JULY 2025

2025 AICUZ STUDY

AIR INSTALLATIONS COMPATIBLE USE ZONES

McCONNELL

AIR FORCE BASE · WICHITA, KANSAS

PREPARED FOR

U.S. ARMY CORPS OF ENGINEERS

SOUTHWESTERN DIVISION

REGIONAL PLANNING AND ENVIRONMENTAL CENTER

AIR FORCE CIVIL ENGINEERING CENTER

McCONNELL AIR FORCE BASE

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DEPARTMENT OF THE AIR FORCE

22D AIR REFUELING WING (AMC)
McCONNELL AIR FORCE BASE, KANSAS

MEMORANDUM FOR AREA GOVERNMENTS

FROM 22 ARW/CC
22d Air Refueling Wing,
22931 Kansas St., Bldg. 1, Suite 135,
McConnell AFB KS 67221-3504

SUBJECT Air Installations Compatible Use Zones (AICUZ) Study

1. The 2025 AICUZ Study for McConnell Air Force Base (AFB) is an update of the installation's 2011 version. The Air Force initiated the update to include operational changes that have occurred since the 2011 study was released such as the transitioning from the KC-135 airframe to the KC-46 airframe and includes a reevaluation of the installation's operational noise and safety zones. The Air Force provides this AICUZ study to aid in the development of local planning mechanisms that will protect the health, safety, and welfare of the public, as well as preserve the operational capabilities of McConnell AFB.

2. 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), operational noise footprint, and provides recommendations for development that is compatible with military operations. It is the Air Force's proposal that local governments incorporate these recommendations into long-range plans, zoning ordinances, subdivision regulations, building codes, and other related documents.

3. This study provides noise contours based upon the Day-Night Average Sound Level (DNL) metric. Long-range planning by local authorities involves strategies to influence present and future land uses. In accordance with DoDI 4715.13, DoD Operational Noise Program, the Air Force provides planning contours—noise contours based on reasonable projections of future missions and operations. Through planning contours, the AICUZ Study provides a description of the noise environment for projected aircraft operations that is more consistent with the planning horizon used by state, Tribal, regional, and local planning bodies.

4. The Air Force greatly values the positive relationship McConnell AFB has experienced with its neighbors over the years. As a partner in the process, the installation has worked closely with local communities on local development issues and attempted to limit noise disturbances by avoiding flights over heavily populated areas. The Air Force appreciates the cooperation of all community stakeholders in the collaborative implementation of the recommendations and guidelines presented in this AICUZ Study update.

Cory M. Damon,
Colonel, USAF Commander

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Unless otherwise noted, all photos are courtesy of the Defense Visual Information Distribution Service (DVIDS).

FIGURES

TABLES

ABBREVIATIONS AND ACRONYMS

AAD	Average Annual Day
ABD	Average Busy Day
ADNL	A-Weighted Day-Night Average Noise Level
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
AGL	Above Ground Level
AICUZ	Air Installations Compatible Use Zones
ANG	Air National Guard
Air Force	United States Air Force
AOD	Airport Overlay District
APZ	Accident Potential Zone
ARW	Air Refueling Wing
ATC	Air Traffic Control
BASH	Bird/Wildlife Aircraft Strike Hazard
BNOISE	Blast Noise Model
CDNL	C-Weighted Day-Night Average Noise Level
CFR	Code of Federal Regulations
CZ	Clear Zone
DAFH	Department of the Air Force Handbook
DAFI	Department of the Air Force Instruction
dB	Decibel
dBA	A-Weighted Decibel
DNL	Day-Night Average Sound Level
DoD	Department of Defense
DoDI	Department of Defense Instruction
EAD	Extended Active Duty
EOD	Explosive Ordnance Disposal
EMI	Electromagnetic Interference
EPA	Environmental Protection Agency
ESQD	Explosive Safety Quantity Distance
FAA	Federal Aviation Administration
FAR	Floor Area Ratio (also Federal Aviation Regulation)
FEIS	Final Environmental Impact Statement
FHWA	Federal Highway Administration
FOM	Friends of McConnell
FTU	Formal Training Unit
FY	Fiscal Year
GIS	Geographic Information System
HAFZ	Hazards to Aircraft Flight Zone
Hz	Hertz
ICBM	Intercontinental Ballistic Missile
ISR	Intelligence, Surveillance, and Reconnaissance
JLUS	Joint Land Use Study
JPPT	Joint Primary Pilot Training
KANG	Kansas Air National Guard
KMC	Kansas Modification Center
LED	Light Emitting Diode
LUPZ	Land Use Planning Zone
MACA	Midair Collision Avoidance
MOB 1	First Main Operating Base
MOU	Memorandum of Understanding
MSL	Mean Sea Level
NIAR	National Institute for Aviation Research
NEW	Net Explosive Weight
NLR	Noise Level Reduction
NVG	Night Vision Goggles
OLDCC	Office of Local Defense Community Cooperation
PA	Public Affairs
PK	Peak
PUD	Planned Unit Development
QD	Quantity Distance
ROD	Record of Decision
SAC	Strategic Air Command
SDZ	Surface Danger Zones
SLUCM	Standard Land Use Coding Manual
SMW	Strategic Missile Wing
STEM	Science, Technology, Engineering, and Mathematics
T&G	Touch-and-Go
UAS	Unmanned Aircraft System
USAF	United States Air Force
UFC	Unified Facilities Criteria
VFR	Visual Flight Rules
WPA	Works Progress Administration
WSU	Wichita State University

1. INTRODUCTION

The 2025 McConnell 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 2011. It reaffirms the United States Air Force's policy of promoting public health, safety, and general welfare in areas surrounding McConnell 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.

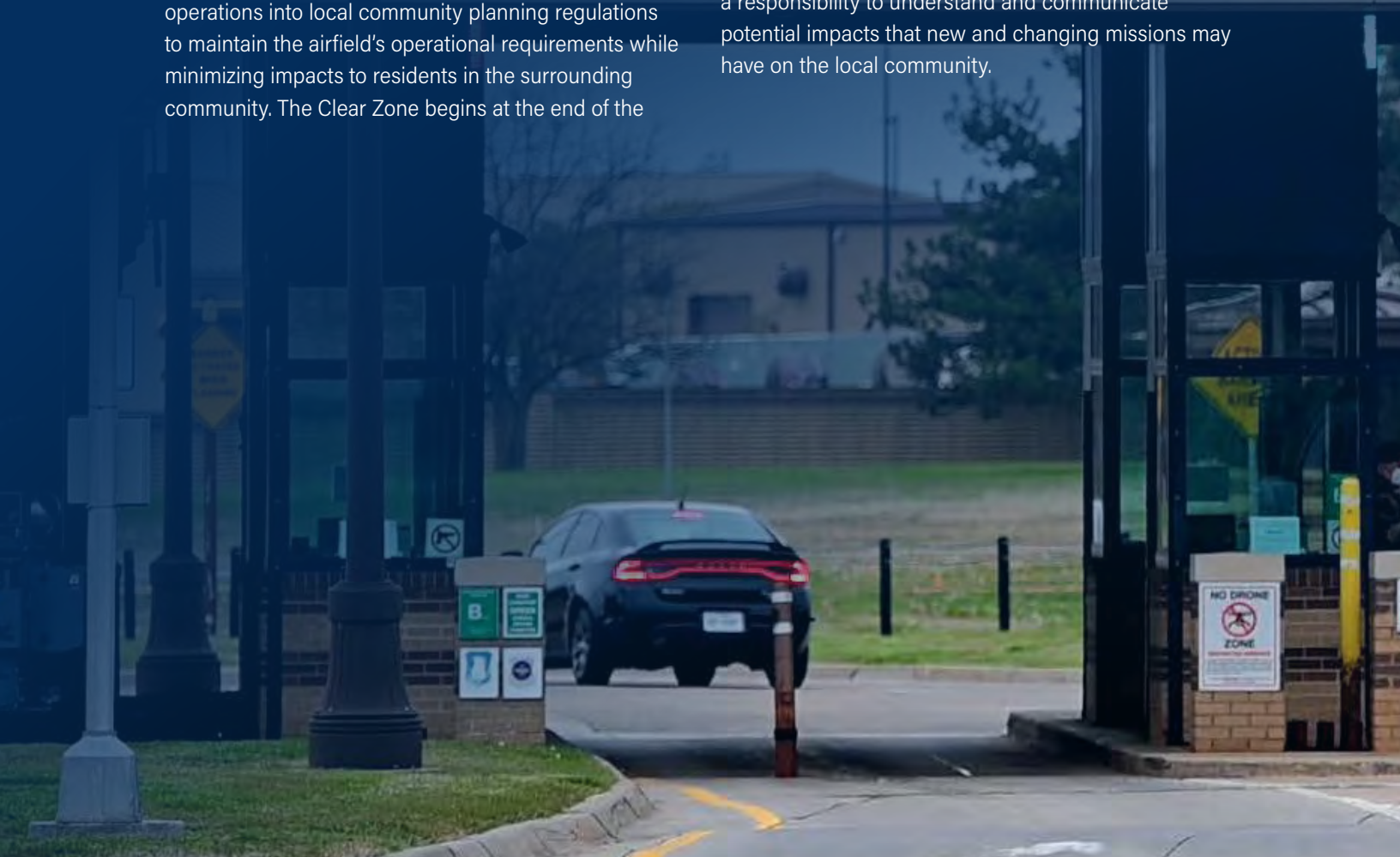
1.1 AICUZ PROGRAM

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 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 local 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 McConnell 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 ordnances, subdivision regulations, building codes, and other related documents. The study analysis is informed by the latest projected air operations.

In addition, McConnell AFB has an Explosives Ordnance Disposal range (EOD) where training and ordnance disposal are conducted. There are both explosive safety quantity distance (ESQD) arcs and noise contours associated with the EOD range, along with their own recommendations for compatible land use near the installation.

1.2.2 Authority

Authority for the Air Force AICUZ Program lies in three documents:

- Department of Defense Instruction (DoDI) 4165.57, *Air Installations Compatible Use Zones,* which establishes policy, assigns responsibilities, and prescribes procedures for air installations.
- Department of the Air Force Instruction (DAFI) 32-1015, *Integrated Installation Planning,* applies to all Air Force installations with active runways located in the United States and its territories. This DAFI outlines the AICUZ program objectives and responsibilities.
- Department of the Air Force Handbook (DAFH) 32-7084, *AICUZ Program Management,* 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 (listed chronologically):

- *McConnell Air Force Base Joint Land Use Study (JLUS)—City of Derby, Sedgwick County, City of Wichita, (2009).*
- *Air Installation Compatible Use Zone Study, (2011).*
- *Final Environmental Impact Statement for the KC-46 Formal Training Unit (FTU) and First Main Operating Base (MOB 1) Beddown, (2014).*
- *McConnell AFB Airfield Noise Report, (2024).*
- *McConnell AFB Explosive Ordnance Disposal Noise Report, (2024).*

1.4 CHANGES THAT REQUIRE AN AICUZ STUDY UPDATE

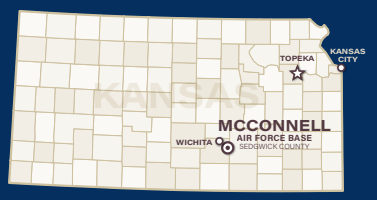
This 2025 McConnell AFB AICUZ Study replaces the 2011 version. It provides the installation's flight tracks, CZs, APZs, and noise contour information, presenting the most accurate representation of current military activities. With this information, the AICUZ Program allows the installation and surrounding 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 McConnell AFB AICUZ Study includes:

- **Introduction of new aircraft.** The ongoing transition from the KC-135R/T to the KC-46A (often shortened to KC-135 and KC-46, respectively) aircraft at McConnell AFB.
- **Changes in noise modeling approach.** The 2011 AICUZ for McConnell AFB utilized the average busy day (ABD) noise modeling approach, where current guidance within the Air Force is to utilize the average annual day (AAD) noise modeling approach. This is discussed in more depth in **Section 4.5.**
- **Changes to planning noise contours.** Due to the aforementioned operational changes at McConnell AFB, the operational noise contours have changed since the 2011 AICUZ Study was completed.
- **Changes in off-installation land use and/or projected land use.** In the 14 years since the 2011 AICUZ Study was prepared for McConnell AFB, land use, zoning regulations, and comprehensive planning processes in the surrounding municipalities have evolved. An updated AICUZ Study will enhance understanding of where growth is occurring and identify any current land use compatibility issues and concerns related to more current aircraft operations at McConnell AFB.
- **Changes in local population.** U.S. Census Bureau data shows that the population of the City of Wichita, Sedgwick County, and the City of Derby have all risen between the 2010 and 2020 Census, with Sedgwick County and the City of Derby each increasing over 15 percent. This has driven significant growth in residential development in the region, along with the amenities and other developments that often follow population growth.

2. McCONNELL AFB • KANSAS

2.1 LOCATION



McConnell AFB is located in Sedgwick County, Kansas, just southeast of the City of Wichita. The installation comprises approximately 2,649 acres of land. Adjacent to McConnell AFB to the north is the Cessna Aircraft facility, along with the Cessna Aircraft Field, which is a small north-south runway. To the west of the installation is a variety of aviation-related industrial development, including Spirit AeroSystems (acquired by Boeing) and the National Institute for Aviation Research (NIAR). These are discussed in more detail in **Section 6.**

McConnell AFB contains an airfield with two parallel runways, associated mission support facilities, housing, recreation areas, community facilities, training areas, and open land. Majority of McConnell AFB built facilities, (including those associated with the 22d ARW and 931st ARW) are to the east of the airfield, along with the main gate off of South Rock Road. The 184th Wing of the Kansas Air National Guard (KANG) is located on the western side of the airfield.

Wichita is colloquially known as the Air Capital of the World and there are many airfields and aviation related businesses in the Wichita region. Airfields in the vicinity of McConnell AFB include Cessna Field, Beech Airport, Colonel James Jabara Airport, Benton Airport, Cook Airfield, Augusta Municipal Airport and the Wichita Mid-Continent Airport, which is the largest airport in the region.

Top Right Photograph Inset | AdobeStock.com

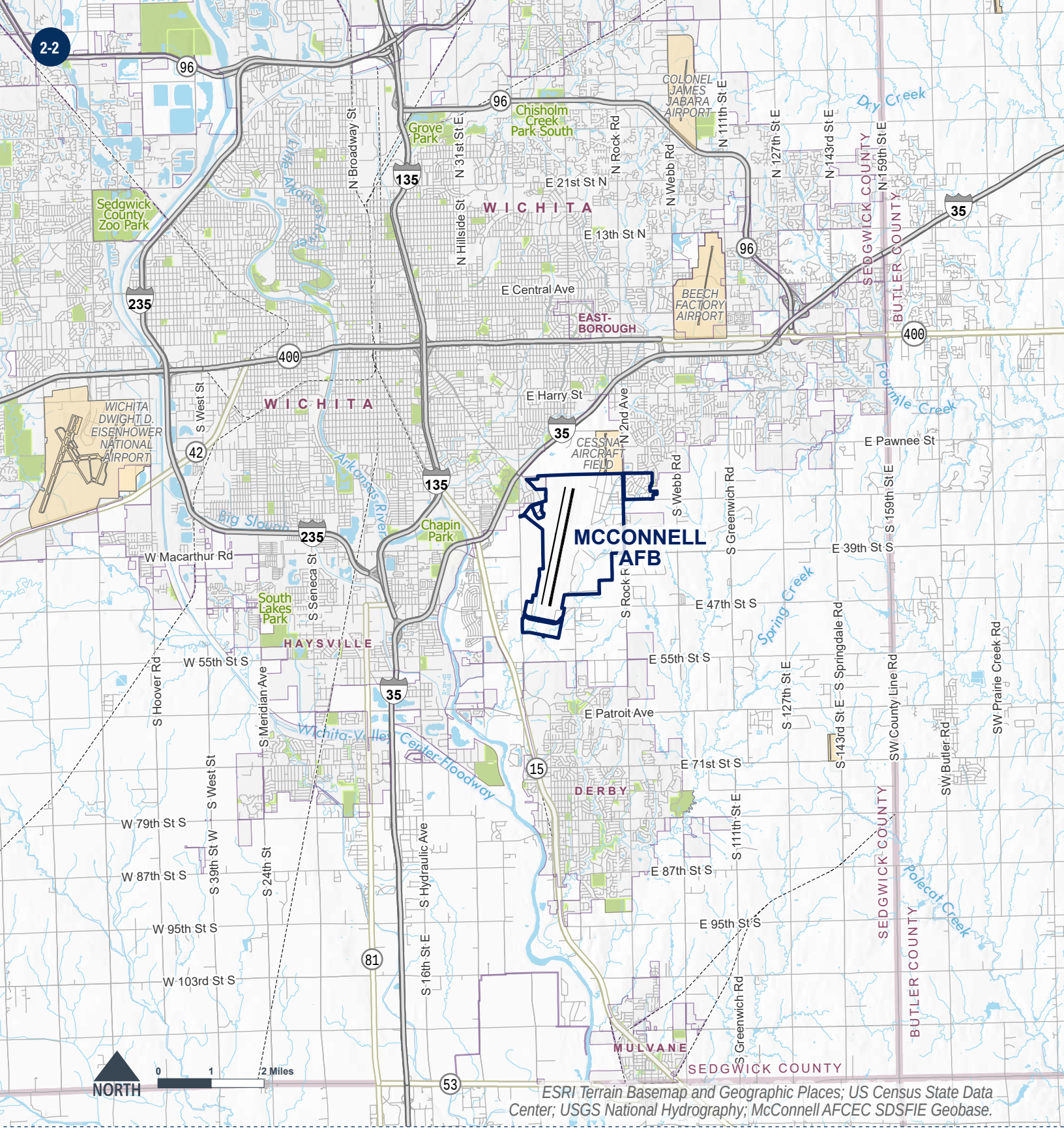


Figure 2-1

McConnell AFB Airfield Diagram

2.2 HISTORY

McConnell AFB was established in 1924 when Jack Turner, L.W. Clapp, Alfred MacDonald, and Julius Earl Schaefer shared a dream of building a municipal airport that would serve as the premiere mid-country stop point. Land was obtained in 1928 and construction began on a large maintenance hangar in March 1929, followed by an adjacent administration building in 1930. At this time, these facilities were named the Wichita Municipal Airport. Funding quickly dried up due to the Great Depression until 1934 when the New Deal Works Progress Administration (WPA) revived the project.

