2025

AIR INSTALLATIONS COMPATIBLE USE ZONES STUDY

BARKSDALE AIR FORCE BASE

BOSSIER CITY ▪ LOUISIANA

PREPARED FOR

U.S. AIR FORCE

2D BOMB WING

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 2D BOMB WING (AFGSC)
BARKSDALE AIR FORCE BASE LOUISIANA

10 Mar 25

MEMORANDUM FOR AREA GOVERNMENTS

FROM: 2 BW/CC

SUBJECT: Air Installation Compatible Use Zones (AICUZ) Study

1. The 2025 AICUZ Study for Barksdale Air Force Base (AFB) is an update of the AICUZ Study dated August 2008. The Air Force initiated the update to reflect changes in regional population, municipal land use data, anticipated future development surrounding the installation, and the introduction of the Hazards to Aircraft Flight Zone (HAFZ) area of consultation.

2. The AICUZ study is a reevaluation of military operational noise and safety zones. The Air Force provides this AICUZ study to aid in the development of local planning mechanisms that will protect public health, safety, and welfare, as well as preserve the operational capabilities of Barksdale AFB.

3. The AICUZ Study contains a description of the affected area around the installation. It outlines the location of runway Clear Zones (CZs), Accident Potential Zones (APZs), and operational noise footprint, and provides recommendations for development that is compatible with military operations. It is our recommendation that local governments incorporate these recommendations into community plans, zoning ordinances, subdivision regulations, building codes, and other related documents.

4. This update provides noise contours based upon the Day-Night Average Sound Level (DNL) metric and utilizes a planning noise contour. Local land use authorities engage in long-term land use planning to support community goals such as improved quality of life, access to amenities, and resilient local economies. To align with the long-term planning efforts of local communities, the Air Force provides planning contours – noise contours based on reasonable projections of future missions and operations. AICUZ studies using planning contours provide a description of the long-term (5- to 10-year) aircraft noise environment for projected aircraft operations that is more consistent with the planning horizon used by state, tribal, regional, and local planning bodies.

5. We greatly value the positive relationship Barksdale AFB has experienced with its neighbors over the years. As a partner in the process, we have attempted to minimize noise disturbances through such actions as minimizing night flying and avoiding flights over heavily populated areas. The Air Force appreciates and values the cooperation of all community stakeholders in the collaborative implementation of the recommendations and guidelines presented in this AICUZ Study update.

6. If you have any questions or concerns, please contact me at DSN:456-4982.

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2025.03.18 15:31:26 -05'00'
MICHAEL D. MAGINNESS, Colonel, USAF
Commander

- FIGHT'S ON! -

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ABBREVIATIONS AND ACRONYMS

ACD	Airfield Compatibility District
ADAIR	Adversary Air
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
AFFSA	Air Force Flight Standards Agency
AFH	Air Force Handbook
AFI	Air Force Instruction
AGL	Above Ground Level
AICUZ	Air Installations Compatible Use Zones
Air Force	United States Air Force
AMOPS	Airfield Management Operations
APZ	Accident Potential Zone
ATARS	Air Traffic Activity Reporting System
ATC	Air Traffic Control
ATCT	Air Traffic Control Tower
AWACS	Airborne Warning and Control System
BASH	Bird/Wildlife Aircraft Strike Hazard
C2BM	Command and Control Battle Management
CFR	Code of Federal Regulations
CZ	Clear Zone
dB	Decibel
dBA	A-weighted Decibel
DDZ	Density Dispersion Zone
DNL	Day-Night Average Sound Level
DoD	Department of Defense
DoDI	Department of Defense Instruction
EA	Environmental Assessment
ECR	Electronic Combat Range
EO	Executive Order
EMI	Electromagnetic Interference
EPA	United States Environmental Protection Agency
FAA	Federal Aviation Administration
FAR	Floor Area Ratio
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
GIS	Geographic Information System
HAFZ	Hazards to Aircraft Flight Zone
Hz	Hertz
JLUS	Joint Land Use Study
MBTF	Military Base Task Force
MSL	Mean Sea Level
MOC	Maintenance Operations Center
MPUD	Master and Planned Unit Development
MX	Maintenance
NA	Noise Attenuation
NAF	Numbered Air Force
NASA	National Aeronautics and Space Administration
NAVFAC	Naval Facilities Engineering Systems Command
NEPA	National Environmental Policy Act of 1969
NLCD	National Land Cover Database
NLR	Noise Level Reduction
NM	Nautical Mile
2 OG/CC	2d Bomb Wing Operations Group Commander
PA	Public Affairs
PUD	Planned Unit Development
RCD	Range Compatibility District
REPI	Readiness and Environmental Protection Integration
SFO	Simulated Flame-Out
SLUCM	Standard Land Use Coding Manual
SUA	Special Use Airspace
T&G	Touch-and-Go
TDR	Transfer of Development Rights
TDY	Temporary Duty
USCENTCOM	United States Central Command
VFR	Visual Flight Rules


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1

1. INTRODUCTION

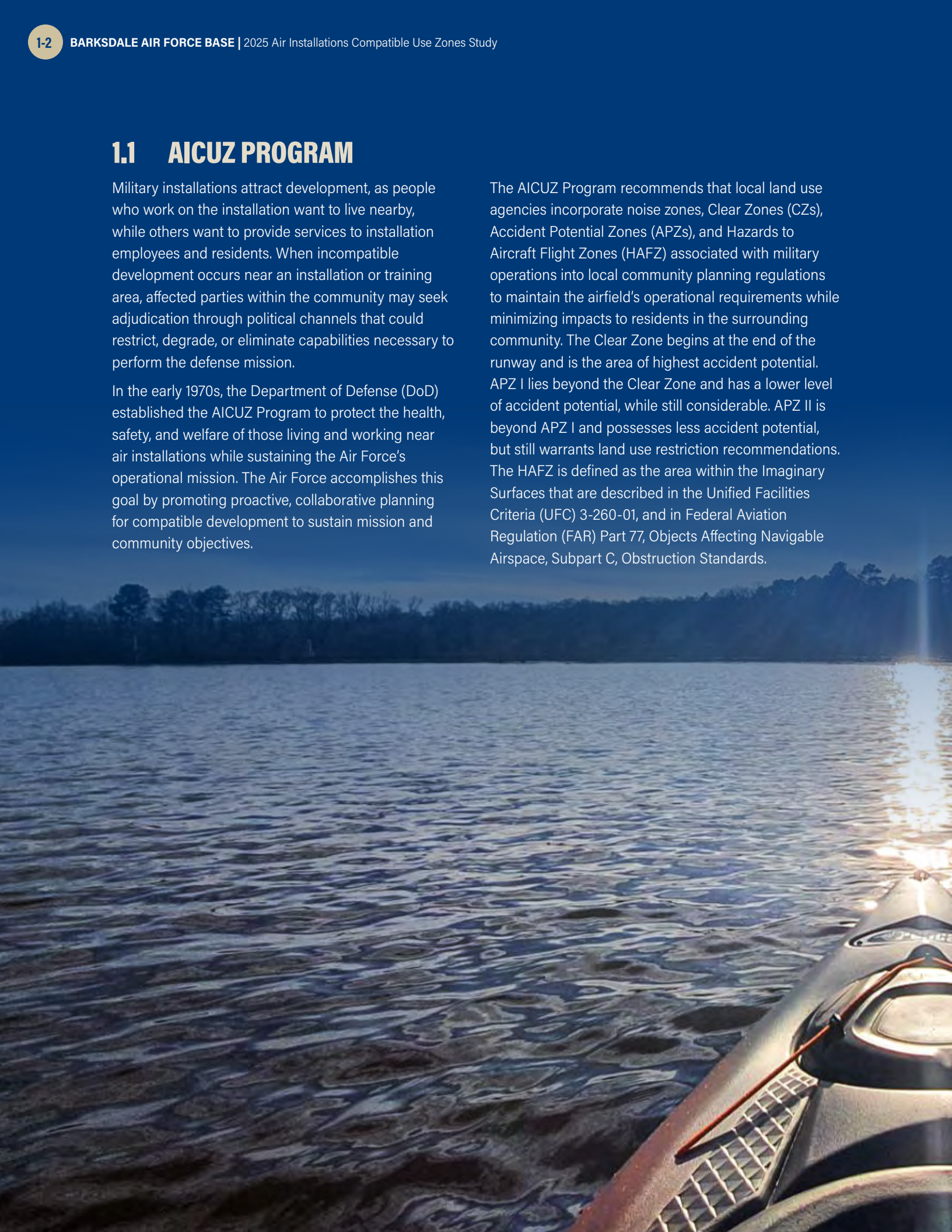
The 2025 Barksdale Air Force Base (AFB) Air Installations Compatible Use Zones (AICUZ) Study focuses on the installation's flying missions. This update presents and documents changes since the previous AICUZ study, released in 2008. It reaffirms the United States Air Force's policy of promoting public health, safety, and general welfare in areas surrounding Barksdale AFB, while seeking development that is compatible with the defense mission. This study presents changes in flight operations since the previous study and provides noise contours and recommendations for compatible land use.

1.1 AICUZ PROGRAM

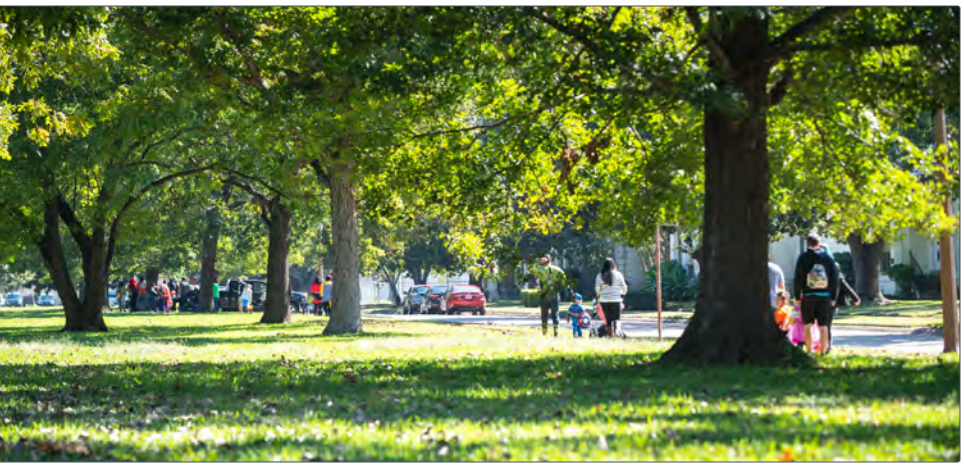
Military installations attract development, as people who work on the installation want to live nearby, while others want to provide services to installation employees and residents. When incompatible development occurs near an installation or training area, affected parties within the community may seek adjudication through political channels that could restrict, degrade, or eliminate capabilities necessary to perform the defense mission.

In the early 1970s, the Department of Defense (DoD) established the AICUZ Program to protect the health, safety, and welfare of those living and working near air installations while sustaining the Air Force's operational mission. The Air Force accomplishes this goal by promoting proactive, collaborative planning for compatible development to sustain mission and community objectives.

The AICUZ Program recommends that local land use agencies incorporate noise zones, Clear Zones (CZs), Accident Potential Zones (APZs), and Hazards to Aircraft Flight Zones (HAFZ) associated with military operations into local community planning regulations to maintain the airfield's operational requirements while minimizing impacts to residents in the surrounding community. The Clear Zone begins at the end of the runway and is the area of highest accident potential. APZ I lies beyond the Clear Zone and has a lower level of accident potential, while still considerable. APZ II is beyond APZ I and possesses less accident potential, but still warrants land use restriction recommendations. The HAFZ is defined as the area within the Imaginary Surfaces that are described in the Unified Facilities Criteria (UFC) 3-260-01, and in Federal Aviation Regulation (FAR) Part 77, Objects Affecting Navigable Airspace, Subpart C, Obstruction Standards.



Cooperation between military airfield planners and community-based counterparts serves to increase public awareness of the importance of air installations and encourage the public planning process to support mission requirements and address associated noise and risk factors. As the communities that surround military airfields grow and develop, the Air Force has the responsibility to communicate and collaborate with local governments on land use planning, zoning, and similar matters that could affect the installation's operations or missions. Likewise, the Air Force has a responsibility to understand and communicate potential impacts that new and changing missions may have on the local community.



1.2 SCOPE AND AUTHORITY

1.2.1 Scope

This AICUZ Study provides Barksdale AFB's CZs, APZs, and noise zones associated with the airfield's runways to the local communities, along with recommendations for compatible land use near the installation for incorporation into comprehensive plans, zoning ordinances, subdivision regulations, building codes, and other related documents. The study analysis is informed by the latest projected air operations.

1.2.2 Authority

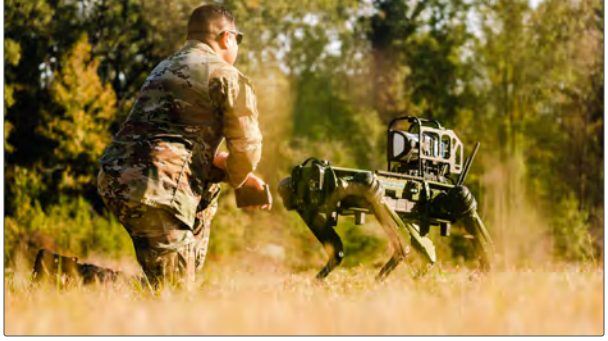
Two documents provide authority for the Air Force AICUZ Program:

- Department of Defense Instruction (DoDI) 4165.57, Air Installations Compatible Use Zones, which establishes policy, assigns responsibilities, and prescribes procedures for air installations. *Air Force Instruction (AFI) 32-1015, Integrated Installation Planning,* applies to all Air Force installations with active runways located in the United States and its territories. This AFI outlines the AICUZ program objectives and responsibilities.
- *Air Force Handbook (AFH) 32-7084, AICUZ Program Manager's Guide,* provides installation AICUZ Program Managers with specific guidance concerning the organizational tasks and procedures necessary to implement the AICUZ Program. It is written in a "how to" format and includes the land use compatibility tables used in AICUZ studies.

1.3 PREVIOUS AICUZ EFFORTS AND RELATED STUDIES

Previous studies relevant to this AICUZ Study include:

- *Barksdale AFB Air Installations Compatible Use Zones Update (2008).*
- *Barksdale AFB Joint Land Use Study (JLUS) (2009).*
- *Barksdale AFB 2023 Noise Study (2023).*



1.4 CHANGES THAT REQUIRE AN AICUZ STUDY UPDATE

This 2025 Barksdale AFB AICUZ Study replaces the 2008 version. It provides the installation's flight tracks, CZs, APZs, and noise contour information, presenting the most accurate representation of current military activities. With this information, the AICUZ Program allows surrounding communities to consider both current and potential activities when making land use decisions.

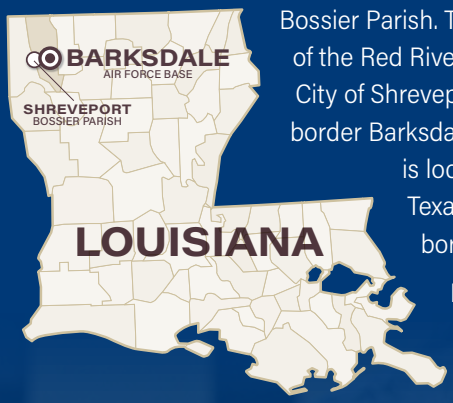
As the DoD aircraft fleet mix and training requirements change over time, the resulting flight operations change as well. These changes can affect noise contours and necessitate an AICUZ Study update. Additionally, non-operational changes, such as refinements to noise modeling methods and a local community's land use, may also require the need for an update.

The primary changes occurring since the previous Barksdale AFB AICUZ Study includes:

- **Changes to planning noise contours.** Due to operational changes at Barksdale AFB the operational noise contours have changed since the 2008 AICUZ Study was completed.
- **Changes in the regional population** surrounding the installation.
- **Changes to AICUZ AFI and AFH.** AFI 32-1015, *Integrated Installation Planning, and AFH 32-7084, AICUZ Program Manager's Guide,* were published after the 2008 Barksdale AFB AICUZ Study was released.

2. BARKSDALE AFB, LOUISIANA

2.1 LOCATION



Location of Barksdale AFB within Louisiana

Barksdale AFB is located in northwest Louisiana within Bossier Parish. The 21,945- acre installation lies east of the Red River and adjacent to Bossier City and the City of Shreveport. US Highway 71 and Interstate 20 border Barksdale AFB on the west and north. The base is located approximately 20 miles east of the Texas border and 35 miles south of Arkansas border **(See Figure 2-1).**

Barksdale AFB contains an airfield and associated mission support facilities, housing, community facilities, training areas, and open land.

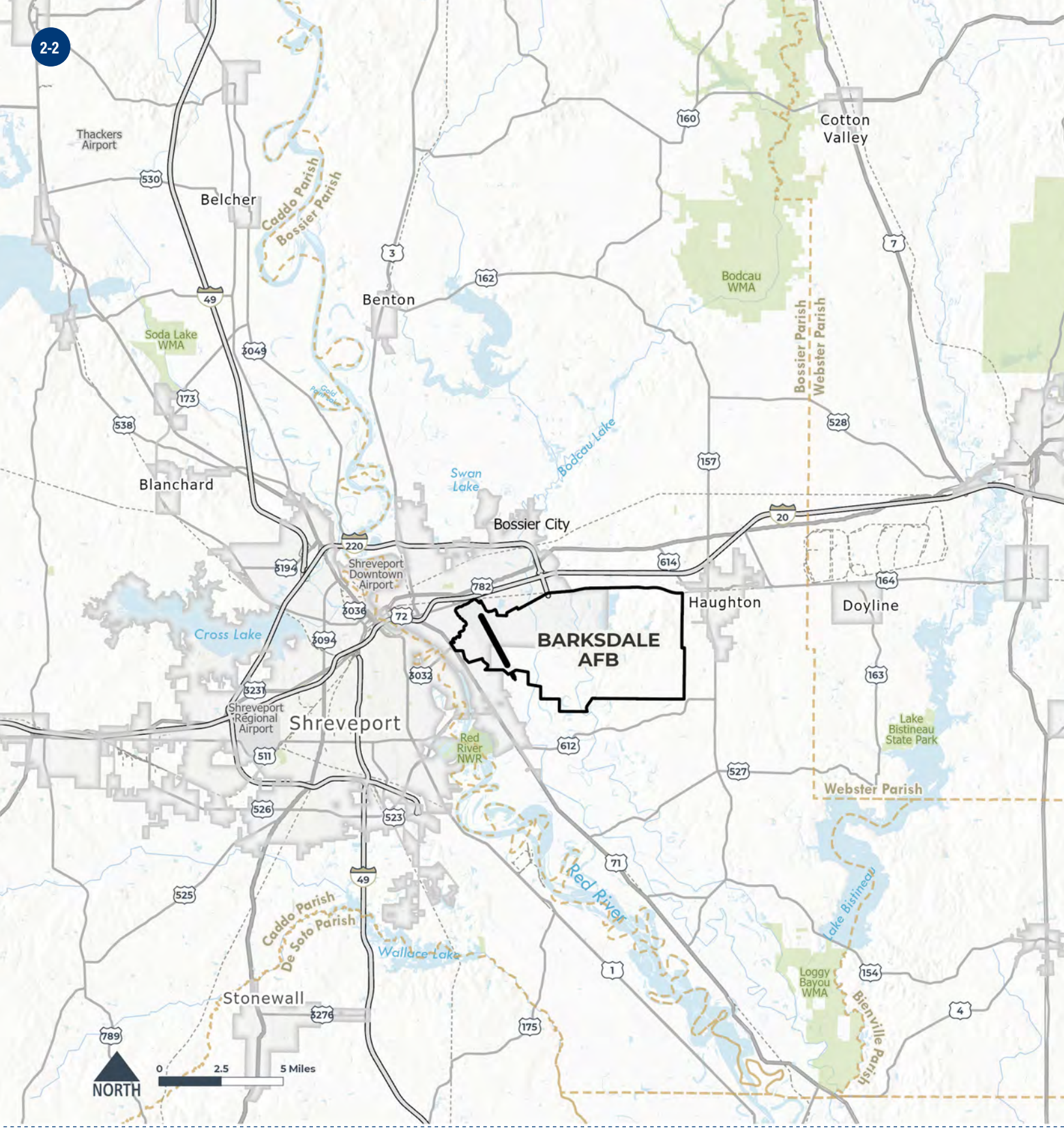
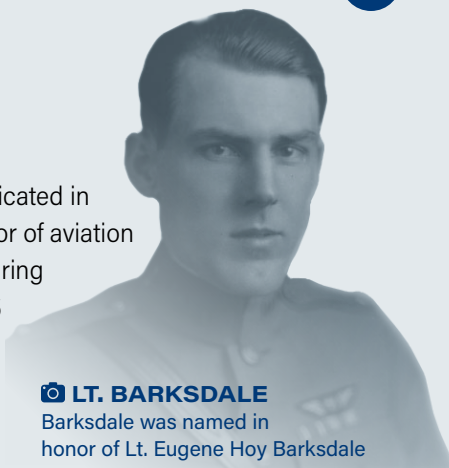


FIGURE 2-1
Barksdale AFB Airfield Diagram

2.2 HISTORY

The culmination of a concerted community action over many years, Barksdale AFB was dedicated in 1933 in Bossier City, Louisiana. Barksdale AFB, originally Barksdale Field, was named in honor of aviation pioneer Lt. E. Hoy Barksdale. After serving as a B-26, B-17 and B-29 bomber training base during World War II, Barksdale Field became headquarters for the Air Training Command from 1945 to 1949. In 1948, Barksdale Field was renamed Barksdale AFB and, in 1949, was the home of the first jet bomber, the North American RB-45, and home to Headquarters Second Air Force, bringing Barksdale into the Strategic Air Command (SAC).



LT. BARKSDALE
Barksdale was named in honor of Lt. Eugene Hoy Barksdale

During the 1950s, Barksdale AFB hosted the Boeing B-47 and Boeing KC-97. In 1958, the first of the Boeing B-52 and Boeing KC-135 aircraft were assigned to the base. In 1963, the famous 2d Bomb Wing transferred to Barksdale AFB from Hunter Field, GA. The 2d Bomb Wing replaced the 423 8th Strategic Wing, absorbing its in-place personnel and B-52 and KC-135 aircraft. In 1968, the 2d Bomb Wing was assigned a second B-52 squadron and a second KC-135 squadron, becoming a "SAC Super Wing." In 1975, the Second Air Force was inactivated, and Headquarters Eighth Air Force was installed on Barksdale AFB after being based on Guam for five years in charge of strategic operations for the Vietnam War. In 1981, the first KC-10 tanker squadron in the Air Force was assigned to the 2d Bomb Wing at Barksdale AFB. All the KC-135s and KC-10s were transferred to Air Mobility Command in 1992, and the bombers moved to the new Air Combat Command. Also, in 1992, 265 buildings on Barksdale's main base were placed on the National Registry of Historic Places.

In 1962, the 917th Troop Carrier Group, Air Force Reserve, equipped with C-124 cargo aircraft, was activated at Barksdale AFB for worldwide airlift missions. The group was later equipped with A-37 aircraft in 1972 and A-10 aircraft in 1980, being redesignated the 917th Tactical Fighter Wing in 1987. In 1993, the 917th became the first Air Force Reserve unit to receive and operate the B-52 aircraft, becoming the composite 917th Wing with its A-10s aircraft. In 2010, the 917th Wing was inactivated, it's A-10 aircraft transferred to the 917th Fighter Group, and the Air Force Reserve B-52 mission was assumed by the newly activated 307th Bomb Wing. After 33 years of service at Barksdale AFB, the A-10 mission transferred away in 2013.

In 2009, Barksdale AFB became home to the newly activated Headquarters Air Force Global Strike Command to effectively manage the nation's long-range nuclear-equipped bombers and intercontinental ballistic missiles.

2.3 MISSION

Barksdale AFB is the host site for the 2d Bomb Wing. As the host unit, the 2d Bomb Wing delivers devastating combat capability through deployable aircraft and personnel capable of executing both nuclear and conventional combat missions, while maintaining an elite force of expeditionary Airmen in support of combatant commanders around the world.

2.4 HOST AND TENANT ORGANIZATIONS AND OTHER MISSION PARTNERS

2d Bomb Wing (2 BW)

As the host organization for Barksdale AFB, the 2d Bomb Wing, the oldest bomb wing in the United States, conducts the primary mission of Barksdale AFB, with three squadrons of B-52H Stratofortress bombers—the 11th Bomb Squadron, which is the training squadron, the 20th Bomb Squadron and the 96th Bomb Squadron. Together they ensure the 2d Bomb Wing provides flexible, responsive, global combat capability, autonomously or in concert with other forces, and trains all Air Force Global Strike Command and Air Force Reserve B-52 crews, including our 307th Bomb Wing mission partners here at Barksdale AFB.

The 2d BW mission is to deliver devastating combat capability through deployable aircraft and personnel capable of executing both nuclear and conventional combat missions, while maintaining an elite force of expeditionary Airmen in support of combatant commanders around the world.

Air Force Global Strike Command (AFGSC)

Air Force Global Strike Command was activated August 7, 2009 and is a major command with headquarters at Barksdale AFB. AFGSC is responsible for the nation's three intercontinental ballistic missile wings, the Air Force's entire bomber force, to include B-52, B-1 and B-2 wings, the Long-Range Strike Bomber program, Air Force Nuclear Command, Control and Communications (NC3) systems, and operational and maintenance support to organizations within the nuclear enterprise.

Headquarters 8th Air Force

Eighth Air Force is one of two active-duty Numbered Air Forces in Air Force Global Strike Command with headquarters at Barksdale AFB. The mission of "The Mighty Eighth Air Force" and the Joint – Global Strike Operations Center (J-GSOC) is to conduct indefinite strategic deterrence operations, and on order, neutralize the enemy through global strike in order to protect the United States of America.

307th Bomb Wing (307 BW)

The 307th Bomb Wing (307 BW) is an Air Reserve Component (ARC) of the Air Force. It is assigned to the Tenth Air Force of Air Force Reserve Command, stationed at Barksdale AFB, Louisiana. If mobilized, the wing is gained by Air Force Global Strike Command (AFGSC).

The 307th Bomb Wing is a diverse wing, flying and maintaining 20 B-52 Stratofortress aircraft. The 307th Operations Group oversees three squadrons: the 93rd Bomb Squadron, which operates the B-52 Formal Training Unit and qualifies aircrew to operate the B-52 in active association with the 11th Bomb Squadron, 2nd Operations Group, the 343rd Bomb Squadron, which performs the nuclear enterprise and global strike missions in classic association with the 2nd Operations Group, and the 307th Operations Support Squadron, which provides intelligence, aircrew life support and range operations services to the wing's full range of B-52 missions. The 489th Bomb Group, a geographically separated unit, operates in classic association with the 7th Operations Group at Dyess AFB, flying the B-1 Lancer. In addition, the wing produces sorties for the 340th Weapons Squadron and the 49th Test and Evaluation Squadron to accomplish their missions.

2.5 AIRFIELD ENVIRONMENT

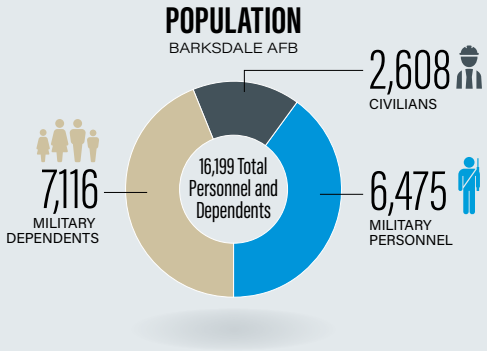
Located in the western portion of the overall installation, the Barksdale AFB airfield (Figure 2-2) includes aircraft hangars for maintenance and storage, an Air Traffic Control Tower (ATCT), aircraft parking ramps and taxiways, a hard surface runway, assorted administrative buildings, test cells and ramp space for engine run ups, and other airfield support facilities. Barksdale AFB's one runway is oriented to a magnetic heading 15/33. The runway is approximately 300 feet wide and 11,700 feet long. The overrun at the end of the runway is 1,000 feet long and 300 feet wide. The field elevation at Barksdale AFB is 165 ft. Mean Sea Level measured from the center of the runway.

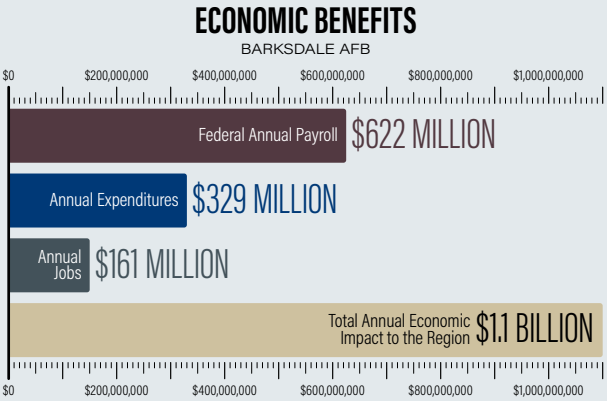
RUNWAYS

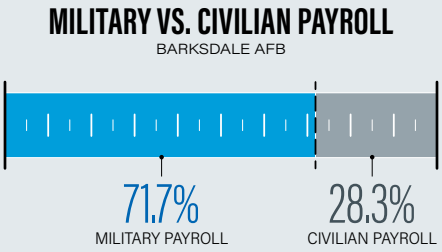
A runway is typically used in both directions and counted as two separate runways, depending on the direction of the departure. Each direction is labeled as a separate runway and numbered based on its magnetic heading, divided by 10 and rounded to a whole number.

2.6 LOCAL ECONOMIC IMPACTS

Barksdale AFB is one of the largest single-site employers in Louisiana and boasts an annual federal payroll of over $622 million and annual expenditures of over $329 million. Barksdale AFB generates over $161 million in jobs annually, with $1.1 billion in total annual economic impact to the region. That makes the base's economic footprint enormously important for both the region and state.







The military provides direct, indirect, and induced economic benefits to local communities through jobs and wages. Benefits include employment opportunities and increases in local business revenue, property sales, and tax revenue.

The economic impact of a military installation is based on annual payroll (jobs and salaries), annual expenditures, and the estimated annual dollar value of the jobs created. The military further contributes to the economic development of communities through increased demand for local goods and services and increased household spending by military and civilian employees.

Based on the 2024 Economic Impact Statement from Barksdale AFB, there are 16,199 total personnel and dependents within Barksdale AFB, including almost 6,500 military personnel, over 7,000 military dependents, and approximately 2,600 civilians.

Tables 2-1 through 2-3 provide summaries of personnel and dependents for Barksdale AFB; the economic impact of the installation; military and civilian payroll; and construction, contract, and expenditures for materials, equipment, and supplies.

TABLE 2-1
Total Personnel and Dependents

CLASSIFICATION	TOTAL
Active-Duty Military	5,133
Reservists	1,342
Total Military	**6,475**
Appropriated Fund Civilians	1,632
Non-Appropriated Fund Civilians	210
Commissary	92
Base Exchange	108
Private Businesses	3
Contract Civilians	563
Total Civilians	**2,608**
Total Dependents	**7,116**
Total	**16,199**

Source: FY 2024 Barksdale AFB Economic Impact Statement

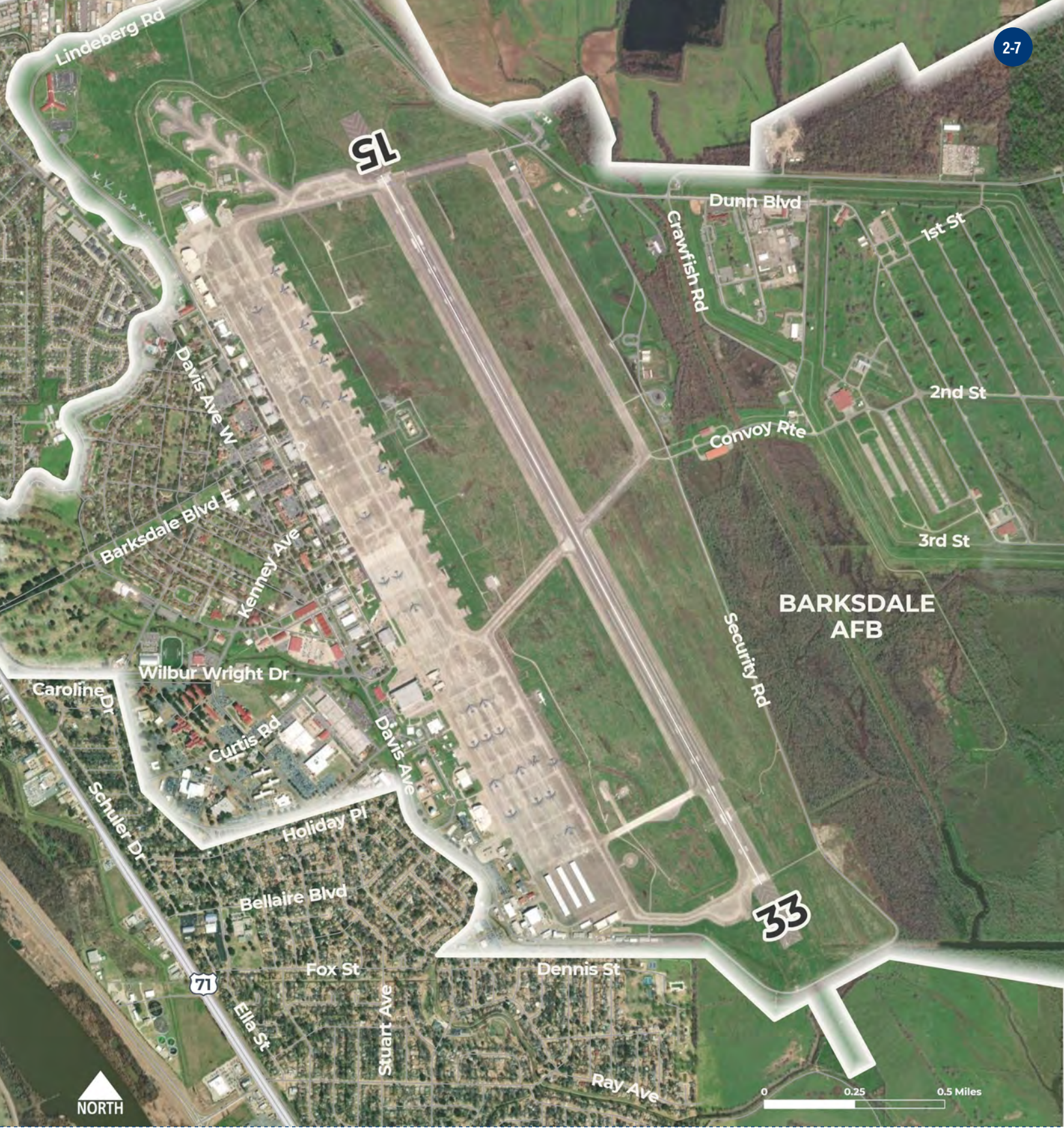


FIGURE 2-2
Barksdale AFB Airfield Diagram

TABLE 2-2
Annual Payroll by Classification

MILITARY PAYROLL	AMOUNT ($)
Active Duty	$415,974,118
Reservists	$30,499,244
All Military Pay	**$446,473,362**
CIVILIAN PAYROLL	**AMOUNT ($)**
Appropriated Fund	$161,233,344
Non-Appropriated Fund	$8,250,673
Commissary	$2,729,444
Base Exchange	$3,408,334
Private Businesses	$177,801
All Civilian Pay	**$175,799,596**
Total Payroll	**$622,272,959**

Source: FY 2024 Barksdale AFB Economic Impact Statement

TABLE 2-3
Summary of Expenditures

EXPENSE CATEGORY	AMOUNT ($)
MILCON	$110,000,000
O&M Construction	$32,557,139
NAF Construction	—
Service Contracts	$99,564,683
Temporary Duty	$3,814,496
Commissary	$286,103
Base Exchange	$229,000
Health/TRICARE	$53,399,932
Tuition Assistance	$2,438,017
Material, Equipment and Supplies	$26,948,665
Total Annual Expenditures	**$329,238,035**

Source: FY 2024 Barksdale AFB Economic Impact Statement

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3. AIRCRAFT OPERATIONS

Aircraft operations are the primary source of noise associated with a military air installation. The level of noise exposure is related to a number of variables, including the aircraft type, engine power setting and afterburner use, altitude flown, direction of the aircraft, flight track, temperature, relative humidity, frequency, and time of operation (day/night). This chapter discusses the aircraft based at or transient to Barksdale AFB, the types and number of operations conducted at the airfields, and the runways and flight tracks used to conduct these operations.

