9](#).

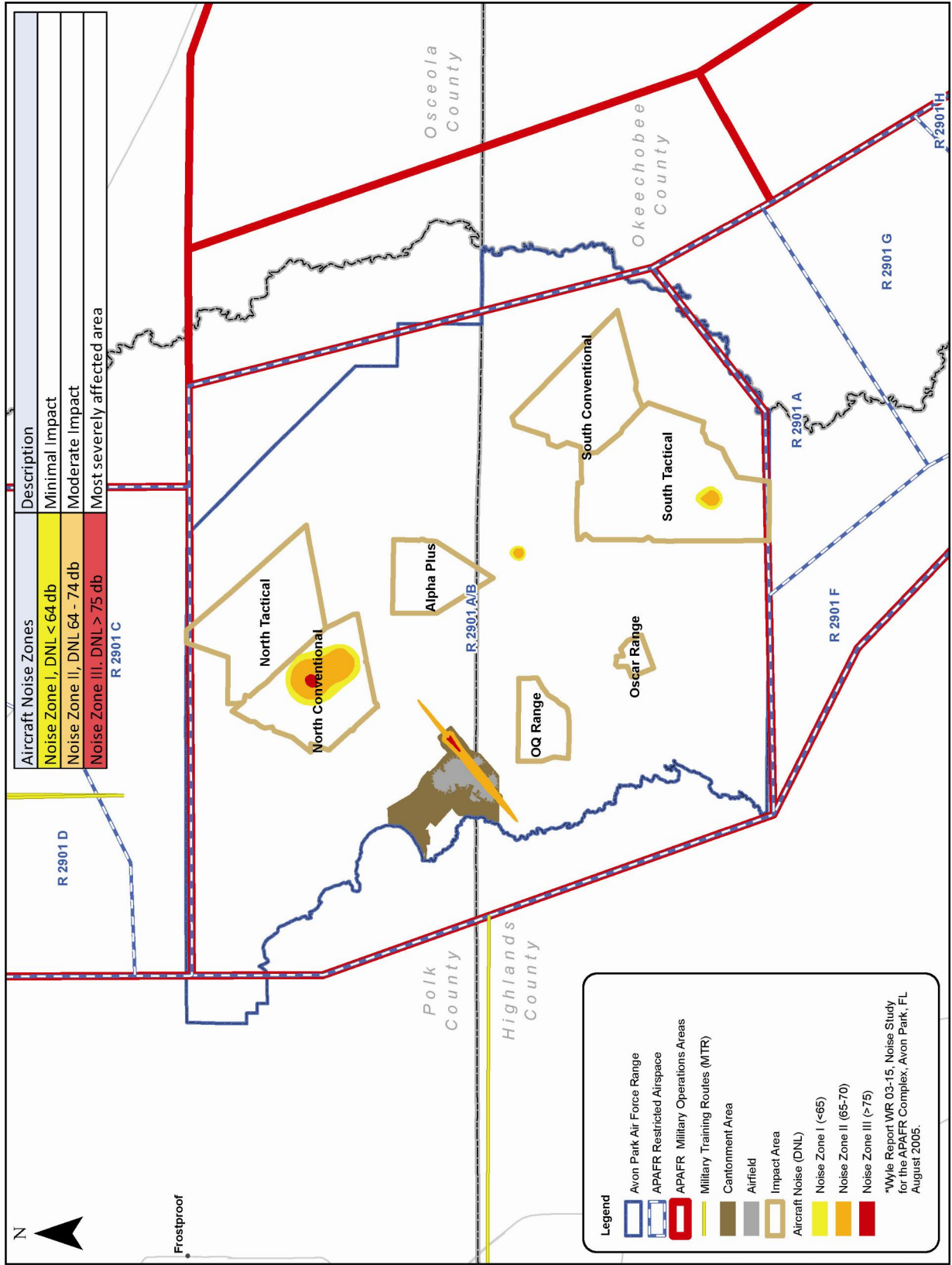
Training for night operations is mission-essential for many APAFR tenants. Light encroachment can be light trespass, glare, sky glow or any unintended consequence from artificial lighting. Light trespass is illuminating areas not intended. Glare results from overly bright lights and interferes with vision. Sky glow is the illumination of the sky from artificial sources.





# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

Figure 9-7: Aircraft Noise

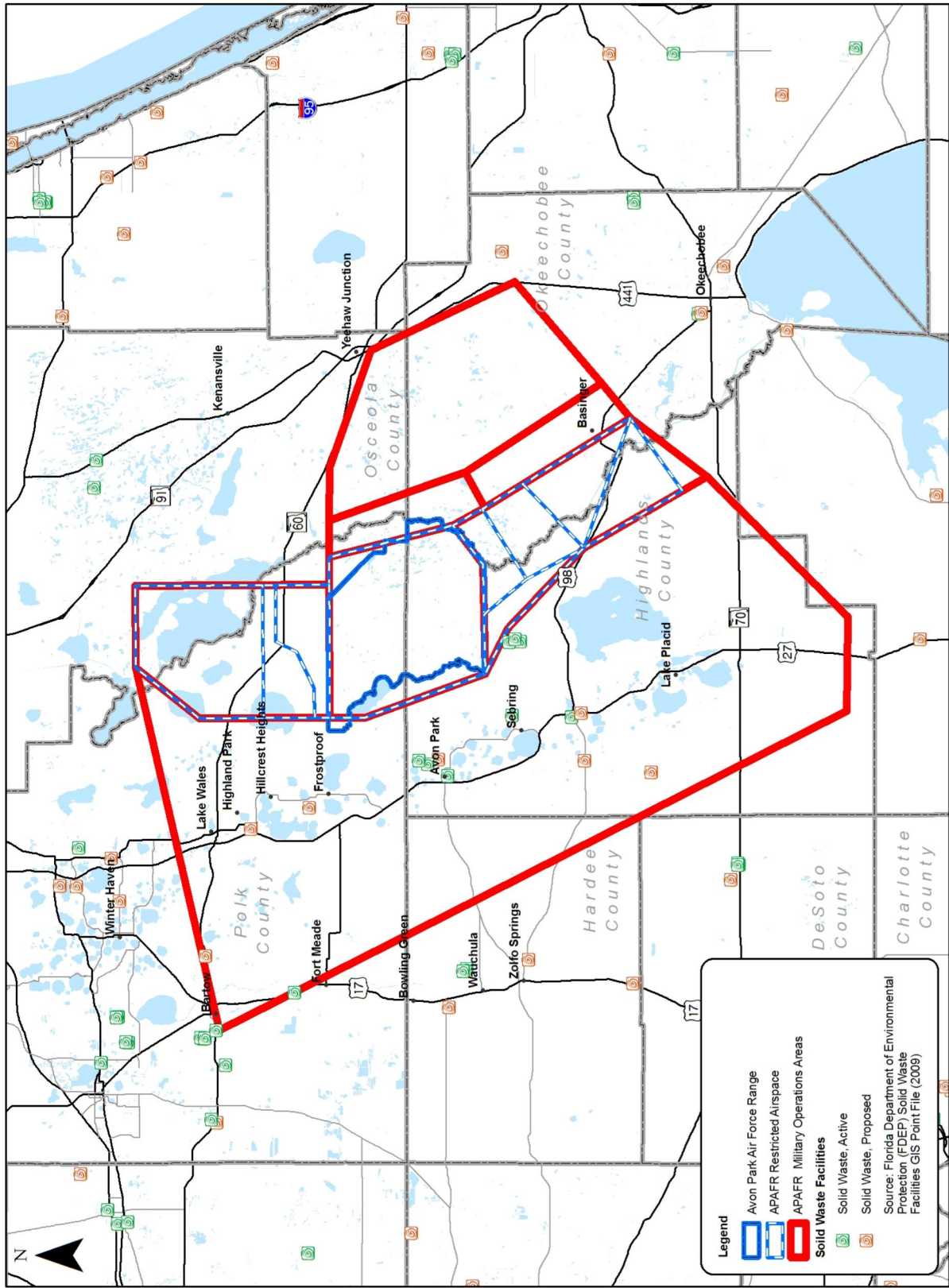


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# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

Figure 9-8: Active and Proposed Solid Waste Facilities (Source: FDEP)



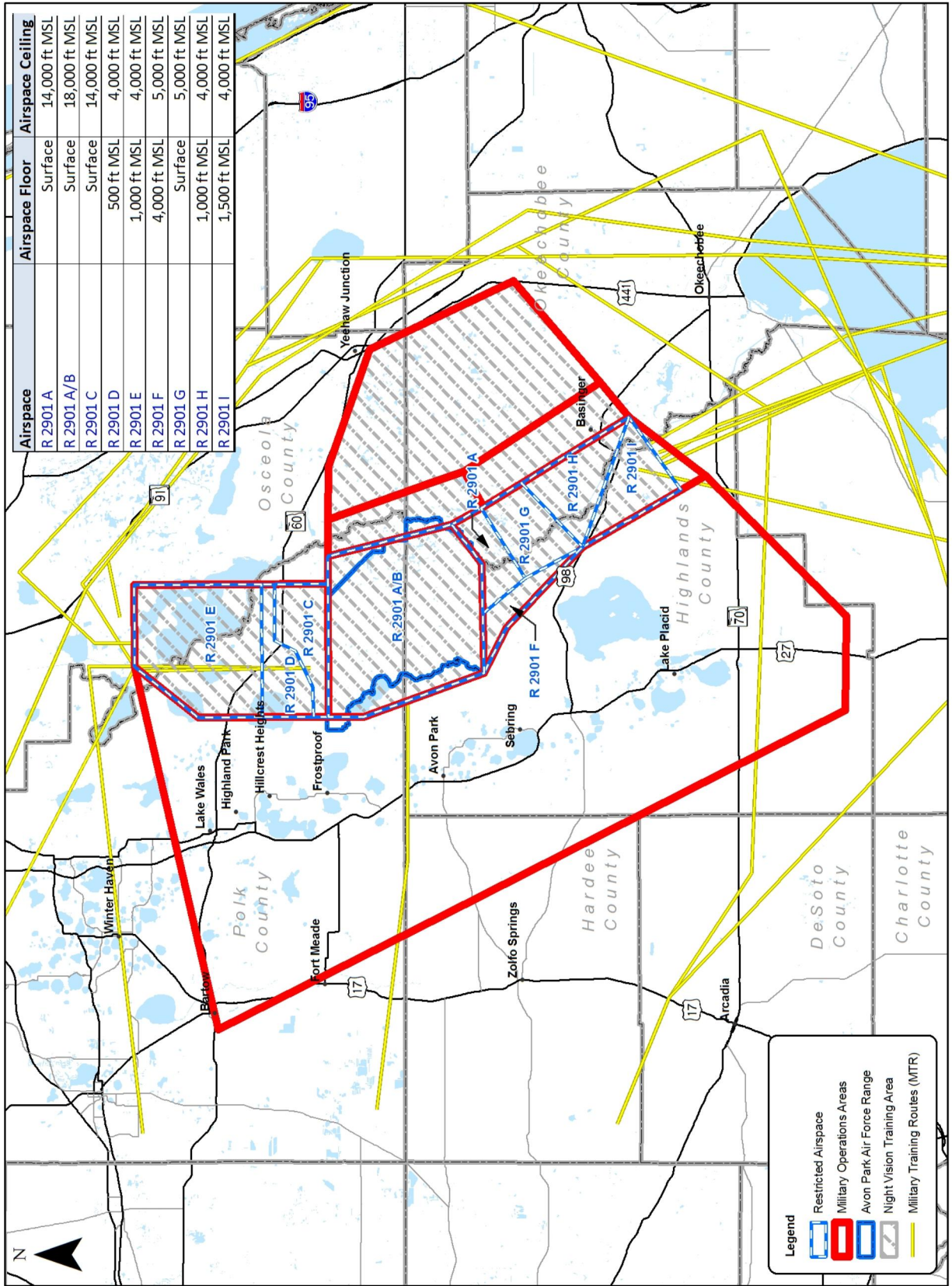
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# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

Figure 9-9: Night Vision Training Areas Near APAFR



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## 9.2.8 Conservation Resources

In addition to recreation uses, the property at APAFR is also managed for natural resources benefits, including income generating endeavors such as cattle grazing and forest management.

Cattle Grazing. Approximately 96,000 acres are leased for cattle grazing. The program is implemented in accordance with annual grazing management plans considering herd management needs and natural resource conservation. The cattle grazing program at APAFR is self-sustaining. Approximately \$150,000 is generated annually from grazing leases. Receipts are used to maintain facilities and improvements, as well as for salaries of personnel hired to implement the program. The indirect benefit of cattle grazing includes construction and maintenance of fencing as well as wildfire hazard reduction.

Forest Management. Over 35,000 acres are managed for production of wood fiber. Slash pines are planted on 18,000 acres and are clear cut and replaced at a rate of 250 to 350 acres per year. The remaining 19,000 acres are managed naturally through selective thinning. Forest management is also a self-sustaining program, generating over \$350,000 annually. Income from timber sales pays for the personnel to manage the program and funds the road and trail network necessary to support the program. Forest Management personnel and equipment also support the Range's land management program. Under federal law, four percent of the net income from timber sales is returned to local counties.

Endangered Species. There are numerous federal and state listed species, both plant and animal occurring on the Range. The Air Force has an active management program that monitors individual species' populations and implements management activities to maintain habitat quality for these species.

Wetlands and Floodplain Protection. Over 50 percent of the installation is classified as wetland or

floodplain. The Air Force has inventoried and mapped these sites, as required by federal law (Air Force 2008).

Conservation Through Fire Management. Florida Statutes recognize prescribed burning as being in the public interest and therefore it does not constitute a public or private nuisance when conducted under applicable state air pollution statutes and rules. In addition, Highlands County considers prescribed burning a necessary management strategy for forestland, rangeland, wildlife management areas, parks, preserves, and other areas.

The Range should pursue mechanisms with impacted jurisdictions such as deed restrictions on lots or acreages in areas that may experience smoke and air particulates from prescribed burning on agricultural and conservation lands on the Range. Buyers and potential buyers should be informed of the use of fire management programs such as prescribed burns on the Range and be told that they may experience smoke and odors from these fire management practices.

Figure 9-10 provides the various conservation resources in and around APAFR.

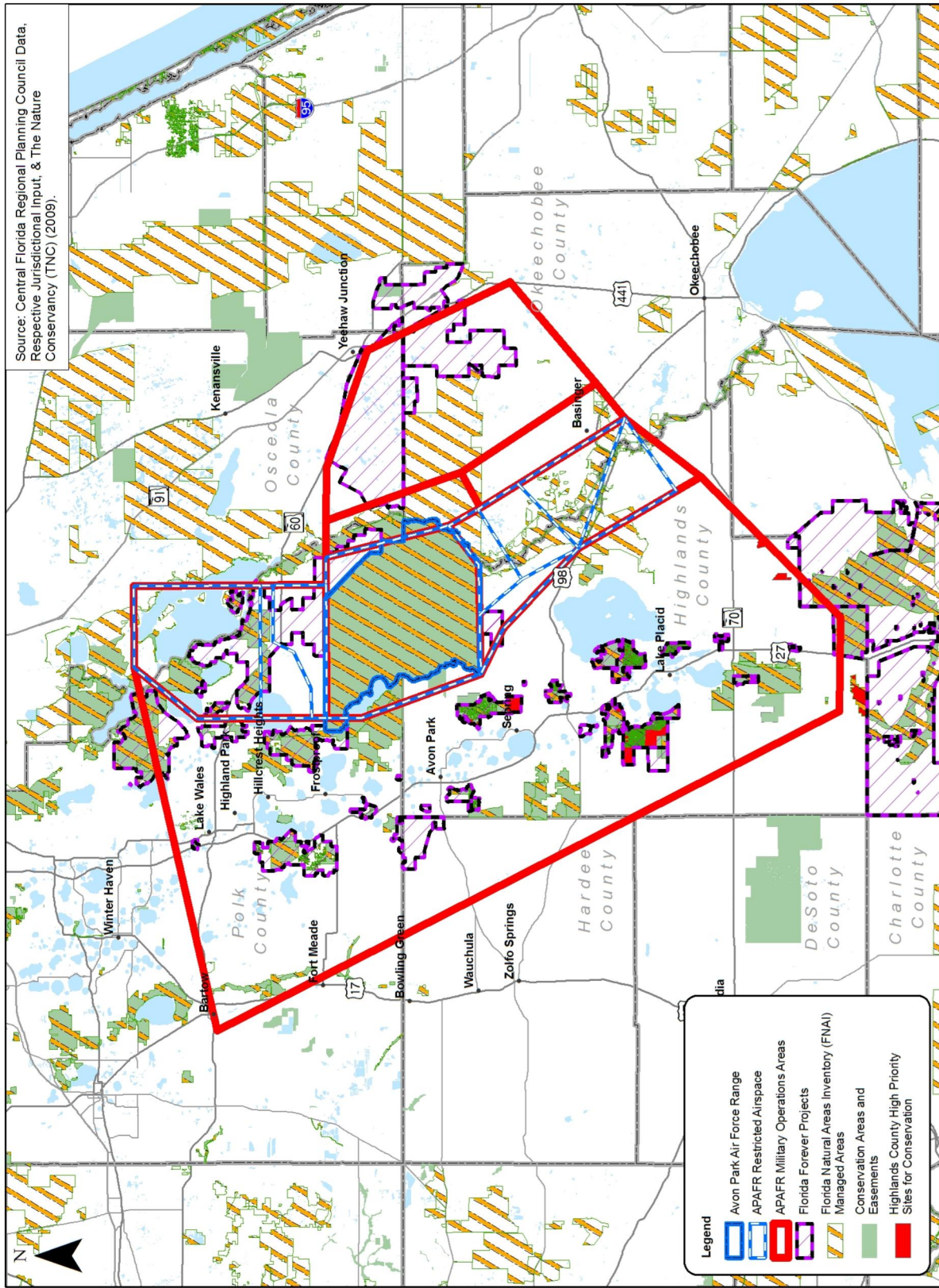
## 9.2.9 Transportation Interchanges and/or Corridors

The concern associated with transportation interchanges and corridors is based more upon the secondary effects than initial implementation efforts. The construction of new roadway interchanges and/or corridors will promote new development or redevelopment in their vicinity. With respect to APAFR, it is important new interchanges and corridors are planned to avoid the secondary growth nearby that could create an incompatibility issue with the military's mission at APAFR. Figure 9-11 shows the primary arterial roads near APAFR and the study area for the proposed Heartland Coast to Coast Transportation facility.



# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

Figure 9-10: Conservation Resources In and Around APAFR

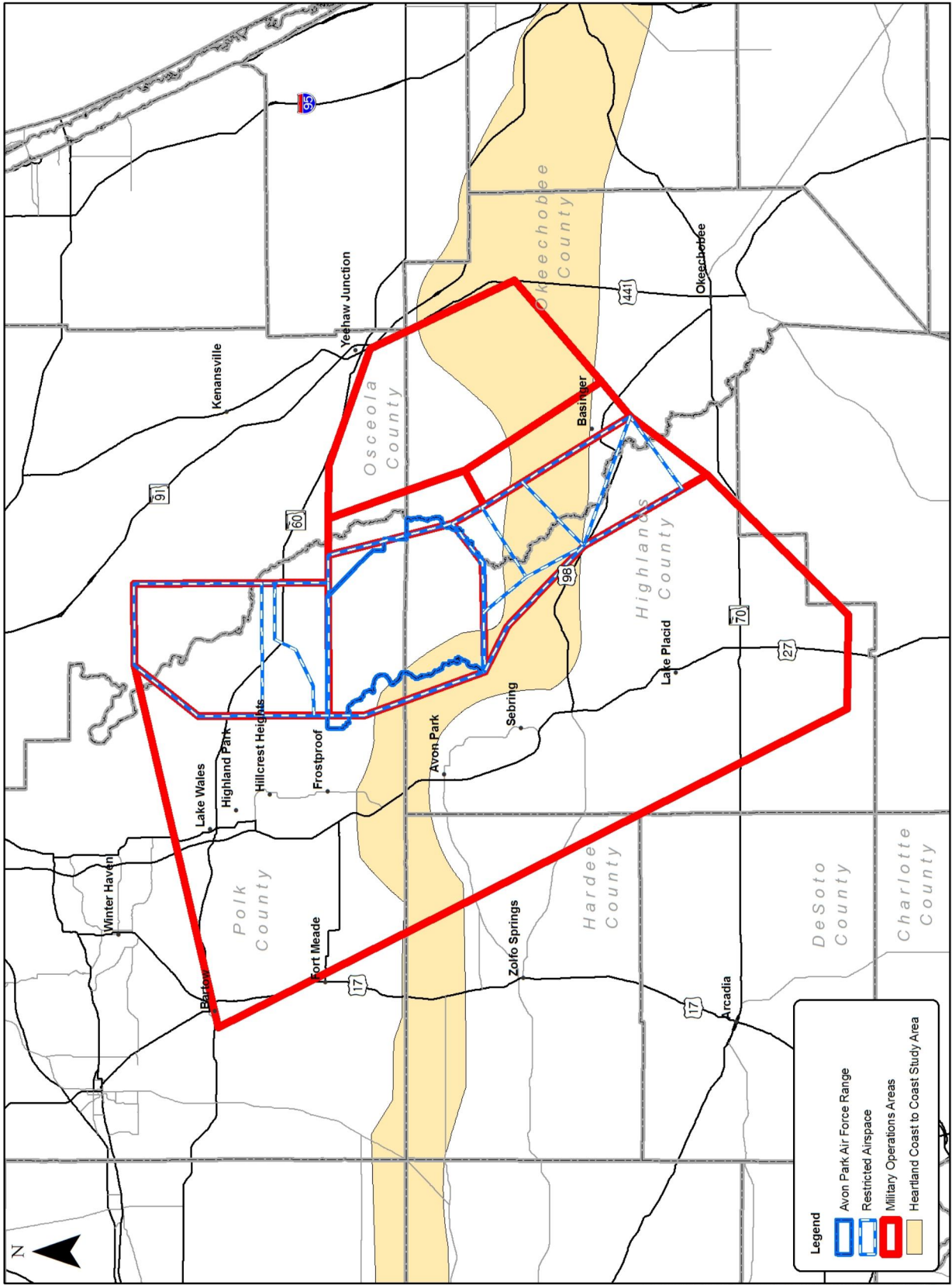






# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

Figure 9-11: Primary Arterial Roads and the Study Area for the Proposed Heartland Coast to Coast Transportation Facility Near APAFR



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## 9.2.10 Public Access

Access for all recreational pursuits is determined weekly and is dependent on training activities at APAFR. Military exercises can restrict public access to management units or can close the entire Range. Up-to-date information about open/closed areas is posted at the Outdoor Recreation Office where recreation visitors must check in. Access information is also posted on a public website. Because scheduled mission activities typically occur from Monday through Thursday, most recreational use occurs during the weekend. During a typical year, weekend users of the Range can expect the range to be closed approximately 10% of the time. The majority of APAFR users are from Central and South Florida. Impact areas are always closed to recreation visitors.

The recreational opportunities offered by APAFR focus on dispersed, resource-based recreation such as hunting, bird watching, hiking, fishing, and primitive camping. To manage public access, de-conflict public recreation and military use, and protect public safety, the installation has been divided into public management units which are open or closed as directed by planned military uses.

Of APAFR's 106,073 acres, approximately 82,000 acres are now available for recreation. Camping is allowed in four areas totaling approximately 160 acres; hiking occurs on 36 miles of trails; fishing occurs on approximately 5,025 acres of lakes and ponds and along 24 miles of rivers, streams, and canals; and approximately 130 miles of roads provide driving and sightseeing pleasure. Throughout the year, the public can purchase recreation permits allowing fishing, camping, hiking, and bird-watching.

- Camping. Three public use campground areas and a military use campground are located on APAFR:
  - Willingham (near Lake Arbuckle);
  - Morgan Hole (near the center of the range);

- Fort Kissimmee (on Kissimmee River); and
- Austin Hammock (military use campground, main base area).

In addition to the campground areas, there are two day-use areas at APAFR

- Arnold Hammock (northwest, near Lake Arbuckle); and
- Tomlin Hammock Lake (southwest).

- Fishing. Fishing is available along 24 miles of rivers, streams, and canals and 5,025 acres of ponds and lakes. Three catfish ponds and Tomlin Lake Hammock are stocked and managed for public access. Fishing can occur at any area on APAFR where access is allowed.
- Hunting. Public access to the range for recreational hunting began in 1951. The program was first administered by the Florida Game and Freshwater Fish Commission until 1983 when the Air Force took over management of the program. The Air Force issues recreation permits for public recreation activities. Until recently, annual demand for hunting permits exceeded supply. Increased military activities have impacted demand due to lack of advance planning capabilities (Lichtler 2004).
- Hiking. Over 30 miles of hiking trails are available at the Lake Arbuckle National Recreational Trail. The Arbuckle Nature Trail Boardwalk, the Sandy Point Wildlife Refuge Trail, and the Florida National Scenic Trail. Additionally, Avon Park Air Force Range offers 130 miles of roads for windshield wildlife sightseeing. Four trails at Avon Park Air Force Range are designated for hiking, including a loop trail (northwest corner, part of the Florida National Recreation Trail system), a boardwalk (to observation tower at Lake Arbuckle), a trail at the Sandy Point Area, and the Florida National Scenic Trail. Approximately 11 miles of the Florida National Scenic Trail run through APAFR and this trail is one of eight National Scenic Trails in the United States. The



trail generally follows the western edge of the Kissimmee River floodplain and is oriented in a north-south direction. The portion of the trail located within Avon Park Air Force Range was incorporated on November 6, 1989, and is cooperatively managed through a certified agreement focusing on protection and management. The Air Force, the USDA Forest Service, and the Florida Trail Association renewed the certified agreement on January 22, 2002. Additionally, the Air Force and the Florida Trail Association developed a cooperative agreement to maintain the trail (Wimmer 2003).

- **Wildlife Observation.** Demand for wildlife observation opportunities and nature study is increasing at Avon Park Air Force Range. A 30-foot observation tower at Lake Arbuckle is a popular year-round site for birdwatchers and organized groups. The 600-acre Sandy Point Area is also popular, receiving a number of visits per year (Air Force 2008).

Figure 9-12 shows the Florida National Scenic Trail running north and south through the southeast section of APAFR as an example of existing hiking trails.

## 9.3 ANALYSIS

People living or working near a military installation can expect impacts such as noise, smoke, and dust generated from ground and air operations. Quality of life for those living or working near an installation can be negatively affected when these impacts reach levels creating a nuisance. A potential risk to public safety also exists from the possibility of aircraft crashes or other operational accidents at or near an airfield. The extent and frequency of negative impacts affecting people living near airfields will vary based on the type of aircraft, airfield operating hours, airfield ground activities, frequency of flight, ground training activities, and proximity to the airfield. Future residents choosing to live near APAFR will be impacted by flight and ground activi-

ties.

### 9.3.1 Development Near APAFR's Boundary

The areas within three miles of APAFR's boundary include primarily Agriculture and Conservation Existing and Future Land Use designations. There are portions of Single-Family Residential (Indian Lakes Estates) and Institutional (River Ranch Resort) that are not compatible. Since the lands within the 3-mile buffer are predominately Conservation and Agriculture, they provide an opportunity to preserve security and limit encroachment concerns over the long term.

### 9.3.2 Airspace Controls

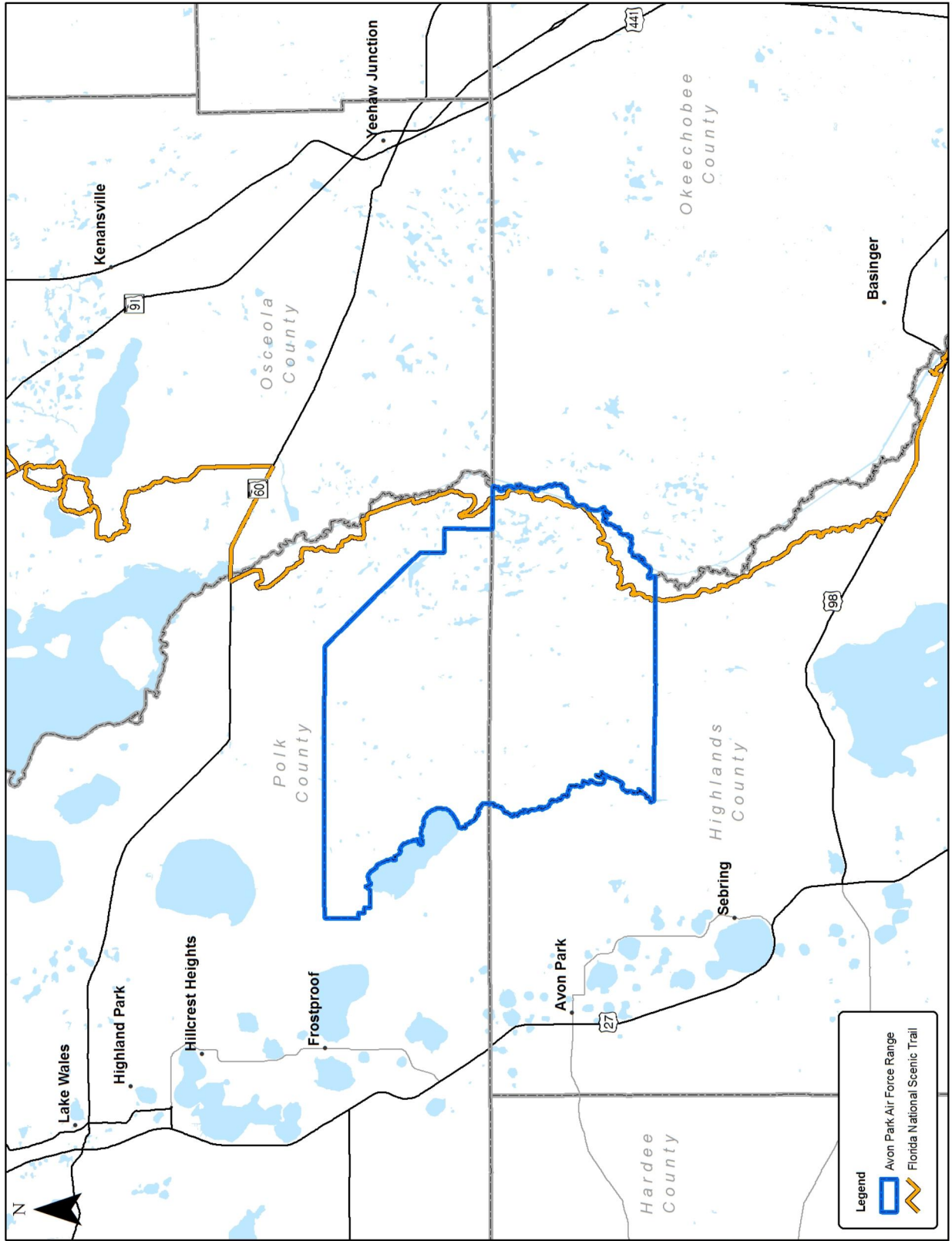
The Secretary of the Air Force has issued guidance documents for the planning, operations, management, safety, facilities, and security of Air Force ranges. Air Force Instruction (AFI) 13-212 Addenda A is one such guidance document identifying overflight avoidance areas both on and off APAFR's range. To the north, the avoidance areas include the populated areas of Walk-in-the-Water Ranch Resort, Indian Lake Estates and Westgate River Ranch Resort. To the west and southwest the avoidance areas include the cities of Avon Park and Sebring, Santa Rosa Ranch, and Avon Park Municipal Airport and Sebring Regional Airport. Within the installation's boundaries, aviators are instructed to avoid the cantonment area and MacDill Auxiliary Airfield.

### 9.3.3 Blast Noise

The nature of the blast noise extending beyond the Range's boundary is in the low to moderate ranges as previously shown in Figure 9-5. The low range area covers a very large area of unincorporated limits in each of the four counties—Polk, Osceola, Highlands, and Okeechobee. The moderate blast noise area generally encompasses areas designated with Agriculture and/or Conservation land use. There are a few exceptions to this creating incompatibilities between the military's activities and private property. The effects in the moderate blast



Figure 9-12: Hiking Trail (Florida National Scenic Trail) Across Southeast Corner of APAFR



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noise area can be expected to present a moderate risk of noise complaints. The effects in the remaining moderate range area are minimal due to the Agriculture and Conservation designations on the County's Future Land Use Map.

### 9.3.4 Low Level Flight Areas

The low level flight training area covers portions of all four counties and includes an airspace floor from the ground surface to an airspace ceiling up to 14,000 feet above mean sea level (MSL). This may be perceived as a nuisance resulting from low level fixed-wing and rotor aircraft flying overhead and increasing sound and having other effects associated with a low flying aircraft. The majority of this area is Conservation or Agriculture according to the Future Land Use Maps for each respective jurisdiction. The Indian Lakes Estates and some other smaller developments, represent Single Family Residential, within this area.

### 9.3.5 Aircraft Noise

According to reports provided by APAFR, the only aircraft overflight noise currently modeled for APAFR occurs at the APAFR Airfield (see Figure 9-6). The APAFR Airfield has one primary runway with straight-in arrivals and departures by aircraft flying to and from the facility. A limited number of pattern operations are flown to the south of the airfield. Environmental noise mapping software (NOISEMAP 7.2) was used by others to calculate and plot the 65-dBA through 75-dBA contours for the flight operations at the airfield; these contours are shown in the Noise Exposure Zones. As would be expected from an airfield that has only straight-in arrivals and departures and limited patterns to the southeast of the runway, the contours generally extend straight out from the runway ends. The major contributor to the noise at the airfield is the C-141B, followed by the C-130, and the A-10A (Wyle 2005).

The 65-dBA contour is contained within the range boundary. The 65-dBA noise contour extends about 5,000 feet past the end of Runway 05, and 4,200

feet past the end of Runway 23 where it comes within 2,200 feet of the southwest range boundary. It covers an area of about 388 acres. The 70-dBA contour, which remains very close to the airfield, covers an area of about 146 acres. The 75-dBA contour occurs at the beginning of Runway 23 and covers an area of about 20 acres. This is due to the majority of take-offs being conducted on Runway 23 (Wyle 2005).

### 9.3.6 Bird / Aircraft Strike Hazards (BASH)

Areas identified as having potential effects on BASH near APAFR are natural areas. There are no man-made areas such as landfills in the areas of BASH concern (low level flight area) in Polk County. The natural areas include the area near Lake Kissimmee State Park comprised of open water and marsh areas, Lake Wales Region Conservation Lands, Kissimmee River and floodplain, and Florida Eagle nests (2007 survey). Whereas these areas create compatible land use buffers, they have the potential to create habitats conducive to nesting and rookeries incompatible with the low level approach areas utilized by APAFR.

### 9.3.7 Transportation Interchanges and/or Corridors

As previously explained, the secondary effect of new transportation interchanges and/or corridors is the subsequent growth in these areas. With respect to compatible land use near APAFR, future development plans at and near interchanges (new and existing) and along proposed transportation corridors should be coordinated with APAFR and in line with the recommendations found in this report.