In the fall of 1948, Boeing announced production of the *B-47 Stratojet* from Plant II of the Boeing-Wichita facility. The need arose for a permanent United States Air Force (USAF) installation located nearby to train B-47 aircrews. Through condemnation, the US Justice Department acquired the Wichita Municipal Airport and its immediate lands in 1951. A series of legal battles between the Wichita Chamber and the US Justice Department ensued through June 1952, with the final ruling in favor of Wichita and the Federal Government paying $9.4 million. This money was used to create the current Dwight D. Eisenhower National Airport.

McConnell Air Force Base
McConnell was named in honor of Thomas, Edwin and Fred McConnell.

In 1953, the Wichita Municipal Airport was redesignated as Wichita AFB, and then the installation renamed it a third time as McConnell AFB in 1954. The installation is named after Fred, Thomas, and Edwin McConnell, three Wichita natives who served in the Pacific Theater of World War II.

In 1958, the Strategic Air Command (SAC) took over the B-47 aircrew training program; however, by the summer of 1963, the B-47 mission at McConnell AFB had concluded.

B-47 Stratojet.

Wichita Municipal Airport
Main Terminal Building, c. 1930s

B-29 Superfortress, McConnell AFB.

Pass in Review at McConnell AFB in the 1950's.

In 1961, the 381st Strategic Missile Wing (SMW) arrived at McConnell AFB to execute the installation's newest weapons system: the *Titan II Intercontinental Ballistic Missile (ICBM).* The 381 SMW managed a total of 18 ICBM silo facilities. The missile wing served as the installation host unit through December 1972.

As part of the nuclear arms reduction agreements between the United States, Europe, and Russia, the Federal Government tagged the *Titan-II's* for dismantlement and removal during the mid-1980s. The 381 SMW was officially inactivated in 1985.

In April 1971, the 91st Air Refueling Squadron arrived at McConnell AFB. This tenant unit from Robins AFB, Georgia, introduced the ***KC-135A Stratotanker*** mission to the installation. Then, in 1972, the 384th Air Refueling Wing was activated at McConnell AFB to execute the KC-135A, and later *KC-135R Stratotanker* missions. Additionally, the tanker wing was designated the installation host and assumed host unit duties. In 1987, the 384th ARW redesignated as the 384th Bombardment Wing (BW), added the B-1B *Lancer* to its inventory. The bombardment wing's first B-1B *Lancer* landed on January 4, 1988. The 384 BW operated both weapons systems through its redesignation as the 384th Bombardment Group on January 1, 1994 until its inactivation on October 1, 1994.

91st Air Refueling Squadron KB-29Ps Refuels 84Gs.

On January 3, 1994, the 22d Air Refueling Wing (ARW) moved from its longtime home station of March AFB, California, to McConnell AFB, bringing with it its KC-135 *Stratotanker* mission. At the same time, the unit assumed installation host wing duties, succeeding the 384th Bombardment Wing. In the time period following its move to McConnell AFB, the 22d ARW was deployed to the Middle East as well as other areas of the globe, in support of various military operations. Since September 2001, the 22d ARW actively served air refueling and transport duties in support of the Global War on Terrorism, and other significant missions around the globe.

In September 1994, the 931st Air Refueling Wing, which was formerly located at Grissom AFB, Indiana, was redesignated as the 931st Air Refueling Group. The newly designated 931st ARG was activated in January 1995 as an associate unit to the 22d ARW at McConnell AFB. The 931st ARG again redesignated back to the 931st ARW in March 2016. Since the unit's arrival in 1995, it has operated the KC-135 and is in the process of making a complete conversion to the KC-46 *Pegasus.*

In March 2014, a Final Environmental Impact Statement (FEIS) was published regarding the beddown of KC-46A aircraft at active-duty Air Force Bases in the continental United States. Based on the FEIS, the United States Air Force released a Record of Decision (ROD) in April 2014, stating its intent to beddown thirty-six KC-46A aircraft at McConnell AFB. The first of the KC-46A began arriving in January 2019. The transition continues to be ongoing, with the final aircraft beddown expected to be completed within the next few years.

2.3 MISSION

McConnell AFB is the home of the 22d ARW, 931st ARW, and the 184th Wing of the Kansas Air National Guard (KANG). Together, McConnell AFB's mission is to provide responsive, precise air refueling and operational support for a full range of military operations, as well as support intelligence operations as part of the 184th Wing.

2.4 HOST AND TENANT ORGANIZATIONS

22d Air Refueling Wing

The 22d ARW is the installation host unit of McConnell AFB and is part of the 18th Air Force under Air Mobility Command. The 22d ARW has 17 squadrons in total, with 16 at McConnell AFB and one at Pease Air National Guard Base in New Hampshire. The 22d ARW's primary mission is to deliver global air refueling capabilities, both conventional and unconventional, to U.S. armed forces and allied aircraft using the KC-135 and KC-46 aircraft. The first KC-46 aircraft was delivered to McConnell AFB on January 25, 2019, which began the transition from the KC-135 to the KC-46. The installation has 5,976 total personnel, including 2,874 active-duty military, and also supports nearly 8,000 retirees. For additional information on the personnel and economic impact of McConnell AFB overall, **see Section 2.6.**

931st Air Refueling Wing

The 931st ARW is part of the Air Force Reserve and is an associate unit with the active duty 22d ARW at McConnell AFB. More than 700 air reserve technicians, active guard reserve, traditional reservists and civilians are assigned to the wing. The 931st has had many flying missions over its history, most recently flying the KC-135 at McConnell AFB. However, due to the transition from the KC-135 to the KC-46, the last KC-135 mission took place in 2020. Now, the 22d ARW and 931st ARW share responsibilities for aircraft maintenance, with flying operations conducted by both units, using the KC-46 Pegasus.

184th Wing
(Kansas Air National Guard)

The 184th Wing is assigned to the Kansas Air National Guard and began in August 1941 with the 127th Observation Squadron. Overtime, the unit's designation changed several times, during which time it flew a variety of fighter aircraft, bombers and refueling aircraft. In July 2008, the unit was redesignated as the 184th Intelligence Wing (now the 184th Wing) and shed its aircraft assignment and moved into intelligence, surveillance, and reconnaissance (ISR) duties through various remotely piloted aircraft platforms. Within the 184th Wing, there are five groups that operate their own set of mission parameters, including the 184th Intelligence, Surveillance and Reconnaissance Group, the 184th Cyberspace Operations Group, the 184th Regional Support Group, the 184th Mission Support Group, and the 184th Medical Group. While some groups in the 184th are at McConnell AFB, others are located at the Smoky Hills Weapons Range near Salina, Kansas.

2.5 AIRFIELD ENVIRONMENT

Located at the center portion of the installation, the McConnell AFB Airfield **(Figure 2-2)** includes aircraft hangars for maintenance and storage, an Air Traffic Control Tower, aircraft parking ramps and taxiways, two hard surface parallel runways, assorted office buildings, test cells and ramp space for engine run ups, and other support facilities. Runway 01L/19R is the primary instrument runway and 12,000 feet long by 200 feet wide and completely concrete. Runway 01R/19L is a non-precision instrument runway, is 12,000 feet long by 150 feet wide, and is partially concrete and partially asphalt. The airfield elevation is 1,371 feet above mean sea level (MSL).

RUNWAYS

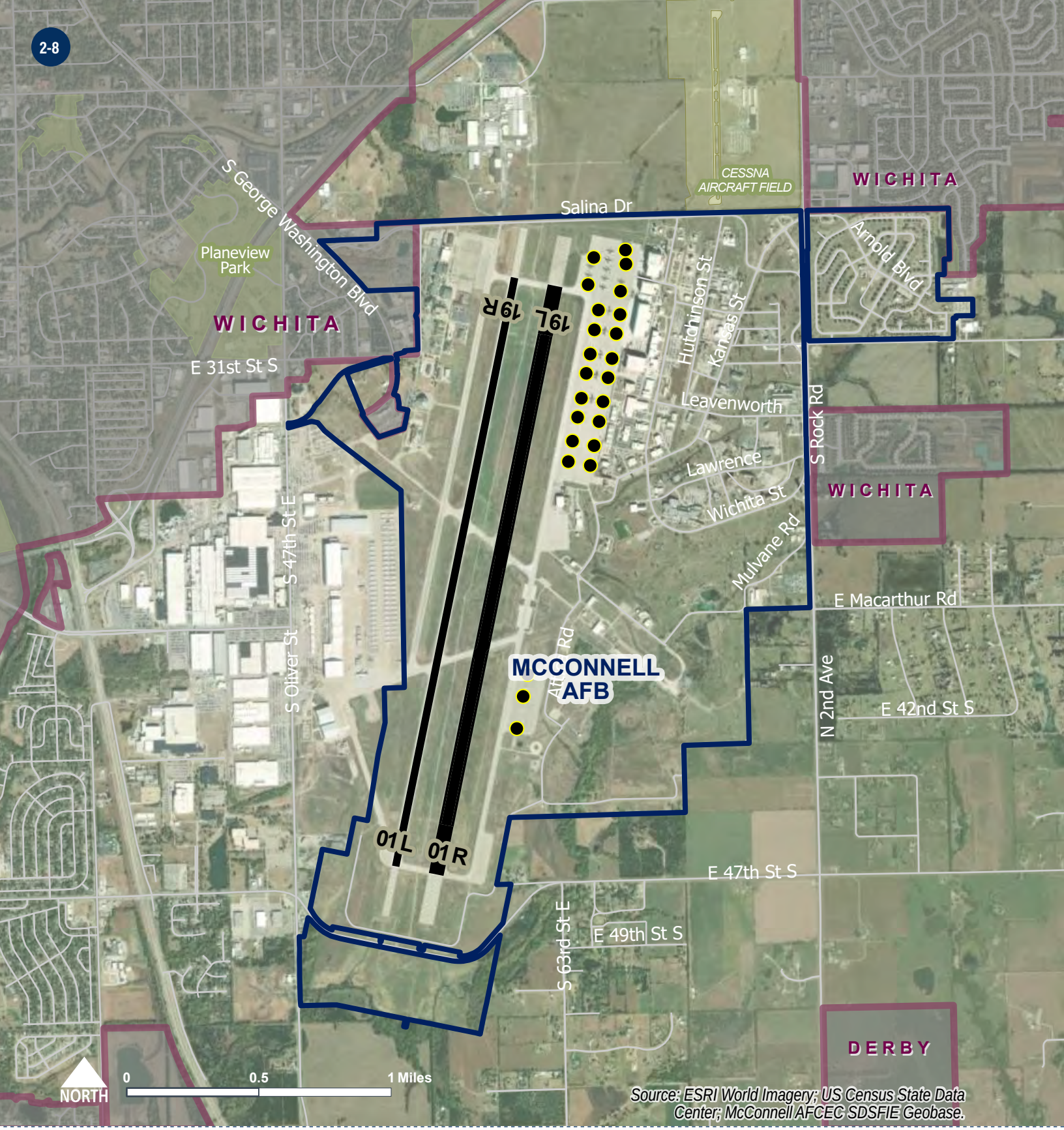
A runway is typically used in both directions and counted as two separate runways, depending on the direction of the departure. Each direction is labeled as a separate runway and numbered based on its magnetic heading, divided by 10 and rounded to a whole number.

ENGINE RUN UPS

Engine run ups are conducted for the purposes of aircraft maintenance and can include various power settings and may be conducted either on aircraft parking ramps, outside hangars or in certain designated locations for high-power run-ups **(see Section 3.2 for additional details).**

2.6 RANGE ENVIRONMENT

Located on the eastern portion of the installation, McConnell AFB's EOD range includes both a Proficiency Range and a Connex Range **(see Figure 2-3).** The Proficiency Range is a training site for EOD personnel to practice their skills and is the source of the largest blast activity at the installation; therefore, it is the focus between the two ranges within this AICUZ Study. Other EOD activities are conducted at the EOD parking lot and EOD field, which are in the northern area of the installation.



Runup Location
Runway
McConnell AFB
City Limit

Figure 2-2
McConnell AFB Airfield Diagram

Figure 2-3
McConnell AFB EOD Range Diagram

2.7 LOCAL ECONOMIC IMPACTS

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 in the local community based upon the presence and operations of the military installation.

For Fiscal Year (FY) 2023, McConnell AFB boasted an annual federal payroll of over $517 million and annual expenditures of $12 million, both of which are considered direct economic impacts. McConnell AFB annually generates approximately $209 million in indirect job creation, with over $1 billion in total annual economic impact. 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. Based on the FY23 Economic Impact Statement from McConnell AFB (published in January 2024), there are 5,976 total personnel within McConnell AFB, including over 2,874 active duty, 1,047 Reserve/Air National Guard, 881 Non-Extended Active Duty (EAD) Reserve/Air National Guard, and approximately 1,174 civilians.

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

Table 2-1
McConnell AFB Total Military Personnel and Payroll by Classification

CLASSIFICATION	TOTAL PERSONNEL	PAYROLL ($K)
Active Duty	2,874	$321.5
Reserve/Air National Guard (ANG)	1,047	$51.0
Non-EAD Reserve/ANG	881	$33.3
Total	**4,802**	**$405.9**

Source: McConnell AFB Economic Impact Statement, FY23.
Note: Totals may not sum exactly due to rounding.

Table 2-2
McConnell AFB Total Civilian Personnel and Payroll by Appropriated Funds

CIVILIAN PERSONNEL	TOTAL PERSONNEL	PAYROLL ($K)
Appropriated Fund Civilians	441	$46.5
Non-Appropriated Fund Civilians	137	$14.4
Commissary	217	$18.9
Base Exchange	258	$18.2
Private Businesses	121	$13.7
Total	**1,174**	**$111.7**

Source: McConnell AFB Economic Impact Statement, FY23.
Note: Totals may not sum exactly due to rounding.

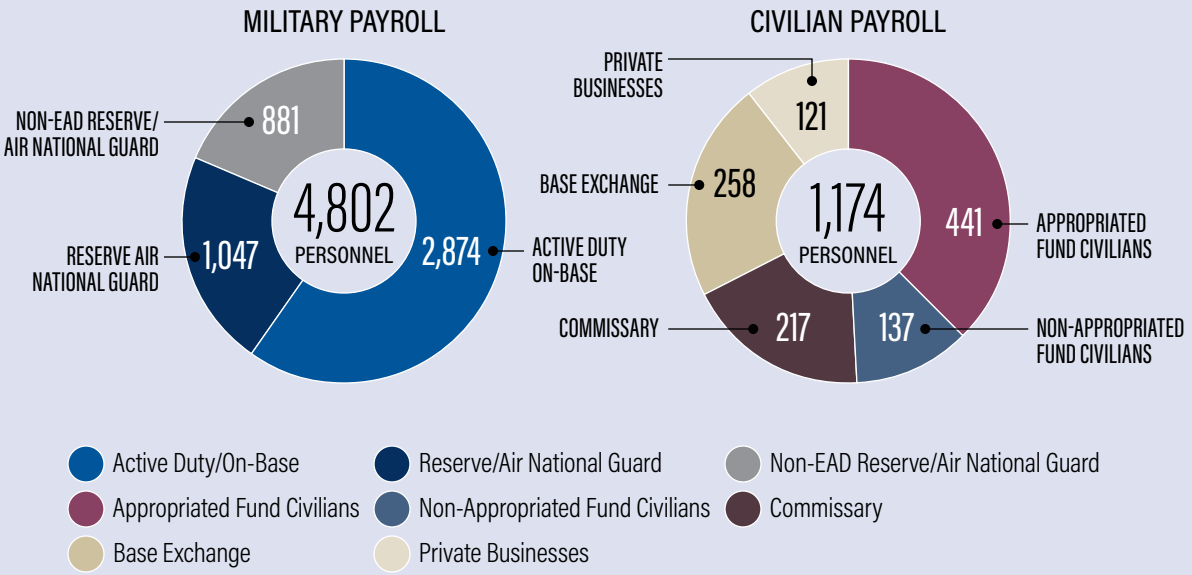
Table 2-3
Direct Impact Expenditures of McConnell AFB

EXPENDITURE	TOTAL ($K)
Military Construction Program	$892
Non-Appropriated Fund Construction	$1,136
O&M Construction	$462
Total Construction Expenditures	**$2,491**
Utilities	$4,313
Broadcasting and telecommunications	$49
Educational services	$9
Other Services	$359
Other local Expenditures	$1,418
Total Local Expenditures	**$6,148**
Retail portion of non-local goods and services	**$94**
Local Travel Spending	**$3,414**
Total Expenditures	**$12,147**

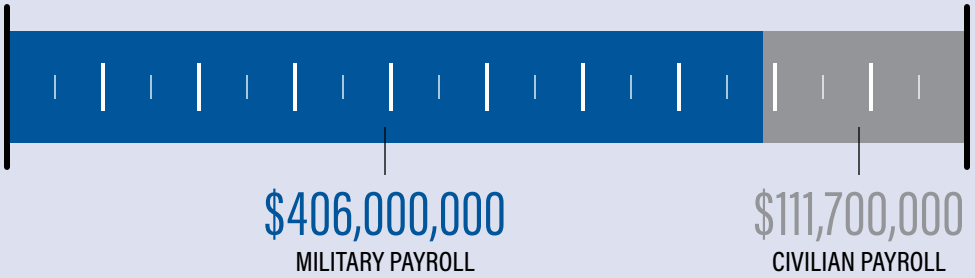
Source: McConnell AFB Economic Impact Statement, FY23.
Note: Totals may not sum exactly due to rounding.

BY THE NUMBERS

TOTAL PERSONNEL AND DEPENDENTS



MILITARY VS. CIVILIAN PAYROLL



ECONOMIC BENEFITS

$209,000,000
INDIRECT JOB CREATION

$517,000,000
ANNUAL FEDERAL PAYROLL

$1,000,000,000+
TOTAL ANNUAL ECONOMIC IMPACT

ANNUAL EXPENDITURE
$12,000,000/YEAR

ANNUAL ECONOMIC IMPACT
$1,000,000,000+

2.8 COMMUNITY ENGAGEMENT WITH McCONNELL AFB

McConnell AFB frequently engages with the communities surrounding the installation in several ways in addition to its economic impact. The organization, "Friends of McConnell" is an affiliate of the Wichita Regional Chamber of Commerce. Formed in the 1960's, the organization works to ensure a significant linkage between military personnel and the wider community. Specifically, Friends of McConnell appoints one member to serve as their military liaison, tasked with frequently interacting with installation personnel **(see Section 7.2 for additional details).**

McConnell AFB also connects with local civic and business leaders by pairing them with Base Commanders to foster mutual understanding and collaboration through the Honorary Commander Program.