3.1 AIRCRAFT TYPES

There is only one type of aircraft operating at Barksdale AFB: fixed wing. Aircraft permanently based at Barksdale AFB most commonly conduct flight operations at the installation. Aircraft that are not permanently assigned to the installation but conduct operations from the installation on an occasional basis are referred to as "transient." Below are brief descriptions of aircraft at Barksdale AFB.

3.1.1 Permanently Assigned Aircraft

B-52H Bomber

The 2 BW at Barksdale AFB operates the B-52H aircraft, as does the 307th Bomb Wing.


BASED | B-52H

The B-52H Stratofortress is a long-range, heavy bomber that can perform a variety of missions. The bomber is capable of flying at high subsonic speeds at altitudes of up to 50,000 feet (15,166.6 meters). It can carry nuclear or precision guided conventional ordnance with worldwide precision navigation capability. In a conventional conflict, the B-52 can perform strategic attack, close-air support, air interdiction, offensive counter-air and maritime operations. All B-52s can be equipped with two electro-optical viewing sensors, a forward-looking infrared and advanced targeting pods to augment targeting, battle assessment and flight safety, further improving its combat ability.

3.1.2 Transient Aircraft


TRANSIENT | C-5

C-5

The C-5 is a strategic transport aircraft and is the largest aircraft in the Air Force inventory. Its primary mission is to transport cargo and personnel for the Department of Defense. The C-5M is a modernized version of the legacy C-5 designed and manufactured by Lockheed Martin. Currently the U.S. Air Force owns and operates 52 C-5B/C/M.


TRANSIENT | C-130

C-130

The C-130 Hercules primarily performs the tactical portion of the airlift mission. The aircraft is capable of operating from rough, dirt strips and is the prime transport for airdropping troops and equipment into hostile areas. The C-130 operates throughout the U.S. Air Force, serving with Air Mobility Command, Air Force Special Operations Command, Air Combat Command, U.S. Air Forces in Europe, Pacific Air Forces, Air National Guard and the Air Force Reserve Command, fulfilling a wide range of operational missions in both peace and war situations.


TRANSIENT | F-15

F-15

The F-15 Eagle is an all-weather, extremely maneuverable, tactical fighter designed to permit the Air Force to gain and maintain air supremacy over the battlefield. The F-15 has electronic systems and weaponry to detect, acquire, track and attack enemy aircraft while operating in friendly or enemy-controlled airspace. The weapons and flight control systems are designed so one person can safely and effectively perform air-to-air combat.


TRANSIENT | F-16

F-16

The F-16 Fighting Falcon is a compact, multi-role fighter aircraft. It is highly maneuverable and has proven itself in air-to-air combat and air-to-surface attack. It provides a relatively low-cost, high-performance weapon system for the United States and allied nations.


TRANSIENT | C-21

C-21

C-21 is a twin turbofan-engine aircraft used for passenger and cargo airlift. The aircraft is the military version of the Learjet 35A business jet. The C-21 can carry eight passengers and 42 cubic feet of cargo. In addition, the aircraft is capable of transporting one litter or five ambulatory patients for aeromedical evacuation operations.


TRANSIENT | F-35

F-35

The F-35 Lightning II is the U.S. Air Force's latest fifth-generation fighter. With its aerodynamic performance and advanced integrated avionics, the F-35A will provide next-generation stealth, enhanced situational awareness, and reduced vulnerability for the United States and allied nations.

TRANSIENT | T-6

T-6

The T-6A Texan II is a single-engine, two-seat primary trainer designed to train Joint Primary Pilot Training, or JPPT, students in basic flying skills common to U.S. Air Force and Navy pilots.

TRANSIENT | T-38

T-38

The T-38 Talon is a twin-engine, high-altitude, supersonic jet trainer used in a variety of roles because of its design, economy of operations, ease of maintenance, high performance and exceptional safety record. Air Education and Training Command is the primary user of the T-38 for joint specialized undergraduate pilot training. Air Combat Command, Air Force Materiel Command and the National Aeronautics and Space Administration also use the T-38A in various roles.


TRANSIENT | A-10

A-10

The A-10 Thunderbolt II is the first Air Force aircraft specially designed for close air support of ground forces. They are simple, effective and survivable twin-engine jet aircraft that can be used against light maritime attack aircraft and all ground targets, including tanks and other armored vehicles. The A-10 aircraft was previously stationed at Barksdale AFB but the mission was transferred in 2013.

3.2 MAINTENANCE OPERATIONS

Maintenance is an integral part of any flying operation and requires a dedicated team of professionals to ensure that units can meet their flying requirements.

Aircraft maintainers conduct engine maintenance runs at power settings ranging from idle to maximum power and typically conduct low- to mid-range-powered runs on aircraft parking ramps or just outside of maintenance hangars. Noise associated with these operations is included in the noise analysis for the Barksdale AFB noise contours.

The loudest maintenance operations performed at Barksdale AFB are engine maintenance runs. Prior to engine-runs, Maintenance Operations Center (MOC) shall coordinate with ATCT on the tower recorded line and inform the controller of the aircraft tail number, parking spot, number of engines, and what type of engine run. Prior to commencing an engine run (idle or above idle), Maintenance (MX) personnel shall contact the ATCT on ground control frequency. 2.21.2. MX personnel shall monitor the ground control frequency during the engine run. Upon completion, they shall contact the ATCT and advise termination.

B-52s running at less than 85% power have no restrictions on engine run locations. Any B-52 engine run greater than 85% must have at least 500 ft. of clearance behind the aircraft, with the exception of one inboard engine being run up to 90% during engine start. B-52s exceeding the above power restrictions must be parked at one of the following locations:

- Aircraft backed into Sites 1-20.
- Delta Hammerhead or spot U3, facing either east or west.
- Spots V4, W4, X4, Y4 and Z4, positioned at a 45-degree angle to the main parallel.

These locations must have a spotter present to watch for any mobile obstructions that might pass behind an aircraft conducting an engine run. The spotter shall instruct MX personnel to reduce the engine power to idle if any mobile obstruction approaches the jet blast area.

B-52 aircraft are not allowed to conduct engine runs at greater than 85% power while parked in the Aircraft Alert Parking Area (AAPA) except Stub Hotel. It is not typical for Barksdale AFB to have transient aircraft that would require restrictions for engine runs. Should transient heavy aircraft require a high-powered engine run, taxiways Alpha or Delta will be used. Transient alert services will consult AMOPS prior to conducting full powered engine runs. Transient aircraft requiring engine runs greater than 85% power shall contact the airfield manager for approval.

3.3 FLIGHT OPERATIONS

Flight activities, including where aircraft fly, how high they fly, how many times they fly over a given area, and the time of day they operate, must be fully evaluated to understand the relationship between flight operations and land use. This chapter discusses typical flight operations for aircraft based at or visiting Barksdale AFB.

Each time an aircraft crosses over a runway threshold (the beginning or ending of a runway's usable surface) to either takeoff, practice an approach, or land, it is counted as a single flight operation. For example, a departure counts as a single operation as does an arrival. As another example, when an aircraft conducts a pattern (a departure followed by an immediate return), it counts as two operations because the aircraft crosses both the approach and departure end of the runway during the pattern.

Operations at Barksdale AFB are conducted on a year-round basis and, in general, temporarily increase during local training exercises.

The following list highlights typical operations utilized during normal or increased flight operations. Each flight track is designed to maximize flight operations and, when possible, minimize the effects of noise.

Takeoff/Departure

When a pilot positions an aircraft on the runway and the engine power is set to facilitate movement and eventual flight. Aircraft follow specific ground tracks and altitude restrictions as they depart the airfield's immediate airspace.

Arrival

An aircraft performing an arrival aligns with the runway extended centerline and begins a gradual descent for landing. Arriving aircraft also follow specific ground tracks and altitudes as they transition through air traffic control airspace to the runway.

Patterns

When an aircraft conducts successive takeoffs and landings without exiting the traffic route.

- **Low Approach.** A low approach is an approach to a runway that does not result in a landing, but rather a descent towards the runway (usually below 500 feet above ground level [AGL]) followed by a climb-out away from the airfield. Pilots perform low approaches for a few reasons, including practicing to avoid potential ground obstructions (e.g., vehicles, debris, stray animals).
- **Touch-and-Go (T&G).** A T&G landing pattern is a training maneuver that involves landing on a runway and taking off again without coming to a full stop. Usually, the pilot then circles the airfield in a defined pattern and repeats the maneuver.
- **VFR Arrival to Initial.** A VFR Arrival to Initial is an expeditious arrival using visual flight rules (VFR). The aircraft arrives over the airfield on the runway centerline at a specified point and altitude and then performs a 180-degree "break turn" away from the runway to enter the landing pattern. Once established, the pilot lowers the landing gear and flaps and then performs a second 180-degree descending turn toward the runway centerline to land.
- **Closed Pattern.** The Closed Pattern refers to traffic pattern training where the pilot performs takeoffs and landings in quick succession by taking off, flying the pattern, and then landing. A closed pattern consists of two portions: a takeoff/departure and an approach/landing. A complete closed pattern is counted as two operations because the aircraft crosses over a runway threshold twice, once on departure and once on arrival. The closed pattern is normally conducted within 5 miles of the runway. Traffic pattern training is demanding and utilizes all the basic flying maneuvers a pilot learns—takeoffs, climbs, turns, climbing turns, descents, descending turns, and straight and level landings.
- **Simulated Flame-Out (SFO).** This is a visual flight maneuver used to simulate a landing recovery from a complete loss of engine thrust. To execute the maneuver, a pilot must establish the aircraft on a specified flight profile (altitude, airspeed, position over the airfield) that would allow the aircraft to glide safely across the runway threshold in a position to land. If properly executed, the maneuver should not require the use of additional engine power until after the maneuver is complete.

3.4 ANNUAL AIRCRAFT OPERATIONS

Total annual operations account for each departure and arrival, including those conducted as part of a pattern operation. Figure 3-2 provides the number of aircraft operations that have occurred at Barksdale AFB over a 20-year period, including based and transient aircraft.

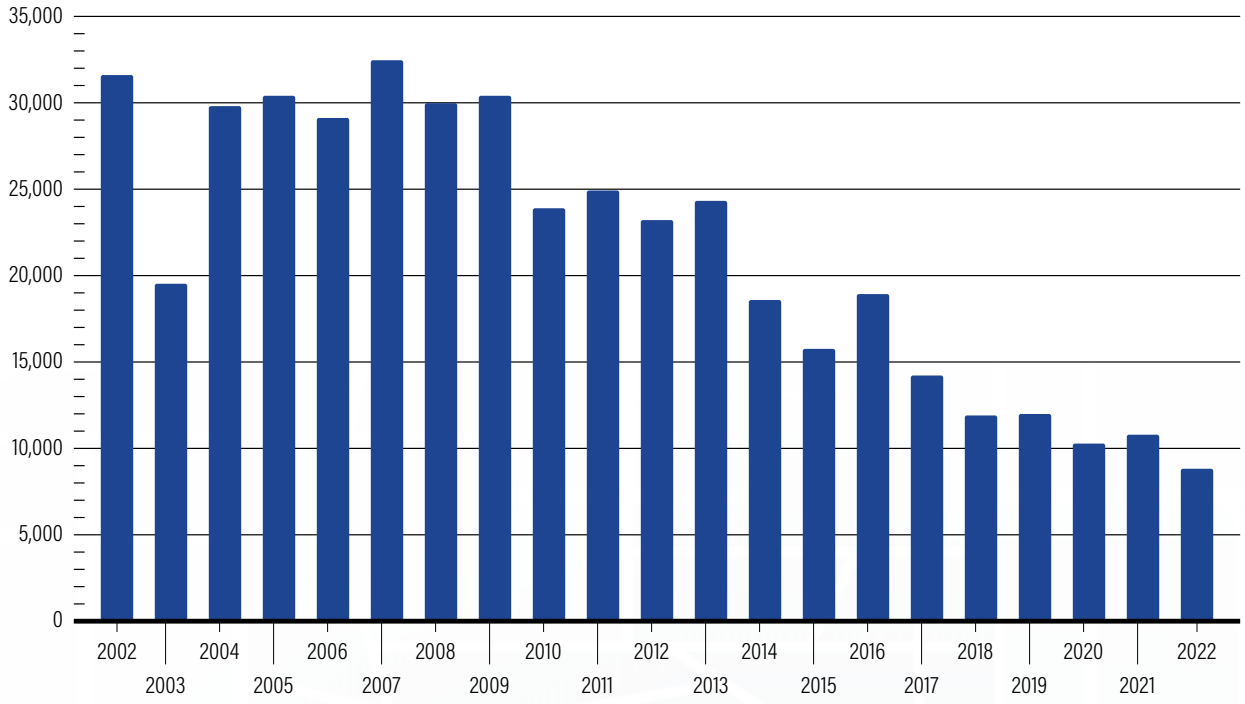
Data for the most recent 10-year period show that aircraft operations at Barksdale AFB have fluctuated up and down some but have with a 10-year average of 14,535 operations per year, with some variability depending on the year. A peak in operations occurred in 2013, with 24,335 operations recorded (about 40 percent more operations than the 10-year average). In 2022, the fewest operations occurred, with 8,793 operations recorded (about 60 percent fewer operations than the 10-year average). The projection for 2025, based on current and anticipated operational tempos, is 10,740 operations (AFCEC, 2023).

The majority of flight activities at and around Barksdale AFB consist of permanently assigned B-52H aircraft. Other aircraft represent a small portion of the operations at Barksdale.

Over the past five years, the vast majority of operations at Barksdale AFB took place during acoustical daytime (defined as taking place from 7:00 a.m. to 10:00 p.m.); only a small percent occurred during acoustical nighttime (defined as taking place from 10:00 p.m. to 7:00 a.m.). 96 and 91 percent of departures and pattern operations took place during daytime hours. The vast majority of arrivals also took place during daytime hours, with only 11 percent of arrivals occurring during nighttime hours.

FIGURE 3-1

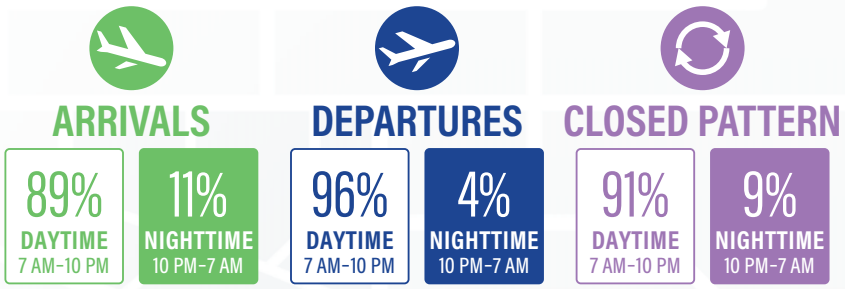
Summary of Barksdale AFB Flight Operations for 2002-2022



Source: Air Force Civil Engineer Center (AFCEC): Air Force Flight Standards Agency (AFFSA) Air Traffic Reporting System Annual Report

FIGURE 3-2

Time of Day for Arrivals, Departures, and Pattern Operations



3.5 RUNWAY UTILIZATION AND FLIGHT TRACKS

3.5.1 Runway Utilization

The frequency with which aircraft utilize a runway involves a variety of factors including, but not limited to:

- Airfield environment (layout, lights, runway length),
- Direction of prevailing winds,
- Location of natural terrain features (rivers, lakes, mountains, and other features),
- Wildlife activity,
- Number of aircraft in the pattern, and/or,
- Preference of a runway for the purpose of safety and noise abatement.

Barksdale AFB Air Traffic Control (ATC) personnel establish the runway in use and adjust pattern procedures accordingly to maximize air traffic flow efficiency. Table 3-1 lists how frequently each runway at Barksdale AFB is used.

TABLE 3-1
Runway Direction and Utilization

RUNWAY DIRECTION	UTILIZATION
Runway 15	69%
Runway 33	31%

Source: AFCEC.

3.5.2 Flight Tracks

Each runway has designated flight tracks that provide for the safety, consistency, and control of an airfield. Flight tracks depict where aircraft fly in relation to an airfield. They are for departures, arrivals, and pattern procedures, and are designated for each runway to facilitate operational safety, noise abatement, aircrew consistency, and the efficient flow of air traffic within ATC airspace. Aircraft flight tracks are not set "highways in the sky." While we show flight tracks as lines on the map, they are more like bands. Aircraft deconfliction, configuration, pilot technique, takeoff weight, and wind all affect the actual path taken on any given flight. Figure 3-3 presents the departure flight tracks, Figure 3-4 presents the arrival flight tracks, and Figure 3-5 presents the pattern flight tracks for Barksdale AFB.

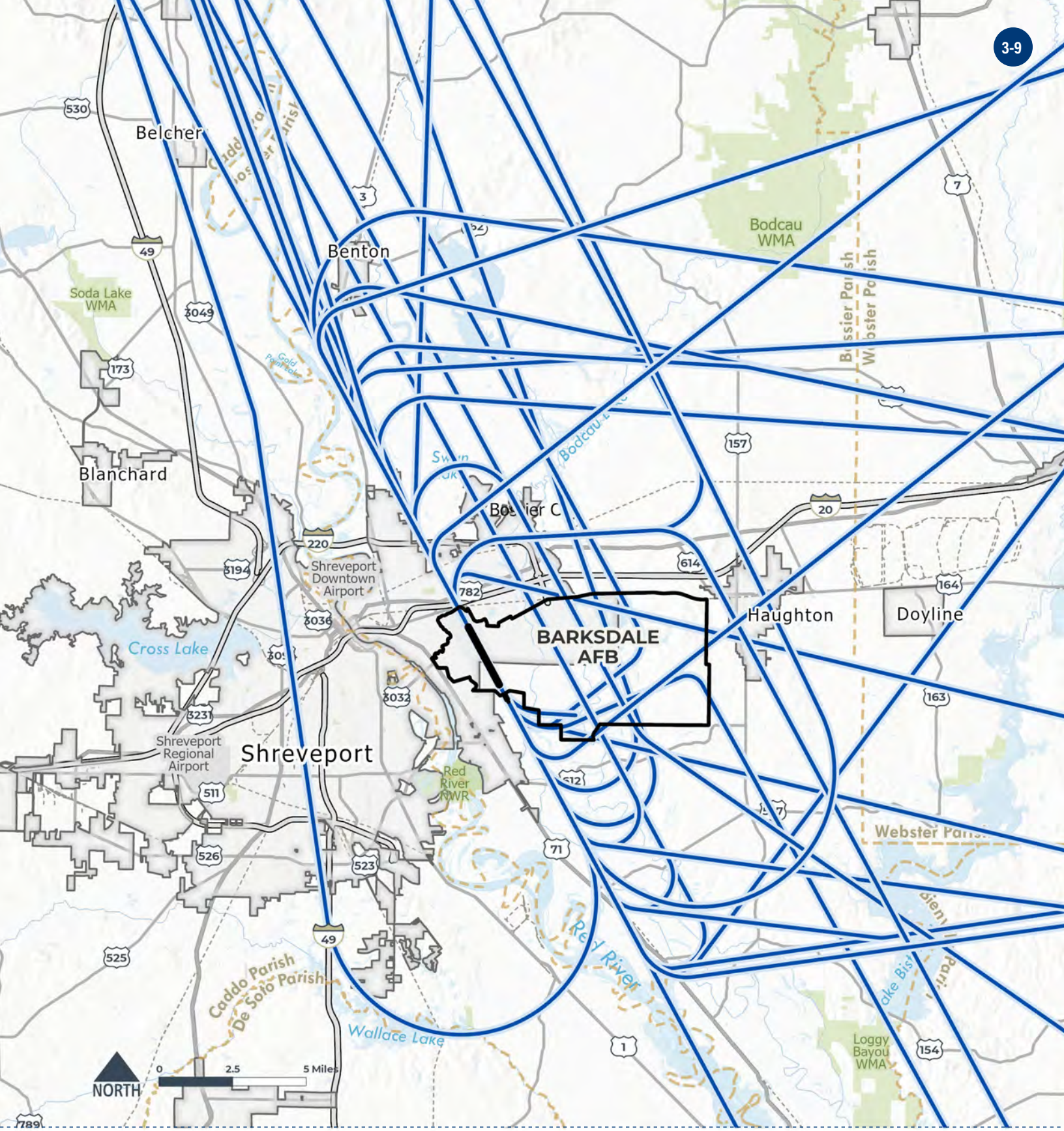


FIGURE 3-3
Departure Flight Tracks

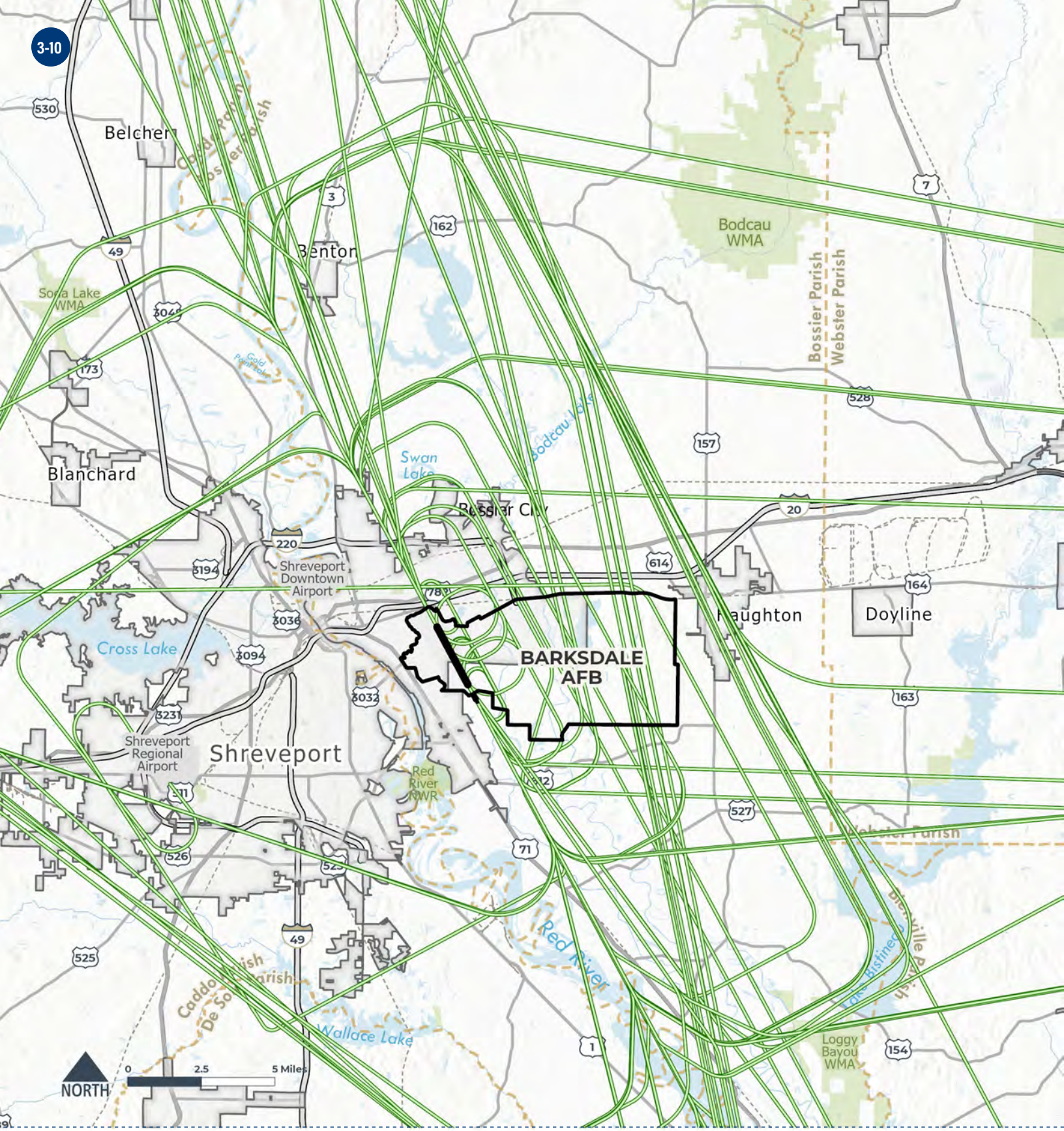


FIGURE 3-4
Arrival Flight Tracks

Pattern Flight Track

Runway

Barksdale AFB

FIGURE 3-5

Pattern Flight Tracks

4

4. MILITARY OPERATIONAL NOISE

How an installation manages operational noise can play a key role in shaping its relationship with neighboring communities. Ideally, aircraft and range noise, as well as its management should be key factors in local land use planning. To mitigate impact on the communities, the Air Force has defined noise zones using the guidance provided in *AFH 32-7084, The AICUZ Program Manager's Guide.*

FEATURES

Terrain features, weather phenomena, man-made structures, and daily life activity contribute to noise exposure.

For this reason, noise contours for Barksdale AFB have been developed in accordance with the AICUZ Handbook to graphically depict how sound, or noise, propagates from the aircraft operating around the airfield and out towards surrounding communities. The following sections will define and discuss sound/noise and how it is perceived and will then conclude with a graphic of the 2025 Barksdale AFB noise contours. Refer to **Section 4.3.2** for a comprehensive definition of Noise Contours.

4.1 WHAT IS SOUND/NOISE?

Sound consists of vibrations in the air called "compression waves." A multitude of sources can generate these vibrations, including roadway traffic, barking dogs, radios, or aircraft operations. Just as a pebble dropped into a pond generates ripples, the compression waves—formed of air molecules pressed together—radiate outward, decreasing with distance. If these vibrations reach your eardrum at a certain rate and intensity, you perceive it as sound. When the sound is unwanted, we refer to it as "noise." Generally, sound becomes noise to a listener when it interferes with normal activities. Sound has three components: intensity, frequency, and duration.

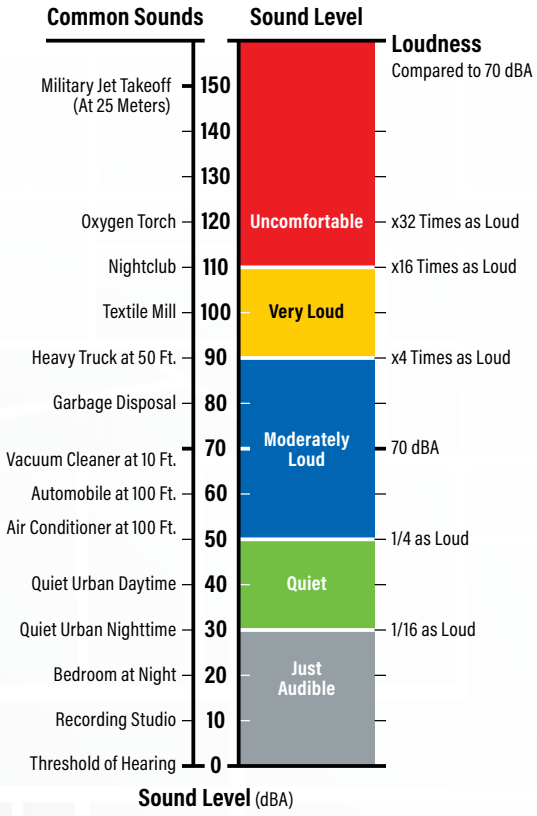
- **Intensity or loudness** relates to sound pressure change. As the vibrations oscillate back and forth, they create a change in pressure on the eardrum. The greater the sound pressure change, the louder it seems.
- **Frequency** determines how we perceive the pitch of the sound. We hear low frequency sounds as rumbles or roars, while sirens or screeches typify high-frequency sounds. We measure sound frequency in cycles per second, or hertz (Hz). While the range of human hearing goes from 20 to 20,000 Hz, humans hear best in the range of 1,000 to 4,000 Hz.
- **Duration** is the length of time one can detect the sound.

4.2 HOW SOUND IS PERCEIVED

The loudest sounds that the human ear can comfortably hear are a billion times higher in intensity than those of sounds we barely hear. Because such large numbers are cumbersome to use, a logarithmic scale is used to measure decibels, the unit of measurement for noise.

Figure 4-1 shows the A-weighted sound levels emitted through common sources measured in decibel (dBA) values. A-weighted decibels give greater weighting to frequencies in the middle of the human hearing range, and less weighting to frequencies at the lower and higher ends. A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. While normal speech has a sound level of approximately 60 dB, sound levels above 120 dB can cause discomfort and those above 130 dB can be painful to the ear.

Table 4-1 shows the subjective responses to changes in (single event) sound levels. While noise energy doubles or halves with every 3 dB change, we do not perceive all this noise energy. It takes a 10 dB increase or decrease for our ears to perceive a doubling or halving of loudness. Please note: these metrics are based on a single event and cannot be compared to the DNL examples, which are based on a cumulative metric.



Source: U.S. Air Force
See also: https://www.chem.purdue.edu/chemsafety/Training/PPETrain/dblevels.htm

FIGURE 4-1
Typical A-weighted Levels of Common Sounds

TABLE 4-1
Subjective Response to Changes in Sound Level

CHANGE IN SOUND LEVEL	CHANGE IN LOUDNESS
10 dB	Twice or half as Loud
5 dB	Quite Noticeable
3 dB	Barely Perceptible
1 dB	No Noticeable Change

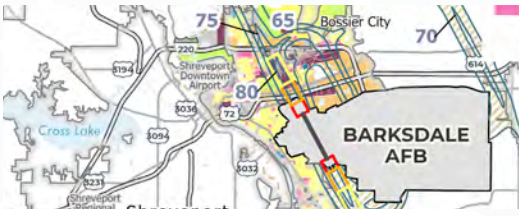
4.3 THE DAY-NIGHT AVERAGE SOUND LEVEL

When people hear an aircraft fly overhead, they may ask, "How loud was that?" While we may often find ourselves concerned over the perceived loudness of a sound, there are other dimensions to the sound event that draw our interest. For instance, does one overflight draw the same interest as two separate overflights—or 20? Does the 30-second run-up of engines prior to takeoff draw the same interest as a 30-minute maintenance run? Additionally, is an overflight more noticeable at 2:00 p.m. or at 2:00 a.m., when the ambient noise is low, and most people are sleeping?

The length and number of events—the total noise energy—combined with the time of day that a noise event takes place, have key roles in our perception of noise. To reflect these concerns, the Air Force uses a metric called the "Day-Night Average Sound Level" (DNL). The United States Environmental Protection Agency (EPA) created DNL for use throughout the United States to evaluate health and activity impacts as well as land use compatibility.

DNL, when used as a metric for aircraft noise, represents the accumulation of noise energy from all aircraft noise events in a 24-hour period. DNL is "A-weighted" (ADNL). This weighting factor removes lower frequencies to focus on the frequency range humans hear. Oftentimes, when discussing ADNL, the "A" is dropped because it is understood that "DNL" is referring to ADNL. Additionally, for all operations between 10:00 p.m. and 7:00 a.m., DNL adds a 10-dB adjustment to each event to account for the intrusiveness of nighttime operations that may disrupt sleep and the reduced ambient sounds that would otherwise mask the flight noise. As is implied in its name, the DNL represents the noise energy present in a daily period. However, because aircraft operations at military airfields fluctuate from day to day, the Air Force typically bases DNL on a year's worth of operations and represents the annual average daily aircraft events.

DNL is not a level heard at any given time but represents long-term exposure. Scientific studies have found a strong correlation between the number of people highly annoyed by sounds and the level of average sound exposure measured in DNL.



4.3.1 Aircraft Noise Contours

The DoD develops noise contours to assess the compatibility of aircraft operations with surrounding land uses. The contours connect points of equal acoustic value, just as contours on topographic maps connect points of equal elevation. They graphically describe noise exposure on the ground. This AICUZ study presents planning noise contour that was determined based on modeling three operational scenarios to determine the most accurate noise contours to use in the study. The analysis was done as part of the 2023 Barksdale AFB noise study.

Noise contours, when overlaid on local land use maps, can help identify areas of incompatible land use, and assist communities in planning for future development around an air installation.

4.3.2 Planning Contours

Long-range planning conducted by local land use authorities involves strategies that shape the present and future uses of land. To assist communities with promoting compatible land uses, the Air Force provides planning noise contours based on reasonable projections of missions and operations based on documented programs of record. AICUZ studies use planning noise contours to provide a description of the long-term (5-10 years) aircraft noise environment for projected aircraft operations that is consistent with the planning horizon used by state, tribal, regional, and local planning bodies. It is important that local land use authorities regularly update their regulations (e.g., zoning, comprehensive plans) according to the latest available noise contours.

The noise contours developed were based on the best available projections of unclassified estimates of future mission requirements, including reasonable projections of future operations based on trends in operational tempo, retirement of legacy aircraft, or programs of record for new aircraft entering the inventory.

DNL is the average total noise levels of an average annual day. DNL does not represent the sound level heard at any particular time, but it quantifies the total sound energy received. While it is normalized as an average, it represents all of the sound energy and is therefore a cumulative measure. Per Air Force policy, the lowest AICUZ contour that is shown in an AICUZ document is 65 DNL.

Table 4-2 presents the annual aircraft flight operations for the Barksdale AFB planning contours.

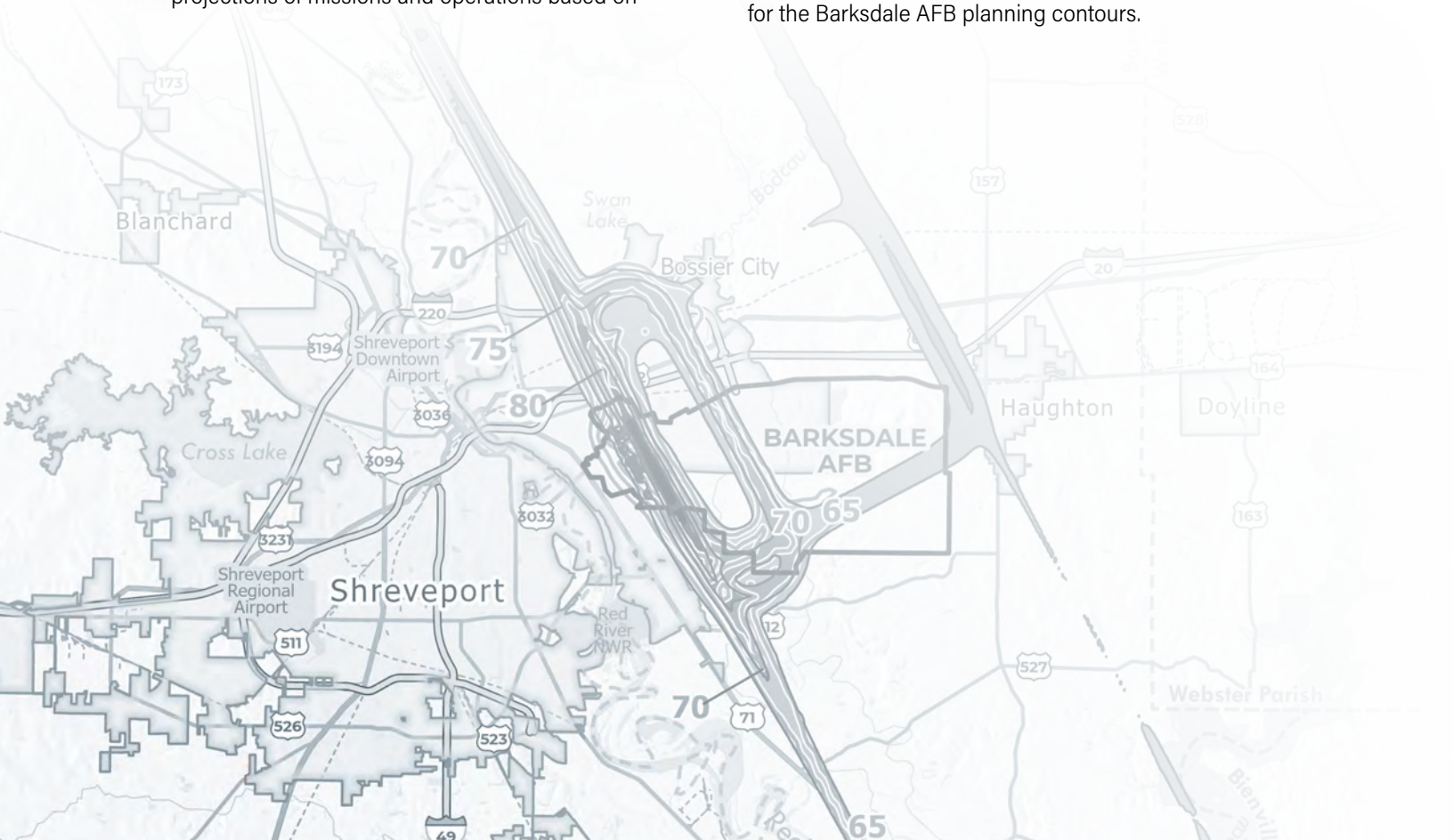


TABLE 4-2
Annual Aircraft Flight Operations for AICUZ Noise Contours

UNIT/AIRCRAFT	DEPARTURES	ARRIVALS	PATTERN[1]	TOTAL
11th Bomb Squadron (BS)/B-52	274	274	4192	4,740
20th BS/B-52	234	234	934	1,401
96 BS/B-52	196	196	1760	2,151
343 BS/B-52	83	83	714	879
49 T&E/B-52	42	42	135	220
340 WPS/B-52	52	52	16	121
Transients/Various Aircraft	274	274	679	1,227
Total	**1,155**	**1,155**	**8,430**	**10,739**

1. Each "closed pattern event" consists of two total operations: one arrival and one departure.

Source: Barksdale AFB Noise Study, 2023

4.4 Barksdale AFB 2025 Noise Contours

The 2025 AICUZ noise contours are presented in Figure 4-2.

