



# AIR INSTALLATION COMPATIBLE USE ZONE (AICUZ) STUDY at Dobbins Air Reserve Base, Georgia

Headquarters Air Force Reserve Command

October 2011

## *ABBREVIATIONS AND ACRONYMS*

| | |
|---|---|
| 22 AF | 22nd Air Force |
| 94 AW | 94th Airlift Wing |
| AFB | Air Force Base |
| AFI | Air Force Instruction |
| AFRC | Air Force Reserve Command |
| AICUZ | Air Installation Compatible Use Zone |
| ANG | Air National Guard |
| APZ | Accident Potential Zone |
| ARB | Air Reserve Base |
| ARNG | Army National Guard |
| ATC | air traffic control |
| BRAC | Defense Base Closure and Realignment |
| CUZ | Compatible Use Zone |
| CZ | Clear Zone |
| dBA | A-weighted decibel |
| DNL | Day-Night Average Sound Level |
| DOD | Department of Defense |
| FAA | Federal Aviation Administration |
| FAR | Federal Aviation Regulation |
| FICUN | Federal Interagency Committee on Urban Noise |
| FY | Fiscal Year |
| HUD | U.S. Department of Housing and Urban Development |
| I | Interstate |
| IAP | International Airport |
| NAS | Naval Air Station |
| NLR | Noise Level Reduction |
| NM | nautical mile |
| O.C.G.A. | Official Code of Georgia Annotated |
| SLUCM | Standard Land Use Coding Manual |
| SPLOST | Special Purpose Local Option Sales Tax |
| USAF | U.S. Air Force |
| USAR | U.S. Army Reserve |
| USDOT | U.S. Department of Transportation |
| USEPA | U.S. Environmental Protection Agency |

DEPARTMENT OF THE AIR FORCE
AIR FORCE RESERVE COMMAND

**MEMORANDUM FOR:** Area Governments

**FROM:** 94 AW
1430 First Street
Dobbins ARB
Marietta, GA 30069-5009

**SUBJECT:** Air Installation Compatible Use Zone Study

1. This Air Installation Compatible Use Zone (AICUZ) Study for Dobbins Air Reserve Base (ARB) is an update of the AICUZ Study from 1998. This update was initiated because of changes in aircraft operations since the last AICUZ Study, the implementation of the 2005 Base Realignment and Closure actions, and modifications to the software-modeling program made subsequent to the release of the 1998 AICUZ Study. It is a reevaluation of aircraft noise and accident potential related to U.S. Air Force (USAF) flying operations. This report is designed to aid in the development of local planning mechanisms that can protect public safety and health, and preserve the operational capabilities of Dobbins ARB.

2. The enclosed report contains a summary description of the affected areas around the installation. The report outlines the locations of runway Clear Zones, Accident Potential Zones, and noise zones; and identifies compatible land use in the vicinity of the installation. It is our hope that this information will be incorporated into community plans, zoning ordinances, subdivision regulations, building codes, and other related documents.

3. The basic objective of the AICUZ Program is to achieve compatible uses of public and private lands in the vicinity of military airfields by controlling incompatible development through local actions. This update provides noise contours based upon the Day-Night Average Sound Level (DNL) noise metric used by the USAF. This AICUZ Study provides the information necessary to maximize beneficial use of the land surrounding Dobbins ARB while minimizing the potential for degradation of the health and safety of the affected public.

4. We greatly value the positive relationship Dobbins ARB has experienced with its neighbors over the years. As a partner in the process, we have attempted to minimize noise disturbances through actions such as limiting flights over noise-sensitive areas when possible. We solicit your cooperation in implementing the recommendations and guidelines presented in this AICUZ Study.

TIMOTHY E. TARCHICK, Colonel, USAF
Commander, 94th Airlift Wing

26 OCT 11
Date

# AIR INSTALLATION COMPATIBLE USE ZONE STUDY
# FOR
# DOBBINS AIR RESERVE BASE, GEORGIA

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# 1. INTRODUCTION

This document is an update to the Dobbins Air Reserve Base (ARB) Air Installation Compatible Use Zone (AICUZ) Study completed in 1998. It presents a description of the current noise environment around Dobbins ARB. It reaffirms the U.S. Air Force (USAF) policy of promoting public health, safety, and general welfare in areas in close proximity to USAF installations. This study identifies changes in flight operations that have occurred since the 1998 study, and provides current noise zones and compatible use guidelines for land areas adjacent to the installation. It is provided as a tool to assist local communities in future planning and zoning activities.

*As the host unit at Dobbins ARB, the 94th Airlift Wing's primary mission is to deploy C-130 aircraft in support of national command objectives.*

The changes requiring an updated AICUZ Study are attributed to the following:

1. Changes in assigned and transient aircraft operations and profiles since the 1998 AICUZ Study.
2. The implementation of the 2005 Defense Base Closure and Realignment (BRAC) actions at Dobbins ARB.
3. Modifications to the Department of Defense- (DOD) approved NOISEMAP software program (USAF 2011) made subsequent to the release of the 1998 AICUZ Study.

## 1.1 Purpose of the AICUZ Study

*This AICUZ Study provides current noise zones and compatible land use guidelines for areas near the installation.*

As stated in the 1998 AICUZ Study, the purpose of the AICUZ Program is to promote compatible land development in areas subject to aircraft noise and accident potential due to aircraft overflight operations. Military airfields and installations attract development to adjacent areas. The AICUZ Program was initiated to protect the public's health, safety, and welfare and to protect military airfields from encroachment by incompatible uses and structures. Guidelines for compatible land uses are presented in **Section 3**. These guidelines should be considered in the various planning processes to prevent incompatibility that might compromise the ability of Dobbins ARB to fulfill its mission requirements. Accident potential and aircraft noise in the vicinity of military airfields should be major considerations in all planning processes.

AICUZ land use guidelines reflect land use recommendations for Clear Zones (CZs), Accident Potential Zones (APZs) I and II, and four noise zones. A description of these zones is provided in **Section 3.2** and **Appendix A**. These guidelines have been established on the basis of studies prepared and sponsored by several Federal agencies, including the Department of Housing and Urban Development (HUD), the U.S. Environmental Protection Agency (USEPA), the USAF, and state and local agencies. The guidelines recommend land uses that are compatible with airfield operations, as described in **Section 4**. The USAF has no desire to recommend land use regulations that render property economically useless. It does, however, have an obligation to the inhabitants of the Dobbins ARB environs and to the

citizens of the United States to identify ways to protect the people in adjacent areas, and the public investment in Dobbins ARB.

The AICUZ Program uses the latest technology to define noise levels in areas near USAF installations. An analysis of Dobbins ARB's flying operations was performed, including specific details on types of aircraft, flight patterns used, variations in altitude, power settings, number of operations, and hours of operations. This information was used to develop the noise contour maps presented in this study. The DOD NOISEMAP methodology and the Day-Night Average Sound Level (DNL) noise metric were used to define the noise zones for Dobbins ARB. NOISEMAP is one of two USEPA-approved aircraft noise modeling computer programs. The other is the Integrated Noise Model, which is used by the Federal Aviation Administration (FAA) for civilian airports. A description of the DNL metric is provided in **Section 3.2** and **Appendix C**.

## 1.2 Process and Procedure

Preparation and presentation of this update to the Dobbins ARB's AICUZ Study is part of the continuing USAF participation in the local planning process. It is recognized that, as local communities prepare land use plans and zoning ordinances, the USAF has the responsibility of providing inputs on its activities relating to the community. To support that responsibility, a companion document called a Citizen's Brochure was created for public dissemination of the information presented in this AICUZ Study. The Citizen's Brochure provides a synopsis of this AICUZ Study and offers the local community the opportunity to learn about the AICUZ Program. **Appendices A** through **D** of this AICUZ Study contain detailed information about the AICUZ Program.

This AICUZ Study was prepared using the guidelines established by the USAF and described in Air Force Instruction (AFI) 32-7063, *Air Installation Compatible Use Zone Program*, 13 September 2005 (USAF 2005) and Air Force Handbook 32-7084, *AICUZ Program Manager's Guide*, 1 March 1999 (USAF 1999). The DOD Instruction 4165.57 describes the procedures by which the AICUZ Program can be defined, including the land use compatibility guidelines for the APZs (DODI 1977). In addition, height restrictions have been recommended so that potential airspace obstructions can be identified. Please see **Section 3.1** for more information on airspace controlled for height restrictions. AFI 32-7063 implemented the policies set forth in DOD Instruction 4165.57. Land use guidelines set forth in AFI 32-7063 reflect recommended land use classifications for those areas impacted by aircraft noise and potential aircraft safety concerns.

Data collection was conducted at Dobbins ARB in October 2010. Aircraft operational and maintenance data were obtained to derive average daily operations by runway and type of aircraft. These data were supplemented by flight track information (where we fly), flight profile information (how we fly), and ground run-up information. After verification for accuracy, data were inputted into the NOISEMAP program to produce DNL noise contours. These contours were plotted on a map of the airfield vicinity and overlaid with the CZ and APZ areas.

# 2. INSTALLATION DESCRIPTION

## 2.1 Mission

Dobbins ARB consists of 1,663 acres in Cobb County in north-central Georgia (see **Figure 2-1**). With units from the Air Force Reserve Command (AFRC), Georgia Army National Guard (ARNG), Georgia Air National Guard (ANG), and U.S. Army Reserve (USAR), Dobbins ARB is the largest multi-service reserve training base in the world. As shown in **Figure 2-2**, the airfield at Dobbins ARB includes one runway (Runway 11/29), one assault strip (Runway 110/290), taxiways, multiple aircraft hangars, and an air traffic control (ATC) tower. The Lockheed Martin/Air Force Plant #6 facilities are collocated with Dobbins ARB to the northwest and south of the runway, and the Georgia ARNG facilities are to the southwest.

The 22nd Air Force (22 AF) is headquartered at Dobbins ARB. As one of three numbered air forces in AFRC, the 22 AF is responsible for recruiting and training reservists and for maintaining subordinate units at the highest level of combat readiness. The 22 AF's wartime mission is to provide combat-ready airlift and support units and augments personnel requirements to Air Mobility Command in the United States.

The 94th Airlift Wing (94 AW) is the host unit at Dobbins ARB and has 8 assigned C-130H *Hercules* aircraft. The mission of the 94 AW is to provide highly trained Citizen Airmen who execute versatile and reliable tactical C-130 operations. Members of the 94 AW train daily to conduct worldwide airlift for a wide range of U.S. military and humanitarian operations. The 94 AW is made up of 3 groups, 10 squadrons, and 5 flights; flying operations are conducted by the 94th Operations Group. When called to active duty, Air Mobility Command and AFRC will each gain separate elements of the wing.

Additional units are also assigned to Dobbins ARB, including the Georgia ANG, Georgia ARNG, and USAR. The Georgia ANG has several units assigned to Dobbins ARB; however, since they are non-flying units they are not discussed in this report.

The ARNG can be called up for active duty to help respond to domestic emergencies and disasters, such as those caused by hurricanes, floods, and earthquakes. The Georgia ARNG is the Army component of the Georgia National Guard. Georgia's ARNG is the 10th largest in the nation and includes combat and combat support. At Dobbins ARB, the Georgia ARNG has 12 assigned UH-60 *Blackhawk* helicopters and 2 OH-58 *Kiowa* helicopters; the latter is being replaced by UH-72 *Lakota* helicopters.

The mission of the USAR is to provide trained, equipped, and ready soldiers and cohesive units to meet the global requirements across the full spectrum of operations. At Dobbins ARB, the USAR has five assigned UC-35B *Citation Encore* aircraft.

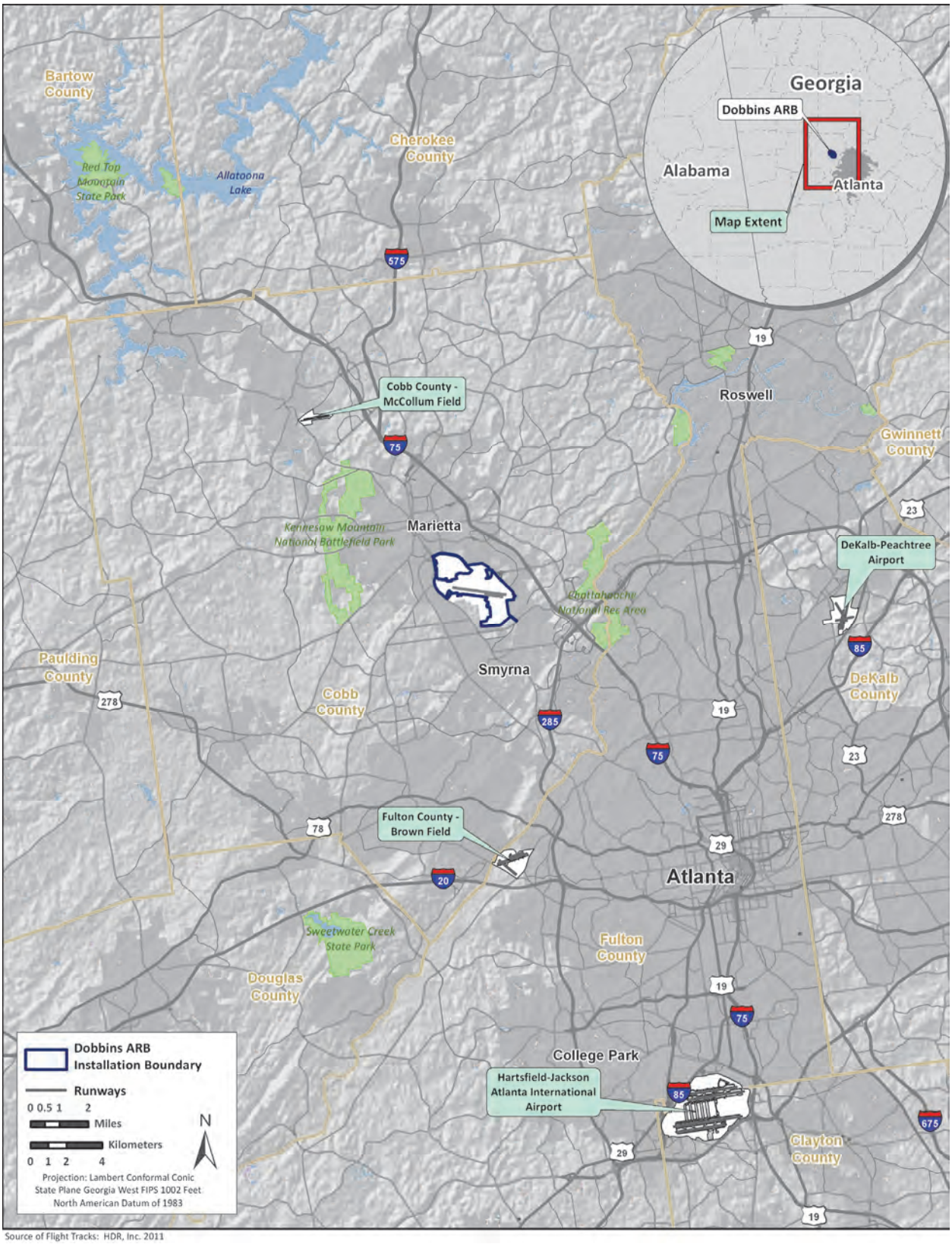


**Figure 2-1. Dobbins ARB Vicinity Map**


**Figure 2-2. Dobbins ARB Installation Map**

Lockheed Martin/Air Force Plant #6 is adjacent to the installation to the northwest and south. The corporation produces C-130J *Hercules* and F-22 *Raptor* aircraft and performs maintenance on the C-5 *Galaxy* aircraft. Lockheed Martin conducts test flights and delivers approximately 3 C-130J and 2 F-22 aircraft per month. F-16 aircraft are used as chase aircraft during the F-22 test flights. Maintenance activities are normally conducted on 13 C-5 aircraft per year.

## 2.2 History

*The history of Dobbins ARB is important in understanding the fluctuations in the noise environment in the areas near the installation.*

In 1940, the newly designated Civil Aeronautics Administration offered to build a modern paved airport in Cobb County if the local governments provided the land. In May 1940, the local government issued bonds to purchase 563 acres 3.5 miles southeast of Marietta along the western side of U.S. Highway 41. Construction of Marietta Army Airfield was conducted from March 1942 to June 1943. In spring 1943, a Bell Aircraft Company factory, paid for by the Department of War, was completed adjacent to the airfield. The factory manufactured the B-29 *Superfortress* heavy bomber aircraft; the Department of War named this factory "Plant #6." The initial mission of Marietta Army Airfield was acceptance testing of the B-29 aircraft for the U.S. Army Air Force and the operation of an Army Air Depot.

Marietta Army Airfield remained open after World War II and became the home of Georgia ANG and Air Force Reserve units. The first post-war ANG unit, the 128th Fighter Squadron, activated at Marietta on 20 August 1946. In 1948 the airfield became Marietta Air Force Base (AFB) as a result of the creation of the USAF. In 1950, the USAF renamed the base Dobbins AFB in honor of Captain Charles M. Dobbins of Marietta, a World War II transport pilot.

Following World War II, the Bell Aircraft Plant #6 remained closed for five years. In 1951, the Lockheed Aircraft Corporation took over the plant to modify B-29s for the Korean War. Over the years, the Lockheed plant constructed the C-140, C-130, C-141, and C-5 aircraft. The Lockheed Corporation merged with Martin Marietta in 1995, creating the Lockheed Martin Corporation. Lockheed Martin is currently producing the USAF's F-22 *Raptor*, an advanced air-to-air fighter, as well as the C-130J at the Air Force Plant #6.

In 1957, Naval Air Station (NAS) Atlanta moved from DeKalb-Peachtree Airport in Chamblee, Georgia, to Dobbins AFB. The Navy constructed a cantonment area on the southwestern portion of Dobbins for their use. In 1992, a U.S. Marine Corps reserve aviation unit, the Marine Aircraft Group 42, was moved from Santa Barbara, California, to NAS Atlanta at Dobbins ARB. In 2008, the Marine Aircraft Group 42 was deactivated.

The 2005 BRAC recommendation for Dobbins ARB included the closure of NAS Atlanta. The BRAC process was created by Congress and establishes clear criteria for DOD evaluation of, and recommendations for, the closure of military installations and other actions (such as the movement of aircraft or personnel) to bring the nation's military infrastructure into line with the needs of its armed forces. The 2005 BRAC cycle is the fifth BRAC proposal

generated since the process was created in 1988. On 26 September 2009, the Georgia DOD took official ownership of the NAS Atlanta facility. The facility's name was changed to the General Lucius D. Clay National Guard Center in honor of the World War II hero and coordinator of the Berlin Airlift during the Cold War.


*The transfer of the Naval Air Station Atlanta facilities to the Georgia Department of Defense occurred on 26 September 2009.*

The 94 AW, the installation's host unit, was established as the 94 Bombardment Wing (Light) on 10 May 1949. The wing was redesignated the 94 Tactical Reconnaissance Wing and activated in the Air Force Reserve in 1952. The wing was redesignated several times over the years, and was moved to Dobbins AFB in July 1972. In 1981, the wing became the 94 AW, the second largest wing in the Air Force Reserve flying three different types of transport aircraft, the C-7, the C-123, and the C-130. By 1987, it had given up the C-7 and C-123 aircraft, retaining only C-130s. In June 1992, Dobbins AFB was renamed Dobbins ARB. The 94 AW continues its mission with the C-130H, and is the host organization supporting all agencies and tenants at Dobbins ARB.

## 2.3 Economic Impact

As shown in **Figure 2-1**, Dobbins ARB is southeast of the City of Marietta and north of the City of Smyrna in Cobb County. Consequently, the greatest population density around Dobbins ARB is to the northwest in the City of Marietta. In the past several years, populations of the cities of Marietta and Smyrna and Cobb County have grown at a slower pace than the State of Georgia (see **Table 2-1**). From 2000 to 2009, the population of the City of Marietta grew by more than 8,200 people, a 14 percent increase and the City of Smyrna grew more than 9,700, a 23.7 percent increase. Cobb County grew by almost 107,000, a 17.6 percent increase, from 2000 to 2009. The State of Georgia grew by more than 1.6 million people representing a 20.1 percent increase in the same timeframe.

Table 2-1. U.S. Census Bureau Population Data

| | 2009 Population Estimate | 2000 Population | Percent Increase |
|---|---|---|---|
| City of Marietta | 66,953 | 58,748 | 14.0 |
| City of Smyrna | 50,712 | 40,999 | 23.7 |
| Cobb County | 714,692 | 607,751 | 17.6 |
| Georgia | 9,829,211 | 8,186,453 | 20.1 |

Source: U.S. Census Bureau 2011

**Table 2-2** shows the factors that influence Dobbins ARB's total economic impact on the surrounding area for Fiscal Year (FY) 2010. The installation's economic impact includes the total gross payroll for Dobbins ARB personnel, the total annual expenditures of the installation, and the estimated annual value of jobs created by Dobbins ARB.

Table 2-2. Dobbins ARB's Economic Impact for FY 2010

| Personnel Category | Number of Personnel and Economic Impact |
|---|---|
| Active Duty | 0 |
| Active Guard and Reserve | 70 |
| Non-extended Active Duty Reserves | 1,660 |
| *Subtotal Military Personnel* | *1,730* |
| Appropriated Fund Civilians | 627 |
| Non-Appropriated Funds Civilians and Private Business Employees* | 190 |
| Military Family Members | 0 |
| *Subtotal Nonmilitary Personnel* | *817* |
| **Total Personnel** | **2,547** |
| Appropriated Fund Military Payroll | $39.2M |
| Appropriated Fund Civilian Payroll | $51.8M |
| Non-appropriated Fund Civilian Payroll | $2.8M |
| **Total Gross Payroll** | **$93.8M** |
| Estimated Annual Value of Jobs Created | $48.5M |
| Total Actual Annual Expenditures | $39.4M |
| **Total Economic Impact** | **$181.7M** |

Source: Dobbins ARB 2010

* Includes contract civilian, bank, restaurant, and Base Exchange employees.

There are 1,730 military and 817 civilians employed at Dobbins ARB. Of the 1,730 military personnel, active guard and reserve personnel account for 70 people and non-extended active duty reserve personnel account for 1,660 people. Of the 817 civilian personnel, 627 are Federal civilian employees, 181 are nonappropriated contract civilians, and 9 are private business employees. This brings the total number of persons supported by Dobbins ARB to 2,547. This equates to nearly 4 percent of the population of the City of Marietta, which is 66,953 (see **Table 2-1**).

Marietta is one of Atlanta's largest suburbs, and is the third-largest city in the Atlanta-Sandy Springs-Marietta metropolitan statistical area, which includes 28 counties and more than 100 cities (MAC 2011). The Lockheed Martin Corporation, which operates Air Force Plant #6 at Dobbins ARB, is the largest employer in Cobb County (City of Marietta 2009). As shown in **Table 2-2**, in FY 2010 Dobbins ARB generated a $94 million payroll for the local economy. In addition to the payroll, Dobbins ARB construction, services, and commodities contracts totaled more than $39 million.

The estimated dollar value of indirect jobs created by Dobbins ARB in north-central Georgia is approximately $48 million. This amount, combined with the installation's gross payroll and annual expenditures, brings the total economic impact of Dobbins ARB on the local area to approximately $182 million in FY 2010.

## 2.4 Flying Activity

To describe the relationship between aircraft operations and land use, it is necessary to fully understand the exact nature of flying activities. An inventory has been made of such information for the aircraft based at Dobbins ARB, where those aircraft fly, how high they fly, how many times they fly over a given area, and at what time of day they operate. An operation is defined as a single aircraft movement, such as an arrival or a departure. A closed pattern accounts for two operations, an arrival and a departure. Pilots commonly use closed patterns to practice takeoffs and landings, and closed patterns usually remain close to the airfield.

### 2.4.1 Airfield and Airspace Planning

Airfield environs planning is concerned with three primary aircraft operational/land use determinants: (1) hazards to operations from land uses (e.g., height obstructions), (2) aircraft noise, and (3) accident potential to land users. Each of these concerns is addressed in conjunction with mission requirements and safe aircraft operation to determine the optimum flight track for each aircraft type. Data supporting the 2011 AICUZ Study were provided according to flight track (i.e., where they fly), flight profile (i.e., how they fly), flight occurrence (i.e., how often they fly), and ground run-up (i.e., engine maintenance activities).

*Section 3 presents a detailed description of APZs and current noise zones.*

#### 2.4.1.1 Regional Airspace

As shown in **Figure 2-3**, controlled airspace has been established in the Marietta/Atlanta area to manage air traffic. Class D airspace extends in a 5.5-nautical mile (NM) radius around Dobbins ARB. Class D airspace is designed to provide control into and out of primary airports that have an operational control tower, radar approach capabilities, and where aircraft operations are periodically at high-density levels.

*Hartsfield-Jackson Atlanta International Airport is approximately 19 miles southeast of Dobbins ARB. It is the country's busiest airport, with almost 1 million aircraft operations in 2010.*

Dobbins ARB is approximately 19 miles northwest of Hartsfield-Jackson Atlanta International Airport (IAP), which the FAA estimates will remain the country's busiest airport through 2025 (FAA 2007). The Dobbins ATC tower provides assistance to aircraft within the Dobbins Class D airspace. Outside this airspace, Atlanta Approach Control has authority. As shown on **Figure 2-3**, Hartsfield-Jackson Atlanta IAP is surrounded by several areas of Class B airspace. Class B airspace is used around major airports and is designed to contain arriving and departing commercial air traffic. The outermost ring of Hartsfield-Jackson Atlanta IAP's Class B airspace extends in a 35-NM radius around the airport, encompassing Dobbins ARB. As such, there is very heavy commercial air traffic in the Dobbins ARB local flying area.