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## 9.4 RECOMMENDATIONS

Based on the issues identified and the analysis associated with each issue, recommendations focused on addressing each issue or combination of issues have been prepared. It is the intent of the recommendations to provide guidance to the APAFR on land use and related land use policies and procedures with definitive direction and in some cases, applicable examples successfully implemented from across the US.

The following summarize the recommendations for APAFR:

- **APAFR 1:** Continue Ongoing Coordination with the Federal Aviation Administration (FAA) Regarding Airspace Controls and Usage Including Coordination and Planning Efforts for All Airports and Airstrips Within APAFR MOAs
- **APAFR 2:** Implement Public Awareness Measures Such as Public Signage, Website Links, Educational Handouts, etc.
- **APAFR 3:** Coordinate with other Agencies to Manage Public Access to APAFR or Critical APAFR Areas to Avoid Encroachment on Military Missions
- **APAFR 4:** Develop Policies to Protect Critical Areas Supporting Military Readiness and/or Environmental Conservation Including Partnering Opportunities with USAF, The Nature Conservancy, Florida Forever, Florida Defense Alliance, and Others
- **APAFR 5:** Continue Ongoing APAFR Environmental Stewardship Programs
- **APAFR 6:** Seek Funding for an Updated Comprehensive Noise Study
- **APAFR 7:** Conduct Updated Noise Study
- **APAFR 8:** Supplement Final APAFR JLUS Document with Findings of Noise Study (see APAFR 6 and 7)
- **APAFR 9:** Develop and Distribute BASH Educational Material
- **APAFR 10:** Develop Program in Coordination with Local Jurisdictions, and Environmental and

Water Resource Agencies to Explore Methods to Control Bird and Bird Attractors Near APAFR

- **APAFR 11:** Monitor Land Use at Transportation Intersections or Interchanges and Transportation Changes of New or Expanding Corridors and/or Hubs
- **APAFR 12:** Formalize Policy to Implement Cross-Jurisdictional Collaboration and Coordination In Development Review and Planning Process Including Implementing the JLUS Recommendations
- **APAFR 13:** Monitor Recertification of Runway and Seek Funding for the Preparation of APAFR R/AICUZ
- **APAFR 14:** Collaborate with CFRPC as Lead Facilitator of the JLUS Implementation Activities

Implementation Information for Some of the Recommendations. The following information provides additional details with implementation steps and/or examples for the APAFR's use. These suggestions are not intended to be prescriptive but to offer guidance that should be adapted to their local circumstances as appropriate.

APAFR 2: Implement Public Awareness Measures Such as Public Signage, Website Links, Educational Handouts, etc. Through a variety of information vehicles, the public can be made aware of APAFR and its operations and community impacts both from physical and economic perspectives. Examples of measures that may be taken include:

- Post signage in areas screened from airfields and other military operations. The intent of this recommendation serves to notify visitors or prospective homeowners or renters to the presence of aircraft and related noise, high intensity impulse noise, and/or low flying aircrafts typically found near an installation. Trees, vegetation, or terrain screen airfields from many areas near airfields and military operations are not always in effect 24 hours a day, 7 days a week.
- Provide website links to maps showing high level aircraft noise zones, high intensity impulse noise



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areas, and MIPAs.

- Distribute maps showing high level aircraft noise zones, high intensity impulse noise areas, and MIPAs to local libraries, real estate offices, county offices, airports, community buildings, and other locations existing and prospective residents and business owners frequent.
- Provide electronic media (video documentary, powerpoint slides, etc.) for information use in public areas such as foyers, waiting rooms, public lobbies, etc. to educate local residents and visitors about APAFR and it's mission. This is also an ideal opportunity to educate the public to the importance of APAFR to national security.

### APAFR 3: Coordinate with Other Agencies to Manage Public Access to APAFR or Critical APAFR Areas to Avoid Encroachment on Military Missions.

APAFR's 82,000 acres for public access for hiking, hunting, fishing, camping and other related activities is a tremendous asset for the local community. The Air Force's ability to balance this aspect of the Range with ongoing mission activities is crucial to the vitality of the Range in future years. Military exercises can restrict public access to areas of the Range or can close the entire Range to the public. If the public breaches the restrictions, whether intentional or not, it can cause the military exercise to be scrubbed or entirely canceled. There are opportunities to improve managing public access to APAFR that include signage, public information, public notification, and similar actions. This recommendation focuses on APAFR coordinating the current policies to advertise access information with local jurisdictions to determine how this information can be disseminated in a more efficient and comprehensive manner. Part of this coordination should include APAFR's assessment of closure areas and procedures to ensure all necessary national security measures are covered with respect to the public's access to the Range.

### APAFR 4: Develop Policies to Protect Critical Areas Supporting Military Readiness and/or Environmental Conservation Including Partnering Opportunities

### with USAF, The Nature Conservancy, Florida Forever, Florida Defense Alliance, and Others.

Through the adoption of the recommendations and proposed implementation steps contained herein, there is the opportunity to continue ongoing efforts to protect critical areas supporting both military readiness and environmental conservation. The partnering opportunities include the USAF, The Nature Conservancy, South Florida Water Management District, Florida Department of Environmental Protection, Florida Forever, Florida Defense Alliance and federal agencies to purchase conservation lands. As part of this program, potential funding sources should be identified and alternative mechanisms to fee simple purchase explored such as restrictive use easements, avigation easements, land exchanges, and transfer of development rights. Prepare a Plan organized with projected costs for acquisitions. Once the Plan's acquisition strategies are adopted, it is important to document the planning efforts completed and adopted to date such as the APAFR JLUS and the recommendations implemented to date in order to maximize grant scoring opportunities.

The work coordinated by the Florida Forever program and The Nature Conservancy should be leveraged as part of the Plan. For example, The Nature Conservancy recently prepared an assessment of lands around APAFR called Areas of Conservation Significance (ACS). This was a broad based ecological assessment of the natural resources surrounding APAFR. There were 10 areas of Conservation Significance identified near APAFR. The areas near APAFR are shown in [Figure 9-13](#).

### APAFR 10: Develop Program in Coordination with Local Jurisdictions and Environmental and Water Resource Agencies to Explore Methods to Control Bird and Bird Attractors Near APAFR.

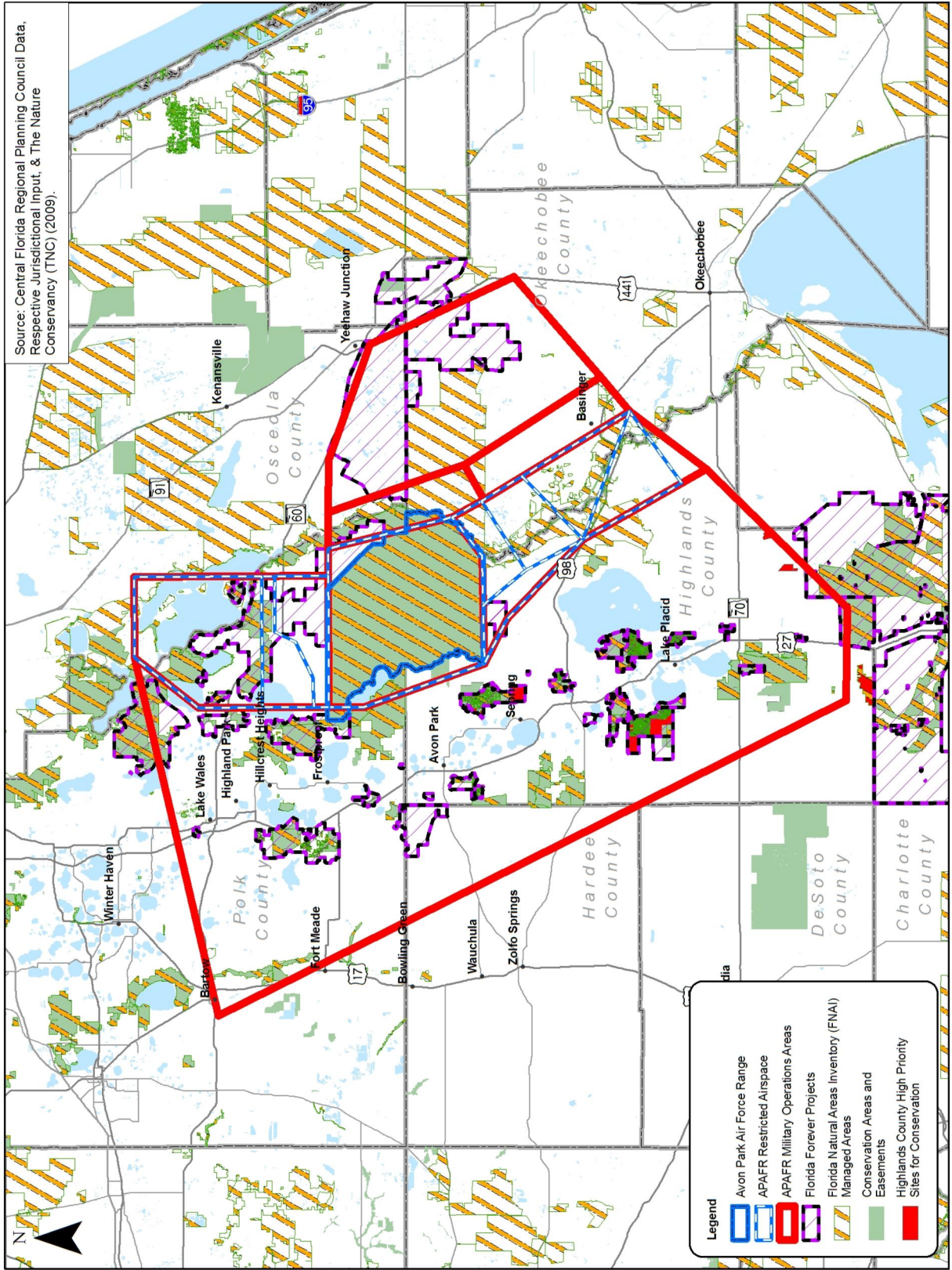
A policy should be formalized regarding methodologies to control bird and bird attractors near APAFR to avoid BASH conditions. This should include a formal communication process between local jurisdictions, APAFR, and environmental agencies to





# AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

Figure 9-13: The Nature Conservancy's Priority Areas of Conservation Significance (ACS) Near APAFR





## AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

ensure appropriate parties understand the conditions of the accepted methodologies. There are opportunities to encourage societies/groups and/or individual bird watchers to help participate in the monitoring for this program as an environmental stewardship effort.

[APAFR 11: Monitor Land Use at Transportation Intersections or Interchanges and Transportation Changes of New or Expanding Corridors and/or Hubs.](#) Of particular interest are the proposed corridors for new roadways and the encouragement of development activity at future and/or improved interchanges. At the onset of planning future roadways, increased plans for development at access points occur. With the proximity of certain transportation corridors proposed near APAFR, monitoring of proposed land use at these locations is strongly encouraged. The benefits of the roadway should be recognized to increase roadway capacity and relieve existing and anticipated traffic congestion, improved regional mobility, improved hurricane evacuation times and emergency response, and east/west access across the state of Florida. However, the potential encroachment of unplanned development near a military installation should be recognized and strategies implemented to avoid this potential problem from arising.

[APAFR 12: Formalize Policy to Implement Cross-Jurisdictional Collaboration and Coordination In Development Review and Planning Process Including Implementing the JLUS Recommendations.](#) Formalize a policy to include military participation in the development review and planning process. This should include a formal communication process with APAFR for all communities to ensure appropriate parties are engaged in reviewing information pertaining to proposed developments, redevelopments, or planning issues upon receipt of an application, or preferably as part of a pre-application meeting. This requires working with developers and community leaders from their initial contact with planning staff regarding their prospective plans through to presentations to policy makers such as the Planning Com-

missions and City/County Commissions. A key component of this recommendation is ensuring there are ongoing opportunities for different jurisdictions and APAFR to communicate amongst themselves.

To facilitate the cross communication of the jurisdictions with APAFR, it is recommended the JLUS Technical Committee remain and communicate development activities and planning efforts across jurisdictions to the JLUS Policy Committee, which should also remain active. The Technical Committee should include active participation from each jurisdiction and appropriate representatives from APAFR including those responsible for coordinating activities associated with tenants of APAFR.

Updates of Capital Improvement Projects should be a recurring activity to create a comprehensive understanding of where new projects are being proposed with respect to any potential impact on APAFR missions.

Policy makers stress not only the importance of APAFR to the local region but also to the state itself because of the importance of APAFR to the overall missions of Florida-based military (MacDill AFB, Florida Guard, etc.).

Monitoring state legislation pertaining to compatibility planning and the issues addressed in the APAFR JLUS should be the responsibility of this collaborative group.

[APAFR 13: Monitor Recertification of Runway and Seek Funding for the Preparation of APAFR R/AICUZ.](#) The AICUZ program is a Department of Defense (DOD) discretionary program designed to promote compatible land use around military airfields. The military services maintain an AICUZ program in an effort to protect the operational integrity of their flying mission. DOD Instruction 4165.57 establishes the AICUZ program which is similar to the Federal Aviation Administration's Federal Aviation Regulation Part 150 program for civil airports.



## AVON PARK AIR FORCE RANGE JOINT LAND USE STUDY

Other installations have utilized a very similar approach for ground activities and included the Range aspect of the installation to create a Range/Air Installation Compatibility Use Zone (R/AICUZ) Study. It's important to recognize the R/AICUZ program is a land use planning program not a land acquisition or land management program. The purpose is two-fold: 1) to promote the public health and safety through the local adoption of compatible land use controls and 2) to protect the operational capability of the air installation.

The basic R/AICUZ report provides background information on the R/AICUZ program including the purpose, need, process and procedures involved. It also explains the installation's mission, flying activities and the economic impact that the installation has on the community. The core of the report describes actions the installation has taken to minimize the noise effects of their aircraft operations. It also provides recommendations for achieving land use compatibility with respect to aircraft accident potential, noise, height restrictions and any additional local considerations. It includes graphics showing noise contours and APZs overlaid on a vicinity map. It addresses the relationship between noise exposure and accident potential to existing land use, zoning, and projected future land use, and analyzes potential incompatibilities. The report includes appendices providing more detailed discussions about the R/AICUZ concept, program, methodology and policies plus more technical explanations of the APZs, the noise environment, and height and obstruction criteria. It also contains references to guidelines for reducing noise levels in buildings. In addition to the R/AICUZ report, the installation normally prepares a Citizen's Brochure summarizing key points of the study and showing the noise contours and APZs along with generalized land use recommendations.

To date, neither an AICUZ nor R/AICUZ has been prepared for APAFR. With the community embracing APAFR and the importance of APAFR to national security and training of our armed services,

the development of the APAFR R/AICUZ would provide a key ingredient to long range compatible land use in the Central Florida Region.

As part of the R/AICUZ program, it is desired for the local community to actively participate in the planning, development, and public meetings as part of the drafting of the APAFR R/AICUZ. This recommendation focuses on the need for local jurisdictions to promote the importance of the R/AICUZ, the reason an R/AICUZ is needed, and to publicize the various public meetings taking place as part of the R/AICUZ.

### APAFR 14: Collaborate with CFRPC as Lead Facilitator of the JLUS Implementation Activities.

Since the application to OEA for funding of the APAFR JLUS, development of the APAFR JLUS Policy Committee and Technical Advisory Committee, numerous public meetings and stakeholder meetings, and the creation of this report, constructive lines of communication have been established and a nice synergy has formed amongst the local communities on the importance and need to have a viable installation in APAFR while promoting compatible land use in our surrounding communities. This recommendation focuses on the importance of continuing this collaborative effort by keeping the CFRPC as the lead facilitator and manager to continue with implementing the recommendations of this JLUS through the established committees and alliances formed over the past 3 years.

*The remainder of this page intentionally left blank.*



## Appendix – B

### Example Noise Disclosure Statements

To: \_\_\_\_\_

The property at \_\_\_\_\_ (address) \_\_\_\_\_ is located within the airport environs of \_\_\_\_\_ (airport) \_\_\_\_\_. Santa Rosa County has determined that this is an area of airport operations. The County has placed certain restrictions on the development and use of property within airport environs zones in addition to the restrictions in Article Six of the Land Development Code (the zoning code). Before purchasing or leasing the above property, you should consult Article Eleven of the Santa Rosa County Land Development Code to determine the restrictions which have been placed on the subject property.

**Certification**

As the owner of the subject property, I hereby certify that I have informed \_\_\_\_\_, as a prospective purchaser/lessee, that the subject property is located in an Airport Environs Zone.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 19 \_\_\_\_.

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Owner

As a prospective purchaser/lessee of the subject property, I hereby certify that I have been informed that the subject property is in an Airport Environs Zone and I have consulted Article Eleven of the Santa Rosa County Land Development Code to determine the restrictions which have been placed on the subject property.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 19 \_\_\_\_.