The Barksdale AFB noise contours primarily parallel the west side of the base and east side of the Red River. The 65-69 dB DNL noise contour also extends a considerable distance north through Bossier City into Bossier Parish where it crosses over into Caddo Parish in two locations. The contours traverse past and to the north of the Town of Benton, LA.

The higher noise zones (e.g., 70–74, 75–79 and 80+ dB DNL contours) extend off station to both the north and south—but much less so to the south—and encompass on station and off station areas around the airfield primarily in Bossier City to the north and Bossier Parish to the south. The noise zones do not extend west into more populated areas within Bossier City or Caddo Parish or into the City of Shreveport. In Bossier City to the northwest, the high noise is over denser commercial and industrial land uses. However, the 70-74 and 75-79 dB DNL contours also encompasses residential areas. This includes the residential areas bisected by Swan Lake Road. Some schools and places of worship are also proximate to the higher noise zones north of the base in Bossier City. The contours cross over less dense agricultural/open space areas further north in the vicinity of Route US 220. There are also several residential developments beneath the Barksdale AFB noise contours including Airline Park Estates, Tiburon and Stone Bridge residential areas, among others.

As shown, in Figure 4-2, there is a considerable amount of noise around the installation and underneath the radar pattern and other operations (e.g., takeoff and landings). The loudness of the B-52 aircraft combined with how frequently the aircraft conducts certain operations is the reason for this noise.

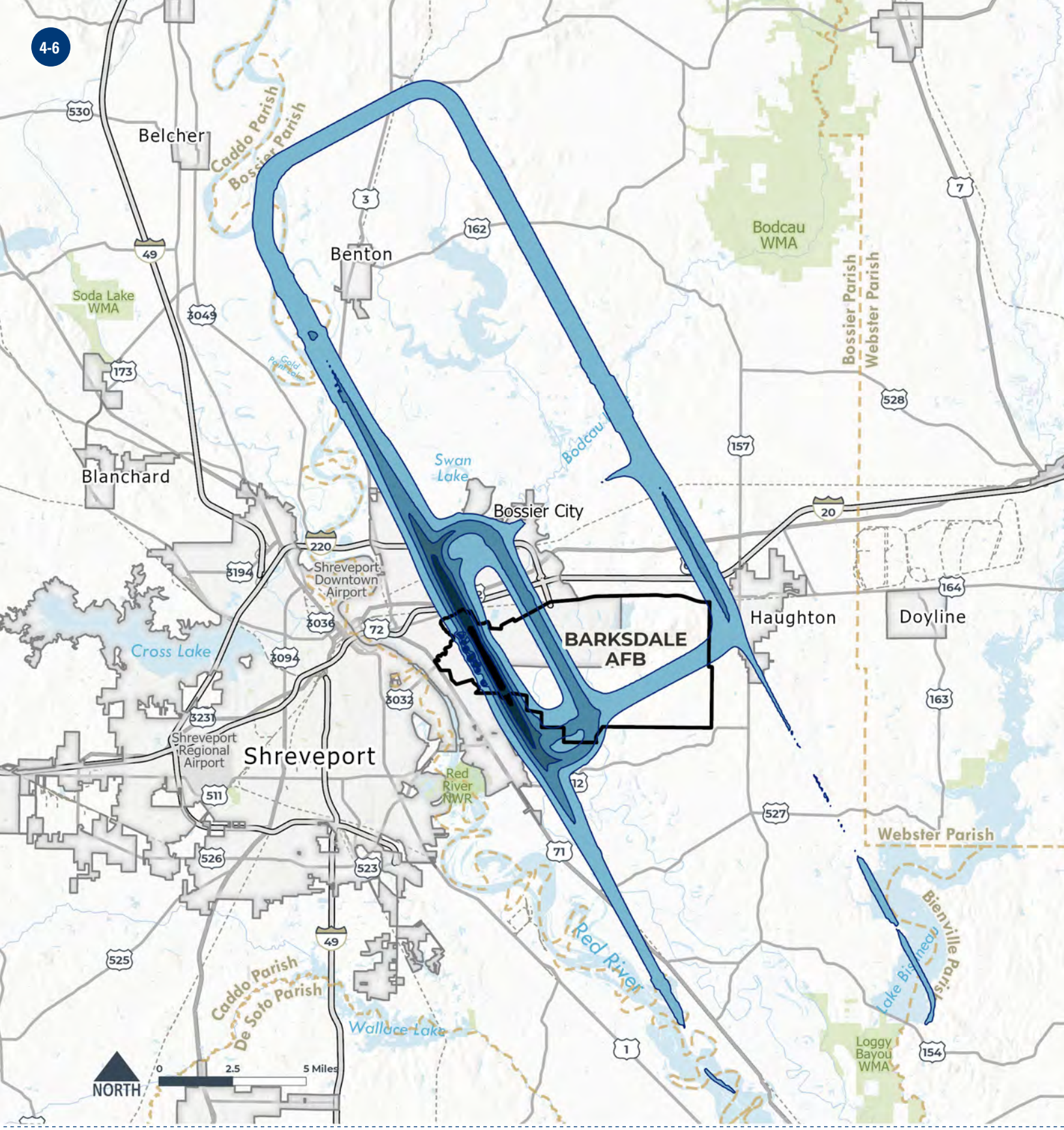


FIGURE 4-2
2025 Barksdale AFB AICUZ Noise Contours

Focusing on the radar pattern (pattern flight tracks shown in Figure 3-3), the B-52s perform an average of 5.3 radar patterns per day (1,936 per year). This frequency of radar patterns, combined with the loudness of the B-52 raises the DNL values above 65 dB DNL for most of the areas underneath the radar pattern ground track that extends north through Bossier City, extending along the Caddo/Bossier Parish boundary into unincorporated Bossier Parish. The radar pattern then continues further north beyond the Town of Benton where it then turns right and then right again in Bossier Parish heading back southeast toward the Town of Haughton, LA. The 65 dB DNL contour is maintained this entire way. Northwest of the Town of Haughton there is a small area where the dB DNL increases to 70–74 dB DNL. This is due to aircraft changes in power and altitude as it maneuvers in the radar pattern and prepares for approach back to Barksdale AFB.

As shown in Figure 4-2, south of the airfield does not have a continuous 65 dB DNL contour underneath the radar pattern. The broken up or non-continuous nature of the contour in this area means that the noise does not reach 65 dB DNL in those areas, however, it does not mean there is not aircraft noise in those areas. Figure 4-3 shows a 50–90 dB DNL noise gradient of the 2025 Barksdale AFB AICUZ noise contours. As shown, there is noise underneath the radar pattern south of the field; it just doesn't quite reach 65 dB DNL contour level. The difference between the radar pattern north of the field vs. south of the field is primarily due to the runway utilization (shown above in Table 3-2) at Barksdale AFB.

Inclusion of planning noise contours in the AICUZ study does not eliminate the need to conduct appropriate environmental analysis if an assumption used in the development of the planning contours becomes a proposed Air Force action. While the assumptions are logical, changes to certain factors supporting these assumptions are highly likely. When significant changes in the projected mission or operational tempo warrant it, the AICUZ study will again be updated.

As indicated above, Figure 4-3 shows the Barksdale AFB noise contours with color gradient shading, which depicts how Barksdale AFB noise propagates.

Figure 4-4 shows a comparison of the 2025 AICUZ and the 2008 AICUZ noise contours. As shown in the comparison, the most noteworthy change from the 2008 contours to the 2025 contours is that the 65 DNL contours extends much further east and primarily follow the radar pattern flight tracks. While there was a considerable amount of noise under the 2008 radar pattern, it did not rise to the level of the 65 DNL contour in this more eastern area. Other than this, the contours from 2008 and 2025 are relatively similar.

Table 4-3 presents the off-installation land acreage and estimated population within the planning contours. The population estimates are for the year 2023 and are derived from U.S. Census 2020 data. A geometric proportion method was used to determine the estimated population within the contour bands. This method assigns population based on the portion of a census block that falls within the contour. The population across census blocks is assumed to be evenly distributed.

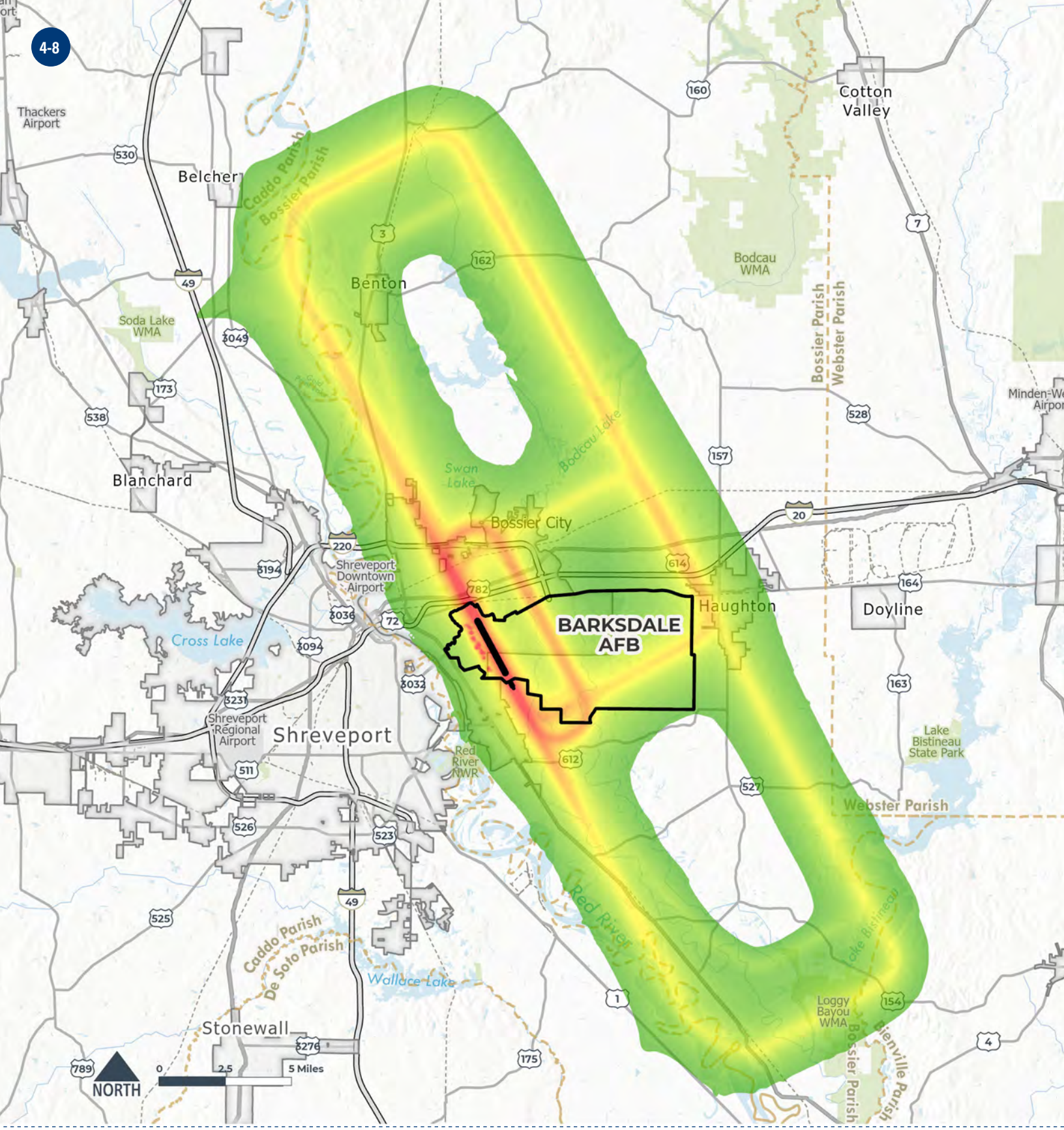
Approximately 18,000 people are exposed to noise at or above 65 dB DNL across the 21,000-acre off-base area; over 98 percent of this population resides within the 65–69 dB DNL and 70–74 dB DNL noise zones. The 75–79 dB DNL noise zone contains around 1,350 acres of off-base land and only 162 estimated residents. There are no residences within the 80+ dB DNL noise zone, which overlies 656 acres of off-base land (See Table 4-3).

TABLE 4-3

Off-installation Land Area and Estimated Off-installation Population within Noise Zones for the 2025 AICUZ Noise Contours

NOISE ZONE (dB DNL)	ACRES	ESTIMATED POPULATION
65-69	27,462	12,442
70-74	5,756	5,397
75-79	1,348	162
80-84	656	143
Total (65+)	**35,222**	**18,144**

Source: ESRI Updated Demographics 2023; U.S. Census Bureau, 2016-2020 American Community Survey 5-year Estimates



Runway

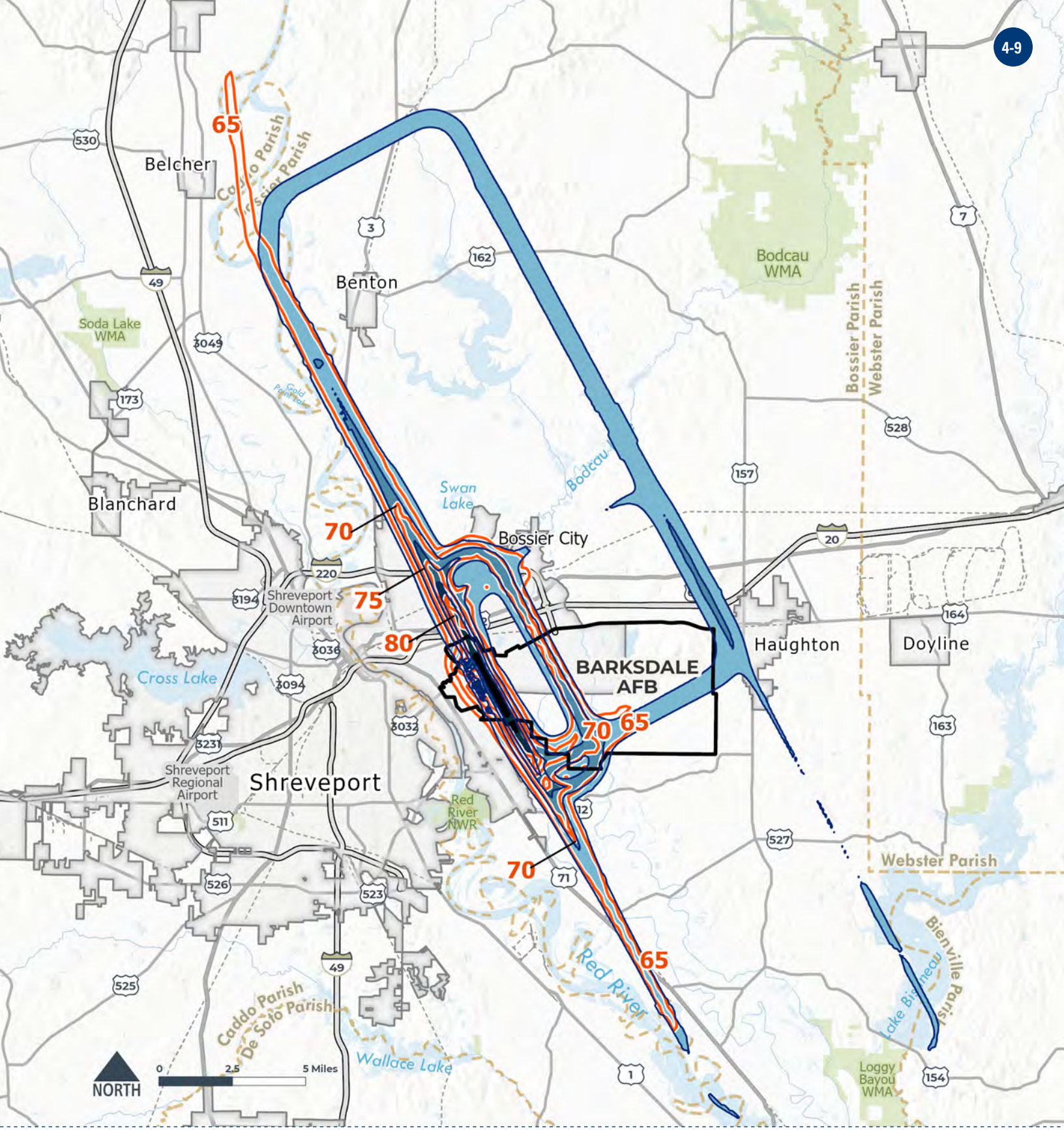
Barksdale AFB

dB DNL

50 80+

FIGURE 4-3

2025 AICUZ Noise Contour Gradient Shading



2025 AICUZ Contour (dB)

- 65-69
- 70-74
- 75-79
- 80 and Greater

2009 AICUZ Contour (dB)

Runway

Barksdale AFB

FIGURE 4-4
Comparison of 2008 and 2025 AICUZ Noise Contours

4.5 NOISE ABATEMENT

The Air Force recognizes that sound from military operations may cause concern for people living near military installations. For this reason, the Air Force has established a Noise Program aimed at reducing and controlling the emission of noise and vibrations associated with the use of military aircraft, weapon systems, and munitions while maintaining operational requirements. The result is the implementation of various strategies, techniques, and procedures documented under the Barksdale AFB Noise Abatement Program. These implementations are aimed at protecting the installation's neighbors and structures from the harmful effects of noise and vibrations.

Noise abatement at Barksdale AFB is the responsibility of all aircrews operating at the base and all base agencies in direct support of flying operations. With respect to noise abatement, MOC personnel will minimize aircraft engine runs from 2200L to 0600L. ATCT WS may terminate engine runs if engine noise interferes with ATC instructions.

The 2d Bomb Wing Operations Group Commander (2 OG/CC) is the approval authority for all quiet hours at Barksdale AFB. Quiet hours are divided into the following categories:

Level One

- No engine starts or engine runs on the ramp or test stands.
- No aircraft will be allowed to taxi along the Main Parallel Taxi Lane.
- No traffic pattern activity, including full-stop arrivals and departures (unless specified in the request).

Level Two

- No engine starts or engine runs on the ramp or sites impacting the "quiet zone" as defined by the requester.
- No aircraft may taxi along the parallel taxiway without 2 OG/CC approval.
- No traffic pattern operations including full-stops without 2 OG/CC approval.

Level Three

- No engine starts or engine runs on spots affecting the "quiet zone" as defined in the request.
- No aircraft may taxi along the main parallel taxiway within the "quiet zone" as defined by the requester.
- Taxi and traffic pattern operations are authorized, to include full stop landings.

Level Four

- No engine starts or runs on spots affecting the quiet zone.
- Taxiing aircraft are not restricted.

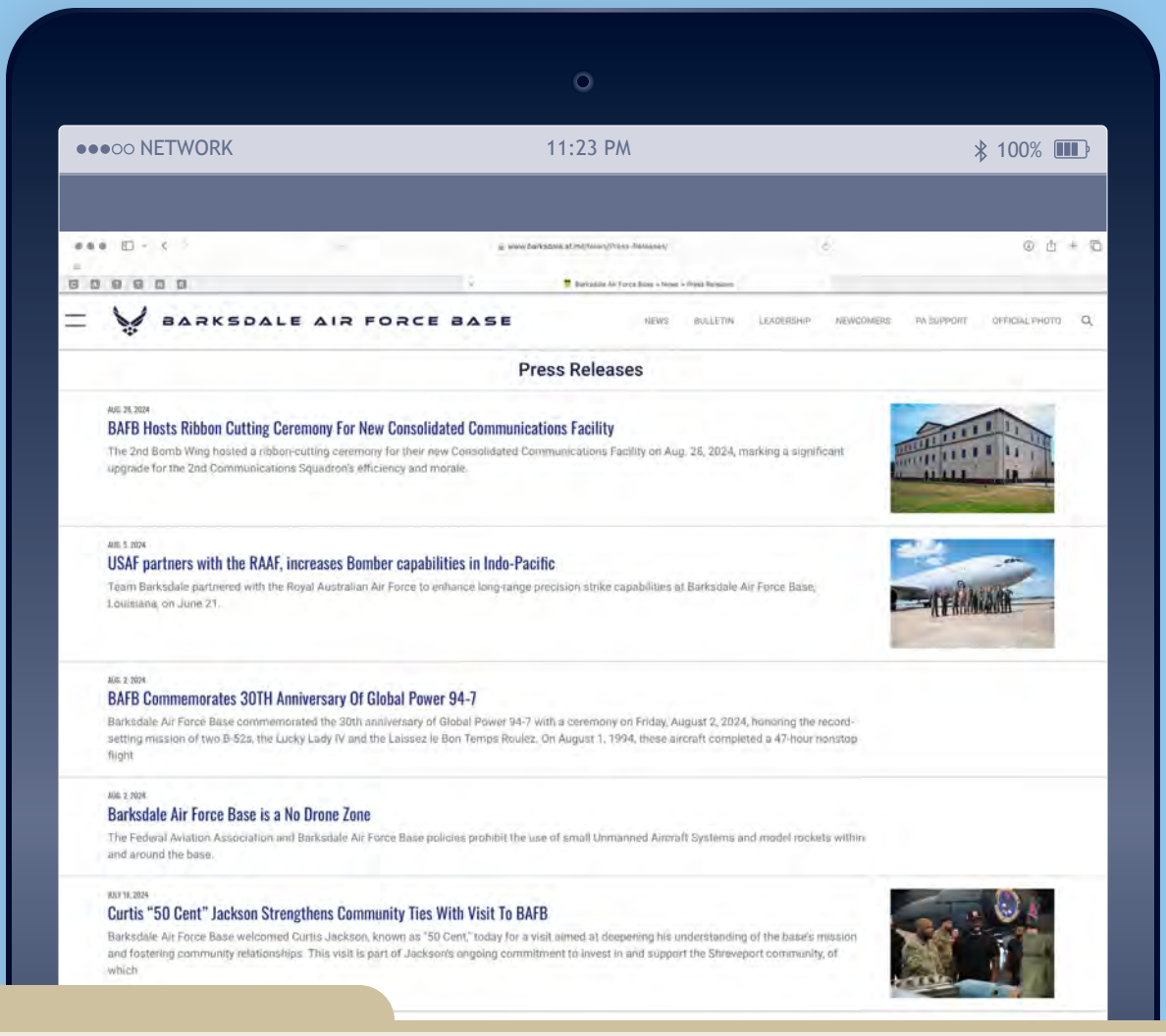
4.6 NOISE COMPLAINTS

At times, military operations may generate noise complaints. The Air Force evaluates all noise complaints to ensure future operations, when possible, do not generate unacceptable noise.

Barksdale AFB has historically experienced a relatively low number of noise complaints due to its noise abatement procedures and distance from major population centers. Noise complaints that they have gotten in the past 5 years come from the flight track on final approach and over south of Shreveport regional airport. These complaints are very infrequent.

The Public Affairs (PA) office at Barksdale AFB manages responses to noise complaints. As mentioned, the base receives very few complaints on an annual basis and consistently coordinates with the Airfield Manager to address any complaints.

Barksdale AFB noise complaint procedures starts when an individual has a noise complaint. Barksdale AFB PA staff receiving the call annotates the information on the Barksdale AFB Noise Complaint Form, trying to get as much information as possible to completely fill out each block on the form in as much detail as possible. PA then works with Airspace Management to determine the validity of the complaint and works to follow up within 5 work days for a response to the complaint.



The response is coordinated, as necessary, with other Barksdale AFB commands and then contact with the individual who lodged the complaint is made to provide them with an official response as to whether it was related to Barksdale AFB aircraft or not.

All noise complaints are evaluated to ensure future operations, where possible, do not generate unacceptable noise, and to provide results from noise investigations back to the complainant as soon as practical. Citizens are encouraged to contact **2d Bomb Wing Public Affairs with any noise complaints. To report an issue, please call (318)-456-1015.**

Contact us.

WEB
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5. COMMUNITY AND AIRCRAFT SAFETY

Community and aircraft safety is paramount to the Air Force and is a shared responsibility between Barksdale AFB and surrounding communities, with each playing a vital role in its success. Cooperation between the Air Force and the community results in strategic and mutually beneficial land use planning and development. As such, the Air Force has established a flight safety program and has designated areas of accident potential around its air installations to assist in preserving the health, safety, and welfare of residents living near its airfields. This AICUZ study provides the information needed, in part, to reach this shared safety goal.

Identifying safety issues assists the community in encouraging land uses compatible with airfield operations. To this end, as part of the AICUZ Program, the Air Force defines areas of accident potential, imaginary surfaces, and hazards to aircraft flight.

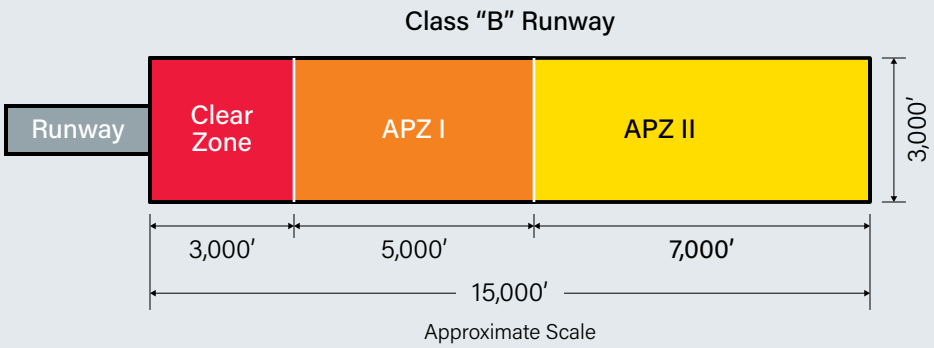
5.1 CLEAR ZONES AND ACCIDENT POTENTIAL ZONES

In the 1970s and 1980s, the military conducted studies of historical accidents and operations data throughout the military. The studies showed that most aircraft mishaps occur on or near the runway, diminishing in likelihood with distance from the runway. Based on these studies, the DoD identified Clear Zones (CZs) and Accident Potential Zones (APZs) as areas where an aircraft accident is most likely to occur if an accident were to take place; however, it should be noted that CZs and APZs are not predictors of accidents. The studies identified the following three areas for which planners should consider density and land use restrictions because of the increased potential for accidents: the Clear Zone, the Accident Potential Zone I, and the Accident Potential Zone II.

The CZs and APZs for Class B runways are described below and are depicted on Figure 5-1 based off *DoDI 4165.57, Appendix 3A:*

- **CZ.** At the end of all active DoD runways is an area known as the "Clear Zone." The CZ for Class B runways has an area of 3,000 ft. x 3,000 ft. square from the end of the runway along the extended runway centerline. All active runways have CZs and should be owned or controlled by the installation and remain undeveloped.
- **APZ I.** Beyond the CZ is APZ I. APZ I is 3,000 feet in width and 5,000 feet in length along the extended runway centerline.
- **APZ II.** APZ II is the rectangular area beyond APZ I. APZ II is 3,000 feet in width by 7,000 feet in length along the extended runway centerline.

FIGURE 5-1
Typical Class "B" Runway Clear Zones and Accident Potential Zones



Within the CZ, the only compatible land uses with military aircraft operations and defense missions are undeveloped lands and certain right-of-way and agricultural uses. For this reason, it is the Air Force's policy, where possible, to acquire real property interests in land within the CZ to ensure incompatible development does not occur. Within APZ I and APZ II, a variety of land uses are compatible; however, higher density uses (e.g., schools, apartments, churches) and more intense uses (e.g., office buildings, strip malls) should be limited and, if possible, prevented because of the greater safety risk in these areas. Chapter 6 discusses land use and recommendations for promoting compatible growth and addressing incompatibility issues within APZs for each runway.

Barksdale AFB has a single Class B runway measuring 11,700 feet long and 300 feet wide. It is designated with the markings 15 and 33. The 2025 AICUZ CZs and APZs have not changed since the 2008 AICUZ report.

Table 5-1 tabulates the off-base land acreage and estimated population within the CZs and APZs. Approximately 86 acres of the CZs extend outside of the installation property primarily off of the southern end of the runways into a portion of unincorporated Bossier Parish, but there are no residents living within the CZ in this area. A very small area (approximately two acres) of the CZ to the north extends outside the base boundary.

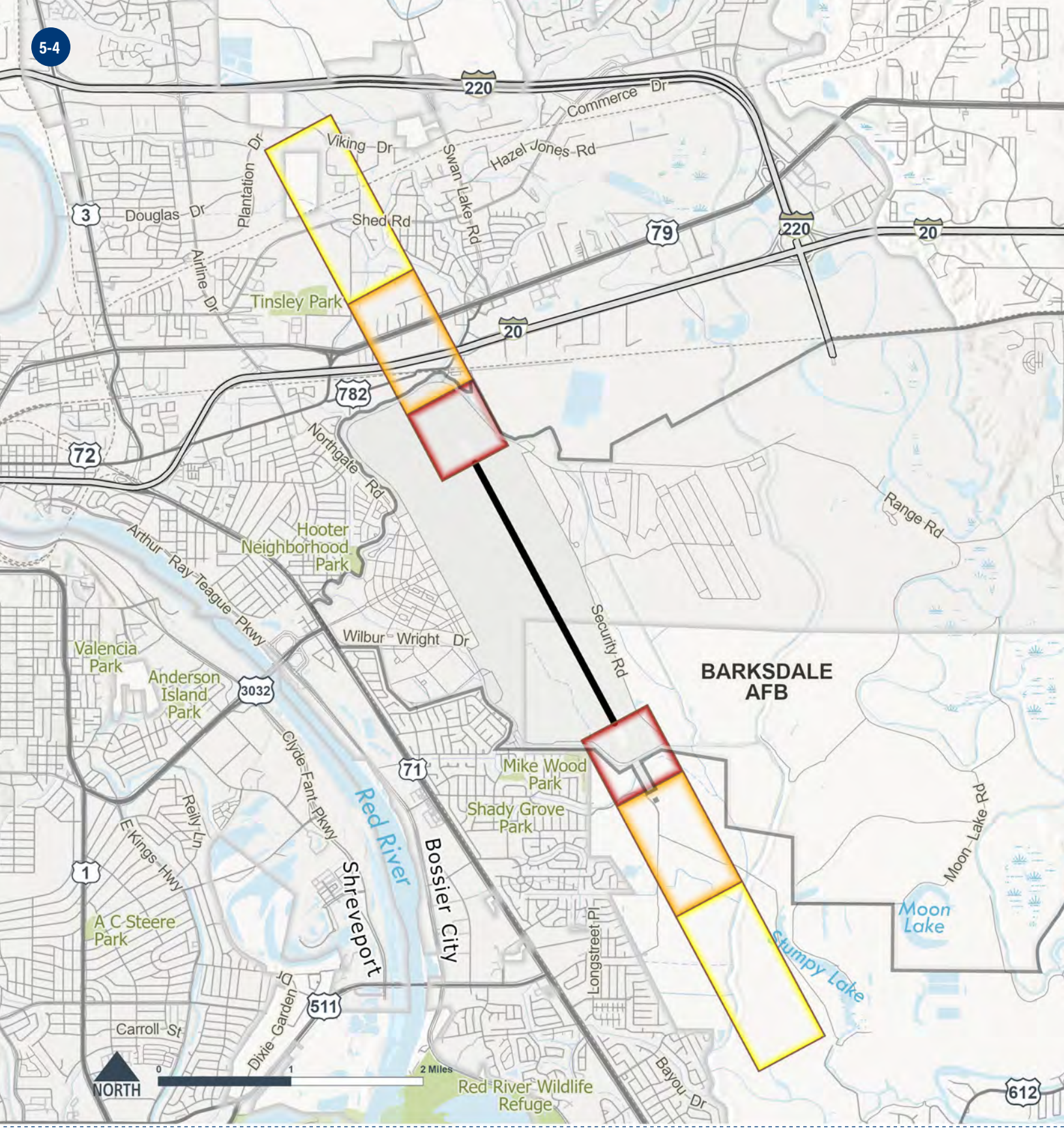
There are an estimated 177 people located within the 644 acres of APZ I extending beyond the base property boundary. The APZ falls outside of Barksdale AFB within portions of Bossier City to the northwest in what are mainly heavily commercial areas and in agricultural areas within unincorporated Bossier Parish to the southeast of the runways. Approximately 173 people are located within the 964 off-installation acres of the APZ II. The entirety of the areas and population within APZ II are similarly outside of the base boundary in unincorporated Bossier Parish to on the southeast and in Bossier City to the northwest of Barksdale AFB. In this area to the northwest, APZ II skirts a large residential area to the east (residences along Norris Drive) but otherwise is primarily characterized by Industrial land use.

TABLE 5-1

Off-installation Land Area and Off-installation Estimated Population within the Clear Zones and Accident Potential Zones

FIXED WING ZONE	ACRES	POPULATION
CZ	86	0
APZ I	644	177
APZ II	964	173
Total	**1,694**	**350**

Source: ESRI Updated Demographics 2023; U.S. Census Bureau, 2016-2020 American Community Survey 5-year Estimates.