Additionally, McConnell AFB Library offers a wide array of educational programs to students throughout the area. These include reading initiatives, hands-on STEM experience, and craft classes. Furthermore, McConnell AFB organizes several different charitable campaigns, several of which impact the local community in a positive way.


Visitor Parking


3
U.S. AIR FORCE
6043

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, engine run-ups for maintenance, temperature, relative humidity, frequency, and time of operation (day/night). This chapter discusses the aircraft based at or transient to McConnell AFB, the types and number of operations conducted at the airfield, and the runways and flight tracks used to conduct these operations.

3.1 AIRCRAFT TYPES

There are two primary aircraft types operating at McConnell AFB—the KC-135 and KC-46 aircraft. McConnell AFB is in the process of transitioning between the aircraft with the first KC-46 arriving on January 25, 2019. Therefore, both aircraft are currently operating at the airfield, with a gradual reduction of KC-135 operations, while the KC-46 operations increase. These are the only two aircraft that are permanently assigned to McConnell AFB, or referred to as "based," and represent the most common flight operations conducted 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 McConnell AFB.

3.1.1 Permanently Assigned Aircraft


BASED | KC-135

KC-135 Stratotanker

The KC-135 Stratotanker provides the core aerial refueling capability for the Air Force. Air refueling operations enhance the Air Force's capability to accomplish its primary mission of global reach. It also provides aerial refueling support to other U.S. military and allied nation aircraft. Additionally, the KC-135 can perform medical evacuations. The KC-135R/T, an updated model of the original KC-135A, features four turbofan engines and can carry up to 83,000 lbs. of cargo while being 96 percent quieter than the original airframe.

BASED | KC-46

KC-46 Pegasus

The KC-46 Pegasus is an aerial refueling aircraft powered by two Pratt & Whitney 4062 engines (thrust reversers removed). Each engine has the capability to provide approximately 62,000 pounds of thrust. With new technology and a maximum fuel capacity expected to be 212,000 pounds, the KC-46 is capable of accomplishing all current aerial refueling missions. The KC-46 will be able to refuel any certified fixed-wing receiver-capable aircraft on any mission, both day and night. The aircraft will be equipped with a modernized refueling boom integrated with a proven fly-by-wire control system and will have the ability to deliver fuel through a centerline hose and drogue system, which adds additional mission capability independent of the boom system. The aircraft will be able to operate at certain night vision goggle (NVG) and/or defensive-system-required airfields with a minimum of 7,000 feet of paved runway available for takeoff or landing. The aircraft is capable of operating in day-night and adverse weather conditions (e.g., icing conditions, extreme cold, etc.) over vast distances to enable deployment, employment, sustainment, and redeployment of U.S., joint, allied, and coalition forces.

3.1.2 Transient Aircraft

TRANSIENT | F-16

F-16 Fighting Falcon II

The F-16 Fighting Falcon II 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. The F-16 fighter aircraft are employed in conventional and anti-radiation suppression of enemy air defenses, strategic attack, counter air, air interdiction, joint maritime operations, and combat search and rescue missions.

TRANSIENT | F-35

F-35 Lightning

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 Texan II

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

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. Two key tasks in maintaining aircraft are low- and high-powered engine maintenance runs. McConnell AFB may conduct low-power engine maintenance runs on aprons, ramps, or in hangars to functionally check the operation of engines or other aircraft systems **(see Figure 2-2 for the run-up locations).**

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. High-powered runs are conducted in specific areas designated for this type of maintenance run. Certain high-power run-up locations also have blast fences to help deflect the noise up and away from the ground. Noise associated with these operations is included in the noise analysis for the McConnell AFB noise contours **(see Figure 4-2 – 2025 AICUZ Operational Noise Contours).**

McConnell AFB does not observe quiet hours for maintenance operations—mission necessity can require run-ups on a 24-hour basis.

3.3 FLIGHT OPERATIONS

Flight activities, including where aircraft fly, how high they fly, number of 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 McConnell 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 ends of the runway during the pattern.

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

Takeoff/Departure

When a pilot positions an aircraft on the runway, 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). Visual Flight Rules (VFR) are a set of regulations that govern how pilots operate aircraft in clear weather conditions where they can see where they are going. VFR is commonly used by light aircraft and helicopters, and pilots use visual reference to the ground or water to navigate. 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.

3.4 ANNUAL AIRCRAFT OPERATIONS

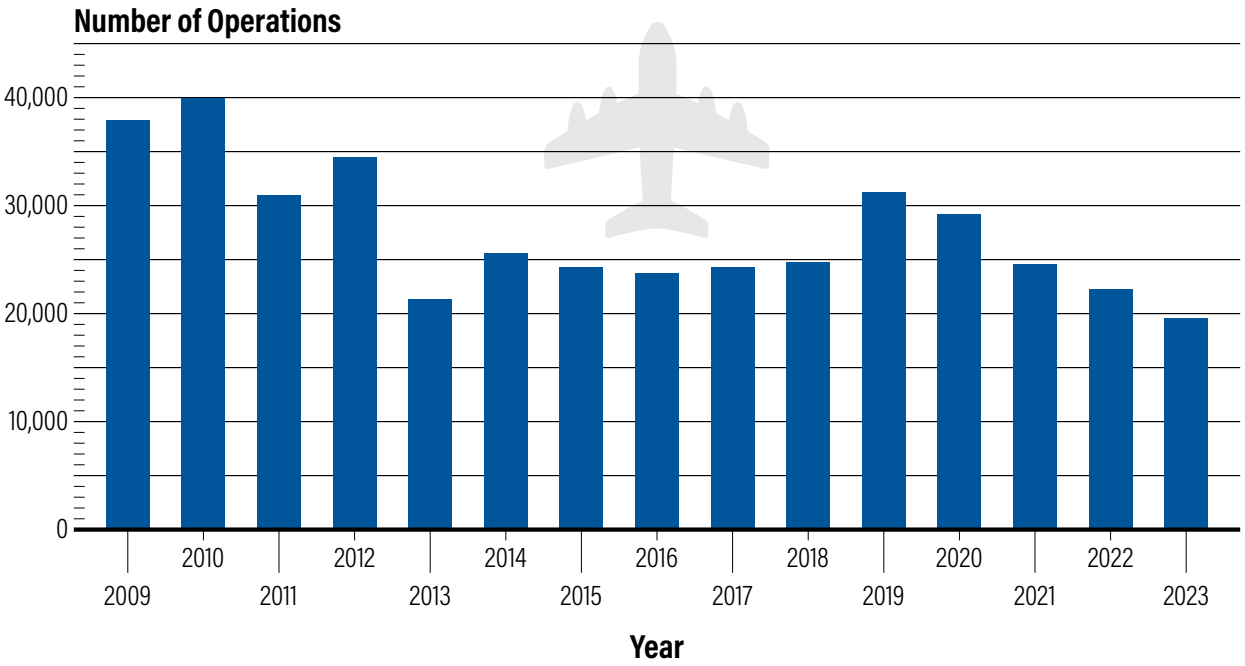
Total annual aircraft operations account for each departure and arrival, including those conducted as part of a pattern event. **Figure 3-1** provides the number of aircraft operations that have occurred at McConnell AFB over a 15-year period, including based and transient aircraft.

Operations at McConnell AFB have remained relatively steady over the past 10 years, ranging between approximately 20,000 and 30,000 operations per year. However, this is down from years where there were up to 40,000 annual operations, such as in 2010. Overall, the 10-year average from 2014 to 2023 is 25,029 operations.

The 2024 Noise Study that is the basis for the noise contours being utilized in this AICUZ Study update assumed an annual operations level of 26,233 **(see Table 4-3).** As noted previously, McConnell AFB and the Air Force overall are in the midst of transitioning from the KC-135 airframe to the KC-46 airframe, and over the next several years, the operations at McConnell AFB will gradually shift to more KC-46 operations. However, operations are forecasted to remain fairly constant throughout the transition but may fluctuate at the discretion of the DoD due to the unpredictable nature of world events and the global political climate.

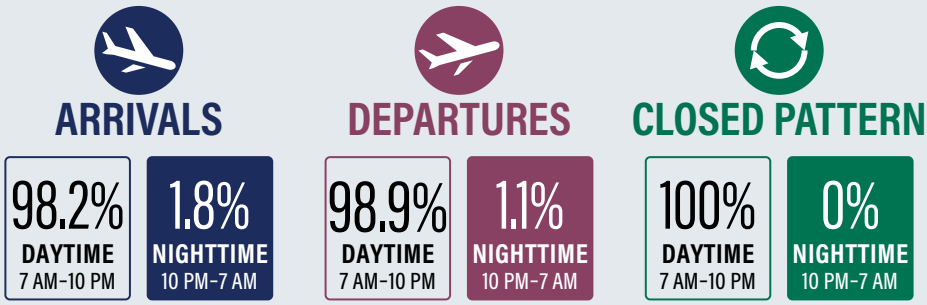
McConnell AFB's airfield can operate 24 hours per day; however, the majority of operations are conducted during daytime hours, which are from 7 a.m. to 10 p.m. for the purpose of noise modeling. Aircraft operations that take place after 10 p.m. can be more disruptive to the community as there is a lower ambient noise environment. The daytime versus nighttime breakdown of aircraft operations is presented in **Table 3-2.**

Figure 3-1
Summary of McConnell AFB Flight Operations for Calendar Years 2009-2023



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, etc.),
- 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.

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

Table 3-1
McConnell AFB Runway Utilization

RUNWAY DIRECTION		USAGE
Runway 01L	Arriving from the south and/or departing to the north	19%
Runway 01R	Arriving from the south and/or departing to the north	13%
Runway 19L	Arriving from the north and/or departing to the south	28%
Runway 19R	Arriving from the north and/or departing to the south	40%

Source: AFCEC Airfield Noise Report (2024).

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 McConnell AFB.

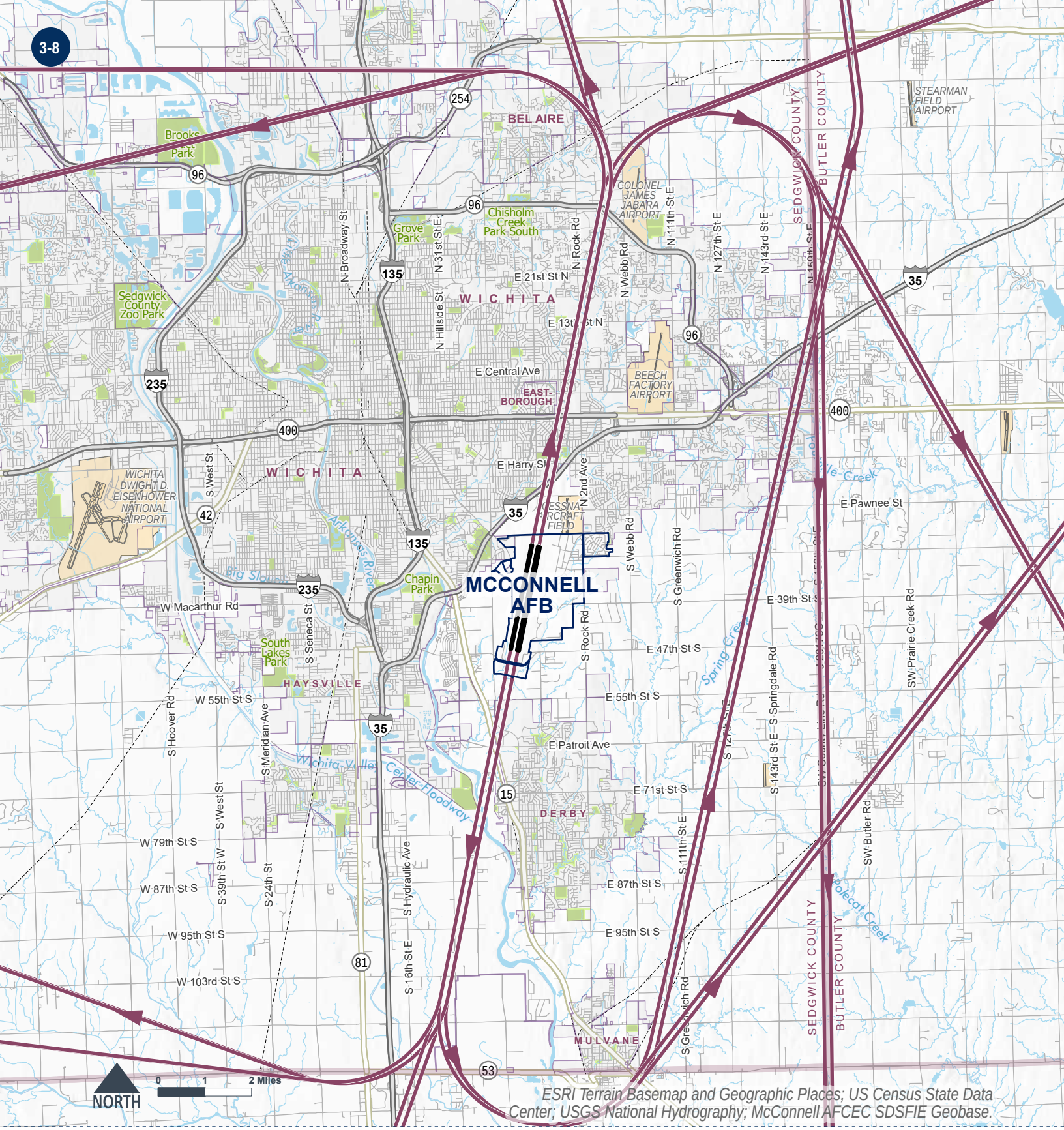
3.6 RANGE OPERATIONS

This 2025 McConnell AFB AICUZ Study includes EOD range operations which includes noise-generating activities related to small explosives. **Figure 3-6** shows the location of the specific EOD range components that were modeled for noise, which included the Proficiency Range and Connex Range. The Proficiency Range is the location where the largest explosion takes place and is the most active of the sites.

Training exercises and emergency detonations are coordinated and scheduled according to training and other mission requirements, with operations being conducted an average of six times per month, year-round.

The explosives training and emergency detonations at the McConnell AFB EOD range considered in this analysis consist of various small explosive charges. The EOD range is only sited for up to five pounds of Net Explosive Weight (NEW). Typical EOD emergency operations include disposal of malfunctioning smoke grenades, primarily detonated using C-4.

Detonations are only conducted during the daytime, and when possible, the public is provided a window of time on when certain EOD activities would be taking place. Specific EOD activities are discussed in more detail in **Section 4.**



ESRI Terrain Basemap and Geographic Places; US Census State Data Center; USGS National Hydrography; McConnell AFCEC SDSFIE Geobase.

Departure Flight Track

Runway

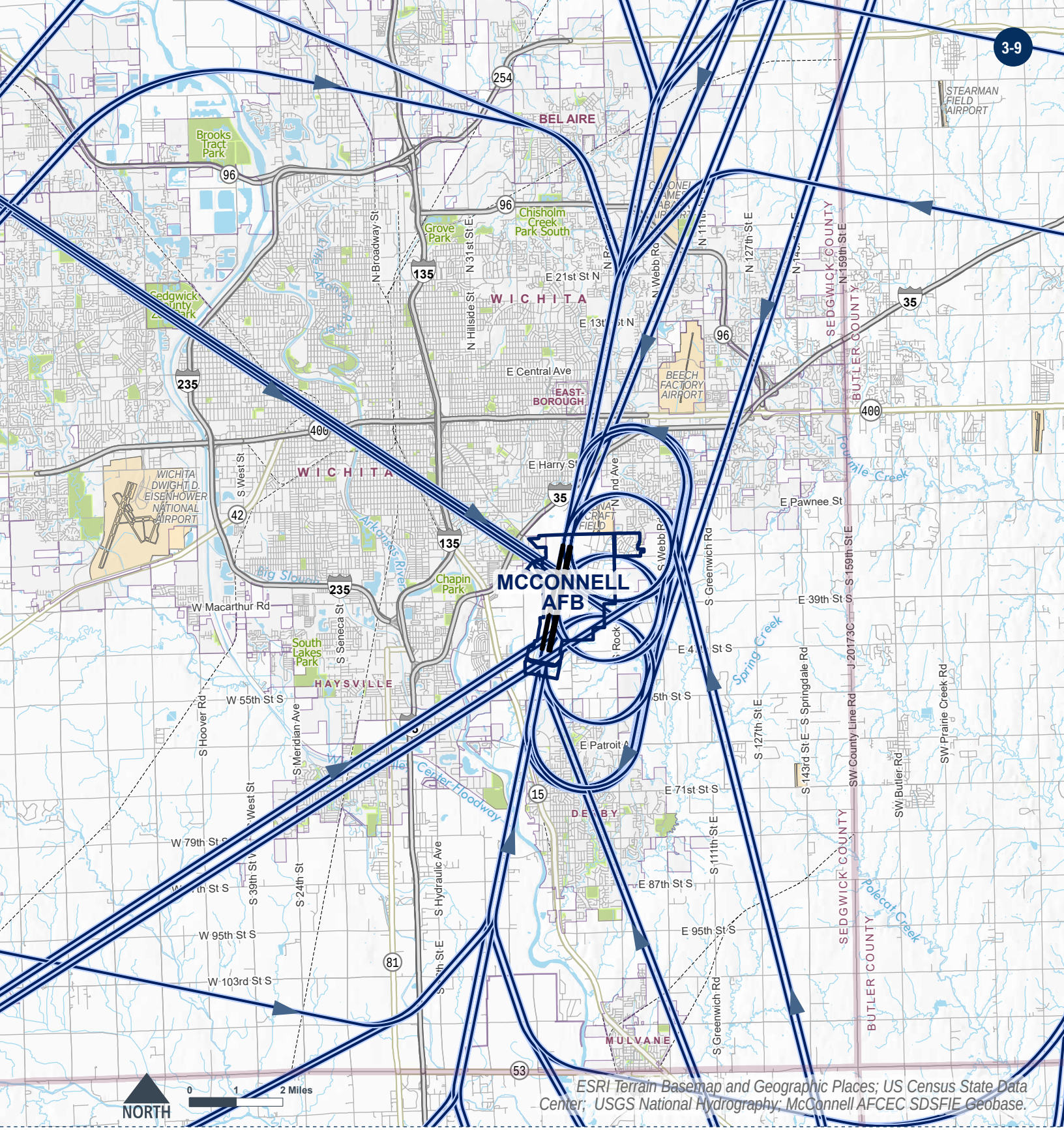
McConnell AFB

Nearby Airport

City Limit

Figure 3-3

McConnell AFB Departure Flight Tracks



ESRI Terrain Basemap and Geographic Places; US Census State Data Center; USGS National Hydrography; McConnell AFCEC SDSFIE Geobase.