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Purchaser/Lessee

## Appendix – C

Example Military Area / Dark Skies Lighting Ordinances



# **Model Lighting Ordinance (MLO)**

Developed by the International Dark-Sky Association (IDA) and  
the Illuminating Engineering Society (IES)

60% Public Review

**NOT FOR ADOPTION OR USE**

February 7, 2009

Modifications Published March 2, 2009

- Added "--" to page 1: International Dark-Sky Association
- Added Reference to page 21 of text/22 of PDF "Addendum A for IESNA TM-15-07: Backlight, Uplight, and Glare (BUG) Ratings <http://www.iesna.org/PDF/Erratas/TM-15-07BUGRatingsAddendum.pdf>"
- Change to page 23 of text/24 PDF two references to "Table E" changed to "Appendix A: Table A"
- Added to page 24 of text/25 of PDF "Appendix A: Table A --" to Skyglow Multiplier of Exitant Lumens (interpreted from Baddiley)
- Added to page 25 of text/26 of PDF "Appendix A: Table B --" to Maximum Line of Sight Illuminance at Any Vertical Plane Boundary
- Added to page 25 of text/26 of PDF "Appendix A: Table C --" to Minimum Modified DeBoer Rating Viewed from Any Boundary

1 **IDA-IESNA Model Lighting Ordinance (MLO)**

2  
3 **FOR PUBLIC REVIEW**

4 **NOT INTENDED FOR PUBLIC ADOPTION AT THIS TIME**

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1 **I. Preamble**

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2 The purpose of this Ordinance is to provide regulations for outdoor lighting  
3 that will:

4 Permit reasonable uses of outdoor lighting for night-time safety, utility,  
5 security, productivity, enjoyment and commerce.

6 a. Conserve energy and resources to the greatest extent possible.

7 b. Minimize adverse offsite impacts including, light trespass, and  
8 obtrusive light.

9 c. Curtail light pollution and preserve the nighttime environment.

10 d. Help preserve the dark night sky for astronomy and enjoyment.

11 e. Help protect the natural environment from the adverse effects of night  
12 lighting from electric sources.

13



## 1 II. Definitions

<i>Authority</i>	The adopting municipality, agency or other governing entity having jurisdiction.
<i>Astronomic Time Switch</i>	An automatic lighting control device that operates as an on/off switch for outdoor lighting relative to time of solar day with time of year correction.
<i>Adjacent Grade</i>	Grade directly below luminaire on a plumb line or, nearest grade thereto.
<i>Backlight</i>	For an exterior luminaire, light emitted in the quarter sphere below horizontal and in the opposite direction of the intended orientation of the luminaire. For luminaires with symmetric distribution, backlight will be the same as frontlight.
<i>BUG</i>	A luminaire classification system that is used in the Prescriptive method for evaluating optical distribution of outdoor luminaires that denotes levels of backlight (B), uplight (U) and glare (G).
<i>Canopy</i>	A covered, unconditioned structure with at least one side open for pedestrian and/or vehicular access..
<i>Common Outdoor Areas</i>	One or more of the following: a common parking lot for three or more domiciles or buildings; a common parking garage or covering entrance intended to be used by three or more domicile or buildings; a common entrance for three or more domiciles or buildings.
<i>Curfew</i>	A time defined by the authority when outdoor lighting is reduced to a specified maximum level or extinguished.
<i>Emergency conditions</i>	Loss of electrical power, fire, security alarm, or other situation requiring uninterrupted illumination for the path of egress.
<i>Fully Shielded Luminaire</i>	A residential luminaire with opaque top and sides, capable of only emitting light in the lower photometric hemisphere as installed.
<i>Frontlight</i>	For an exterior luminaire, light emitted in the quarter sphere below horizontal and in the direction of the intended orientation of the luminaire.
<i>Glare</i>	Light entering the eye directly from luminaires that causes visual discomfort or reduced visibility.
<i>Hardscape</i>	Permanent improvements to a site, including but not limited to parking lots, drives, entrances, curbs, ramps, stairs, steps, and similar construction.
<i>Hardscape Area</i>	Area in square feet of all hardscape including any medians, walkways, landscape areas 10 feet or less in width within the hardscape area used to calculate complete site method allowed lumens.
<i>Hardscape Perimeter</i>	Perimeter in linear feet of all hardscape outside perimeter plus perimeter around buildings and structures greater than 10 feet in width used to calculate complete site method allowed lumens.
<i>IDA</i>	International Dark-Sky Association, Tucson, AZ USA
<i>IES</i>	Illuminating Engineering Society, New York, NY USA
<i>Illuminated area</i>	An exterior area for which lighting of reasonable uniformity and illumination is provided; not incidentally lighted or partially lighted.
<i>Improved area</i>	The area of a specific use, measured in plan view.
<i>Initial Lamp Lumens</i>	Lumen rating of a lamp when the lamp is new and has not depreciated in light output (rated lamp lumens) Lamp lumen depreciation equals 1.0.

<i>Intended manner</i>	The manner of use of the product generally as listed, advertised and/or per manufacturer's standard installation instructions.
<i>Lamp</i>	A generic term for a source created to produce optical radiation (i.e. "light"), often called a bulb or tube.
<i>Lamp Watts</i>	The rated watts of the lamp, not including the watts of external auxiliaries.
<i>Landscape Lighting</i>	Lighting not mounted to poles or buildings, for the purpose of illuminating trees, shrubbery and other natural external elements.
<i>Light Pollution</i>	Light scattered by the atmosphere that interferes with the appreciation or observation of night skies
<i>Light Trespass</i>	Unwanted light that falls on neighboring properties or produces glare or distraction for observers away from the area for which the light is intended (also called "nuisance glare")
<i>Lighting</i>	Light produced by man-made sources, including electric lamps, gas lamps, and similar sources.
<i>Lighting Equipment</i>	Equipment specifically intended to provide electric illumination, including but not limited to, luminaire(s), poles, posts, and related structures, electrical wiring, and other necessary or auxiliary components.
<i>Lighting System</i>	On a site, all exterior man-made lighting sources, associated infrastructure and controls.
<i>Low Voltage Landscape Lighting</i>	Electric lighting powered at less than 15 volts and limited to lamps of 50 watts or less, not mounted to poles or buildings, for the purpose of illuminating trees, shrubbery and other natural external elements.
<i>Lumens (lm)</i>	International unit of luminous flux; light power corrected for $V_{\lambda}$ , the human photopic sensitivity function.
<i>Lighting Zone (LZ)</i>	A designation assigned by the Authority for specified parcels, areas or districts within its jurisdictional boundaries defining allowable ambient lighting levels, operational characteristics and other control criteria.
<i>Luminaire</i>	The complete lighting unit assembly (fixture), consisting of a lamp, or lamps and ballast(s) (when applicable), together with the parts designed to distribute the light (reflector, lens, diffuser), to position and protect the lamps, and to connect the lamps to the power supply.
<i>Mounting height</i>	The height of a luminaire above grade level. The horizontal spacing of poles is often measured in units of "mounting height". Example: "The luminaires can be spaced up to 4 mounting heights apart."
<i>New lighting</i>	Lighting for areas not previously illuminated; newly installed lighting of any type except for replacement lighting or lighting repairs.
<i>Obtrusive light</i>	Light that produces sky glow, light trespass, glare or other undesirable environmental impacts.
<i>Opaque</i>	A solid material allowing no light to pass through.
<i>Ornamental lighting</i>	Lighting that is not a sign and does not impact the function and safety of an area but is purely decorative, or used to illuminate architecture and/or landscaping, and installed for aesthetic effect.
<i>Partly Shielded Luminaire</i>	A residential luminaire in which the lamp is shielded by a translucent shade so as to prevent light from being directly emitted by the lamp or reflector into the upper photometric hemisphere

<i>Photoelectric Switch</i>	A control device employing a photocell or photodiode to detect daylight and automatically switch lights off by day.
<i>Project</i>	Installation of a lighting system under a single electrical permit or for a specific construction project, multiple permits when required for phased construction.
<i>Property line</i>	The edges of the legally-defined extent of privately owned property
<i>Public Right of Way</i>	Any sidewalk, planting strip, alley, street, or pathway, improved or unimproved, that is dedicated to public use.
<i>Radiosity</i>	A method for calculating lighting system performance that accounts for direct and reflected light by using Fourier coefficients to describe the transfer of radiative energy from sources to surfaces and among surfaces.
<i>Ray Tracing</i>	A method for calculating lighting system performance that accounts for direct and reflected light by tracing each ray from sources to surfaces and among surfaces until dissipated.
<i>Replacement Lighting</i>	Lighting installed specifically to replace existing lighting equipment that is sufficiently inoperable to be beyond repair(s).
<i>Repair(s)</i>	The reconstruction or renewal of any part of an existing luminaire for the purpose of its on-going operation, including but not limited to relamping or replacement of components such as; capacitor, ballast or photoelectric control.
<i>Residential Luminaire</i>	Luminaires used solely for compliance with Section V.
<i>Sales area</i>	Uncovered area used for sales of retail goods and materials, including but not limited to automobiles, boats, tractors and other farm equipment, building supplies, and gardening and nursery products.
<i>Seasonal lighting</i>	Temporary lighting installed and operated in connection with holidays, community celebrations or traditions.
<i>Service yard</i>	Uncovered hardscape specifically used for vehicular, marine or aviation service or for outdoor storage and/or loading of goods and materials
<i>Shielded Directional Luminaire</i>	A fully shielded residential luminaire with an adjustable mounting device allowing aiming in a direction other than straight downward.
<i>Sign</i>	Advertising, directional or other signs (governed by the sign ordinance)
<i>Site</i>	A geographic area within the jurisdiction of the Authority delineated by specific dimensions and coordinates or a complete land parcel defined by designated property boundaries as recorded by the Authority..
<i>Skyglow</i>	The illumination of clouds, moisture and airborne matter by lighting
<i>Temporary lighting</i>	Lighting installed and operated for periods not to exceed 60 days, completely removed and not operated again for at least 30 days.
<i>Third Party</i>	A party contracted to provide lighting, such as a utility company.
<i>Time Switch</i>	An automatic lighting control device that operates as an on/off switch for outdoor lighting according to time of day.
<i>Translucent</i>	A material allowing light to pass through while obscuring or diffusing the lamp.
<i>Uplight</i>	For an exterior luminaire, light emitted in the hemisphere at or above the horizontal plane.
<i>Urban Park</i>	A publicly accessible park in or near a town or city and not specified as a wildlife refuge or nature preserve.



### 1 **III. General Requirements for All Outdoor Lighting**

#### 2 **A. Conformance with All Applicable Codes**

3 All outdoor lighting shall be installed in conformance with the provisions of  
4 this Ordinance, applicable Electrical and Energy Codes, and applicable  
5 sections of the Building Code.

#### 6 **B. Applicability**

7 Except as described below, all outdoor lighting installed after the effective  
8 date of this Ordinance shall comply with these requirements. This includes,  
9 but is not limited to, new lighting, replacement lighting, or any other lighting  
10 whether attached to structures, poles, the earth, or any other location,  
11 including lighting installed by any third party.

12 *Exemptions to III.(B.)* The following are not regulated by this  
13 Ordinance:

- 14 a. Lighting equipment within public right-of-way or easement for  
15 the principal purpose of illuminating streets, roadways and/or  
16 other areas open to public transport by vehicle or pedestrian  
17 traffic. No exemption shall apply to any lighting equipment  
18 within the public right of way or easement when the purpose of  
19 the luminaire is to illuminate areas outside the public right of way  
20 or easement.
- 21 b. Lighting equipment for roadway rest areas without gas stations,  
22 restaurants or retail stores.
- 23 c. Lighting equipment for public monuments and statuary.
- 24 d. Lighting equipment solely for signs, (as this lighting is regulated  
25 by the Sign Ordinance).
- 26 e. Repairs to existing lighting equipment.
- 27 f. Temporary lighting equipment for theatrical, television,  
28 performance areas and construction sites.
- 29 g. Lighting equipment in swimming pools and other water features.
- 30 h. Temporary lighting equipment and seasonal lighting equipment  
31 provided that individual lamps are 10 watts or less.
- 32 i. Lighting equipment that is only used during emergency  
33 conditions.

1 j. Lighting equipment used solely for security and controlled by a  
2 motion sensor with photoelectric switch.

3 k. In Lighting Zones 2, 3 and 4, low voltage landscape lighting  
4 equipment controlled by a photoelectric switch or programmable  
5 time switch.

6 ***Exceptions to III. (B.)*** When the requirements herein conflict with  
7 specific lighting provisions of any of the following, only those  
8 specific provisions shall take precedence and all other requirements  
9 herein shall remain in force:

10 a. Lighting equipment specified or identified in a specific special  
11 use permit.

12 b. Lighting equipment required by laws and/or regulation of a  
13 government, authority or entity having applicable jurisdiction.

#### 14 **C. Use of Lighting Zones**

15 The Authority shall establish Lighting Zones (LZ) within its jurisdictional  
16 boundaries. The Lighting Zone shall define the limitations for outdoor  
17 lighting as specified in this ordinance. The descriptive criteria for each  
18 Lighting Zone shall be as follows:

##### 19 **LZ0: No ambient lighting**

20 Areas where the natural environment will be seriously and adversely  
21 affected by lighting. Impacts include disturbing the biological cycles  
22 of flora and fauna and/or detracting from human enjoyment and  
23 appreciation of the natural environment. Human activity is  
24 subordinate in importance to nature. The vision of human residents  
25 and users is adapted to the total darkness, and they expect to see little  
26 or no lighting. When not needed, lighting should be extinguished.

##### 27 **LZ1: Low ambient lighting**

28 Areas where lighting might adversely affect flora and fauna or disturb  
29 the character of the area. The vision of human residents and users is  
30 adapted to low light levels. Lighting may be used for safety, security  
31 and/or convenience but it is not necessarily uniform or continuous.  
32 After curfew, most lighting should be extinguished or reduced as  
33 activity levels decline.

34

1           **LZ2: Moderate ambient lighting**

2           Areas of human activity where the vision of human residents and  
3           users is adapted to moderate light levels. Lighting may typically be  
4           used for safety, security and/or convenience but it is not necessarily  
5           uniform or continuous. After curfew, lighting may be extinguished or  
6           reduced as activity levels decline.

7           **LZ3: Moderately high ambient lighting**

8           Areas of human activity where the vision of human residents and  
9           users is adapted to moderately high light levels. Lighting is generally  
10          desired for safety, security and/or convenience and it is often uniform  
11          and/or continuous. After curfew, lighting may be extinguished or  
12          reduced in most areas as activity levels decline.

13          **LZ4: High ambient lighting**

14          Areas of human activity where the vision of human residents and  
15          users is adapted to high light levels. Lighting is generally considered  
16          necessary for safety, security and/or convenience and it is mostly  
17          uniform and/or continuous. After curfew, lighting may be  
18          extinguished or reduced in some areas as activity levels decline.  
19

20    **D.    Lighting Controls and Curfews**

21          1. Automatic Control Requirements

22                 Controls shall be provided that automatically extinguish all outdoor  
23                 lighting by day using a switching device such as a photoelectric  
24                 switch, astronomic time switch or a control system such as a  
25                 programmable lighting controller, building automation system,  
26                 lighting energy management system or equivalent.

27                 *Exceptions to III.(D.) 1.* Automatic lighting controls are not  
28                 required for the following:

- 29                         a. Lighting under canopies.
- 30                         b. Lighting for tunnels, parking garages, garage entrances, and  
31                                 similar conditions.  
32



1           2. Curfews and Automatic Lighting Reduction Requirements

2           The Authority shall establish curfew time(s) specific to each  
3           Lighting Zone designation after which the total outdoor lighting  
4           lumens shall either be extinguished or at a minimum reduced by  
5           30%.

6           ***Exceptions to III.(D.) 2.*** Lighting reductions are not required for  
7           any of the following:

- 8           a. When there is only one (1) conforming luminaire on the  
9           property.
- 10          b. Code required lighting for steps, stairs, walkways, and points  
11          of ingress and egress to building and other facilities.
- 12          c. When in the opinion of the Authority, lighting levels must be  
13          maintained.
- 14          d. Motion activated lighting.
- 15          e. Lighting governed by special use permit in which times of  
16          operation are specifically identified.
- 17          f. Residential lighting
- 18

1 **iv. Requirements for Non-Residential Outdoor**  
2 **Lighting**

---

3 For all non-residential properties, and for multiple residential properties  
4 having common outdoor areas, all outdoor lighting shall comply either with  
5 Part A or Part B of this section.

6 **A. Prescriptive Method**

7 An outdoor lighting system for applications in this section shall comply with  
8 this Ordinance if it meets the requirements as defined in subsections 1 and 2,  
9 below.

10 1. Total Site Lumen Limit

11 The total installed initial lamp lumens of all outdoor lighting on the  
12 site shall not exceed the total site lumen limit. The total site lumen  
13 limit shall be determined using any one of the three methods listed  
14 in Table A, (Allowed Total Lumens per Site for Non-residential  
15 Outdoor Lighting). Only one method shall be used per permit  
16 application. For sites with existing lighting, the existing lighting  
17 shall be included in the calculation of total installed lumens.

18 2. Limits to Off Site Impacts

19 All luminaires shall be rated and installed according to Table C,  
20 (Maximum Allowable Backlight, Uplight and Glare (BUG)  
21 Ratings).

22 **B. Performance Method**

23 An outdoor lighting system for applications in this section shall comply with  
24 this Ordinance if when analyzed by the appropriate software it meets the  
25 specifications in Appendix A.

26

27

1 **v. Requirements for Residential Outdoor Lighting**

2 For all residential properties including multiple residential properties not  
3 having common areas, all outdoor lighting shall comply with Table D,  
4 (Residential Lighting Total Wattage Limits). Lighting not listed in Table D  
5 shall not be permitted unless exempt according to Section III (B.).

6 ***Exceptions to Section IV and Table D.***

7 a. Open flame gas lights (without mantle) are exempt.

8 b. If located more than 75 feet from all property lines, a fully shielded  
9 luminaire may be mounted up to 25 feet above adjacent grade.

10 c. Outdoor lighting for sports, agriculture and other uses/activities which  
11 exceed the limits defined in this section shall only be permitted by a  
12 special use permit.