Clear Zone (CZ)
Accident Potential Zone I (APZ I)
Accident Potential Zone II (APZ II)
Runway
Barksdale AFB

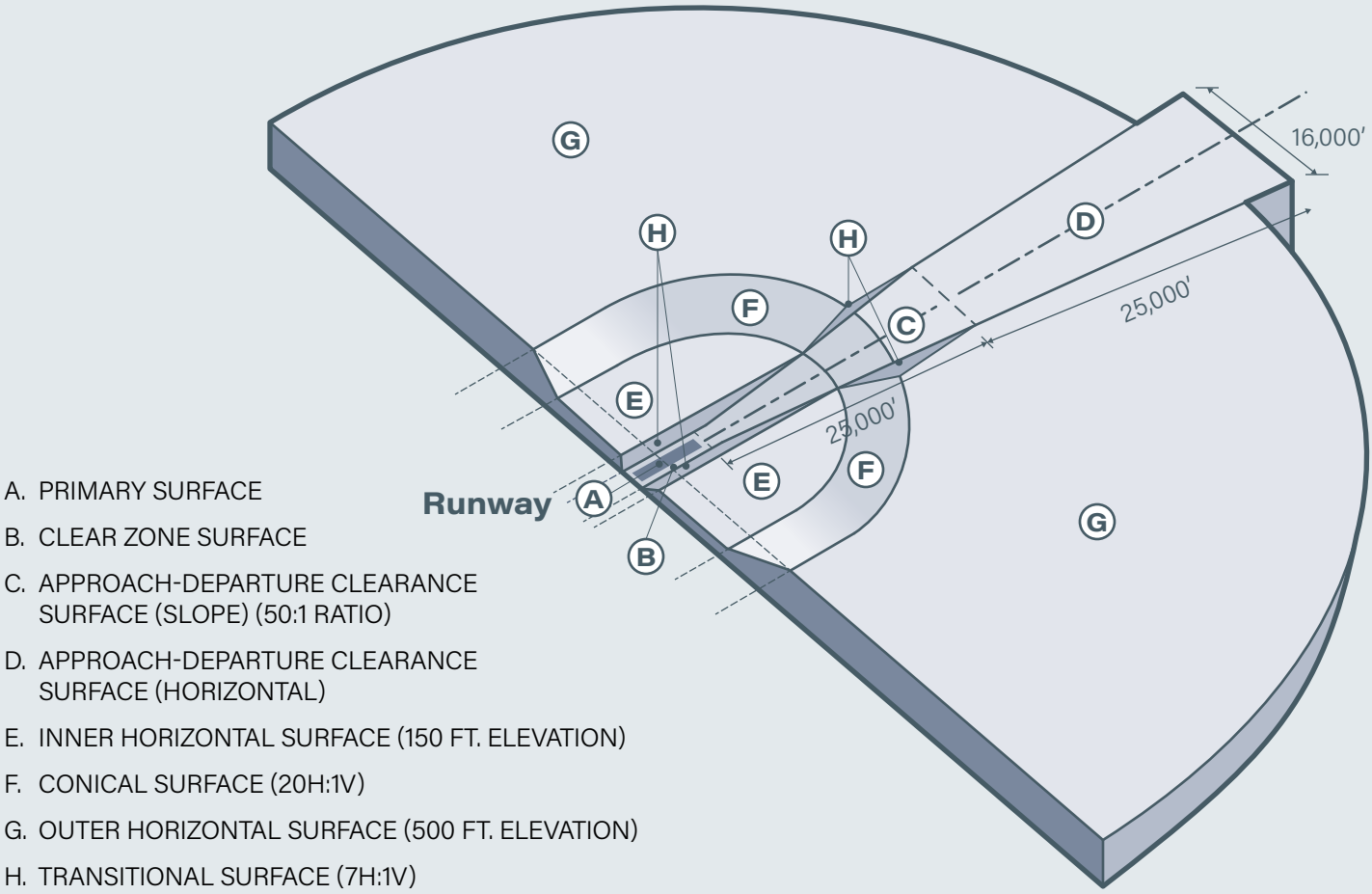
FIGURE 5-2
2025 AICUZ Clear Zones and Accident Potential Zones for Barksdale AFB

5.2 IMAGINARY SURFACES

The DoD and Federal Aviation Administration (FAA) identify a complex series of imaginary planes and transition surfaces that together define the airspace needed to remain free of obstructions around an airfield. Imaginary surfaces collectively form a "bowl" around the airfield to ensure safe flight approaches, departures, and pattern operations. Potential obstructions could include natural terrain and man-made features such as buildings, towers, poles, wind turbines, cell towers, and other vertical obstructions that could impair airspace navigation.

There are different imaginary surfaces for fixed-wing runways (depending on the types of aircraft supported by the runway) and rotary-wing runways/helipads. Figure 5-3 depicts the imaginary surfaces for typical Class B fixed-wing runways like those at Barksdale AFB. Table 5-2 provides brief descriptions of each of these surfaces. Figure 5-4 depicts the actual runway airspace imaginary surfaces specific to Barksdale AFB's Class B runway. In general, the Air Force does not permit aboveground structures on the primary surface (located on base), and height restrictions apply to transitional surfaces and approach and departure surfaces. Height restrictions are more stringent for areas closer to the runway and flight paths.

FIGURE 5-3
Imaginary Surfaces and Transition Planes for Class B Fixed-Wing Runways



A. PRIMARY SURFACE
B. CLEAR ZONE SURFACE
C. APPROACH-DEPARTURE CLEARANCE SURFACE (SLOPE) (50:1 RATIO)
D. APPROACH-DEPARTURE CLEARANCE SURFACE (HORIZONTAL)
E. INNER HORIZONTAL SURFACE (150 FT. ELEVATION)
F. CONICAL SURFACE (20H:1V)
G. OUTER HORIZONTAL SURFACE (500 FT. ELEVATION)
H. TRANSITIONAL SURFACE (7H:1V)

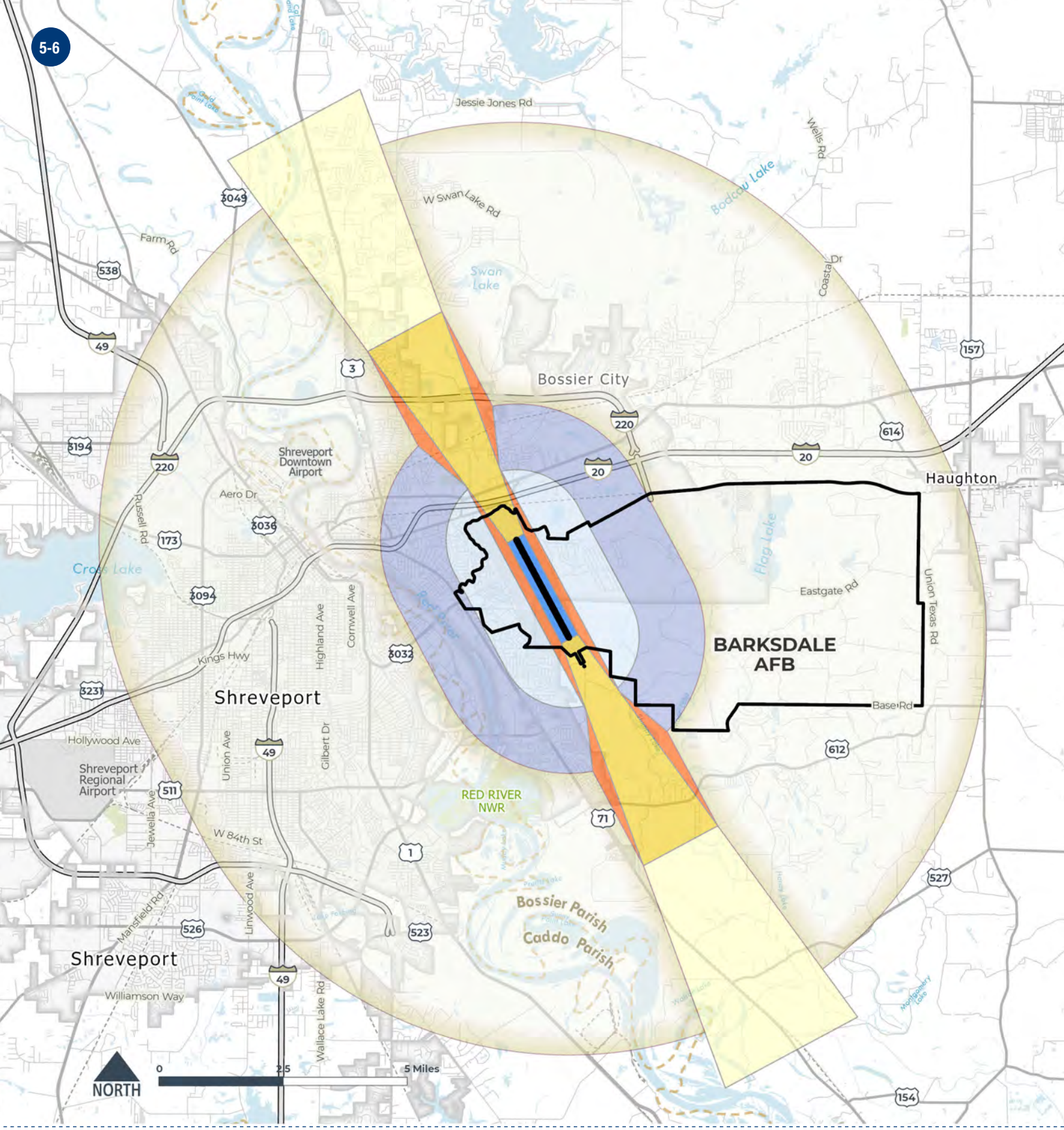


FIGURE 5-4

Imaginary Surfaces and Transition Planes for Barksdale AFB

TABLE 5-2
Descriptions of Imaginary Surfaces for Military Airfields with Class B Runways

Primary Surface	An imaginary surface symmetrically centered on the runway, extending 200 feet beyond each runway end that defines the limits of the obstruction clearance requirements near the landing area. The width of the primary surface is 2,000 feet, or 1,000 feet on each side of the runway centerline.
Approach-Departure Clearance Surface	An imaginary surface symmetrically centered on the extended runway centerline, beginning as an inclined plane (glide angle) at the end of the primary surface (200 feet beyond each end of the runway), and extending for 50,000 feet. The slope of the approach-departure clearance surface is 50:1 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 starting point. The width of this surface at the runway end is 2,000 feet, flaring uniformly to a width of 16,000 feet at the end.
Inner Horizontal Surface	This imaginary surface is an oval plane at a height of 150 feet above the established airfield elevation. The inner boundary intersects with the approach-departure clearance surface and the transitional surface. The outer boundary is formed by scribing arcs with a radius of 7,500 feet from the centerline of each runway end and interconnecting these arcs with tangents.
Conical Surface	An inclined imaginary 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. The conical surface connects the inner and outer horizontal surfaces.
Outer Horizontal Surface	An imaginary surface that is located 500 feet above the established airfield elevation and extends outward from the outer periphery of the conical surface for a horizontal distance of 30,000 feet.
Transitional Surface	An imaginary surface that extends outward and upward at an angle to the runway centerline and extended runway centerline at a slope of 7:1. The transitional surface connects the primary and the approach-departure clearance surfaces to the inner horizontal, the conical, and the outer horizontal surfaces.

5.3 HAZARDS TO AIRCRAFT FLIGHT ZONE

Certain land uses and activities pose potential hazards to flight. To ensure land uses and activities do not threaten pilot and citizen safety, the Air Force has identified a Hazards to Aircraft Flight Zone (HAFZ). The HAFZ boundary may change with the encroachment issue at hand, but at a minimum, the HAFZ encompasses the imaginary surfaces. For instance, issues related to bird/wildlife aircraft strike hazards may follow natural boundaries, encompass local bodies of water, and extend along flight paths. Unlike noise zones and safety zones, the HAFZ does not have recommended land use compatibility guidelines. Instead, it is a consultation zone recommending that project applicants and local planning bodies consult with the Air Force to ensure the project concept is compatible with Air Force operations. These land use and activity compatibility considerations include:

Height

Tall objects can pose significant hazards to flight operations or interfere with navigational equipment (including radar). City/county agencies involved with approvals of permits for construction should require developers to submit calculations showing that projects meet the height restriction criteria of 14 Code of Federal Regulations (CFR) 77.17 for the specific airfield described in the AICUZ study. City and county agencies may also consider requiring a "Determination of No Hazard" issued by the FAA for any tall objects within this zone.

Construction cranes may be present in the municipalities near Barksdale AFB due to new development projects. The City and Parish will notify Barksdale AFB of any temporary vertical obstructions like the cranes within the HAFZ.

It is important to maintain communication between localities and Barksdale AFB about vertical obstructions outside of the HAFZ. The region's airspace, low-level military airspace, military training routes, and special use airspace, are crucial to conducting Barksdale AFB's missions in support of training and readiness.

Wind turbines are tall enough to encroach upon low-level flying routes. Wind turbines introduce man-made changes to an established range environment, potentially diminishing the ability to conduct required operations and training and can impact aircraft subsystems with respect to the radio frequency, electro-optical, and infrared spectrum. Wind turbines cause clutter impacts on ground-based and airborne radar systems, radio interference, and overflight restrictions. While wind turbines are not expected to be planned and constructed within the areas around Barksdale AFB, there are areas in the vicinity of Barksdale AFB that are currently undeveloped or agricultural in nature that could be viable locations for wind energy developments in the future. Localities should notify the DoD Siting Clearinghouse and coordinate with Barksdale AFB as soon as possible whenever wind, solar, transmission, or other alternative energy projects are proposed in the region. There are no permanent vertical obstructions that pose an issue to flight operations around Barksdale AFB.

Visual Interference

Industrial or agricultural sources of smoke, dust, and steam in the airfield vicinity can obstruct a pilot's vision during takeoff, landing, or other periods of low-altitude flight. Close coordination between the installation and landowners can often mitigate these concerns. For example, irrigating before plowing can greatly reduce dust dispersal. There are no current issues with smoke, dust, or steam in the vicinity of the Barksdale AFB airfield.

Light Emissions

Bright lights, either direct or reflected, in the airfield vicinity can impair a pilot's vision, especially at night. A sudden flash from a bright light causes a spot or "halo" to remain at the center of the visual field for a few seconds or more, rendering a person virtually blind to all other visual input. This is particularly dangerous for pilots at night when the flash can diminish the eye's adaptation to darkness. The eyes partially recover from this adaptation in a matter of minutes, but full adaptation typically requires 40 to 45 minutes. Specific examples of light emissions that can interfere with the safety of nearby aviation operations include:

- **Lasers that emit in the visible spectrum,** which can be potentially harmful to a pilot's vision during both day and night.
- **The increasing use of energy-efficient LED lighting,** which poses potential conflicts in areas where pilots use night vision goggles (NVGs). NVGs can exaggerate the brightness of these lights, interfering with pilot vision.
- **The use of red LED lights to mark obstructions,** which can produce an unintended safety consequence because red LED lights are not visible on most NVG models, rendering them invisible to NVG users in the area.

There have not been any reported recent incidents of light emissions that have affected pilot safety at Barksdale AFB.

Bird/Wildlife Aircraft Strike Hazard (BASH)

Wildlife represents a significant hazard to flight operations. Birds are drawn to different habitat types found in the airfield environment, including hedges, grass, brush, forest, water, and even the warm pavement of the runways. Due to the high aircraft speeds, collisions with wildlife can happen with considerable force. Although most bird and animal strikes do not result in crashes, they cause structural and mechanical damage to aircraft as well as loss of flight time.

Most aircraft collisions occur below 2,000 feet AGL. To reduce the potential of a BASH incident, the Air Force recommends that land uses that attract birds not be located near installations with active air operations. These land uses include:

- Waste disposal operations
- Wastewater treatment facilities
- Transfer stations
- Landfills
- Golf courses
- Wetlands
- Stormwater ponds
- Dredge disposal sites

Birds, in search of food or rodents, will flock to landfills, increasing the probability of BASH occurrences near these facilities. Landfill operators can use design modifications to reduce the attractiveness of these types of land uses to birds and other wildlife. There is a regional landfill located northwest of the base, but there have not been any recent BASH-related occurrences associated with the site.

Barksdale AFB Wing Safety, CE, Natural Resources, and the BASH Manager, which is a USDA-managed position at Barksdale AFB, mitigate any on-base BASH-related concerns using a variety of strategies including removal and depredation. Some of these issues and strategies include the following:

- **Barksdale AFB experiences a lot of diverse wildlife in the vicinity of Barksdale AFB, including birds, coyotes, skunks, and raccoons around the base.** Birds are one of the main BASH concerns at the base. The types of birds change from season to season. Spring and fall have the most birds. The base gets a large flock of cowbirds in the hundreds of thousands every evening in the fall. Because the base also has an abundance of bermuda grass it helps to deter birds. In addition, a recent drainage project reduced the amount of standing water on base decreased the number of waterbirds present on base.
- **To reduce bird strikes, Barksdale AFB uses propane cannons, pyrotechnics, shotguns, snares, and predator calls.** The installation also has multiple individuals qualified with a shotgun in case needed. Airfield management can use deterrence strategies but only BASH employees can shoot.
- In addition, the base employs an innovative strategy of not operating aircraft if the moon illumination is above 60%. When the moon illumination is above 60%, there can be up to two or three strikes per night. The installation researched and implemented this strategy internally and will include it in the next revision of the plan.

Other issues strategies implemented by the BASH team includes:

- The Red River horse racing track and the east side housing area attract a lot of vultures. The reason for this is unknown but this land use is monitored closely for BASH management.
- BASH team installed over 1,400 feet of fence to deter coyotes.
- Barksdale AFB's BASH manager—a USDA certified biologist—also helps manage BASH issues at two local airports which broadly yields benefits for Barksdale AFB.

Radio Frequency/ Electromagnetic Interference

The American National Standards Institute defines electromagnetic interference (EMI) as any electromagnetic disturbance that interrupts, obstructs, or otherwise degrades or limits the effective performance of electronics/electrical equipment. EMI can be induced intentionally, as in forms of electronic warfare, or unintentionally, because of spurious emissions and responses, such as high-tension line leakage and industrial machinery. In addition, EMI may be caused by atmospheric phenomena, such as lightning or precipitation static.

New generations of military aircraft are highly dependent on complex electronic systems for navigation and critical flight and mission-related functions. Consequently, communities should use care when siting any activities that create EMI. Many sources are low-level emitters of EMI but, when combined, have a compounded effect. EMI also affects consumer devices such as cell phones, FM radios, television reception, and garage door openers. In some cases, the source of interference occurs when consumer electronics use frequencies set aside for military use.

There have been no recent reported issues with EMI at Barksdale AFB.

Midair Collision Avoidance (MACA)

Barksdale AFB conducts MACA visits throughout the region to talk about local procedures and discuss the local airfield environment. These visits make Barksdale AFB aware of any airport within 50 miles that should be in their consideration. There are about 50 airports within 50 miles of the base.

Drones/Unmanned Aircraft Systems (UAS)

The use of drones near military airfields poses a serious flight safety hazard due to the potential for a mid-air collision between military aircraft and small- to medium-sized drones. The FAA maintains specific guidance about where operators can fly drones. Currently, non-DoD drone operations are not permitted within certain zones surrounding military bases. Additional restrictions are in place around airports, sports stadiums, and security sensitive areas. For more information on drone use in and around DoD airfields, visit the FAA's website at: www.faa.gov/uas.

In 2015, the FAA created a new statutory requirement that applies to all privately owned, unmanned aircraft that weigh more than 55 pounds. The FAA's goal is to allow the "opportunity to educate new aircraft users before they fly, so that they know the airspace rules and understand that they are ultimately accountable" for incidents that may occur due to their aircraft.

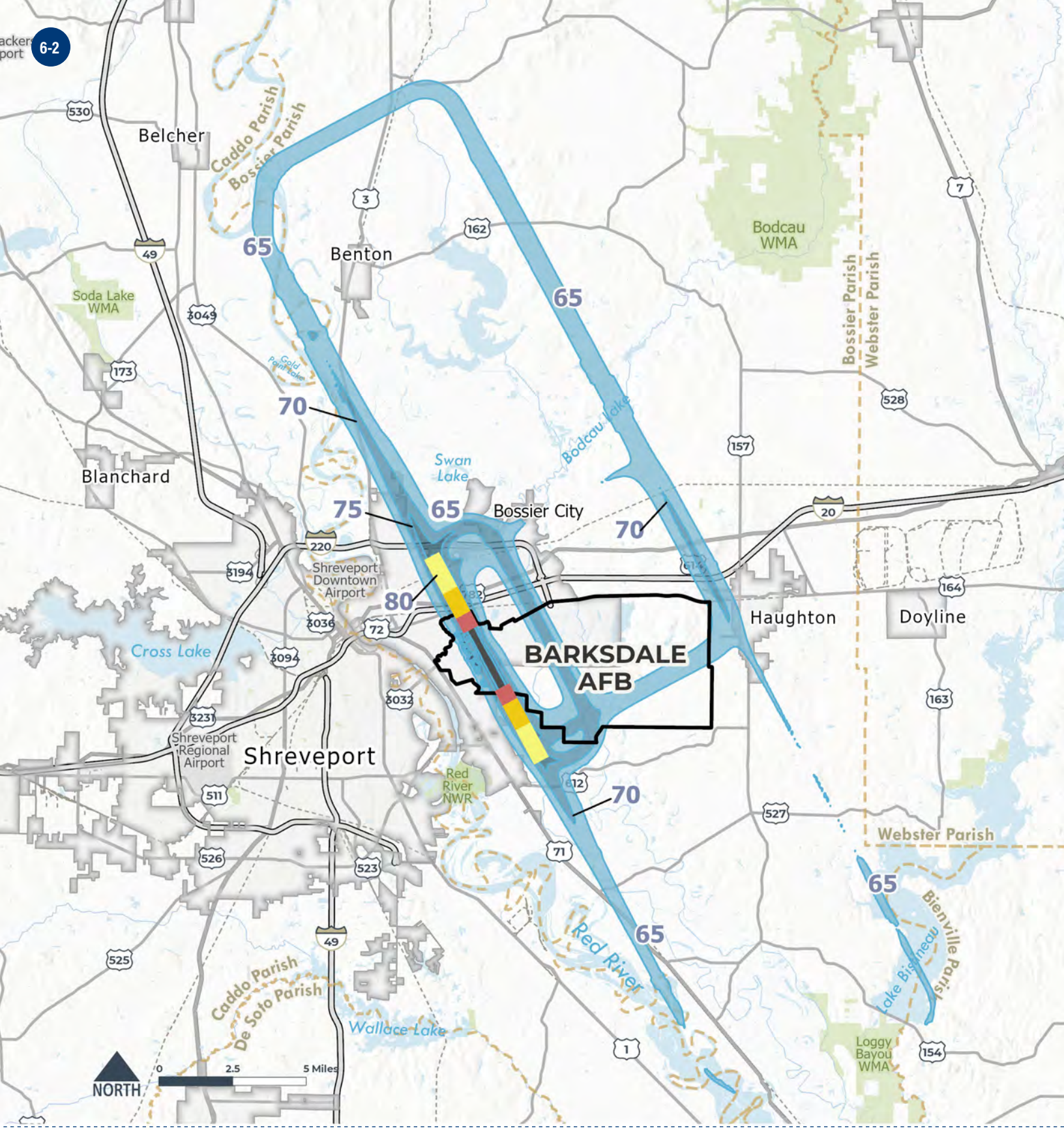
Presently, users are required to register aircraft meeting the requirements in a national database. The registration is web-based, and registrants will be required to provide a nominal fee of $5 per application. This registration will be valid for a period not to exceed three years.

The FAA distinguishes between recreational UAS flyers and commercial operators and has a process for operation of these aircraft. Due to the ever-changing environment, drone operators should visit the FAA website (provided above) to ensure they have the most up-to-date guidance on how to operate legally and safely.

Barksdale AFB is a no-drone fly area. Commercial drones occasionally come up near the gate but air traffic control works to manage this and do their best to be accommodating while enforcing their no drone policy. There have been no incidents with drones at Barksdale AFB. Base-specific drone policy is the Federal Aviation Administration Certificate of Authorization.

6. LAND USE COMPATIBILITY ANALYSIS

CZs, APZs, and noise zones, shown in **Figure 6-1,** make up the AICUZ footprint for an air installation. HAFZ is also part of the AICUZ footprint and is shown in **Figure 5-4** in the previous chapter. This footprint defines the minimum recommended area where land use controls are needed and requested to enhance the health, safety, and welfare of those living or working near a military airfield while preserving the flying mission. The AICUZ footprint, combined with the guidance and recommendations set forth in the AICUZ study, are the fundamental tools necessary for the planning process to achieve overall land use compatibility. The Air Force recommends that local and regional governments adopt land use controls described in this chapter for areas within the AICUZ noise zones, CZs, APZs, and HAFZ into planning studies, regulations, and processes to promote compatible development around installations (i.e., overlay zones, land use controls, etc.).



Clear Zone (CZ)
Accident Potential Zone I (APZ-I)
Accident Potential Zone II (APZ-II)

2025 AICUZ Contour (dB)
65-69
70-74
75-79
80 and Greater

Runway
Barksdale AFB

FIGURE 6-1
2025 Barksdale AFB Composite AICUZ Footprint

6.1 LAND USE COMPATIBILITY GUIDELINES AND CLASSIFICATIONS

To establish long-term compatibility for lands within the vicinity of military air installations, the DoD has created land use compatibility recommendations based on the *Federal Highway Administration's (FHWA) Standard Land Use Coding Manual (SLUCM)* and the *Federal Interagency Committee on Urban Noise's "Guidelines for Considering Noise in Land Use Planning and Control."* These guidelines are used by DoD personnel for on-installation planning and for engaging with the local community to foster compatible land use development off the installation. Table A-1 of Appendix A shows the suggested land use compatibility guidelines within the CZs and APZs. Table A-2 of Appendix A provides land use compatibility recommendations within aircraft noise zones. Table A-3 of Appendix A provides land use compatibility recommendations for explosives. Section 6.4 presents the compatibility analysis and concerns within noise zones and APZs associated with Barksdale AFB.

6.2 PLANNING AUTHORITIES, STAKEHOLDERS, AND POLICIES

This section presents information for each governing body that has land use jurisdictions near Barksdale AFB, including descriptions of existing and future land uses, relevant stakeholder groups, and existing compatible planning policies and regulations. Figure 6-2 shows the locations of jurisdictions within the vicinity of Barksdale AFB.

State of Louisiana Land Use Planning and Zoning

In the State of Louisiana, there is an absence of statutory standards, guidelines, and other external drivers for planning and the extent to which local governments regulate land use varies widely among local jurisdictions.

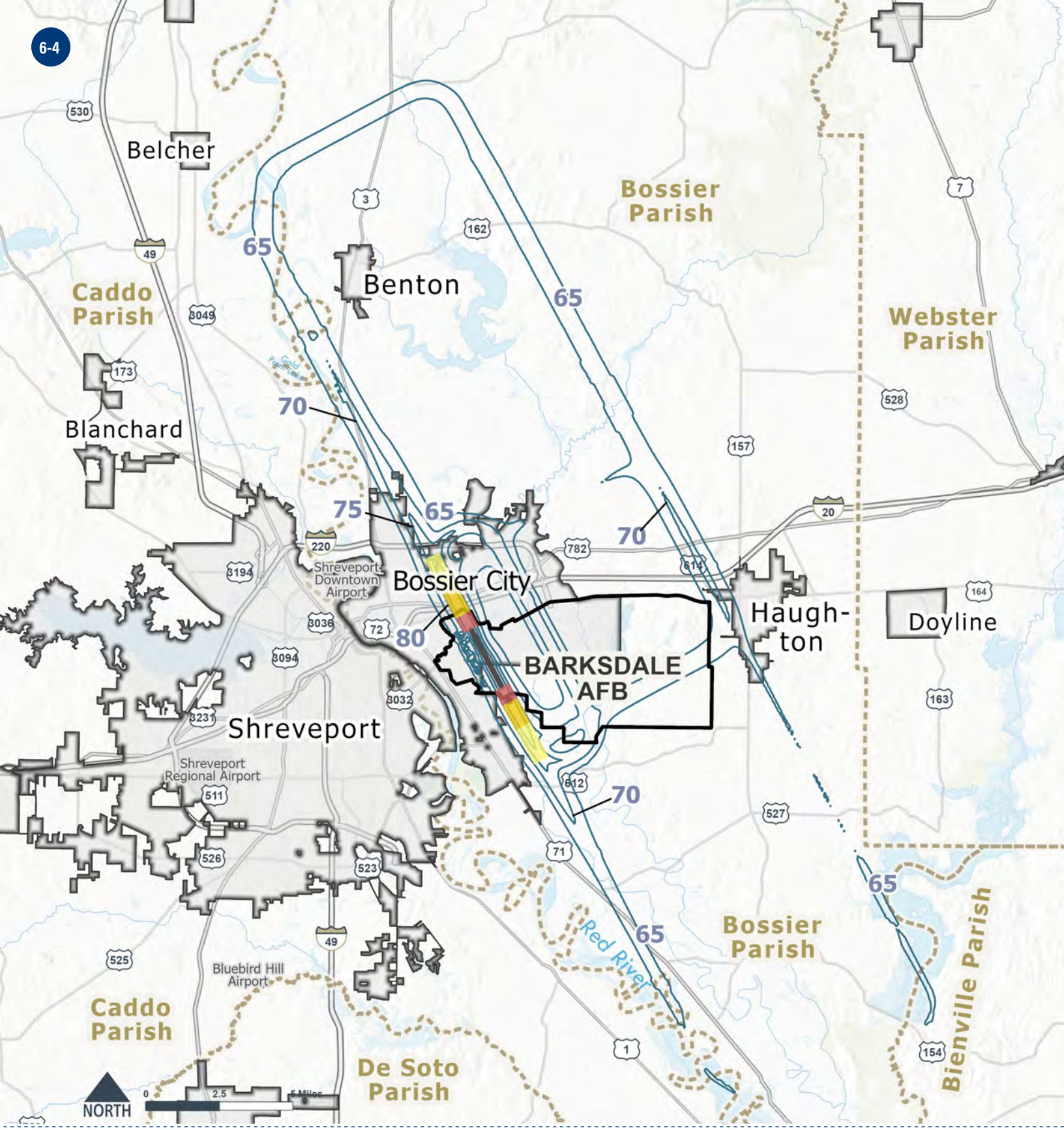
In the early 20th Century, Louisiana was a leader in land use planning, being the first to establish a commission to protect historic properties and one of the first to adopt enabling legislation for local planning commissions. In 1926, Louisiana was one of 20 states to adopt the Standard State Zoning Enabling Act (the SZEA). In 1998, it was one of 24 that had failed to keep up with the rest of the nation in updating its statutes (Villavaso 1999). It is among the states least likely to intervene in private property decisions regarding development (American Planning Association [APA] 2002), and prior to Hurricanes Katrina and Rita in 2005, promulgated little legislation related to planning as an important public policy tool.

In general, planning is treated as a local concern. While a number of jurisdictions require no governmental permits for development of any kind, others have adopted ordinances that establish the use of planning tools such as building permits, subdivision review, and zoning, or some combination of these simple forms for regulating development. Larger metropolitan areas are more likely to adopt and implement land use and zoning regulations.

The most aggressive local planning authorities attempt to regulate the location, timing, and impacts of new development by adopting comprehensive (master) plans that regulate not only what can be developed in an area, but also how that development looks and performs. The most "comprehensive" plans coordinate public and non-governmental resources to guide development along a path toward a set of goals and objectives devised through public input and visioning.

Laws that relate to planning in Louisiana, include the following:

- **Louisiana State Planning Laws (R.S. 33:103-109)** generally states that every parish and municipality may create a planning commission and appropriate funds to it. The law requires that, once created, the "planning commission shall make and adopt a master plan for the physical development of the community." Although 40 parishes have appointed planning commissions, the number of plans in the state is extremely low. Even among the jurisdictions with planning commissions, a zoning map is considered compliant with the statute (Villavaso 2002).



Clear Zone (CZ)
Accident Potential Zone I (APZ-I)
Accident Potential Zone II (APZ-II)
2025 AICUZ Contour (dB)
Runway
Barksdale AFB
Incorporated Area
Parish

FIGURE 6-2
Geography of Jurisdictions in Relation to the AICUZ Noise and Safety Zones

- **Coastal Protection and Recovery Authority (CPRA)** published a *Comprehensive Master Plan* for a Sustainable Coast (2007) that recommends improved land use planning, zoning, and permitting to address the risks related to development in the Louisiana coastal zone.

Bossier Parish Police Jury, Louisiana

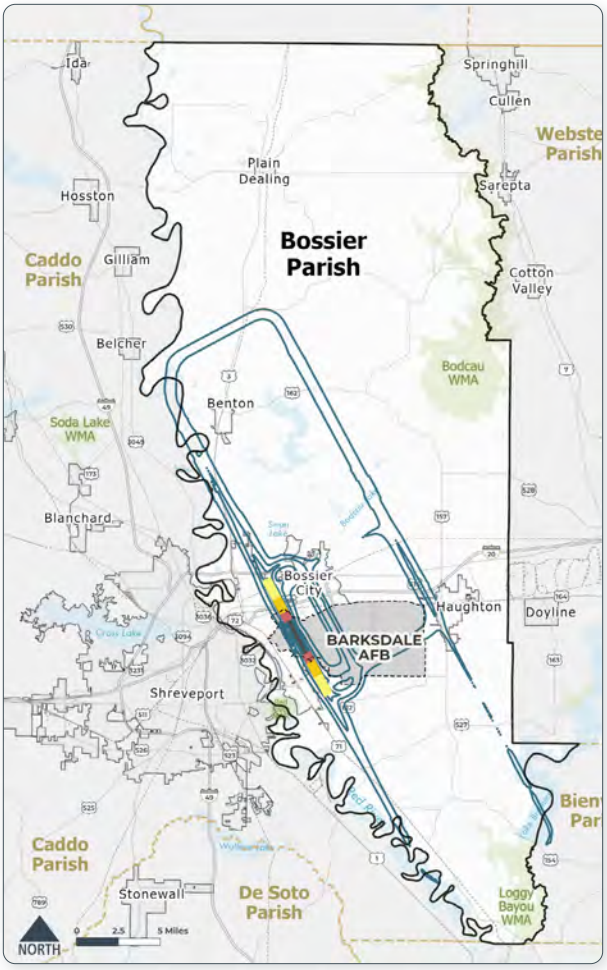
Bossier Parish is represented by 12 Jurors who represent various districts throughout the parish. The Bossier Parish Police Jury is both a legislative and administrative body. Its legislative functions include enacting ordinances and resolutions, establishing programs and setting policy. As an administrative body, it prepares the budget, hires personnel, spends money, negotiates contracts, and, in general, directs the activities under its supervision. The purpose of the Police Jury is to serve the public. Services are provided by the following departments and offices: Police Jury Administrative Staff, Registrar of Voters' Office, Maintenance Department, Highway Department, Bossier Parish Libraries, the Section 8 Housing Office, the Bossier Parish Coroner's Office, 26th Judicial District Attorney's Office, and the 26th Judicial District Judges' Office.

Bossier City, Louisiana

All planning and zoning regulatory measures in Bossier City are conducted through the Bossier City Metropolitan Planning Commission (MPC), mirroring the bureaucratic makeup of Bossier Parish. Within this MPC, the Planning and Zoning office performs several tasks such as issuing Certificates of Occupancy, reviewing both commercial and residential building permits, among other processes relating to changes in zoning and development policy.

The MPC is overseen by the Bossier City Council, with its seven members. Two of the elected officials represent the city at-large, while the remaining five represent a district of the city. A subset of the City Council is the Board of Adjustments. The board consists of six members, with the Bossier Parish Police Jury and the Bossier City council each appointing three. Each member serves a five-year term which is staggered. The Planning and Zoning office the "Bossier City-Parish Unified Development Code," linking the two government's regulations.

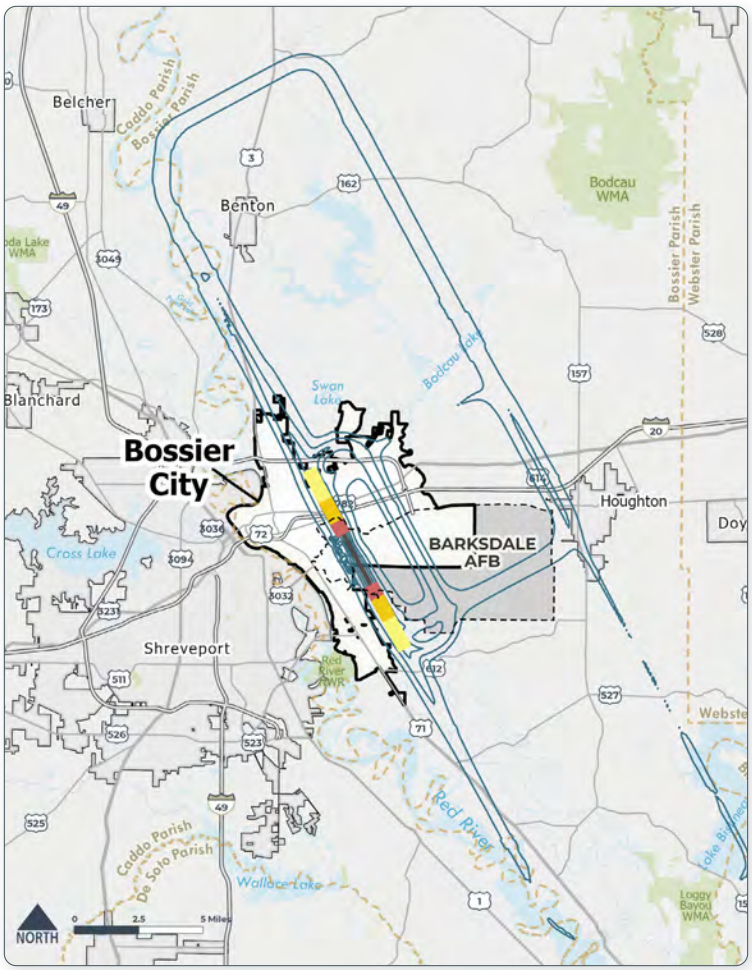
BOSSIER PARISH
Louisiana



The Bossier City Comprehensive Plan (2013) updates the Bossier Comprehensive Land Use and Development Plan completed in 2002. The city is also ready to begin another update in the near future.