Arrival Flight Track

Runway

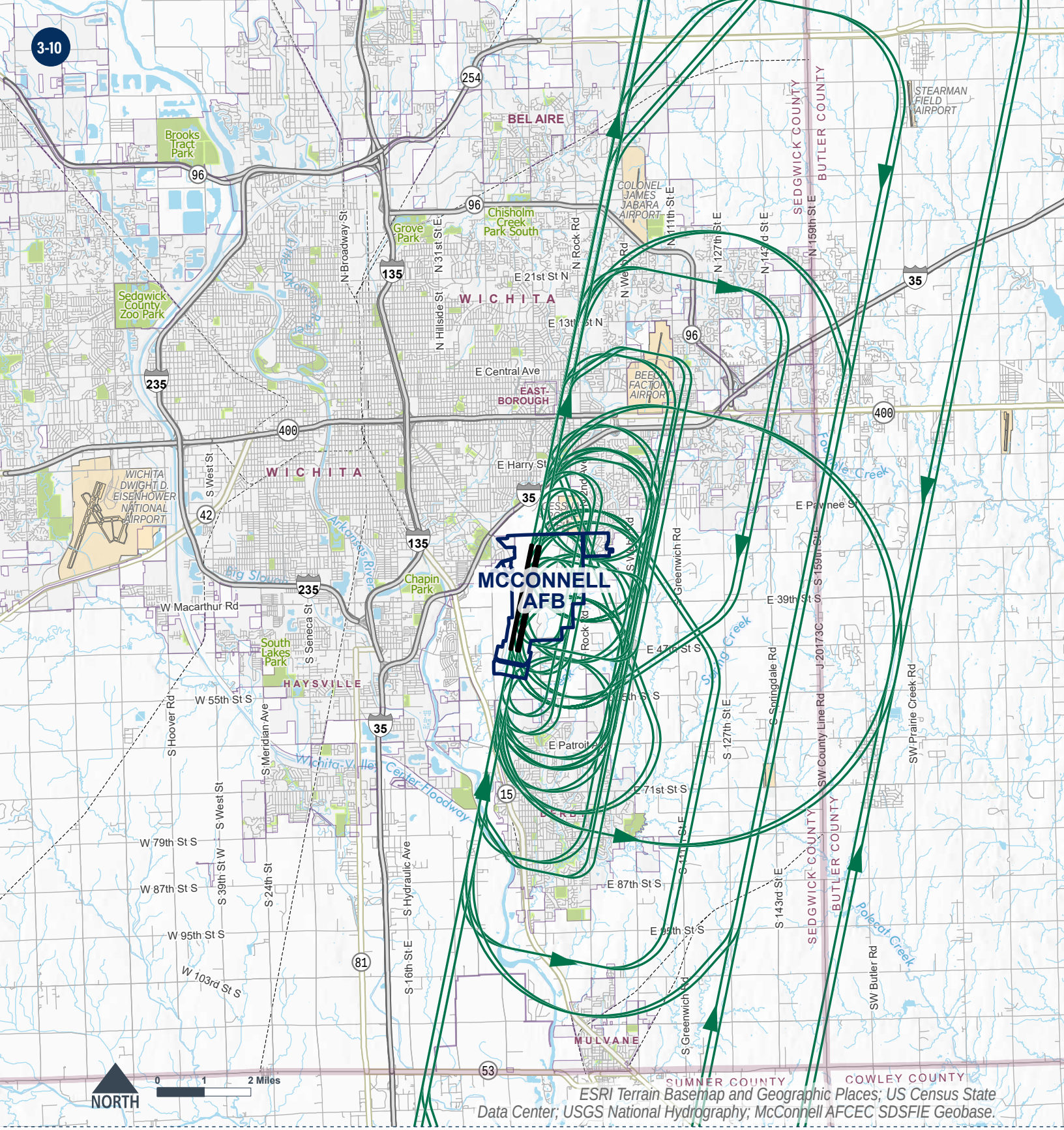
McConnell AFB

Nearby Airport

City Limit

Figure 3-4

McConnell AFB Arrival Flight Tracks



ESRI Terrain Basemap and Geographic Places; US Census State Data Center; USGS National Hydrography; McConnell AFCEC SDSFIE Geobase.

Pattern Flight Track

Runway

McConnell AFB

Nearby Airport

City Limit

Figure 3-5

McConnell AFB Pattern Flight Tracks

EOD Range Component

Runway

McConnell AFB

Figure 3-6
McConnell AFB EOD Proficiency Range and Connex Range

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 DAFH 32-7084, *AICUZ Program Management.*

For this reason, noise contours for McConnell AFB have been developed in accordance with the *AICUZ Program Management 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 McConnell AFB planning noise contours. Refer to **section 4.3.2** for a comprehensive definition of Planning 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, and 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.

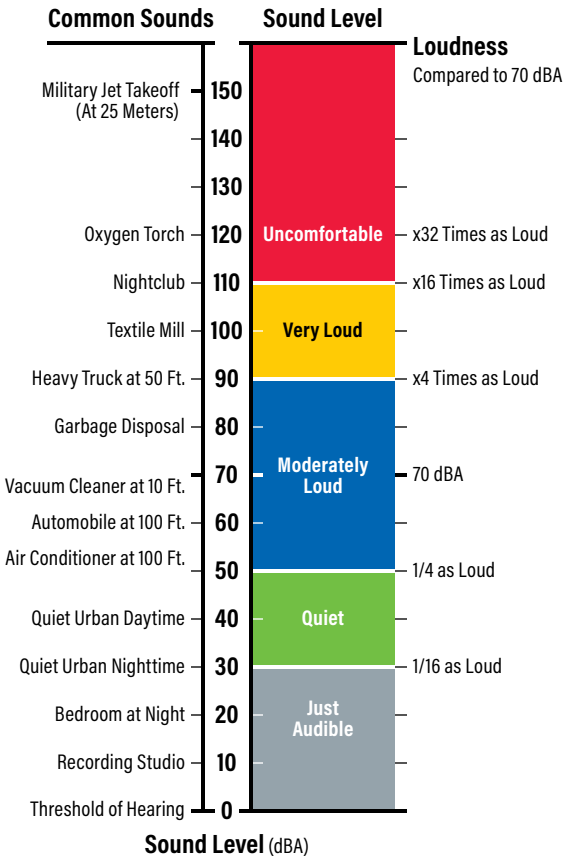
4.2 HOW SOUND IS PERCEIVED

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.

WEIGHTING FACTOR

This weighting factor removes lower frequencies to focus on the frequency range humans hear. Oftentimes, when discussing decibels with respect to human hearing range, the "A" is dropped and only noted as dB.



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 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 Day-Night Average Sound Level examples, which are based on a cumulative metric.

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.

DNL NOISE METRIC

The DNL noise metric is used for both A-weighted and C-weighted noise events, depending on the noise source. In the context of this AICUZ Study, when DNL is used, it is assumed to be A-weighted associated with aircraft-related noise. When it is C-weighted noise related to large caliber or other impulsive/explosive noise, the metric will be specifically identified as "CDNL."

C-weighted Day-night Average Noise Level (CDNL) is the metric used to describe the noise environment for ground training ranges involving the live fire of large caliber munitions and detonation of explosives as well as cumulative supersonic overflights. This weighting factor emphasizes the lower frequencies, or rumbles, that commonly accompany explosive sounds. Contours were developed using the Blast Noise Model (BNOISE) for the EOD activities at McConnell AFB's EOD Proficiency Range. CDNL noise increments are based upon AFH 32-7084 and include ranges from below 57 dB, to between 57 dB and 62 dB, and above 70 dB CDNL.

4.3.1 Aircraft Noise Contours

The DoD develops noise contours to assess the noise impacts of aircraft operations on 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 the latest available noise contours that were modeled by AFCEC's Operational Noise Program in two separate reports, which were finalized in May 2024 for the Airfield Noise Report and in June 2024 for the EOD Range Noise Report. These two noise reports and associated noise contours represent the most recent and accurate noise environment based on current operations at McConnell AFB. The 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

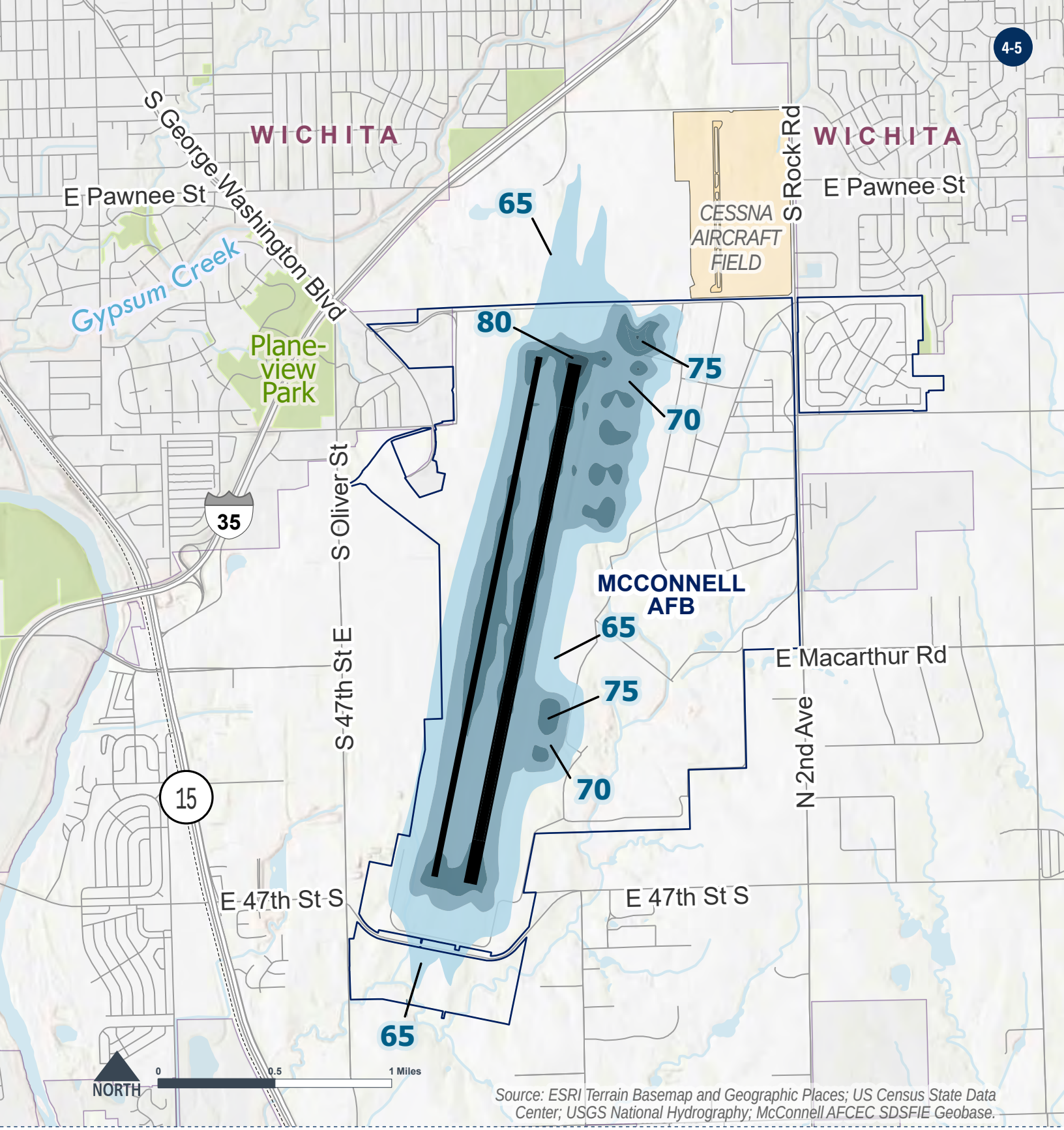
Long-range planning by local land use authorities involves strategies that influence present and future uses of land. This work is implemented by comprehensive plans, zoning ordinances, and zoning maps. These documents are usually updated on 5 – to 10-year cycles. Missions and training change to counter new threats, and those changes do not follow predictable timelines. To better align the efforts and offer more stability, the Air Force provides current operations and reasonable projections of potential future missions. AICUZ studies use such contours to describe the noise footprint for current and projected aircraft operations that are more consistent with the planning horizons used by state, Tribal, regional, and local planning bodies.

The Air Force develops planning contours on the best available, realistic, long-range projections of unclassified estimates of future mission requirements. This includes reasonable projections of future operations based on trends in operational tempo, retirement of legacy aircraft, new aircraft entering the inventory, and other factors.

These long-range projections are not commitments to future operations or basing decisions. Inclusion of the planning contours in the AICUZ Study does not eliminate the need to conduct appropriate environmental analysis if an assumption used in the development of these contours becomes a proposed Air Force action. **Table 4-3** presents the projected operations for the McConnell AFB planning contours.

Assumptions included in the McConnell AFB planning contours include:

- The transition from the KC-135 to KC-46 has begun but is not yet completed. Therefore, there is a mix of both aircraft operating at McConnell AFB.
- Transient fighter aircraft, such as F-16 and F-35, create louder noise events than based aircraft but they occur infrequently.
- Flexibility for increased operations and potential future aircraft basing needs to be maintained.
- EOD Range activities continuing.



Source: ESRI Terrain Basemap and Geographic Places; US Census State Data Center; USGS National Hydrography; McConnell AFCEC SDSFIE Geobase.

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

- Runway
- McConnell AFB
- Nearby Airport
- City Limit

Figure 4-2
2025 McConnell AFB AICUZ Noise Contours

4.4 PEAK SOUND PRESSURE LEVEL

The Air Force uses the Peak Sound Pressure Level (dB PK) to assess the risk of noise complaints. The dB PK is the highest instantaneous, unweighted sound level over any given period time. The Air Force uses this metric to quantify impulsive, short-duration events, such as a large caliber weapon firing or an explosive detonation. The Air Force uses the peak level metric to measure the noise environment for small-arms ranges (i.e., .50 caliber and below) as well as blast noise from explosives. Blast noise from each event and weather conditions at the time of the event can vary. The noise models used to predict peak levels account for this variation by using the Peak15 (dB PK15) metric. PK15 is the peak sound level, factoring in the statistical variations caused by weather, that is likely to be exceeded only 15 percent of the time (i.e., there is an 85-percent certainty that the sound will be within this range). It allows assessment of noise from large caliber gunfire and impulsive demolition activities, as well as from firing at small-arms ranges.

PEAK SOUND EVENT

Peak is a single event (instantaneous) sound pressure level without weighting. We perceive it as the loudest of a single sound event.

The PK15 metric is used along with DNL for a few reasons. Although DNL is an effective metric for assessing land use compatibility or the average of all noise events in a day, DNL may not be the best metric for describing community annoyance associated with occasional loud events and their potential impact on communities. DNL accounts for the total noise exposure a community experiences over a period of time. The DoD often uses metrics such as PK15 assess noise levels of impulsive and single sound events. This is necessary because the DNL (average) noise metric may understate the intensity of an impulsive sound event (such as small arms, artillery, or tank gunfire, or explosive detonations) because DNL averages noise peaks with noise levels of ambient quiet times. The PK15 metric is sometimes a better predictor than DNL for determining noise impacts and likelihood of complaints. For example, the average noise level is irrelevant to a mother upset about a child awakened from naps by impulsive or single event noises caused by blast operations or tank firing.

In this instance, the PK15 noise metric is utilized for this AICUZ Study to address the potential for noise complaints related to EOD Range activities at the installation. As this is not an average noise metric, there is not land use planning guidance; however, the U.S. Army Public Health Center guidance document AR 200-1 provides an evaluation of supplemental noise metrics that help describe impulsive noise events and when they may reach levels high enough to generate complaints. These peak levels are useful for estimating the areas where there may be a higher risk of receiving a noise complaint from blast noise, as they correlate with the receiver's perception of noise levels. **Table 4-2** lists the Army's Complaint Risk Guidelines.

Table 4-2
Risk of Noise Complaints by Level of Noise (PK15)

dB PEAK	PERCEPTIBILITY OF NOISE	RISK OF RECEIVING NOISE COMPLAINTS
< 115	May be audible.	Low
115-130	Lower levels are noticeably audible and distinct. Upper levels may be described as loud.	Moderate
>130	Described as very loud and may startle.	High

Source: AFCEC Airfield Noise Report (2024).

Note: Perceptibility is subjective. The classifications are based on how a typical person may describe the event.

4.5 McCONNELL AFB NOISE CONTOURS

The 2025 McConnell AFB AICUZ Study noise contours are based on two noise studies conducted by the AFCEC Noise Group in 2024, one centered on airfield operations and one centered on EOD Range operations. As these noise contours utilize different noise metrics, they are presented separately below.

Airfield Noise Contours

The operational data utilized for the noise contours associated with the airfield is presented in **Table 4-3** and **Figure 4-2** shows the noise contours at McConnell AFB plotted in 5 dB increments, ranging from 65 – to 80-dBA DNL. The 65-dBA noise contour is primarily contained within the installation boundary, with just small areas extending to the south, north and slightly to the west. The noise contours follow the general direction of the runways and have some additional higher noise contours to the east of the runways where engine run-ups are generally conducted. The farthest the noise contour extends off installation property is approximately 0.6 miles to the north of the installation property, over the Cessna Aircraft facility.

As these contours were developed in 2024, they take into account the most recent operational changes at McConnell AFB, including the in-process transition from the KC-135 to the KC-46 aircraft.

In addition, **Figure 4-3** shows a 50-80+ dB DNL noise gradient of this AICUZ Study noise contours.

Figure 4-4 shows a comparison of the 2011 AICUZ and the 2025 AICUZ noise contours. The contours are slightly smaller and cover different areas compared to the previous AICUZ noise contours. This is likely due to a number of reasons, including the transition to the KC-46 aircraft, the overall change in the aircraft operations and mix the balance of where engine maintenance is performed, as well as a change from the average busy day (ABD) to average annual day (AAD) approach to modeling aircraft noise.