13



---

**VI. Lighting by Special Use Permit Only**

---

**A. High Intensity and Special Purpose Lighting**

The following lighting systems are prohibited from being installed or used except by special use permit:

1. Temporary lighting in which any single luminaire exceeds 250 watts or the total lighting load exceeds 2000 watts.
2. Aerial Lasers.
3. Searchlights.
4. Other very intense lighting defined as having a light source exceeding 200,000 lumens or an intensity in any direction of more than 2,000,000 candelas.

**B. Complex and Non-Conforming Uses**

Upon issuance of a special use permit by the Authority, lighting not complying with the technical requirements of this ordinance but consistent with its intent may be installed for complex sites/uses or special uses including, but not limited to, the following applications:

1. Sports facilities, including but not limited to unconditioned rinks, open courts, fields, and stadiums.
2. Construction lighting.
3. Lighting for industrial sites having special requirements, such as petrochemical manufacturing or storage, shipping piers, etc.
4. Parking structures.
5. Bridges, public monuments, public buildings and urban parks.
6. Theme and amusement parks.

1 To obtain such a special use permit, applicants shall demonstrate that the  
2 proposed lighting installation:

3 a. Has been analyzed using the Performance Method and for which  
4 Sky Glow, Light Trespass and Glare values have been calculated.

5 b. Has sustained every reasonable effort to mitigate Sky Glow, Light  
6 Trespass and Offensive Glare supported by a signed statement  
7 describing the mitigation measures. Such statement shall be  
8 accompanied by computer calculations indicating the light trespass  
9 levels (horizontal and vertical at ground level) at the property line.

10 c. Employs lighting controls to reduce lighting at a Project Specific  
11 Curfew (“Curfew”) time to be established in the special use permit.

12 d. Complies with the Prescriptive or Performance Method after  
13 Curfew.

14 The Authority shall review each such special use permit application. A  
15 special use permit may be granted if, upon review, the Authority believes  
16 that the proposed lighting will not create unwarranted glare, sky glow, or  
17 light trespass.

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## **VII. Existing Lighting**

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Lighting installed prior to the effective date of this ordinance shall comply with the following.

### **A. Amortization**

On or before [amortization date], all outdoor lighting shall comply with this Code.

### **B. New Uses or Structures, or Change of Use**

Whenever there is a new use of a property (zoning or variance change) or the use on the property is changed, all outdoor lighting on the property shall be brought into compliance with this Ordinance before the new or changed use commences.

### **C. Additions or Alterations**

#### **1. Major Additions.**

If a major addition occurs on a property, lighting for the entire property shall comply with the requirements of this Code. For purposes of this section, the following are considered to be major additions:

- a. Additions of 50 percent or more in terms of additional dwelling units, gross floor area, seating capacity, or parking spaces, either with a single addition or with cumulative additions after the effective date of this Ordinance.
- b. Single or cumulative additions, modification or replacement of 50 percent or more of installed outdoor lighting luminaires existing as of the effective date of this Ordinance.

#### **2. Minor Modifications, Additions, or New Luminaires for Non-residential and Multiple Dwellings**

For non-residential and multiple dwellings, all additions, modifications, or replacement of less than 50 percent of outdoor luminaires existing as of the effective date of this Ordinance shall require the submission of a complete inventory and site plan detailing all existing and any proposed new outdoor lighting.

Any new lighting shall meet the requirements of this Ordinance.



- 1           3. Resumption of Use after Abandonment
- 2           If a property with non-conforming lighting is abandoned for a
- 3           period of six months or more, then all outdoor lighting shall be
- 4           brought into compliance with this Ordinance before any further use
- 5           of the property occurs.
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1 **viii. Enforcement and Penalties (Reserved)**

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1 **IX. Tables**

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2  
3 **Non-Residential Prescriptive Method**

4 Table A - Non-residential Outdoor Lighting Prescriptive Method - Allowed  
5 Total Lumens per Site.....18

6 Table B - Additional Lumen Allowance for Specific Applications.....19

7 Table C Prescriptive Method - Maximum Allowable Backlight, Uplight and  
8 Glare (BUG) Ratings.....21

9  
10 **Residential Lighting**

11 Table D - Residential Lighting Total Wattage and Lumen Limits for each  
12 Luminaire.....22

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**Table A - Non-residential Outdoor Lighting Prescriptive Method -  
Allowed Total Lumens per Site**

Only one (1) method may be used for each project.

Per Parking Space Method					
	Lighting Zone 0	Lighting Zone 1	Lighting Zone 2	Lighting Zone 3	Lighting Zone 4
May only be applied to projects up to 12 parking spaces (including handicapped accessible spaces).	500 lm/space (lumens per parking space)	700 lm/space	900 lm/space	1200 lm/space	1500 lm/space

Simple Hardscape Method					
	Lighting Zone 0	Lighting Zone 1	Lighting Zone 2	Lighting Zone 3	Lighting Zone 4
May be used for any project	1.5 lm/ ft <sup>2</sup> of hardscape*	2.5 lm/ ft <sup>2</sup> of hardscape*	4.0 lm/ ft <sup>2</sup> of hardscape*	8.0 lm/ ft <sup>2</sup> of hardscape*	12.0 lm/ ft <sup>2</sup> of hardscape*

Complete Site Method						
		Lighting Zone 0	Lighting Zone 1	Lighting Zone 2	Lighting Zone 3	Lighting Zone 4
May be used for any project  <i>The total allowance is the sum of each of the Basic, Perimeter, Area and Specific Use Allowances</i>	Basic Allowance	N/A	22,000 lm per site	33,000 lm per site	55,000 lm per site; plus	80,000 lm per site; plus
	Perimeter Allowance	10 lm per linear foot of hardscape perimeter	20 lm per linear foot of hardscape perimeter	30 lms per linear foot of hardscape perimeter	65 lm per linear foot of hardscape perimeter	100 lm per linear foot of hardscape perimeter
	Area Allowance	1 lm/ft <sup>2</sup> of hardscape	2 lm/ft <sup>2</sup> of hardscape	3 lm/ft <sup>2</sup> of hardscape	7 lm/ft <sup>2</sup> of hardscape	10 lm/ft <sup>2</sup> of hardscape
	Specific Use Allowance	Reference Table B (LZ 0)	Reference Table B (LZ 1)	Reference Table B (LZ 2)	Reference Table B (LZ 3)	Reference Table B (LZ 4)

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*\*When lighting intersections of site drives and public streets or roads the effective property line for the purpose of this section may be extended to the center line of the public right of way up to 5 times the width of the drive or site road on either side of the centerline of the intersecting drive or site road.*

1 **Table B - Additional Lumen Allowance for Specific Applications**  
 2 All of the following are “use it or lose it” allowances. All area and distance  
 3 measurements in plan view unless otherwise noted.

Lighting Application	Lighting Zone 0	Lighting Zone 1	Lighting Zone 2	Lighting Zone 3	Lighting Zone 4
<b>Building Entrances or Exits.</b> This allowance is per door. In order to use this allowance, luminaires must be within 20 feet of the door.	750 lm	2,000 lm	4,000 lm	6,000 lm	8,500 lm
<b>Entrances at Senior Care Facilities, Police Stations, Hospitals, Fire Stations, and Emergency Vehicle Facilities.</b> This allowance is lumens per primary entrance. To use this allowance, luminaire(s) must be installed within 100 feet of the entrance door.	N/A	4,000 lm	8,400 lm	12,000 lm	16,500 lm
<b>Building Facades.</b> This allowance is lumens per square foot of building façade that is illuminated. To use this allowance, luminaires must be aimed at the façade and capable of illuminating it without obstruction.	N/A	N/A	12 lm/ft <sup>2</sup>	25 lm/ft <sup>2</sup>	40 lm/ft <sup>2</sup>
<b>Outdoor Sales Lots.</b> This allowance is lumens per square foot of uncovered sales lots used exclusively for the display of vehicles or other merchandise for sale, and may not include driveways, parking or other non sales areas. To use this allowance, Luminaires must be within 10 mounting heights of the sales lot area.	N/A	10,000 lm plus 10 lm/ft <sup>2</sup>	10,000 lm plus 40 lm/ft <sup>2</sup>	15,000 lm plus 60 lm/ft <sup>2</sup>	22,000 lm plus 125 lm/ft <sup>2</sup>
<b>Outdoor Sales Frontage.</b> This allowance is for linear feet of sales frontage immediately adjacent to the principal viewing location(s) and unobstructed for its viewing length. A corner sales lot may include two adjacent sides provided that a different principal viewing location exists for each side. In order to use this allowance, luminaires must be located between the principal viewing location and the frontage outdoor sales area.	N/A	N/A	1,650 lm/ft	2,850 lm/ft	4,500 lm/ft
<b>Hardscape Ornamental Lighting.</b> This allowance is in lumens per square foot of the total illuminated hardscape area. In order to use this allowance, luminaires must be rated for 100 watts (3000 lumens) or less.	N/A	N/A	1.2 lm/ft <sup>2</sup>	2.4 lm/ft <sup>2</sup>	3.6 lm/ft <sup>2</sup>
<b>Drive Up Windows.</b> This allowance is lumens per window. In order to use this allowance, luminaires must be within 2 mounting heights of the sill of the window.	N/A	2,700 lm	4,000 lm	8,000 lm	13,000 lm

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<b>Guard Stations.</b> This allowance is lumens per square foot of guardhouse area plus 2,000 sf per vehicle lane. In order to use this allowance, luminaires must be within 2 mounting heights of a vehicle lane or the guardhouse.	N/A	10 lm/ft <sup>2</sup>	25 lm/ft <sup>2</sup>	50 lm/ft <sup>2</sup>	80 lm/ft <sup>2</sup>
<b>Outdoor Dining.</b> This allowance is lumens per square foot for the total illuminated hardscape of outdoor dining area. In order to use this allowance, luminaires must be within 2 mounting heights of the hardscape area of outdoor dining.	N/A	1 lm/ft <sup>2</sup>	10 lm/ft <sup>2</sup>	15 lm/ft <sup>2</sup>	25 lm/ft <sup>2</sup>
<b>Special Security Lighting for Retail Parking and Pedestrian Hardscape.</b> This allowance is lumens per square foot for the total area of illuminated retail parking and pedestrian hardscape identified as having special security needs. This allowance shall be in addition to the building entrance or exit allowance.	N/A	0.2 lm/ft <sup>2</sup>	2 lm/ft <sup>2</sup>	3 lm/ft <sup>2</sup>	N/A
<b>Vehicle Service Station Hardscape.</b> This allowance is lumens per square foot for the total illuminated hardscape area less any area of buildings, area under canopies, area off property, or areas obstructed by signs or structures. In order to use this allowance, luminaires must be illuminating the hardscape area and must not be within a building, below a canopy, beyond property lines, or obstructed by a sign or other structure.	N/A	5 lm/ft <sup>2</sup>	10 lm/ft <sup>2</sup>	25 lm/ft <sup>2</sup>	40 lm/ft <sup>2</sup>
<b>Vehicle Service Station Canopies.</b> This allowance is lumens per square foot for the total area within the drip line of the canopy. In order to use this allowance, luminaires must be located under the canopy.	N/A	30 lm/ft <sup>2</sup>	60 lm/ft <sup>2</sup>	80 lm/ft <sup>2</sup>	150 lm/ft <sup>2</sup>
<b>Vehicle Service Station Uncovered Fuel Dispenser.</b> This allowance is lumens per fueling side (2 max) per dispenser. In order to use this allowance, luminaires shall be within 2 mounting heights of the dispenser.	N/A	7,500 lm	15,000 lm	20,000 lm	40,000 lm
<b>All Other Sales Canopies.</b> This allowance is lumens per square foot for the total area within the drip line of the canopy. In order to qualify for this allowance, luminaires must be located under the canopy.	N/A	10 lm/ft <sup>2</sup>	40 lm/ft <sup>2</sup>	65 lm/ft <sup>2</sup>	100 lm/ft <sup>2</sup>
<b>Non-sales Canopies.</b> This allowance is lumens per square foot for the total area within the drip line of the canopy. In order to qualify for this allowance, luminaires must be located under the canopy.	N/A	5 lm/ft <sup>2</sup>	12 lm/ft <sup>2</sup>	25 lm/ft <sup>2</sup>	45 lm/ft <sup>2</sup>



1 **Table C Prescriptive Method - Maximum Allowable Backlight, Uplight**  
 2 **and Glare (BUG) Ratings**

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A luminaire may be used if it is rated as follows according to the Lighting Zone of the Site. If the luminaire is installed in other than the intended manner, the rating shall be determined to account for the actual photometric geometry. Luminaires equipped with adjustable mounting devices permitting alteration of luminaire aiming in the field shall not be permitted.

	Lighting Zone 0	Lighting Zone 1	Lighting Zone 2	Lighting Zone 3	Lighting Zone 4
<b>Allowed Backlight Rating</b>					
>2 mounting heights from property line	B0	B1	B2	B3	B4
1 to 2 mounting heights from property line and properly oriented*	B0	B1	B2	B3	B3
0.5 to 1 mounting height to property line and properly oriented*	B0	B0	B1	B2	B2
<0.5 mounting height to property line adjacent to a street and properly oriented*	B0	B0	B1	B2	B2
<0.5 mounting height to property line and properly oriented*	B0	B0	B0	B1	B2
<b>Allowed Uplight Rating</b>	U0	U1	U2	U3	U4
<b>Allowed Glare Rating</b>	G0	G1	G2	G3	G4

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*\* The luminaire must be mounted with backlight towards the property line.*

*Note: Backlight, Uplight, and Glare ratings are defined based on specific lumen limits for IESNA TM-15-07 solid angles.*

*Addendum A for IESNA TM-15-07: Backlight, Uplight, and Glare (BUG)  
 Ratings <http://www.iesna.org/PDF/Erratas/TM-15-07BUGRatingsAddendum.pdf>*

1 **Table D - Residential Lighting Total Wattage and Lumen Limits for**  
 2 **each Luminaire**

3 Each luminaire shall not exceed the lower of either the allowed Watts or  
 4 Lumens.

Allowable Lamp Wattages	Lighting Zone 0	Lighting Zone 1	Lighting Zone 2	Lighting Zone 3	Lighting Zone 4
Allowed Total Lamp Watts or Lumens for General Exterior Lighting**	25 watts plus .05 watts per ft <sup>2</sup> of site structures*	75 watts plus .05 watts per ft <sup>2</sup> of site structures*	150 watts plus .05 watts per ft <sup>2</sup> of site structures*	200 watts plus .05 watts per ft <sup>2</sup> of site structures*	200 watts plus .05 watts per ft <sup>2</sup> of site structures*
	750 lumens plus 0.45 lumens per ft <sup>2</sup>	2250 lumens plus 0.45 lumens per ft <sup>2</sup>	4500 lumens plus 0.45 lumens per ft <sup>2</sup>	6000 lumens plus 0.45 lumens per ft <sup>2</sup>	6000 lumens plus 0.45 lumens per ft <sup>2</sup>
Maximum Allowed Lamp Watts or Lumens Each for Fully Shielded Luminaires	25W	40W	60W	100W	100W
	750 lumens	1200 lumens	1800 lumens	3000 lumens	3000 lumens
Maximum Lamp Watts or Lumens Each for Partly Shielded Luminaires	N/A	15W	40W	40W	40W
	N/A	450 lumens	1200 lumens	1200 lumens	1200 lumens
Maximum Lamp Watts or Lumens each for Low Voltage Landscape Lighting	N/A	N/A	50W	50W	50W
	N/A	N/A	1500 lumens	1500 lumens	1500 lumens
Maximum Watts or lumens each for Shielded Directional Flood Lighting	N/A	N/A	60W	100W	100W
	N/A	N/A	1800 lumens	3000 lumens	3000 lumens

5 *\* The sum of the land area of residential buildings on the site including*  
 6 *habitable structures, garages, recreational buildings, and storage and*  
 7 *equipment structures.*

8 *\*\* For sites exceeding one acre, an additional allowance of 100 watts per*  
 9 *acre is allowed.*

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## 1 **Appendix “A” Performance Method**

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2 The Performance Method requires the use of computer software that  
3 employs either radiative transfer (radiosity) and/or ray tracing methods to  
4 predict lighting system performance. Such software is typically used for  
5 lighting design and illuminating engineering, and most current programs  
6 include CAD interfaces to enable rapid and accurate data input. For the  
7 purposes of this analysis, input data shall include all buildings, structures  
8 and significant topography and may, at the option of the analyst, include  
9 trees and minor topography.

10 The software must be modified to perform the following tests and then  
11 return a “pass” rating only if all three tests are passed for the Lighting Zone  
12 of the Project. In addition, the software should provide the analyst with  
13 feedback to aid in interpreting the results and correcting deficiencies.

### 14 **Test 1: Analysis of Off-site Lumen Impact (or “Light Pollution” or** 15 **“Skyglow”)**

- 16 1. Calculate the *allowed* offsite lumens as follows:
  - 17 a. Determine the total allowed on-site lumens using the  
18 “Complete Site Method” under the Prescriptive Method  
19 (Section IV (A.))
  - 20 b. Multiply by 0.1. This is the allowed offsite lumens.
- 21 2. Calculate the *relative skyglow* produced by off-site lumens as follows:
  - 22 a. Establish the worst-case condition: Multiply the allowed offsite  
23 lumens calculated in step 1b by the skyglow multiplier for the  
24 90-100° range of exitant angles from Appendix A–Table A. This  
25 is the *maximum relative average sky luminance* that would be  
26 produced by the allowed offsite lumens.
  - 27 b. (This calculation includes direct and reflected light.) Determine  
28 the amount and exitant angles of all lumens leaving the site  
29 using the vertical angular increments in the following Table.  
30 Multiply the lumens leaving the site in each of these angular  
31 zones by the corresponding multiplier from Appendix A–Table A.  
32 These products are the *relative average sky luminance* produced by  
33 the lumens leaving the site. Lumens that are emitted downward  
34 and not blocked (that is between 0° and 90°) are counted only if  
35 they leave the site. All lumens emitted upward and not blocked  
36 are counted.