This 2013 plan is a multi-faceted document that serves as the City's guide for future growth and development. The Comprehensive Plan is also the source of information regarding the existing and future conditions of the community and the established policies and strategies for the future of Bossier City. This updated Plan considers growth and development and the overall management of the resulting growth pressures.

With respect to Barksdale AFB, the Plan recognizes Barksdale AFB as the City and region's top employer and a critical asset to the city and region. The Comprehensive Plan also recognizes encroachment challenges posed to Barksdale AFB by overall growth and growth in housing. The plan calls for *"Protection*



BOSSIER CITY
Louisiana

of Barksdale Air Force Base and the surrounding Air Installation Compatible Use Zone from encroachment by development" as a key to Bossier's future. It also considers areas beneath Barksdale AFB flight paths and sensitive and categorizes them as "primary conservation areas" which include areas that are "untouchable and unbuildable." **In this case, those features are likely to be floodplains, wetlands, significant wildlife habitats and specifically designated areas of the Barksdale AICUZ.**

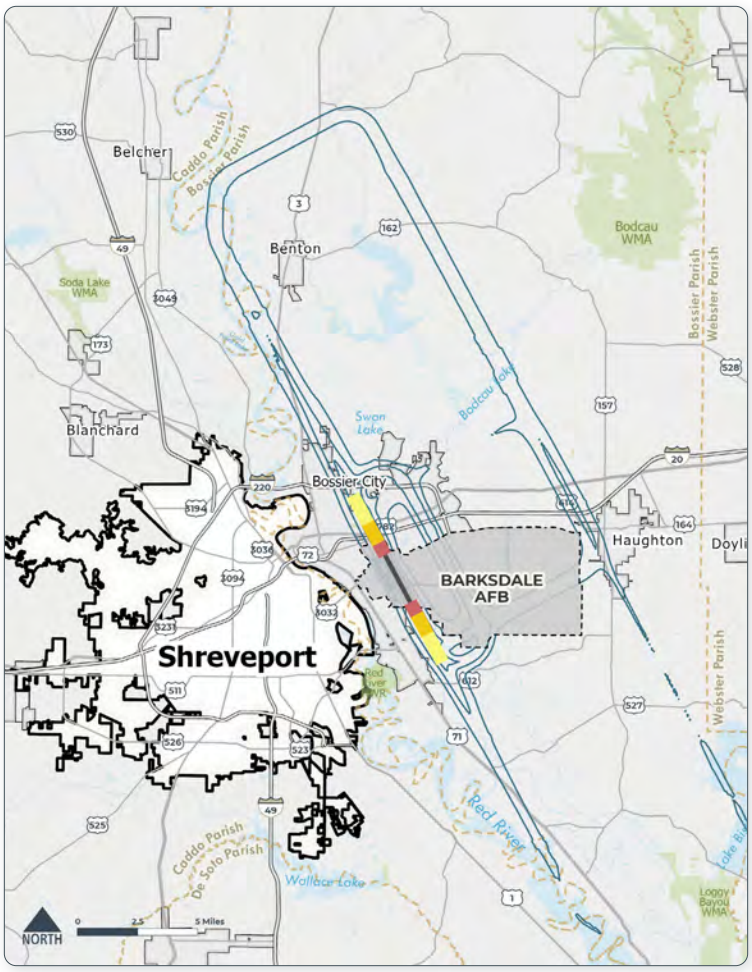
In addition, in the Bossier City-Parish Unified Development Ordinance contains many references to AICUZ concepts and several supportive references are made concerning Barksdale AFB and protecting the base from encroachment of any kind. Specific AICUZ-supportive references include those around established districts and safety/lighting:

- **C. Air Base Buffer—North (A-1) District.** The north airbase buffer district is established to limit uses and development within and near the north-northwest approach to Barksdale Air Force Base to those activities that reflect land uses recommended in the most current air installation compatible use zone (AICUZ) study. The recommended land uses in the AICUZ study are uses that are less sensitive to aircraft activities and that will not hamper flight operations.
- **D. Air Base Buffer—South (A-2) District.** The south air base buffer district is established to restrict development within and near the south-southeast approach to Barksdale Air Force Base, which is an undeveloped area having no existing or planned municipal services.
- **9.9.4 No neon, LED or similar electronic technology signs shall be allowed** within the air base buffer-north (A-1) district or within the area designated by Barksdale Air Force Base as the north approach zone.

A-1 District Uses

Per the Unified Development Ordinance,

"uses in the North (A-1) District are allowed as Provisional and Conditional uses only in the Accident Potential Zone I (APZ I) and the Accident Potential Zone II (APZ II) areas. Uses allowed in these districts will follow the recommendations and guidelines in the most current AICUZ Study. The allowed uses in these Accident Potential Zones are restricted to the number of individuals on the site at any given time. The gathering of employees and customers cannot result in a gathering on site of a density of more than 25 persons per acre per hour during a 24-hour period, not to exceed 50 persons per acre at any time. Uses allowed in the North (A-I) District zone cannot produce smoke emissions of a nature that could interfere with aircraft or conduct operations that would attract birds. Land uses in this district will not be allowed outdoor neon lighting, flashing lights, or lighting of an intense nature that would be detrimental to the operation of aircraft. All allowed uses in the A-1 district will follow the guidelines recommended in the Land Use Compatibility Use Zone (AICUZ) Study."



CITY OF SHREVEPORT
Louisiana

This zoning districts are shown on the zoning figure presented in Chapter 6 (Figure 6-3).

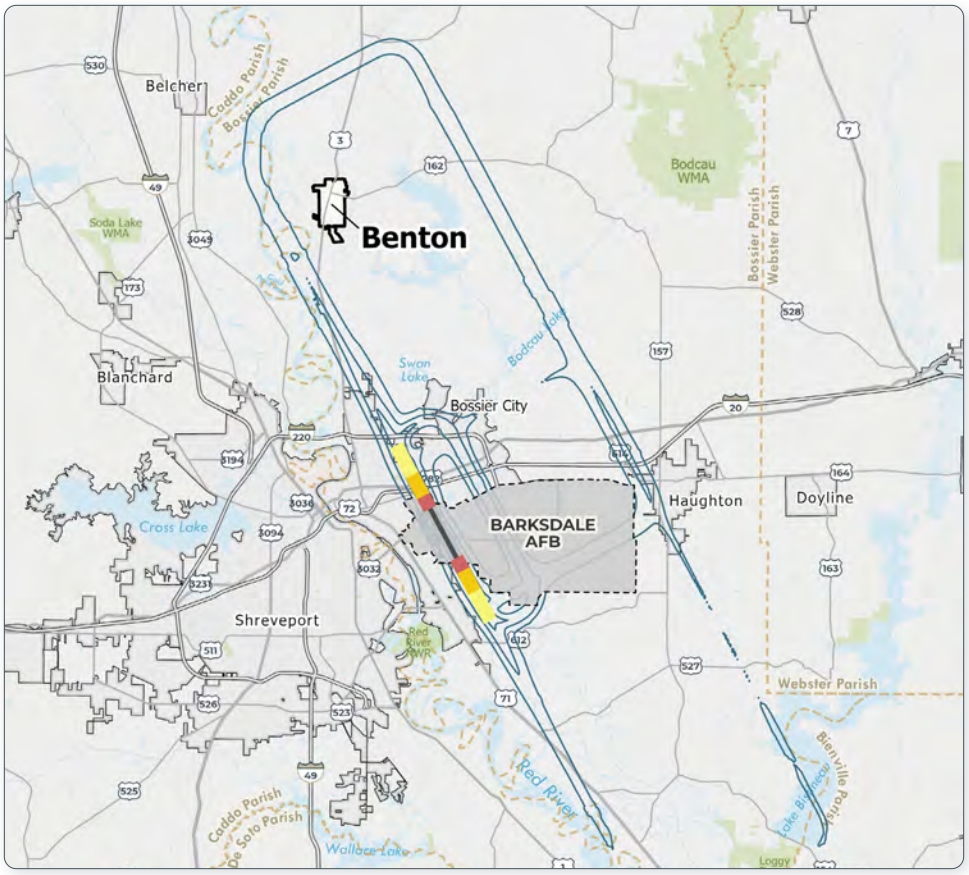
In terms of growth areas, the comprehensive plan is current with respect to identifying areas to the north and east in the City where future residential, commercial and mixed-use growth is anticipated to occur. The Comprehensive Plan Future Land Use Map is identified a guide for development and decision making and is intended to help implement the identified land use goals and objectives of the plan. The Comprehensive Plan promotes efficient, long-term growth within the Bossier City limits and outside of designated sensitive development areas. The planned growth areas are outside of both the safety zones and the high noise zones for Barksdale AFB.

City of Shreveport, Louisiana/ Caddo Parish, Louisiana

The City of Shreveport's planning and zoning services are managed by The Shreveport/Caddo Metropolitan Planning Commission (MPC). This commission was established in 1954, per changes in the state of Louisiana's regulatory procedures. The MPC has several subgroups tasked with various planning duties relating to growth and development, including an administrative department, land development department, a community development department, and a zoning enforcement department. These departments report to the MPC board, a group appointed by the City of Shreveport Council and the Caddo Parish Commission jointly. MPC staff has many responsibilities across all departments including application assistance, administrative planning, long-range city planning, and changes to city planning policies. Funding for the MPC is generated through appropriations from the city and parish.

The MPC is required to adopt a plan for the physical development within the area. The City of Shreveport Council and the Caddo Parish Commission highlighted a vision of the future in the Shreveport-Caddo 2030 Master Plan. Featured within the plan are initiatives to grow smarter, celebrate uniqueness, and invest in people and places. While the two municipalities share the same MPC and Master Plan, they differ in their Unified Development Code. Separate regulations exist within the two plans, depending on the location of the project. However, the MPC oversees any amendments to either the Caddo Parish Unified Development Code or the Shreveport Unified Development Code.

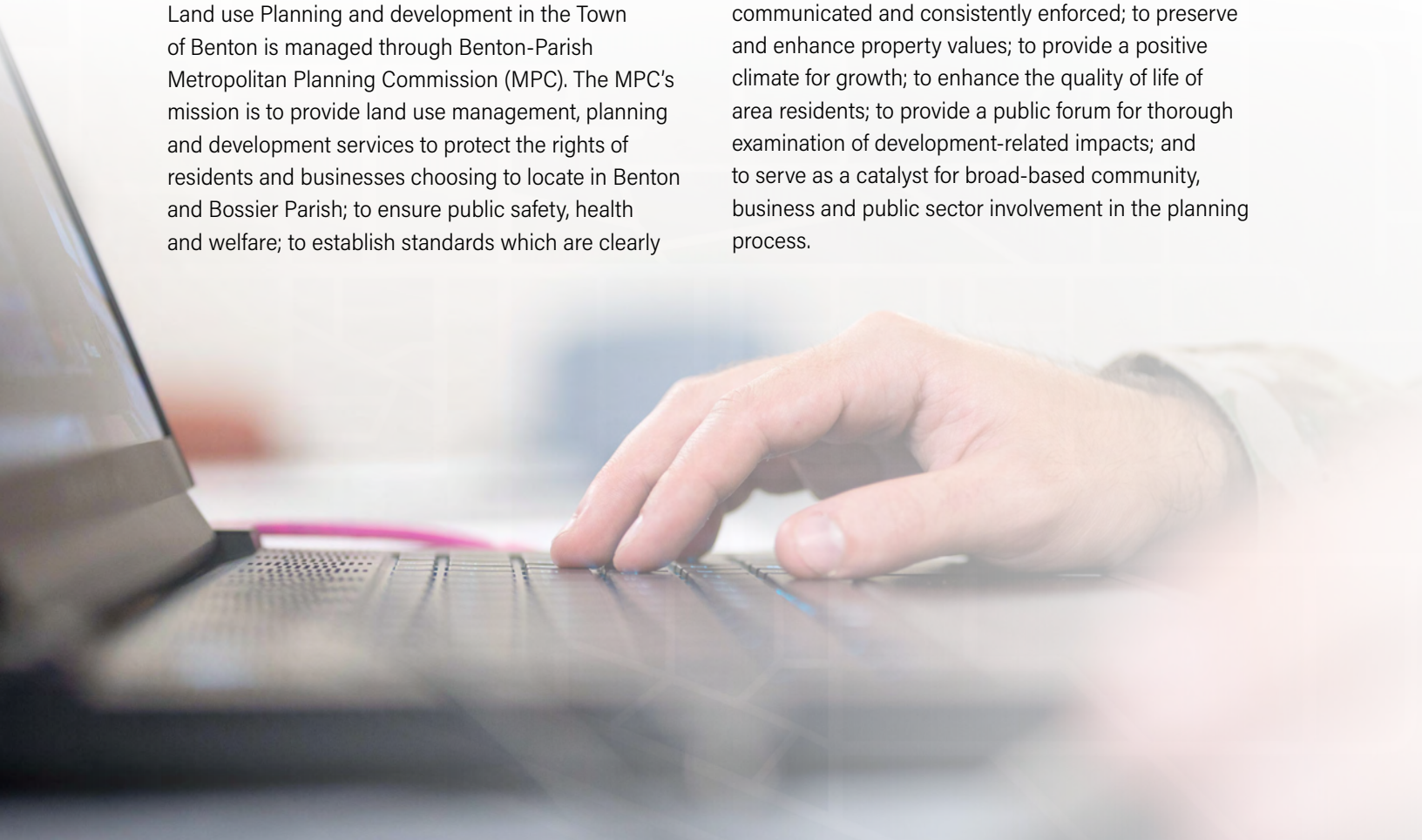
The Shreveport-Caddo 2030 Master Plan in its Prosperity and Opportunity: Economic Development element, recognizes Barksdale AFB a major regional employer as well as a source of contracting opportunities for local firms.

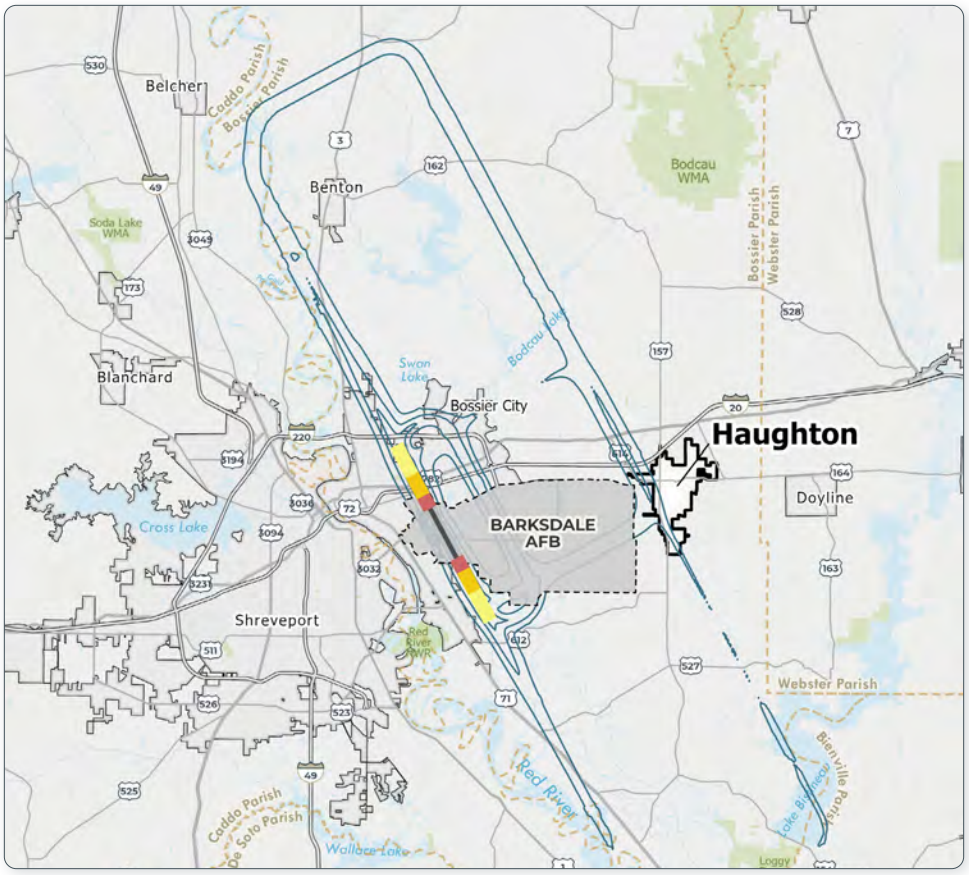


TOWN OF BENTON
Louisiana

Town of Benton, Louisiana

Land use Planning and development in the Town of Benton is managed through Benton-Parish Metropolitan Planning Commission (MPC). The MPC's mission is to provide land use management, planning and development services to protect the rights of residents and businesses choosing to locate in Benton and Bossier Parish; to ensure public safety, health and welfare; to establish standards which are clearly communicated and consistently enforced; to preserve and enhance property values; to provide a positive climate for growth; to enhance the quality of life of area residents; to provide a public forum for thorough examination of development-related impacts; and to serve as a catalyst for broad-based community, business and public sector involvement in the planning process.





TOWN OF HAUGHTON
Louisiana

Operating with a two person staff, the MPC office duties includes approving building permits, processing MPC Zoning Board and Board of Appeals applications and answering the daily needs of the public. The MPC staff is responsible for ensuring that zoning enforcement efforts are fair and reasonable.

Town of Haughton, Louisiana

A Municipal Planning Commission (MPC) handles the zoning and development regulations for the Town of Haughton. Like Bossier City, Haughton also shares the responsibility of appointing MPC board members with Bossier Parish. Two candidates are appointed by each the Town of Haughton and the Bossier Parish. Additionally, one joint nominee is appointed to the commission. Tasks are largely centered around zoning applications and amendment requests. However, other applications such as alcohol consumption as well as other miscellaneous documents are provided by the MPC. Moreover, the MPC has the responsibility of overseeing Conditional Use Applications, and passing its policy recommendations on to the appropriate legislative body.

Within the MPC is the subgroup tasked with handling specific zoning restrictions. The Zoning Board of Adjustment reviews zoning applications and requests for Special Exemptions, ensuring they comply with existing regulatory measures.

Bienville Parish, Louisiana

Bienville Parish is located approximately twelve miles south of Barksdale AFB (See Figure 6-2). A very small portion of the bottom of Barksdale AFB's 65 DNL noise contour extends into Bienville Parish. The area within the contour is characterized primarily as open/agriculture/low density undeveloped land with mainly forested and forested wetland land cover types present. All uses are considered compatible with aircraft operations in this area.

6.3 LAND USE AND PROPOSED DEVELOPMENT

The land use compatibility analysis presented in this study evaluates existing and future land uses and zoning near Barksdale AFB to determine compatibility conditions. Existing land use is assessed to determine current land use activity, while future land use and zoning are used to project development and potential growth areas. Existing land use data was not available from local governments for this project. To develop an existing land use layer National Land Cover Database (NLCD) land cover data was used as a base data layer. Current aerial imagery was then overlaid onto the NLCD data and lastly the Federal Emergency Management Agency (FEMA) structures data, that contains generalized land use code information, was applied to assign more detailed definition to the NLCD data.

Future land use and zoning geographic information system (GIS) data utilized to inform the analysis was obtained from Bossier City MPC.

In order to analyze the compatibility of nearby land uses surrounding Barksdale AFB, each parcel in the data was characterized into use categories defined by the SLUCM tables. While the specific categories used by each local government may vary, these generalized categories provide a starting point for each analysis:

- **Residential.** Designations and zoning for family and personal living and sleeping, including rural/low density development, medium density, and high-density towers. Types of units include, but are not limited to, single family detached dwellings, duplex, triplex, and quadplexes, mobile homes or manufactured housing, apartment buildings, and condominiums.
- **Manufacturing.** Includes food, textile, apparel, household goods, and trades manufacturing (metals, stones, clays, glass, plastic, and rubber, etc.).
- **Transportation, Communication, and Utilities.** Includes public and private transportation uses (road, rail, air, marine); parking infrastructure; communication uses (cell towers, relay towers, etc.); public, semi-public, and private utilities (power stations; power transmission lines, substations, wastewater treatment plants, solid waste disposal facilities, etc.).
- **Trade.** Includes wholesale trade, retail trade (neighborhood, community, regional and super-regional: food, transportation, home furnishings, etc.), financial services, personal and professional services, medical services, government and educational services, and religious activities.
- **Cultural, Entertainment, and Recreational.** Includes cultural activity uses, nature exhibits, public assembly, indoor auditoriums and outdoor amphitheaters, outdoor sports, amusements and recreational activities, parks, etc.
- **Resource Production and Extraction.** Includes farm and livestock agriculture, forestry and fishing activities, resource mining, etc.
- **Other.** Includes undeveloped land and water areas.

Typically, municipal governments have land or zoning codes that differ slightly from the FHWA SLUCM categories. Local land and zoning codes commonly, but not always, categorize land use around the previously mentioned categories. It then falls upon the community (base) planner to rectify the discrepancies between the DOD's use of SLUCM standards and all the relevant local jurisdiction's land use typologies to provide a meaningful analysis. Please reference Appendix C for additional information.

Appendix A, Land Use Compatibility Tables, provides further description on the SLUCM land use categories along with notes on general allowable uses for Barksdale AFB surrounding jurisdictions.

The land use compatibility analysis performed as part of this AICUZ study identifies existing and future land uses near Barksdale AFB. Existing land uses were assessed to determine current land use activity, while future land use plans were used to project potential development and growth areas. Existing land use and parcel data provided by local communities were evaluated to ensure an actual account of land use activity, regardless of conformity, to zoning classification or designated planning or permitted use. Additionally, local management plans, policies, ordinances, and zoning regulations were evaluated to determine the type and extent of land use allowed in specific areas.

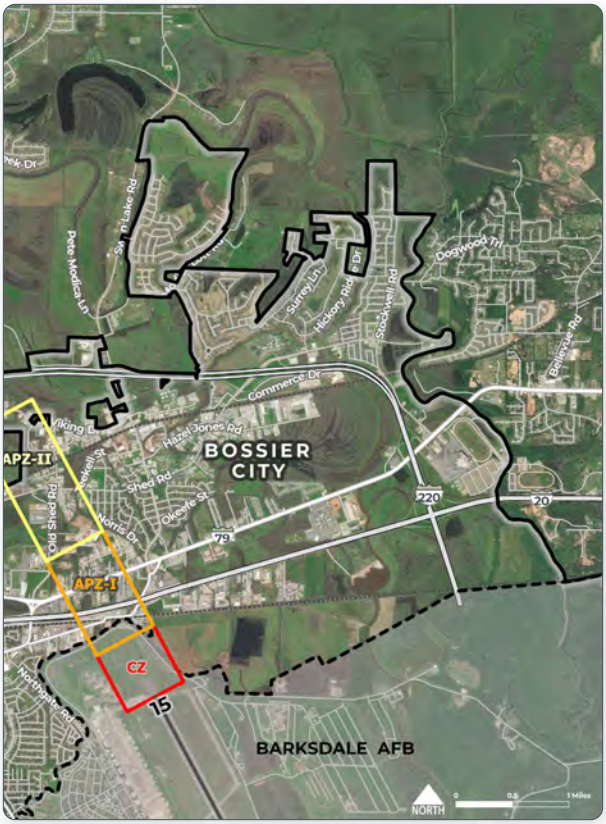
6.3.1 Existing Land Use

Barksdale AFB current land use is a mix of heavier and denser development to the west and north of the installation in Bossier City and further west toward the Red River and City of Shreveport, respectively, and more rural/open space and lower density development to the south and of east installation (See Figure 6-3).

Within Bossier City the high noise zones exist primarily to the north of the installation (see inset below). APZ I and II and noise contours ranging from 65 -69 to 75-79 dB DNL extend into the community in this area. High noise zones do not extend west into the City of Shreveport or into Caddo Parish west of the base boundary.

Outside of Bossier City the installation's noise contours extend north and west into unincorporated Bossier Parish. The contours do in two locations cross into the adjacent Caddo Parish as well. Bossier Parish in this area is primarily designated as open/agriculture/ low density land and is used primarily for agriculture. There are some homes and non-agricultural operations in this area as well but at very low densities. The Town of Benton is also generally within this area—approximately 17 miles north of Barksdale AFB. The 65 dB DNL contour generated by Barksdale AFB pattern operations does not traverse within the Town of Benton but rather to the west and north.

Additional undeveloped open/agriculture/low density land in unincorporated Bossier Parish lies to the area traversed by the 65 dB DNL contour to the east, as well. In this area the contours generally traverse the area in the vicinity of Cypress Black Bayou Recreation and Water Conservation District and above the small towns of Bellevue, Princeton, and Fillmore, among others.



Immediately north of the base, in Bossier City, the high noise zones extend beyond the Barksdale AFB boundary—both north and south of Highway US 20. Land uses in this area are a mix of mainly commercial (that includes retail, restaurants, office space, etc.) along Industrial Drive, Miller Road and E. Texas Street (Louisiana State Routes 79/80), among others (See Figure 6-3). More Industrial land uses exist further north within APZ II north of E. Texas Street, near Shed and Old Shed Roads and areas north of the railroad tracks (see inset map below). The Shed Road Community Playfield is within southern APZ II and the 75-79 dB DNL noise zone as well. The 70-74 and 75-79 dB DNL contours also encompasses several residential areas and other noise sensitive uses in the community. This includes the residential areas bisected by Swan Lake Road. Several schools are also located in the higher noise zones north of the base in Bossier City. The contours cross over some less dense agricultural/ open space areas further north in the vicinity of Route US 220. However, there are also several residential developments within the Barksdale AFB patterns further north in the Airline Park Estates, Tiburon and Stone Bridge residential areas, among others.

To the west and southwest of Barksdale AFB, east of Louisiana State Route 71, residential development exists. Due to the patterns flown by aircraft at Barksdale AFB, the majority of these residences, however, are outside of the Barksdale AFB noise contours.

To the south and east the of Barksdale AFB, the noise zones extend into more open/agriculture/low density areas of unincorporated Bossier Parish. There is also a Bossier City Park located south of Barksdale AFB (Mike Wood Memorial Park/2200 Dennis Street, Bossier City) that includes many park and recreational amenities—benches, frisbee golf course, Playground, pavilion, picnic areas, swimming pool, tennis court and trails. The park is touched by a small area of the Barksdale AFB CZ, and within the 70–74 dB DNL contour.

East of Barksdale AFB the 65–69 dB DNL contour and a small portion of the 70–74 dB DNL contour is in the vicinity of the Town of Haughton. Around the Town of Haughton, the areas traversed on the outskirts of the town along Louisiana Route 157 are primarily low density agricultural and rural residential type land uses.

6.3.2 Existing Zoning

The zoning for the area around Barksdale AFB generally supports the land use patterns in place in Bossier City. Zoning immediately north and west of Barksdale AFB beneath Barksdale AFB high noise zones (i.e., 75–79, 74–70, 80+ dB DNL as well as APZ I and APZ II) is a mix of commercial and industrial zoned land. Commercial uses in this area include retail/ stores, restaurants and offices and industrial land includes light industrial, manufacturing, and warehouse uses, among others. There are also areas zones for residential north of the base (See Figure 6-4).

South of the base the majority of the high noise zones and safety zones fall within Bossier Parish where there are no zoning regulations in place. West of the installation, there is primarily a mix of residential and open/ag/low density zoning, however, the noise contours and safety zones do not extend into the community in this area. East of Barksdale AFB, the noise contours – primarily the 65 dB DNL – traverse Bossier Parish where there is no zoning in place.

North of Barksdale AFB the 65 dB DNL contour produced by the installation's radar pattern traverses mainly open/ag/low density land uses around the Town of Benton. There are areas of residential zoning within and adjacent to Benton but these areas are not traversed by the 65 dB DNL contour.

As mentioned previously, Bossier City also has in place zoning categories that seek to protect Barksdale AFB from uses that are incompatible with aircraft operations. These districts, identified as Air Base Buffer—North (A-1) District and Air Base Buffer—South (A-2) District are located north and south of the installation and reflect the shape of Barksdale AFB Clear Zone and APZs (See Figure 6-4). They act as buffers in these zones to limit uses and development within and near the north-northwest and south-southwest approaches to Barksdale AFB to only those activities that reflect land uses recommended in the most current AICUZ study (i.e. uses that are less sensitive to aircraft activities and that will not hamper flight operations).

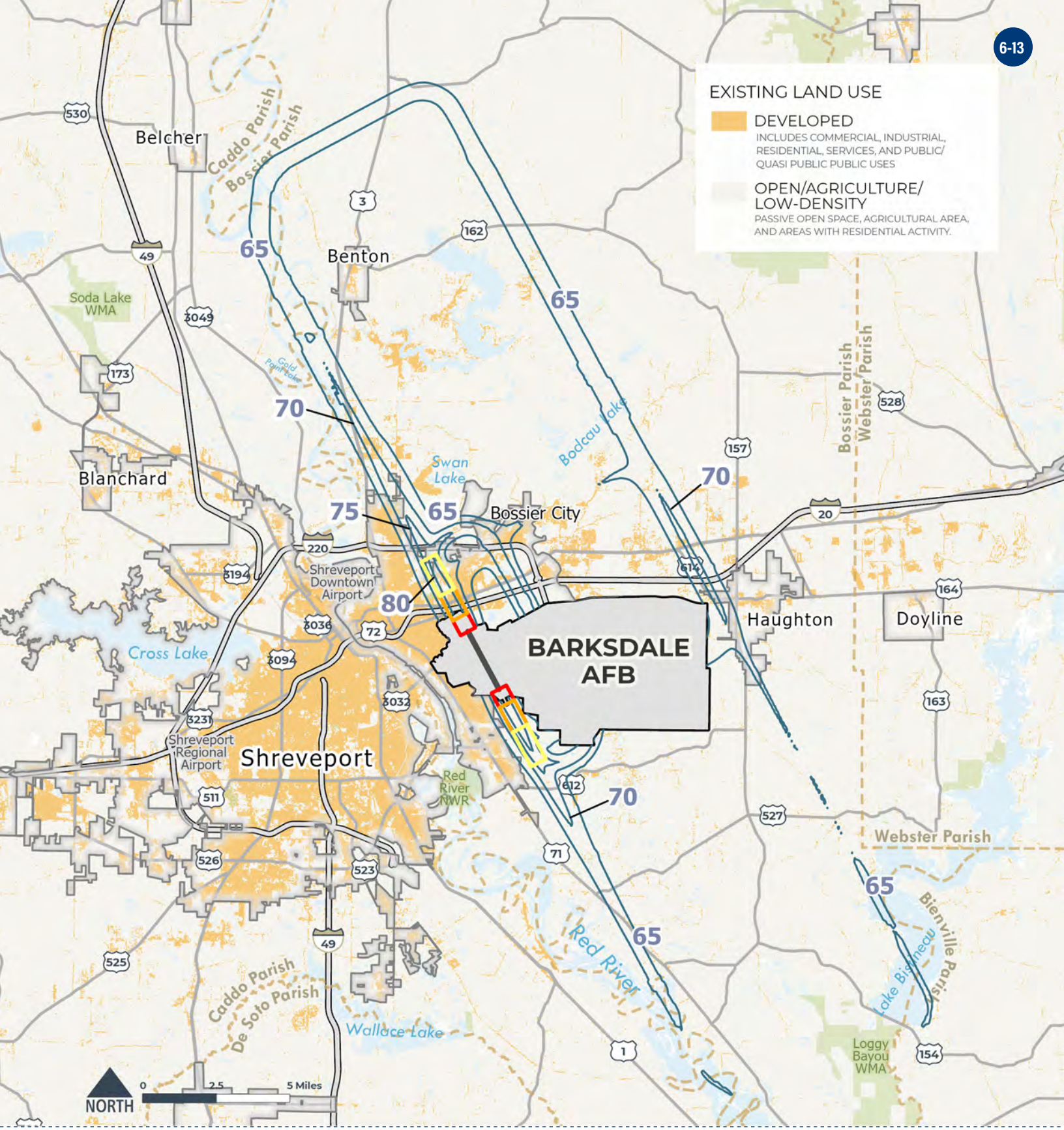


FIGURE 6-3

Existing Land Use and 2025 Barksdale AFB AICUZ Study Noise Contours, CZs, and APZs

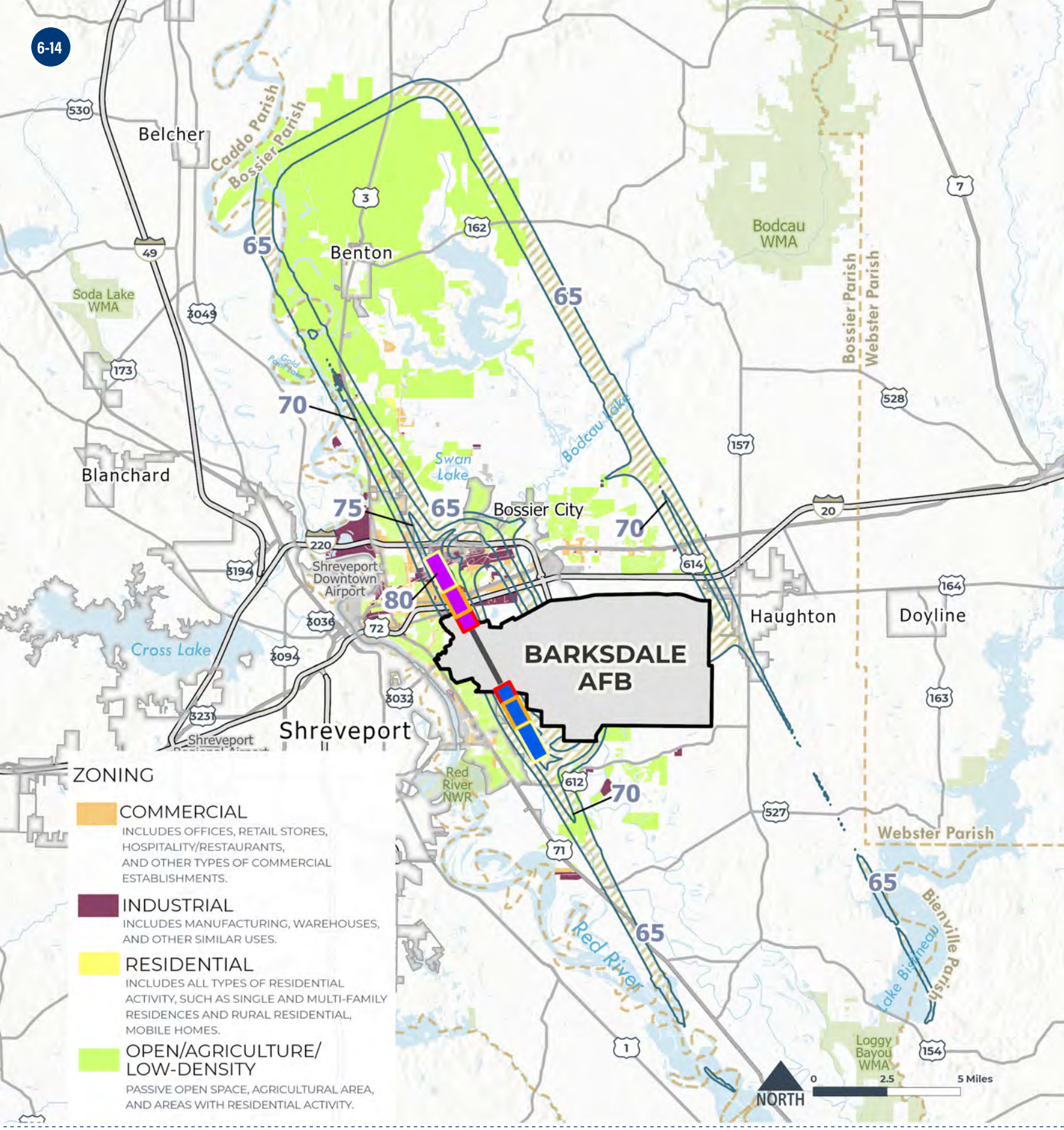


FIGURE 6-4

Existing Zoning and 2025 Barksdale AFB AICUZ Study Noise Contours, CZs, and APZs

6.3.3 Future Land Use

As a fully built out municipality, Bossier City future land use is essentially consistent with existing use. Redevelopment in Bossier City is addressed through zoning and rezoning and enforcement of the City's Unified Development (zoning) Code and specifically and where applicable applies the airport buffer overlay zoning, discussed previously.