Table 4-3
McConnell AFB Modeled Annual Aircraft Flight Operations for 2025 AICUZ Study Noise Contours

UNIT/AIRCRAFT	DEPARTURES	ARRIVALS	PATTERN[1]	TOTAL
BASED AIRCRAFT				
KC-135R	689	689	7,158	**8,536**
KC-46X	1,643	1,643	13,736	**17,022**
TRANSIENT AIRCRAFT				
F-16C	0	0	228	**228**
F-35A	45	45	0	**90**
KC-46X	52	52	0	**104**
T-6	0	0	253	**253**
Total	**2,429**	**2,429**	**21,375**	**26,233**

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

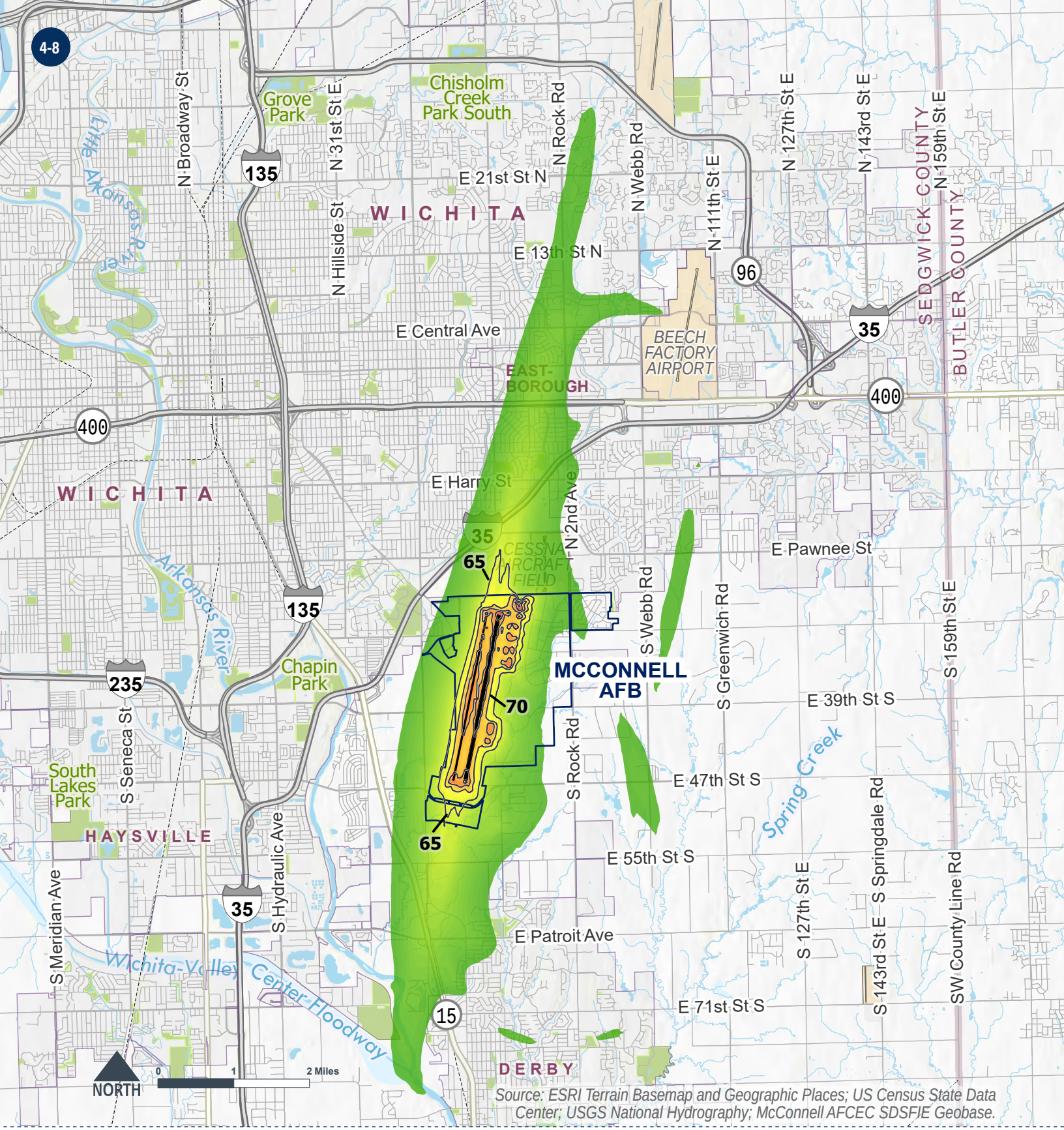
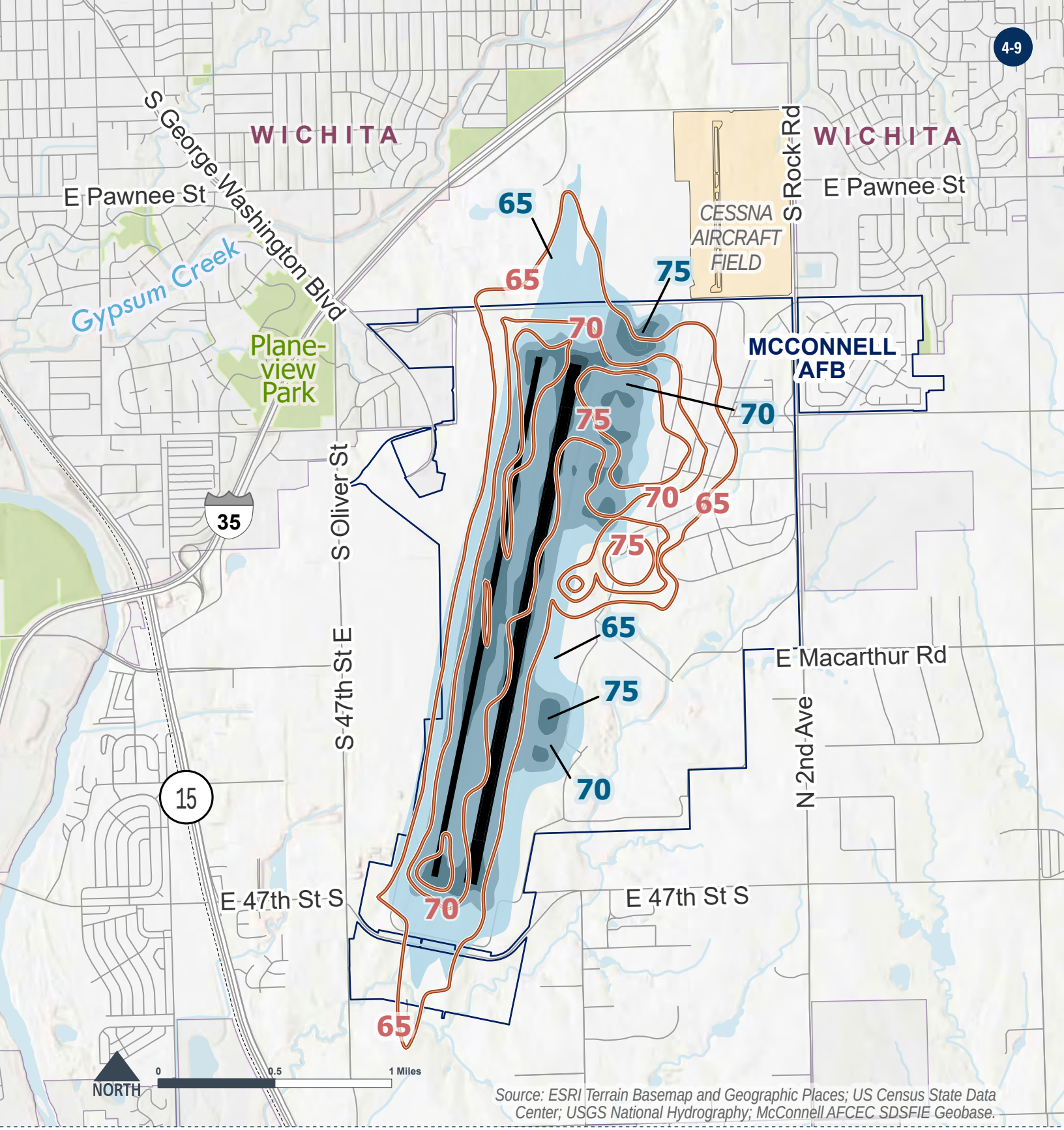


Figure 4-3
2025 AICUZ Operational Noise Footprint with Gradient Shading



2025 AICUZ Contours (dB)

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

- 2011 AICUZ Contours (dB)
- Runway
- McConnell AFB
- Nearby Airport
- City Limit

Figure 4-4
Comparison of 2025 and 2011 AICUZ Noise Contours for McConnell AFB

The ABD approach assumes all aircraft activity would take place during a certain number of active flying days at the installation, which in the case of the 2011 AICUZ for McConnell AFB was 260 flying days per year. For many years, the Air Force approximated the ABD concept, which acknowledged that flying at some installations seldom occurred on weekends and that annual operations therefore were divided by the number of operational days (e.g., five flying days per week).

However, since land use compatibility as discussed in this AICUZ Study is better correlated with AAD methodology, as is outlined in DODI 4165.57, that is what is utilized in the development of the current noise contours. Therefore, this AICUZ update utilizes the AAD approach, where all operations are spread over the calendar year and this can result in a slightly smaller noise contour.

Table 4-4 presents the off-installation land acreage and estimated population within the planning contours. Since the 2025 AICUZ noise contours barely extend outside the installation boundary, and where they do, there are no residential properties, there are no off-base residents exposed to operational noise zones of 65 dB DNL or above.

Table 4-4
Off-Installation Land Area and Estimated Population within Noise Zones for the 2025 AICUZ Noise Contours at McConnell AFB

NOISE ZONE (dB DNL)	ACRES	ESTIMATED POPULATION
65-69	81.6	0
70-74	0	0
75-79	0	0
80+	0	0
Total (65+)	**81.6**	**0**

EOD Range Noise Contours

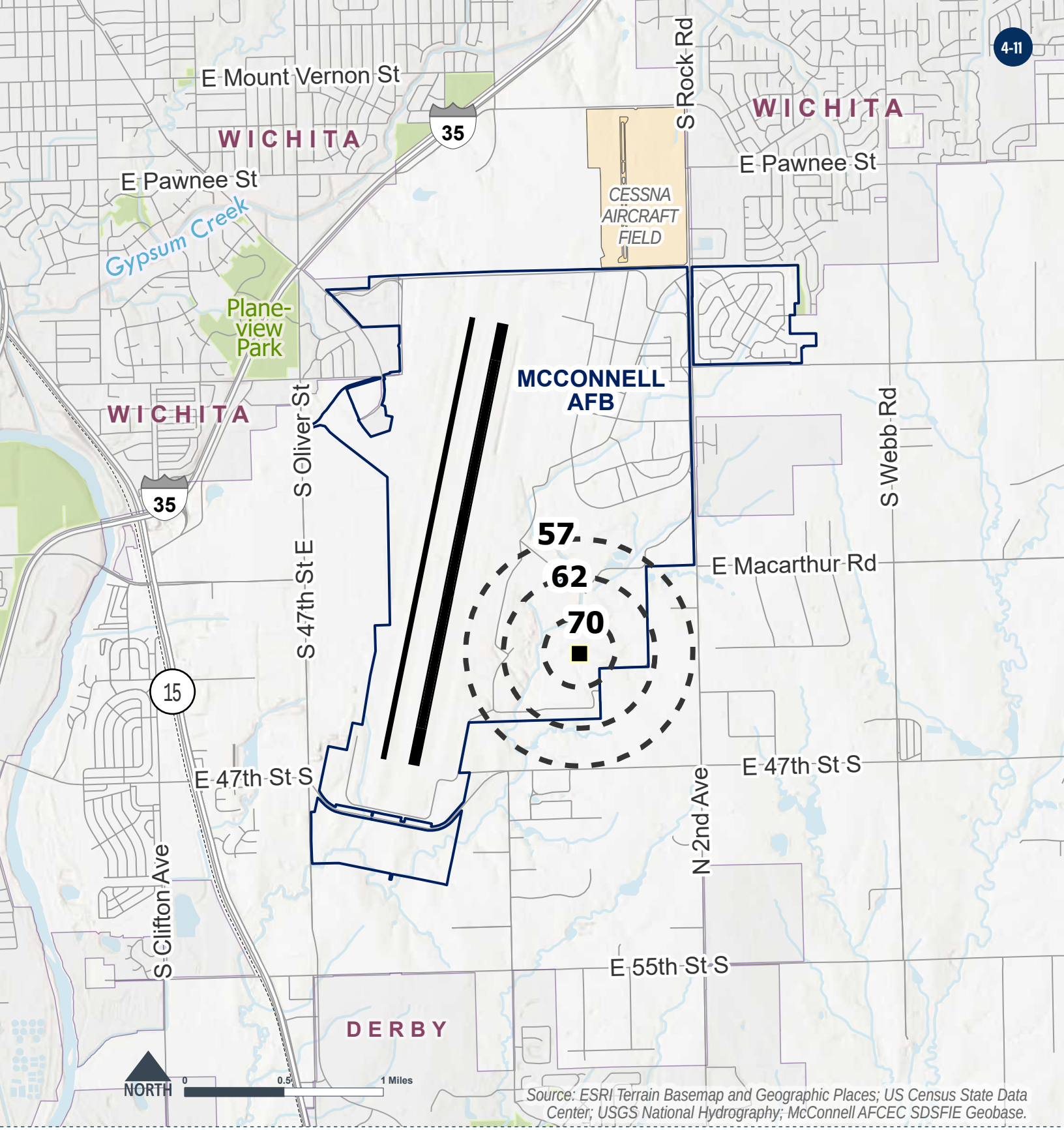
The operational data utilized for developing the two noise contours associated with the EOD Ranges are presented in **Table 4-5.** This includes the average type of explosive used, the frequency of that activity, and the elevation. In all instances, these activities are performed at the ground surface. The detonation of 5 lbs. of C-4 explosive at the Proficiency Range is the loudest EOD activity conducted, and most frequent. Therefore, it is the source of the noise contours utilized for this AICUZ Study.

As discussed previously, there are two noise metrics that are used to describe noise from impulsive blast noise, such as that associated with an EOD Range – CDNL and PK15. The CDNL noise contours from the EOD Range are presented in **Figure 4-5** and include three different noise contour increments—57 dB CDNL, 62 dB CDNL, and 70 dB CDNL—which are the standards dictated by AFH 32-7084.

Table 4-5
Blast Site Operations for McConnell AFB EOD Ranges

LOCATION	AVERAGE EXPLOSIVE	EXPLOSION FREQUENCY	ELEVATION
Proficiency Range	5 lbs. of C-4	72 shots per year (average of 6 shots per month)	Surface
Proficiency Range	Explosive Tools (similar to shotgun shells)	4.5 shots per year	Surface
Connex Range	Explosive Tools (similar to shotgun shells)	4.5 shots per year	Surface
EOD Field	Explosive Tools (similar to shotgun shells)	4.5 shots per year	Surface
EOD Parking Lot	Explosive Tools (similar to shotgun shells)	4.5 shots per year	Surface

Source: AFCEC EOD Range Noise Report (2024).



Source: ESRI Terrain Basemap and Geographic Places; US Census State Data Center; USGS National Hydrography; McConnell AFCEC SDSFIE Geobase.

- EOD Proficency Range
- EOD CDNL Noise Contour (dB)
- Runway
- McConnell AFB
- Nearby Airport
- City Limit

Figure 4-5
McConnell AFB EOD CDNL dB Noise Contours

Table 4-6 presents the off-installation land acreage and estimated population within the EOD CDNL noise contours. These noise contours are concentric circles around the EOD Proficiency Range that experiences the largest noise event. Each noise zone extends off-installation to some extent, with the 57 dB CDNL noise contour covering the largest area and an estimated population of 13 people. The 62 dB CDNL noise contour covers a smaller area, and an estimated 11 people are expected to reside in that area, while the 70 dB CNDL noise contour only covers 2 acres and there is no population associated with that area.

The PK15 noise contours from the EOD Range are presented in **Figure 4-6** and include three different noise contour increments – 115 dB PK15, 130 dB PK15, and 140 dB PK15.

As noted previously, the PK15 noise metric is being used to understand the potential for noise complaints related to the activities at the EOD Range. Based on the thresholds of perceptibility noted in **Table 4-2,** individuals living outside of the 115 dB PK15 noise contour may hear the event but are unlikely to complain about the noise. Those living between the 115 dB and 130 dB PK15 noise contours are likely to notice the noise event and have a moderate likelihood of having a noise concern, while those in the 140 dB PK15 noise contour having the potential of being startled and highest likelihood of having a noise concern. **Table 4-7** provides the acreage and estimated population within these different noise areas and provides context for those who may hear the loudest activities conducted at the EOD Range.