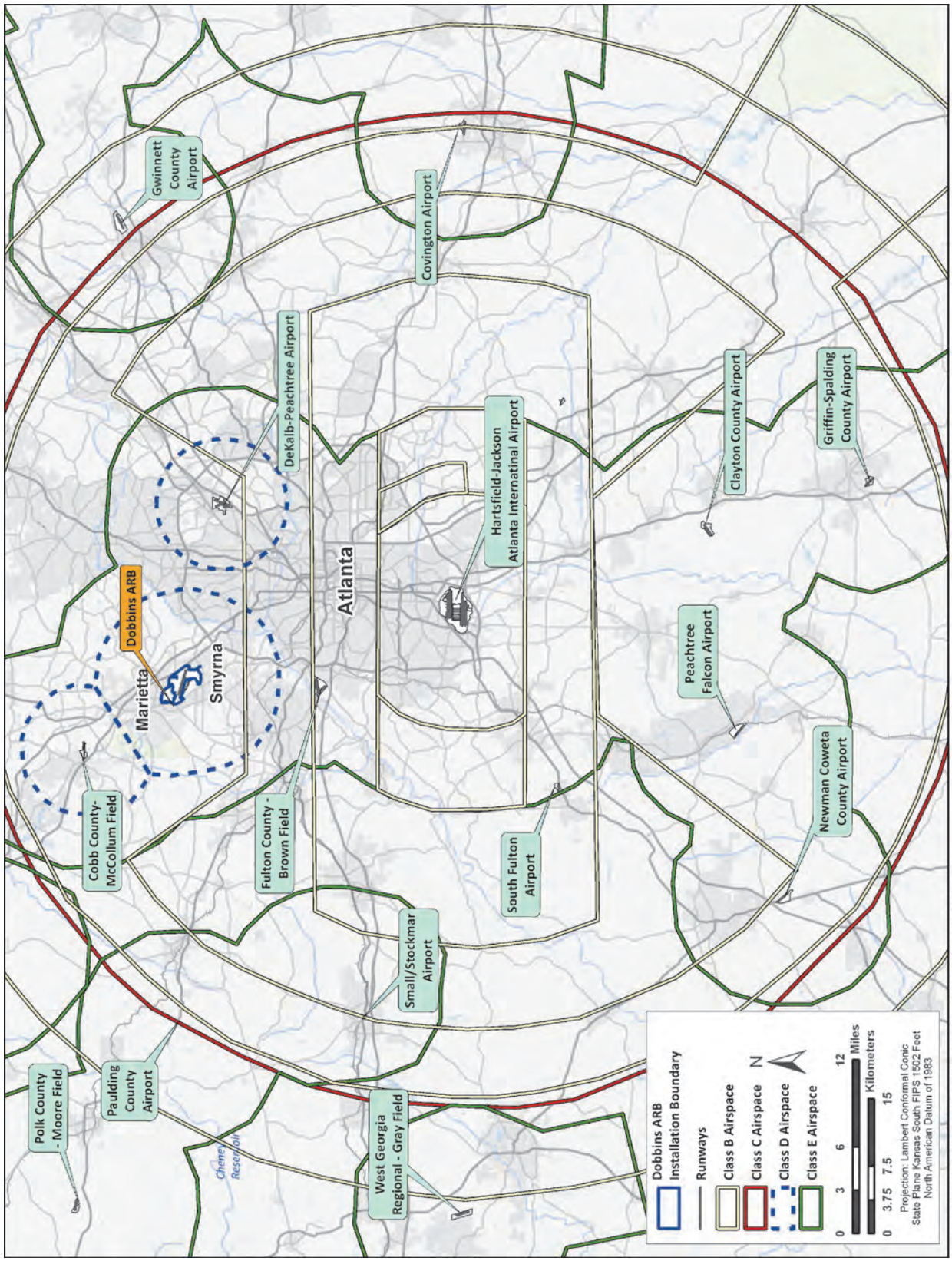


**Figure 2-3. Controlled Airspace in the Vicinity of Dobbins ARB**

The Atlanta area is home to an increasingly large number of civilian and military flight operations. Cobb County-McCollum Field and DeKalb-Peachtree Airport are northwest and east, respectively, of Dobbins ARB. In addition, airfields within the Class B airspace include (but are not limited to) Fulton County-Brown Field to the south, Small/Stockmar Airport to the southwest, and several airports to the south of Hartsfield-Jackson Atlanta IAP. Therefore, extreme caution is exercised by pilots when navigating the Atlanta area airspace.

#### 2.4.1.2 Dobbins ARB Airfield

***Runway Use.*** The airfield at Dobbins ARB includes one runway (Runway 11/29) and one assault strip (Runway 110/290). Both runways are oriented in an east/west direction. Runway 11/29 is 10,000 feet long and 300 feet wide, the assault strip is 3,500 feet long and 60 feet wide. Aircraft operating at Dobbins ARB use Runway 11 approximately 30 percent of the time and Runway 29 approximately 70 percent of the time. The assault strip is only used by the 94 AW and the occasional military transient C-130 aircraft.

***Flight Patterns.*** The flight patterns in **Figures 2-4, 2-5,** and **2-6** represent the way aircraft arrive, depart, and perform training and closed-pattern operations at Dobbins ARB. As shown in **Figures 2-4** and **2-5**, aircraft arrive to and depart from Runway 11/29 and the assault strip from numerous directions. As shown in **Figure 2-6**, closed-pattern flight tracks are flown to the north and south of the airfield. Flight tracks were designed to minimize conflict with civilian aircraft operations to the greatest extent possible.

***Maintenance Engine Run-ups.*** Maintenance engine run-ups are performed on aircraft based at Dobbins ARB. The engine run-ups are normally performed at the parking apron adjacent to each unit's facilities. On average, approximately 90 percent of maintenance runs are conducted during the day (between 7:00 a.m. and 10:00 p.m.) and 10 percent are conducted at night (between 10:00 p.m. and 7:00 a.m.). Various types of engine run-ups are performed on the based aircraft.

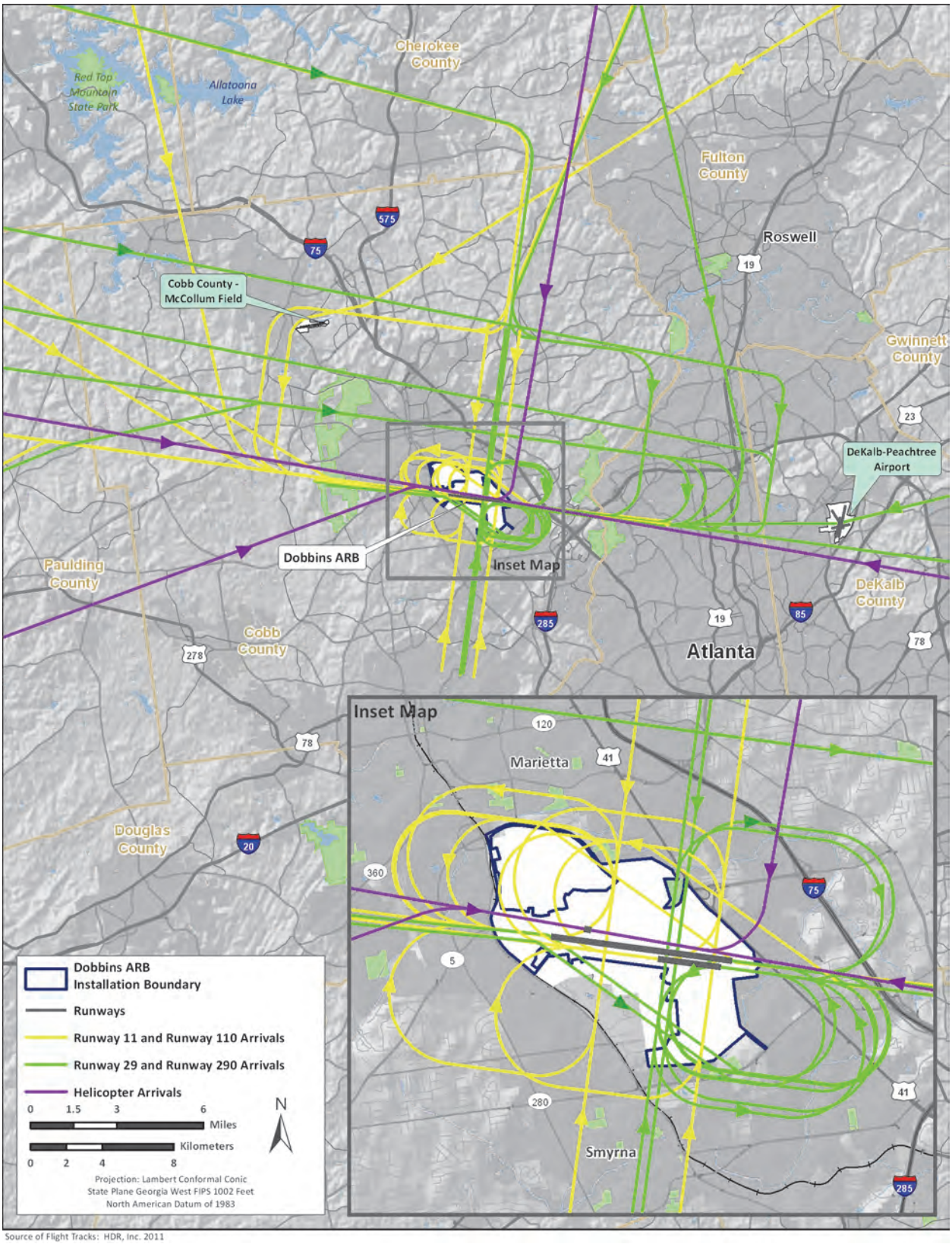


**Figure 2-4. Arrival Flight Tracks**

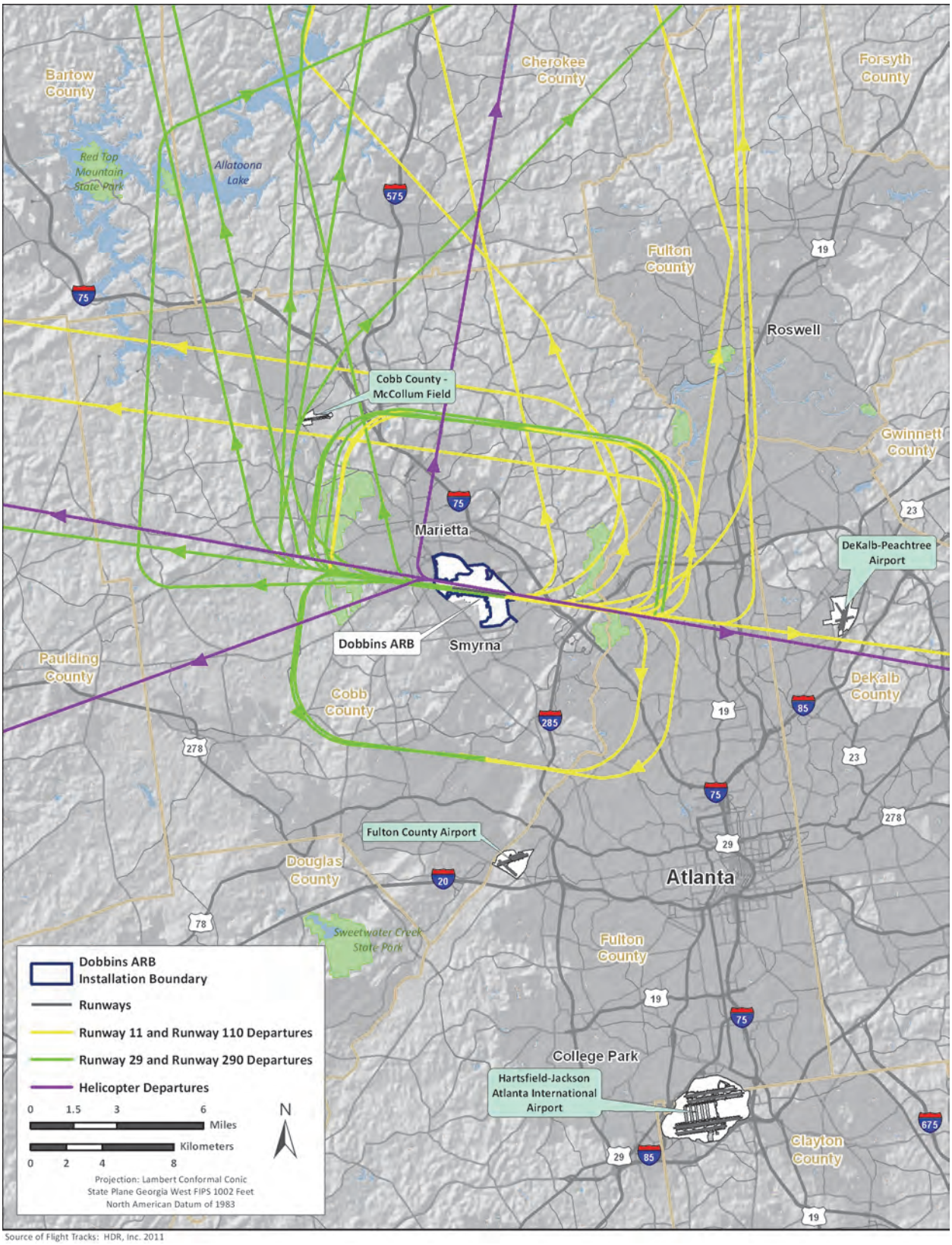


**Figure 2-5. Departure Flight Tracks**

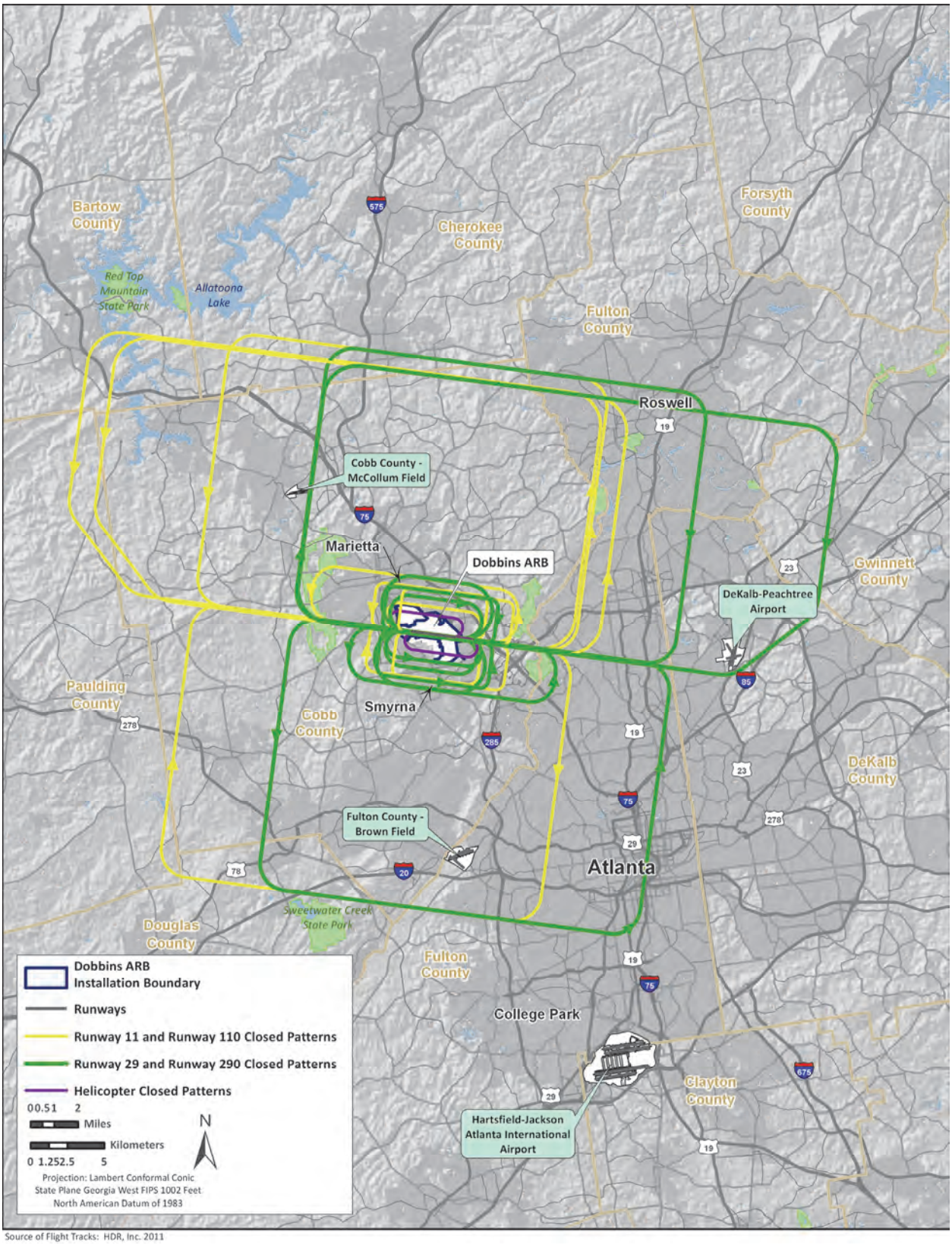


**Figure 2-6. Closed-Pattern Flight Tracks**

## 2.4.2 Dobbins ARB Aircraft Operations

Flying activities at Dobbins ARB have been grouped into five categories: 94 AW, Georgia ARNG, Lockheed Martin, additional tenant units, and transient operations. The type and number of aircraft at Dobbins ARB are provided in **Table 2-3**. Flight track and profile data were collected in October 2010.

Table 2-3: Type and Number of Aircraft at Dobbins ARB

| Category | Aircraft Type | Number Assigned or Delivered per Year |
|---|---|---|
| 94 AW | C-130H | 8 |
| Georgia ARNG | UH-60 | 12 |
| | UH-72/OH-58 | 2 |
| Lockheed Martin Corporation | C-5A | 13 |
| | F-22 | 24 |
| | F-16C* | 2 |
| | C-130J | 36 |
| Additional Tenant Units | Business Jet | 5 |
| | Small Single Engine | 4 |
| | Turboprop | 1 |
| Military Transient | Various | -- |
| **Total Aircraft at Dobbins ARB** | | **107** |

Note: * Lockheed Martin has two F-16C aircraft that are used as chase aircraft during the F-22 test flights.

### 2.4.2.1 94th Airlift Wing Aircraft Operations

The 94 AW has 8 assigned C-130H aircraft. The 94 AW conducts operations Monday through Friday and occasionally on the weekends for a total of 264 flying days per year.

*The C-130 Hercules primarily performs the tactical portion of the USAF's airlift mission. The aircraft is capable of operating from rough, dirt strips and is the prime transport for air dropping troops and equipment into hostile areas.*

Total daily operations include the number of arrivals, the number of departures, and two times the number of closed patterns. As shown on **Table 2-4**, 94 AW aircraft averaged approximately 12 arrivals, 12 departures, and 6 closed patterns per day at Dobbins ARB. The 94 AW is the only unit that uses the assault strip besides the occasional transient C-130 aircraft. Day operations occur from 7:00 a.m. to 10:00 p.m. and night operations occur from 10:00 p.m. to 7:00 a.m. Approximately 74 percent of the 94 AW aircraft operations occur during the day and approximately 26 percent occur at night.

Table 2-4. Average Busy Day 94 AW Aircraft Operations

| | **94 AW** |
|---|---|
| Arrivals | 11.52 |
| Departures | 11.52 |
| Closed Patterns | 5.71 |
| **Total Operations** | **34.46** |

Note: Total daily operations = arrivals + departures + (2 x closed patterns).

#### 2.4.2.2 Georgia Army National Guard Aircraft Operations

The Georgia ARNG has 12 assigned UH-60 helicopters and 2 OH-58 helicopters; the latter is being replaced by UH-72 helicopters. The Georgia ARNG conducts operations Monday through Friday and one Saturday per month for a total of 272 flying days per year.

*The UH-60 is a four-bladed, twin-engine, Army tactical transport helicopter. It provides ARNG units in every state with a multi-mission aircraft for search and rescue, utility lift, disaster relief, and medical evacuation.*

As shown on **Table 2-5**, Georgia ARNG aircraft averaged approximately 15 arrivals, 15 departures, and 30 closed patterns per day at Dobbins ARB. Approximately 96 percent of Georgia ARNG aircraft operations occur during the day and approximately 4 percent occur at night.

Table 2-5. Average Busy Day Georgia ARNG Aircraft Operations

| | **Georgia ARNG** |
|---|---|
| Arrivals | 15.00 |
| Departures | 15.00 |
| Closed Patterns | 30.00 |
| **Total Operations** | **90.00** |

Note: Total daily operations = arrivals + departures + (2 x closed patterns).

#### 2.4.2.3 Lockheed Martin Aircraft Operations

The Lockheed Martin Corporation currently produces the C-130J and F-22 aircraft and conducts maintenance on C-5 aircraft at the Lockheed Martin/Air Force Plant #6. The number of Lockheed Martin flying days per year varies depending on the delivery schedule for each aircraft type.

*The F-22 is a single-seat, twin-engine, fifth-generation, super-maneuverable fighter aircraft that uses stealth technology. It was designed primarily as an air superiority fighter, but has additional capabilities that include ground attack, electronic warfare, and signals intelligence roles.*

As shown on **Table 2-6**, Lockheed Martin aircraft averaged approximately 4 arrivals, 4 departures, and 23 closed patterns per day at Dobbins ARB. Lockheed Martin aircraft operations occur during the day.

Table 2-6. Average Busy Day Lockheed Martin Aircraft Operations

| | **Lockheed Martin** |
|---|---|
| Arrivals | 4.48 |
| Departures | 4.48 |
| Closed Patterns | 22.55 |
| **Total Operations** | **54.06** |

Note: Total daily operations = arrivals + departures + (2 x closed patterns).

#### 2.4.2.4 Additional Tenant Unit Aircraft Operations

Dobbins ARB has additional tenant units. These units conduct operations using small single-engine, turboprop, or business jet aircraft. As shown on **Table 2-7**, tenant unit aircraft averaged approximately 6 arrivals, 6 departures, and 8 closed patterns per day at Dobbins ARB. Approximately 99 percent of tenant unit aircraft operations occur during the day and approximately 1 percent occur at night.

*A typical representative aircraft these tenant units use is the UC-35B. It is one of the military variants of the civilian Cessna Citation Encore aircraft. They are used primarily to transport VIPs, but can also be used to transport other personnel or cargo.*

Table 2-7. Average Busy Day Tenant Unit Aircraft Operations

| | **Tenants** |
|---|---|
| Arrivals | 6.10 |
| Departures | 6.10 |
| Closed Patterns | 8.11 |
| **Total Operations** | **28.42** |

Note: Total daily operations = arrivals + departures + (2 x closed patterns).

#### 2.4.2.5 Military Transient Aircraft Operations

Over the course of a year, numerous military transient aircraft arrive and depart from Dobbins ARB. Military aircraft of any type may visit the installation; **Table 2-8** shows a representative sample of military transient aircraft that visited the airfield in 2010.

Table 2-8. Representative Sample of Average Busy Day Military Transient Aircraft Operations

| **Aircraft** | **Arrivals** | **Departures** | **Closed Patterns** | **Total Operations** |
|---|---|---|---|---|
| C-130 | 0.48 | 0.48 | 0.24 | **1.44** |
| KC-135 | 0.04 | 0.04 | 0.01 | **0.11** |
| F-18 | 0.14 | 0.14 | 0.03 | **0.33** |
| T-38 | 0.12 | 0.12 | 0.03 | **0.29** |
| Other | 0.38 | 0.38 | 0.26 | **1.28** |
| **Total Operations** | **1.16** | **1.16** | **0.57** | **3.46** |

Note: Total daily operations = arrivals + departures + (2 x closed patterns).

*F-18 aircraft flew approximately 10 percent of the total transient aircraft operations at Dobbins ARB. The F-18 is a supersonic, twin-engine, combined fighter and attack aircraft.*

The C-130, KC-135, F-18, and T-38 aircraft flew the highest number of transient operations at Dobbins ARB. Since such a large variety of transient aircraft frequent the airfield, the remaining transient operations have been grouped under "other." As shown in **Table 2-8**, military transient aircraft averaged approximately 1 arrival and 1 departure per day, and 1 closed pattern every other day. Approximately 25 percent of the transient aircraft complete closed-pattern operations at the main runway (Runway 11/29). Military transient C-130 aircraft also occasionally train at the assault strip (Runway 110/290). Approximately 99 percent of military transient operations occur during the day and approximately 1 percent occur at night.

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# 3. LAND USE COMPATIBILITY GUIDELINES

The DOD developed the AICUZ Program for military airfields. Using this program, DOD works to protect aircraft operational capabilities at its installations and to assist local government officials in protecting and promoting the public health, safety, and quality of life. The goal is to promote compatible land use development around military airfields by providing information on aircraft noise exposure and accident potential.

*Airfield planning is concerned with three primary constraints:*
1. *Height obstructions*
2. *Aircraft noise*
3. *Accident potential.*

An AICUZ Study describes three basic types of constraints that affect, or result from, flight operations. As discussed in **Section 3.1**, the first constraint involves areas that the FAA and DOD have identified for height limitations (see Height and Obstruction Criteria in **Appendix D**). USAF obstruction criteria are based upon those contained in Federal Aviation Regulation (FAR) Part 77, Subpart C, *Objects Affecting Navigable Airspace* (U.S. Code 1965). These obstruction criteria are defined for all military airfields regardless of the current flying mission. The height restrictions are to prevent man-made structures from creating an obstruction that could prevent aircraft from accessing airports or pose an accident hazard. Aircraft approach and depart from airports on a diagonal line that gets farther from the ground as distance from the airport increases. The height obstruction criteria reflect this principle, and permit the placement of taller structures as the distance from the airport increases.

The second constraint involves noise zones associated with aircraft operations. As discussed in **Section 3.2**, using the NOISEMAP program, DOD produces noise contours showing the noise exposure levels generated by Dobbins ARB aircraft operations. The area encompassed by two noise contours is known as a noise zone. This makes noise zones uniquely suited for making important zoning and land use decisions based on noise exposure.

The third constraint involves military APZs, which are based on statistical analyses of past DOD aircraft accidents. As discussed in **Section 3.3**, DOD analyses have determined that the areas immediately beyond the ends of runways and along the approach and departure flight paths have significant potential for aircraft accidents. Based on these analyses, DOD developed three zones that have high relative potential for accidents: CZs and APZs I and II.

## 3.1 Areas Identified for Height Restrictions

Areas identified for height restrictions result from the application of criteria for height and obstruction clearance given in FAR Part 77 and in USAF design standards. FAR Part 77 applies to all DOD military facilities in the United States. FAR Part 77.13 stipulates that modifications to existing facilities and construction of new facilities must consider navigable airspace, and could require that a Notice of Proposed Construction or Alteration be filed with the FAA (DOD 2008). The FAA's height obstruction criteria are outlined in the FAA Advisory Circular 150/5300-13, which classifies an



obstruction to air navigation as an object of greater height than any of the heights or surfaces presented in FAR Part 77.

The standards in FAR Part 77.28, which is specifically for military airfields, states that the area around a runway must be kept clear of objects that might damage an aircraft and therefore the area is bounded by imaginary airspace control surfaces that are defined in detail in **Appendix D**. Imaginary airspace control surfaces for military airfields such as Dobbins ARB are shown in **Figure D-1**. The purpose of these imaginary airspace control surfaces is to provide a planning tool to graphically depict airspace management concepts in a way that can enhance the safety and efficiency of aircraft operations. These regulations can prevent the construction of structures whose height could compromise the ability of aircraft to land safely, particularly in adverse weather conditions or during military training operations.

Although the FAA sets airspace heights, the FAA does not have the authority to control the height of structures under the imaginary airspace control surfaces. Therefore, in order to protect the health, safety, and welfare of populations around airfields, the local communities must enforce the obstruction height restriction guidelines established by the FAA. The local communities around DOD airfields should regulate the land areas outlined by these criteria to prevent uses that might otherwise be hazardous to aircraft operations.

## 3.2 Noise Zones

Cumulative noise levels, resulting from multiple single events, are used to characterize effects from aircraft operations. The cumulative DNL is expressed in A-weighted decibels (dBA) and presented in the form of noise contours. The DNL metric in this study was calculated using the computerized noise model, NOISEMAP. This noise metric incorporates a "penalty" for nighttime noise events to account for increased annoyance. DNL is the energy-averaged sound level measured over a 24-hour period, with a 10-dBA penalty assigned to noise events occurring between 10:00 p.m. and 7:00 a.m. DNL values are obtained by averaging sound exposure level values over a given 24-hour period.