(NOTE: the reference document (B.)(1.) below shall be consulted as shall new data from this and other sources. At such time as additional data warrants, the table shall be modified to account for location, climate and other conditions.)

- c. Add the relative average sky luminances from all solid angles. This is the total relative average sky luminance (“skyglow”) produced by all the offsite lumens.

**Appendix A: Table A – Skyglow Multiplier of Exitant Lumens**  
*(interpreted from Baddiley)*

Vertical exitant angles	Skyglow Multiplier
0-10°	0.002
10-20°	0.002
20-30°	0.003
30-40°	0.003
40-50°	0.005
50-60°	0.009
60-70°	0.015
70-80°	0.029
80-90°	0.337
90-100°	1.000
100-110°	0.774
110-120°	0.587
120-130°	0.436
130-140°	0.236
140-150°	0.170
150-160°	0.134
160-170°	0.102
170-180°	0.033

- 3. The design passes Test 1 if the ratio of the total relative average sky luminance produced by all the offsite lumens calculated in step 2b is less than or equal to **\*\*\*TBD\*\*\*%** of the worst case relative average sky luminance calculated in step 2a.



- 1 **Test 2: Analysis of Light Trespass Impact**
- 2 Calculate line of sight illuminance at or above grade on a vertical plane at
- 3 the property line, up to the highest point of structures or luminaires.
- 4 Calculate the direct light from individual luminaires and light reflected from
- 5 all solid surfaces on the site. Assume the reflecting surfaces are diffuse. If
- 6 no point illuminance exceeds defined threshold values for each lighting
- 7 zone, then the design passes Test 2.

8

9 **Appendix A: Table B – Maximum Line of Sight Illuminance at Any**  
 10 **Vertical Plane Boundary**

Maximum Illuminance	Lighting Zone 0	Lighting Zone 1	Lighting Zone 2	Lighting Zone 3	Lighting Zone 4
	0.5 lux (0.05 fc)	1.0 lux (0.10 fc)	3.0 lux (0.30 fc)	8.0 lux (0.8 fc)	15.0 lux (1.5 fc)

11

- 12 **Test 3: Analysis of Glare Impact**
- 13 Calculate the modified DeBoer glare rating according to the reference
- 14 document (B.)(2.) below for E1 and E2 at or above grade (within 55 degrees
- 15 above horizontal and 75 degrees below horizontal) on a vertical plane at the
- 16 property line, up to the highest point of structures or luminaires within the
- 17 site. The design passes if the rating is higher than or equal to the following
- 18 ratings:

19

20 **Appendix A: Table C Minimum Modified DeBoer Rating**  
 Viewed from Any Boundary

21

	Lighting Zone 0	Lighting Zone 1	Lighting Zone 2	Lighting Zone 3	Lighting Zone 4
	TBD	TBD	TBD	TBD	TBD

22

23 **Minimum DeBoer Rating**

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25 **Reference Papers**

- 26 1. Skyglow Impact (Reserved for Baddiley paper)
- 27 2. Modified DeBoer Method for Rating Glare (Reserved for LRC Paper)

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**Chapter 15.30**  
**Dark Sky Ordinance**  
(Ord. 2002-11)

- 15.30.000 [Purpose](#)
- 15.30.010 [Definitions](#)
- 15.30.020 [Scope and Applicability](#)
- 15.30.030 [Exemptions and Exceptions](#)
- 15.30.040 [Approved materials and methods of installation](#)
- 15.30.050 [Submittals](#)
- 15.30.060 [General Standards](#)
- 15.30.070 [Non-Permitted Lighting](#)
- 15.30.080 [Appeals](#)
- 15.30.090 [Violations](#)
- 15.30.100 [Penalties](#)
- 15.30.110 [Severability](#)

**15.30.000 PURPOSE**

The purpose of the Sandy Dark Sky Ordinance is to regulate outdoor lighting in order to reduce or prevent light pollution. This means to the extent reasonably possible the reduction or prevention of glare and light trespass, the conservation of energy, and promotion of safety and security. (Ord. 2002-11)

**15.30.010 DEFINITIONS**

The "IES" (Illuminating Engineering Society of North America) Lighting Handbook, most recent edition, the City of Sandy Development Code, and Building Code, shall be used for the definition of terms used in this ordinance but not defined herein. In the case where a definition of a term of this ordinance is found to be in conflict with a definition of a term of any other ordinance, "IES" handbook or regulation, the more restrictive definition will apply.

**Area Light:** Light that produces over 2050 lumens (See Table 2 for Light Output of Various Lamps). Area lights include, but are not limited to, street lights, parking lot lights and yard lights.

**Automatic timing device:** A device that automatically controls the operation of a light fixture or fixtures, circuit or circuits. Photocells and light and or motion sensors shall be considered automatic-timing devices

**Average Footcandle:** The level of light measured at an average point of illumination between the brightest and darkest areas. The measurement can be made at the ground surface or at four to five feet above the ground.

**Bulb:** The source of electric light. To be distinguished from the whole assembly (See Luminaire).

**Candela (cd):** Unit of luminous intensity.

**Eighty-five (85) Degree Full Cut-Off Type Fixtures:** Fixtures that do not allow light to escape above an 85-degree angle measured from a vertical line from the center of the lamp extended to the ground.

**Exterior Lighting:** Temporary or permanent lighting that is installed, located or used in such a manner to cause light rays to shine outside. Fixtures that are installed indoors that are intended to light something outside are considered exterior lighting for the intent of this Ordinance.

**Fixture:** The assembly that holds the lamp in a lighting system. It includes the elements designed to give light output control, such as a reflector (mirror) or refractor (lens), the ballast, housing, and the attachment parts.

**Flood Light:** Light that produces up to 1800 lumens (See Addendum 1 for Light Output of Various Lamps) and is designed to "flood" a well-defined area with light. Generally, floodlights produce from 1000 to 1800 lumens.

**Foot-candle:** Illuminance produced on a surface one foot from a uniform point source of one candela. Measured by a light meter.

**Full cutoff fixture:** A fixture which, as installed, gives no emission of light above a horizontal plane.

**Glare:** Intense light that results in discomfort and/or a reduction of visual performance and visibility.

**Holiday Lighting:** Festoon type lights, limited to small individual bulbs on a string, where the output per bulb is no greater than 15 lumens.

**IESNA - Illuminating Engineering Society of North America (IES or IESNA):** The professional society of lighting engineers, including those from manufacturing companies, and others professionally involved in lighting.

**Illuminance:** Density of luminous flux incident on a surface. Unit is foot-candle or lux.

**Illuminating devices:**

1. Light fixture types

- a. Full cutoff fixture types - A fixture which, as installed, gives no emission of light above a horizontal plane.
- b. Floodlights and Spotlights - Fixtures defined as having a full beam width or beam spread of less than 110 degrees.

2. Lamp types

- a. Incandescent lamps - Lamps which produce light via an electrically heated metallic filament.
- b. Fluorescent lamps - Lamps that use fluorescence of a phosphor to produce visible light.
- c. High Intensity Discharge Lamps - Lamps, which produce visible light directly by the electrical heating or excitation of a gas. Examples of such lighting include, but are not limited to, Metal Halide, High Pressure Sodium, Low Pressure Sodium and Mercury Vapor. For purposes of this Ordinance, fluorescent lights are not considered HID lighting.

**Lamp or Bulb:** The light-producing source installed in the socket portion of a luminaire.

**Light Pollution:** Any adverse effect of manmade light including, but not limited to, light trespass, uplighting, the uncomfortable distraction to the eye, or any manmade light that diminishes the ability to view the night sky. Often used to denote urban sky glow.

**Light trespass:** Light emitted by a luminaire falls where it is not wanted or needed or shines beyond the property on which the luminaire is installed.

**Lighting:** Any or all parts of a luminaire that function to produce light.

**Lumen:** Unit of luminous flux; the flux emitted within a unit solid angle by a point source with a uniform luminous intensity of one candela. One foot-candle is one lumen per square foot. One lux is one lumen per square meter.

**Luminaire:** The complete lighting unit, including the lamp, the fixture, and other parts.

**Luminance:** At a point and in a given direction, the luminous intensity in the given direction produced by an element of the surface surrounding the point divided by the area of the projection of the element on a plane perpendicular to the given direction. Units: candelas per unit area. The luminance is the perceived brightness that we see, the visual effect of the illuminance, reflected, emitted or transmitted from a surface.

**Measurement:**

1. Lamp output

- a. Total output: Measurement of total output is in lumens. This should be understood to be the initial lumen for the lamp.
- b. Illuminance: Measurements of illuminance are expressed in initial lumens per square foot. (A desktop illuminance of twenty (20) initial lumens per square foot is adequate for most purposes.)

In measuring illuminance, the light detector should be pointed directly at the light source or sources. The intervening light path should be free of obstruction.

**Outdoor light fixture:** An outdoor illuminating device, outdoor lighting or reflective surface, luminous tube, lamp similar device, permanently installed or portable, used for illumination, decoration, or advertisement. Such devices shall include, but are not limited to lights used for:

- A. parking lot lighting;
- B. roadway lighting;
- C. buildings and structures;
- D. recreational areas;
- E. landscape lighting;
- F. billboards and other signs (advertising or other);
- G. product display area lighting;
- H. building or structure decoration;
- I. building overhangs and open canopies.

**Recessed:** When a light is built into a structure or portion of a structure such that the light is fully cut-off and no part of the light extends or protrudes beyond the underside of a structure or portion of a structure.

**Partially Shielded:** The bulb of the fixture is shielded by a translucent siding and the bulb is not visible at all. Light may be emitted at the horizontal level of the bulb.

**Shielded:** When the light emitted from the fixture is projected below a horizontal plane running through the lowest point of the fixture where light is emitted. The bulb is not visible with a shielded light fixture, and no light is emitted from the sides of the fixture. Also considered a full cut-off fixture.

**Spotlight or Floodlight:** Any lamp that incorporates a reflector or a refractor to concentrate the light output into a directed beam in a particular direction (see definition for floodlight).

**Temporary Lighting:** Lighting that is intended to be used for a special event for seven (7) days or less.

**Uplighting:** Lighting that is directed in such a manner as to shine light rays above the horizontal plane.

### 15.30.020 SCOPE & APPLICABILITY

- A. **New Lighting.** All exterior outdoor lighting installed after the effective date of this Chapter in any and all zones in the City shall conform with the requirements established by this Chapter and other applicable ordinances unless otherwise exempted. This ordinance does not apply to indoor lighting.
- B. **Existing Lighting.** All existing lighting located on a subject property that is part of a land use application or building permit, dependent on the value of the project, shall be brought into conformance with this Ordinance. The value of the project will be determined in accordance with Chapter 15.20.040 and 15.20.050. If the value exceeds the threshold in Chapter 15.20.020 and 15.20.030, all lighting on the property must be brought into full compliance before reoccupation or reuse.
- C. **Nonconforming Uses or Structures.** If a nonconforming use or structure has been abandoned for more than twelve months all lighting on the property must be brought into full compliance before reoccupation or reuse.
- D. Conformity shall occur prior to issuance of Certificate of Occupancy, Final Inspection, or Final Plat Recordation, when applicable. For other permits, the applicant shall have a maximum of thirty days from date of permit issuance to bring the lighting into conformance.
- E. Preferred Source - Low-pressure Sodium (LPS) lamps are the preferred illumination source throughout the city and their use is encouraged.
- F. When an existing fixture is replaced, the replacement fixture shall meet the requirements of this chapter.
- G. Architectural design, site planning, landscaping and lighting may be further restricted elsewhere in the Sandy



Municipal Code.

- H. All governmental agencies, federal, state or county, which operate within the city limits of Sandy - should experience no difficulty meeting the requirements of this ordinance and are encouraged by the city to comply with its provisions.
- I. In the event of a conflict with any other chapter of the Sandy Municipal Code, the more stringent requirements shall apply.

### **15.30.030 EXEMPTIONS AND EXCEPTIONS**

- A. Residential fixtures consisting of lamp types of 2050 lumens and below (the acceptability of a particular light is decided by its lumen output, not wattage. Check manufacturer's specifications). Examples include:
  - 1. 100 Watt Standard Incandescent and less
  - 2. 100 Watt Midbreak Tungsten-Halogen (quartz) and less
  - 3. 25 Watt T-12 Cool White Fluorescent and less
  - 4. 18 Watt Low Pressure Sodium and less
- B. Federally funded and state funded roadway construction projects, are exempted from the requirements of this division only to the extent it is necessary to comply with federal and state requirements.
- C. Fossil Fuel Light. Fossil fuel light produced directly or indirectly by the combustion of natural gas or other utility-type fossil fuels is exempt from the provisions of this article.
- D. Full cutoff street lighting, which is part of a federal, state, or municipal installation.
- E. Holiday lighting.
- F. Lighting of sports facilities or stadiums prior to 11:00 p.m. Illumination after 11:00 p.m. is also permitted if necessary in order to conclude a recreational, sporting or other scheduled activity, which is in progress prior to that time.
- G. Specialized lighting necessary for safety, such as navigated or runway lighting of airports, or temporary lighting associated with emergency operations, road hazard warnings, etc.
- H. Traffic control signals and devices.

### **15.30.040 APPROVED MATERIALS AND METHODS OF INSTALLATION**

The provisions of this chapter are not intended to prevent the use of any design, material or method of installation or operation not specifically prohibited by this chapter, provided such alternative design, material or method conforms with the intent of this division and has been approved by the building official.

The Building Official administrator may approve an alternative design provided he finds that:

- A. It complies with the applicable specific requirements of this division; or
- B. It has been designed or approved by a registered professional engineer and complies with the purpose of this division.

### **15.30.050 SUBMITTALS**

All applications for building permits or land use planning review which include installation of outdoor lighting fixtures shall include lighting plans conforming to the provisions of this Ordinance. The Planning Director and/or Building Official shall have the authority to request additional information in order to achieve the purposes of this Ordinance.

- PLANNING DEPARTMENT
- August 2018
- A. The submittal shall contain the following information and submitted as part of the site plan to the Planning and Building departments for approval.
    1. Plans indicating the location, type, intensity, and height of luminaries including both building and ground-mounted fixtures;
    2. A description of the luminaries, including lamps, poles or other supports and shielding devices, which may be provided as catalogue illustrations from the manufacturer;
    3. Photometric data, such as that furnished by the manufacturer, showing the angle of light emission and the foot-candles on the ground; and
    4. Additional information as may be required by the city in order to determine compliance with this Ordinance.
  - B. Applications for single/multi-family residential or other projects where any single outdoor light fixture exceeds (2050 lumens output) shall be required to comply with paragraph A above.

### **15.30.060 GENERAL STANDARDS**

The following general standards shall apply to all outdoor lighting installed after the effective date of this ordinance, which is not exempted above:

- A. **Area Lights:** All area lights, including street lights and parking area lighting, shall be full cut-off fixtures and are encouraged to be eighty-five (85) degree full cut-off type fixtures. Street lights shall be high-pressure sodium, low-pressure sodium, or metal halide, unless otherwise determined by the city that another type is more efficient. Street lights along residential streets shall be limited to a 70-watt high-pressure sodium (hps) light. Street lights along nonresidential streets or at intersections shall be limited to 100 watts hps, except that lights at major intersections on state highways shall be limited to 200 watts hps. If the city permits a light type other than high-pressure sodium, then the equivalent output shall be the limit for the other light type.
- B. **Canopy Lights:** All lighting shall be recessed sufficiently so as to ensure that no light source is visible from or causes glare on public rights-of-way or adjacent property.
- C. **Illumination Levels:** Illumination levels and uniformity shall be in accordance with current recommended practices of the Illuminating Engineering Society. Recommended standards of the illuminating engineering society shall not be exceeded.
- D. All outdoor lighting systems shall be designed and operated so that the area 10 feet beyond the property line of the premises receives no more than .25 (one quarter) of a foot-candle of light from the premises lighting system.
- E. **Temporary Lighting:** Temporary lighting that conforms to the requirements of this Ordinance shall be allowed. Nonconforming temporary exterior lighting may be permitted by the Building Official only after considering 1) the public and/or private benefits which will result from the temporary lighting; 2) any annoyance or safety problems that may result from the use of the temporary lighting; and, 3) the duration of the temporary nonconforming lighting. The applicant shall submit a detailed description of the proposed temporary nonconforming lighting to the Building Official.
- F. **Towers:** All radio, communication, and navigation towers that require lights shall have dual lighting capabilities. For daytime, the white strobe light may be used, and for nighttime, only red lights shall be used.

### **15.30.070 NON-PERMITTED LIGHTING**

- A. Newly installed fixtures, which are not full-cutoff fixtures.
  - Lighting which presents a clear hazard to motorists, cyclists, or pedestrians.
- C. **Laser Source Light.** The use of laser source light or any similar high intensity light for outdoor advertising or entertainment is prohibited.

**15.30.080 APPEALS**

If an application is denied, an individual shall have the right of appeal to the City Council. The fee for an appeal shall be the same as a Type III review (Section 2-Master Fee Resolution).

**15.30.090 VIOLATIONS**

This section may be enforced on the basis of a formal complaint filed in writing with the city.

**15.30.100 PENALTIES**

See Section 1.16.010 of the Sandy Municipal Code.