Table 4-6

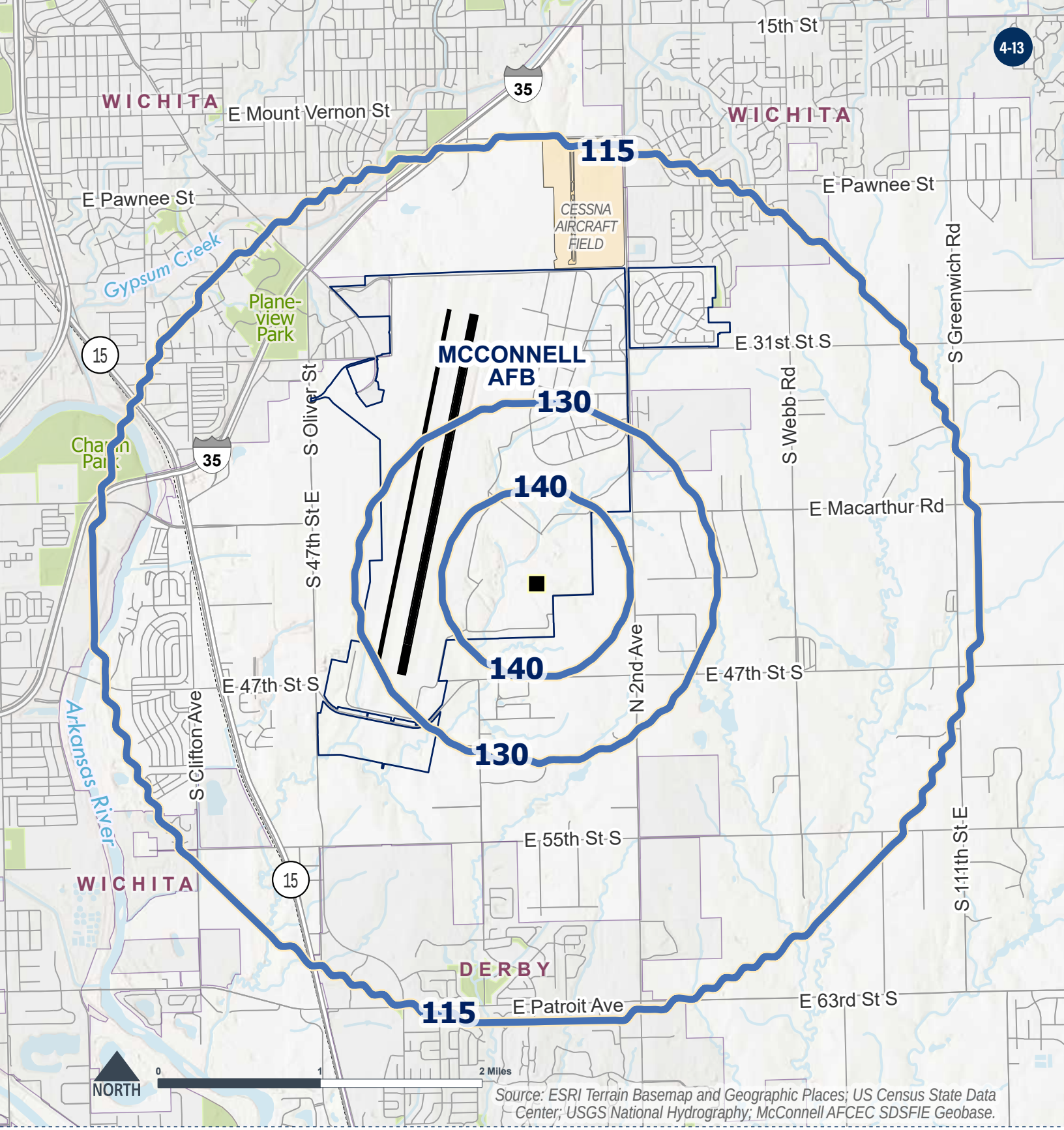
Off-Installation Land Area and Estimated Population within Noise Zones for the EOD CDNL Noise Contours at McConnell AFB

NOISE ZONE (dB CDNL)	ACRES	ESTIMATED POPULATION
57 dB	187.3	13
62 dB	51.0	11
70 dB	2.1	0
Total	**240.3**	**24**

Table 4-7

Off-Installation Land Area and Estimated Population within Noise Zones for the EOD PK15 Noise Contours at McConnell AFB

NOISE ZONE (PK15)	ACRES	ESTIMATED POPULATION
115 dB – 130 dB	11,136.4	13,134
130 dB – 140 dB	956.5	149
Greater than 140 dB	235.7	11
Total	**12,328.5**	**13,294**



- EOD Proficency Range
- EOD C4 PK15 Noise Contour (dB)
- Runway
- McConnell AFB
- Nearby Airport
- City Limit

Figure 4-6
McConnell AFB EOD PK15 Noise Contours

In the context of the EOD activities at McConnell AFB, the loudest events that would result in these PK15 noise contours are generated from the detonation of C-4 at the Proficiency Range, that was modeled at an estimated 72 times per year.

4.6 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 McConnell AFB Airfield Operations Instruction. These implementations are aimed at protecting the installation's neighbors and structures from the harmful effects of noise and vibrations.

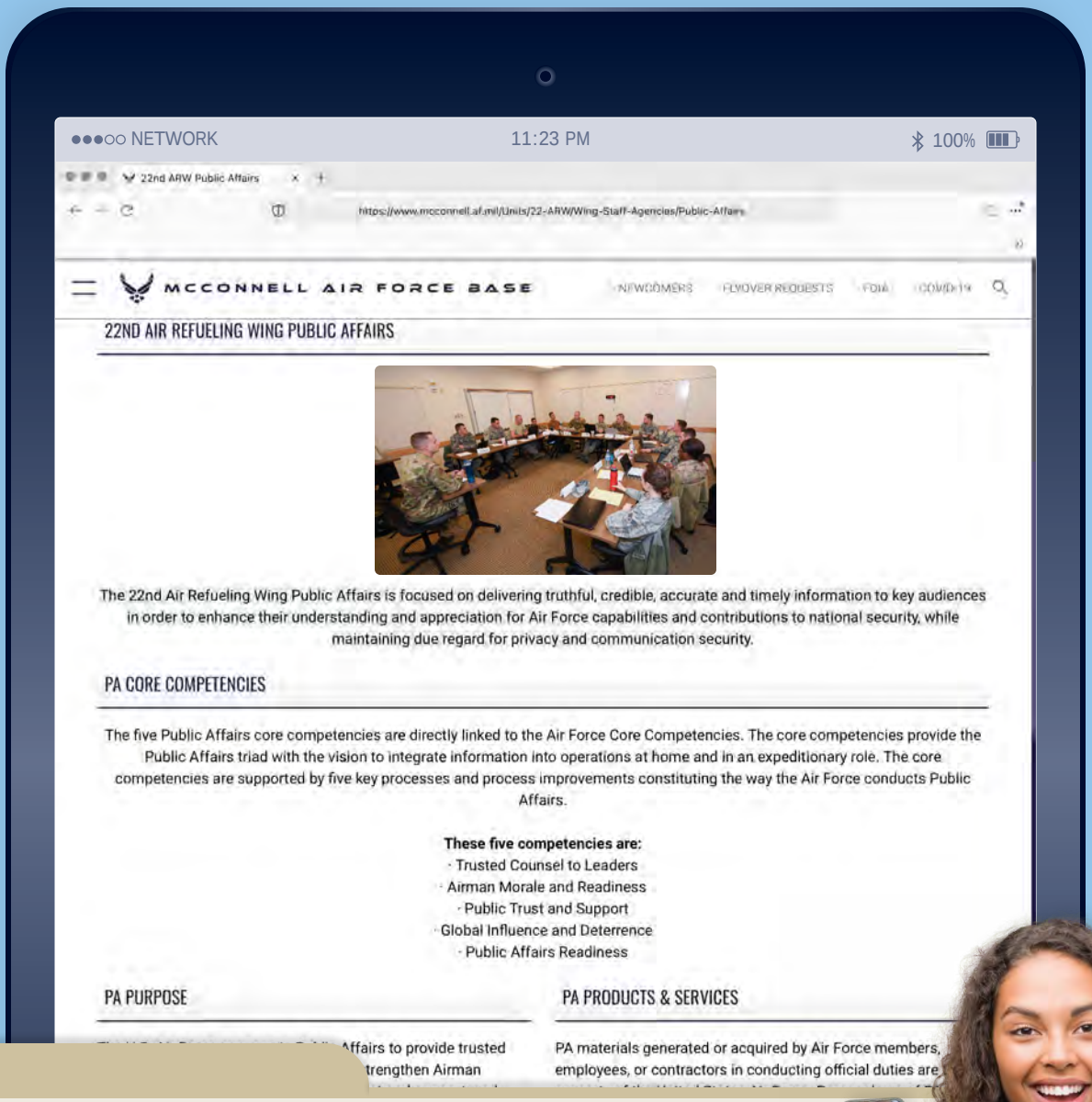
Noise abatement procedures at McConnell AFB are intended to minimize the impacts of aircraft operations on the surrounding communities while maintaining operational capacity and flexibility. The McConnell AFB noise abatement procedures include closure of the low, closed traffic pattern from 10 p.m. to 6 a.m., as well as no practice approaches for transient aircraft during the same night hours. In addition, all aircraft should avoid overflight of the base housing area, base clinic, and the munitions storage area.

Installation leadership periodically reviews flight operations and their potential impact on surrounding communities. This requirement facilitates the planning, designation, and establishment of flight tracks over sparsely populated areas and/or waterways as often as practicable to balance operational safety and reduce noise exposure levels in surrounding communities.

4.7 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. Concerned citizens are encouraged to contact the McConnell AFB Public Affairs (PA) Office with any noise complaints. This can be done via McConnell AFB's website where there is a noise complaint form available at https://www.mcconnell.af.mil/Contact-Us/Noise-Complaints/. Alternatively, you can also reach the PA Office at 22.PA@us.af.mil. The type of information collected includes the date and time of the incident, location, type of complaint, direction, weather, etc.

When someone files a noise complaint with the base, a noise complaint form is generated that is then coordinated throughout the base for internal review and tracking purposes to determine the most likely cause of the noise. Generally speaking, very few noise complaints are received and the community is very supportive of the installation and their flying mission.



McConnell AFB posts information about issues and upcoming events via the installation Facebook and Instagram pages as well as press releases:

WEB
WWW.MCCONNELL.AF.MIL

EMAIL
22.PA@US.AF.MIL
McConnell AFB Public Affairs

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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 McConnell 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.

Top Middle Photograph Inset | AdobeStock.com

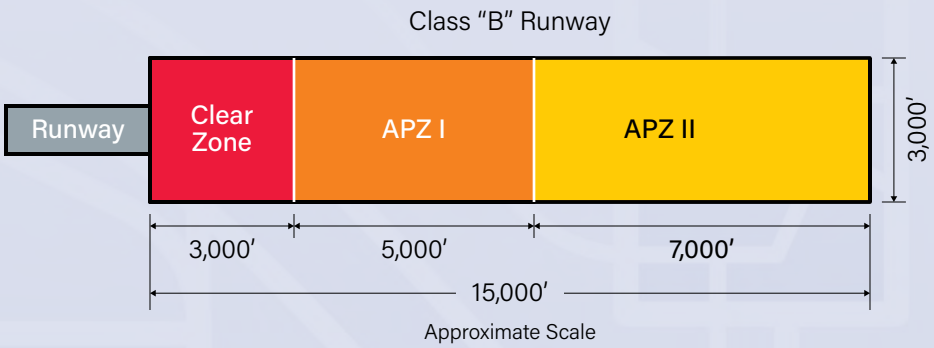
5.1 CLEAR ZONES AND ACCIDENT POTENTIAL ZONES

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 CZ, the APZ I, and the APZII.

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 9,000 square feet 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 5,000 feet in length and 3,000 feet in width along the extended runway centerline.
- **APZ II.** APZ II is the rectangular area beyond APZ I. APZ II is 7,000 feet in length by 3,000 feet in width along the extended runway centerline.

Figure 5-1
McConnell AFB Runway Clear Zones and Accident Potential Zones for 'Class B' Runways



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. Installation control of land use in CZs is a consideration of the Strategic Basing Process when siting new missions. 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.

McConnell AFB has parallel Class B runways measuring 12,000 feet long, with the eastern runway being 200 feet wide and the western runway being 150 feet wide. They are designated with markings 01R/19L and 01L/19R.

Figure 5-2 depicts the CZs and APZs for Runways 01R/19L and 01L/19R for McConnell AFB.

Table 5-1 presents the off-installation land acreage and estimated population within the CZs and APZs. The Air Force generates population estimates on 2020 census block-level data using a geometric proportion method to determine the estimated population within each safety zone. This method assigns population based on the portion of a census block that falls within each zone. The population across census blocks is assumed to be evenly distributed.

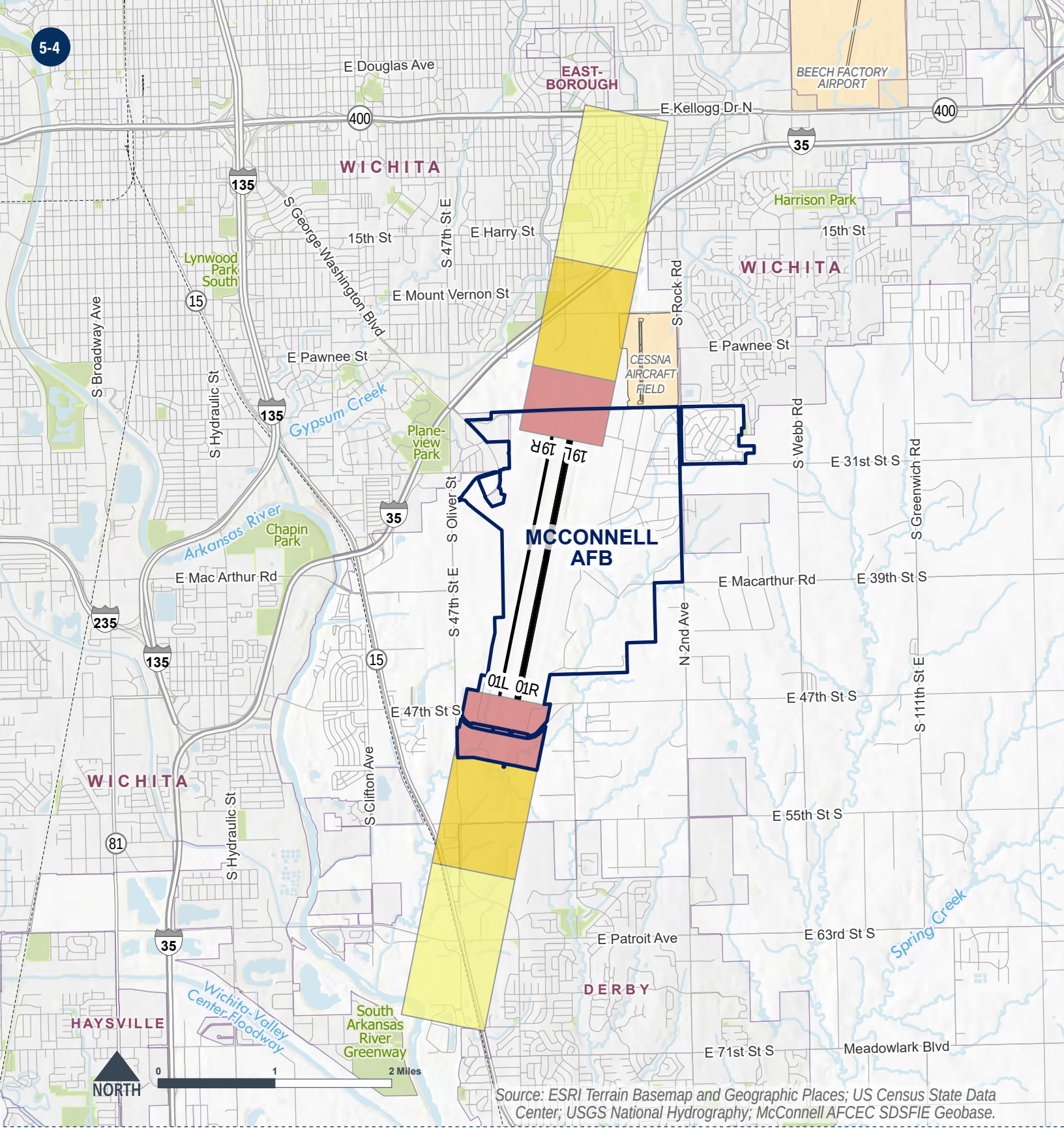
There are 168.7 acres off-installation land in the CZs, 877.8 acres in APZ I, and 1,229.8 acres in APZ II. According to 2020 U.S. Census data, no population lives within the off-installation areas of the CZ; however, an estimated 553 people live within APZ I and 4,081 within APZ II.

Table 5-1

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

FIXED WING ZONE	ACRES	POPULATION
CZ	168.7	0
APZ I	877.8	553
APZ II	1,229.8	4,081
Total	**2,276.3**	**4,634**

Source: 2020 U.S. Census.



Source: ESRI Terrain Basemap and Geographic Places; US Census State Data Center; USGS National Hydrography; McConnell AFCEC SDSFIE Geobase.

- Clear Zone (CZ)
- Accident Potential Zone I (APZ I)
- Accident Potential Zone II (APZ II)
- Runway
- McConnell AFB
- Nearby Airport
- City Limit

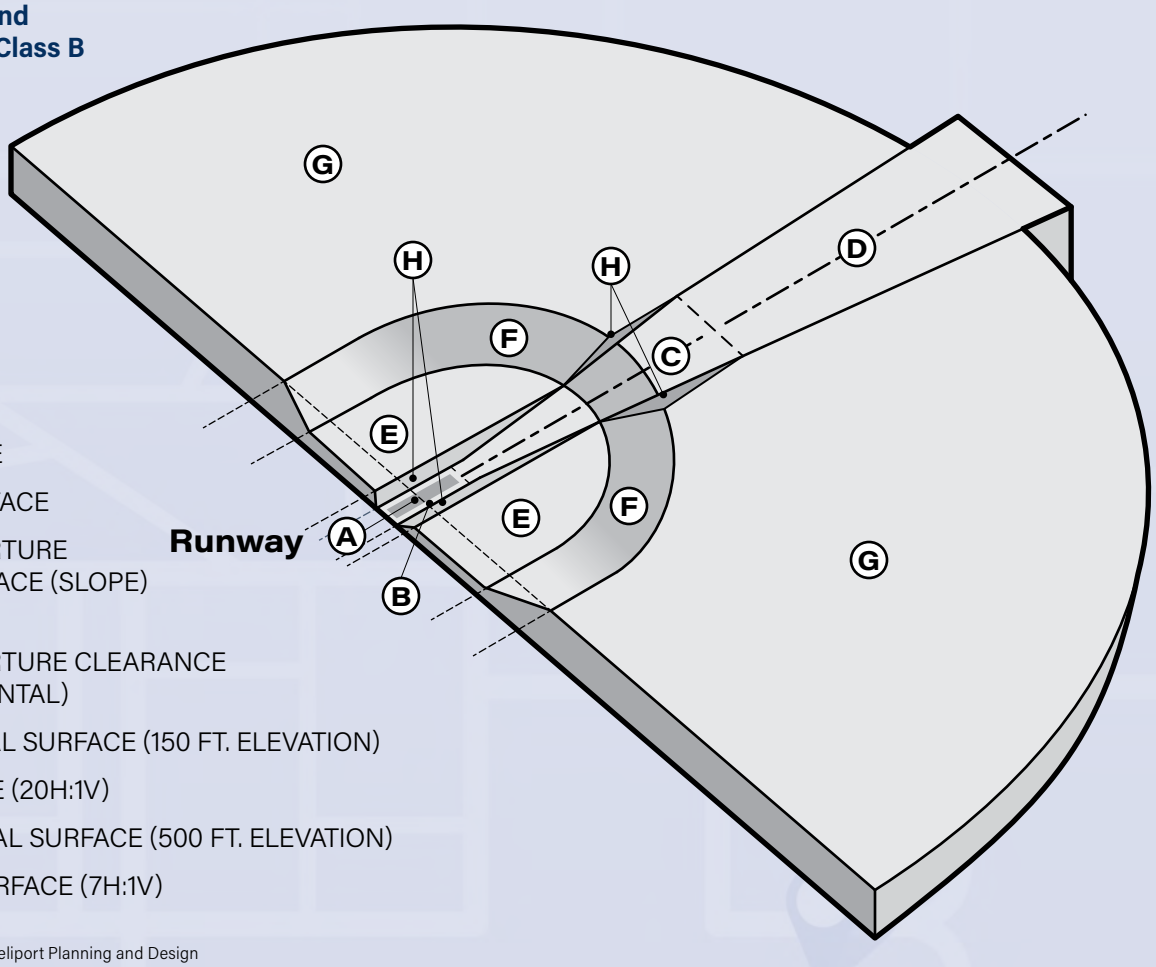
Figure 5-2
2025 AICUZ Clear Zones and Accident Potential Zones for McConnell AFB

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 patterns. 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.