*The DNL noise metric incorporates a penalty for late night (10 p.m. to 7 a.m.) noise events to account for increased annoyance.*

DNL is a time-averaged noise metric, which takes into account both the noise levels of individual events that occur during a 24-hour period and the number of times those events occur. The logarithmic nature of the decibel unit causes the noise levels of the loudest events to control the 24-hour average. For an example of this characteristic using an aircraft flyover, consider a case in which 1 flyover occurs during daytime hours creating a sound level of 100 dBA for one second. Using the logarithmic equation for DNL, the value for this 24-hour period would be 50.6 dBA DNL. If there were 30 flyovers at 100 dBA for 1 second each, the DNL for this 24-hour period would be 65.5 dBA. The averaging of noise over a 24-hour period does not ignore the louder single events. This is the basic concept of a time-averaged sound metric, and specifically the DNL. The actual sound levels that a person hears

fluctuate throughout the 24-hour period. DNL is the designated noise metric of the FAA, HUD, USEPA, U.S. Department of Transportation (USDOT), and the DOD for determining land use compatibility in the airport environment.

The USAF has adopted the DOD-approved NOISEMAP software program, and uses it in predicting noise exposure that would result from aircraft operations in the vicinity of an airfield. Using the NOISEMAP program (Version 7.353), the DOD produced noise contours showing the noise exposure levels generated by current Dobbins ARB aircraft operations. NOISEMAP visually creates continuous contours that connect all points of the same noise exposure level, in much the same way as ground contours on a topographic map visually represent lines of equal elevation. These noise contours are drawn in 5 dBA DNL increments from the airfield, ranging from 65 dBA DNL up to 80 dBA DNL, and are overlaid on a map of the airport vicinity. The area encompassed by two noise contours is known as a noise zone. This updated AICUZ Study contains guidelines for compatible land uses in relation to four DNL noise zones, listed as follows:

*DNL noise levels are depicted visually as noise contours that connect points of equal value. The area encompassed by two noise contours is known as a noise zone.*

- 65–69 dBA DNL
- 70–74 dBA DNL
- 75–79 dBA DNL
- 80+ dBA DNL.

### 3.2.1 Understanding the Historical Noise Environment

The 1998 and 2011 AICUZ noise contours associated with Dobbins ARB were plotted on an aerial map and are shown in **Figure 3-1** to illustrate how noise exposure has fluctuated over time from varying aircraft-related factors (i.e., aircraft type, number of operations, flight track). Noise contours were developed for the 1998 AICUZ Study to reflect the changes in flight operations and assigned aircraft types since the original AICUZ Study in 1980 that was updated in 1984, 1992, and 1994 (Dobbins ARB 1998). The 65 dBA DNL noise contours depicting the 1998 and 2011 aircraft operations were plotted on an aerial map and are shown in **Figure 3-1**. 65 dBA DNL is considered the level where land use planning recommendations begin. As shown, the 1998 DNL noise contour encompasses more land in almost every direction as compared to the 2011 DNL noise contour.

*The 1998 and 2011 noise zones are shown to demonstrate that noise zones are not static, but are dependent on aircraft type, number, performance, and flight path.*

There have been numerous changes at Dobbins ARB since 1998 including the closure of NAS Atlanta, whose based aircraft included the F-18, C-9, and E-2C, and the deactivation of the U.S. Marine Aircraft Group, who flew the AH-1W and UH-1N helicopters. This has resulted in an overall reduction in the number of operations at the airfield. Additional changes at Dobbins ARB include modifications to the C-130H flight patterns, changes in the based aircraft at some of the tenant units, and modifications in flight profiles and ground run-ups.

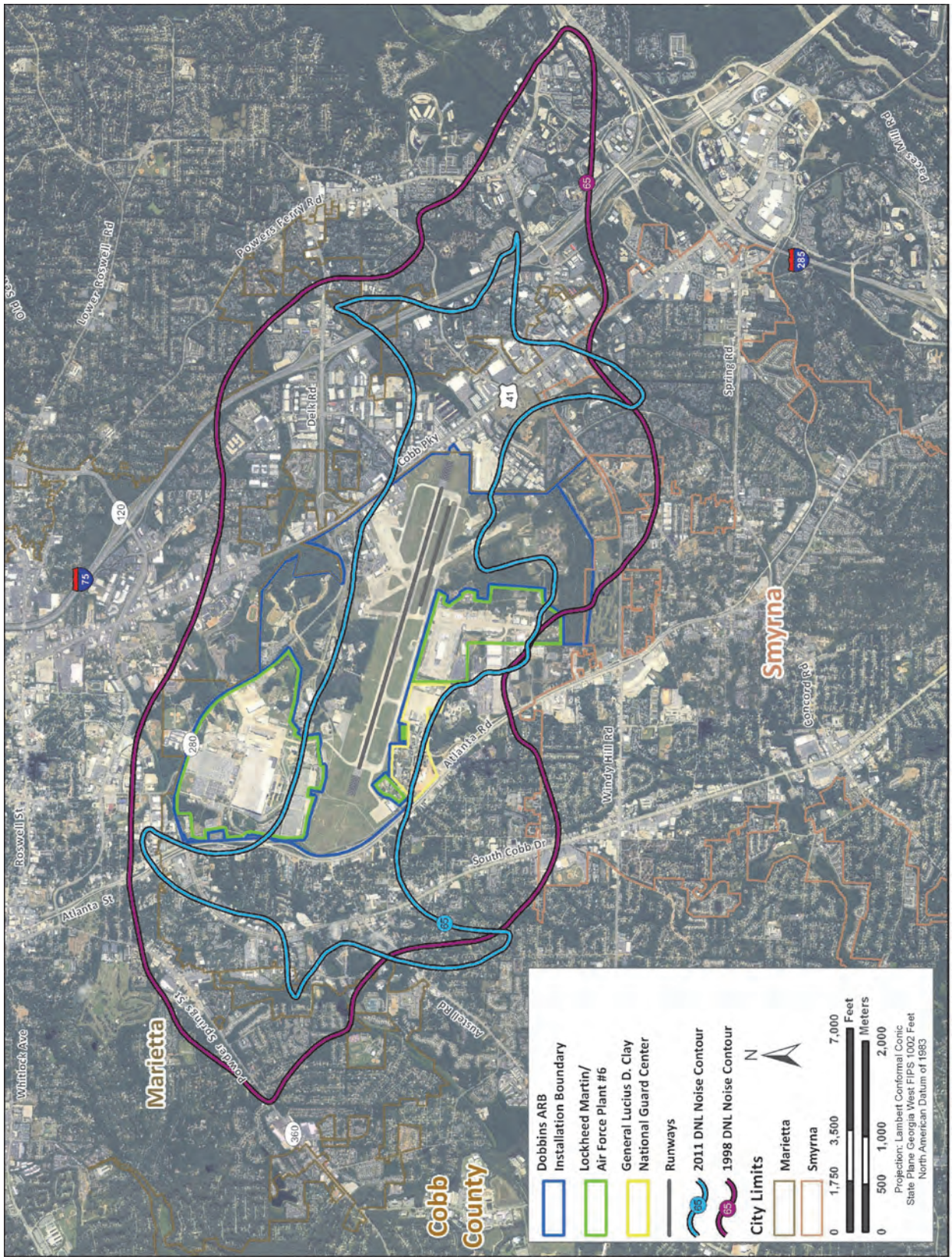



**Figure 3-1. 1998 and 2011 DNL Noise Contours at Dobbins ARB**

The 1998 noise contour encompasses more land in almost every direction as compared to the 2011 noise contour. This includes land to the north in the City of Marietta, to the south in Cobb County and the City of Smyrna, and to the east and west in the City of Marietta and Cobb County. The 2011 noise contour encompasses slightly more land to the southwest in Cobb County and to the southeast in the City of Smyrna as compared to the 1998 noise contour.

### 3.2.2 2011 Noise Zones

As shown on **Figure 3-2**, the 2011 DNL noise zones, which are framed by noise contours, extend along the runway centerline to the east and west. As expected, the noise zones follow the same general path as the flight tracks that are shown in **Figures 2-4** through **2-6**. The shape of the noise zones are partially the result of the closed-pattern flight tracks flown to the north and south of the airfield. The 2011 DNL noise zones encompass land outside of the installation boundary primarily in Cobb County, followed by the City of Marietta and a small portion of property in northern Smyrna. Some areas in Cobb County and the City of Marietta are exposed to high noise levels under current operational conditions. The 75–79 dBA DNL noise zone extends outside the installation boundary to the east, encompassing land east of U.S. 41. Land is also exposed to noise levels of 70–74 dBA DNL both east and west of the airfield.

## 3.3 Accident Potential Zones

***Runway 11/29 Accident Potential Zones.*** DOD analyses have determined that the areas immediately beyond the ends of military runways and along the approach and departure flights paths have significant potential for aircraft accidents. Based on this analysis, DOD developed three zones that have high relative potential for accidents. The CZ, the area closest to the runway end, is the most hazardous. The overall risk is high enough that the DOD generally acquires the land through purchase in fee or acquiring restrictive easements to prevent development. Each CZ encompasses an area 3,000 feet wide by 3,000 feet long.

APZ I is an area beyond the CZ that has significant potential for accidents. APZ II is an area beyond APZ I with a lesser, but still significant, potential for accidents. Each APZ I is 3,000 feet wide by 5,000 feet long and each APZ II is 3,000 feet wide by 7,000 feet long. While aircraft accident potential in APZs I and II does not warrant acquisition by the USAF, land use planning and controls are strongly encouraged in these areas for the protection of the public. Additional information on accident potential is contained in **Appendix B** of this report.

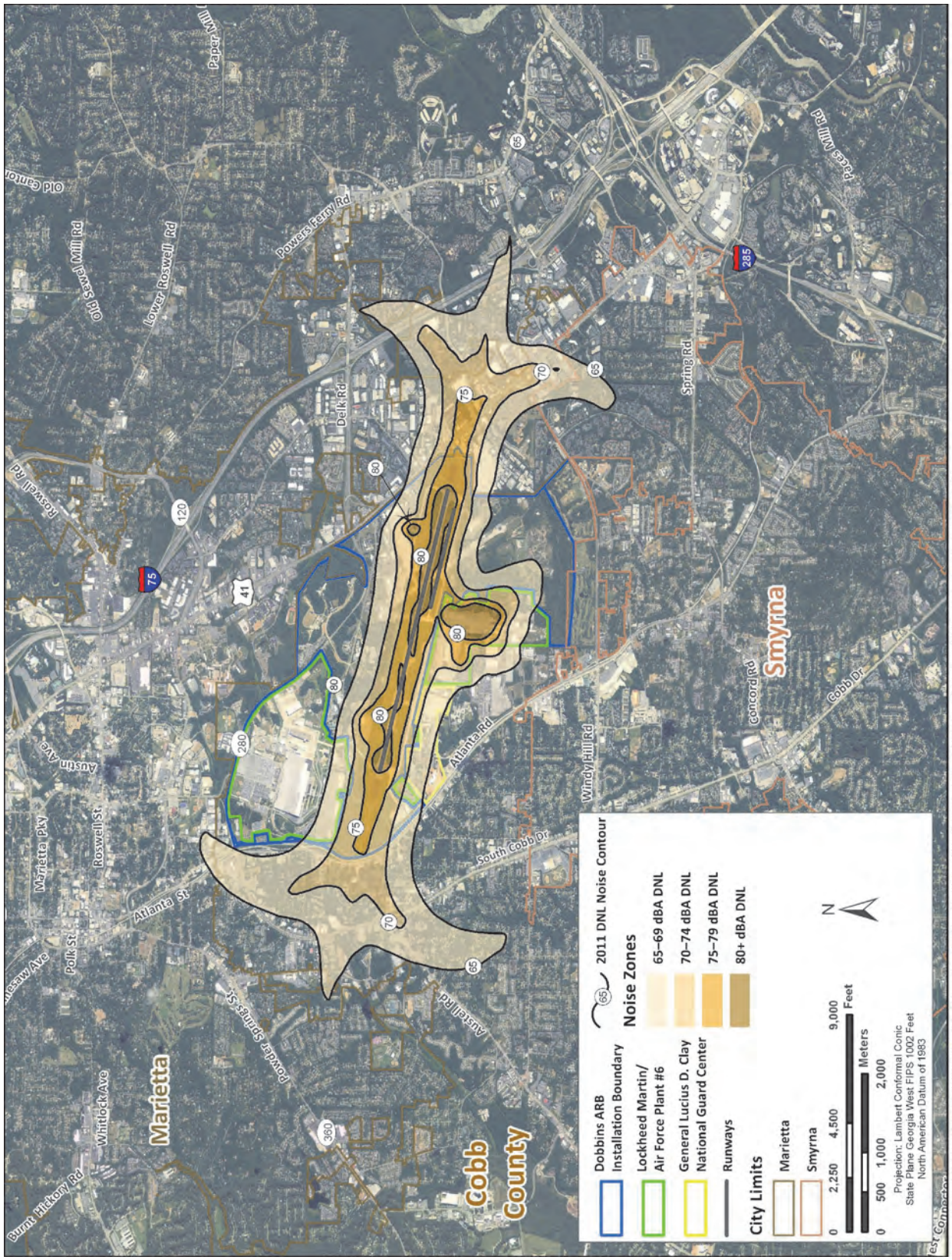



**Figure 3-2. 2011 DNL Noise Zones at Dobbins ARB**

As shown on **Figure 3-3**, approximately 98 percent of land in the western CZ is within the installation boundary; however, the majority of land in the eastern CZ is outside the installation boundary in the City of Marietta. Almost all the land in the western APZ I is outside the installation boundary in Cobb County. The land in western APZ II is outside the installation boundary in the City of Marietta. The Marietta city limits divide the eastern APZ I almost in half, the remainder of the land is in Cobb County. The eastern APZ II is entirely within Cobb County. The APZs do not encompass any land in the City of Smyrna.

***Assault Strip (Runway 110/290) Accident Potential Zones.*** Assault strips are considered special use runways for warfighting or contingency response and are used by C-130 aircraft (DOD 2008). CZs, APZs, and an exclusion area were developed for USAF assault strips.

The CZ at the Dobbins ARB assault strip (Runway 110/290) is a trapezoidal shape, with a width of 270 feet at the runway end and flaring uniformly to a width of 500 feet, and is 500 feet long (DOD 2008). As shown in **Figure 3-3**, the eastern and western CZs at the assault strip are within the Dobbins ARB installation boundary.

The APZ at the assault strip is 500 feet wide and 2,500 feet long. The eastern APZ is within the installation boundary and a portion of the western APZ is outside the installation boundary in the City of Marietta.

An exclusion area is required for all paved and unpaved assault strips (DOD 2008). The purpose of the exclusion area is to restrict the development of facilities. Only features required to operate the assault strip (e.g., taxiways, aprons, support equipment, and cargo loading and unloading areas) are allowed in the exclusion area. Non-operational land uses such as security forces, roads, parking lots, storage areas, and similar structures are not allowed. The exclusion area is centered on the assault strip and extends the length of the strip plus the CZ at each end. The exclusion area at the Dobbins ARB assault strip is 700 feet wide, and 4,000 feet long (the length of the assault strip [3,500 feet] plus the length of the CZ [500 feet]). The exclusion area is within the Dobbins ARB installation boundary.

*Accident potential areas at assault strips and landing zones are provided in UFC 3-260-01, Airfield and Heliport Planning Criteria. UFC apply to all DOD airfields.*

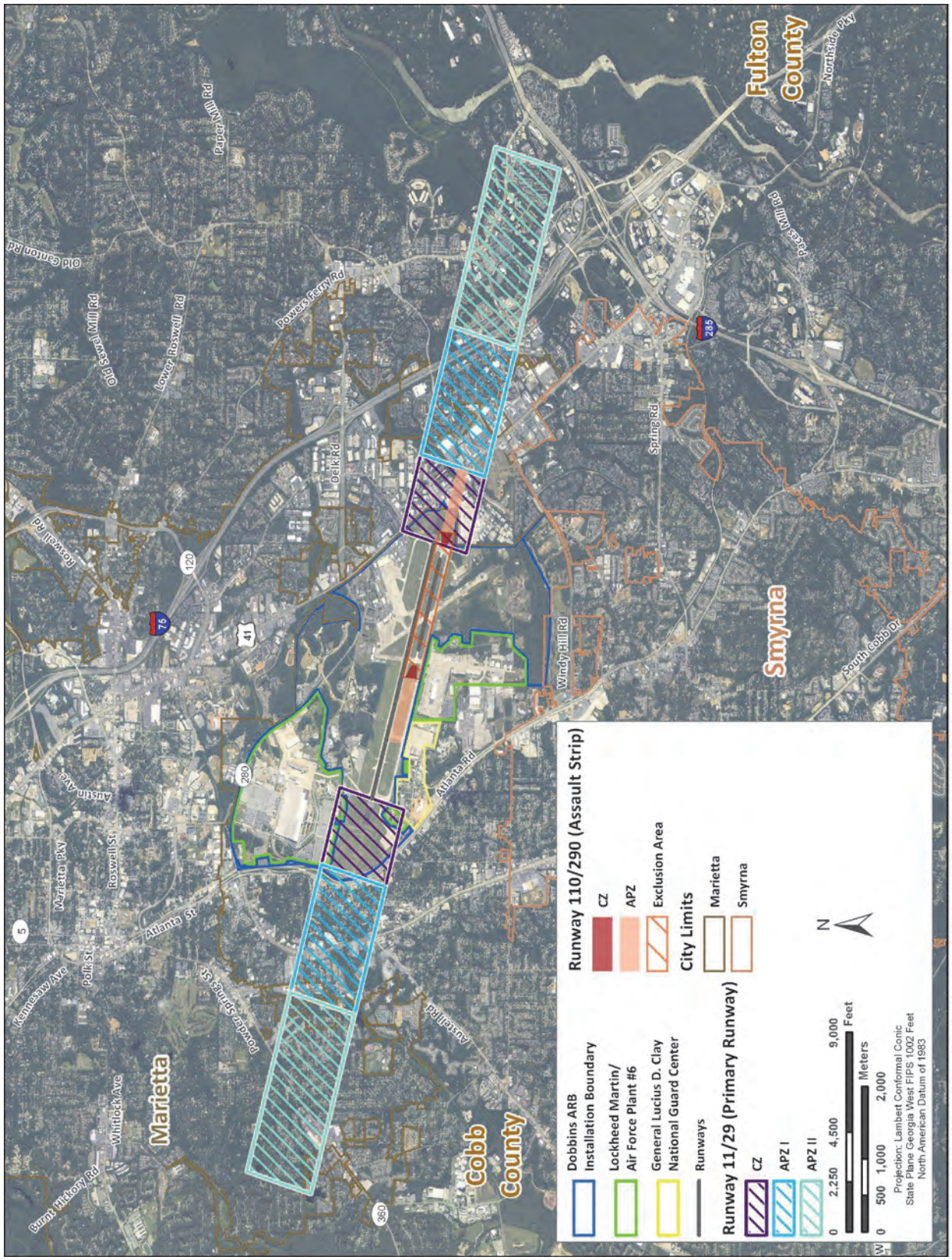



**Figure 3-3. Clear Zones and Accident Potential Zones at Dobbins ARB**

## 3.4 Land Use Compatibility Guidelines

This AICUZ Study contains general land use guidelines related to safety and noise associated with aircraft operations. **Table 3-1** lists the USAF land use compatibility guidelines in relation to noise zones and APZs. The information presented in the table is the same as the information published in the June 1980 publication by the Federal Interagency Committee on Urban Noise (FICUN) entitled *Guidelines for Considering Noise in Land Use Planning Control* (FICUN 1980). The USDOT publication *Standard Land Use Coding Manual* (SLUCM) has been used for identifying and coding land use activities in the compatibility table (USDOT 1965). Some of the land use guidelines require the user to reference additional information that is included in the Legend and Notes section at the end of the table. For example, in SLUCM row No. 11.11, Single units/detached, Y[1] (in APZ II) means land use and related structures are compatible without restriction at a suggested maximum density of one to two dwelling units per acre, possibly increased under a Planned Unit Development where maximum lot coverage is less than 20 percent. However, if Single units/detached are proposed or located in APZ II and within the 75 dBA DNL noise zone or higher, this land use should be prohibited since the land use and related structures are not compatible in the 75 dBA DNL noise zone or higher.

Table 3-1. USAF Land Use Compatibility Guidelines

| Land Use | | APZs | | | DNL Noise Zones | | | |
|---|---|---|---|---|---|---|---|---|
| **SLUCM No.** | **Name** | **CZ** | **APZ I** | **APZ II** | **65–69 dBA** | **70–74 dBA** | **75–79 dBA** | **80+ dBA** |
| **10** | **Residential** | | | | | | | |
| 11 | Household units | | | | | | | |
| 11.11 | Single units: detached | N | N | Y[1] | A[11] | B[11] | N | N |
| 11.12 | Single units: semidetached | N | N | N | A[11] | B[11] | N | N |
| 11.13 | Single units: attached row | N | N | N | A[11] | B[11] | N | N |
| 11.21 | Two units: side-by-side | N | N | N | A[11] | B[11] | N | N |
| 11.22 | Two units: one above the other | N | N | N | A[11] | B[11] | N | N |
| 11.31 | Apartments: walk-up | N | N | N | A[11] | B[11] | N | N |
| 11.32 | Apartments: elevator | N | N | N | A[11] | B[11] | N | N |
| 12 | Group quarters | N | N | N | A[11] | B[11] | N | N |
| 13 | Residential hotels | N | N | N | A[11] | B[11] | N | N |
| 14 | Mobile home parks or courts | N | N | N | N | N | N | N |
| 15 | Transient lodgings | N | N | N | A[11] | B[11] | C[11] | N |
| 16 | Other residential | N | N | N[1] | A[11] | B[11] | N | N |
| **20-30** | **Manufacturing** | | | | | | | |
| 21 | Food and kindred products: manufacturing | N | N[2] | Y | Y | Y[12] | Y[13] | Y[14] |
| 22 | Textile mill products: manufacturing | N | N[2] | Y | Y | Y[12] | Y[13] | Y[14] |

| Land Use | | APZs | | | DNL Noise Zones | | | |
|---|---|---|---|---|---|---|---|---|
| **SLUCM No.** | **Name** | **CZ** | **APZ I** | **APZ II** | **65–69 dBA** | **70–74 dBA** | **75–79 dBA** | **80+ dBA** |
| **20-30** | **Manufacturing (continued)** | | | | | | | |
| 23 | Apparel and other finished products made from fabrics, leather, and similar materials: manufacturing | N | N | N[2] | Y | Y[12] | Y[13] | Y[14] |
| 24 | Lumber and wood products (except furniture): manufacturing | N | Y[2] | Y | Y | Y[12] | Y[13] | Y[14] |
| 25 | Furniture and fixtures: manufacturing | N | Y[2] | Y | Y | Y[12] | Y[13] | Y[14] |
| 26 | Paper and allied products: manufacturing | N | Y[2] | Y | Y | Y[12] | Y[13] | Y[14] |
| 27 | Printing, publishing, and allied industries | N | Y[2] | Y | Y | Y[12] | Y[13] | Y[14] |
| 28 | Chemicals and allied products: manufacturing | N | N | N[2] | Y | Y[12] | Y[13] | Y[14] |
| 29 | Petroleum refining and related industries | N | N | N | Y | Y[12] | Y[13] | Y[14] |
| 31 | Rubber and misc. plastic products: manufacturing | N | N[2] | N[2] | Y | Y[12] | Y[13] | Y[14] |
| 32 | Stone, clay, and glass products manufacturing | N | N[2] | Y | Y | Y[12] | Y[13] | Y[14] |
| 33 | Primary metal industries | N | N[2] | Y | Y | Y[12] | Y[13] | Y[14] |
| 34 | Fabricated metal products: manufacturing | N | N[2] | Y | Y | Y[12] | Y[13] | Y[14] |
| 35 | Professional, scientific, and controlling instruments; photographic and optical goods; watches and clocks: manufacturing | N | N | N[2] | Y | A | B | N |
| 39 | Miscellaneous manufacturing | N | Y[2] | Y[2] | Y | Y[12] | Y[13] | Y[14] |
| **40** | **Transportation, communications, and utilities** | | | | | | | |
| 41 | Railroad, rapid rail transit, and street railroad transportation | N[3] | Y[4] | Y | Y | Y[12] | Y[13] | Y[14] |
| 42 | Motor vehicle transportation | N[3] | Y | Y | Y | Y[12] | Y[13] | Y[14] |
| 43 | Aircraft transportation | N[3] | Y[4] | Y | Y | Y[12] | Y[13] | Y[14] |
| 44 | Marine craft transportation | N[3] | Y[4] | Y | Y | Y[12] | Y[13] | Y[14] |
| 45 | Highway and street right-of-way | N[3] | Y | Y | Y | Y[12] | Y[13] | Y[14] |
| 46 | Automobile parking | N[3] | Y[4] | Y | Y | Y[12] | Y[13] | Y[14] |
| 47 | Communications | N[3] | Y[4] | Y | Y | A[15] | B[15] | N |
| 48 | Utilities | N[3] | Y[4] | Y | Y | Y | Y[12] | Y[13] |
| 49 | Other transportation communications and utilities | N[3] | Y[4] | Y | Y | A[15] | B[15] | N |

| Land Use | | APZs | | | DNL Noise Zones | | | |
|---|---|---|---|---|---|---|---|---|
| **SLUCM No.** | **Name** | **CZ** | **APZ I** | **APZ II** | **65–69 dBA** | **70–74 dBA** | **75–79 dBA** | **80+ dBA** |
| **50** | **Trade** | | | | | | | |
| 51 | Wholesale trade | N | Y[2] | Y | Y | Y[12] | Y[13] | Y[14] |
| 52 | Retail trade: building materials, hardware, and farm equipment | N | Y[2] | Y | Y | Y[12] | Y[13] | Y[14] |
| 53 | Retail trade: general merchandise | N | N[2] | Y[2] | Y | A | B | N |
| 54 | Retail trade: food | N | N[2] | Y[2] | Y | A | B | N |
| 55 | Retail trade: automotive, marine craft, aircraft, and accessories | N | Y[2] | Y[2] | Y | A | B | N |
| 56 | Retail trade: apparel and accessories | N | N[2] | Y[2] | Y | A | B | N |
| 57 | Retail trade: furniture, home furnishings, and equipment | N | N[2] | Y[2] | Y | A | B | N |
| 58 | Retail trade: eating and drinking establishments | N | N | N[2] | Y | A | B | N |
| 59 | Other retail trade | N | N[2] | Y[2] | Y | A | B | N |
| **60** | **Services** | | | | | | | |
| 61 | Finance, insurance, and real estate services | N | N | Y[6] | Y | A | B | N |
| 62 | Personal services | N | N | Y[6] | Y | A | B | N |
| 62.4 | Cemeteries | N | Y[7] | Y[7] | Y | Y[12] | Y[13] | Y[14,21] |
| 63 | Business services | N | Y[8] | Y[8] | Y | A | B | N |
| 64 | Repair services | N | Y[2] | Y | Y | Y[12] | Y[13] | Y[14] |
| 65 | Professional services | N | N | Y[6] | Y | A | B | N |
| 65.1 | Hospitals, nursing homes | N | N | N | A* | B* | N | N |
| 65.1 | Other medical facilities | N | N | N | Y | A | B | N |
| 66 | Contract construction services | N | Y[6] | Y | Y | A | B | N |
| 67 | Governmental services | N | N | Y[6] | Y* | A* | B* | N |
| 68 | Educational services | N | N | N | A* | B* | N | N |
| 69 | Miscellaneous services | N | N[2] | Y[2] | Y | A | B | N |
| **70** | **Cultural, entertainment, and recreational services** | | | | | | | |
| 71 | Cultural activities (including churches) | N | N | N[2] | A* | B* | N | N |
| 71.2 | Nature exhibits | N | Y[2] | Y | Y* | N | N | N |
| 72 | Public assembly | N | N | N | Y | N | N | N |
| 72.1 | Auditoriums, concert halls | N | N | N | A | B | N | N |
| 72.11 | Outdoor music shell, amphitheaters | N | N | N | N | N | N | N |
| 72.2 | Outdoor sports arenas, spectator sports | N | N | N | Y[17] | Y[17] | N | N |
| 73 | Amusements | N | N | Y[8] | Y | Y | N | N |
| 74 | Recreational activities (including golf courses, riding stables, water recreation) | N | Y[8,9,10] | Y | Y* | A* | B* | N |
| 75 | Resorts and group camps | N | N | N | Y* | Y* | N | N |

| Land Use | | APZs | | | DNL Noise Zones | | | |
|---|---|---|---|---|---|---|---|---|
| **SLUCM No.** | **Name** | **CZ** | **APZ I** | **APZ II** | **65–69 dBA** | **70–74 dBA** | **75–79 dBA** | **80+ dBA** |
| **70** | **Cultural, entertainment, and recreational services (continued)** | | | | | | | |
| 76 | Parks | N | Y[8] | Y[8] | Y* | Y* | N | N |
| 79 | Other cultural, entertainment, and recreational activities | N | Y[9] | Y[9] | Y* | Y* | N | N |
| **80** | **Resources production and extraction** | | | | | | | |
| 81 | Agriculture (except livestock) | Y[16] | Y | Y | Y[18] | Y[19] | Y[20] | Y[20,21] |
| 81.5 to 81.7 | Livestock farming and animal breeding | N | Y | Y | Y[18] | Y[19] | Y[20] | Y[20,21] |
| 82 | Agriculture-related activities | N | Y[5] | Y | Y[18] | Y[19] | N | N |
| 83 | Commercial forestry activities and related services | N[5] | Y | Y | Y[18] | Y[19] | Y[20] | Y[20,21] |
| 84 | Commercial fishing activities and related services | N[5] | Y[5] | Y | Y | Y | Y | Y |
| 85 | Mining activities and related services | N | Y[5] | Y | Y | Y | Y | Y |
| 89 | Other resources production and extraction | N | Y[5] | Y | Y | Y | Y | Y |

Sources: DODI 1977, FICUN 1980, and USDOT 1965

**Legend:**

SLUCM = Standard Land Use Coding Manual, USURA.