As shown on Figure 6-5, future land around Barksdale AFB shows the areas south and southeast of Barksdale AFB are primarily within unincorporated Bossier Parish where there is no future land are assigned. This area is primarily Open/Agricultural/Low Density land use and is expected to remain as such and avoid any future land use patterns from developing that are incompatible with aircraft operations. Areas to the west fall outside of the Barksdale AFB noise and safety zones. These areas are a relatively medium density mix of Residential and Open/Agriculture/Low density uses and future land use designations indicate they will remain as such.

As specified by its future land use designations, currently developed areas to the north and northwest of Barksdale AFB, within Bossier City, will generally maintain their mixture of Residential, Commercial and Industrial uses. Any development in these areas is expected to consist of infill and redevelopment consistent with existing land use patterns and zoning regulations assessed on a case-by-case basis. As a result, future land use north and northwest of Barksdale AFB AFB will continue to be consistent with and reflect existing land use patterns.

North of Barksdale AFB in the vicinity of the Town of Benton future land uses are primarily designated as open/agriculture/low density reflecting the existing land use patterns and zoning as well (See Figure 6-5).

East of Barksdale AFB the 65–69 dB DNL contour and a small portion of the 70–74 dB DNL contours are in the vicinity of the Town of Haughton. Although no future land use data for Haughton was obtained the areas traversed on the outskirts of the town are primarily low density and rural type land uses.

6.4 COMPATIBILITY CONCERNS

6.4.1 Land Use Analysis

Land use describes the development and management of an area as characterized by its dominant function. To compare land use consistently across jurisdictions, this analysis uses generalized land use classifications (e.g., commercial, industrial, residential) rather than more specific categories (e.g., high-density residential, medium-density residential, low-density residential). These generalized land use categories, derived from the DoD AICUZ compatibility guidelines (Tables A-1 and A-2 of Appendix A) and shown in Table 6-1, are not exact representations of the local community's land use designations but combine similar land uses like those introduced in Section 6.3, Land Use and Proposed Development.

KEY RECOMMENDATION

The Air Force recommends that local and regional governments adopt the AICUZ noise zones, CZs, APZs, and HAFZ into planning studies, regulations, and processes to best guide compatible development around installations.

The land use compatibility analysis presented in this AICUZ Study evaluates existing and future land uses near Barksdale AFB to determine land use compatibility conditions. Existing land use data is assessed to determine current land use activity, while future land use data is used to project development and potential growth areas. Land use and zoning GIS data utilized were obtained from local jurisdictions—where available—within the vicinity of Barksdale AFB. In places where datasets were not available more generalized datasets were used and aerial interpretation was conducted to try and verify land uses. Land use and zoning data were not available for certain jurisdictions, therefore the total acres shown in the land use compatibility tables will vary based on data availability. The land use compatibility figures highlight where data was unavailable.

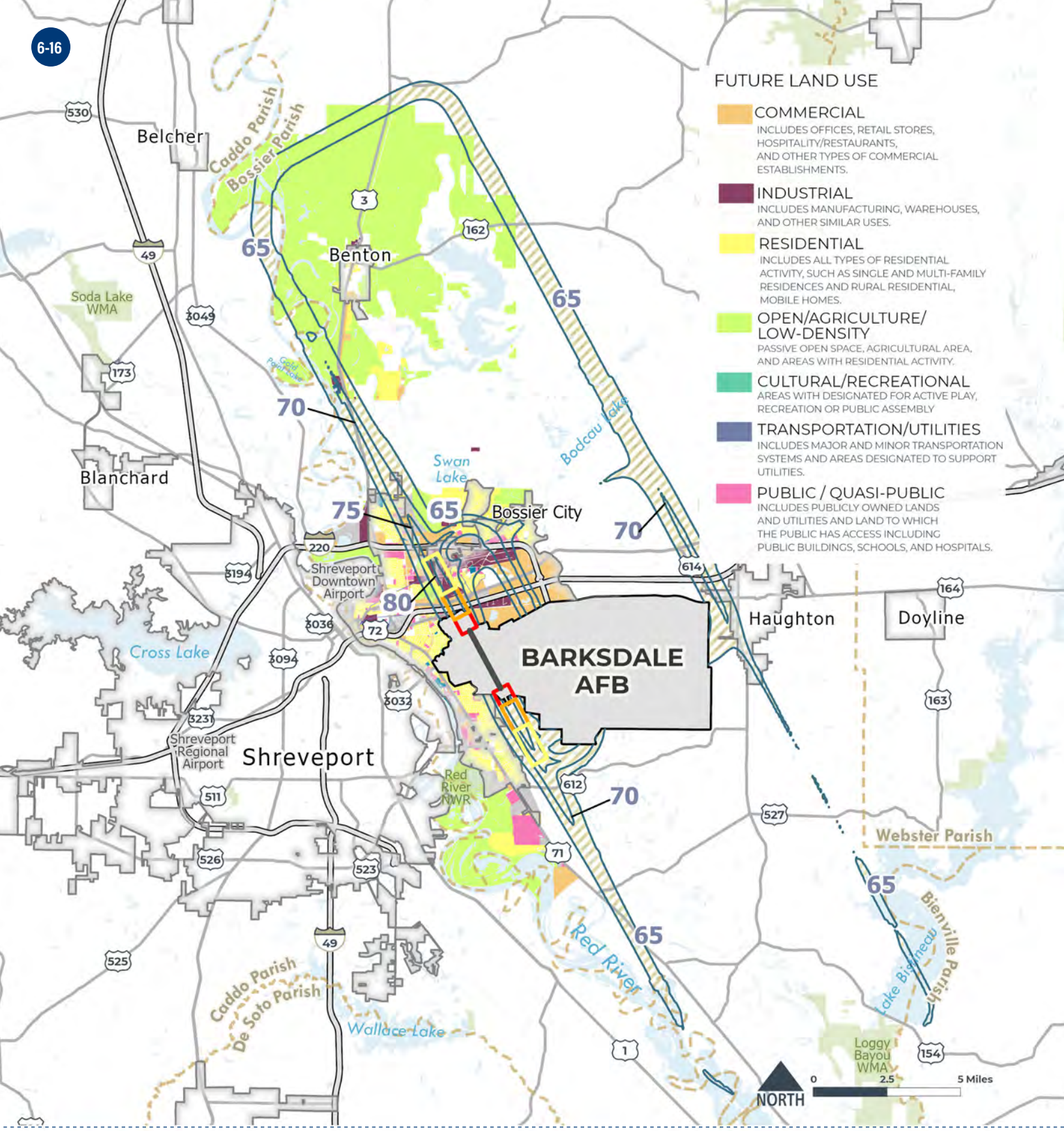


FIGURE 6-5

Future Land Use and 2025 Barksdale AFB AICUZ Study Noise Contours, CZs, and APZs

In order to analyze the compatibility of nearby land uses surrounding Barksdale AFB, each parcel is characterized into broad land use categories. While the specific categories used by each local government may vary, the following generalized categories provide a starting point for each analysis.

- **Residential.** Includes all types of residential activity, such as single- and multi-family residences, transient lodging (e.g., resorts, hotels), and mobile homes.
- **Commercial.** Includes offices, retail stores, hospitality/restaurants, and commercial establishments.
- **Industrial.** Includes manufacturing, warehouses, and other similar uses.
- **Services.** Includes publicly owned lands and lands to which the public has access, including public buildings, schools, churches, cemeteries, and hospitals.
- **Recreation.** Includes parks, sports fields, cultural exhibits, assembly areas, raceways, and areas that host other recreational activities.
- **Open/Agriculture/Low Density.** Passive open spaces, agricultural areas, and areas with low density residential activity.
- **Transportation/Utilities.** Includes major and minor transportation systems and areas designated to support utilities.
- **Undeveloped.** Includes undeveloped or vacant parcels.

Table 6-1 provides compatibility guidelines for the generalized land use categories. Land use compatibility falls into one of four categories:

1. **Compatible;**
2. **Compatible with Restrictions;**
3. **Incompatible; and,**
4. **Incompatible with Exceptions.**

Conditionally compatible land uses (i.e., compatible with restrictions and incompatible with exceptions can be considered compatible if noise attenuation measures are incorporated into the design and construction of structures or density limitations are imposed.

TABLE 6-1
Generalized Land Use Categories and Noise/Safety Compatibility[1]

GENERALIZED LAND USE CATEGORY	NOISE ZONE (DB DNL)						APZS		
	<65	65-70	70-75	75-80	80-85	85+	CZ	APZ I	APZ II
Residential	Yes	No[2]	No[2]	No	No	No	No	No	No[3]
Commercial	Yes	Yes	Yes[4]	Yes[4]	No	No	No	Yes[4]	Yes[4]
Industrial	Yes	Yes	Yes	Yes	Yes[4]	No	No	Yes[4]	Yes[4]
Services	Yes	Yes[4]	Yes[4]	Yes[4]	No	No	No	No	Yes[4]
Recreation	Yes	Yes[4]	Yes[4]	No	No	No	No	Yes4	Yes[4]
Public/Quasi-Public	Yes	Yes[4]	Yes[4]	Yes[4]	No	No	No	No	Yes[4]
Open/Agriculture/Low Density	Yes	Yes[4]	Yes[4]	Yes[4]	Yes[4]	Yes[4]	No	Yes[4]	Yes[4]
Transportation/Utilities	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Undeveloped	Yes	No	No	No	No	No	No	No	No

Key: COMPATIBLE | COMPATIBLE WITH RESTRICTIONS | INCOMPATIBLE | INCOMPATIBLE WITH EXCEPTIONS

1. This generalized table demonstrates the land compatibility guidelines. Refer to Appendix A for use in determining land use compatibility.
2. Residential land uses within the greater than 65 dB DNL noise zones are considered incompatible. However, if residential uses are considered essential, noise-attenuation measures should be incorporated into the building structures.
3. Residential land uses in APZ II are considered incompatible, except when development is limited to less than two dwellings per acre.
4. Compatible with restrictions indicates that some mitigation measures are needed for these uses to ensure full compatibility with air operations See Appendix A, Land Use Compatibility Tables, for more information.

Source: Adapted from AFH 32-7084.

6.4.2 Existing Land Use Compatibility Concerns

As shown in Figure 6-6 and Table 6-2, the greatest amount of incompatible land within the Barksdale AFB noise zones is Residential land use; this includes approximately 1,945 acres of Residential land in the 65-69 dB DNL contour that is both within Bossier City limits and north of Bossier City in unincorporated Bossier Parish. These Residential uses are primarily low to medium density residential homes. All Residential land use is considered incompatible in the greater 65 dB DNL noise zone and greater. Approximately 880 acres of incompatible Residential land use is also present within the higher noise zones (combining acreage in both the 70-74 and 75-79 dB DNL noise contours) north of Barksdale AFB in Bossier City. This includes the multiple residential developments that fall within the Barksdale AFB radar pattern to the north including homes in the Meadowview area and further north in Airline Park Estates, Tiburon, Cypress Point Apartments, and Stone Bridge residential areas, among others. There are also some Residential land uses within the 65 dB DNL contour to east of Barksdale AFB near the Town of Haughton. These homes fall beneath Barksdale AFBs' radar pattern and experience noise at levels (65-69 and 70-74 dB DNL) that are considered incompatible with Residential land use (See Figure 6-6).

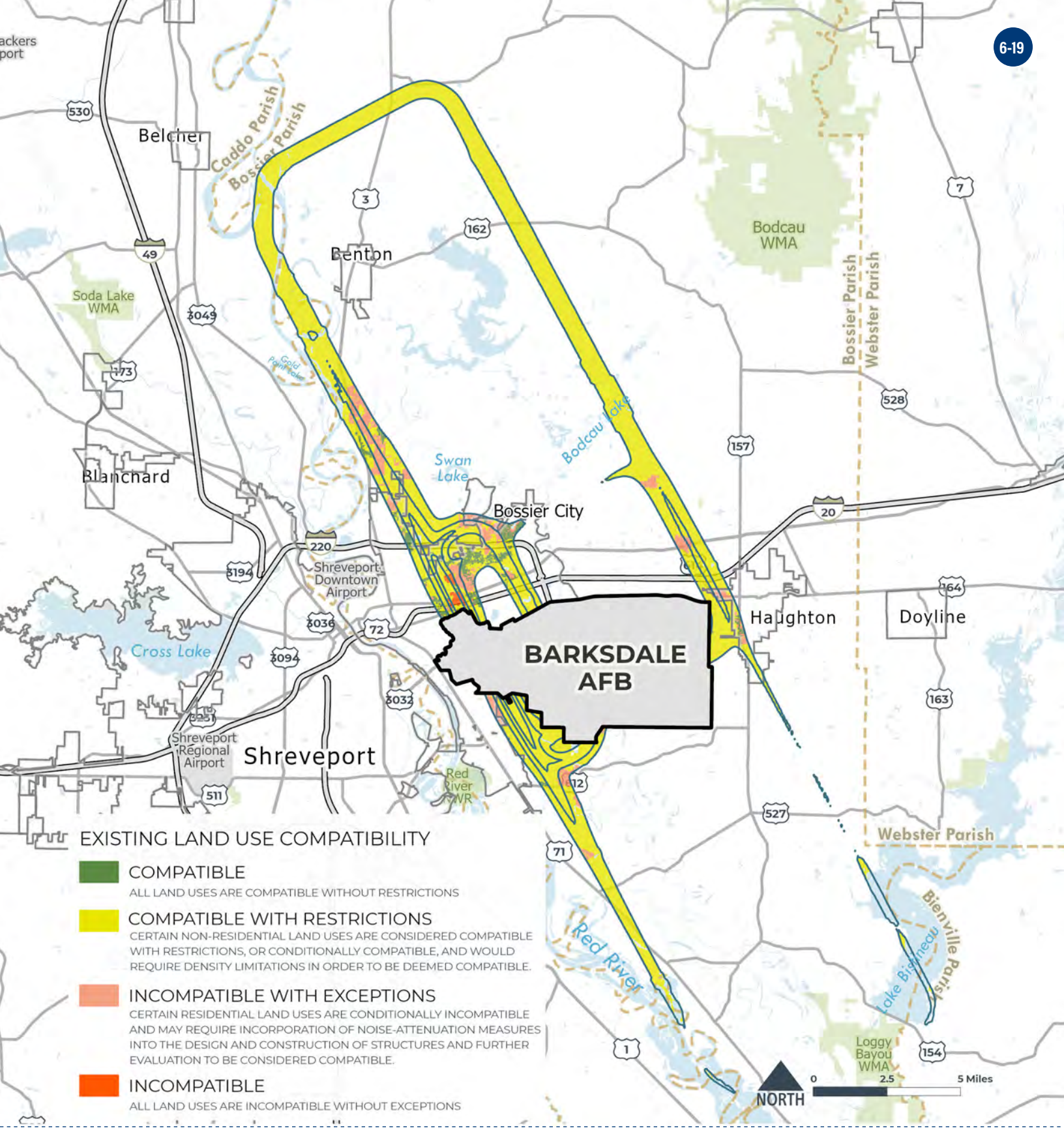


FIGURE 6-6

Existing Land Use Compatibility within Barksdale AFB Noise Contours

TABLE 6-2

Off-installation Existing Land Use Acreage within Noise Zones

DESIGNATION	GENERALIZED LAND USE CATEGORY[1]	65-69 dB	70-74 dB	75-79 dB	80+ dB	TOTAL
Incompatible or Incompatible with Exceptions	Commercial	—	—	—	42.45	**42.45**
	Industrial	—	—	—	—	**—**
	Public/Quasi-Public	—	—	—	—	**—**
	Recreation	—	—	—	—	**—**
	Open/Agriculture/Low Density	—	—	—	—	**—**
	Residential	1,945.57	828.49	48.98	5.47	**2,828.51**
	Undesignated	—	—	—	—	**—**
	Transportation/Utility	—	—	—	—	**—**
Compatible or Compatible with Restrictions	Commercial	804.27	234.65	35.84		**1,074.76**
	Industrial	261.35	120.10	58.09	98.38	**537.92**
	Public/Quasi-Public	192.62	194.90	—	—	**387.52**
	Recreation	—	—	—	—	**—**
	Open/Agriculture/Low Density	22,589.76	4,282.29	1,188.98	510.36	**28,571.39**
	Residential	—	—	—	—	**—**
	Transportation/Utility	—	—	—	—	**—**
Sub-Total	**Incompatible**	**1,945.57**	**828.49**	**48.98**	**47.92**	**2,870.96**
	Compatible	**23,848.0**	**4,831.94**	**1,282.91**	**608.74**	**30,571.59**
Total		**25,793.57**	**5,660.43**	**1,331.89**	**656.66**	**33,442.55**

1. Refer to **Appendix A** for Details.

There is also approximately 42 acres of incompatible Commercial land uses located north of the installation located in the Shed Road community and areas along Louisiana State Route 79. These commercial uses are within the 80+ dB DNL noise contour and considered incompatible.

There are approximately 35 acres of Residential land use within APZ I that are considered incompatible or incompatible with exceptions (See Figure 6-7 and Table 6-3). These properties include mainly low to medium density single-family residential homes in Bossier City just north of Barksdale AFB. Residential uses are discouraged from being located in APZ I and II but may be considered compatible in APZ II if they are limited to less than two dwelling units per acre.

All land uses present within the APZ I and IIs except Residential (i.e., Commercial, Industrial, Open/Agriculture/Low density, Transportation/Utilities) are considered compatible or compatible with restrictions. Open/Agricultural/Low Density uses in APZ I and II should not attract bird or wildlife that could create BASH hazards. Landowners of agricultural parcels should notify Barksdale AFB prior to conducting operations that generate steam or smoke to avoid impacts to pilot safety. Whether or not an industrial use is compatible depends on the type of specific use taking place (see Table A-1 for more information), but generally, industrial uses are compatible in APZ I and II if they do not attract birds and wildlife nor create dust or light emissions that could affect pilot vision, and if they are under the maximum floor area ratio (FAR) of 0.28 in APZ I and 0.56 in APZ II.

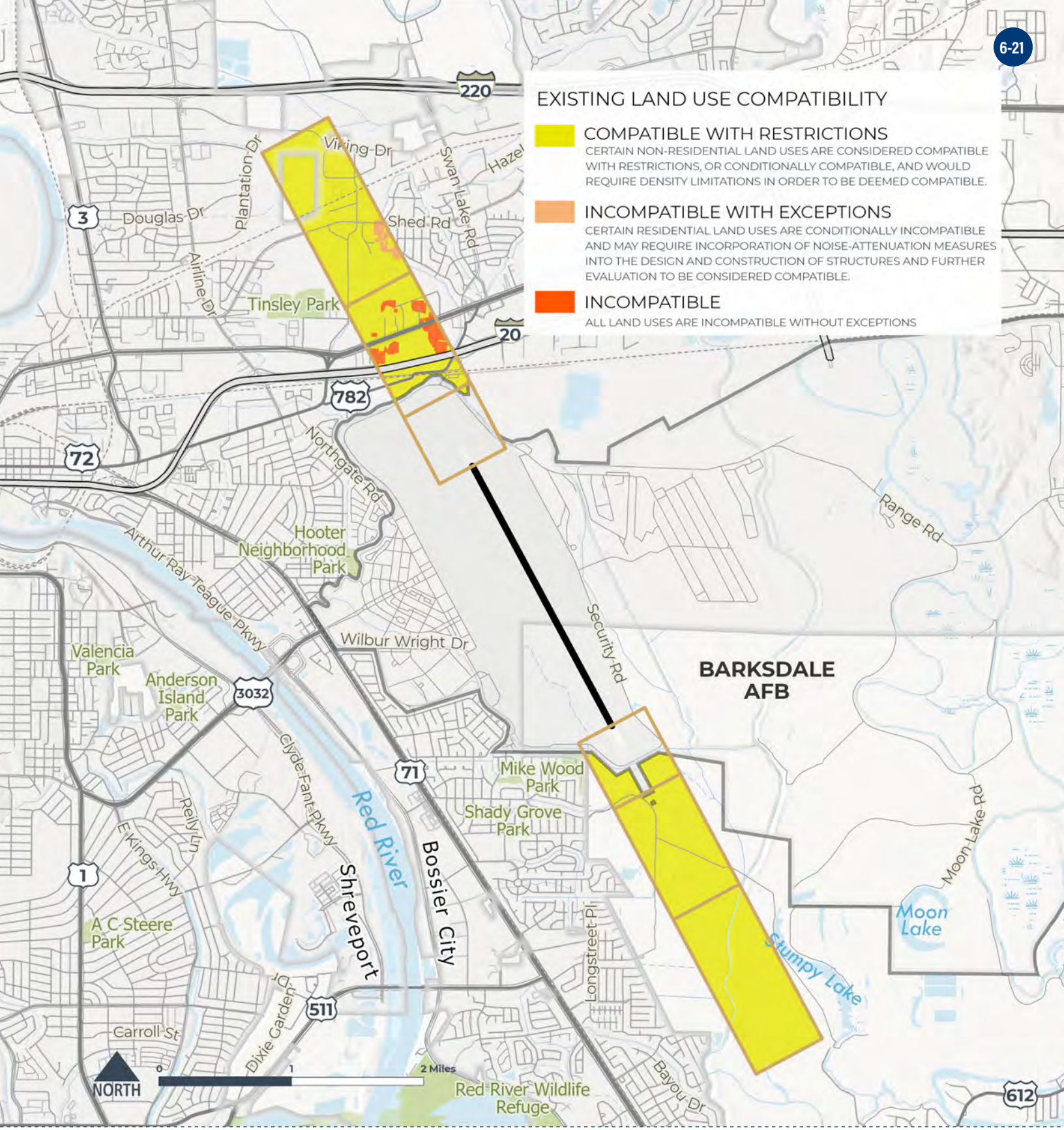


FIGURE 6-7

Existing Land Use Compatibility within Barksdale AFB Clear Zones, APZ I and APZ II

TABLE 6-3

Off-installation Existing Land Use Acreage within Clear Zones, APZ I and II

DESIGNATION	GENERALIZED LAND USE CATEGORY[1]	CZ	APZ I	APZ II	TOTAL
Incompatible or Incompatible with Exceptions	Residential	—	35.07	—	**35.07**
	Commercial	—	—	—	**—**
	Industrial	—	—	—	**—**
	Public/Quasi-Public	—	—	—	**—**
	Recreation	—	—	—	**—**
	Open/Agriculture/Low Density	—	—	—	**—**
	Transportation/Utilities	40.49	—	—	**40.49**
	Undeveloped	—	—	—	**—**
Compatible or Compatible with Restrictions	Residential	—	—	—	**—**
	Commercial	—	58.95	22.30	**81.25**
	Industrial	—	79.95	68.47	**148.42**
	Public/Quasi-Public	—	—	—	**—**
	Recreation	—	—	—	**—**
	Open/Agriculture/Low Density	86.01	470.06	857.43	**1,413.50**
	Transportation/Utilities	—	—	—	**—**
	Undeveloped	—	—	—	**—**
Sub-Total	**Incompatible**	**40.49**	**35.07**	—	**75.56**
	Compatible	**86.01**	**608.96**	**948.20**	**1,643.17**
Total		**126.5**	**644.03**	**948.20**	**1718.73**

1. Refer to **Appendix A** for Details.

6.4.3 Zoning Compatibility Concerns

As mentioned previously, Bossier City has zoning in place to protect Barksdale AFB APZs from uses that are incompatible with aircraft operations. These zoning districts—the Air Base Buffers—are located north and south of the installation. All designated zoning within the Barksdale AFB Clear Zone and APZs is therefore considered compatible or compatible with restrictions (See Table 6-5 and Figure 6-9). Although this zoning is in place there are still areas within Barksdale AFBs noise zones that possess zoning that is considered incompatible per generalized zoning categories (See Table 6-5 and Figure 6-9).

KEY RECOMMENDATION

Local communities should continue work with Barksdale AFB to ensure current information is available on proposed development projects in the vicinity of Barksdale AFB (i.e., within the Barksdale AFB HAFZ—See Section 5.3) and that a pathway for Barksdale AFB to provide input regarding compatibility concerns is in place.

TABLE 6-4
Off-installation Zoning Acreage within Noise Zones

DESIGNATION	GENERALIZED LAND USE CATEGORY[1]	65-69	70-74	75-79	80+	TOTALS
Incompatible or Incompatible with Exceptions	Commercial	—	—	—	2.05	**2.05**
	Industrial	—	—	—	—	**—**
	Public/Quasi-Public	—	—	—	—	**—**
	Recreation	—	—	—	—	**—**
	Open/Agriculture/Low Density	—	—	—	—	**—**
	Residential	899.18	585.82	52.63	2.07	**1,539.70**
	Undesignated	—	—	—	—	**—**
	Transportation/Utility	—	—	—	—	**—**
Compatible or Compatible with Restrictions	Commercial	174.50	—	6.18	—	**180.68**
	Industrial	154.52	93.10	—	—	**247.62**
	Public/Quasi-Public	—	—	—	—	**—**
	Recreation	—	—	—	—	**—**
	Open/Agriculture/Low Density	7,761.21	1,154.67	769.17	605.62	**10,290.67**
	Residential	—	—	—	—	**—**
	Transportation/Utility	—	—	—	—	**—**
Subtotals	**Incompatible**	**899.18**	**585.82**	**52.63**	**4.12**	**1,541.75**
	Compatible	**8,090.23**	**1,247.77**	**775.35**	**605.62**	**10,718.97**
Totals		**8,989.41**	**1,833.59**	**827.98**	**609.74**	**12,260.72**

1. Refer to **Appendix A** for Details.

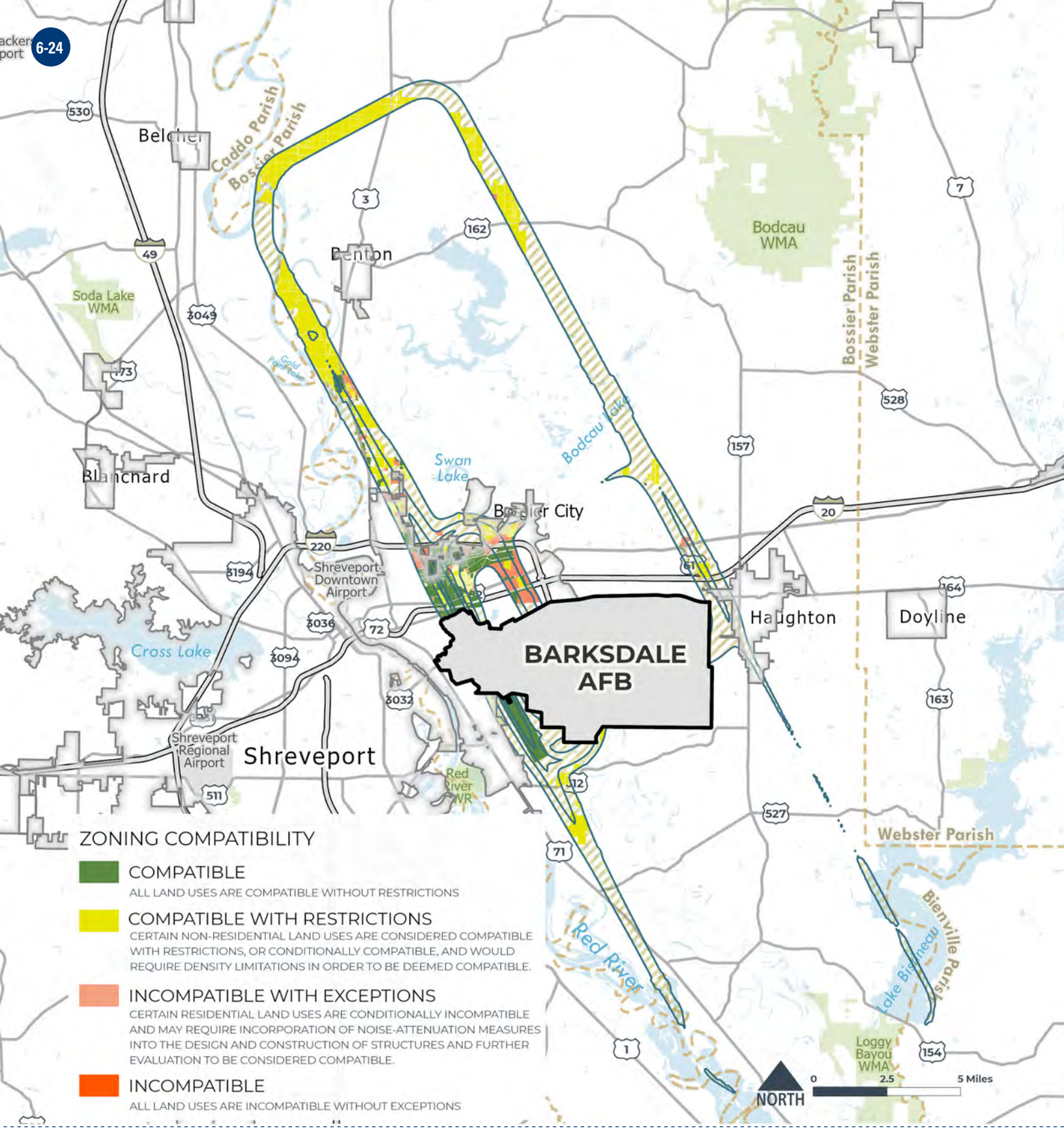


FIGURE 6-8

Zoning Compatibility within Barksdale AFB Noise Contours

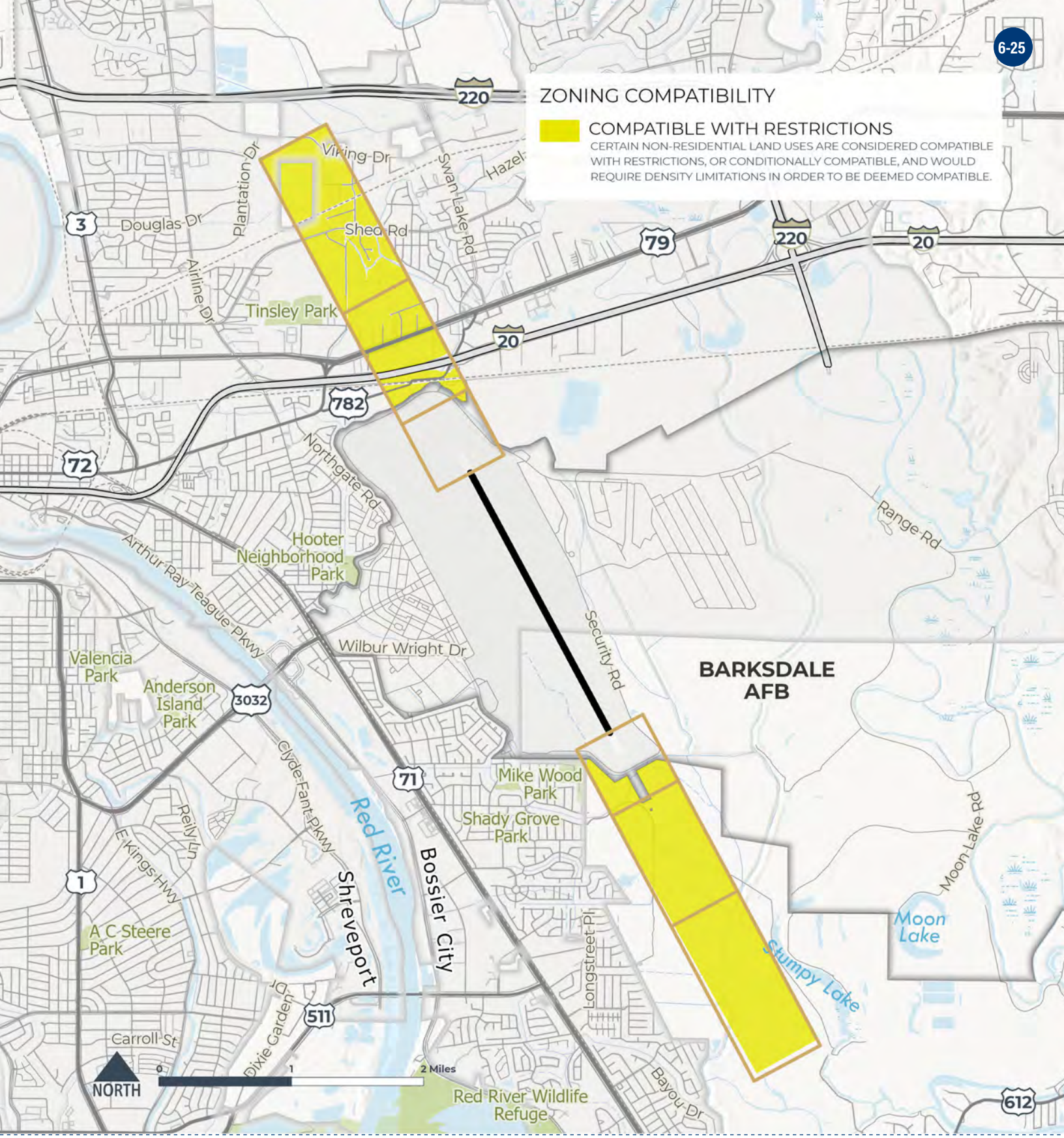


FIGURE 6-9
Zoning Compatibility within Barksdale AFB Clear Zones and APZ I and APZ II

There is approximately 2,300 acres of Residential zoned land located in the high noise that are considered incompatible. These areas are located north and northeast of Barksdale AFB with a concentration of incompatible residential land use land in the Whitehurst area. The majority of zoning designations in the region (over 10,00 acres of land) are considered compatible or compatible with restrictions, and have zoning in place that encourages appropriate development around Barksdale AFB.

It should also be noted, that there are also large areas of Bossier Parish where zoning data was not available. These areas do not have any local land development regulations or zoning rules in place, however, the vast majority of the land uses in Bossier Parish are generally rural in nature and/or are considered Open/Agriculture/ Low Density land and is considered compatible with aircraft operations.

TABLE 6-5

Off-installation Zoning Acreage within Clear Zones, APZ I and APZ II

DESIGNATION	GENERALIZED LAND USE CATEGORY[1]	CZ	APZ I	APZ II	TOTALS
Incompatible or Incompatible with Exceptions	Residential	–	–	–	–
	Commercial	–	–	–	–
	Industrial	–	–	–	–
	Public/Quasi-Public	–	–	–	–
	Recreation	–	–	–	–
	Open/Agriculture/Low Density	–	–	–	–
	Transportation/Utilities	–	–	–	–
	Undeveloped	–	–	–	–
Compatible or Compatible with Restrictions	Residential	–	–	–	–
	Commercial	–	–	–	–
	Industrial	–	–	–	–
	Public/Quasi-Public	–	–	–	–
	Recreation	–	–	–	–
	Open/Agriculture/Low Density	85.34	580.15	883.11	**1548.60**
	Transportation/Utilities	–	–	–	–
	Undeveloped	–	–	–	–
Subtotals	**Incompatible**	–	–	–	–
	Compatible	**85.34**	**580.15**	**883.11**	**1548.60**
Totals		**85.34**	**580.15**	**883.11**	**1548.60**

1. Refer to **Appendix A** for Details.

6.4.4 Future Land Use Compatibility Concerns

Future land use around Barksdale AFB follows similar patterns to existing land uses and therefore the compatibility assessment is similar. The largest incompatible future land use in the Barksdale AFB noise contours is Residential (approximately 1,600 acres). There are some other lesser incompatible uses in the Commercial, Public/Quasi-Public and Recreation land use categories as well (See Table 6-6 and Figure 6-10).

As specified by its future land use designations, currently developed areas to the north and northwest of Barksdale AFB, within Bossier City, will generally maintain their mixture of residential, commercial and industrial uses. Any development in these areas is expected to consist of infill and redevelopment consistent with existing land use patterns and zoning regulations assessed on a case-by-case basis. As a result, future land use north and northwest of Barksdale AFB will continue to be consistent with and reflect existing land use patterns.

As shown in Figure 6-11 and Table 6-7, the future land uses in the CZs and APZs are almost entirely compatible or compatible with restrictions, with the exception of approximately 2 acres of Commercial, Public/Quasi Public and Residential land use located in the Clear Zone. This area appears to be presently undeveloped and contain a satellite parking lot/open area and an area of green space located south of the Army Corps of Engineers building parking lot.