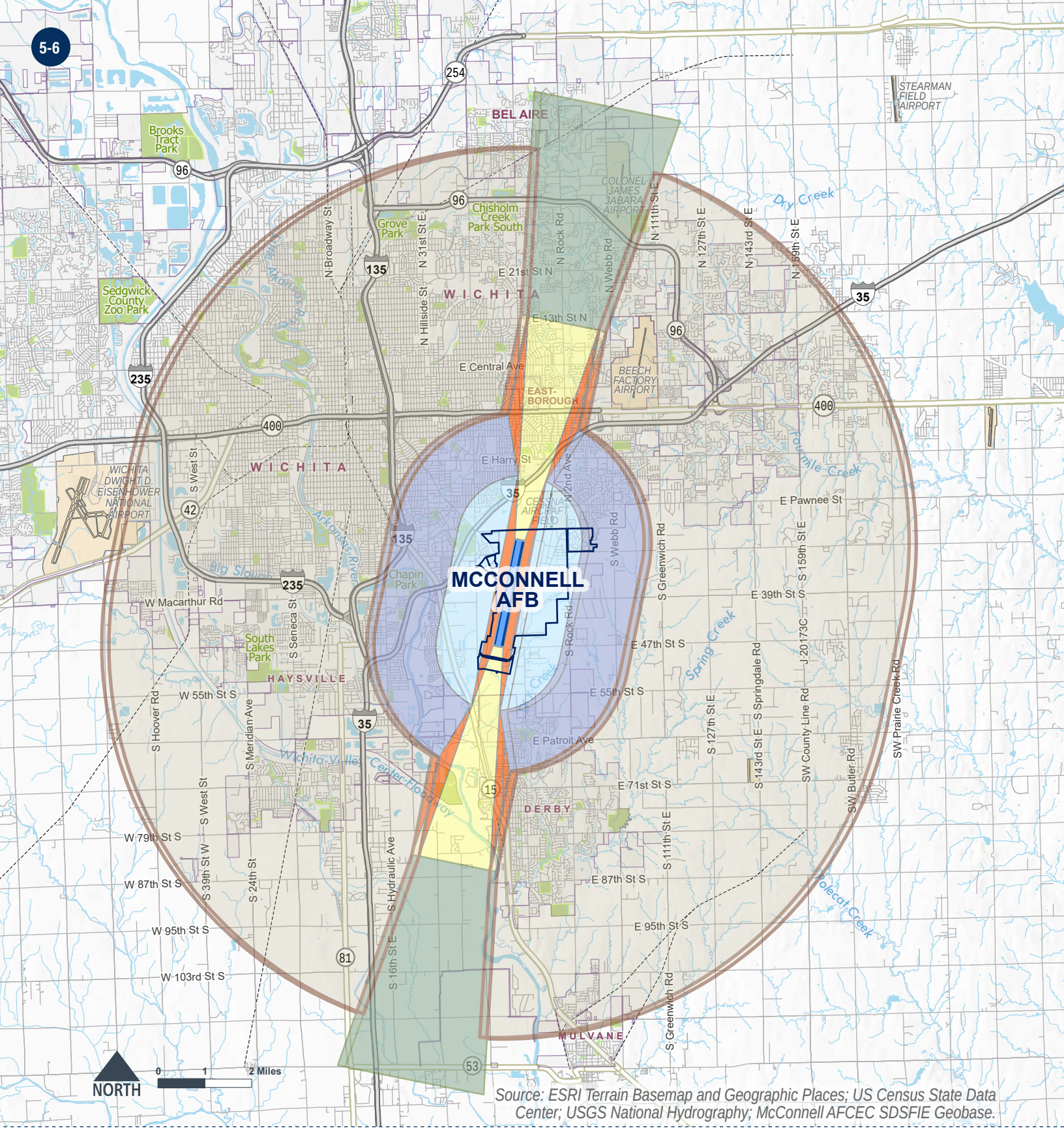
There are different imaginary surfaces for fixed-wing runways (depending on the types of aircraft supported by the runway) and rotary-wing runways/helipads. **Figure 5-3** depicts the imaginary surfaces for typical Class B fixed-wing runways like those at McConnell AFB. **Table 5-2** provides brief descriptions of each of these surfaces. **Figure 5-4** depicts the actual runway airspace imaginary surfaces specific to McConnell AFB's Class B runways. 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)

Source: UFC 3-260-01 Airfield and Heliport Planning and Design



Source: ESRI Terrain Basemap and Geographic Places; US Census State Data Center; USGS National Hydrography; McConnell AFCEC SDSFIE Geobase.

- Primary Surface
- Approach/Departure Clearance Surface (50:1)
- Approach/Departure Clearance Surface (Horiz)
- Transitional Surface (7:1)
- Inner Horizontal Surface
- Conical Surface (20:1)
- Outer Horizontal Surface
- Runway
- McConnell AFB
- Nearby Airport
- City Limit

Figure 5-4

Imaginary Surfaces and Transition Planes for McConnell 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.

Source: UFC 3-260-01 Airfield and Heliport Planning and Design.

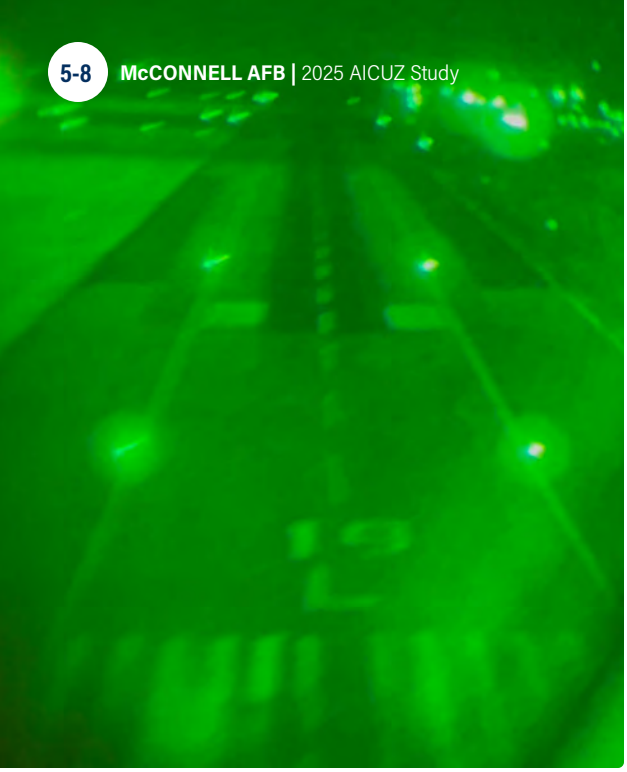
5.3 HAZARDS TO AIRCRAFT FLIGHT ZONE

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.

Wind turbines, cell towers, power lines, or other tall structures have not caused operational impacts at McConnell AFB. Vertical developments are coordinated closely with base officials to ensure there are no obstructions that violate Air Force regulations.



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 have been no instances of visual interference around McConnell AFB.

Light Emissions

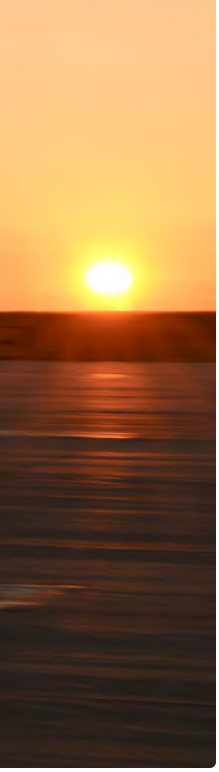
Bright lights, either direct or reflected, in the airfield vicinity can impair a pilot's vision, especially at night. A sudden flash from a bright light causes a spot or "halo" to remain at the center of the visual field for a few seconds or more, rendering a person virtually blind to all other visual 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:

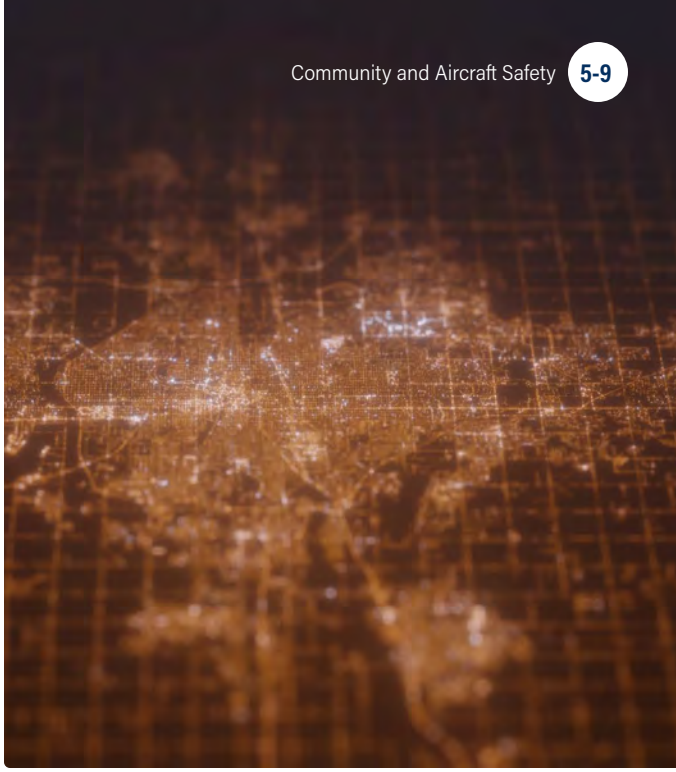
- **Lasers that emit in the visible spectrum,** which can be potentially harmful to a pilot's vision during both day and night.
- **The increasing use of energy-efficient light-emitting diode (LED) lighting**, which poses potential conflicts in areas where pilots use night vision goggles (NVGs). NVGs 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 been no instances of glint or glare interference with operations around McConnell 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.

In general, McConnell AFB's BASH Program is able to manage bird and animal presence in the vicinity of the airfield to keep interactions to a minimum. During migration periods, flight timing may be adjusted to further separate aircraft flights from high activity periods for birds. Standing water and retention ponds, both on installation as well as in residential developments throughout the community oftentimes attract birds and are a focus of the BASH staff at McConnell 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 reported issues with EMI at McConnell AFB.

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.

Drones are considered a low-level threat at McConnell AFB and minimal incidents have been reported. The FAA website outlines the limits for flying drones (five miles from runway) and drone users must follow FAA rules.

Midair Collision Avoidance (MACA)

McConnell AFB conducts MACA visits throughout the region to talk about local procedures and discuss the local airfield environment. These visits make McConnell AFB aware of any airport within 50 miles that should be in their consideration. A MACA pamphlet is also produced and distributed.

5.4 SURFACE DANGER ZONES

A Surface Danger Zone (SDZ) depicts the space necessary for containment of projectiles, fragments, and debris from the firing of a ground weapons system or demolition activity. SDZs represent a mathematically predicted three-dimensional area of ground and airspace that projectiles or fragments could travel through and impact the earth, either by direct fire or ricochet from ground-based, live-fire operations. SDZ designs are based on the worst-case scenario for how a given munition type could travel. They are designed to minimize the probability of a hazardous fragment escaping from range boundaries and to keep the public, range personnel, facilities/equipment, and property safe.

SDZ sizes and shapes are dependent on the characteristics of the weapon system, ammunition, training requirements, geographical location, and environmental conditions.

Similarly, there are quantity distance (QD) arcs associated with EOD Range activities, such as those that are conducted at McConnell AFB. These are calculated distances that should remain clear based upon the size of the explosives that are approved for the range. The largest QD arc for the EOD Range at McConnell AFB is 367 feet and does not leave the installation property.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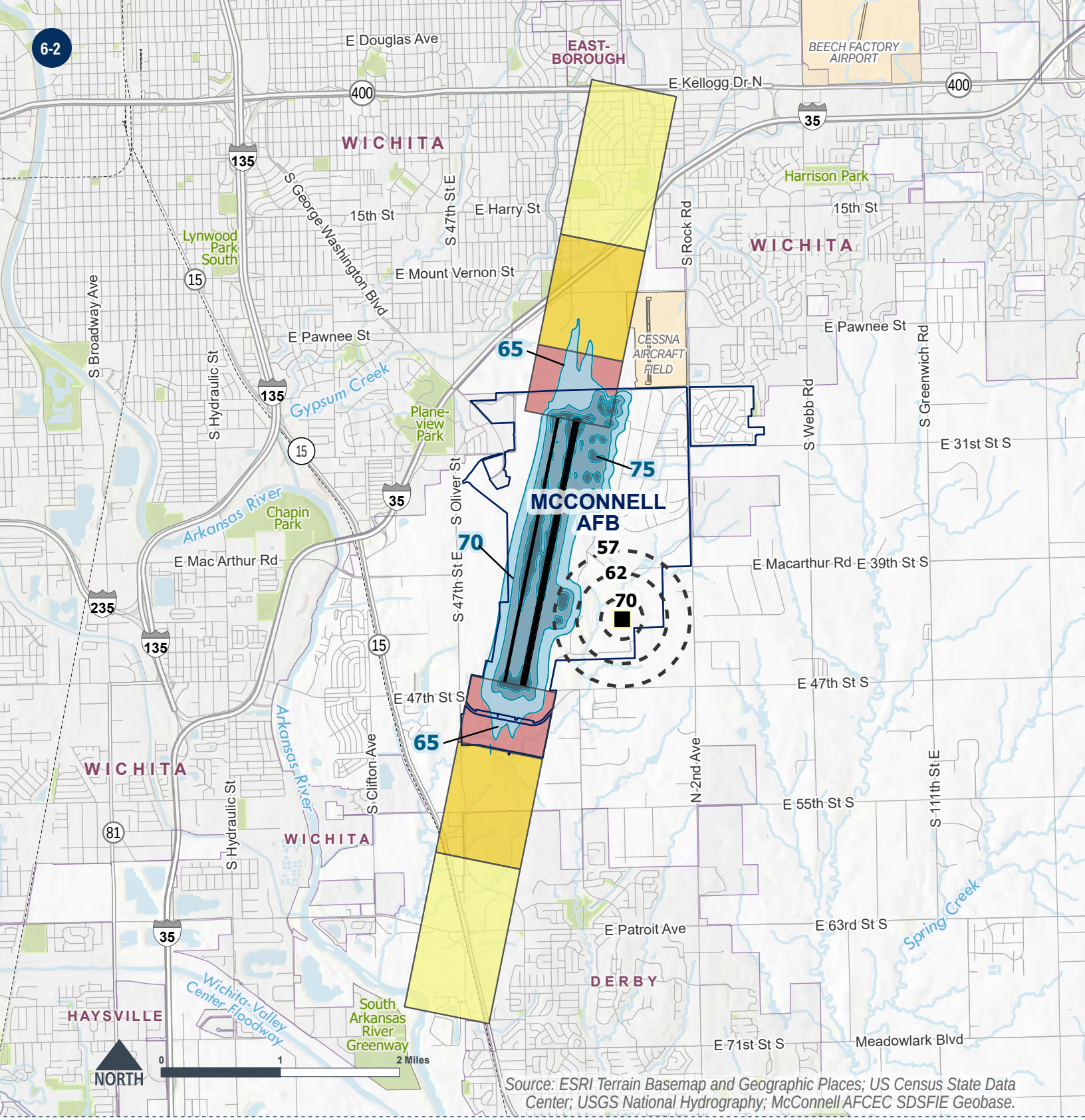
6. LAND USE COMPATIBILITY ANALYSIS

CZs, APZs, and noise zones (both from the airfield operations and EOD activities), 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, as well as other activities at the installation. The AICUZ footprint, combined with the guidance and recommendations set forth in this 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.).



- EOD Proficency Range
- EOD CDNL Noise Contour (dB)
- Clear Zone (CZ)
- Accident Potential Zone I (APZ I)
- Accident Potential Zone II (APZ II)

2025 AICUZ Contours (dB)

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

- Runway
- McConnell AFB
- Nearby Airport
- City Limit

Figure 6-1
2025 McConnell 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 large caliber weapons and explosives. **Section 6.4** presents the compatibility analysis and concerns within noise zones and APZs associated with McConnell AFB.

6.2 PLANNING AUTHORITIES, STAKEHOLDERS, AND POLICIES

This section presents information for each governing body that has land use jurisdictions near McConnell AFB, including descriptions of existing and future land uses, relevant stakeholder groups, and existing compatible planning policies and regulations. **Figure 6-1** shows the locations of jurisdictions within the vicinity of McConnell AFB.

State of Kansas Land Use Planning and Zoning

In the State of Kansas, planning authority is delegated to counties, cities, towns, and townships. Kansas legislation and regulations for land use planning and zoning are covered in Chapter 12, Article 7 of the Kansas Statutes, and includes details on comprehensive plan development, procedure for adoption, and review, along with zoning regulations and districts, military installations and special use areas.

Kansas Statute, Chapter 12, Article 7, Section 772—"Military installations; state area of interest" acknowledges both the AICUZ Study area and the Joint Land Use Study (JLUS) area, and notes that these areas shall constitute a state area of interest vital to national security and the economic well-being of the state. This is further expanded upon in Section 773, which outlines the various communication, cooperation, and collaboration efforts that should be made between any military installation and adjacent municipalities.