Y = Yes – Land uses and related structures are compatible without restriction.

N = No – Land use and related structures are not compatible and should be prohibited.

$Y^X$ = Yes with restrictions – Land use and related structures generally compatible; see notes indicated by the superscript.

$N^X$ = No with exceptions – See notes indicated by the superscript.

NLR = Noise Level Reduction (NLR) (outdoor to indoor) to be achieved through incorporation of noise attenuation measures into the design and construction of the structures.

A, B, or C = Land use and related structures generally compatible; measures to achieve NLR for A (65–69 dBA DNL), B (70–74 dBA DNL), C (75–79 dBA DNL) need to be incorporated into the design and construction of structures.

A*, B*, and C* = Land use generally compatible with NLR; however, measures to achieve an overall noise level reduction do not necessarily solve noise difficulties and additional evaluation is warranted. See the following appropriate notes.

* = The designation of these uses as "compatible" in this zone reflects individual Federal agencies and program considerations of general cost and feasibility factors, and past community experiences and program objectives. Localities, when evaluating the application of these guidelines to specific situations, might have different concerns or goals to consider.

**Notes:**

1. Suggested maximum density of 1 to 2 dwelling units per acre, possibly increased under a Planned Unit Development where maximum lot coverage is less than 20 percent.
2. Within each land use category, uses exist where further deliberating by local authorities might be needed due to the variation of densities in people and structures. Shopping malls and shopping centers are considered incompatible use in any accident potential zone (CZ, APZ I, or APZ II).
3. The placement of structures, buildings, or aboveground utility lines in the CZ is subject to severe restrictions. In a majority of the CZs, these items are prohibited. See AFI 32-7063, *Air Installation Compatible Use Zone Program* (USAF 2005), and United Facilities Criteria 3-260-1, *Airfield and Heliport Planning Criteria* (DOD 2008), for specific guidance.
4. No passenger terminals and no major aboveground transmission lines in APZ I.
5. Factors to be considered: labor intensity, structural coverage, explosive characteristics, and air pollution.
6. Low-intensity office uses only. Meeting places, auditoriums, and the like are not recommended.
7. Excludes chapels.

**Notes: (continued)**

8. Facilities must be low-intensity.
9. Clubhouse not recommended.
10. Areas for gatherings of people are not recommended.
11. (a) Although local conditions might require residential use, it is discouraged within the 65–69 dBA DNL noise zone and strongly discouraged within the 70–74 dBA DNL noise zone. The absence of viable alternative development options should be determined and an evaluation should be conducted prior to approvals indicating a demonstrated community need for residential use would not be met if development were prohibited in these zones.
    (b) Where the community determines the residential uses must be allowed, measures to achieve outdoor to indoor NLR for the 65–69 dBA DNL noise zone and the 70–74 dBA DNL noise zone should be incorporated into building codes and considered in individual approvals.
    (c) NLR criteria will not eliminate outdoor noise problems. However, building location and site planning, and design and use of berms and barriers can help mitigate outdoor exposure, particularly from near ground-level sources. Measures that reduce outdoor noise should be used whenever practical in preference to measures that only protect interior spaces.
12. Measures to achieve the same NLR as required for facilities within the 65–69 dBA DNL noise zone must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.
13. Measures to achieve the same NLR as required for facilities within the 70–74 dBA DNL noise zone must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.
14. Measures to achieve the same NLR as required for facilities within the 75–79 dBA DNL noise zone must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.
15. If noise-sensitive, use indicated NLR; if not, the use is compatible.
16. No buildings.
17. Land use is compatible provided special sound reinforcement systems are installed.
18. Residential buildings require the same NLR as required for facilities within the 65–69 dBA DNL noise zone.
19. Residential buildings require the same NLR as required for facilities within the 70–74 dBA DNL noise zone.
20. Residential buildings are not permitted.
21. Land use is not recommended. If the community decides the use is necessary, personnel should wear hearing protection devices.

## 3.5 Relationship between Noise and Annoyance Levels

Noise levels in residential areas vary depending on the housing density and location. The noise level in a quiet suburban residential area in the daytime is about 50 dBA DNL, which increases to 60 dBA DNL in an urban residential area, and to 80 dBA DNL in a downtown area of a major city during the daytime (USEPA 1974). Studies of community annoyance in response to transportation noise (aircraft, street/expressway, and railroad) show that DNL correlates well with human annoyance. Most people are exposed to sound levels of 50 to 55 dBA DNL or higher on a daily basis.

**Table 3-2** presents the percentage of people projected to be "highly annoyed" when exposed to various levels of noise measured in DNL. This table presents the results of more than a dozen studies of the relationship between noise and annoyance levels. The data shown provide a perspective on the level of annoyance that might be anticipated. For example, 12 to 22 percent of persons exposed on a long-term basis to 65–69 dBA DNL are expected to be highly annoyed by noise events.

Table 3-2. Percentage of Population Highly Annoyed by DNL Noise Zones

| DNL Noise Zones | Percentage of Persons Highly Annoyed | |
|---|---|---|
| | *Low* | *High* |
| 65–69 dBA | 12 | 22 |
| 70–74 dBA | 22 | 36 |
| 75–79 dBA | 36 | 54 |
| 80+ dBA | > 54 | |

Source: Finegold et al. 1994

## 3.6 Participation in the Planning Process

AFRC is responsible for informing the public of the release of the AICUZ Study through a public presentation meeting. Attendees will include local and areawide officials, the general public, and the media. The 94 AW Commander will officiate the public meeting, and the AICUZ Study will be presented by the Dobbins ARB AICUZ manager or other designated representative. Headquarters USAF will also coordinate with congressional delegations (before public release) and Federal officials (after public release) in Washington, D.C. The AICUZ Study will be sent to the state clearinghouse.

*Please visit http://www.dobbins.afrc.af.mil for information on how to contact personnel at the installation.*

As local communities prepare their land use plans, the USAF must be ready to provide additional data and information. At Dobbins ARB, the 94 AW Public Affairs Office should be contacted regarding planning matters as they might affect, or be affected by, activities at Dobbins ARB. The Public Affairs Office will educate local communities and their officials about these activities.

# 4. LAND USE ANALYSIS

## 4.1 Introduction

Land use planning and control is a dynamic, rather than static, process. The specific characteristics of land use determinants will always reflect, to some degree, the changing conditions of the economic, social, and physical environment of a community; and changing public concerns. The planning process accommodates this fluidity in that decisions are normally not based on boundary lines, but rather on more generalized area designations.

*Research on aircraft accident potential, noise, and land use compatibility is ongoing at a number of Federal and other agencies. These studies and all other compatibility guidelines must not be considered inflexible standards. They are the framework within which land use compatibility questions can be addressed and resolved.*

Computer technology enables Dobbins ARB to more precisely display its flight tracks and noise zones for land use planning purposes. This same technology allows the installation a means to communicate the extent to which Dobbins ARB's flight operation impacts extend into the cities of Marietta and Smyrna, and Cobb County. For the purposes of this study, existing land uses within the 2011 DNL noise zones and APZs (see **Figure 4-1**) have been classified into the following categories:

- ***Commercial:*** Offices, retail, restaurants, businesses, and other types of commercial activity.

- ***Industrial:*** Areas and the facilities they contain that are owned or used for industrial purposes, such as manufacturing, mining, warehousing, and other similar uses.

- ***Open-Space/Low-Density:*** Undeveloped land areas, forested land, agricultural land, grazing areas, water or wetland areas, and areas with residential activity at densities less than or equal to one dwelling per acre.

- ***Public/Semi-Public:*** Publicly owned lands or lands to which the public has access, such as public buildings, schools, churches, cemeteries, hospitals, or institutional facilities.

- ***Recreational***: Land areas designated for recreational activity, including local parks; wilderness areas and reservations; conservation areas; and areas designated for trails, hikes, camping, and other similar uses.

- ***Residential:*** All types of residential activity, such as single and multifamily residences and mobile homes, at a density greater than one dwelling unit per acre.

- ***Dobbins ARB:*** Land within the current Dobbins ARB installation boundary.

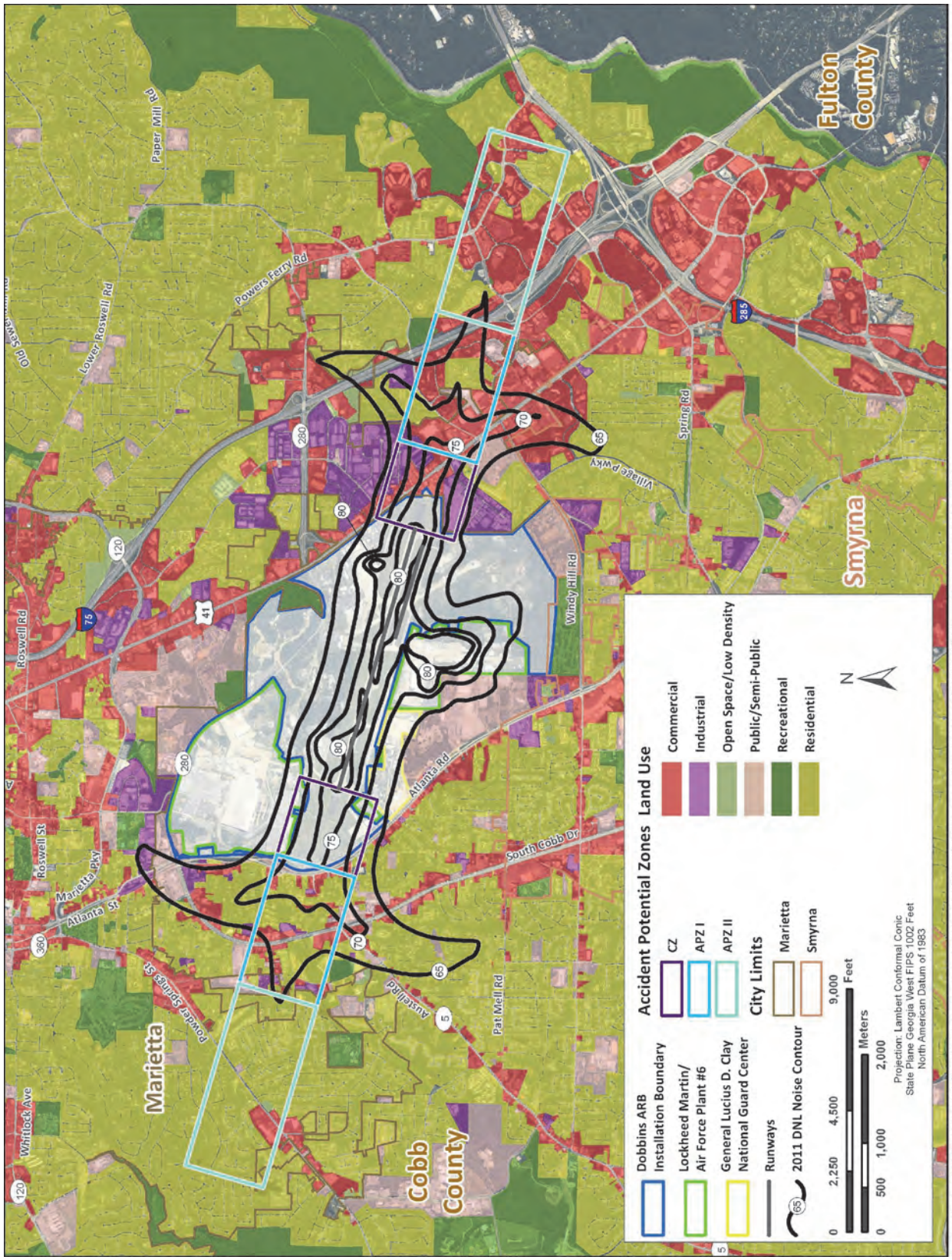



**Figure 4-1. 2011 DNL Noise Contours and APZs on Existing Land Use Map**

## 4.2 Existing Land Use

### 4.2.1 Introduction

Before the mid-1970s, development in Cobb County was concentrated along U.S. 41. Until that time, there was considerable separation between Cobb County and the City of Atlanta. As shown in **Table 2-1**, the communities near Dobbins have grown significantly from 2000 to 2009. Residential development now stretches from the cities of Marietta and Smyrna southward to metropolitan Atlanta. As such, current land use around Dobbins ARB is predominately residential, with the majority of the development to the north and south in the cities of Marietta and Smyrna, respectively.

*Before the mid-1970s, there was considerable separation between Cobb County and the City of Atlanta. Residential development now stretches from the cities of Marietta and Smyrna southward to metropolitan Atlanta.*

The 2011 DNL noise zones and APZs at Dobbins ARB are depicted on a land use map as shown in **Figure 4-1**. The land use information illustrated on this map consists of 2008 land use data provided by the City of Marietta and 2010 land use data from Cobb County, which also provides mapping services for the City of Smyrna.

***Noise Zones.*** Within the 2011 DNL noise zones, approximately 53 percent of the land consists of installation property. As shown in **Table 4-1**, the 80+ dBA DNL noise zone only encompasses Dobbins ARB and Lockheed Martin/Air Force Plant #6 property. The 65–79 dBA DNL noise zones encompass off-installation land use.

Land outside of the installation boundary within the 65–69 dBA DNL noise zone consists primarily of residential land use in the City of Marietta and Cobb County, and commercial land use in the City of Smyrna. Large parcels of commercial and industrial land use are present along Interstate- (I) 75, along U.S. 41 east of the installation, and along South Cobb Drive to the west. In addition, there are several Cobb County municipal facilities, which are adjacent to the installation to the northwest.

South of the runway are Lockheed Martin-owned facilities that are not part of Air Force Plant #6. These facilities are within the 65–69 and 70–74 dBA DNL noise zones and are classified as civic land use by Cobb County, which falls into the public/semi-public category. The Georgia Memorial Cemetery, a public/semi-public land use, is present east of the installation within the 65–69 and 70–74 dBA DNL noise zones. Residential, commercial, and industrial land along major roadways is present within the 70–74 dBA DNL noise zone. The 75–79 dBA DNL noise zone encompasses a small area of off-installation property, this include commercial and industrial land use along U.S. 41 in the City of Marietta.

***Accident Potential Zones.*** The APZs at the assault strip (Runway 110/290) are either within the installation boundary or encompassed by the eastern CZ at the main runway (Runway 11/29), which is discussed in the following paragraphs.

Table 4-1. Existing Off-Installation Land Use Acreage within the 2011 DNL Noise Zones

| DNL Noise Zone | Land Use Category | Acres |
|---|---|---|
| 65–69 dBA | Commercial | 264 |
| | Industrial | 124 |
| | Open-Space/Low-Density | 4 |
| | Public/Semi-Public* | 136 |
| | Recreational | 1 |
| | Residential | 418 |
| | *Subtotal* | *947* |
| 70–74 dBA | Commercial | 122 |
| | Industrial | 34 |
| | Public/Semi-Public* | 25 |
| | Residential | 89 |
| | *Subtotal* | *270* |
| 75–79 dBA | Commercial | 31 |
| | Industrial | 4 |
| | *Subtotal* | *35* |
| 80+ dBA | Off-Installation | 0 |
| | *Subtotal* | *0* |
| | **Total** | **1,252** |

Note: *The Georgia Memorial Cemetery east of the installation was classified as recreational land use by the City of Marietta. Per USAF land use guidelines, this parcel (which has a total of 33 acres within the 2011 DNL noise zones) was classified as public/semi-public land use in this AICUZ Study.

As shown in **Table 4-2**, the vast majority of the land in the western CZ is within the installation boundary; however, small areas of commercial and residential land use are also present in Cobb County. The majority of the land in western APZ I consists of residential use in Cobb County and the City of Marietta, along with commercial land use along South Cobb Drive. The western APZ II is almost entirely in the City of Marietta; land use is primarily residential although there is a commercial parcel along Powder Springs Road.

Only a small portion of land in the eastern CZ is within the installation boundary. The vast majority of the off-installation land consists of commercial and industrial use in the City of Marietta. However, residential and public/semi-public land use is also present. Commercial land use between U.S. 41 and I-75 composes the majority of the land in the eastern APZ I. A large residential area is also present in the center of eastern APZ I. Land in the eastern APZ II is entirely in Cobb County and consists primarily of commercial land use north of I-75, along with smaller areas of residential land use.

Table 4-2. Existing Off-Installation Land Use Acreage within the Accident Potential Zones

| APZ | Land Use Category | Acres |
|---|---|---|
| **West End (Runway 11)** | | |
| CZ | Commercial | 3 |
| | Residential | 1 |
| | *Subtotal* | *4* |
| APZ I | Commercial | 67 |
| | Industrial | 19 |
| | Public/Semi-Public | 15 |
| | Residential | 187 |
| | *Subtotal* | *288* |
| APZ II | Commercial | 25 |
| | Open Space/Low Density | 3 |
| | Public/Semi Public | 8 |
| | Residential | 389 |
| | *Subtotal* | *425* |
| | **Total** | **717** |
| **East End (Runway 29)** | | |
| CZ | Commercial | 46 |
| | Industrial | 71 |
| | Public/Semi Public* | 3 |
| | Residential | 4 |
| | *Subtotal* | *124* |
| APZ I | Commercial | 192 |
| | Industrial | 8 |
| | Public/Semi Public* | 29 |
| | Recreational | 1 |
| | Residential | 63 |
| | *Subtotal* | *293* |
| APZ II | Commercial | 243 |
| | Recreational | 2 |
| | Residential | 136 |
| | *Subtotal* | *381* |
| | **Total** | **800** |

Note: *The Georgia Memorial Cemetery east of the installation was classified as recreational land use by the City of Marietta. Per USAF land use guidelines, this parcel (which has a total of 10 acres within the APZs) was classified as public/semi-public land use in this AICUZ Study.

### 4.2.2 State of Georgia

The Official Code of Georgia Annotated (O.C.G.A.) Section 50-8-1, *Department of Community Affairs*, gives the Department authority to establish regional planning standards and procedures for all regional planning commissions in Georgia. The Georgia Department of Community Affairs most recently issued these regional planning requirements titled *Standards and Procedures for Regional Planning* in 2009 (GADCA 2009). According to these requirements, each municipality must create a planning document that includes three components: (1) a regional assessment, (2) a stakeholder involvement program, and (3) a regional agenda. As such, the Comprehensive Plans for the cities of Marietta and Smyrna and Cobb County are divided into three similarly-named components, as discussed in **Sections 4.2.3** through **4.2.5**, respectively.

*The Georgia Department of Community Affairs provides several services to local governments, including the following:*

1. *Grant programs*
2. *Housing finance and development*
3. *Building codes*
4. *Comprehensive planning, technical, and research assistance.*

### 4.2.3 City of Marietta

***Land Use Policies.*** The *City of Marietta Comprehensive Plan 2006–2030* was adopted in 2005 and is designed to guide growth throughout the city. According to the Georgia regional planning requirements, the plan is separated into three major sections: the Community Assessment, the Community Participation Program, and the Community Agenda. The Community Assessment identifies existing land use patterns and analyzes those patterns for consistency with the community's growth objectives. The Community Participation Program outlines the public involvement process in the preparation of and updates to the Comprehensive Plan. The Community Agenda provides guidance for future land uses within the city, and describes the community's issues with future growth that were identified during the community participation program. Since the Community Agenda provides guidance for future land uses, it is discussed in **Section 4.4.1**.

The Community Assessment classifies existing land use in the city into nine categories, such as residential, commercial, and industrial (City of Marietta 2005). Dobbins ARB is directly south of Marietta in Cobb County and as such is not classified as a particular type of land use.

The Comprehensive Plan recognizes Dobbins ARB as one of the "major job centers" for the city. One of the three main focuses of Marietta's economic development efforts is to grow the "professional and technical services that surround Dobbins ARB and Lockheed Martin." The plan states that the areas within the city along Cobb Parkway and Powder Springs Street fall within the "Federal AICUZ restrictions for the airport" (City of Marietta 2005). These AICUZ restrictions are provided in the Marietta AICUZ Overlay District as discussed in **Section 4.3.3**.

***Existing Land Use.*** As shown in **Figure 4-1**, the City of Marietta wraps around Dobbins ARB to the northwest, north, and northeast. Therefore, a large portion of the 2011 DNL noise zones and APZs encompass developed areas within the city limits. The western APZ II is almost entirely within the city limits and consists of predominantly residential land use near Powder Springs Road. Northwest of the installation, the 65–69 dBA DNL noise zone

encompasses a small amount of industrial land use within the City of Marietta. The eastern CZ and 65–79 dBA DNL noise zones overlap outside installation boundary in the City of Marietta; this area includes commercial and industrial land use along U.S. 41 and a small parcel of residential land use. A portion of the eastern APZ I is also in Marietta, this area consists of commercial and public/semi-public land use east of U.S. 41.

### 4.2.4 City of Smyrna

***Land Use Policies.*** The *City of Smyrna Comprehensive Plan 2005–2030* was adopted in 2007 and provides guidance for future development patterns and land use throughout the city (City of Smyrna 2007). Following the Georgia regional planning requirements, the plan includes three sections: the Community Assessment, Public Participation Program, and Community Agenda. The Community Assessment includes an analysis of existing development patterns and evaluates those patterns against the community's development objectives (City of Smyrna 2006). This analysis was used to inform elected officials, appointed officials, steering committee members, and the community during the development of the Community Agenda. The Community Agenda focuses on future growth and development within the city; it is discussed in **Section 4.4.2**.

*The City of Smyrna was incorporated in 1872. It is known as the "jonquil city" because of the thousands of jonquil flowers that bloom in gardens and along the city streets in early spring.*

The Community Assessment classifies existing land use in the city into 11 categories, such as commercial, mixed use, and several densities of residential development (City of Smyrna 2006). The assessment does not address Dobbins ARB; however, it does recognize the installation as a stakeholder in future planning decisions.

***Existing Land Use.*** The City of Smyrna is south of the installation. As shown on **Figure 4-1**, only a small portion of the 65–69 dBA DNL noise zone encompasses land within the city limits. This noise zone encompasses land in the northeastern corner of Smyrna and consists of commercial land use west of U.S. 41 along with residential property east of Village Parkway.

### 4.2.5 Cobb County

***Land Use Policies.*** The *Cobb County 2030 Comprehensive Plan* was adopted in 2007 and was last revised in February 2010. It does not serve as a development ordinance, but rather as a growth management guide for unincorporated areas of the county. The plan is separated into two documents as established by the Georgia Department of Community Affairs standards, the Community Assessment and the Community Agenda. The Community Assessment provides an analysis of existing development patterns and a public participation program for the Comprehensive Plan. The Community Agenda contains the vision, goals, policies, and implementation program portion of the Comprehensive Plan. The Community Agenda is discussed in **Section 4.4.3** since it describes future land uses in the county.

The Community Assessment provides an analysis of existing development patterns within the county. The county has grouped land uses into nine standard categories, such as residential, commercial, and industrial (Cobb County 2010a). The Community Assessment recognizes Dobbins ARB, the

Lockheed Martin/Air Force Plant #6, and (now defunct) NAS Atlanta as the three "economic engines" of the county. It also states that "much of the land use in central Cobb continues to be influenced by the Dobbins ARB and the Lockheed Martin Manufacturing Plant" (Cobb County 2010a). Cobb County classifies Dobbins ARB as a civic land use. Civic areas are "congregations of uses that are appropriate for government, cultural activities, and other areas that congregate people to a particular location for community-based reasons" (Cobb County 2010a). The Community Assessment does not provide land use restrictions around the installation; this function is provided by the Cobb County Airport Hazard Zoning District. This district is discussed in **Section 4.3.5**.

***Existing Land Use.*** Unincorporated land in Cobb County is present west of the installation between the Marietta and Smyrna city limits, and east of the installation beyond the intersection of the Marietta and Smyrna city limits. As such, the majority of the land within the 2011 DNL noise zones west of the installation and almost all of western APZ I, eastern APZ I, and eastern APZ II are within Cobb County. Land use west of the installation consists primarily of residential property and smaller parcels of commercial and public/semi-public land along South Cobb Drive and Atlanta Road. This area is encompassed by the 65–69 and 70–74 dBA DNL noise zones and western APZ I. Public/semi-public land uses in this area include Fair Oaks Elementary School and Oak Wood High School at the intersection of Cobb Drive and Austell Road. The 65–69 dBA DNL noise zone also encompasses a large area of predominately residential land use west of these schools between Cobb Drive and Austell Road. Land within Cobb County and City of Marietta is present in eastern APZ I which overlaps with the 65–79 dBA DNL noise zones, this area includes commercial, residential, and public/semi-public land use between U.S. 41 and I-75. The western APZ II and a small portion of the 65–69 dBA DNL noise zone overlap in Cobb County; this land includes commercial and residential uses north of I-75.

## 4.3 Existing Zoning

### 4.3.1 Introduction

The 2011 DNL noise zones and APZs at Dobbins ARB are depicted on a zoning map as shown in **Figure 4-2**. The information illustrated on this map consists of 2008 zoning data provided by the City of Marietta and 2010 zoning data from Cobb County, which also provides mapping services for the City of Smyrna. A large number of municipal zoning districts were simplified for the purpose of this figure. For example, the Cobb County Office Low-Rise, Office Mid-Rise, and Office High-Rise zoning districts were combined into a single "Office Low-, Mid-, or High-Rise" color on **Figure 4-2**. Cobb County and the City of Marietta do not zone roadways or their associated rights-of-way; therefore, these areas are shown as "unzoned."