TABLE 6-6
Off-installation Future Land Use Acreage within Noise Zones

DESIGNATION	GENERALIZED LAND USE CATEGORY[1]	65-69 dB	70-74 dB	75-79 dB	80+ dB	TOTALS
Incompatible or Incompatible with Exceptions	Commercial	—	—	—	65.60	**65.60**
	Industrial	—	—	—	—	**—**
	Public/Quasi-Public	—	—	—	14.14	**14.14**
	Recreation	—	—	12.20	—	**12.20**
	Open/Agriculture/	—	—	—	—	**—**
	Low Density	1,139.85	539.71	6.10	—	**1,685.66**
	Residential	—	—	—	—	**—**
	Undesignated	—	—	—	7.06	**7.06**
Compatible or Compatible with Restrictions	Commercial	1,105.08	1,023.16	279.49	—	**2,407.73**
	Industrial	718.53	345.73	251.69	240.35	**1556.30**
	Public/	98.81	147.71	53.06	—	**299.58**
	Quasi-Public	68.48	30.40	—	—	**98.88**
	Recreation	5,441.23	313.96	37.51	0.20	**5,792.90**
	Open/Agriculture/	—	—	—	—	**—**
	Low Density	33.46	16.16	5.73	—	**55.35**
Sub-Total	**Residential**	**1,139.85**	**539.71**	**18.30**	**86.80**	**1,784.66**
	Transportation/	**7,465.59**	**1877.12**	**627.48**	**240.55**	**10,210.74**
Total		**8,605.44**	**2,416.83**	**645.78**	**327.35**	**11,995.40**

1. Refer to **Appendix A** for Details.

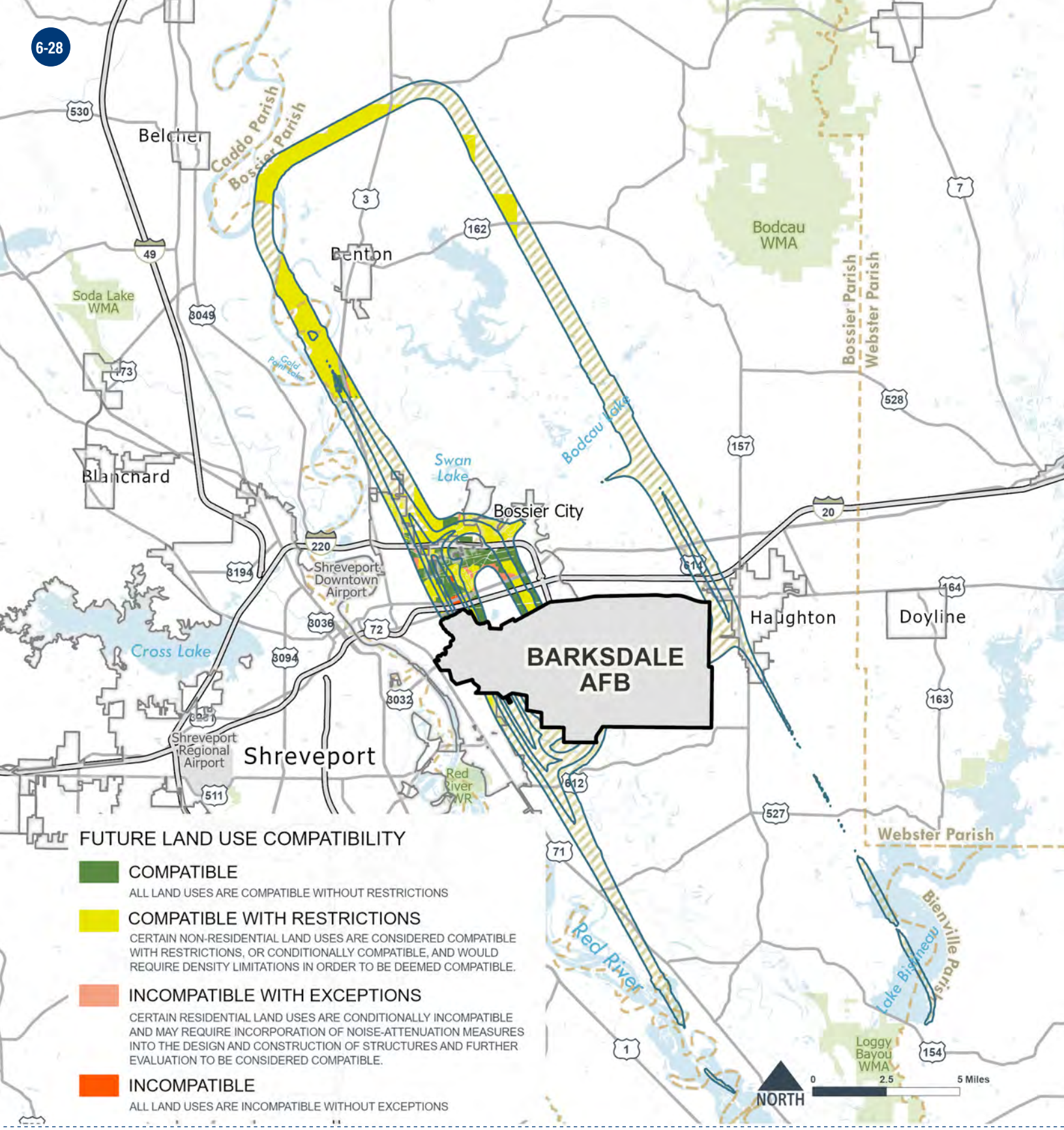


FIGURE 6-10

Future Land Use Compatibility within Barksdale AFB Noise Zones

TABLE 6-7

Off-installation Future Land Use within Clear Zones, APZ I and APZ II

DESIGNATION	GENERALIZED LAND USE CATEGORY[1]	CZ	APZ I	APZ II	TOTAL
Incompatible or Incompatible with Exceptions	Residential	—	—	—	—
	Commercial	0.72	—	—	**0.72**
	Industrial	—	—	—	—
	Public/Quasi-Public	0.72	—	—	**0.72**
	Recreation	0.72	—	—	**0.72**
	Open/Agriculture/Low Density	—	—	—	—
	Transportation/Utilities	—	—	—	—
	Undeveloped	—	—	—	—
Compatible or Compatible with Restrictions	Residential	—	—	—	—
	Commercial	—	123.40	20.09	**143.49**
	Industrial	—	112.35	359.31	**471.66**
	Public/Quasi-Public	—	9.06	19.26	**28.32**
	Recreation	—	—	10.01	**10.01**
	Open/Agriculture/Low Density	—	0.76	39.53	**40.29**
	Transportation/Utilities	—	6.67	5.69	**12.36**
	Undeveloped	—	—	—	—
Subtotals	**Incompatible**	**2.16**	**—**	**—**	**2.16**
	Compatible	**—**	**252.24**	**435.89**	**688.13**
TOTAL		**2.16**	**252.24**	**435.89**	**690.29**

1. Refer to **Appendix A** for Details.

The largest future land use category (471 acres) within APZs I and II is Industrial, which is considered compatible or conditionally compatible. Whether or not an industrial use is compatible depends on the type of specific use taking place (see Table A-1 for more information), but generally, industrial uses are compatible in APZs I and II if they do not attract birds and wildlife nor create dust or light emissions that could affect pilot vision, and if they are under the maximum FAR of 0.28 in APZ I and 0.56 in APZ II.

The Commercial, Public/Quasi-Public, and Recreational land uses in the APZ II are generally considered compatible if they do not attract concentrations of people, greater than 50 per acre at any given time, including employees and visitors. There are also varying FAR recommendations dependent on the use; see Table A-1 for more details.

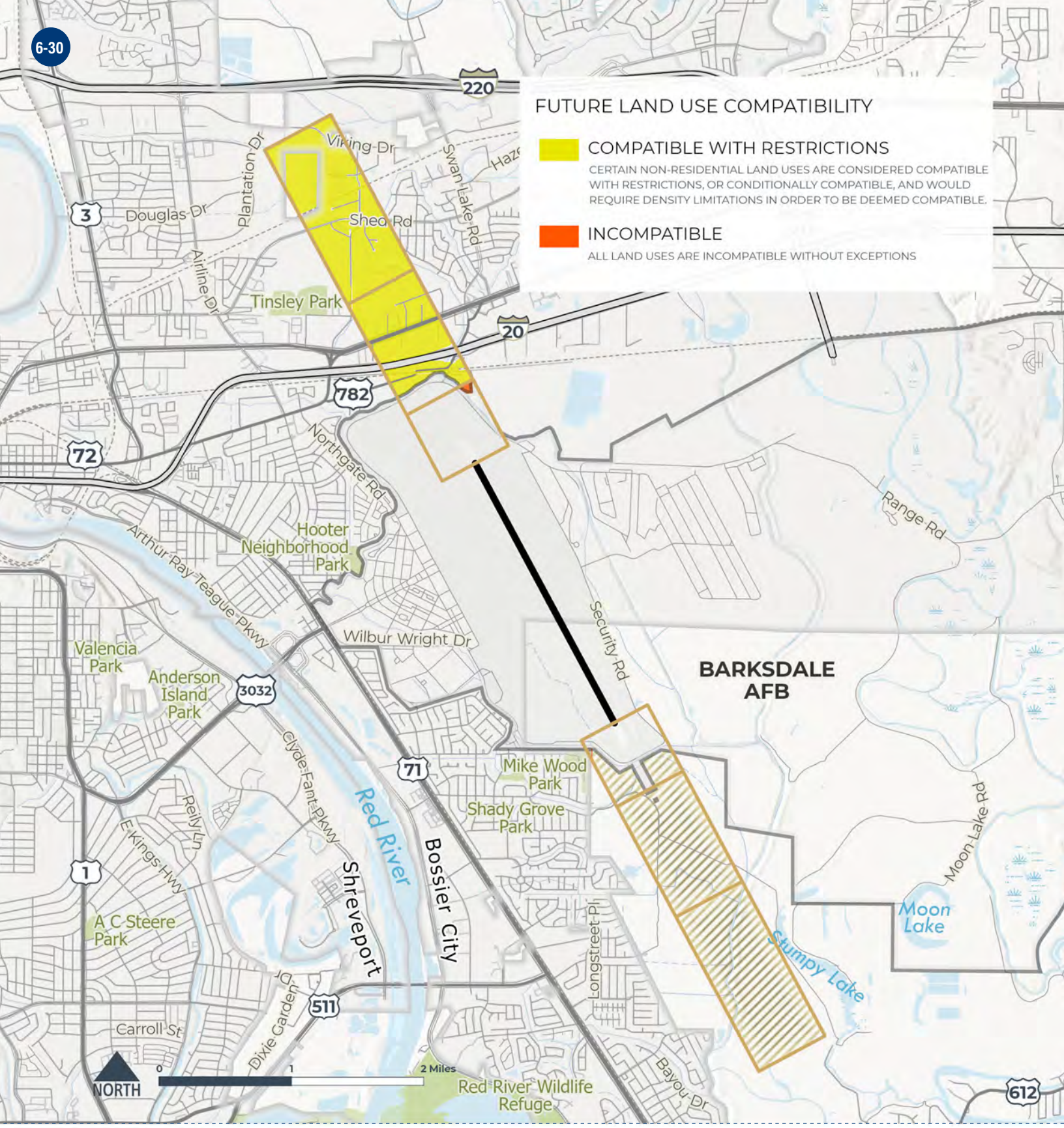


FIGURE 6-11

Future Land Use Compatibility within Barksdale AFB Clear Zones, APZ I and APZ II

6.4.5 Future Growth Areas and Potential Development Projects around Barksdale AFB

Areas that are proximate to an air installation but fall outside the formally designated AICUZ footprint and where AICUZ-focused land use planning recommendations and guidelines are not formally applied are sometimes referred to as "white spaces." These large areas exist in all regions around bases where land development rules vary, regulatory authority is broad, and long-term development strategies do not necessarily consider AICUZ concepts, but their potential impact on mission is real.

Future projects in the vicinity of Barksdale AFB, both in the white spaces and within the designated AICUZ footprint, that merit consideration from a land use compatibility standpoint include the following (See Figure 6-12):

KEY RECOMMENDATION

To ensure land uses and activities are examined for compatibility with flight operations, the Air Force has identified a HAFZ, which is defined as the area within the imaginary surfaces. Unlike AICUZ zones, the HAFZ does not have recommended land use compatibility tables that list potential uses. The HAFZ is a "consultation zone" that project applicants and local planning bodies should use as a tool to facilitate consultations with the Air Force to ensure their project or land uses are compatible with Barksdale AFB operations.

Town of Haughton

See Numbers 1, 2 and 3 on Figure 6-12

- Residential growth just north of the Town of Haughton—new water lines and subdivisions planned.
- New northern access gate at Barksdale AFB will provide efficient access to US Route 20 and will likely encourage growth east in Town of Haughton.
- Improvements and upgrades to area roads are ongoing—including Louisiana State Routes 157 and 3227—potentially spurring growth in and around the Town of Haughton. This project includes widening the Louisiana State Route 157 corridor from two to five lanes from approximately Ragan Lane to Highway 3227. The purpose of this first phase is to set the stage for the relocation of Louisiana State Route 3227 to allow for much improved traffic flow through the area, which is home to a number of new developments and is located just off the interchange with I-20. The second phase, which will include the construction of the new Louisiana State Route 3227 on a different alignment, will be done in a future project. The project is anticipated to be complete in Spring/Summer 2024.

Town of Benton

See Numbers 4 and 5 on Figure 6-12

- Benton experiencing significant growth to the south of the Town.
  - From Kingston Road north towards Benton, there has been substantial residential and commercial growth. There are 4,000 homes to be built in the next 5 years.
  - There was a recent annexation just south of Benton that will be used to support new residential growth.

Bossier Parish

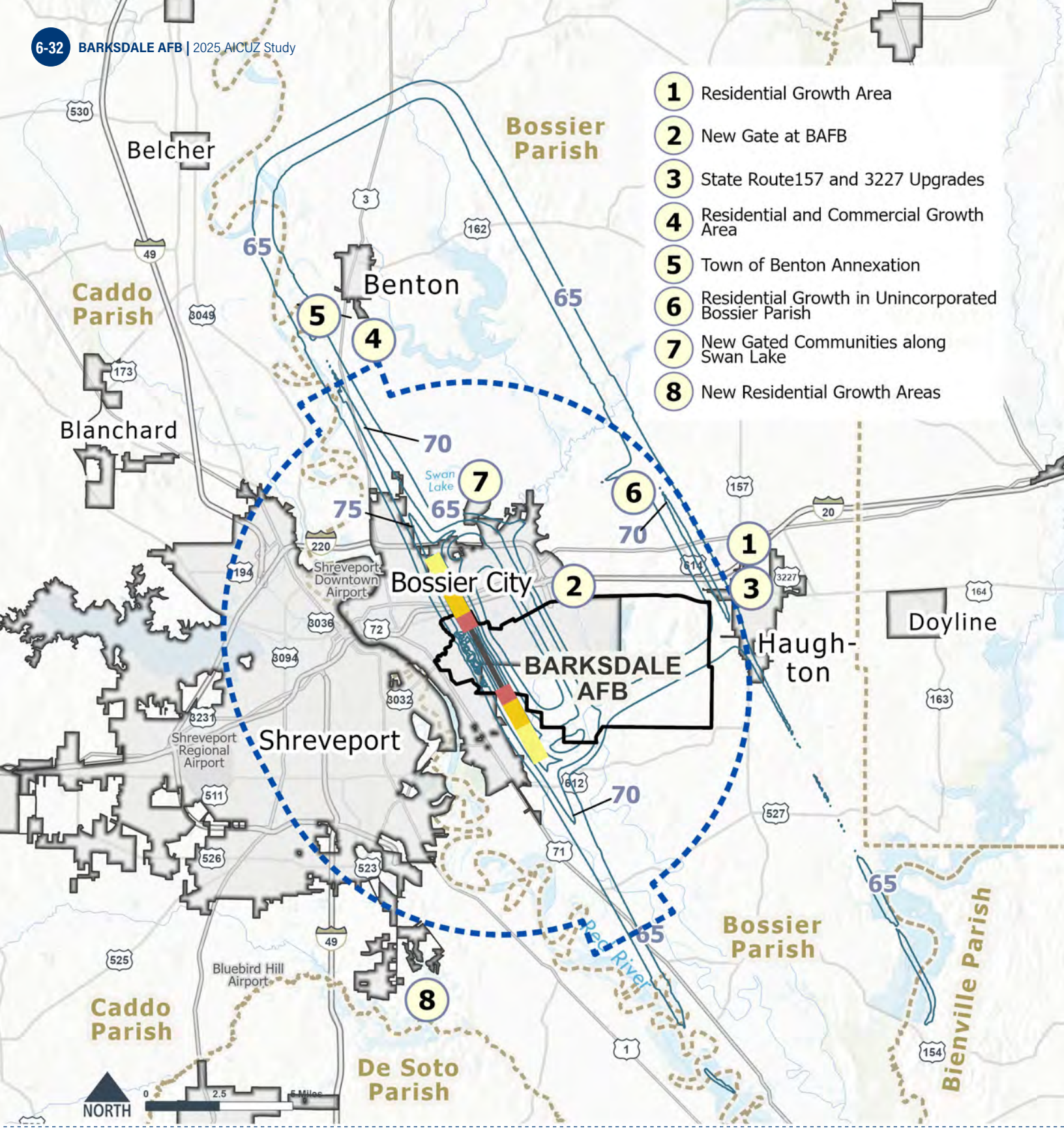
See Numbers 6 and 7 on Figure 6-12

- Residential growth occurring to the north and east of Barksdale AFB in unincorporated Bossier Parish. This potential growth is currently characterized by low density ag/open land generally bounded by Eastwood Road (Louisiana State Route 79) on the south, Louisiana State Route 157 to the east, and Bellevue Road on the north and west. New infrastructure (e.g., roads) is being planned and going in and is poised for extensive growth.
- Swan Lake. There are three new gated communities being developed along Swan Lake. There has also been a $20 million upgrade to Swan Lake Road that will connect to Benton community.

Caddo Parish

See Number 8 on Figure 6-12

- New residential growth areas occurring southeast of Shreveport.



Clear Zone (CZ)
Accident Potential Zone I (APZ I)
Accident Potential Zone II (APZ II)
HAFZ
2025 AICUZ Contour (dB)
Runway
Barksdale AFB

FIGURE 6-12
Future Growth Areas Around Barksdale AFB

7. IMPLEMENTATION

Implementation of the AICUZ Study must be a joint effort between Barksdale AFB and the surrounding communities. This AICUZ Study provides the best source of information to ensure land use planning decisions made by local municipalities are compatible with a future installation presence. This chapter discusses the roles of all partners in collaborative planning efforts.

7.1 MILITARY ROLE

The goal of the AICUZ Program is to assist local, regional, state, and federal officials in protecting the public health, safety, and welfare by promoting long-term land use compatible with military operations, and to protect Air Force operational capability from the effects of incompatible land use. This program helps mitigate noise and safety impacts on surrounding communities and advises these communities about supporting flight operations and the safety, welfare, and quality of life of their citizens.

Barksdale AFB is responsible for flight safety, noise abatement, and participation in existing local jurisdictional land use planning processes as part of its AICUZ Program responsibilities. Air Force policy and guidance requires that installation leadership periodically review existing practices for flight operations and evaluate these factors in relationship to populated areas and other local situations. The installation may serve in an advisory, non-voting capacity on planning boards and commissions.

Barksdale AFB will:

- **Ensure that, wherever possible, air operations planners route flights over sparsely populated areas** to reduce the exposure of lives and property to a potential accident.
- **Periodically review existing traffic patterns, instrument approaches, weather conditions, and operating practices** and evaluate these factors in relationship to populated areas and other local conditions. The purpose of this review is to limit, reduce, and control the impact of noise from flying operations on surrounding communities.
- **Consider the establishment of a community forum** between the installation and surrounding stakeholders to discuss land use and other issues of concern; the installation anticipates holding these meetings on an annual basis.
- **Schedule land use planning meetings** to provide a forum for agencies to meet and discuss future development and to address issues that may surface because of new proposals.
- **Provide copies of the AICUZ study** to local, parish, Tribal, and regional planning departments, and zoning administrators to aid in the planning process and provide copies of the AICUZ study to appropriate state and federal agencies.

Preparation and presentation of the 2025 Barksdale AFB AICUZ Study is one phase in continuing Air Force participation in the local planning process. The Air Force recognizes that, as the local community updates its land use plans, Barksdale AFB must be ready to provide additional input as needed.

7.2 STATE/REGIONAL ROLES

As noted in Section 6.2, in the State of Louisiana, land use planning and zoning are delegated to municipal and parish governments, which are empowered to create comprehensive land use plans and coordinate local land use plans. Recommendations for working with local governments to encourage compatible land use are discussed below, in Section 7.3.

Louisiana Military Advisory Council

The Louisiana Military Advisory Council was formed to provide a forum for issues concerning the installations and units of the Armed Forces located in Louisiana, and for the military and retired military personnel and their families who reside in Louisiana. It is responsible for formulating goals and objectives to enhance cooperation, coordination, communication and understanding among the military, the United States Department of Defense, the Louisiana congressional delegation, the communities in the state interfacing with the military, and state and local government agencies.

The Shreveport–Bossier Military Affairs Council

The Shreveport-Bossier Military Affairs Council (MAC) was established in 1986 by the Shreveport and Bossier City Chambers of Commerce for the purpose of serving as the primary liaison between the civilian/business community and the commanders of Barksdale AFB. The Barksdale AFB PA leadership goes to the MAC meetings every month and is an important part of maintaining a positive and beneficial relationship between the Air Force and community leaders.

Barksdale AFB Honorary Commanders

Barksdale AFB inducts members of the local community as honorary commanders. These individuals are part of Barksdale AFB's initiative to maintain the strong relationships between the base and the local community through mutually beneficial professional partnerships. The goal of the Honorary Commander Program is to build and maintain a strong and lasting bond between Barksdale AFB and surrounding communities, while exposing community leaders to the mission of the 2d Bomb Wing and the important role of today's military. The Honorary Commanders Program serves as an opportunity to educate key community leaders about the innovative missions of Barksdale AFB, foster a supportive relationship with the community, increase military involvement in civic endeavors and organizations, and demonstrate connection the community and the base share.

Readiness and Environmental Protection Integration (REPI) Program

Although it does not have any current initiatives, Barksdale AFB, as needed, could, subject to continued appropriation of funds for this use, pursue funding through existing federal government programs, such as DoD's Readiness and Environmental Protection Integration (REPI) Program, for protection of mission-sensitive areas. The REPI Program is a key tool used by DoD and its partners to protect the military's ability to train, test, and operate. The DoD created the REPI Program in response to land development and loss of habitat in the vicinity of or affecting its installations, ranges, and airspace that can lead to restrictions or costly and inadequate training and testing alternatives. Through REPI, the DoD works with state and local governments, conservation organizations, and willing private landowners to address these challenges to the military mission and the viability of DoD installations and ranges. The REPI Program has enjoyed broad bipartisan support in Congress and among groups representing state and local officials. The continued use of REPI as a tool is subject to continued appropriation of funds for this use. Through fiscal year (FY) 2022, the DoD and its partners have spent nearly $89 million on three REPI projects in Louisiana.

Cyber Innovation Center, Bossier City, LA

Cyber Innovation Center (CIC), is a key partner of Air Force Global Strike Command (AFGSC) and the anchor of the 3,000-acre National Cyber Research Park located adjacent to Barksdale AFB. It serves as a catalyst for the development and expansion of a knowledge-based workforce throughout the region. As a non-profit corporation, CIC fosters collaboration among its partners including AFGSC and Barksdale AFB in technology, research, and development. One of its primary missions is to develop a sustainable knowledge-based workforce that can support the growing needs of government, industry, and academic partners.

7.3 LOCAL GOVERNMENT ROLE

The role of the local government is to enact planning, zoning, and development principles and practices that are compatible with the installation and protect the installation's mission. The residents of the surrounding community have a long history of working with personnel from Barksdale AFB. 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 protect the integrity of the installation's flying mission:

- **Local government planners consider AICUZ policies and guidelines** when developing or revising city comprehensive plans and use AICUZ overlay maps and Air Force Land Use Compatibility Guidelines (see Appendix A) to evaluate existing and future land use proposals.
- **Ensure that new development applications or properties that are applying for a change of use are submitted to Barksdale AFB** to afford the opportunity for the base to assess those applications for potential impacts on defense missions. The Barksdale AFB PA Department can provide a land use planning point of contact.

Barksdale AFB and surrounding cities enjoy an excellent, long-standing collaborative partnership. Many of the cities provide relevant development packages to the Barksdale AFB Civil Engineering Squadron for review and input on an as-needed basis.

- **Adopt or modify zoning ordinances** to reflect the compatible land uses outlined in the 2023 Barksdale AFB AICUZ Study, including the creation of military airport overlay zones.
- **Local governments review their capital improvement plan, infrastructure investments, and development policies** to ensure they do not encourage incompatible land use patterns near Barksdale AFB, with particular emphasis on utility extension and transportation planning.
- **Local governments implement height and obstruction ordinances** that reflect current Air Force and 14 CFR 77 requirements, presented in this study as HAFZs.
- **Fair disclosure ordinances be enacted to require disclosure to the public** for those AICUZ study items that directly relate to military operations at Barksdale AFB.
- **Where allowed, local governments require real estate disclosure** for individuals purchasing or leasing property within noise zones, CZs, or APZs.
- **Enact or modify building/residential codes** to ensure that any new construction near Barksdale AFB has the recommended noise-level reduction measures incorporated into the design and construction of structures.

- **Government planning bodies monitor proposals for tall structures,** such as wind turbines and communication towers, to ensure that new construction does not pose a hazard to navigable airspace around Barksdale AFB. Where appropriate, coordinate with the FAA on the height of structures.
- **Local government land use plans and ordinances reflect AICUZ study recommendations** for development in CZs, APZs, and noise zones.
- **Local governments consult with Barksdale AFB on planning and zoning actions** that have the potential to affect installation operations.
- **Invite the Air Force leadership to be ex officio members on boards, commissions, and regional councils** addressing long-range development and other planning policies.
- **Encourage the development of a working group of cities, parish, and Barksdale AFB representatives** to discuss land use concerns and major development proposals that could affect military operations.

Barksdale AFB JLUS Recommendations

The 2009 Barksdale AFB JLUS recommendations provide for actions by local governments to improve land use decisions that may affect the mission of Barksdale AFB. The recommended actions are aimed at improving the compatibility of land uses around Barksdale AFB with the base's mission now and in the future. The Barksdale AFB Barksdale JLUS recommendations have been integrated into the Bossier City MPC process for management of growth and development around Barksdale AFB. It serves as an ongoing guide to local government and Air Force actions to enhance compatibility around Barksdale AFB and to strengthen the military-civilian relationship.

Many of the recommendations in the and initiatives identified in the 2009 Barksdale AFB JLUS have either been implemented or are being used as tools to help ensure compatibility on an ongoing basis.

The JLUS Update is intended to present a series of tools that the Air Force and the local governments can choose to adopt during the implementation phase of the JLUS process. All of the entities participating in the JLUS, including the Air Force and cities and parishes, retain the responsibility of selecting those compatibility tools that best reflect the specific issues, concerns, and needs of each stakeholder.

The tools assess the existing and foreseeable effects of Barksdale AFB on adjacent land and provide a set of options that promote collaborative regional decision-making and balance community and military interests while meeting the following goals:

- Protect the military mission
- Protect the health, safety and welfare of the military and civilian communities
- Sustain economic development and protect property rights
- Protect the environment
- Secure proper funding and administrative resources for implementation
- Maintain political feasibility

It should also be noted that the 2009 Barksdale AFB JLUS is 15 years old. With the updating of the installations operational noise footprint and development of a new AICUZ Study, timing is ideal to refresh the JLUS with an updated Compatible Use Plan.

Strategies

Strategies From the 2009 JLUS that Have Been Implemented or Are Being Implemented on an Going Basis Include:

STRATEGY AREA/TOOLS AND SUMMARY	STATUS OF IMPLEMENTATION [1]
Planning Documents and Policies Local governments include specific language about JLUS coordination as part of any Comprehensive Plan update or small area plans such as corridor studies.	**Ongoing Implementation**
Infrastructure Local governments would consider the impacts of both public and private infrastructure installation/ extension (e.g. water and sewer facilities) into noise and safety affected areas around Barksdale AFB.	**Ongoing Implementation**
Consultation Local governments would share information on community development proposals with Barksdale AFB. Military representatives would then advise the local government on the potential impacts of the proposed development on installation training and readiness activities.	**Ongoing Implementation**
Memorandum of Understanding The Memorandum of Understanding (MOU) is a "good faith" document that lays out procedures for communication among affected parties and formalizes collaboration among multiple stakeholders. All participating local governments and Barksdale AFB would sign a general MOU.	—
Communications/Information These tools establish clear mechanisms for information exchange among residents, local governments, and the military. Under this communications option, participating jurisdictions would develop appropriate mechanisms to ensure that residents, developers, businesses, and local decision-makers have adequate information about Air Force operations, possible impacts on lands surrounding the base, procedures to submit comments, and any additional local measures to promote land use compatibility around the airfield.	**Ongoing Implementation**
Real Estate Disclosure Disclosure requires the release of information on possible impacts (dust, smoke, noise/vibration, air safety zones) to prospective buyers or renters as part of real estate transactions for properties close to Barksdale AFB. Having a real estate disclosure ordinance/resolution in place educates individuals about the potential hazards and nuisances of nearby aircraft operations and it allows them to make well-informed decisions about property investment around military uses. Along with adopting a local ordinance to require disclosures, communities can also play a facilitator role by supporting voluntary disclosure in the real estate sector through the use of maps and searchable property databases that identity affected properties, which are described in the Communications/ Information recommendation above.	—

Source: Barksdale AFB JLUS, 2009

Strategies

Strategies From the 2009 JLUS that Have Been Implemented or Are Being Implemented on an Going Basis Include:

STRATEGY AREA/TOOLS AND SUMMARY	STATUS OF IMPLEMENTATION [1]
Establish Navigation and Noise Easements An easement is the right granted to a third party to use private real property in a specified manner. An easement may be given, for example, for overhead wires, underground gas lines or roads. A noise or navigation easement is a property right acquired from a land owner that grants the right of military training impacts, including the right to: • Cause noise, vibration, dust, etc. • Ensure unobstructed airspace over the property above a specified height • Restrict or prohibit certain lights, electromagnetic signals, or land uses that could interfere with communications technology and safe aircraft operation. The easement runs in perpetuity with the deed to the property and protects against lawsuits for military related impacts. Local governments, for example, may establish the granting of a noise easement by the developer as a condition for the approval of a proposed new home subdivision in areas subject to military training impacts.	—
Sound Attenuation Attenuation refers to design and construction practices intended to lower the amount of noise that penetrates the windows, doors, and walls of a building. Local governments can require attenuation as part of building codes for new residential and other noise sensitive construction in certain noise affected areas.	—
Cluster Developments Cluster subdivisions are intended to protect landscape features, such as wetlands and wildlife habitat. Local governments would implement a special provision for cluster zoning that recognizes those portions of a parcel within a noise/safety zone as prime candidates for the application of clustering. The site design would set aside areas subject to noise and safety constraints and allow denser, but compatible, development in areas outside of noise and hazard zones. This approach is density-neutral, so it allows the developer to build an equal number of housing units as would otherwise be permitted under conventional zoning.	—
Height Restrictions In addition to density and site location, local governments may use zoning controls to regulate the impacts of tall structures such as cell towers on navigable airspace in flight corridors used by the military. Regulation would ensure that such structures are properly sited so as not to interfere with safe aircraft operation.	**Ongoing Implementation**
Outdoor Lighting Standards Outdoor lighting systems, especially lighting associated with billboards, gas stations, major roadways, athletic fields, and large commercial or industrial uses often allow significant light to travel upward into an otherwise darkened sky. The resulting "light pollution" can obscure pilot vision or interfere with the use of night vision training devices. A lighting ordinance that requires fully shielded, cut-off exterior lighting applications can reduce the excess illumination and thereby improve pilot navigation.	—

Source: Barksdale AFB JLUS, 2009

Strategies

Strategies From the 2009 JLUS that Have Been Implemented or Are Being Implemented on an Going Basis Include:

STRATEGY AREA/TOOLS AND SUMMARY	STATUS OF IMPLEMENTATION [1]
Land Use Regulations These tools control the densities and placement of land use activities within established noise and safety zones around the base to protect the health, safety, and welfare of the public. These options are intended to accommodate future growth while minimizing the concentrations of people and uses that may trigger conflicts with noise and operations. Since local jurisdictions exercise land use control through zoning, any of the regulatory actions described would be implemented through the established local government legislative process.	**Ongoing Implementation**
Establish Planning Areas Members of the JLUS PMT established four planning areas in which specific recommendations related to land use, communication and coordination are identified. See Figure 10. Each of the planning areas is based on proximity to training activities, noise impacts, safety risks, or other operational impacts: • Clear Zones and Accident Potential Zones; • Noise Contours; • Base perimeter buffer (200 feet); and • North and south approach and departure zones	—
Clear Zones The Clear Zone is the most stringently regulated of all air safety zones and should contain no uses other than roads, underground utilities, agriculture, livestock grazing, and permanent passive open space.	**Ongoing Implementation**
Accident Potential Zone 1 The Unified Development Code for Bossier City/Parish strongly regulates land uses in the APZ 1, specially prohibiting potentially incompatible development, such as housing, and limiting rezoning activity. The JLUS recommends adding clarity to current development standards with the following land use intensities recommended for APZ I: • The maximum gross acreage coverage for all industrial uses should be 20% and have no more than 50 employees per shift. A sliding scale of employment density per shift and maximum acreage cover should apply. (See Figure 11). A Planned Development approach is encouraged to maximize flexibility in layout and guide buildings away from the centerline of the runway. • The maximum building footprint for all commercial uses including office, business, retail and wholesale trade shall be 8,000 square feet. Strip commercial centers should be explicitly prohibited.	**Ongoing Implementation**

Source: Barksdale AFB JLUS, 2009

7.4 COMMUNITY ROLE

Neighboring residents and installation personnel have a long-established history of working together for the mutual benefit of the Barksdale AFB mission and local community. Adoption of the following recommendations will strengthen this relationship, protect the health and safety of the public, and help ensure the integrity of the installation's defense mission:

Real Estate Professionals and Brokers

- Know where noise and safety zones encumber land near the air installation and invite installation representatives to brokers' meetings to discuss the AICUZ Program with real estate professionals.
- Disclose noise impacts to all prospective buyers of properties within areas greater than 65 dB DNL or within the safety zones.
- Disclose accident potential to all prospective buyers of properties within the CZs/APZs.
- Incorporate noise and accident potential in estimates of property values.
- Require the Multiple Listing Service to disclose noise and safety zones for all listings.

Developers

- Know where the noise zones and CZs/APZs encumber land near the air installation. Consult with Barksdale AFB on proposed developments within the AICUZ footprint.
- Participate in local discussions regarding existing and proposed zoning ordinances and subdivision regulations to support the compatible land uses outlined in this AICUZ Study.

Local Citizens

- Participate in local forums with the installation to learn more about the installation's missions.
- Become informed about the AICUZ Program and learn about the program's goals, objectives, and value in protecting the public's health, safety, and welfare.
- Ask local real estate professionals, city planners, and installation representatives about noise and accident potential when considering property purchases and values.

While the installation and community are separated by a fence, Barksdale AFB activities and operations could adversely affect the community. Likewise, community activities and development decisions can impair Barksdale AFB's ability to complete its local hometown mission. Military and community goals can be mutually achieved through a combination of collaborative planning and partnerships, open communication, and close relationships. The AICUZ study provides a foundation for relevant communication that safeguards the community and its hometown military installation to continue to coexist for many years.

Questions about the AICUZ Program may be directed to the installation Community Planner.

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APPENDIX
A. LAND USE COMPATIBILITY TABLES

Table A-1 provides compatibility recommendations based on historic aircraft mishap locations on or near air installations. The primary land use objective is to discourage people from establishing occupied land uses in areas of high accident potential.

While the table is organized by the *Standard Land Use Coding Manual (SLUCM)* categories, it varies from SLUCM by differentiating land use types by population density. Some uses warrant additional evaluation due to the variation of densities of people, intensity of use, or other characteristics that could impact safety of flight. Floor Area Ratio (FAR) recommendations are included within the table to guide suggested maximum density for non-residential uses. General notes and specific footnotes at the bottom of the table provide additional information and compatibility considerations.