**15.30.110 SEVERABILITY**

The provisions of this ordinance are severable and if any paragraph, section, subsection, or part of this ordinance is held to be invalid, unenforceable, unconstitutional, or inapplicable to any person or circumstance, such illegality, invalidity, unconstitutionality, or inapplicability shall not affect or impair the remainder of this ordinance.

# TABLE 1: CODE REQUIREMENTS TABLES FOR SHIELDING

WATTAGE - SEE SECTION 1 BELOW

Lamp Type	25	30	35	40	50	60	75	100	110 OR MORE
JW PRESSURE SODIUM	UNSHIELDED	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD
HIGH PRESSURE SODIUM	UNSHIELDED	UNSHIELDED	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD
METAL HALIDE	UNSHIELDED	UNSHIELDED	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD
FLUORESCENT	UNSHIELDED	UNSHIELDED	UNSHIELDED	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD
QUARTZ	UNSHIELDED	UNSHIELDED	UNSHIELDED	UNSHIELDED	UNSHIELDED	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD
TUNGSTEN HALOGEN	UNSHIELDED	UNSHIELDED	UNSHIELDED	UNSHIELDED	UNSHIELDED	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD
MERCURY VAPOR	UNSHIELDED	UNSHIELDED	UNSHIELDED	UNSHIELDED	UNSHIELDED	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD	DIRECTED SHIELD
INCANDESCENT	UNSHIELDED	UNSHIELDED	UNSHIELDED	UNSHIELDED	UNSHIELDED	UNSHIELDED	UNSHIELDED	UNSHIELDED	UNSHIELDED

1. For the purpose of this section wattage ratings for lamp types will be for either a single lamp source or multiple lamp sources when installed in a cluster.
2. Lamp types not listed in the table may be approved for use by the building official providing installation of these lamps conforms to the lumen limits established in this section.
3. Glass tubes filled with argon, neon or krypton do not require shielding.



**Table 2: TYPICAL LUMEN VALUES FOR VARIOUS LAMP WATTAGE \*\***

WATTAGE	LOW PRESSURE SODIUM	HIGH PRESSURE SODIUM	METAL HALIDE	FLUORESCENT	QUARTZ	MERCURY VAPOR	INCANDESCENT
9				600			
18	1,800						
35	4,725	2,250					
40		4,000		2,250			480
50					1,400	1,140	480
55	7,925						
60							870
70		5,800	5,500				
75						2,800	1,190
90	14,400						
100		9,500	8,000			4,300	1,750
110				6,600			
150		16,000					2,850
175			14,000			8,600	
200		22,000					4,010
250		27,500	20,500			12,100	
300							6,360
400		50,000	36,000			22,500	
500							10,850

\*\* Taken from data supplied by Portland General Electric - Energy Resource Center



Polk County

From: Martinez, Ana [AnaMartinez@polk-county.net]  
Sent: Friday, July 23, 2010 5:01 PM  
To: Helen Sears  
Subject: RE: JLUS

Helen, I left early and missed your email. Nobody else had a comment, so the one below is the only one. Have a great weekend Ana

---

From: Helen Sears [hsears@cfrpc.org]  
Sent: Friday, July 23, 2010 2:56 PM  
To: Martinez, Ana  
Subject: RE: JLUS

Hi Ana, We need the County's comments asap. I know you are up to your EARS—but could you could get something to me this week? Please let me know. Helen

From: Martinez, Ana [mailto:AnaMartinez@polk-county.net]  
Sent: Wednesday, June 30, 2010 10:11 AM  
To: Helen Sears  
Subject: JLUS

Helen, I have been looking at the JLUS for Polk County. There is a lot in there that was not in the draft I had. Most of the stuff I think we can incorporate into our processes with o problem, but there is a couple of things that might take longer to incorporate into our system. I am going to give copies of the Polk county section to our Land Development people (Chandra's group) to read because they are the ones mainly involved with the LDC. I didn't see anything that is totally out there, but there is some strategies that might take some time/effort to implement. The only thing that I didn't catch before is in the section that talks about land uses and it says River Ranch has land use designations of Institutional and mixed use (page 7-19, column on the right, first and third paragraphs) . There might be a church or something in there, but that development is a DRI with permanent and seasonal residents as well as resort facilities. The land use designation is still DRI. DO you have an idea of when we are going to meet again? I want to make sure I have comments or questions from everyone by then. Thanks, Ana

Ana Martinez-Hubert  
Long Range Planning Division  
Ph # (863) 534-6486  
Fax # (863) 534-6471  
Drawer TS05  
Post Office Box 9005  
Bartow, Florida 33831-9005

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Please Note: Florida has a very broad Public Records Law. Most written communications to or from State and Local Officials regarding State or Local business are public records available to the public and media upon request. Your email communications may therefore be subject to public disclosure.

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\*\*\*\*\*

From: Morgan Jr, John [jmorganj@sfwmd.gov]  
Sent: Tuesday, July 20, 2010 12:57 PM  
To: Helen Sears  
Cc: Barletto, Margaret; Braun, Rod  
Subject: Joint Land Use Study Report

Helen:

I have reviewed the draft report and have mostly editorial comments. I am sending you the marked up report. Please give me a call when you have an opportunity to review the comments. I focused my comments primarily in the Highlands County section but they also pertain to the other local governments.

I do have some general comments that should be considered in the report:

1. In the current report, the Bird/Aircraft Strike Hazards (BASH) issue focuses primarily on landfills. This discussion should be expanded to consider water resources civil works projects such as stormwater treatment areas (STAs), water storage facilities (reservoirs), ecosystem restoration projects such as the Kissimmee River Restoration, and efforts to store and treat water and conserve natural resources on private lands. Implementation of plans for the Lake Okeechobee Watershed and Kissimmee River will likely result in habitat improvements which will tend to attract birds.
2. The height restrictions proposed for facilities could impact the water management district's structures and communications network (towers) for operating structures and collecting water resources data. Planned recreational facilities such as wildlife observation towers may also be impacted.

Thanks for the opportunity to comment. I look forward to discussing the comments with you.

John Morgan  
Policy & Planning Analyst - Lead  
Intergovernmental Policy and Planning Division  
South Florida Water Management District  
(561)682-2288 Office  
(561)719-4423 Cellular

SWFWMD- JLUS comments

From: Daniel L. Kushmer [Danny.Kushmer@swfwmd.state.fl.us]  
Sent: Monday, June 21, 2010 5:10 PM  
To: Helen Sears  
Subject: JLUS

One error I found, on page ES-6 you have me associated with South Florida Water Management District (SFWMD) it should be Southwest Florida Water Management District (SWFWMD).

Danny Kushmer  
Community Affairs  
SWFWMD  
863-559-8062

Sent from BlackBerry  
IMPORTANT NOTICE: All E-mail sent to or from this address are public record and archived. The Southwest Florida Water Management District does not allow use of District equipment and E-mail facilities for non-District business purposes.



<p><b>GEORGE HENSLEY, JR</b></p> <p><b>COUNCIL:</b>  <b>JOHN CLARK, PRESIDENT</b>  <b>SCOTT STANLEY, PRO-TEMPORE</b>  <b>JOHN GRIFFIN</b>  <b>MARGIE RHOADES</b>  <b>BUDDY WHITLOCK</b></p>	<p><b>THE CITY OF</b></p> <p><b>SEBRING</b></p> <p>368 SO. COMMERCE. AVE.  SEBRING, FL 33870  (941) 471-5102  (941) 471-5438(FAX)</p>	<p><b>KATHY HALEY, CMC</b>  CITY CLERK</p> <p><b>SCOTT NOETHLICH</b>  CITY ADMINISTRATOR</p> <p><b>JIM POLATTY</b>  Planning &amp; Zoning Director</p>
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July 19, 2010

TO: Helen Sears, Senior Planner, Central Florida Regional Planning Council

FROM: Jim Polatty, Planning and Zoning Director

SUBJECT: Input into the Joint Land Use Study June 2010 Draft

Thank you for providing the opportunity for input in the JLUS study. These are my comments and not the City of Sebring's. This study is very important to our Country's national defense but also to the economic well being of our County. The continued existence of the Range's use for military training depends upon the implementation of many of these recommendations.

1. Each local government should be asked to either adopt or at least approve this study by resolution. It would be a serious mistake for any local government, especially a County government to "put this study on the shelf" and not implement many of its recommendations.
2. What is the relative importance of each of the recommendations? For instance, some of the recommendations seem to be of critical importance for the successful maintenance of the Range's military mission. You may want to give a priority rating or evaluation to each recommendation or at least group them by level of importance. For example, the disclosure provisions seem to be critical and can be implemented immediately. Some of the other recommendations depend upon further study and can be grouped in a category for future action.
3. There are a few typos that need correcting, including Figures 2-15 and 4-12 are "Future" Land Use, not "Figure" Land Use. Sebring recommendations # 14 and # 15 on the second column of page 4-20 are incorrectly numbered and should be # 16 and # 17.
4. The Land Use Compatibility Chart in Table 4-3 on page 4-29 shows that "potential uses and related structures are normally compatible without restrictions" for the MIPA-3 (Military Influence Planning Area). However, if Table 4-3 purports to show the compatibility between the land use categories and the MIPA-3, then there is a disconnect between the fact that Sebring is located in the MIPA-3 and the recommendations contained on pages 4-19 and 4-20 and the detailed recommendations on pages 4-20 through 4-28. Some clarification is needed. How

are these recommendations needed when the table seems to say “uses and structures are normally compatible without restrictions”?

5. A clear statement or table is needed to state what are the noise levels in the MIPA-1, MIPA-2, and MIPA-3. What are the db levels in all three MIPAs?. Can Figure 4-5 on page 4-9 be used to guess that area is the same as the MIPAs? Can the MIPA db be calculated by applying the noise level from Figure 4-5 as the db in the MIPA-3?
6. Recommendation # 3 (disclosure statements) located on page 4-19 and discussed in greater length on page 4-22 seems critically important in the MIPA-1 and MIPA-2 but it is not required in the MIPA-3. It is not clear how important the disclosure statement is in the MIPA-3. The discussion of Recommendation # 3 does not even mention the MIPA-3. With a decibel level of up to 115 db (if using Figure 4-5 to calculate the db level in the MIPA-3 is the correct methodology), then the disclosure statement may also be important in the MIPA-3.
7. It seems that given the discussion above, many of the land use recommendations on pages 4-26 and 4-27 are not applicable. For instance, why, how, and where does the City need to regulate tall buildings (second column on page 4-26), outdoor lighting (second column on page 4-27) and the use of radio frequency spectrum bands on wireless LAN and microwave cordless devices? These regulations are not explained for their applicability in the MIPA-3.
8. Sebring recommendation # 14 lists declarative statements for the MIPA-1 and MIPA-2 when Sebring is in neither area and it does not look like the City will ever annex land in those areas. The only focus for the City of Sebring should be the MIPA-3. Recommendations about compatibility between existing and future land use and development and military operations that are to occur at the Range should be directed to the MIPA-3 for the City of Sebring.
9. Page 4-28 contains detail discussion of an overlay district. First, when you are dealing with the entire jurisdiction of Sebring in one MIPA, then it is not logical to adopt the MIPA as an overlay but as a city wide ordinance. Second, does a City in the MIPA implement in such an overlay district? This discussion of recommendation # 14 must be revised and clarified to answer these questions. It is understandable to adopt such overlay districts in the County where all three MIPAs exist. Third, what are the differences in approaches for regulating land uses in each MIPA?

From: Tricia Martin [tricia\_martin@tnc.org]  
 Sent: Thursday, June 24, 2010 1:53 PM  
 To: Helen Sears  
 Subject: JLUS comments

Helen,

Sorry I can't make it tomorrow. I've quickly looked over the document (pls. excuse me if I've overlooked something). Here are some observations/comments:

- ? Pg. 2-2 -Not sure why they haven't wanted to identify fire/smoke as an issue (many military activities start fires; the installation does extensive burning to reduce the risk of wildfires and for ecological reasons) – I've brought it up a few times.
- ? Indicate on the Figures entitled TNC Areas' of Conservation Significance – the limit of the study – 10 mile buffer around APAFR.
- ? Also on those Figures make the FF areas stand out more – hard to read.
- ? Again on that Figure the Areas of Conservation Significance aren't explained anywhere that I could find.
- ? No literature citation throughout the entire document? (where did the history on the range come from etc.; include reference to TNC's study used to make the above figures)
- ? Maybe even include a glossary for all the acronyms.
- ? Appendices not included.

Tricia

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From: Tricia Martin  
 Sent: Thursday, June 24, 2010 11:17 AM  
 To: [hsears@cfrpc.org](mailto:hsears@cfrpc.org)  
 Subject: easments

Helen,

Here's a map of "official" easements around APAFR. If Tetra Tech doesn't have these, their GIS person can contact me and we can let them know where to get the data. (I haven't checked Tom's shape files.)

Tricia

---

Tricia Martin  
 Peninsular Florida Programs Director

[tricia\\_martin@tnc.org](mailto:tricia_martin@tnc.org)  
 (863) 635-7506 (Phone)  
 (863) 528-2718 (Mobile)  
 (863) 635-6456 (Fax)

The Nature Conservancy  
 Lake Wales Ridge  
 P.O. Box 630  
 674 Pfundstein Rd  
 Babson Park, FL 33827

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October 4, 2010

Helen Sears, Principal Planner  
Central Florida Regional Planning Council  
555 East Church Street  
Bartow, FL 33830

**RE: Avon Park Air Force Range Joint Land Use Study  
Osceola County Comments**

Dear Ms. Sears,

Osceola County staff has reviewed the June, 2010 version of the Avon Park Air Force Range (APAFR) Joint Land Use Study (JLUS) and is conveying comments in this letter. To date, the County has actively participated in the development of the JLUS by attending and participating in five Policy Committee meetings, four Working Group meetings, and the Community meetings held in Kenansville on January 19, 2010 and April 20, 2010. In addition, we are holding meetings with property owners impacted by the Military Influence Planning Areas (MIPAs), specifically MIPAs I and II. After these meetings, to be held over the next three months, we can forward final comments for your use.

To assist, I've attached the County's comments on the JLUS. Attachment 1 addresses recommendations proposed in the JLUS and Attachment 2 addresses the proposed text. Attachment 3 is the County's adopted Comprehensive Plan language addressing coordination with the APAFR and Attachment 4 is the County's adopted Map TRN 10 illustrating the Military Operations Areas.

As background, please note the portions of Osceola County in proximity to the APAFR are designated on the County's Future Land Use Map as either Conservation, which allows no new development, or as Rural/Agricultural, which restricts development primarily to agricultural uses or to residential uses at one unit per five acres. Additionally, properties in Osceola County in proximity to the APAFR are outside of the County's Urban Growth Boundary (UGB), and the maximum residential density permitted outside the UGB is one unit per five acres. Further, expansion of public facilities supporting development is prohibited outside the UGB. As a result, we believe that Osceola County has already achieved a land use pattern compatible with the operations of the APAFR. Likewise, Osceola County is aware that Chapter 163, F.S., mandates Comprehensive Plan amendments addressing compatibility of military installations to adjacent and proximate land uses as well as increased cooperation and coordination between local governments and military installations regarding land use decisions that could impact military operations. We intend to address these requirements not already met in our Plan by the statutory deadline of June 30, 2012.

**DEPARTMENT OF  
COMMUNITY  
DEVELOPMENT**

**Dave Tomek**  
Director

**Robert Deatherage**  
Building Official

**Joe Johnston**  
Customer Resources

**Mahmoud Najda P.E.**  
Development Review

**Mary Beth Salisbury**  
Extension Services

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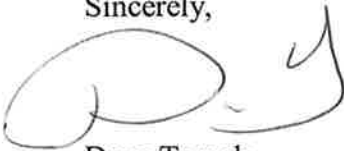
On August 16, 2010, the Osceola County Board of County Commissioners, as part of its EAR-based amendments, amended its Future Land Use Element (FLUE) to include policies addressing coordination with the APAFR regarding land use decisions and proposed changes on property in proximity to the Range. These proposed policies can be found in Attachments 3 and 4 and address the following:

- Appointing a non-voting representative of the APAFR to the County's Planning Commission;
- Developing a process to notify APAFR staff of proposed Comprehensive Plan and Zoning Map amendments or proposed Conditional Uses that could affect the density or intensity of land adjacent to or in close proximity to the APAFR; and
- Providing opportunities for APAFR staff to comment on the proposals.

Thank you for the opportunity to comment on the JLUS. We look forward to working with you and the staff of the Central Florida Regional Planning Council to finalize the JLUS and to implement the Study.

Please contact Steven Josephson of our staff either by e-mail at [sjos1@osceola.org](mailto:sjos1@osceola.org) or by phone at (407)742-0295 if you have questions.

Sincerely,



Dave Tomek  
Community Development Director

CC: Chairman Fred Hawkins, Jr., member, Avon Park Air Force Range Joint Land Use Study Policy Group  
Donald Fisher, County Manager  
Kerry Godwin, Principal Planner

ATTACHMENTS: Attachment 1-Comments on the JLUS Recommendations\  
Attachment 2-Comments on the JLUS Text  
Attachment 3-Comprehensive Plan Future Land Use Policies Adopted as Part of CPA08-0018 on August 16, 2010 by the Osceola County Board of County Commissioners  
Attachment 4-TRN10: Air Transportation Facilities & Special Planning Areas-2025

## ATTACHMENT 1

Listed below are comments on the JLUS recommendations for Osceola County.