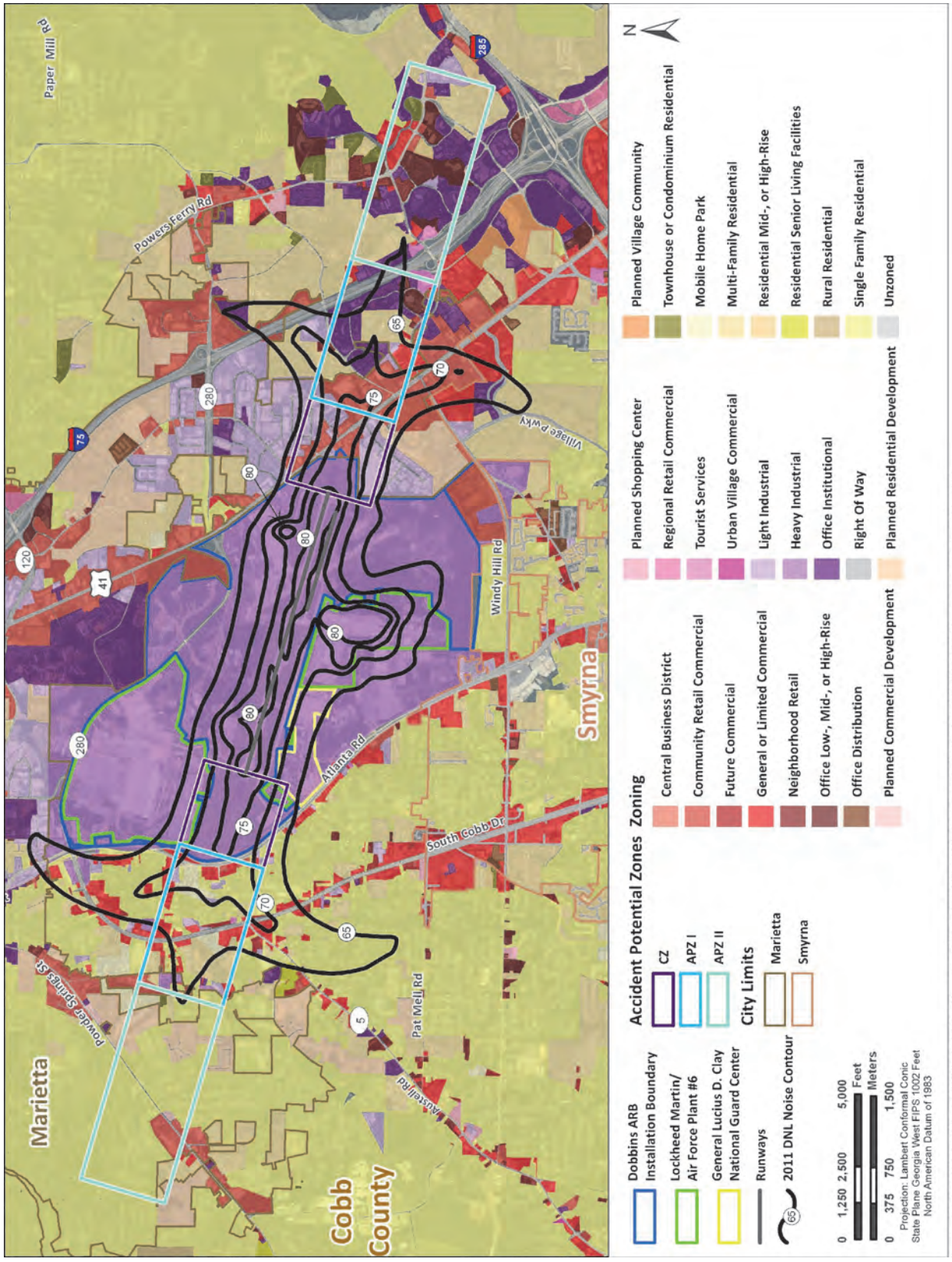



**Figure 4-2. 2011 DNL Noise Contours and APZs on Existing Zoning Map**

In compliance with Georgia Code (see **Section 4.3.2**), the Marietta and Cobb County planning departments have enacted zoning controls to prevent uses that might be hazardous to aircraft operations. These zoning controls are illustrated on **Figure 4-3** and include the Marietta AICUZ Overlay District as described in **Section 4.3.3**, and the Cobb County Compatible Use Zones (CUZs) as described in **Section 4.3.5**. The City of Smyrna has not enacted any airport-related zoning controls near Dobbins ARB. The Marietta AICUZ Overlay District and Cobb CUZs overlap; however these zoning controls only apply to the land within each municipality's respective jurisdiction (e.g., the Cobb County CUZs regulations do not apply to land within the Marietta city limits, and vice versa). The AICUZ Overlay and CUZ regulations are in addition to those of the underlying zoning district; therefore, the underlying zoning is also discussed in this section.

***Noise Zones.*** As shown on **Figure 4-2**, the land within the installation boundary is zoned Heavy Industrial by Cobb County. The 80+ dBA DNL noise zone is entirely within the installation boundary. The 65–69 dBA DNL noise zone to the southeast encompasses commercial and residential zoning in the City of Smyrna. The 65–74 dBA DNL noise zones encompass a small amount of off-installation property to the south; this area includes 45 acres of Heavy Industrial zoning. The 65–74 dBA DNL noise zones to the west encompass several types of commercial and industrial zoning along Atlanta Road and South Cobb Drive, such as Community Retail Commercial, Neighborhood Retail, and Office Institutional. The land between these two roadways within these noise zones is zoned residential, and includes Single-Family, Multi-Family, and Mobile Home Park zoning. The 65–79 dBA DNL noise zones east of the installation encompass predominately commercial and industrial zoning, including large tracts of Community Retail Commercial zoning along U.S. 41 in the City of Marietta and Heavy Industrial zoning west of I-75 in Cobb County.

***Accident Potential Zones.*** As shown on **Figure 4-3**, the Marietta AICUZ Overlay District extends along the runway centerline and has approximately the same boundaries as the CZs and APZs. The Cobb County CUZs extend in a fan shape along the runway centerline, and therefore also encompass the majority of the CZs and APZs.

*The City of Marietta and Cobb County airport zoning overlap to encompass the CZs and APZs. The Marietta AICUZ overlay district was designed to protect the public's safety and welfare by limiting high-density land uses.*

The majority of the land in the western CZ is within the installation boundary; however, approximately 3 acres of commercial and 1 acre of Single-Family Residential zoning in Cobb County are present. The majority of the land within western APZ I is zoned residential, including Single and Multi-Family in Marietta and Cobb County and Mobile Park Home zoning in Cobb County. In addition, there are multiple types of commercial and industrial zoning along Atlanta Road and South Cobb Drive. The vast majority of the land within western APZ II is also zoned with these same residential districts, but also includes Planned Residential zoning south of Powder Springs Road.

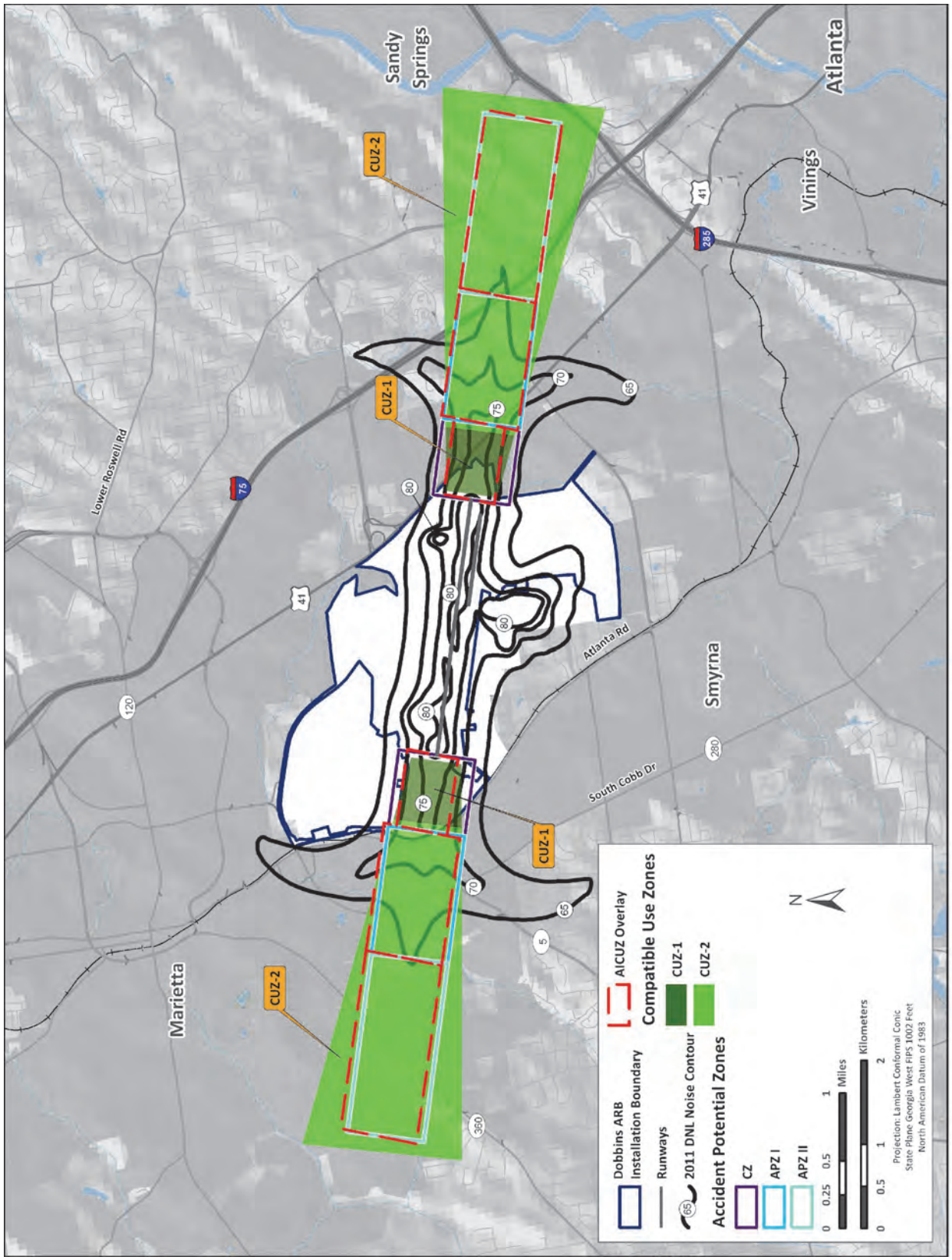



**Figure 4-3. 2011 DNL Noise Contours and APZs with City of Marietta AICUZ Overlay District and Cobb County CUZs**

The majority of the land within the eastern CZ is outside of the installation boundary, and includes industrial and commercial zoning along U.S. 41. The zoning within eastern APZ I is mixed and includes large parcels of Community Retail Commercial, Office Institutional, and Multi-Family Residential Districts. The land within eastern APZ II is entirely in Cobb County and includes several types of high-density zoning such as Office High-Rises; and Residential High-Rises, Townhomes, and Condominiums.

### 4.3.2 State of Georgia

The O.C.G.A. Section 36-66-6, *Investigations and Recommendations of Planning Department Regarding Land Near Military Installation*, was revised in 2003. It requires any local government that has an established planning department to evaluate proposed zoning decisions that occur within the following areas (O.C.G.A. § 36-66-6):

- Land within 3,000 feet of a military base
- Land within the CZ, APZ I, or APZ II of a military airport.

The statute requires local municipalities to investigate the zoning proposal with respect to the following matters:

- Would adversely affect the existing use or usability of property near a military airport
- If the affected property has a reasonable economic use as currently zoned
- Would result in a use which could cause a safety concern with respect to transportation or schools due to the proximity of the military airport
- Is in conformity with the policy and intent of the municipalities' land use plan
- Whether there are other existing or changing conditions affecting the military airport which give supporting grounds for either approval or disapproval of the zoning proposal.

The statute also states that the local government must request a written recommendation from the commander of the military airport regarding the land being considered in the zoning proposal. If the local government does not receive a response to this request, the municipality may presume that the zoning proposal would not have any of the adverse affects previously listed.

### 4.3.3 City of Marietta

***Zoning Policies.*** The *Zoning Ordinance of the City of Marietta* was enacted in 1998 and updated in 2009. The ordinance regulates lots, structures, and uses within the Marietta city limits. It consists of 28 zoning districts, including multiple types of residential, commercial, and industrial; and several overlay districts (City of Marietta 1998). As shown in **Figure 4-2**,

Dobbins ARB is directly adjacent to the Marietta city limits to the south and is therefore not zoned by the city.

In compliance with Georgia Code (see **Section 4.3.2**), Chapter 712.05 of the Marietta zoning ordinance, *AICUZ Overlay District*, was enacted in 1998. With this enactment, there are overlay district regulations and underlying zoning district regulations. The AICUZ Overlay District is designed to promote development that is appropriate for the airfield vicinity and to protect the public's safety by limiting land uses near the airport that would generate large concentrations of people (City of Marietta 1998).

The Overlay District regulations include restrictions within the Marietta portion of the CZ, APZ I, and APZ II (see **Figure 4-3**). The remainder of the land within the APZs is in Cobb County; as such it is regulated by the Cobb County Airport Hazard District (see **Section 4.3.5**). Only low-intensity uses such as cemeteries, agriculture, and passive recreation are permitted in the CZ. New residential development is restricted to 2.5 dwelling units per acre in APZ I, and 4 dwelling units per acre in APZ II. Daycare, hospitals, schools, and assisted living facilities are not permitted in APZ I or II. The following uses are also prohibited throughout the Overlay District (City of Marietta 1998):

- Fire or explosive, toxic, corrosive, or other hazardous materials
- Release of any airborne substances such as steam, dust, and smoke, which would impair visibility or otherwise interfere with the operation of aircraft
- Uses that would produce light emissions, whether direct or indirect (reflective) that would interfere with pilot vision
- Uses that would produce electrical emissions that would interfere with aircraft communications systems or navigational equipment
- Uses that would attract birds or waterfowl.

The Overlay District regulations do not include use restrictions within the noise zones; however, noise level reduction (NLR) recommendations are provided in a companion document titled "Guidelines for Construction in Marietta's AICUZ Overlay District" (City of Marietta undated). This document also describes the imaginary surfaces surrounding Dobbins ARB; these surfaces are described in **Appendix D** of this AICUZ Study. The construction guidelines use the imaginary surface limitations to determine whether an object or structure constitutes an obstruction to air navigation. A building application that exceeds the height limits requires an approval letter from Dobbins ARB (City of Marietta undated).

***Existing Zoning.*** The Marietta city limits wrap around Dobbins ARB to the west, north, and northeast, and therefore encompass parts of the noise zones and APZs. As described previously, the AICUZ Overlay District regulations apply to the land within the CZs and APZs. However, as shown on **Figure 4-3**, the AICUZ Overlay boundary is narrower and slightly out of alignment as compared to the CZs and APZs at Dobbins ARB.


*A well-known landmark in Marietta, "The Big Chicken" is a restaurant which features a 56-foot-tall structure designed in the appearance of a chicken rising up from the top of the building. Pilots sometimes used the building as a reference point when approaching Dobbins ARB.*

Within the Marietta city limits, the 65–69 dBA DNL noise zone encompasses Light Industrial zoning. The land within the 65–79 dBA DNL noise zones overlaps with the eastern CZ and APZ I and includes commercial and industrial zones along U.S. 41. The portion of the land within western APZ I in Marietta includes several types of commercial, industrial, and residential zoning. The land within western APZ II consists of residential zoning, including Single Family, Multi-Family, and Planned Residential Development.

### 4.3.4 City of Smyrna

***Zoning Policies.*** The Smyrna zoning regulations were adopted in 1973 and are provided in the *Code of Ordinances, City of Smyrna, Georgia* (City of Smyrna 1995). The ordinance regulates building construction, population density, and land use within the Smyrna city limits. The city is divided in 20 zoning districts, which include multiple types of residential, business, and shopping districts. The zoning code does not discuss Dobbins ARB.

***Existing Zoning.*** The APZs do not encompass any land within the Smyrna city limits. Only a small portion of 65–69 dBA DNL noise zone encompasses land within the City of Smyrna, this area includes land south of the intersection of U.S. 41 and Windy Hill Road. This noise zone encompasses 84 acres of commercial, 11 acres of Office Institutional, and 21 acres of Multi-Family zoning.

### 4.3.5 Cobb County

***Zoning Policies.*** The Cobb County zoning ordinance was enacted in 1996 and is provided in the *Official Code of Cobb County, Georgia* (Cobb County 1996). The county is divided in 44 districts, which includes more than 20 types of residential districts. As shown on **Figure 4-2**, Dobbins ARB is in Cobb County and is zoned Heavy Industrial. This district includes uses such as heavy manufacturing, warehousing, and storage (Cobb County 1996).

In accordance with Georgia Code (see **Section 4.3.2**), Cobb County's airfield zoning regulations are provided in the *Airport Hazard District*. In the Airport Hazard District, the land east and west of the runway ends is part of a CUZ that is divided into two subzones (see **Figure 4-3**). The fan shape of these subzones is based on the horizontal dimensions of the approach-departure clearance surface; this three-dimensional airspace surface is described in **Appendix D** of this AICUZ Study. The CUZ subzones for Dobbins ARB include the following (Cobb County 1996):

- ***CUZ-1:*** Flares uniformly from the end of the runway for a distance of 2,500 feet
- ***CUZ-2:*** Flares uniformly from the end of CUZ-1 to a point 2.5 miles from the end of the runway.

In general, land uses are not permitted within the CUZ that create electrical interference; make it difficult for pilots to distinguish between airfield lights and other lights; result in glare; impair visibility; attract birds; or otherwise

endanger the landing, takeoff, or maneuvering of aircraft. Densities of residential, commercial, industrial, or recreational uses within CUZ-1 must not exceed 25 persons per acre. The CUZ-1 restrictions also apply to CUZ-2, however several types of manufacturing, warehousing, landfills, and junkyard uses are allowed in CUZ-2 via a permit. Additional non-residential uses are also allowed by permit. Permit owners could be required to mark and light obstructions to air navigation, such as structures or trees (Cobb County 1996).

***Existing Zoning.*** As shown on **Figure 4-3**, CUZ-1 is shorter and narrower than the CZs. CUZ-2 encompasses all the land within APZ I and APZ II, as well as additional property to the north and south.

As shown on **Figure 4-2**, land within the installation boundary is zoned Heavy Industrial by Cobb County. The 80+ dBA DNL noise zone is entirely inside the installation boundary. South of the installation, 45 acres of Heavy Industrial zoning is present within the 65–74 dBA DNL noise zones. This area is Lockheed Martin property that is not part of Air Force Plant #6.

*The land within the Dobbins ARB installation boundary is zoned heavy industrial by Cobb County. This district includes uses such as heavy manufacturing, warehousing, and storage.*

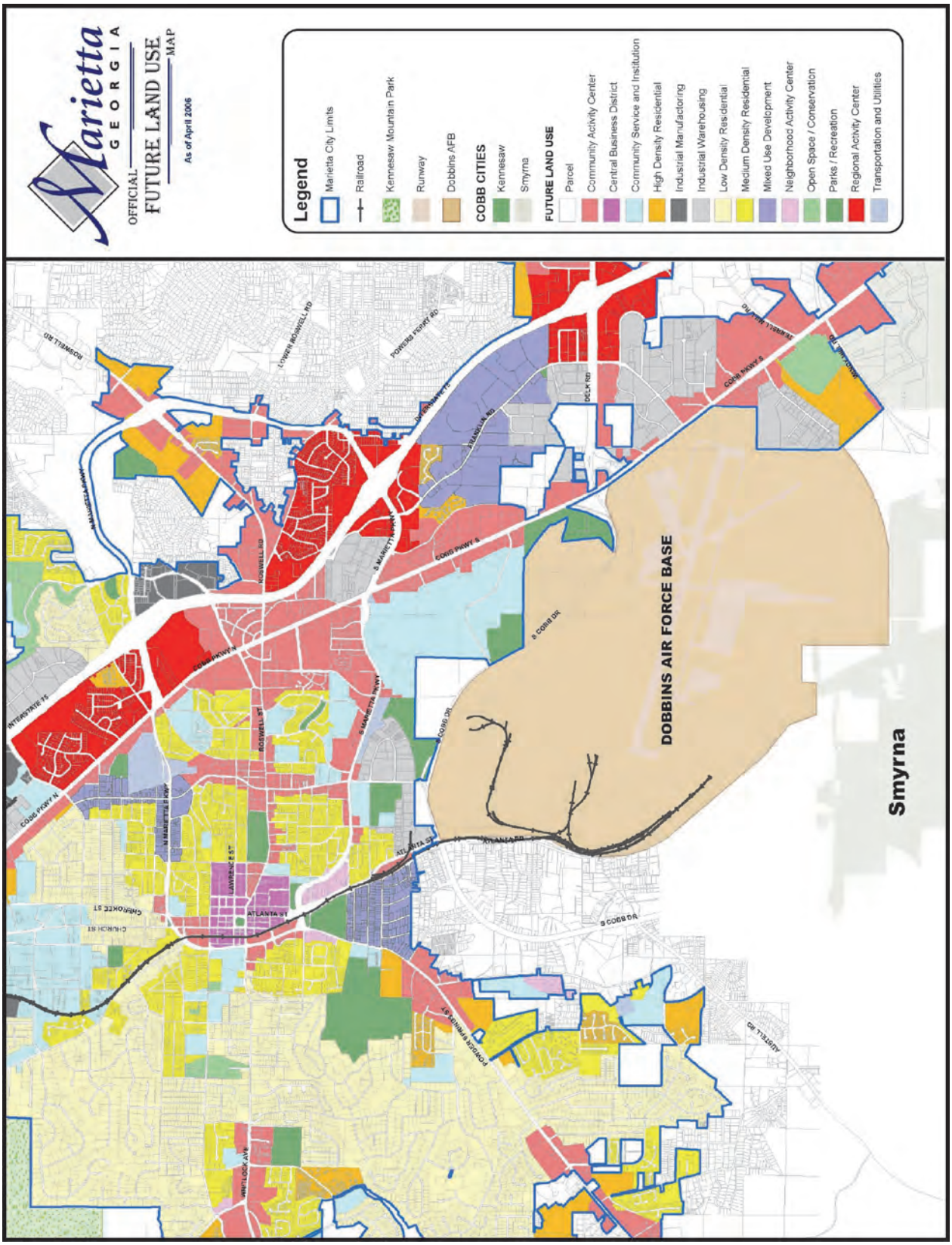
The 65–74 dBA DNL noise zones and western APZ I overlap west of the installation. This area includes several types of commercial zoning along Atlanta Road and South Cobb Drive. In addition, it includes Single- and Multi-Family Residential zoning. The 65–69 dBA DNL noise zone encompasses a large area outside of the APZs between South Cobb Drive and Austell Road. This area consists predominately of Single Family Residential zoning.

The land within the 65–69 dBA DNL noise zone overlaps with some of the eastern APZ I in Cobb County. This area includes Heavy Industrial zoning along I-75 and a large parcel of Multi-Family Residential development. The land within eastern APZ II is entirely in Cobb County and consists of a mix of high-density commercial, industrial, and residential zoning. In particular, there are several large Office High-Rise and Multi-Family Residential districts.

## 4.4 Future Land Use

### 4.4.1 City of Marietta

As discussed in **Section 4.2.3**, the Community Agenda provides guidance for new development in the city. The location of future land uses is based on existing or proposed road improvements, the availability of public services like water or sewer, existing land uses, and other environmental constraints (City of Marietta 2005). The Community Agenda includes 14 future land use categories, such as residential, industrial, and several types of activity centers. The portion of the Marietta future land use map that shows Dobbins ARB is presented in this AICUZ Study as **Figure 4-4**.




Source: City of Marietta 2006

**Figure 4-4. City of Marietta Future Land Use Map**

Dobbins ARB is directly south of Marietta and is not classified as a particular land use. However, the land surrounding the installation is highly developed and, as such, there are future land uses that have the potential to be incompatible with the Dobbins ARB AICUZ environs. The Marietta Future Land Use Map shows a large portion of the land north and east of the installation along U.S. 41, South Marietta Parkway, and Roswell Street classified as Community Activity Center use. This area would include low- to medium-intensity office, retail, and commercial service uses (City of Marietta 2005). Commercial land use is generally compatible within the AICUZ environs, however further deliberation by local authorities might be needed due to the variation of densities in people and structures. For example, per USAF land use compatibility guidelines, shopping malls and centers are considered incompatible in any noise zone or APZ. It is recommended that the City of Marietta consider the USAF land use compatibility guidelines when regulating development in these areas (see **Table 3-1**).

The majority of the land west of the installation includes existing residential land use; the Marietta Future Land Use map also contains residential land use in this area. The majority of the land west of Powder Springs Street consists of existing and future Low-Density Residential land use (3 dwelling units per acre), however several areas of High-Density Residential use (6–12 dwelling units per acre) are also present (City of Marietta 2005). Residential land use is considered incompatible in any noise zone or APZ. It is recommended that the City of Marietta consider the USAF land use compatibility guidelines when considering residential development proposals within the noise zones and APZs.

### 4.4.2 City of Smyrna

The Community Agenda was adopted in August 2007 (City of Smyrna 2007). The focus of the Community Agenda is to provide a future development description to accompany the Future Development Map, which is the guide for future growth and development in the City of Smyrna. The Community Agenda includes 11 future development categories, such as several densities of residential use and multiple types of activity centers.

Dobbins ARB is directly north of the Smyrna city limits, and as such is not assigned a future development category. Future land uses south of the installation are similar to the existing land use. This includes office and mixed use along U.S. 41, Atlanta Road, and South Cobb Drive; and residential use between these roadways. These future land use patterns are also present in the City of Marietta. The USAF land use recommendations for commercial and residential land use discussed in **Section 4.4.1** would also apply to future land use in the City of Smyrna. It is recommended that the City of Smyrna consider the USAF land use compatibility guidelines when regulating development in the area south of Dobbins ARB (see **Table 3-1**).