These recommendations are intended to support compatible land use planning both on and off base; they do not constitute a federal determination that any use of land is acceptable or unacceptable under local zoning.

These tables are based on approximation of data from the Federal Highway Administration SLUCM tables and may be transposed in the event of any possible data gaps. Intended to be estimates for the purpose of general development guidelines.

TABLE A-1

Land Use Compatibility Recommendations in APZs and CZs

SLUCM No./LAND USE NAME		CZ[1]	APZ I[1]	APZ II[1]	DENSITY[1] RECOMMENDATION
	10 RESIDENTIAL				
11	Household Units				
11.11	Single Units: Detached	N	N	Y[2]	Maximum Density of 2 Du/Ac
11.12	Single Units: Semi-Detached	N	N	N	
11.13	Single Units: Attached Row	N	N	N	
11.21	Two Units: Side-By-Side	N	N	N	
11.22	Two Units: One Above the Other	N	N	N	
11.31	Apartments: Walk-Up	N	N	N	
11.32	Apartment: Elevator	N	N	N	

SLUCM No.	LAND USE NAME	CZ[1]	APZ I[1]	APZ II[1]	DENSITY[1] RECOMMENDATION
12	Group Quarters	N	N	N	
13	Residential Hotels	N	N	N	
14	Mobile Home Parks or Courts	N	N	N	
15	Transient Lodgings	N	N	N	
16	Other Residential	N	N	N	
	20 MANUFACTURING[3]				
21	Food and Kindred Products; Manufacturing	N	N	Y	Maximum FAR 0.56 IN APZ II
22	Textile Mill Products; Manufacturing	N	N	Y	Maximum FAR 0.56 IN APZ II
23	Apparel and Other Finished Products; Products Made From Fabrics, Leather, and Similar Materials; Manufacturing	N	N	N	
24	Lumber and Wood Products (Except Furniture); Manufacturing	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
25	Furniture and Fixtures; Manufacturing	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
26	Paper and Allied Products; Manufacturing	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
27	Printing, Publishing, and Allied Industries	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
28	Chemicals and Allied Products; Manufacturing	N	N	N	
29	Petroleum Refining and Related Industries	N	N	N	
	30 MANUFACTURING[3] (CONTINUED)				
31	Rubber and Miscellaneous Plastic Products; Manufacturing	N	N	N	
32	Stone, Clay, and Glass Products; Manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II

SLUCM No.	LAND USE NAME	CZ[1]	APZ I[1]	APZ II[1]	DENSITY[1] RECOMMENDATION
33	Primary Metal Products; Manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II
34	Fabricated Metal Products; Manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II
35	Professional, Scientific, and Controlling Instruments; Photographic and Optical Goods; Watches and Clocks	N	N	N	
39	Miscellaneous Manufacturing	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
	40 TRANSPORTATION, COMMUNICATION, AND UTILITIES[3,4]				
41	Railroad, Rapid Rail Transit, and Street Railway Transportation	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
42	Motor Vehicle Transportation	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
43	Aircraft Transportation	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
44	Marine Craft Transportation	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
45	Highway and Street Right-of-Way	Y[5]	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
46	Automobile Parking	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
47	Communication	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
48	Utilities[7]	N	Y[6]	Y[6]	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
48.5	Solid Waste Disposal (Landfills, Incinerators, etc.)	N	N	N	
49	Other Transportation, Communication, and Utilities	N	Y[6]	Y	See Note 6 below
	50 TRADE				
51	Wholesale Trade	N	Y	Y	Maximum FAR of 0.28 in APZ I & .56 in APZ II
52	Retail Trade: Building Materials, Hardware, and Farm Equipment	N	Y	Y	See Note 8 below

SLUCM No.	LAND USE NAME	CZ[1]	APZ I[1]	APZ II[1]	DENSITY[1] RECOMMENDATION
53	Retail Trade: Including, Discount Clubs, Home Improvement Stores, Electronics Superstores, etc.	N	N	Y	Maximum FAR of 0.16 in APZ II
53	Shopping Centers: Neighborhood, Community, Regional, Super-Regional[9]	N	N	N	
54	Retail Trade: Food	N	N	Y	Maximum FAR of 0.24 in APZ II
55	Retail Trade: Automotive, Marine Craft, Aircraft, and Accessories	N	Y	Y	Maximum FAR of 0.14 in APZ I & 0.28 in APZ II
56	Retail Trade: Apparel and Accessories	N	N	Y	Maximum FAR of 0.28 in APZ II
57	Retail Trade: Furniture, Home, Furnishings, and Equipment	N	N	Y	Maximum FAR of 0.28 in APZ II
58	Retail Trade: Eating and Drinking Establishments	N	N	N	
59	Other Retail Trade	N	N	Y	Maximum FAR of 0.16 in APZ II
	60 SERVICES[10]				
61	Finance, Insurance, and Real Estate Services	N	N	Y	Maximum FAR of 0.22 in APZ II
62	Personal Services	N	N	Y	Office uses only. Maximum FAR of 0.22 in APZ II.
62.4	Cemeteries	N	Y[11]	Y[11]	
63	Business Services (Credit Reporting; Mail, Stenographic, Reproduction; Advertising)	N	N	Y	Maximum FAR of 0.22 in APZ II
63.7	Warehousing and Storage Services[12]	N	Y	Y	Maximum FAR of 1.0 in APZ I; 2.0 in APZ II
64	Repair Services	N	Y	Y	Maximum FAR of 0.11 APZ I; 0.22 in APZ II
65	Professional Services	N	N	Y	Maximum FAR of 0.22 in APZ II
65.1	Hospitals, Nursing Homes	N	N	N	
65.1	Other Medical Facilities	N	N	N	

SLUCM No./LAND USE NAME		CZ[1]	APZ I[1]	APZ II[1]	DENSITY[1] RECOMMENDATION
66	Contract Construction Services	N	Y	Y	Maximum FAR of 0.11 APZ I; 0.22 in APZ II
67	Government Services	N	N	Y	Maximum FAR of 0.24 in APZ II
68	Educational Services	N	N	N	
68.1	Childcare Services, Child Development Centers, and Nurseries	N	N	N	
69	Miscellaneous Services	N	N	Y	Maximum FAR of 0.22 in APZ II
69.1	Religious Activities (Including Places of Worship)	N	N	N	
	70 CULTURAL, ENTERTAINMENT AND RECREATIONAL				
71	Cultural Activities	N	N	N	
71.2	Nature Exhibits	N	Y[13]	Y[13]	
72	Public Assembly	N	N	N	
72.1	Auditoriums, Concert Halls	N	N	N	
72.11	Outdoor Music Shells, Amphitheaters	N	N	N	
72.2	Outdoor Sports Arenas, Spectator Sports	N	N	N	
73	Amusements: Fairgrounds, Miniature Golf, Driving Ranges; Amusement Parks, etc.	N	N	Y[20]	
74	Recreational Activities (Including Golf Courses, Riding Stables, Water Recreation)	N	Y[13]	Y[13]	Maximum FAR of 0.11 in APZ I; 0.22 in APZ II
75	Resorts and Group Camps	N	N	N	
76	Parks	N	Y[13]	Y[13]	Maximum FAR of 0.11 in APZ I; 0.22 in APZ II
79	Other Cultural, Entertainment and Recreation	N	Y[11]	Y[11]	Maximum FAR of 0.11 in APZ I; 0.22 in APZ II

SLUCM No.	LAND USE NAME	CZ[1]	APZ I[1]	APZ II[1]	DENSITY[1] RECOMMENDATION
	80 RESOURCE PRODUCTION AND EXTRACTION				
81	Agriculture (Except Live-Stock)	Y[4]	Y[14]	Y[14]	
81.5, 81.7	Agriculture-Livestock Farming, Including Grazing and Feedlots	N	Y[14]	Y[14]	
82	Agriculture Related Activities	N	Y[15]	Y[15]	Maximum FAR of 0.28 in APZ I; 0.56 in APZ II, no activity which produces smoke, glare, or involves explosives
83	Forestry Activities[16]	N	Y	Y	Maximum FAR of 0.28 in APZ I; 0.56 in APZ II, no activity which produces smoke, glare, or involves explosives
84	Fishing Activities[17]	N[17]	Y	Y	Maximum FAR of 0.28 in APZ I; 0.56 in APZ II, no activity which produces smoke, glare, or involves explosives
85	Mining Activities[18]	N	Y[18]	Y[18]	Maximum FAR of 0.28 in APZ I; 0.56 in APZ II, no activity which produces smoke, glare, or involves explosives
89	Other Resource Production or Extraction	N	Y	Y	Maximum FAR of 0.28 in APZ I; 0.56 in APZ II, no activity which produces smoke, glare, or involves explosives
	90 OTHER				
91	Undeveloped Land	Y	Y	Y	
93	Water Areas[19]	N[19]	N[19]	N[19]	

Key To Table A-1, A-2, And A-3 Land Use Compatibility

Land Use Recommendations

Y **Yes.** Land use and related structures compatible without restrictions.

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

Yx **Yes with Restrictions.** The land use and related structures generally are compatible. However, see note(s) indicated by the superscript.

Nx **No with Exceptions.** The land use and related structures are generally incompatible. However, see note(s) indicated by the superscript.

Notes for Table A-1 Land Use Compatibility In APZs and CZs

1. A "Yes" or a "No" designation for compatible land use is to be used only for general comparison. Within each, uses exist where further evaluation may be needed in each category as to whether it is clearly compatible, normally compatible, or not compatible due to the variation of densities of people and structures. In order to assist air installations and local governments, general suggestions as to FARs are provided as a guide to density in some categories. In general, land use restrictions that limit occupants, including employees, of commercial, service, or industrial buildings or structures to 25 an acre in APZ I and 50 an acre in APZ II are low density. Outside events should normally be limited to assemblies of not more than 25 people an acre in APZ I, and maximum assemblies of 50 people an acre in APZ II. Recommended FARs are calculated using standard parking generation rates for various land uses, vehicle occupancy rates, and desired density in APZ I and II. For APZ I, the formula is FAR = 25 people an acre/ (Average Vehicle Occupancy x Average Parking Rate x (43,560/1000)). The formula for APZ II is FAR = 50/ (Average Vehicle Occupancy x Average Parking Rate x (43,560/1000)).
2. The suggested maximum density for detached single-family housing is two dwelling units/acre to encourage retention of farming and open space. In a planned unit development (PUD) of single-family detached units, where clustered housing development results in large open areas, this density could possibly be increased slightly provided the amount of surface area covered by structures does not exceed 20 percent of the PUD total area. PUD encourages clustered development that leaves large open areas.
3. Other factors to be considered: Labor intensity, structural coverage, explosive characteristics, air-pollution, steam, electronic interference with aircraft, height of structures, and potential lighting or glare to pilots.
4. No structures (except airfield lighting and navigational aids necessary for the safe operation of the airfield when there are no other siting options), buildings, or above-ground utility and communications lines should be in Clear Zone areas on or off the air installation. The Clear Zone is subject to the most severe restrictions.
5. Roads within the graded portion of the Clear Zone are prohibited. All roads within the Clear Zone are discouraged, but if required, they should not be wider than two lanes and the rights-of-way should be fenced (frangible) and not include sidewalks or bicycle trails. Nothing associated with these roads should violate obstacle clearance criteria. Nothing associated with these roads should violate obstacle clearance criteria.
6. Above-ground passenger terminals and above-ground power transmission or distribution lines are not recommended. Prohibited power lines include high-voltage transmission lines and distribution lines that provide power to cities, towns, or regional power for unincorporated areas.
7. Development of renewable energy resources, including solar and geothermal facilities and wind turbines, may impact military operations through hazards to flight or electromagnetic interference. Each new development should be analyzed for compatibility issues on a case-by-case basis that considers both the proposal and potentially affected mission.
8. Within SLUCM Code 52, maximum FARs for lumberyards (SLUCM Code 52.1) are 0.20 in APZ I and 0.40 in APZ II; the maximum FARs for hardware, paint, and farm equipment stores, (SLUCM Code 52.5), are 0.12 in APZ I and 0.24 in APZ II.
9. A shopping center is an integrated group of commercial establishments that is planned, developed, owned, or managed as a unit. Shopping center types include strip, neighborhood, community, regional, and super-regional facilities anchored by small businesses, a supermarket or drug store, discount retailer, department store, or several department stores, respectively. The maximum recommended FAR should be applied to the gross leasable area of the shopping center.
10. Land uses in the APZs should be passive open space; ancillary uses such as meeting places, auditoriums, etc. are not recommended.
11. Chapels, houses of worship, and land uses of public gatherings are incompatible within APZ I or APZ II.
12. Big-box home improvement stores are not included as part of this category.
13. Low occupancy facilities are compatible with these uses; however, playgrounds and marinas are not recommended.
14. Activities that attract concentrations of birds creating a hazard to aircraft operations should be excluded.
15. Factors to be considered: labor intensity, structural coverage, explosive characteristics, and air pollution.
16. Lumber and timber products removed due to establishment, expansion, or maintenance of Clear Zone lands owned in fee will be disposed of in accordance with applicable DoD guidance.
17. Controlled hunting and fishing may be permitted for the purpose of wildlife management.
18. Surface mining operations that could create retention ponds that may attract waterfowl and present bird/wildlife aircraft strike hazards (BASH), or operations that produce dust or light emissions that could affect pilot vision are not compatible.
19. Naturally occurring water features (e.g., rivers, lakes, streams, wetlands) are pre-existing, nonconforming land uses. Actions to expand naturally occurring water features or construction of new water features should not be encouraged. If construction of new features is necessary for storm water retention, they should be designed not to attract waterfowl. Water features that attract waterfowl present a potential BASH.
20. Amusement centers, family entertainment centers or amusement parks designed or operated at a scale that could attract or result in concentrations of people greater than 50 per acre at any given time, including employees and visitors, are incompatible in APZ II. Measures that reduce noise at a site should be used wherever practical in preference to measures that only protect interior spaces.

Table A-2 provides compatibility recommendations based on yearly A-weighted Day-Night Average Sound Level (ADNL) [the 'A' is implied in DNL when discussing aircraft operations] or Community Noise Equivalent Level (CNEL) on and around installations. The primary land use objective is to discourage noise-sensitive land uses in areas of higher noise exposure.

While the table is organized by the SLUCM categories, it varies from SLUCM by differentiating land use types by noise sensitivity. Some uses warrant additional evaluation due to potential for annoyance and activity interference. General notes and specific footnotes at the bottom of the table provide additional information and considerations for compatibility determinations.

These recommendations are intended to support compatible land use planning both on and off-base; they do not constitute a federal determination that any use of land is acceptable or unacceptable under local zoning.

TABLE A-2

Recommended Land Use Compatibility for Noise Zones

LAND USE		SUGGESTED LAND USE COMPATIBILITY				
		DNL OR CNEL				
SLUCM No./LAND USE NAME		65-69 dB	70-74 dB	75-79 dB	80-84 dB	85+ dB
10 RESIDENTIAL						
11	Household Units	N[1]	N[1]	N	N	N
11.11	Single Units: Detached	N[1]	N[1]	N	N	N
11.12	Single Units: Semidetached	N[1]	N[1]	N	N	N
11.13	Single Units: Attached Row	N[1]	N[1]	N	N	N
11.21	Two Units: Side-by-Side	N[1]	N[1]	N	N	N
11.22	Two Units: One Above the Other	N[1]	N[1]	N	N	N
11.31	Apartments: Walk-Up	N[1]	N[1]	N	N	N
11.32	Apartment: Elevator	N[1]	N[1]	N	N	N
12	Group Quarters	N[1]	N[1]	N	N	N

LAND USE		SUGGESTED LAND USE COMPATIBILITY				
		DNL OR CNEL				
SLUCM No./LAND USE NAME		65-69 dB	70-74 dB	75-79 dB	80-84 dB	85+ dB
13	Residential Hotels	N[1]	N[1]	N	N	N
14	Mobile Home Parks or Courts	N	N	N	N	N
15	Transient Lodgings	N[1]	N[1]	N[1]	N	N
16	Other Residential	N[1]	N[1]	N	N	N
	20 MANUFACTURING					
21	Food and Kindred Products; Manufacturing	Y	Y[2]	Y[3]	Y[4]	N
22	Textile Mill Products; Manufacturing	Y	Y[2]	Y[3]	Y[4]	N
23	Apparel and Other Finished Products; Products Made from Fabrics, Leather, and Similar Materials; Manufacturing	Y	Y[2]	Y[3]	Y[4]	N
24	Lumber and Wood Products (Except Furniture); Manufacturing	Y	Y[2]	Y[3]	Y[4]	N
25	Furniture and Fixtures; Manufacturing	Y	Y[2]	Y[3]	Y[4]	N
26	Paper and Allied Products; Manufacturing	Y	Y[2]	Y[3]	Y[4]	N
27	Printing, Publishing, and Allied Industries	Y	Y[2]	Y[3]	Y[4]	N
28	Chemicals and Allied Products; Manufacturing	Y	Y[2]	Y[3]	Y[4]	N
29	Petroleum Refining and Related Industries	Y	Y[2]	Y[3]	Y[4]	N

LAND USE		SUGGESTED LAND USE COMPATIBILITY				
		DNL OR CNEL				
SLUCM No./LAND USE NAME		65-69 dB	70-74 dB	75-79 dB	80-84 dB	85+ dB
	30 MANUFACTURING (CONTINUED)					
31	Rubber and Misc. Plastic Products; Manufacturing	Y	Y[2]	Y[3]	Y[4]	N
32	Stone, Clay, and Glass Products; Manufacturing	Y	Y[2]	Y[3]	Y[4]	N
33	Primary Metal Products; Manufacturing	Y	Y[2]	Y[3]	Y[4]	N
34	Fabricated Metal Products; Manufacturing	Y	Y[2]	Y[3]	Y[4]	N
35	Professional Scientific, and Controlling Instruments; Photographic and Optical Goods; Watches and Clocks	Y	25	30	N	N
39	Miscellaneous Manufacturing	Y	Y[2]	Y[3]	Y[4]	N
	40 TRANSPORTATION, COMMUNICATION, AND UTILITIES					
41	Railroad, Rapid Rail Transit, and Street Railway Transportation	Y	Y[2]	Y[3]	Y[4]	N
42	Motor Vehicle Transportation	Y	Y[2]	Y [3]	Y[4]	N
43	Aircraft Transportation	Y	Y[2]	Y[3]	Y[4]	N
44	Marine Craft Transportation	Y	Y[2]	Y[3]	Y[4]	N
45	Highway and Street Right-of-Way	Y	Y	Y	Y	N
46	Automobile Parking	Y	Y	Y	Y	N
47	Communication	Y	25[5]	30[5]	N	N
48	Utilities	Y	Y[2]	Y[3]	Y4	N

LAND USE		SUGGESTED LAND USE COMPATIBILITY				
		DNL OR CNEL				
SLUCM No./LAND USE NAME		65-69 dB	70-74 dB	75-79 dB	80-84 dB	85+ dB
49	Other Transportation, Communication, and Utilities	Y	255	305	N	N
	50 TRADE					
51	Wholesale Trade	Y	Y[2]	Y[3]	Y[4]	N
52	Retail Trade: Building Materials, Hardware, and Farm Equipment	Y	25	30	Y[4]	N
53	Retail Trade: Including Shopping Centers, Discount Clubs, Home Improvement Stores, Electronics Superstores, etc.	Y	25	30	N	N
54	Retail Trade: Food	Y	25	30	N	N
55	Retail Trade: Automotive, Marine Craft, Aircraft, and Accessories	Y	25	30	N	N
56	Retail Trade: Apparel and Accessories	Y	25	30	N	N
57	Retail Trade: Furniture, Home, Furnishings, and Equipment	Y	25	30	N	N
58	Retail Trade: Eating and Drinking Establishments	Y	25	30	N	N
59	Other Retail Trade	Y	25	30	N	N
	60 SERVICES					
61	Finance, Insurance, and Real Estate Services	Y	25	30	N	N
62	Personal Services	Y	25	30	N	N
62.4	Cemeteries	Y	Y[2]	Y[3]	Y[4,11]	Y[6,11]
63	Business Services	Y	25	30	N	N

LAND USE		SUGGESTED LAND USE COMPATIBILITY				
		DNL OR CNEL				
SLUCM No./LAND USE NAME		65-69 dB	70-74 dB	75-79 dB	80-84 dB	85+ dB
63.7	Warehousing and Storage	Y	Y[2]	Y[3]	Y[4]	N
64	Repair Services	Y	Y[2]	Y[3]	Y[4]	N
65	Professional Services	Y	25	30	N	N
65.1	Hospitals, Other Medical Facilities	25	30	N	N	N
65.16	Nursing Homes	N[1]	N[1]	N	N	N
66	Contract Construction Services	Y	25	30	N	N
67	Government Services	Y[1]	25	30	N	N
68	Educational Services	25	30	N	N	N
68.1	Childcare Services, Child Development Centers, and Nurseries	25	30	N	N	N
69	Miscellaneous Services	Y	25	30	N	N
69.1	Religious Activities (Including Places of Worship)	Y	25	30	N	N
	70 CULTURAL, ENTERTAINMENT AND RECREATIONAL					
71	Cultural Activities	25	30	N	N	N
71.2	Nature Exhibits	Y[1]	N	N	N	N
72	Public Assembly	Y	N	N	N	N
72.1	Auditoriums, Concert Halls	25	30	N	N	N

LAND USE		SUGGESTED LAND USE COMPATIBILITY				
		DNL OR CNEL				
SLUCM No./LAND USE NAME		65-69 dB	70-74 dB	75-79 dB	80-84 dB	85+ dB
72.11	Outdoor Music Shells, Amphitheaters	N	N	N	N	N
72.2	Outdoor Sports Arenas, Spectator Sports	Y[7]	Y[7]	N	N	N
73	Amusements	Y	Y	N	N	N
74	Recreational Activities (Including Golf Courses, Riding Stables, Water Recreation)	Y	25	30	N	N
75	Resorts and Group Camps	Y	25	N	N	N
76	Parks	Y	25	N	N	N
79	Other Cultural, Entertainment and Recreation	Y	25	N	N	N
	80 RESOURCE PRODUCTION AND EXTRACTION					
81	Agriculture (Except Live-Stock)	Y[8]	Y[9]	Y[10]	Y[10,11]	Y[10,11]
81.5, 81.7	Agriculture-Livestock Farming Including Grazing and Feedlots	Y[8]	Y[9]	N	N	N
82	Agriculture Related Activities	Y[8]	Y[9]	Y[10]	Y[10,11]	Y[10,11]
83	Forestry Activities	Y[8]	Y[9]	Y[10]	Y[10,11]	Y[10,11]
84	Fishing Activities	Y	Y	Y	Y	Y
85	Mining Activities	Y	Y	Y	Y	Y
89	Other Resource Production or Extraction	Y	Y	Y	Y	Y

Notes for Table A-2 Land Use Compatibility for Noise Zones

1. General
   - **a.** Although local conditions regarding the need for housing may require residential use in these zones, residential use is discouraged in DNL 65-69 and strongly discouraged in DNL 70-74. The absence of viable alternative development options should be determined, and an evaluation should be conducted locally prior to local approvals indicating that a demonstrated community need for the residential use would not be met if development were prohibited in these zones. Existing residential development is considered as pre-existing, non-conforming land uses.
   - **b.** Where the community determines that these uses must be allowed, measures to achieve outdoor to indoor NLR of at least 25 decibels (dB) in DNL 65-69 and 30 dB in DNL 70-74 should be incorporated into building codes and be considered in individual approvals; for transient housing, an NLR of at least 35 dB should be incorporated in DNL 75-79.
   - **c.** Normal permanent construction can be expected to provide an NLR of 20 dB, thus the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation, upgraded sound transmission class ratings in windows and doors, and closed windows year-round. Additional consideration should be given to modifying NLR levels based on peak noise levels or vibrations.
   - **d.** NLR criteria will not eliminate outdoor noise problems. However, building location, site planning, design, and use of berms and barriers can help mitigate outdoor noise exposure particularly from ground level sources. Measures that reduce noise at a site should be used wherever practical in preference to measures that only protect interior spaces.
2. Measures to achieve NLR of 25 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
3. Measures to achieve NLR of 30 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
4. Measures to achieve NLR of 35 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.
5. If project or proposed development is noise sensitive, use indicated NLR; if not, land use is compatible without NLR.
6. Buildings are not permitted.
7. Land use is compatible provided special sound reinforcement systems are installed.
8. Residential buildings require an NLR of 25.
9. Residential buildings require an NLR of 30.
10. Residential buildings are not permitted.
11. Land use that involves outdoor activities is not recommended, but if the community allows such activities, hearing protection devices should be worn when noise sources are present. Long-term exposure (multiple hours per day over many years) to high noise levels can cause hearing loss in some unprotected individuals.

Table A-3 shows recommended land use compatibility guidelines in large arms weapons and explosives noise zones. The primary objective is to discourage noise-sensitive land uses in areas of higher noise exposure. These land use compatibility recommendations are intended to support land use planning on- and off-installation. They do not constitute a federal determination of whether a use of land is acceptable under local zoning.

TABLE A-3

Recommended Land Use Compatibility for Large Arms and Explosives Noise Zones

LAND USE	C-WEIGHTED DNL/CNEL LEVELS			
LAND USE NAME & SLUCM CATEGORY	<57 dB	57-62 dB	62-70 dB	>70 dB
Residential Use Group (SLUCM Category10)				
Residential Uses, Inclusive of All Residential Units, i.e., Any Type of Single or Multiple Dwelling Units.	Y	Y[1]	N[2,3]	N[3]
Mobile Home Parks or Courts	Y	Y[1]	N[2,3]	N[3]
Transient Lodgings	Y	Y[1]	Y	N
MANUFACTURING USE GROUP (SLUCM CATEGORIES 20 & 30)				
Manufacturing and Industrial Uses (Food and Kindred Products; Textile Mill Products; Stone, Clay, Glass, Primary Metal, and Fabricated Metal Products; Fabric Products; Leather and Similar Materials; Chemicals and Allied Products; Petroleum Refining and Related Industries; Rubber and Miscellaneous Plastic Products; Lumber and Wood Products; Furniture and Fixtures; Paper and Allied Products; Printing, Publishing, and Allied Industries, Other Miscellaneous Manufacturing)	Y	Y	Y[4]	Y[4]
Precision Manufacturing (Professional Scientific and Controlling Instruments; Photographic and Optical Goods)	Y	Y	N	N
TRANSPORTATION, COMMUNICATION, AND UTILITIES USE GROUP (SLUCM CATEGORY 40)				
Rail, Motor Vehicle, Aircraft, Marine and Other Transportation, and Communication Systems and Utilities	Y	Y	Y	Y[4]
Highway and Street Right-of-Way, Automobile Parking	Y	Y	Y	Y
Telephone, Cellular and Radio Communication	Y	Y	Y	Y[4]
Solid Waste Disposal, (Landfills, Incinerators, etc.)	Y	Y	Y	Y

LAND USE	C-WEIGHTED DNL/CNEL LEVELS			
LAND USE NAME & SLUCM CATEGORY	**<57 dB**	**57-62 dB**	**62-70 dB**	**>70 dB**
TRADE (SLUCM CATEGORY 50)				
Wholesale Trade	Y	Y	Y	N
Retail Trade: Building Materials, Hardware, Paint, and Farm Equipment Sales; Food Such As Groceries, Bakeries, Confectionaries, Meat Markets, and Fast-Food Establishments; Automotive, Marine Craft, Aircraft, and Accessories; Apparel and Accessories, Furniture, Home, Furnishings, and Equipment; Other Retail Trade	Y	Y	Y	N
Mass Retailing, Super Stores, Strip Malls, Shopping Centers, Discount Clubs, Home Improvement Stores, etc.; Eating and Drinking Establishments	Y	Y	Y	N
SERVICES (SLUCM CATEGORY 60)				
Finance, Insurance and Real Estate, Personal, Professional, and Miscellaneous Services (Office Uses Only)	Y	Y	Y	N
Cemeteries	Y	Y	Y	N
Warehousing/Storage & Repair Services	Y	Y	Y[4]	Y[4]
Hospitals/Medical, Childcare & Development Services, Nursing Homes, Educational Facilities	Y	Y[1]	N	N
Governmental	Y	Y	Y	N
CULTURAL, ENTERTAINMENT AND RECREATIONAL (SLUCM CATEGORY 70)				
Cultural Activities, Auditoriums & Concert Halls	Y	Y[1]	N	N
Nature Exhibits, Cultural Activities, Auditoriums, Concert Halls, Places of Worship; Outdoor Music Shells, Museums, Outdoor Displays, Amphitheaters, Sports Arenas, Spectator Sports, Resorts and Group Camps, or Other Places of Assembly	Y	Y[1]	N	N

LAND USE	C-WEIGHTED DNL/CNEL LEVELS			
LAND USE NAME & SLUCM CATEGORY	<57 dB	57-62 dB	62-70 dB	>70 dB
Amusements: Fairgrounds, Miniature Golf, Driving Ranges; Amusement Parks, etc.	Y	Y	Y	N
Outdoor Recreational Activities: Golf Courses, Riding Stables, Water Recreation, Parks, etc.	Y	Y	Y	N
Resorts, Campground	Y	Y	N	N
RESOURCE PRODUCTION AND EXTRACTION5 (SLUCM CATEGORY 80)				
Agriculture (Including Grazing and Feedlots) and Forestry	Y	Y	Y	Y
Livestock Farming, Animal Breeding	Y	Y	N	N
Fishing, Mining and Other Resource Production or Extraction	Y	Y	Y	Y

Compatibility designations in Table A-3 generally refer to the principal use of the site. If other uses with greater sensitivity to noise are proposed, a determination of compatibility should be based on that use which is most adversely affected by noise.

Notes for Table A-3 Land Use Compatibility in Large Arms and Explosives Noise Zones[3]

1. The 57-62 dB CDNL (Land Use Planning Zone (LUPZ) functions as a buffer for the 62-70 dB CDNL area. Local governments have implemented land use planning measures in areas <62 dB CDNL. In addition to mitigating current noise impacts, implementing land use controls within this contour can create a buffer and limit development trends to prevent the possibility of future noise conflicts.
2. Although local demand for on- or off-installation housing may support noise-sensitive land uses within 62-70 dB CDNL, such land use is generally not compatible within 62-70 dB CDNL. Measures to achieve overall noise level reduction inside structures do not solve noise difficulties outside the structure. Barriers are not effective reducing the noise generated from large caliber military weapons firing (artillery, tank, etc.) or the detonation of explosives. Additionally, noise level reduction inside structures does not mitigate the vibration generated by the low-frequency energy of large caliber weapons firing and detonations.
3. Existing noise-sensitive land uses are considered as pre-existing incompatible land uses. In most cases these uses are not a risk to mission sustainment or a community's quality of life. Most long-term members near military installations or activities acknowledge hearing military operations and activities, but they are usually not alarmed or bothered by the noise. However, landowners, occupants, or other users may change over time, therefore the comfort or familiarity with military noise will not remain permanent or constant. Effort should be made to limit further incompatible development, seek mitigation efforts, and where practicable to roll back pre-existing incompatible land uses.
4. Although noise levels may be compatible, exercise caution in siting any activity that may be sensitive to vibration.
5. The land uses within this category include necessary associated resource management activities, for example, wildfire management activities for forestry.
6. This compatibility table identifies places of worship as a cultural gathering. However, religious institutions provide a wide variety of services and in these instances refer to the applicable category.

B. KEY TERMS

Day-Night Average Sound Level (DNL)

DNL (A-weighted when describing aircraft operational noise) is a composite noise metric accounting for the sound energy of all noise events in a 24-hour period. In order to account for increased human sensitivity to noise at night, DNL includes a 10 dB adjustment to events occurring during the acoustical nighttime period (10 p.m. through 7 a.m.). See Section 4.3 for additional information.

Decibel (dB)

Decibel is the unit used to measure the intensity of a sound.

Flight Profiles

Flight profiles consist of aircraft conditions (i.e., altitude, speed, power setting, etc.) defined at various locations along each assigned flight track.

Flight Track

The flight track locations represent the various types of arrivals, departures, and closed patterns accomplished at air installations. The location for each track is representative for the specific track and may vary due to air traffic control, weather, and other reasons (e.g., one pilot may fly the on one side of the depicted track, while another pilot may fly slightly to the other side of the track).

Floor Area Ratio (FAR)

The relationship between a development's floor area and the size of the land parcel on which the development is situated is quantified by a floor area ratio.

Operation

An aircraft operation is defined as one takeoff or one landing. A complete closed pattern or circuit is counted as two operations because it has a takeoff component and a landing component. A sortie is a single military aircraft flight from the initial takeoff through the termination landing. The minimum number of aircraft operations for one sortie is two operations, one takeoff (departure) and one landing (approach).

C. LAND USE AND ZONING COMPARISON

Existing Land Use, Future Land Use, and Zoning Comparison

TABLE C-1

NLCD Land Cover Classes within Off-Base APZs, Clear Zones, and Noise Contours

LAND COVER	AICUZ NORMALIZATION
Barren Land	Open/Agriculture/Low Density
Cultivated Crops	Agriculture
Deciduous Forest	Open/Agriculture/Low Density
Developed High Intensity	Residential/Commercial/Industrial
Developed Low Intensity	Residential/Commercial/Industrial
Developed Medium Intensity	Residential/Commercial/Industrial
Developed Open Space	Recreation
Emergent Herbaceous Wetlands	Open/Agriculture/Low Density
Evergreen Forest	Open/Agriculture/Low Density
Grassland/Herbaceous	Open/Agriculture/Low Density
Mixed Forest	Open/Agriculture/Low Density
Open Water	Open/Agriculture/Low Density
Pasture/Hay	Open/Agriculture/Low Density
Shrub/Scrub	Open/Agriculture/Low Density
Woody Wetlands	Open/Agriculture/Low Density

TABLE C-2

Zoning Classes within Bossier City: Off-Base APZs, Clear Zones, and Noise Contours

ZONING CLASS		AICUZ NORMALIZATION
A-1	**Airbase Buffer Zone North**	Open/Agriculture/Low Density
A-2	**Airbase Buffer Zone South**	Open/Agriculture/Low Density
B-1	**Business, Commercial Office**	Commercial
B-2	**Limited Business**	Commercial
B-3	**General Business**	Commercial
B-5	**Interchange Business**	Commercial
I-1	**Light Industrial**	Industrial
I-2	**I-2 (Heavy Industrial**	Industrial
R-A	**Residential Agriculture**	Residential
R-HD	**Residential High Density**	Residential
R-LD	**Residential Low Density**	Residential
R-MD	**Residential Med Density**	Residential
R-MHP	**Residential Manufactured Home Park**	Residential

TABLE C-3

Zoning Classes within Benton: Off-Base APZs, Clear Zones, and Noise Contours

ZONING CLASS	AICUZ NORMALIZATION
Community and Central Business Districts	Commercial
Heavy Industry Districts	Industrial
Light Industry Districts	Industrial
Multiple-Family Residence Districts	Residential
Neighborhood Business Districts	Residential
One-Family Residence Districts	Residential

TABLE C-4

Future Land Use Classes within Bossier City: Off-Base APZs, Clear Zones, and Noise Contours

FLU CLASS	FLU DESCRIPTION	AICUZ NORMALIZATION
C	**Commercial**	Commercial
CO	**Commercial Office**	Commercial
I	**Industrial**	Industrial
LDR	**Low Density Residential**	Open/Agriculture/Low Density
MDR	**Medium Density Residential**	Residential
HDR	**High Density Residential**	Residential
PK	**Park**	Recreation
PSP	**Public/Semi Public**	Public/Quasi-Public
ROW	**Right of Way**	Transportation/Utilities
RP	**Research Park**	Commercial
RR	**Rail Right of Way**	Transportation/Utilities
SDA	**Sensitive Development Area**	Open/Agriculture/Low Density

TABLE C-5

Future Land Use Classes within Benton: Off-Base APZs, Clear Zones, and Noise Contours

FLU CLASS	FLU DESCRIPTION	AICUZ NORMALIZATION
CH	**Commercial High Intensity**	Commercial
CL	**Commercial Low Intensity**	Commercial
I	**Industrial**	Industrial
MX	**Mixed Residential & Commercial**	Residential
RH	**High Density Residential**	Residential
RL	**Low Density Residential**	Residential
RU	**Rural**	Open/Agriculture/Low Density

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