- *OSCEOLA 1: Continue ongoing coordination with the Federal Aviation Administration, regarding airspace controls and usage including coordination and planning efforts for all airports and airstrips within the APAFR MOAs. **The County's Land Development Code requires that new aircraft landing fields in Osceola County be approved as conditional uses. Meeting all relevant Federal and State regulations is a conditional use requirement. Osceola County would notify the APAFR of any proposed new aircraft landing fields within the Military Operations Areas.***
- *OSCEOLA 2: Identify Low Level Aircraft Approach Zones and High Noise Zones on County Maps and Reports and Require Developers To Identify Same Information on All Proposed Project Maps and Reports. **Osceola County has amended the Transportation Map series of its Comprehensive Plan to include the Military Operations Areas as identified in the APAFR JLUS. This action will meet the recommendation that the County identify low level aircraft approach zones.***
- *OSCEOLA 3: Implement public awareness measures such as public signage, website links, educational handouts, etc. **Osceola County has used its website links to provide information regarding the APAFR and the JLUS. Handouts regarding the JLUS have been set out in the County's Administrative Building. Amendments to the Comprehensive Plan addressing land use compatibility with the APAFR will be publicized by the County.***
- *OSCEOLA 4: Implement effective disclosure measures notifying buyers and lessees that property is near a military installation subject to high aircraft noise, low level aircraft, explosive impulse blast noise, and and/or other military-related issues. **Osceola County will evaluate the need to implement effective disclosure measures.***
- *OSCEOLA 5: Implement lighting standards to avoid glare and reflection at key points. **Osceola County will evaluate its Dark Sky lighting requirements to determine if they will effectively reduce glare and reflection at key points.***
- *OSCEOLA 6: Evaluate opportunities to manage public access to the APAFR or critical APAFR areas to avoid encroachment on military missions. **Osceola County presently does not have any recreational facilities that connect to the Florida National Scenic Trail at this time; therefore, the County cannot at this time manage public access to the APAFR.***

- *OSCEOLA 7: Develop policies to protect critical areas supporting military readiness and/or environmental opportunities with the United States Air Force, The Nature Conservancy, the Florida Forever program, the Florida Defense Alliance, and others. The JLUS discusses the potential for performing a plan identifying critical areas and possible funding sources and mechanisms for acquiring those areas. Alternative funding mechanisms, such as the use of easements and the transfer of development rights, would be discussed. Included in this plan would be projected costs for acquiring those critical areas. Additional clarification of what would constitute County support and/or collaboration with these programs is required.*
- *OSCEOLA 8: Support and/or collaborate with ongoing APAFR environmental stewardship programs. The APAFR is involved in cattle grazing, forest management, endangered species monitoring, and inventorying and mapping wetlands and floodplains. Additional clarification of what would constitute County support and/or collaboration with these programs is required.*
- *OSCEOLA 9: Support funding for an updated comprehensive noise study. Obtaining funding for the noise study is the responsibility of the APAFR, and the funding is available through the Department of Defense. Support on the part of the County would be an endorsement of the APAFR's efforts to secure the funding for a study.*
- *OSCEOLA 10: Supplement final APAFR JLUS document with noise study. The last noise study was performed in 2005. A new noise study has yet to be funded. It is assumed that either the APAFR or the CFRPC are responsible for conducting the noise study and bringing the results to the JLUS Policy Committee for their comments. It is also assumed that either the APAFR or the CFRPC will be responsible for supplementing the APAFR JLUS if the Policy Committee accepts the noise study.*
- *OSCEOLA 11: Develop a program between the APAFR, local jurisdictions, and environmental agencies to explore methods to control birds and bird attractors near the APAFR. Presently, no manmade bird attractors exist in Osceola County in the proximity of the APAFR. Clarification of the program's purpose and scope would allow the County to evaluate supporting and/or collaborating in this program.*
- *OSCEOLA 12: Monitor Land Use at Transportation Intersections or Interchanges and Transportation Changes of New or Expanding Corridors and/or Hubs. No intersections or interchanges are located within the areas of Osceola County proximate to the APAFR, nor are there plans to add corridors or hubs to that area. The areas proximate to the APAFR are located outside of the County's Urban Service Area (UGB) and are not areas where new development is proposed; therefore, adding new transportation facilities in the vicinity of the APAFR area would be inconsistent*

with the Osceola Comprehensive Plan, which calls for new transportation facilities to serve new development within the UGB. Therefore, the County requests the removal of this recommendation.

- *OSCEOLA 13: Formalize a policy to implement cross-jurisdictional collaboration and coordination in development review and planning process including implementing the JLUS recommendations. As discussed in the letter, Osceola County, as part of its EAR-based amendments, amended its Future Land Use Element (FLUE) to include policies addressing coordination with the APAFR regarding land use decisions and proposed changes on properties adjacent to and in close proximity to the Range.*
- *OSCEOLA 14: Actively participate and promote the public's participation in the APAFR's Range/Air Installation Compatibility Zone (R/AICUZ) Study. The R/AICUZ is a Department of Defense program designed to promote compatible land use around military airfields. A R/AICUZ is an extensive analysis of the effects of aircraft noise, aircraft accident potential, and land use development upon present and future neighbors. Should the APAFR undertake a R/AICUZ, Osceola County would voluntarily assist in the process and promote public participation.*
- *OSCEOLA 15: Update the Comprehensive Plan and Land Development Code to include language meeting state requirements designed to strengthen uses compatible to the APAFR's missions on proposed developments, land use amendments, and/or related change requests. As part of the Second Round Cycle of Comprehensive Plan Amendments for 2010, Osceola County amended its Transportation Map series to show the location of the Military Operations Areas as recommended in the JLUS. In accordance with HB 7129 and Chapter 163, F.S., Osceola County shall, by June 30, 2012, review the Future Land Use Element (FLUE) of its Comprehensive Plan and, if required, adopt criteria for locating compatible land uses closely proximate to the APAFR as well as amend its Future Land Use Map series to depict any zones of influence of a military installation. Policies developed as part of the FLUE update could include proposed changes to the Land Development Code to implement the proposed amendments.*

As was noted earlier in this letter, Osceola County, through the utilization of its adopted Future Land Use Map, the UGB, and existing policies within the Comprehensive Plan, has achieved a land use pattern that is compatible with the operations of the APAFR.

- *OSCEOLA 16: Establish Military Influence Planning Area (MIPA) Overlay Districts in Osceola County as a proposed planning tool to restrict uses that would conflict with the APAFR operations. As part of the requirements in Chapter 163, F.S., addressing*



compatibility between military installations and adjacent or proximate land uses, Osceola County shall amend its Comprehensive Plan to portray zones of influence of the APAFR. Osceola County shall evaluate whether the MIPAs in the JLUS portray military installation zones of influence.

- *OSCEOLA 17: Revise Land Development Regulations to be compatible with MIPA I and MIPA II. If the MIPA Overlay Districts are adopted as part of the Comprehensive Plan, amending the Land Development Code to be compatible with the Overlay Districts would be required.*
- *OSCEOLA 18: Implement noise attenuation design and construction standards for new construction in the MIPA I and II overlay districts. Osceola County staff will evaluate the need for noise attenuation design and construction standards as well as the effectiveness of these standards prior to implementation.*
- *OSCEOLA 19: Limit object heights in the MIPA I and II overlay districts to ensure anti-terrorism/force protection measures are met and to mitigate vertical obstructions in established Military Operating Areas (MOAs). Portions of Osceola County are within the low level flight areas identified in the JLUS. Osceola County requests that by December, 2010, the JLUS be amended to recommend maximum objects heights in feet within the MIPAs I and II.*
- *OSCEOLA 20: Adopt resolution supporting the JLUS recommendations and implementation. Please clarify if any action is required from the Board of County Commissioners or other governing bodies prior to finalization of the JLUS. Is a resolution or other official act of adoption or acceptance required? Property owners in the proposed MIPAs I and II as well as other stakeholders will be notified by the County prior to any action taken by the County Commission related to the JLUS.*
- *OSCEOLA 21: Collaborate with Central Florida Regional Planning Council continuing as lead facilitator of the JLUS implementation activities. Osceola County anticipates future cooperation with the CFRPC in the implementation of the JLUS.*

## ATTACHMENT 2

Listed below are comments on the proposed text.

- On page 6-7, under “Flight Operations”, please state in the text there is only one airfield in Osceola County in the vicinity of the APAFR;
- Section 6.2.9 on page 6-15 contains discussion of the proposed Heartland Coast to Coast facility. It is our understanding this project is currently inactive. Please discuss the current funding status of the Heartland Coast of Coast facility in the text;
- Figure 6-13, “Existing Land Use Map” appears on page 6-21. A portion of land in Osceola County is shown with a light-green color that is not in the figure’s legend. This area should be shown as agricultural. Please change the color to match the shade of green in the figure’s legend;
- In Figure 6-15, “Future Land Use Map”, on page 6-23, please clarify the generalized map designations of the light yellow shading in the areas of Kenansville and Yeehaw Junction. Both of those areas, which area outside of the APAFR’s Military Operations Areas, are designated on the County’s Future Land Use Map as “Rural Settlement” and have a maximum density of two units per acre. As the Rural Settlement category recognizes existing development, it would be appropriate to designate Kenansville and Yeehaw Junction as “Existing Designation”;
- Figure 6-16 on page 6-27 illustrates proposed MIPAs in Osceola County. The locations of the proposed MIPAs were presented at a public information workshop on April 20, 2010. As we discussed, notifying the individual property owners of proposed MIPAs will be the responsibility of local governments during the JLUS implementation phase;
- On page 6-29, in the first full paragraph, please identify Appendix” B” as the example noise disclosure statement;
- On page 6-30, in the second paragraph, please identify Appendix” C” as the example lighting ordinances; and
- Osceola County has concerns regarding land use compatibility. Table 6-3 of the JLUS lists several uses deemed as not compatible with the APAFR and recommended for prohibition within the proposed Military Influence Planning Areas I and II. Single-family and mobile home residential development limited to one unit per five acres is permitted in the County’s Rural Agricultural Future Land Use Map designation, and several other uses proposed for prohibition are allowed within the County’s Rural Agricultural Future Land Use designation as Conditional Uses in the corresponding Agricultural Development and Conservation (AC) zoning district. Osceola County is concerned about

the balance of the rights of its property owners with the statutory requirements for compatibility with a military installation. The Conditional Use process is utilized by the County to determine if a potential use is compatible with its surroundings and whether any potential negative impacts can be mitigated or negated through the use of conditions. The County's existing Conditional Use process may prove to be an effective method to achieve land use compatibility between the Range and the properties located with the proposed MIPAs I and II.

## ATTACHMENT 3

### COMPREHENSIVE PLAN FUTURE LAND USE POLICIES ADOPTED AS PART OF CPA08-0018 ON AUGUST 16, 2010 BY THE OSCEOLA COUNTY BOARD OF COUNTY COMMISSIONERS

**Policy 1.7.3:** *Avon Park Air Force Range Coordination.*

Osceola County shall coordinate with the Avon Park Air Force Range (APAFR) regarding land use decisions and changes to the Comprehensive Plan that which if approved, would affect the intensity, density or use of land proximate to the Range. Coordination with the APAFR shall include, but not be limited to, the following:

- The Osceola County Planning Commission (local planning agency) shall include a representative appointed by the APAFR as an ex-officio, non-voting member;
- Osceola County shall require pre-development meetings between County staff and the applicant prior to submittal of an application for any proposed Comprehensive Plan Map Amendments, Zoning Map Amendments, land development code changes or applications for a variance or waiver from height or lighting restrictions or noise attenuation reduction requirements or applications for Conditional Uses within the Military Operating Areas (MOAs), as depicted on Map TRN 10: Air Transportation Facilities & Special Planning Areas. Osceola County shall notify the APAFR base commander or designee of the pre-development meeting;
- Osceola County shall provide any applications for Comprehensive Plan Map Amendments, land development code changes or applications for a variance or waiver from height or lighting restrictions or noise attenuation reduction requirements or applications for Zoning Map Amendments or development applications that would affect the intensity, density or use of land within the MOAs to the APAFR base commander or designee;
- Osceola County shall notify the base commander or designee of the County's application review process schedule and of all meetings that are part of the application process;
- Osceola County shall consider any comments provided by the APAFR base commander or designee as well as any criteria listed in Section 163.3175(5), Florida Statutes, when evaluating applications within the MOAs;
- Osceola County shall forward any comments received from the APAFR base commander or designee regarding proposed Comprehensive Plan Amendments to the Florida Department of Community Affairs.

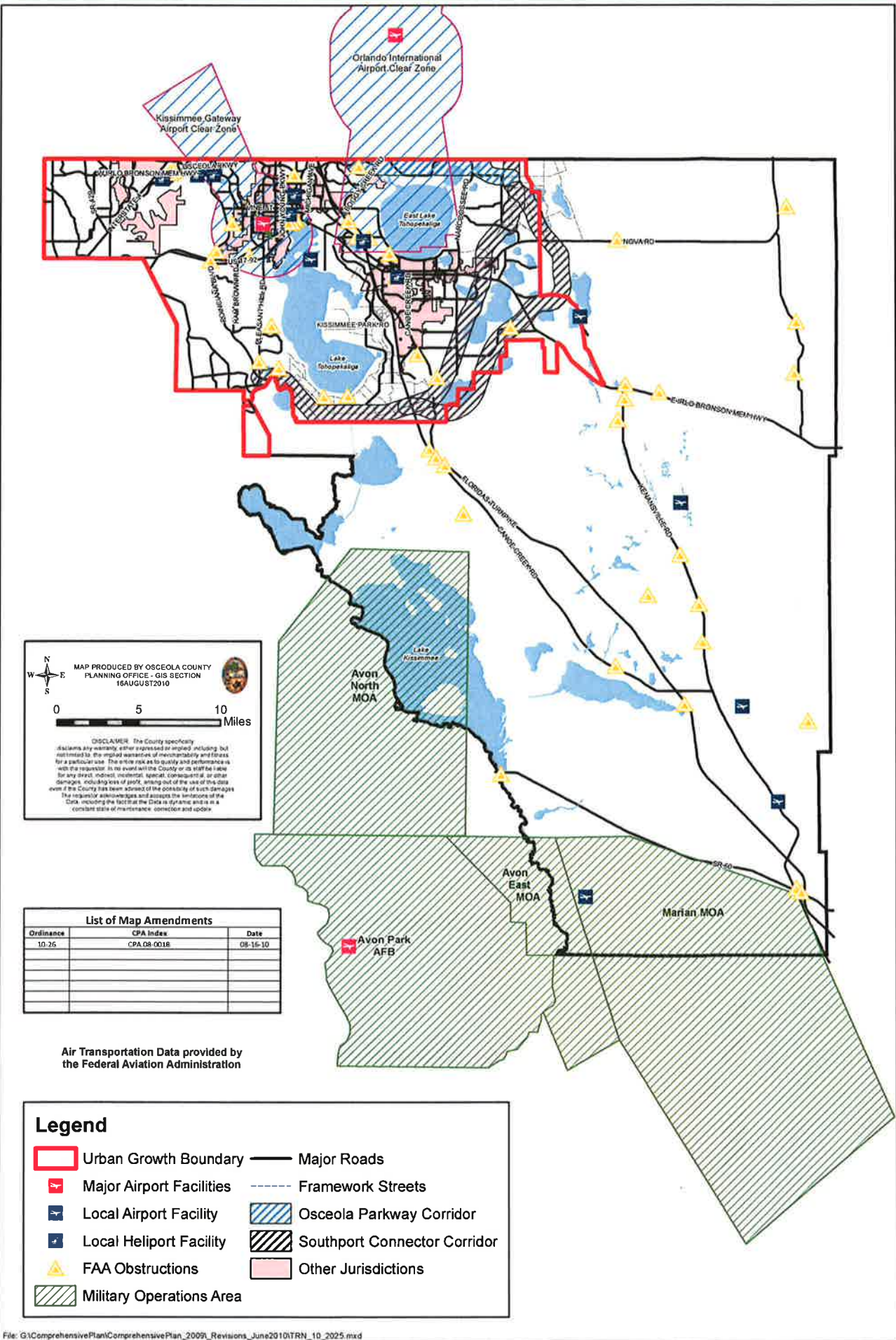
**Policy 1.7.4:** *Avon Park Air Force Range Compatibility Criteria.* Prior to the statutory deadline, the County shall adopt criteria to address compatibility of lands adjacent to or in close proximity to the APAFR.



## **ATTACHMENT 4**

### **TRN 10: Air Transportation Facilities & Special Planning Areas-2025**

# TRN 10: Air Transportation Facilities & Special Planning Areas - 2025



MAP PRODUCED BY OSCEOLA COUNTY PLANNING OFFICE - GIS SECTION 18AUGUST2010

DISCLAIMER: The County specifically disclaims any warranty, either expressed or implied, including but not limited to the implied warranties of merchantability and fitness for a particular use. The entire risk as to quality and performance is with the purchaser. In no event will the County or its staff be liable for any direct, indirect, incidental, special, consequential, or other damages, including loss of profit, arising out of the use of the data even if the County has been advised of the possibility of such damages. The designers acknowledge and assume the liabilities of the data, requiring the fact that the data is dynamic and in a constant state of maintenance, correction and update.

List of Map Amendments		
Ordinance	CPA Index	Date
10-26	CPA 08-0018	08-16-10

Air Transportation Data provided by the Federal Aviation Administration

**Legend**

- Urban Growth Boundary
- ✈ Major Airport Facilities
- ✈ Local Airport Facility
- ✈ Local Heliport Facility
- ⚠ FAA Obstructions
- Military Operations Area
- Major Roads
- Framework Streets
- Osceola Parkway Corridor
- Southport Connector Corridor
- Other Jurisdictions

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