### 4.4.3 Cobb County

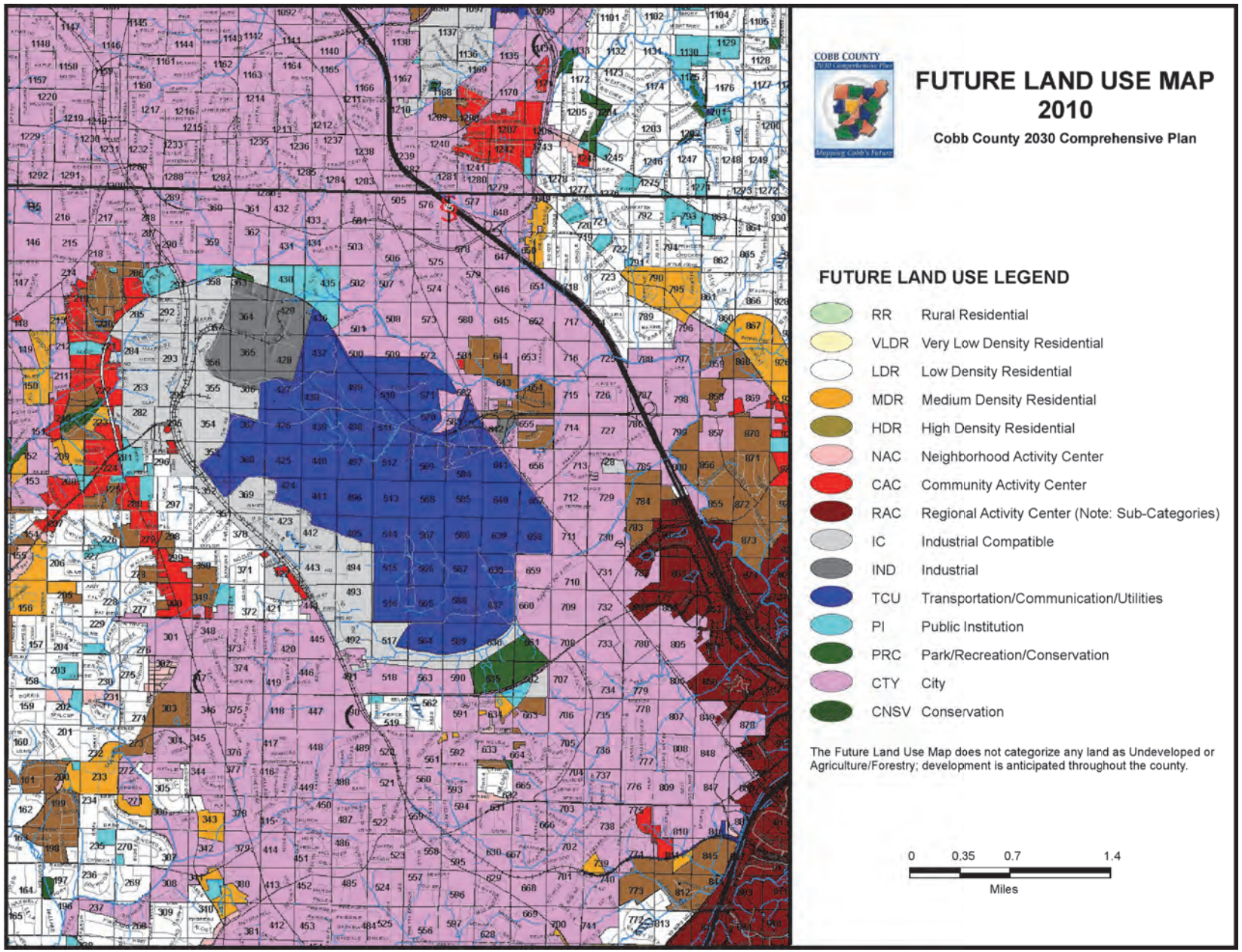
The Cobb County Community Agenda was revised in February 2010 (Cobb County 2010a). The location of the future land use categories was determined using the same factors used for the City of Marietta (see **Section 4.4.1**). The Community Agenda includes 13 future land use categories, such as several types of activity centers and multiple densities of residential development. The portion of the Cobb County Future Land Use Map that shows Dobbins ARB is presented in this AICUZ Study as **Figure 4-5**.

*Cobb County was one of 10 northwestern Georgia counties carved out of Cherokee Indian lands in 1832. The county is named after Thomas Willis Cobb, a U.S. Senator and Superior Court Judge.*

The Cobb County future land use map indicates that Dobbins ARB would be a Transportation/Communication/Utilities land use. This category includes land uses such as power generation plants, railroad facilities, telephone switching stations, and airports (Cobb County 2010a). The northern Lockheed Martin/Air Force Plant #6 property would be an Industrial land use, which are areas that can support heavy industrial and manufacturing uses. These future land use designations are generally considered compatible within the AICUZ environs if NLR measures are incorporated into the structures where the public is present, office areas, noise-sensitive areas, or where the ambient noise level is low.

There are future land uses that have the potential to be incompatible with the Dobbins ARB AICUZ environs. The future land use map indicates that the land directly west of the installation (i.e., within the 2010 DNL noise zones and western APZ I) would be Industrial Compatible land use. The purpose of this category is to provide for areas that can support light industrial, office/warehouse, and distribution uses (Cobb County 2010a). Industrial land use is generally compatible within the AICUZ environs, however further deliberation by local authorities might be needed due to the variation of densities in people and structures. Per USAF land use compatibility guidelines, it is recommended that Cobb County encourage low-density industrial development in these areas (see **Table 3-1**).

The Future Land Use Map indicates that land use east and west of the installation is intended for high-density development. Future land use west of South Cobb Drive within the 2011 DNL noise zones and western APZ I is a mix of several high-density future development categories, including Community Activity Centers, Public Institutions, and Medium- and High-Density Residential areas. Land in the eastern APZ II would be part of the Cumberland Galleria Regional Activity Center. The purpose of this future development category is to provide areas that can support a high intensity of development, including high-rise office buildings, regional malls, and varying densities of residential development (Cobb County 2010a). As shown in **Table 3-1**, in general high-density land uses, including all types of residential land use, are considered incompatible within the AICUZ environs. It is recommended that Cobb County consider the USAF land use compatibility guidelines when regulating development in these areas.




Source: Cobb County 2010a

**Figure 4-5. Cobb County Future Land Use Map**

## 4.5 Future Transportation Issues

***SPLOST Projects.*** In Georgia, a Special Purpose Local Option Sales Tax (SPLOST) can be levied by any county for the purpose of funding capital improvement projects. The 2011 proposed SPLOST would be in effect from January 2012 through December 2015. The 2011 SPLOST would be used to fund transportation and capital improvement projects around Cobb County and within each of the county's six cities (Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna). Projects include infrastructure maintenance, pedestrian improvements, traffic congestion relief, and safety and operational improvements (Cobb County 2010b). The portion of the Cobb County 2011 SPLOST map that shows Dobbins ARB is presented in this AICUZ Study as **Figure 4-6**.

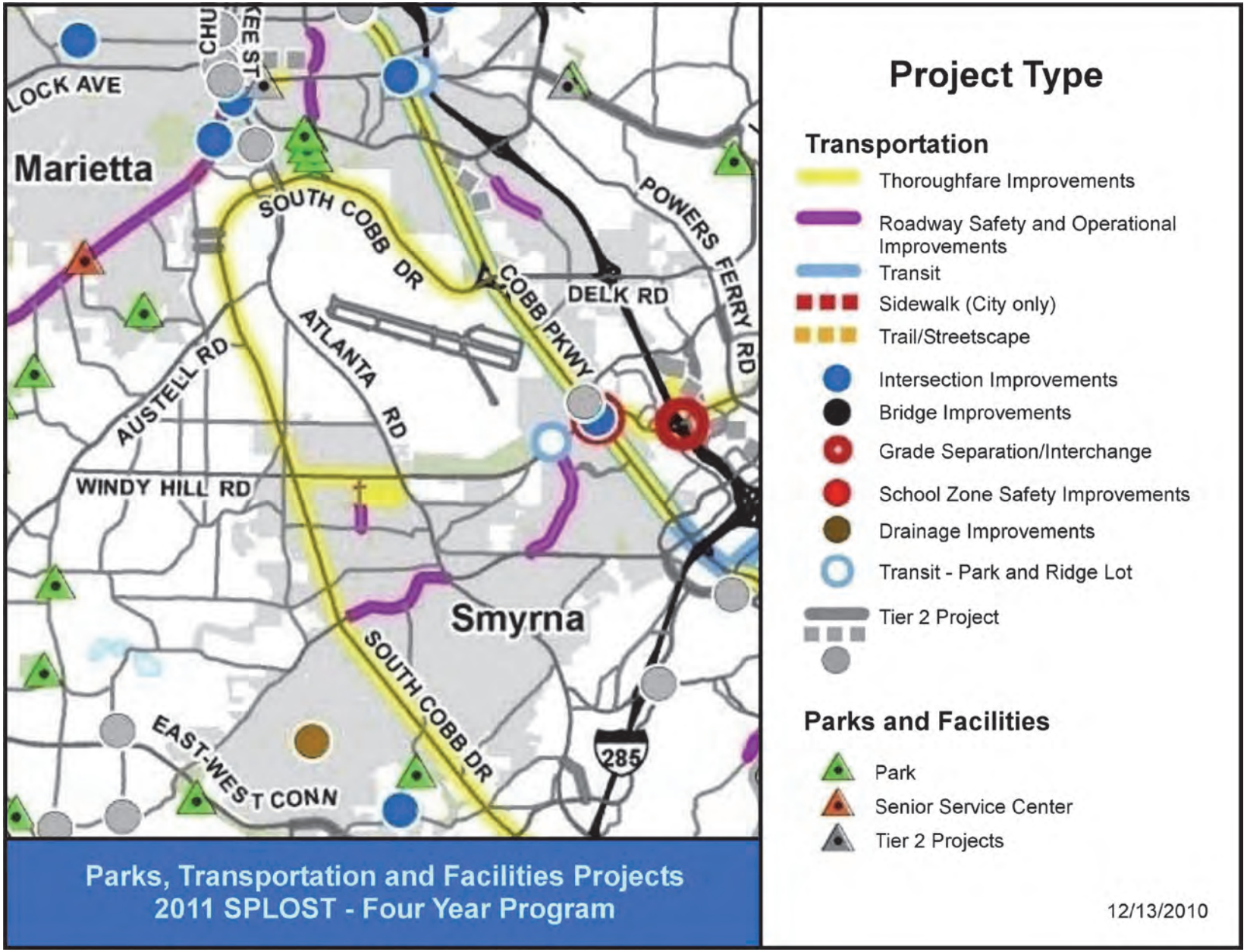
*In Georgia, a SPLOST can be levied by any county for the purpose of funding capital improvement projects. The Cobb County 2011 SPLOST will be in effect from January 2012 to December 2015.*

As shown on **Figure 4-6**, the major traffic improvements proposed for the Dobbins ARB vicinity include the following (Cobb County 2010b, Cobb County 2011):

- Widen U.S. 41 and South Cobb Drive to six lanes around the installation
- Capacity and operational improvements for Windy Hill Road southwest of the installation
- School and intersection improvements along U.S. 41
- A transit park-and-ride lot adjacent to the installation to the southeast
- Park improvements northwest of Lockheed Martin/Air Force Plant #6.

These proposed transportation projects could attract additional development that could be incompatible with Dobbins ARB aircraft operations. It is recommended that Cobb County and the cities of Marietta and Smyrna act consistently with USAF land use compatibility when considering development plans for these areas.

***Proposed Light Rail Project.*** Light Rail in Cobb County has been proposed as a viable option to relieve traffic congestion and manage Cobb County's steadily growing population and the rise in transit ridership. Light rail is a form of urban rail public transportation that generally has a lower capacity and lower speed than heavy rail and metro systems, but higher capacity and higher speed than traditional street-running tram systems. The proposed 2010 light rail route would traverse the county from northwest to southeast, starting at Kennesaw State University in the northern portion of the county, through the Cumberland Galleria area southeast of Dobbins ARB, and ending near the Georgia Institute of Technology in Fulton County (Cobb County DOT 2010). A clear definition of the project and funding sources are expected by August 2011, with operations commencing in November 2019.




Source: Cobb County 2010b

**Figure 4-6. 2011 Cobb County SPLOST Parks, Transportation, and Facilities Projects Map**

The proposed light rail line would run along U.S. 41, through the eastern CZ. A station at Dobbins ARB is proposed along this stretch of U.S. 41 at the intersection with South Cobb Drive in the eastern CZ (Cobb County DOT 2010). Due to high accident potential within the CZ, most land uses are considered incompatible. Railroads, rapid rail transit, and passenger facilities are considered incompatible in CZs. It is recommended that Cobb County and the other interested parties act consistently with USAF land use compatibility guidelines when considering transit routes, especially if they involve passenger stations.

## 4.6 Incompatible Land Uses

### 4.6.1 Introduction

The USAF established compatible land use guidelines in relation to noise zones and APZs in order to determine if land uses around an installation were compatible in the AICUZ environs. In general, the USAF's guidelines recommend that noise-sensitive land uses be placed outside high-noise zones, and that people-intensive uses be placed outside of APZs. The compatibility status of the land within the 2011 noise zones and APZs was determined by taking the land use categories presented in **Figure 4-1**, choosing the respective land use classifications from **Table 3-1**, and applying the applicable land use compatibility criteria. For a land use to be considered compatible, it must meet criteria for its category for both noise and accident potential. For example, a public building (public/semi-public land use) would be considered a compatible use within the 65–69 dBA DNL noise zone. Within APZ I, public/semi-public land use is considered incompatible. Therefore, if a public building was within both the 65–69 dBA DNL noise zone and APZ I, it would be considered incompatible.

*For a land use to be considered compatible, it must meet criteria for its category for both noise and accident potential.*

As shown in **Figure 4-1**, the APZs extend along the runway centerline to the east and west of the installation, and the 2011 DNL noise zones extend to the east and west of the runway ends. Therefore, the incompatible land uses around the installation were divided into eastern and western portions in this AICUZ Study.

A small amount of off-installation land use south of the installation is encompassed by the 2011 DNL noise zones. This land includes Lockheed Martin-owned facilities that are not part of Air Force Plant #6 (a public/semi-public land use). Approximately 36 and 9 acres of these facilities are encompassed by the 65–69 and 70–74 dBA DNL noise zones, respectively. Public/semi-public land use is generally considered compatible within these zones if NLR measures are incorporated into the design and construction of structures. However, measures to achieve an overall NLR do not necessarily solve all noise difficulties (such as outdoor noise) and additional evaluation is warranted by local municipalities.

### 4.6.2 West of Dobbins ARB

As shown in **Table 4-3**, approximately 813 acres of land use to the west of Dobbins ARB are considered incompatible with USAF land use guidelines. The majority of this land consists of medium-density, single-family homes in the City of Marietta and Cobb County, however higher density residential development is also present (e.g., multi-family homes, townhomes, and condominiums).

Table 4-3. Existing Off-Installation Incompatible Land Use within the Western 2011 DNL Noise Zones and APZs

| Category | Acreage within Western APZs | | | Acreage within Western DNL Noise Zones, Not Included in Western APZs | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | ***CZ*** | ***APZ I*** | ***APZ II*** | ***65–69*** | ***70–74*** | ***75–79*** | ***80+*** | |
| Commercial | 3[a] | CO | CO | CO | CO | CO | 0 | **3** |
| Industrial | 0 | CO | CO | CO | CO | CO | CO | **0** |
| Open-Space/ Low-Density | 0 | 0 | CO | CO | CO | CO | CO | **0** |
| Public/ Semi-Public | 0 | 15[b] | CO | CO | CO | CO | 0 | **15** |
| Recreational | 0 | 0 | 0 | CO | CO | CO | 0 | **0** |
| Residential | 1[c] | 187[d] | 389 | 206 | 12 | 0 | 0 | **795** |
| **Total Acreage** | **4** | **202** | **389** | **206** | **12** | **0** | **0** | **813** |

Key:
CO = The land use is considered compatible.
0 = No acreage of this category is present.

Notes:
a = Approximately 3 acres of this land is also encompassed by the 65–74 dBA DNL noise zones.
b = Approximately 10 acres of this land is also encompassed by the 65–74 dBA DNL noise zones.
c = Approximately 1 acre of this land is also encompassed by the 65–69 dBA DNL noise zone.
d = Approximately 139 acres of this land is also encompassed by the 65–74 dBA DNL noise zones.

The land in the western CZ is almost entirely within the installation boundary (approximately 93 percent). However, the western CZ includes 3 acres of commercial land and 1 acre of residential land use along Atlanta Road; this land is also encompassed by the 65–74 dBA DNL noise zones. Due to the high accident potential within the CZ, these land uses are considered incompatible.

As shown in **Figure 4-1**, the land within western APZ I overlaps with a large portion of the 65–74 dBA DNL noise zones. The majority (approximately 389 acres) of the land within western APZ I is medium-density (primarily single-family homes) in Cobb County and the City of Marietta. Of that total, approximately 139 acres are also encompassed by the 65–74 dBA DNL noise zones. Residential land use at a density greater than one dwelling per acre is considered incompatible in any noise zone or APZ. Western APZ I also includes 15 acres of public/semi-public land use, which includes portions of the Fair Oaks Elementary School at the intersection of South Cobb Drive and Austell Road, and Chattahoochee Technical College west of South Cobb Drive. Educational services are considered incompatible in any APZ.

The remainder of the land within the western APZ I and the 65–74 dBA DNL noise zones is considered compatible with USAF land use guidelines; this includes commercial and industrial land use along South Cobb Drive and Atlanta Road. However, further deliberation of industrial and commercial land uses by municipal planners could be needed due to variation in the densities of persons and structures. For example, shopping malls and shopping centers are considered an incompatible land use in any APZ because of the high concentration of people.

The land within western APZ II is entirely outside of the installation boundary in the City of Marietta. Only a very small portion (less than 1 acre) overlaps with the 65–69 dBA DNL noise zone. Western APZ II is almost entirely residential land use (approximately 92 percent), which is considered an incompatible use. Approximately 8 acres of the Chattahoochee Technical College is also present west of Cobb Drive. Educational services are considered incompatible in any APZ.

The 31 acres of commercial and open-space/low-density land use in western APZ II are considered compatible. However, the same commercial density guidelines discussed previously for APZ I would also apply to APZ II. Therefore, any high-density development in APZ II (e.g., a shopping mall) would be considered incompatible.

Approximately 206 acres of the land outside of the installation boundary that is encompassed the 65–69 dBA DNL noise zone west of the installation consists of residential land use along South Cobb Drive and Atlanta Road and between South Cobb Drive and Austell Road in Cobb County. Residential land use at a density greater than one dwelling per acre is considered incompatible within the 65–69 dBA DNL noise zone. USAF land use compatibility guidelines recommend that local municipalities determine that there is an absence of viable alternative development options before approving residential development within this noise zone. The municipality's evaluation of new construction proposals should indicate that the community's need for residential use would not be met if development were prohibited in this noise zone. When the community determines that residential land uses must be allowed, measures to achieve outdoor to indoor NLR should be incorporated into building codes and considered in individual construction approvals. NLR measures will reduce indoor noise levels; however, NLR measures will not eliminate outdoor noise problems. Measures that reduce outdoor noise (e.g., careful site planning and the use of berms or barriers) should be used whenever practical in addition to measures that protect interior spaces.

The remainder of the land outside of the installation boundary to the west within the 65–69 dBA DNL noise zone is mixed, and includes commercial, industrial, public/semi-public, and recreational land uses. Commercial and industrial land uses are present along major roadways, these land uses and related structures are considered compatible without restriction. Public/semi-public land uses include the Cobb County municipal facilities adjacent to the installation to the northwest and Fair Oaks Elementary and Oak Wood High schools along South Cobb Drive to the west. These uses are generally considered compatible in this noise zone if NLR measures are achieved into

the design and construction of structures. However, for educational services like schools, measures to achieve an overall NLR do not necessarily solve all noise difficulties (such as outdoor noise) and additional evaluation is warranted by local municipalities.

### 4.6.3 East of Dobbins ARB

As shown in **Table 4-4**, approximately 442 acres of land use to the east of Dobbins ARB are considered incompatible with USAF land use guidelines. The majority of this consists of commercial and industrial land use within the eastern CZ and 65–79 dBA DNL noise zones, residential land within the eastern APZ I and the 65–74 dBA DNL noise zones, and residential land within the eastern APZ II.

Table 4-4. Existing Off-Installation Incompatible Land Use within the Eastern 2011 DNL Noise Zones and APZs

| Category | Acreage within Eastern APZs | | | Acreage within Eastern DNL Noise Zones, Not Included in Eastern APZs | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | ***CZ*** | ***APZ I*** | ***APZ II*** | ***65–69*** | ***70–74*** | ***75–79*** | ***80+*** | |
| Commercial | 46[a] | CO | CO | CO | CO | CO | 0 | 46 |
| Industrial | 71[b] | CO | 0 | CO | CO | CO | CO | 71 |
| Open-Space/ Low-Density | 0 | 0 | 0 | CO | CO | CO | CO | 0 |
| Public/ Semi-Public | 3[c] | 29[d] | 0 | CO | CO | CO | 0 | 32 |
| Recreational | 0 | CO | CO | CO | CO | CO | 0 | 0 |
| Residential | 4[e] | 63[f] | 136 | 74 | 16 | 0 | 0 | 293 |
| **Total Acreage** | **124** | **92** | **136** | **74** | **16** | **0** | **0** | **442** |

Key:
CO = The land use is considered compatible.
0 = No acreage of this category is present.

Notes:
a = Approximately 45 acres of this land is also encompassed by the 65–79 dBA DNL noise zones.
b = Approximately 71 acres of this land is also encompassed by the 65–79 dBA DNL noise zones.
c = Approximately 3 acres of this land is also encompassed by the 65–69 dBA DNL noise zone.
d = Approximately 19 acres of this land is also encompassed by the 65–69 dBA DNL noise zone.
e = Approximately 3 acres of this land is also encompassed by the 65–74 dBA DNL noise zones.
f = Approximately 54 acres of this land is also encompassed by the 65–74 dBA DNL noise zones.

The majority (approximately 70 percent) of the land within the eastern CZ is outside of the installation boundary. The eastern CZ also overlaps with the 65–79 dBA DNL noise zones. This area includes commercial, industrial, public/semi-public, and residential land use in the City of Marietta. With the exception of residential land use, these land uses are considered compatible within the noise zones. However these land uses are considered incompatible in CZs. Therefore, all the existing off-installation land uses within the eastern CZ are considered incompatible.

As shown in **Figure 4-1**, the land within eastern APZ I is entirely outside of the installation boundary in the City of Marietta and Cobb County. It also

overlaps with the 65–74 dBA DNL noise zones and a small portion of the 75–79 dBA DNL noise zone. The majority of the land use in this area is commercial (approximately 66 percent), followed by residential, public/semi-public, industrial, and recreational land use. Residential land use is considered incompatible in APZ I. The 19 acres of public/semi-public land use (the Georgia Memorial Cemetery and Destiny Metropolitan Worship) are also considered incompatible. The Wellstar Health System facilities (a public/semi-public land use) are also considered incompatible, this parcel is outside of the 2011 DNL noise zones within the eastern APZ I.

The remaining land uses in the eastern APZ I are considered compatible with USAF land use guidelines. However, further deliberation of industrial and commercial land uses by municipal planners could be needed due to variation in the densities of persons and structures. For example, shopping malls and shopping centers are considered an incompatible land use in any APZ because of the high concentration of people. Clubhouses and other similar areas that would result in the gathering of people are also not recommended in Terrell Mill Park (a recreational land use) at the corner of I-75 and Terrell Mill Road.

The land within eastern APZ II is entirely outside of the installation boundary in Cobb County, and only a small portion (approximately 4 acres) overlaps with the 65–69 dBA DNL noise zone. The 136 acres of residential land use north of I-75 and west of I-285 are considered incompatible in APZ II. The remainder of the land within the eastern APZ II is commercial and recreational, which are considered compatible. However, as previously discussed, any high-density commercial development such as shopping centers or malls would be considered incompatible. The 2 acres of the Chattahoochee River National Recreational Area is considered compatible, provided that any park facilities are low-intensity.

Approximately 74 acres of the land outside of the installation boundary that is encompassed the 65–69 dBA DNL noise zone east of the installation consists of residential land use between U.S. 41 and I-75 in Cobb County, and between U.S. 41 and Village Parkway in the City of Smyrna. Residential land use at a density greater than one dwelling per acre is considered incompatible within the 65–69 dBA DNL noise zone. The NLR measures discussed previously would also apply to this land.

The remainder of the land outside of the installation boundary within the 65–69 dBA DNL noise zone consists of commercial and industrial land use in Cobb County and commercial land use in the City of Smyrna. These land uses and related structures are considered compatible without restriction. Approximately 22 acres of the Georgia Memorial Cemetery (a public/ semi-public land use) are present in this noise zone south of U.S. 41. Public/semi-public land use is generally considered compatible within the 65–69 dBA DNL noise zone if NLR measures are achieved. However, for cultural activities such as chapels, measures to achieve an overall NLR do not necessarily solve all noise difficulties (such as outdoor noise) and additional evaluation is warranted by local municipalities.

## 4.7 Incompatible Zoning Uses

### 4.7.1 Introduction

Zoning compatibility with Dobbins ARB activities should be taken into consideration when the cities of Marietta and Smyrna and Cobb County make planning decisions. Since the zoning designation should determine the future land use of a parcel, it is recommended that land in the vicinity of Dobbins ARB be zoned in accordance with land use guidelines (as shown in **Table 3-1**) within the 2011 noise zones and APZs. In general, the USAF's land use compatibility guidelines recommend that noise-sensitive land uses be placed outside high-noise zones, and people-intensive uses be placed outside of the APZs. The compatibility status of the zoning within the 2011 noise zones and APZs was determined by taking the zoning categories presented in **Figure 4-2**, choosing the respective land use classifications from **Table 3-1**, and applying the recommended compatibility. As discussed in **Section 4.6.1**, for a land use to be considered compatible, it must meet criteria for its category for both noise and accident potential.

*In general, the USAF's land use compatibility guidelines recommend that noise-sensitive land uses be placed outside high-noise zones, and people-intensive uses not be placed in the APZs.*

In general, the zoning is consistent with the land use in the areas surrounding the installation. Therefore, the zoning designation should determine the future land use around Dobbins ARB. As shown in **Figure 4-1**, the area around the installation is already highly developed, predominately with residential zoning that is considered incompatible with USAF land use guidelines. Local municipalities should act consistently with USAF land use compatibility guidelines in relation to the noise zones and APZs when considering any new development proposals.

As shown in **Figure 4-3**, most of the land within the 2011 DNL noise zones and all of the land within the APZs is encompassed by the Marietta AICUZ Overlay District and the Cobb County CUZs. (As discussed in **Section 4.3.5**, the CUZ at Dobbins ARB is divided into two parts, CUZ-1 and CUZ-2). However, the use restrictions for these districts are not consistent with USAF land use guidelines. For example, the Marietta AICUZ Overlay District regulations currently restrict residential development to 2.5 dwelling units per acre in APZ I and 4 dwelling units per acre in APZ II. The USAF recommends a maximum density of 1 residential dwelling unit per acre in APZ I and APZ II. The Cobb County CUZ-1 (which overlaps with the CZ) regulations allow for residential, commercial, industrial, or recreation uses. As previously discussed, due to high accident potential within the CZ, most land uses are considered incompatible. Some land uses that would be considered incompatible with USAF land use guidelines are allowed in CUZ-2 via a permit, such as landfills (which attract birds, a hazard to aircraft operations). It is recommended that the AICUZ overlay district and CUZ regulations be updated to reflect the USAF land use compatibility guidelines presented in this AICUZ Study. Since the airport zoning controls around the installation are not consistent with USAF land use guidelines, the underlying zoning was analyzed for compatibility in the following sections.

Similar to **Section 4.6**, the incompatible zoning around the installation was divided into eastern and western portions in this AICUZ Study.

Approximately 45 acres of off-installation Heavy Industrial zoning is present within the 65–74 dBA DNL noise zones south of the installation. Industrial zoning is generally considered compatible within these noise zones if NLR measures are incorporated into the structures where the public is present, office areas, noise-sensitive areas, or where the ambient noise level is low.

### 4.7.2 West of Dobbins ARB

Approximately 1,054 acres of land to the west of Dobbins ARB is zoned with incompatible uses. The majority (approximately 81 percent) of this land is zoned Single Family Residential in the City of Marietta and Cobb County, however higher density residential development is also present (e.g., Multi-Family, Residential Mid- and High-Rises, Townhome, and Condominium zoning).

The land in the western CZ is almost entirely within the installation boundary; however, it includes 3 acres of commercial zoning and 1 acre of residential zoning along Atlanta Road. This land is also encompassed by the 65–74 dBA DNL noise zones. Due to the high accident potential within the CZ, only open space and agricultural uses (without structures) are permitted under USAF guidelines. As shown in **Figure 4-1**, the land within western APZ I overlaps with a large portion of the 65–74 dBA DNL noise zones. The majority of this area is zoned Single and Multi-Family Residential in Cobb County and the City of Marietta that is considered incompatible. The low-density commercial and industrial zoning present in this area is considered compatible; however shopping malls and shopping centers are considered incompatible in any APZ due to the high concentration of people. Land within western APZ II is outside of the noise zones and is zoned mostly Single Family Residential (approximately 63 percent). This is considered an incompatible use in APZ II. However, several large parcels are also zoned for Planned Residential Development. This district "is not intended to encourage greater density of development, but rather to encourage… residential patterns that conserve and create open space" (City of Marietta 1998). It is recommended that the City of Marietta enforce their use restrictions for this district. City planners should also act consistently with USAF land use compatibility guidelines when considering development proposals.

### 4.7.3 East of Dobbins ARB

Approximately 457 acres of land east of Dobbins ARB is zoned with incompatible uses. The majority of this land is zoned commercial and industrial within the eastern CZ and 65–79 dBA DNL noise zones, residential within eastern APZ I and the 65–74 dBA DNL noise zones, and residential within eastern APZ II.

The majority of the land within the eastern CZ is outside of the installation boundary, this area also overlaps with the 65–79 dBA DNL noise zones. Since the compatibility guidelines for the CZ are more restrictive than those for the noise zones, the commercial, industrial, and residential zoning in this area is considered incompatible. The land within eastern APZ I overlaps the

65–74 dBA DNL noise zones, and a small portion of the 75–79 dBA DNL noise zone. Zoning in this area is mixed and includes several types of commercial, industrial, and Planned Residential Development districts. As shown in **Figure 4-1**, this area has already been developed in accordance with these zoning districts, the majority of which are considered incompatible. The land within eastern APZ II has also been developed in accordance with the existing zoning, which includes several types of high-density commercial and residential zoning. However, additional high-density infill development is also proposed in this area as part of the proposed Cumberland Galleria Regional Activity Center (see **Section 4.4.3**). It is recommended that Cobb County consider the USAF land use compatibility guidelines when regulating development in these areas (see **Table 3-1**).

## 4.8 Planning Considerations

AICUZ noise zones describe the noise characteristics of a specific operational environment and, as such, will change if a significant operational change is made. Should a new mission be established at Dobbins ARB, such as adding a larger number of aircraft or additional model types, the AICUZ could be amended.

With these thoughts in mind, Dobbins ARB has revised the 1998 AICUZ Study and has provided flight track, APZ, and noise zone information in this report that reflects the most current and accurate picture of aircraft activities. Land use and zoning suggestions that could be implemented are as follows:

- Several large parcels are zoned for Planned Residential Development in western APZ II (see **Section 4.7.2**). It is recommended that the City of Marietta enforce their use restrictions for this district, i.e., "residential patterns that conserve and create open space" (City of Marietta 1998). City planners should also act consistently with USAF land use compatibility guidelines when considering development proposals.
- The municipalities surrounding the installation should provide timely notification to Dobbins ARB regarding new development plans within the noise zones or APZs.
- Cobb County should continue to encourage developers to seek annexation from municipalities rather than developing in underserved unincorporated areas. The county should also continue to make municipalities and other public service providers active participants in the development review and approval process.
- Local municipalities should provide for Real Estate disclosures in noise zones and APZs around Dobbins ARB.
- Subdivision regulations should provide for rejection of new subdivisions not compatible with AICUZ land use guidelines and provide controls for continued development in existing subdivisions.

- Local municipalities should act consistently with USAF land use compatibility guidelines when regulating development in areas adjacent to the proposed roadway improvements east, north, and west of the installation (see **Section 4.5**).
- Capital improvement programs should be carefully reviewed to discourage incompatible land use patterns, with particular emphasis on utility extension planning.
- As shown on **Figure 4-5**, a portion of the land within the eastern APZ II is proposed as part of the Cumberland Galleria Regional Activity Center, a planned area of "high intensity development" (Cobb County 2010a). It is recommended that Cobb County act consistently with USAF land use compatibility guidelines when developing this area.

# 5. IMPLEMENTATION

## 5.1 Introduction

Implementation of the AICUZ Study must be a joint effort between the USAF and adjacent communities. The USAF's role is to minimize the noise impact of Dobbins ARB operations on local communities. The role of the communities is to ensure that development in the surrounding areas is compatible with the accepted planning and development principles and practices.

## 5.2 USAF Responsibilities

In general, the USAF perceives its AICUZ-related responsibilities as encompassing the areas of flying safety, noise abatement, and participation in the land use planning process.

Well-maintained aircraft and well-trained aircrews do a great deal to avoid aircraft accidents. Despite the best aircrew training and aircraft maintenance intentions, history clearly shows that accidents do occur. It is imperative that flights be routed over sparsely populated areas as regularly as possible to reduce the exposure of lives and property to a potential accident.

*An overview of the USAF aircraft accident hazard study that resulted in the creation of runway CZs and APZs is provided in Appendix B.*

Commanders are required by USAF policy to periodically review air traffic patterns, instrument approaches, minimum weather conditions under which aircraft can use the airfield (e.g., visibility, ceiling), and operating practices, and evaluate these factors in relationship to populated areas and other local situations. This requirement is a direct result and expression of USAF policy that all AICUZ plans must include an analysis of flying and flying-related activities designed to reduce and control the effects of such operations on surrounding land areas. Noise is generated from aircraft both in the air and on the ground. In an effort to reduce the noise effects of Dobbins ARB operations on surrounding communities, the installation routes flight tracks to avoid populated areas.

Preparation and presentation of this Dobbins ARB AICUZ Study is one phase of continuing USAF participation in the local planning process. It is recognized that as the local community updates its land use plans, the USAF must be ready to provide additional input when needed.

It is also recognized that the AICUZ Program is an ongoing activity even after compatible development plans are adopted and implemented. Dobbins ARB personnel are prepared to participate in the continuing discussion of zoning and other land use matters as they might affect, or might be affected by, the installation. Dobbins ARB personnel are also available to provide information, criteria, and guidelines to state, regional, and local planning bodies, civic associations, and similar groups.

## 5.3 Local Community Responsibilities

The residents of the cities of Marietta and Smyrna, and Cobb County have a long history of working together with personnel from Dobbins ARB. Adoption of the following recommendations during the revision of relevant land use planning or zoning regulations will strengthen this relationship, increase the health and safety of the public, and help protect the integrity of the installation's flying mission.

- In accordance with O.C.G.A., local governments should continue to inform Dobbins ARB of planning and zoning actions that have the potential of affecting air operations. These procedures could include the creation of a working group representing city planners, county commissioners, and Dobbins ARB planners to meet frequently to discuss AICUZ concerns and major development proposals that could affect Dobbins ARB operations.
- Ensure that any future adopted versions of the city of Marietta and Smyrna and Cobb County future development plans incorporate AICUZ policies and USAF land use compatibility guidelines. In particular, the Marietta Community Agenda is set to be updated in late summer 2011 (Roth 2010). The overlay maps of the noise zones and the compatibility guidelines presented in this AICUZ Study should be used to evaluate existing and future land use proposals.
- Planners from Dobbins ARB should be included as a stakeholder in the planning meetings for the proposed Cobb County light rail project (see **Section 4.5**).
- The portion of the Marietta AICUZ Overlay District that corresponds to the CZs is narrower than the 3,000-foot width under the AICUZ Program. The overlay boundary is also slightly out of alignment with the western APZs. It is recommended that the Official Zoning Map be revised to match the CZ and APZs dimensions presented in this AICUZ Study.
- The AICUZ Overlay District and CUZ regulations implemented by the City of Marietta and Cobb County, respectively, should be updated to reflect the USAF land use compatibility guidelines presented in this AICUZ Study. For example, the Marietta AICUZ Overlay District regulations currently restrict residential development to 2.5 dwelling units per acre in APZ I, and 4 dwelling units per acre in APZ II. The USAF recommends a maximum density of 1 residential dwelling unit per acre in APZ I and APZ II.
- Enact fair disclosure ordinances to specify disclosure to the public those AICUZ items directly related to aircraft operations at Dobbins ARB.

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# APPENDIX A

## AICUZ CONCEPT, PROGRAM, METHODOLOGY, AND POLICIES

# Appendix A

# AICUZ Concept, Program, Methodology, and Policies

## A.1 Concept

Federal legislation, national sentiment, and other external forces which directly affect the USAF mission have served to greatly increase the USAF's role in environmental and planning issues. Problems of airfield encroachment from incompatible land uses around installations, as well as air and water pollution and socioeconomic impacts, require continued and intensified USAF involvement. The nature of these problems dictates direct USAF participation in comprehensive community and land use planning. Effective, coordinated planning that bridges the gap between the Federal government and the community requires the establishment of good working relationships with local citizens, local planning officials, and state and Federal officials. This planning depends on creating an atmosphere of mutual trust and helpfulness. The Air Installation Compatible Use Zone (AICUZ) concept has been developed in an effort to

- Protect local citizens from the noise exposure and accident potential associated with flying activities
- Prevent degradation of the USAF's capability to achieve its mission by promoting compatible land use planning.

The land use guidelines developed herein are a composite of a number of other land use compatibility studies that have been refined to fit the Dobbins Air Reserve Base (ARB) aviation environment.

## A.2 Program

Base Commanders establish and maintain active programs to achieve the maximum feasible land use compatibility between air installations and neighboring communities. The program requires that all appropriate governmental bodies and citizens be fully informed whenever AICUZ or other planning matters affecting the installation are under consideration. This includes positive and continuous programs designed to

- Provide information, criteria, and guidelines to Federal, state, regional, and local planning bodies, civic associations, and similar groups.
- Inform such groups of the requirements of the flying activity, noise exposure, aircraft accident potential, and AICUZ plans.
- Describe the noise reduction measures that are being used.
- Ensure that all reasonable, economical, and practical measures are taken to reduce or control the impact of noise-producing activities. These measures include proper location of engine test facilities, provision for sound suppressers where necessary, adjustment of flight tracks, and techniques to minimize the noise impact on populated areas. This must be done without jeopardizing safety or operational effectiveness.

## A.3 Methodology

The AICUZ consists of land areas upon which certain land uses might obstruct the airspace or otherwise be hazardous to aircraft operations; and land areas which are exposed to the health, safety, or welfare hazards of aircraft operations. The AICUZ includes

- APZs and CZs based on past USAF aircraft accidents and installation operational data (see **Appendix B**)
- Noise zones produced by the computerized DNL metric (see **Appendix C**)
- The area designated by the Federal Aviation Administration and the USAF for purposes of height limitations in the approach and departure zones of the base (see **Appendix D**).

The APZs, CZs, and DNL noise zones are the basic building blocks for land use planning with AICUZ data. The AICUZ Program provides recommendations for compatible land uses in these areas.

As part of the AICUZ Program, the only real property acquisition for which the USAF has received congressional authorization and the base and Major Commands request appropriation are the areas designated as the CZ. Real property interests are acquired by fee or easement, giving the base control over the use of the property. Fee land so acquired may be leased out for agricultural or grazing purposes. Compatible land use controls for the remaining airfield environs should be accomplished through the community land use planning processes.

## A.4 AICUZ Land Use Development Policies

The basis for any effective land use control system is the development of, and subsequent adherence to, policies which serve as the standard by which all land use planning and control actions are evaluated. Dobbins ARB recommends the following policies be considered for incorporation into the comprehensive plans of agencies in the vicinity of the base environs:

***Policy 1.*** To promote the public health, safety, peace, comfort, convenience, and general welfare of the inhabitants of airfield environs, it is necessary to

- Guide, control, and regulate future growth and development
- Promote orderly and appropriate use of land
- Protect the character and stability of existing land uses
- Prevent the destruction or impairment of the airfield and the public investment therein
- Enhance the quality of living in the areas affected
- Protect the general economic welfare by restricting incompatible land use.

***Policy 2.*** In furtherance of Policy 1, it is appropriate to

- Establish guidelines of land use compatibility
- Restrict or prohibit incompatible land use
- Prevent establishment of any land use which would unreasonably endanger aircraft operations and the continued use of the airfield

- Incorporate the AICUZ concept into community land use plans, modifying them when necessary
- Adopt appropriate ordinances to implement airfield environs land use plans.

***Policy 3.*** Within the boundaries of the CZ, certain land uses are inherently incompatible. The following land uses are not in the public interest and must be restricted or prohibited:

- Uses that release into the air any substance, such as steam, dust, or smoke, which would impair visibility or otherwise interfere with the operation of aircraft
- Uses that produce light emissions, either direct or indirect (reflective), which would interfere with pilot vision
- Uses that produce electrical emissions which would interfere with aircraft communication systems or navigation equipment
- Uses that attract birds or waterfowl, such as operation of sanitary landfills, maintenance or feeding stations, or growth of certain vegetation
- Uses that provide for structures within 10 feet of aircraft approach-departure or transitional surfaces.

***Policy 4.*** Certain noise levels of varying duration and frequency create hazards to both physical and mental health. A limited, though definite, danger to life exists in certain areas adjacent to airfields. Where these conditions are sufficiently severe, it is not consistent with public health, safety, and welfare to allow the following land uses:

- Residential
- Retail business
- Office buildings
- Public buildings (schools, churches, etc.)
- Recreation buildings and structures.

***Policy 5.*** Land areas below takeoff and final approach flight paths are exposed to significant danger of aircraft accidents. The density of development and intensity of use must be limited in such areas.

***Policy 6.*** Different land uses have different sensitivities to noise. Standards of land use acceptability should be adopted, based on these noise sensitivities. In addition, a system of Noise Level Reduction guidelines for new construction should be implemented to permit certain uses where they would otherwise be prohibited.

***Policy 7.*** Land use planning and zoning in the airfield environs cannot be based solely on aircraft-generated effects. Allocation of land used within the AICUZ should be further refined by consideration of:

- Physiographic factors
- Climate and hydrology
- Vegetation
- Surface geology

- Soil characteristics
- Intrinsic land use potential and constraints
- Existing land use
- Land ownership patterns and values
- Economic and social demands
- Cost and availability of public utilities, transportation, and community facilities
- Other noise sources.

Each runway end at Dobbins ARB has a 3,000 foot by 3,000 foot CZ and two APZs (see **Appendix B**). Accident potential on or adjacent to the runway or within the CZ is so high that the necessary land use restrictions would prohibit reasonable economic use of land. As stated previously, it is USAF policy to request the U.S. Congress to authorize and appropriate funds for the necessary real property interests in this area to prevent incompatible land uses.

APZ I is less critical than the CZ, but still possesses a significant risk factor. This 3,000-foot by 5,000-foot area has land use compatibility guidelines which are sufficiently flexible to allow reasonable economic use of the land, such as industrial/manufacturing, transportation, communication/utilities, wholesale trade, open space, recreation, and agriculture. However, uses that concentrate people in small areas are not acceptable.

APZ II is less critical than APZ I, but still has potential for accidents. APZ II is 3,000 feet wide by 7,000 feet long extending to 15,000 feet from the runway threshold. Acceptable uses include those of APZ I, as well as low-density single family residential, and those personal and business services and commercial/retail trade uses of low-intensity or scale of operation. High-density functions such as multistory buildings, places of assembly (e.g., theaters, churches, schools, restaurants), and high-density office uses are not considered appropriate.

High people densities should be limited to the maximum extent possible. The optimum density recommended for residential usage (where it does not conflict with noise criteria) in APZ II is one dwelling per acre. For most nonresidential usage, buildings should be limited to one story and the lot coverage should not exceed 20 percent.

## A.5 Basic Land Use Compatibility

Research on aircraft accident potential, noise, and land use compatibility is ongoing at a number of Federal and other agencies. These studies and all other compatibility guidelines must not be considered inflexible standards. They are the framework within which land use compatibility questions can be addressed and resolved. In each case, full consideration must be given to local conditions such as the following:

- Previous community experience with aircraft accidents and noise
- Local building construction and development practices
- Existing noise environment due to other urban or transportation noise sources
- Time period of aircraft operations and land use activities

- Specific site analysis
- Noise buffers, including topography.

These basic guidelines cannot resolve all land use compatibility questions, but they do offer a reasonable framework within which to work.

## A.6 Accident Potential

Land use guidelines for the two APZs are based on a hazard index system which compares the relationship of accident occurrence for five areas:

- On or adjacent to the runway
- Within the CZ
- In APZ I
- In APZ II
- In all other areas within a 10 nautical mile radius of the runway.

Accident potential on or adjacent to the runway or within the CZ is so high that few uses are acceptable. The risk outside APZ I and APZ II, but within the 10 nautical mile radius area, is significant, but is acceptable if sound engineering and planning practices are followed.

Land use guidelines for APZs I and II have been developed. The main objective has been to restrict all people-intensive uses because there is greater risk in these areas. The basic guidelines aim at prevention of uses that

- Have high residential density characteristics
- Have high labor intensity
- Involve aboveground explosive, fire, toxic, corrosive, or other hazardous characteristics
- Promote population concentrations
- Involve utilities and services required for area wide population, such as telephone and gas, where disruption would have an adverse impact
- Concentrate people who are unable to respond to emergency situations, such as children, the elderly, and the handicapped
- Pose hazards to aircraft operations.

There is no question that these guidelines are relative. Ideally, there should be no people-intensive uses in either of these APZs. The free market and private property systems prevent this where there is land development demand. To go beyond these guidelines, however, substantially increases risk by placing more people in areas where there could ultimately be an aircraft accident.

## A.7 Noise

Nearly all studies analyzing aircraft noise and residential compatibility recommend no residential uses in land areas associated with a DNL above 75 A-weighted decibels (dBA). Usually, no restrictions are recommended below 65 dBA DNL. Between 65 to 74 dBA DNL, there is currently no consensus or

restrictions. These areas might not qualify for Federal mortgage insurance in residential categories according to U.S. Department of Housing and Urban Development (HUD) Regulation 24 Code of Federal Regulations (CFR) Section 51B. In many cases, HUD approval requires noise-attenuation measures, the Regional Administrator's concurrence, and an Environmental Impact Statement. The Department of Veterans Affairs also has airfield noise and accident restrictions, which apply to their home loan guarantee program. USAF land use recommendations also state that, whenever possible, residential land use should be located on land with a noise level below 65 dBA DNL.

Most *industrial/manufacturing* uses are compatible in the airfield environs. Exceptions are uses such as research or scientific activities, which require lower noise levels. Noise-attenuation measures are recommended for portions of buildings devoted to office use, receiving the public, or where there is a requirement for low background noise levels.

*Transportation, communications, and utility* categories have higher noise level compatibility because they generally are not people-intensive. When people use land for these purposes, the use is generally very short in duration; however, when buildings are required for these uses, additional evaluation is warranted.

The *commercial/retail trade and personal and business services* categories are compatible without restriction up to 70 dBA DNL; however, they are generally incompatible above 80 dBA DNL. Between 70 to 80 dBA DNL, noise level reduction measures should be included in the design and construction of buildings.

The nature of most uses in the *public and quasi-public services* category requires a quieter environment, and attempts should be made to locate these uses in land areas below 65 dBA DNL (i.e., a USAF land use recommendation), or else provide adequate noise level reduction.

Although *recreational* use has often been recommended as compatible with high noise levels, recent research has resulted in a more conservative view. Above 75 dBA DNL, noise becomes a factor, which limits the ability to enjoy such uses. Where the requirement to hear is a function of the use (e.g., music shell), compatibility is limited. Buildings associated with golf courses and similar uses should be noise attenuated.

Forestry activities; livestock farming; and uses in the resources production, extraction, and open space categories are compatible almost without restrictions within all DNL noise zones.

# APPENDIX B

## CLEAR ZONES AND ACCIDENT POTENTIAL ZONES

# Appendix B

# Clear Zones and Accident Potential Zones

## B.1 Guidelines for Accident Potential

Urban areas around airports are exposed to the possibility of aircraft accidents even with well-maintained aircraft and highly trained aircraft crews. Despite stringent maintenance requirements and countless hours of training, past history makes it clear that accidents are going to occur.

When the AICUZ Program began, there were no current comprehensive studies on accident potential. In support of the program, the USAF completed a study of USAF accidents that occurred between 1968 and 1972 within 10 nautical miles of airfields. The study of 369 accidents revealed that 75 percent of aircraft accidents occurred on or adjacent to the runway (1,000 feet to each side of the runway centerline) and in a corridor 3,000 feet wide (1,500 feet on either side of the runway centerline), extending from the runway threshold along the extended runway centerline for a distance of 15,000 feet.

Three zones were established based on crash patterns: the CZ, APZ I, and APZ II. The CZ starts at the end of the runway and extends outward 3,000 feet. It has the highest accident potential of the three zones. The USAF has adopted a policy of acquiring property rights to areas designated as CZs because of the high accident potential. APZ I extends from the CZ an additional 5,000 feet. It includes an area of reduced accident potential. APZ II extends from APZ I an additional 7,000 feet in an area of further reduced accident potential.

The USAF research work in accident potential was the first significant effort in this subject area since 1952 when the President's Airport Commission published The Airport and Its Neighbors, better known as the "Doolittle Report." The recommendations of this earlier report were influential in the formulation of the APZ concept.

The risk to people on the ground of being killed or injured by aircraft accidents is small. However, an aircraft accident is a high consequence event and when a crash does occur, the result is often catastrophic. Because of this, the USAF does not attempt to base its safety standards on accident probabilities. Instead the USAF approaches this safety issue from a land use planning perspective.

## B.2 Accident Potential Analysis

Military aircraft accidents differ from commercial air carrier and general aviation accidents because of the variety of aircraft used, the type of missions, and the number of training flights. In 1973, the USAF performed an aircraft accident hazard study to identify land near airfields with significant accident potential. Accidents studied occurred within 10 nautical miles of airfields.

The study reviewed 369 major USAF accidents during the period of 1968 to 1972, and found that 61 percent of the accidents related to landing operations and 39 percent related to takeoffs. It also found that 70 percent occurred in daylight, and that fighter and training aircraft accounted for 80 percent of the accidents.

Because the purpose of the study was to identify accident hazards, the study plotted each of the 369 accidents in relation to the airfield. This plotting found that the accidents clustered along the runway and its extended centerline. To further refine this clustering, a tabulation was prepared which described

the cumulative frequency of accidents as a function of distance from the runway centerline along the extended centerline. This analysis was done for widths of 2,000, 3,000, and 4,000 feet. **Table B-1** shows the results of the location analysis.

**Table B-1. Location Analysis**

| Length From Both Ends of Runway (feet) | Width of Runway Extension (feet) | | |
|---|---|---|---|
| | 2,000 | 3,000 | 4,000 |
| **Percent of Accidents** | | | |
| On or adjacent to runway (1,000 feet to each side of runway centerline) | 23 | 23 | 23 |
| 0 to 3,000 | 35 | 39 | 39 |
| 3,000 to 8,000 | 8 | 8 | 8 |
| 8,000 to 15,000 | 5 | 5 | 7 |
| **Cumulative Percent of Accidents** | | | |
| On or adjacent to runway (1,000 feet to each side of runway centerline) | 23 | 23 | 23 |
| 0 to 3,000 | 58 | 62 | 62 |
| 3,000 to 8,000 | 66 | 70 | 70 |
| 8,000 to 15,000 | 71 | 75 | 77 |

**Figure B-1** indicates that the cumulative number of accidents rises rapidly from the end of the runway to 3,000 feet, rises more gradually to 8,000 feet, and then continues at about the same rate of increase to 15,000 feet, where it levels off rapidly. The location analysis also indicates that the optimum width of the safety zones, designed to include the maximum percentage of accidents in the smallest area, is 3,000 feet (see **Figures B-2** and **B-3**).

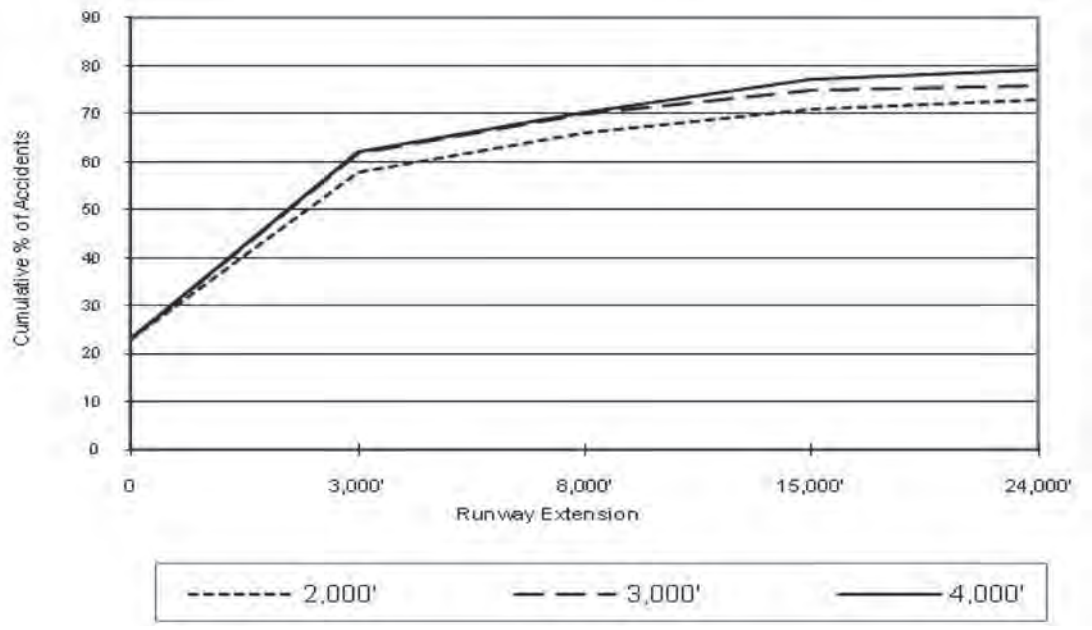


**Figure B-1. Distribution of USAF Aircraft Accidents**

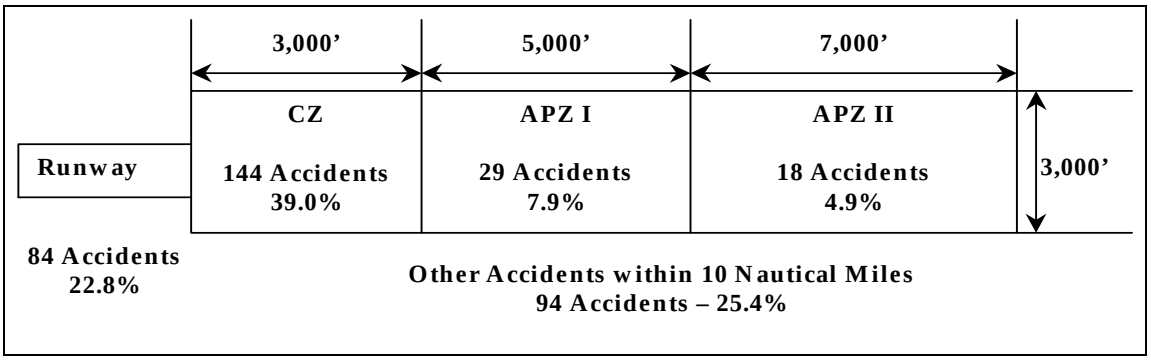


**Figure B-2. USAF Accident Data (369 Accidents — 1968 to 1972)**

The original study was updated to include accidents through September 1995. The updated study now includes 838 accidents during the 1968 to 1995 period. Using the optimum runway extension width of 3,000 feet, the accident statistics of the updated study are shown in **Figure B-3**.

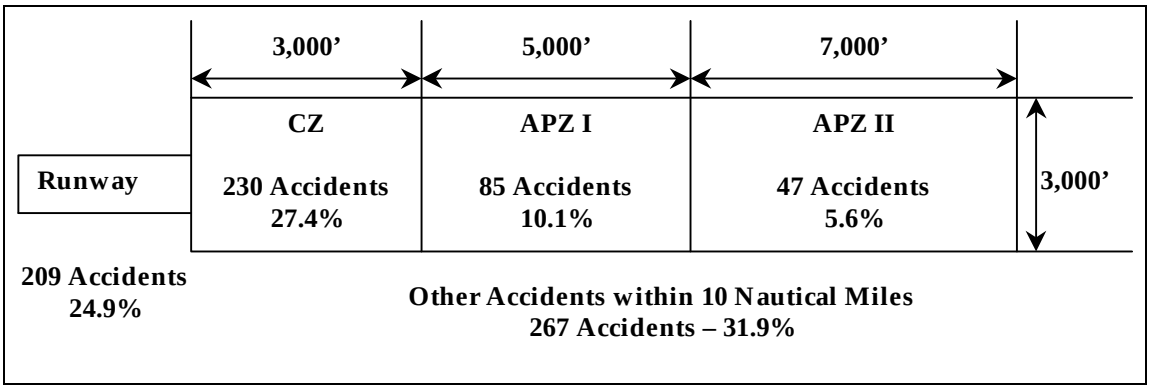


**Figure B-3. USAF Accident Data (838 Accidents — 1968 to 1995)**

Using the designated zones and accident data, it is possible to calculate a ratio of percentage of accidents to percentage of area size. These ratios indicate that the CZ, with the smallest area size and the highest number of accidents, has the highest ratio, followed by the runway and adjacent area, APZ I, and APZ II (see **Table B-2**).

## B.3 Definable Debris Impact Areas

The USAF also determined which accidents had definable debris impact areas, and in what phase of flight the accident occurred. Overall, 75 percent of the accidents had definable debris impact areas, although they varied in size by type of accident. The USAF used weighted averages of impact areas, for accidents occurring only in the approach and departure phase, to determine the following average impact areas:

The USAF study used weighted averages of impact areas, for accidents occurring only in the approach and departure phase, to determine the following average impact areas:

- Overall Average Impact Area
- Fighter, Trainer, and Miscellaneous Aircraft
- Heavy Bomber and Tanker Aircraft.

**Table B-2. Accident to Area Ratio**

| Ratio of Percentage of Accidents to Percentage of Area (USAF Accident Data 1968 – 1995) | | | | | | |
|---|---|---|---|---|---|---|
| | Area (acres) [1] | Number of Accidents [2] | Accidents per Acre | % Total Area | % Total Accidents | Ratio: Accidents to Area [3] |
| Runway Area [4] | 487 | 209 | 1 per 2.3 | 0.183 | 24.9 | 136.0 |
| CZ | 413 | 230 | 1 per 1.8 | 0.155 | 27.4 | 177.0 |
| APZ I | 689 | 85 | 1 per 8.1 | 0.258 | 10.1 | 39.0 |
| APZ II | 964 | 47 | 1 per 20.5 | 0.362 | 5.6 | 16.0 |
| Other | 264,053 | 267 | 1 per 989.0 | 99.042 | 31.9 | 0.3 |

Notes:

1. Area includes land within 10 nautical miles of runway (266,606 acres).
2. Total number of accidents is 838 (through 1995).
3. Percent total accidents divided by percent total area.
4. Runway Area dimensions are 2,000' x 10,600'.

## B.4 Findings

Designation of safety zones around the airfield and restriction of incompatible land uses can reduce the public's exposure to safety hazards.

USAF accident studies have found that aircraft accidents near USAF installations occurred in the following patterns:

- 61 percent were related to landing operations
- 39 percent were related to takeoff operations
- 70 percent occurred in daylight
- 80 percent were related to fighter and training aircraft operations
- 25 percent occurred on the runway or within an area extending 1,000 feet out from each side of the runway
- 27 percent occurred in an area extending from the end of the runway to 3,000 feet along the extended centerline and 3,000 feet wide, centered on the extended centerline
- 15 percent occurred in an area between 3,000 and 15,000 feet along the extended runway centerline and 3,000 feet wide, centered on the extended centerline.

USAF aircraft accident statistics found that 75 percent of aircraft accidents resulted in definable impact areas. The size of the impact areas were as follows:

- 5.1 acres overall average
- 2.7 acres for fighters and trainers
- 8.7 acres for heavy bombers and tankers.

# APPENDIX C

## DESCRIPTION OF THE NOISE ENVIRONMENT

# Appendix C

# Description of the Noise Environment

## C.1 Noise Environment Descriptor

The noise zone methodology used herein is the DNL metric of describing the noise environment. Efforts to provide a national uniform standard for noise assessment have resulted in adoption by the U.S. Environmental Protection Agency of DNL as the standard noise descriptor. The USAF uses the DNL descriptor in assessing the amount of aircraft noise exposure, and as a metric for community response to the various levels of exposure. The DNL values used for planning purposes are 65, 70, 75, and 80 decibels (dB). Land use guidelines are based on the compatibility of various land uses with these noise exposure levels.

It is generally recognized that a noise environment descriptor should consider, in addition to the annoyance of a single event, the effect of repetition of such events and the time of day in which these events occur. DNL begins with a single event descriptor and adds corrections for the number of events and the time of day. Since the primary development concern is residential, nighttime events are considered more annoying than daytime events and are weighted accordingly. DNL values are computed from the single event noise descriptor, plus corrections for number of flights and time of day (see **Figure C-1**).

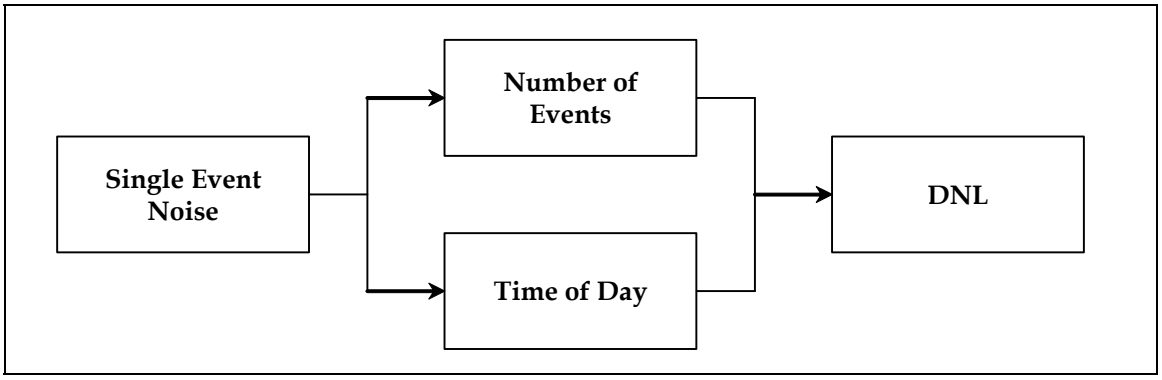


**Figure C-1. Day-Night Average A-Weighted Sound Level**

As part of the extensive data collection process, detailed information is gathered on the type of aircraft, and the number and time of day of flying operations for each flight track during a typical day. This information is used in conjunction with the single event noise descriptor to produce DNL values. These values are combined on an energy summation basis to provide single DNL values for the mix of aircraft operations at the base. Equal value points are connected to form the contour lines.

## C.2 Noise Event Descriptor

The single event noise descriptor used in the DNL system is the Sound Exposure Level (SEL). The SEL measure is an integration of an A-weighted noise level over the period of a single event such, as an aircraft flyover, in dB.

Frequency, magnitude, and duration vary according to aircraft type, engine type, and power setting. Therefore, individual aircraft noise data are collected for various types of aircraft and engines at different power settings and phases of flight. **Figure C-2** shows the relationship of the single event noise descriptor (SEL) to the source sound energy.

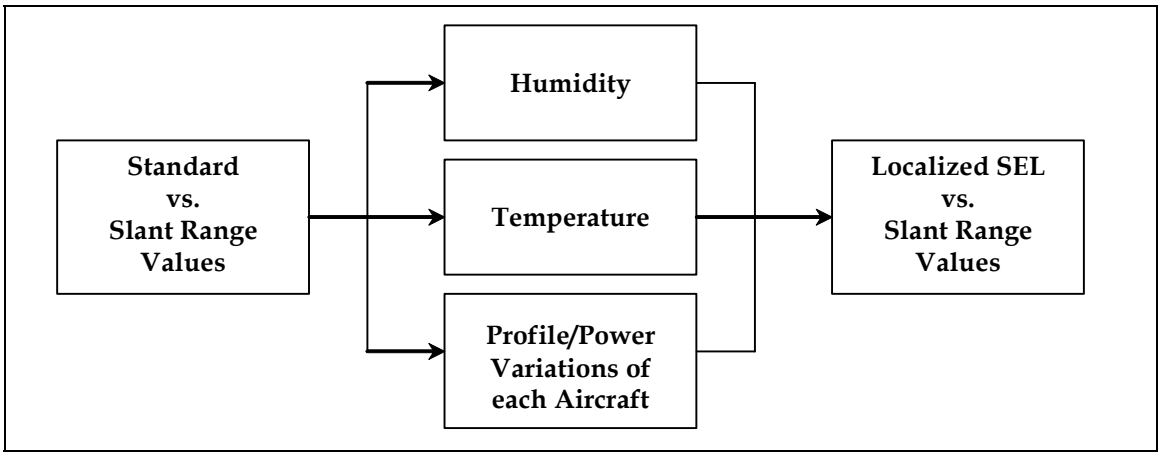


**Figure C-2. Sound Exposure Level**

SEL versus slant range values are derived from noise measurements made according to a source noise data acquisition plan developed by Bolt, Beranek, and Newman, Inc., in conjunction with and carried out by the USAF's Armstrong Laboratory. These standard day, sea level values form the basis for the individual event noise descriptors at any location and are adjusted to the location by applying appropriate corrections for temperature, humidity, and variations from standard profiles and power settings.

Ground-to-ground sound propagation characteristics are used for altitudes up to 500 feet absolute with linear transition between 500 and 700 feet and air-to-ground propagation characteristics above 700 feet.

In addition to the assessment of aircraft flight operations, the DNL system also incorporates noise resulting from engine and aircraft maintenance checks on the ground. Data concerning the orientation of the noise source, type of aircraft or engine, number of test runs on a typical day, power settings used and their duration, and use of suppression devices are collected for each ground runup or test position. This information is processed and the noise contribution added (on an energy summation basis) to the noise generated by flying operations to produce DNL noise zones reflecting the overall noise environment with respect to aircraft air and ground operations.

## C.4 Noise Zone Production

Data describing flight track distances and turns, altitudes, airspeeds, power settings, flight track operational utilization, maintenance locations, ground run-up engine power settings, and number and duration of runs by type of aircraft and engine were assembled for Dobbins ARB. Per Air Force Instruction (AFI) 32-7063 Section 2.4, the Major Command (MAJCOM) deterred to the Air Force Center for Engineering and the Environment (AFCEE) to provide the technical lead for the review of the operational data used to develop the noise contours. Based on approval from AFCEE and the MAJCOM flight tracks were generated. After any required changes were incorporated, DNL contours were generated by the NOISEMAP software program using the supplied data and standard source noise data corrected to local weather conditions. These contours were plotted and provided in the body of this report.

## C.5 Technical Information

Additional technical information on the DNL procedures is available in the following publications:

- *Community Noise Exposure Resulting from Aircraft Operations: Applications Guide for Predictive Procedure.* AMRL-TR-73-105, November 1974, from National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22151.
- *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with Adequate Margin of Safety*. USEPA Report 550/9-74-004, March 1974, from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.
- *Adopted Noise Regulations for California Airports.* Title 4, Register 70, No. 48-11-28-70, Subchapter 6, Noise Standards.

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# APPENDIX D

## HEIGHT OBSTRUCTION CRITERIA

# Appendix D

# Height Obstruction Criteria

***General.*** This appendix establishes criteria for determining whether an object or structure is an obstruction to air navigation. Obstructions to air navigation are as follows:

- Natural objects or man-made structures that protrude above the planes or surfaces as defined in the following paragraphs.
- Man-made objects that extend more than 500 feet above the ground at the site of the structure.

***Explanation of Terms.*** The following will apply:

- *Controlling Elevation*. Whenever surfaces or planes within the obstructions criteria overlap, the controlling (or governing) elevation becomes that of the lowest surface or plane.
- *Runway Length*. Dobbins ARB has one runway (Runway 11/29) and one assault strip (Runway 110/290). Both runways are oriented in an east/west direction. Runway 11/29 is 10,000 feet long and 300 feet wide, the assault strip is 3,500 feet long and 60 feet wide. The runways are designed and built for sustained aircraft landings and takeoffs.
- *Established Airfield Elevation.* The elevation, in feet above mean sea level, for Dobbins ARB is approximately 1,068 feet.
- *Dimensions.* All dimensions are measured horizontally unless otherwise noted.

For a more complete description of airspace and control surfaces for Class A and Class B runways, see Federal Aviation Regulation (FAR) Part 77, Subpart C, or Unified Facilities Criteria (UFC) 3-260-01.

***Planes and Surfaces.*** Definitions for military surfaces are as follows (sees **Figure D-1** through **D-3**):

**Primary Surface**

- This surface defines the limits of the obstruction clearance requirements in the immediate vicinity of the landing area.
- The primary surface comprises surfaces of the runway, runway shoulders, and lateral safety zones and extends 200 feet beyond the runway end.
- The width of the primary surface for a single class “B” runway is 2,000 feet, or 1,000 feet on each side of the runway centerline.

**Clear Zone Surface**

- This surface defines the limits of the obstruction clearance requirements in the vicinity contiguous to the end of the primary surface.
- The clear zone surface is located on the ground or water at each end of the primary surface, with a length of 1,000 feet and the same width as the primary surface. (This definition is for Federal Aviation Administration defined surfaces and should not be confused with the Clear Zone defined in **Section 3.3**, which is used to describe accident potential.)

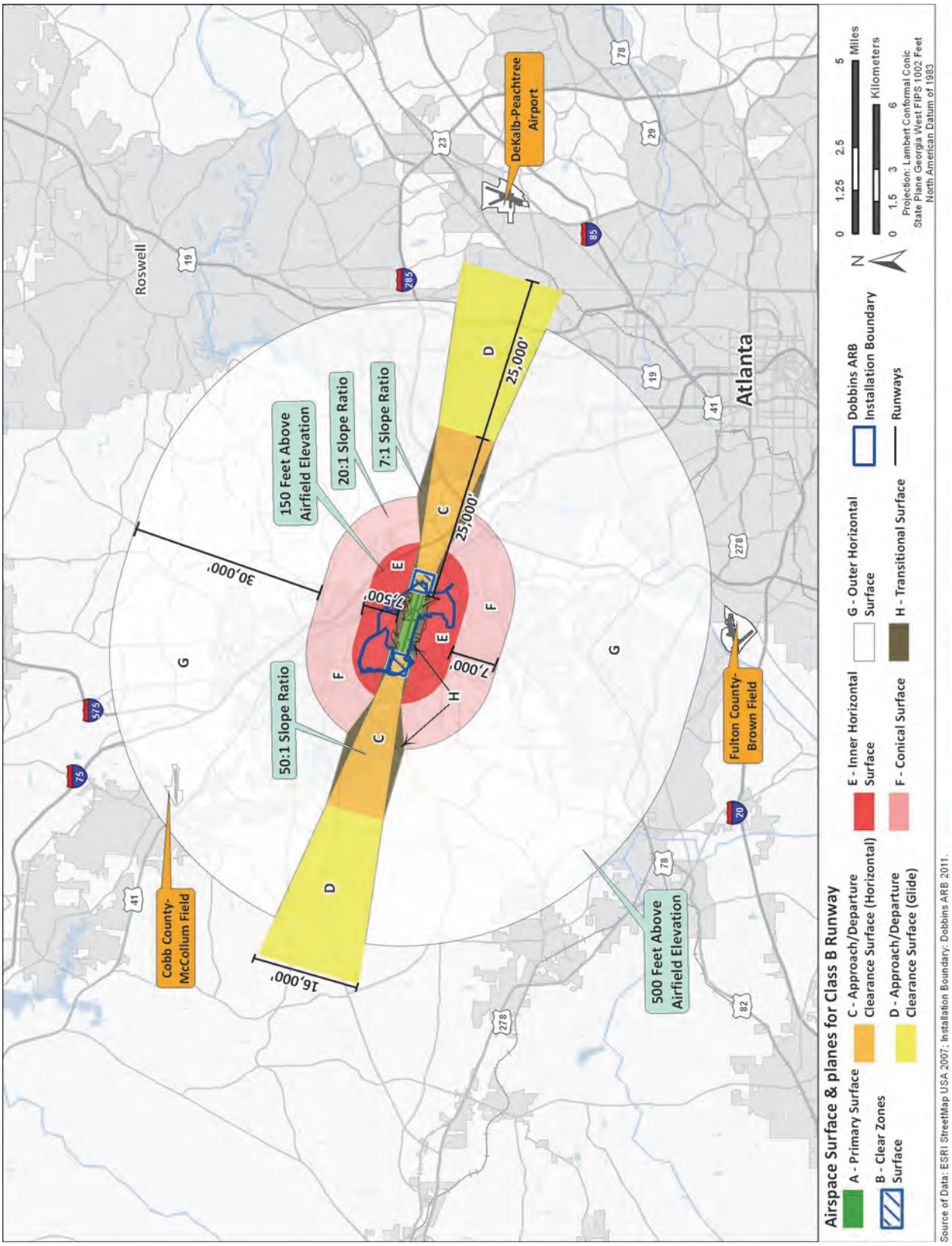


**Figure D-1. Airspace Control Surface Plan for Dobbins ARB**

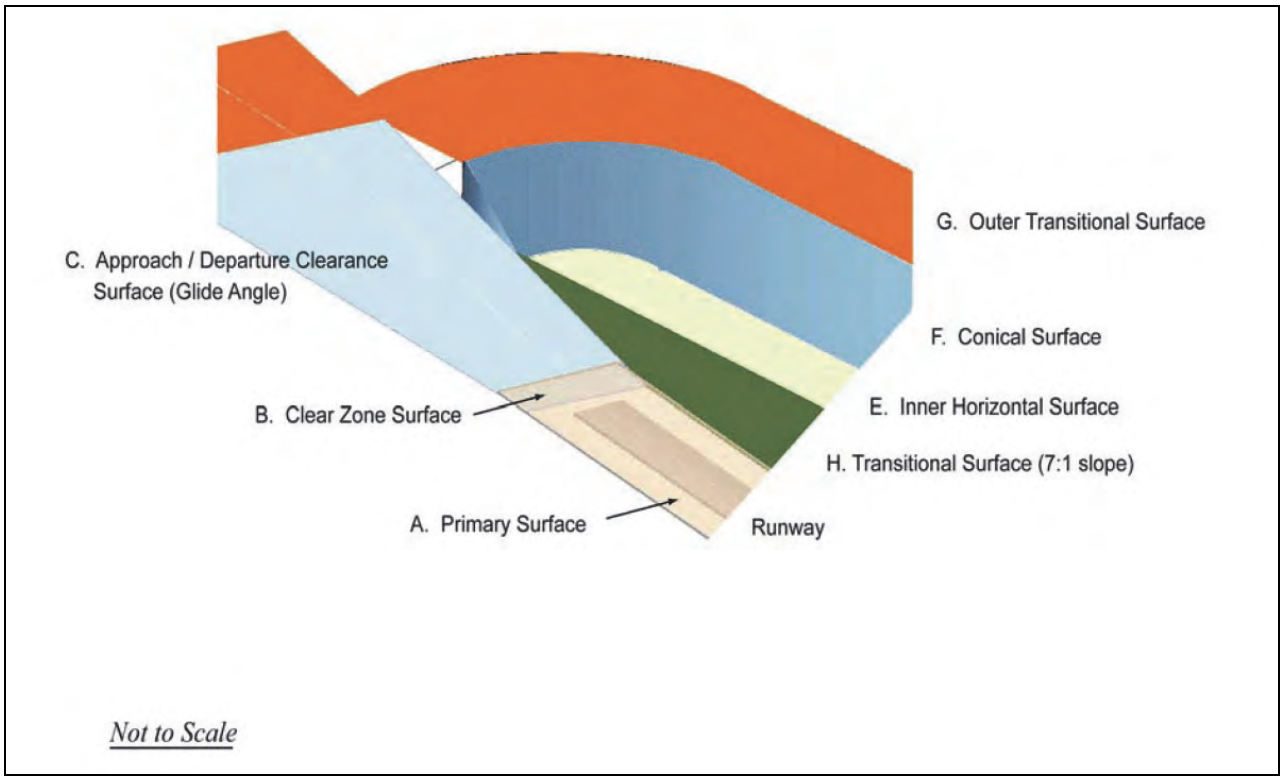


**Figure D-2. Three Dimensional View of FAR Part 77 Surfaces**

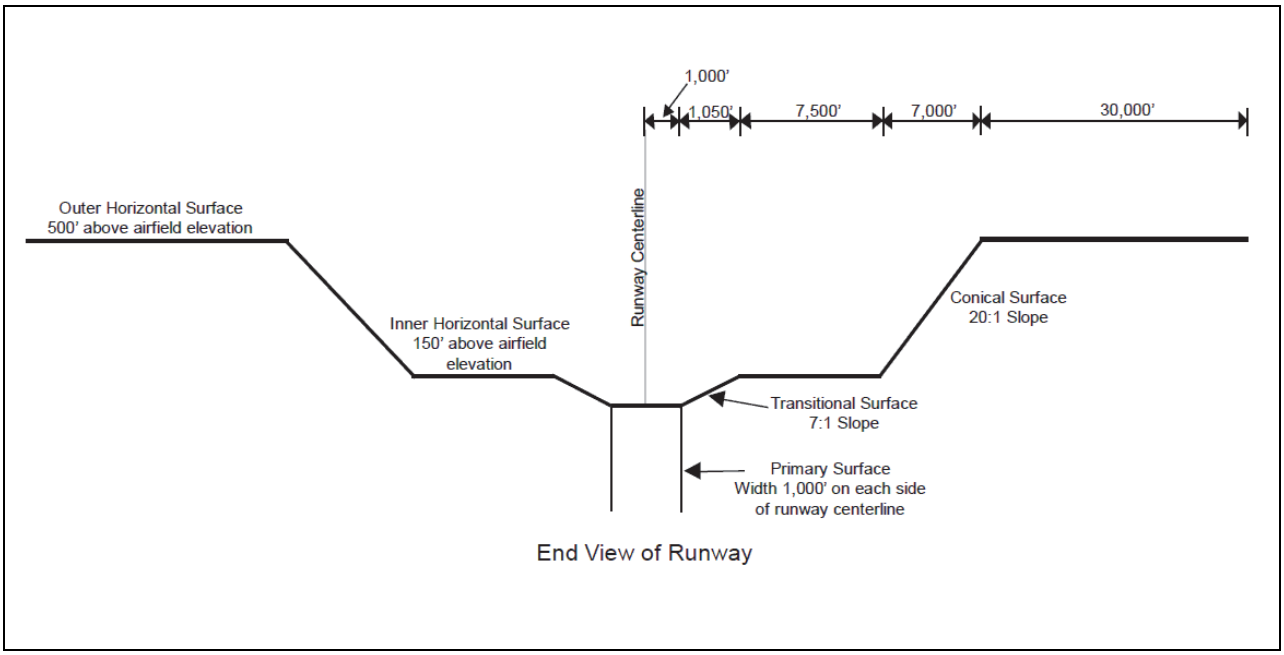


**Figure D-3. Cross-Section View of FAR Part 77 Surfaces**

**Approach-Departure Clearance Surface**

- This surface is symmetrical around the runway centerline extended, begins as an inclined plane (glide angle) 200 feet beyond each end of the primary surface of the centerline elevation of the runway end, and extends for 50,000 feet.
- The slope of the approach-departure clearance surface is 50:1 along the extended runway (glide angle) centerline until it reaches an elevation of 500 feet above the established airfield elevation.
- It then continues horizontally at this elevation to a point 50,000 feet from the start of the glide angle.
- The width of this surface at the runway end is 2,000 feet; it flares uniformly, and the width at 50,000 feet is 16,000 feet.

**Inner Horizontal Surface**

- This surface is a plane, oval in shape at a height of 150 feet above the established airfield elevation.
- It is constructed by scribing an arc with a radius of 7,500 feet above the centerline at the end of the runway and interconnecting these arcs with tangents.

**Conical Surface**

- This is an inclined surface extending outward and upward from the outer periphery of the inner horizontal surface for a horizontal distance of 7,000 feet to a height of 500 feet above the established airfield elevation.
- The slope of the conical surface is 20:1.

**Outer Horizontal Surface**

- This surface is a plane 500 feet above the established airfield elevation.
- It extends for a horizontal distance of 30,000 feet from the outer periphery of the conical surface.

**Transitional Surfaces**

- These surfaces connect the primary surfaces, CZ surfaces, and approach-departure clearance surfaces to the outer horizontal surface, conical surface, other horizontal surface, or other transitional surfaces.
- The slope of the transitional surface is 7:1 outward and upward at right angles starting at 1,000 feet out from the runway centerline.
- To determine the elevation for the beginning of the transitional surface slope at any point along the lateral boundary of the primary surface, including the CZ, draw a line from this point to the runway centerline.
- This line will be at right angles to the runway axis.
- The elevation at the runway centerline is the elevation for the beginning of the 7:1 slope.

The land areas outlined by these criteria should be regulated to prevent uses which might otherwise be hazardous to aircraft operations. The following uses should be restricted or prohibited:

- Uses that release into the air any substance that would impair visibility or otherwise interfere with the operation of aircraft (i.e., steam, dust, or smoke).
- Uses that produce light emissions, either direct or indirect (reflective), which would interfere with pilot vision.
- Uses that produce electrical emissions that would interfere with aircraft communications systems or navigational equipment.
- Uses that would attract birds or waterfowl, including but not limited to, operation of sanitary landfills, maintenance of feeding stations, or the growing of certain vegetation.
- Uses that provide for structures within ten feet of aircraft approach-departure or transitional surfaces.

## D.2 Height Restrictions

City/county agencies involved with approvals of permits for construction should require developers to submit calculations which show that projects meet the height restriction criteria of Federal Aviation Administration Part 77 as described, in part, by the information contained in this appendix.

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