Wichita-Sedgwick County Metropolitan Area Planning Department

The Wichita-Sedgwick County Metropolitan Planning Area was established as part of an interlocal agreement signed between the City of Wichita and Sedgwick County in January 2019. Its mission is to provide professional planning services to the community regarding land use, community facilities, and historic preservation so that the Wichita-Sedgwick County Metropolitan area continues to be a quality place to live, work and play. This is accomplished through three primary areas of responsibility, which are captured through three divisions. The Advanced Plans Division is responsible for long-range land use planning, including reviewing and updating the Wichita-Sedgwick County Comprehensive Plan. The Current Plans Division supports the community's vision for economic vitality and its built environment, which includes historic preservation compliance and zoning/subdivision review. The Enforcement Division is responsible for enforcement of zoning regulations, sign permits, and some licenses in the City of Wichita.

The Community Investments Plan...a framework for the future, 2015-2035 is the most recent comprehensive plan for Wichita-Sedgwick County Metropolitan Area. This was adopted in 2015 and approved by the Wichita City Council in 2015 and the Sedgwick County Board of Commissioners in 2016. Within the plan, there are several acknowledgements of military installations and that residential development should not encroach upon existing or planned heavy industry, airfields, and military installations.

City of Derby

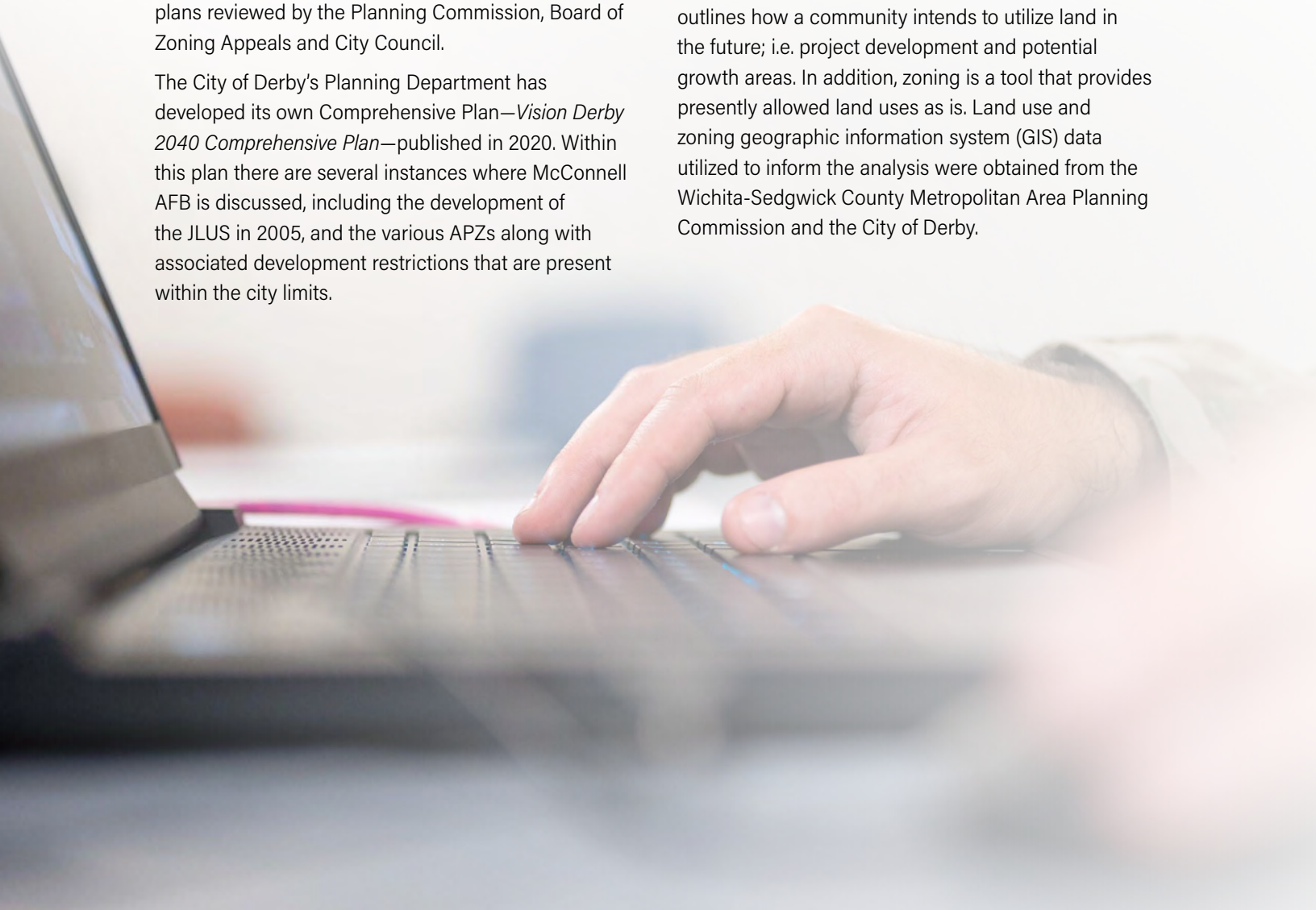
The City of Derby, despite being located in Sedgwick County, independently plans and manages its land from the Wichita-Sedgwick County Planning Department. The City of Derby Planning Department is responsible for regulatory review of all zoning and subdivision issues to ensure compliance with the City's Comprehensive Plan. This includes all platting, zoning requests, annexation, variances, exceptions and site plans reviewed by the Planning Commission, Board of Zoning Appeals and City Council.

The City of Derby's Planning Department has developed its own Comprehensive Plan—*Vision Derby 2040 Comprehensive Plan*—published in 2020. Within this plan there are several instances where McConnell AFB is discussed, including the development of the JLUS in 2005, and the various APZs along with associated development restrictions that are present within the city limits.

The City of Derby recognizes the importance of McConnell AFB as an economic driver and historic component of the community as well as the importance of being able to operate at its maximum capability at any time. Therefore, efforts are made towards maintaining a strong relationship between the City, County and installation to ensure long-term growth for all entities.

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 McConnell AFB to determine compatibility conditions. Existing land use is assessed to determine current land use activity, while future land use outlines how a community intends to utilize land in the future; i.e. project development and potential growth areas. In addition, zoning is a tool that provides presently allowed land uses as is. Land use and zoning geographic information system (GIS) data utilized to inform the analysis were obtained from the Wichita-Sedgwick County Metropolitan Area Planning Commission and the City of Derby.



In order to analyze the compatibility of nearby land uses surrounding McConnell 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 (e.g., less than 2 dwelling units per acre), medium density, and high-density towers (e.g., multi-unit/multi-story buildings). 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.
- **Industrial.** Includes food, textile, apparel, household goods, and trades manufacturing (metals, stones, clays, glass, plastic, and rubber, etc.).
- **Transportation 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.).
- **Commercial.** 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.
- **Services (Civic, 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.
- **Agriculture and Resource Production / 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. See also Section 6.4.1 that further groups these categories for purposes of conducting the land use compatibility analysis.

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

The land use compatibility analysis performed as part of this AICUZ Study identifies existing and future land uses near McConnell 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 Uses

Existing land uses within the vicinity of McConnell AFB are illustrated on **Figure 6-2.** As shown on this figure, in the immediate vicinity of the installation, most land uses are considered industrial. The City of Wichita's data does not have parcel-based existing land use for this area, but categorizes these "Employment/Industry Center" areas. Employment/Industry Center is a land use category defined by Wichita-Sedgwick County as areas primarily intended for concentrated industrial, manufacturing, and service-based employment, and is generally considered industrial for the purposes of this analysis. As such, many properties are consistent with this land use type, while others are currently vacant or may have other uses, such as residential. South of 55th Street, in areas that are within the City of Derby, more parcel-based existing land use is depicted.

Specific land uses in the areas immediately west and north of McConnell AFB are dominated by airport-related industries, including Cessna Aircraft Field to the north along with the Cessna Aircraft and Textron eAviation facilities. To the west there are located both U.S. Naval Reserve and U.S. Army Reserve facilities that are outside of the McConnell AFB fence line, and the Kansas Aviation Museum. In addition, there are a series of industrial complexes to the immediate west of McConnell AFB's airfield that also utilize the runways. These include:

- **Spirit AeroSystems.** A large manufacturer of aerostructures for commercial airplanes, defense platforms, and business/regional jets.
- **National Institute for Aviation Research (NIAR).** Established by Wichita State University (WSU), NIAR is an aerospace research and development facility that collaborates with both government and industry.
- **Kansas Modification Center (KMC).** Manufacturer providing design alternatives to the Boeing 777 aircraft.

Beyond these industrial uses, after crossing Interstate 35 and Southeast Boulevard, there are more commercial and residential uses to the west and north, along with open spaces that follow the Arkansas River.

To the south of McConnell AFB, existing land uses show a mix of industrial, commercial and residential uses. As noted previously, several tracts of land are shown as industrial, but may currently be vacant or undeveloped. Farther to the south, existing land uses also include open/agriculture/low-density, commercial and residential uses. To the east of McConnell AFB, there is primarily residential development with some interspersed commercial uses along Rock Road.

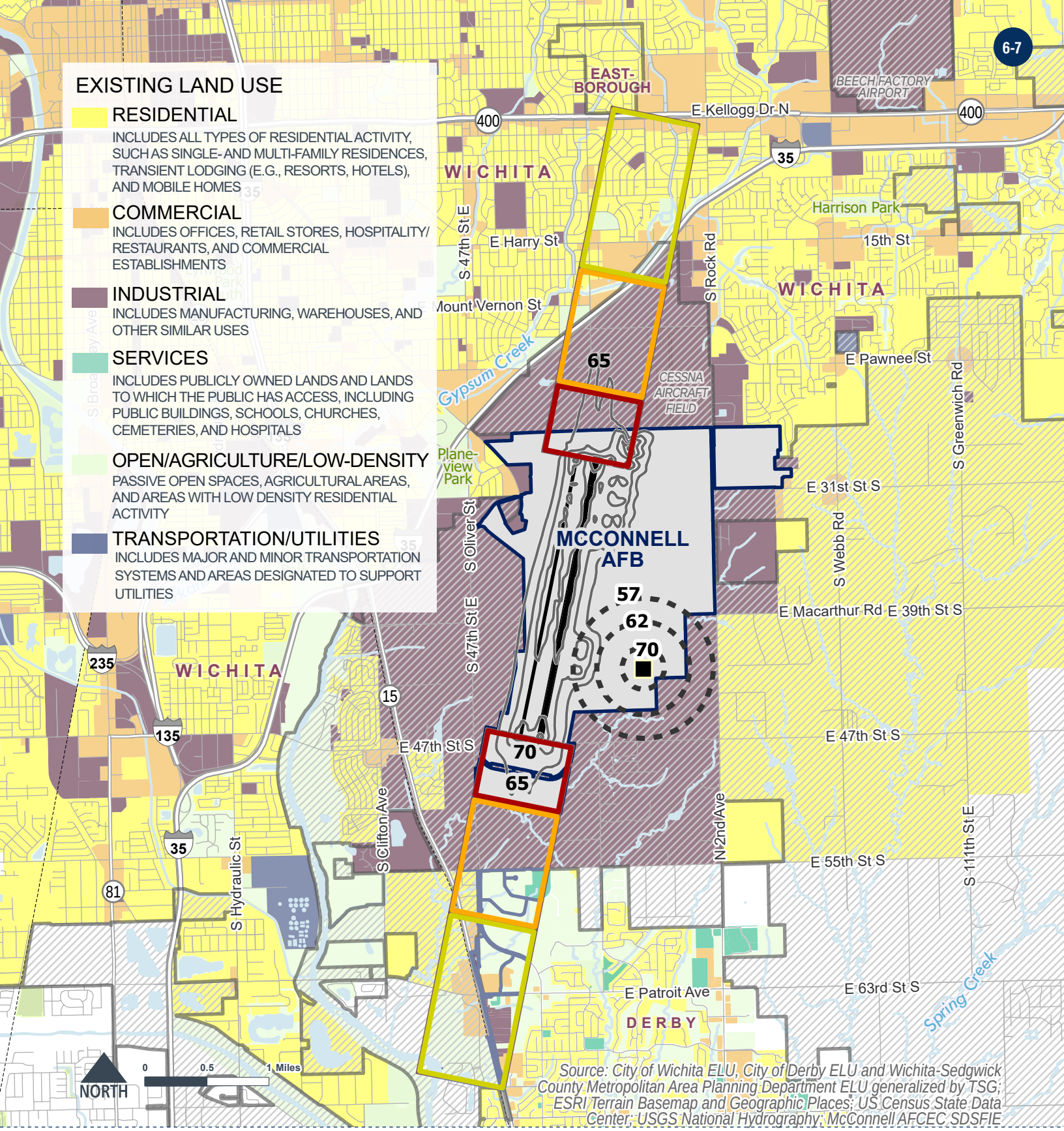
6.3.2 Current Zoning and Future Land Use

All land surrounding McConnell AFB is zoned. **Figure 6-3** overlays the 2025 McConnell AFB AICUZ Study noise contours, CZs, and APZs on top of current generalized zoning data in the vicinity of McConnell AFB (for details on how the generalized zoning layer was created, see **Appendix C**). Future land use data is also presented within this section and on **Figure 6-4,** as there are similarities in how areas are zoned and the intention for the future land use of that parcel.

As noted previously, many areas on the western side of McConnell AFB, as well as the area immediately north of the installation, are already built out with industrial and other aviation-related development, and this is consistent with the existing land use data. Other areas farther to the north and south, within the APZs include a mix of residential, commercial and some industrial zoning and future land use area.

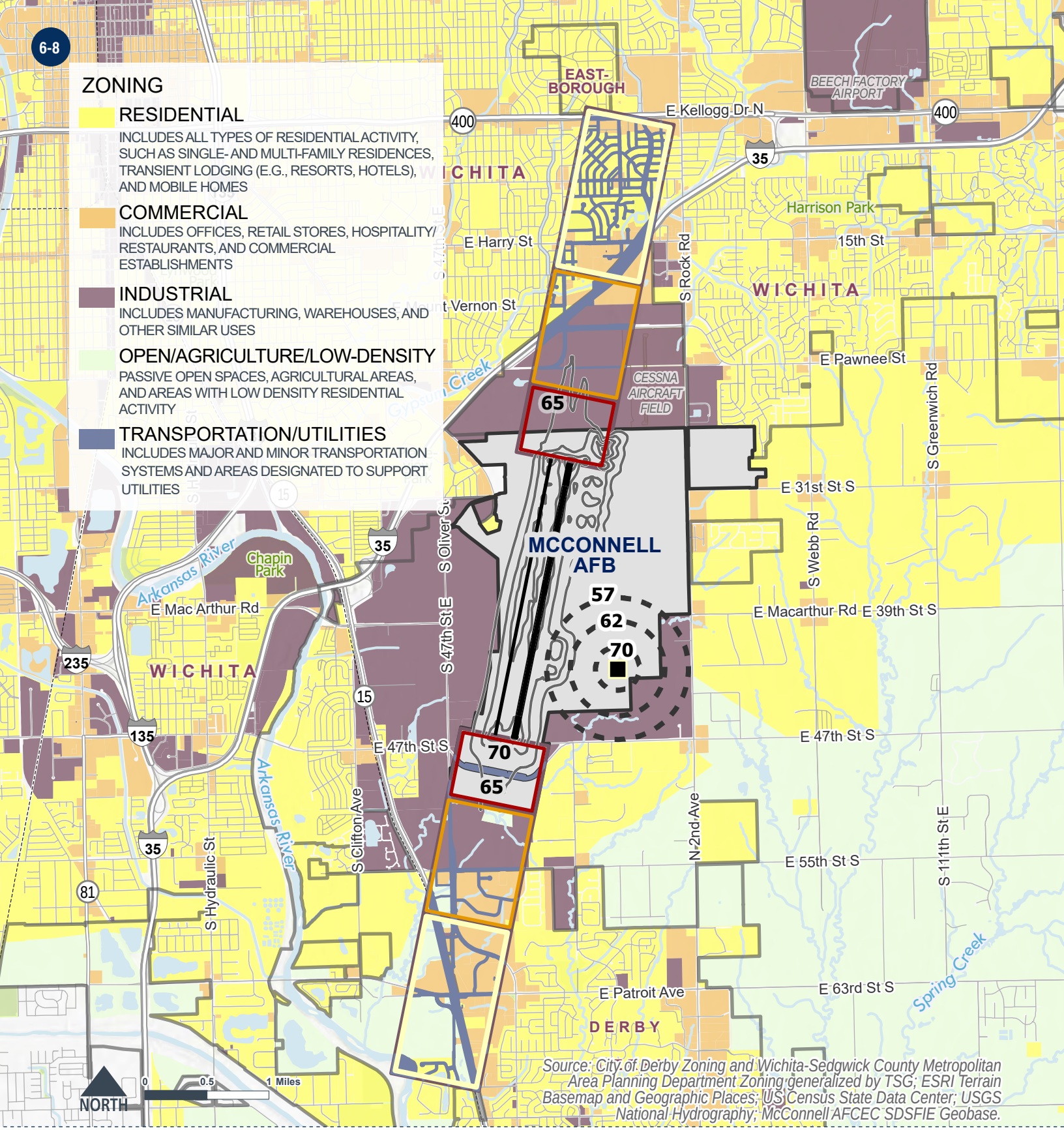
The major difference between zoning and future land use is for areas to the east of McConnell AFB, where zoning shows a mix of residential and open/agricultural/low-density residential with small pockets of commercial, while the future land use data includes primarily commercial land uses in the same area.

Areas within the cities of Wichita and Derby are mostly built out; however, there remain pockets of undeveloped parcels where development could be proposed, or changes in the zoning could be requested from a developer. The majority of vacant land is within the unincorporated areas of Sedgwick County (areas that are outside of the city limits of both Wichita and Derby). These areas could either go through an annexation process by one of the cities, which could result in supplying certain utilities, or the parcels can be developed individually.



- EOD Proficency Range
- EOD CDNL Noise Contour (dB)
- 2025 AICUZ Contours (dB)
- Clear Zone (CZ)
- Accident Potential Zone I (APZ-I)
- Accident Potential Zone II (APZ-II)
- Runway
- McConnell AFB
- Sedgwick County Unicorporated Areas
- City Limit

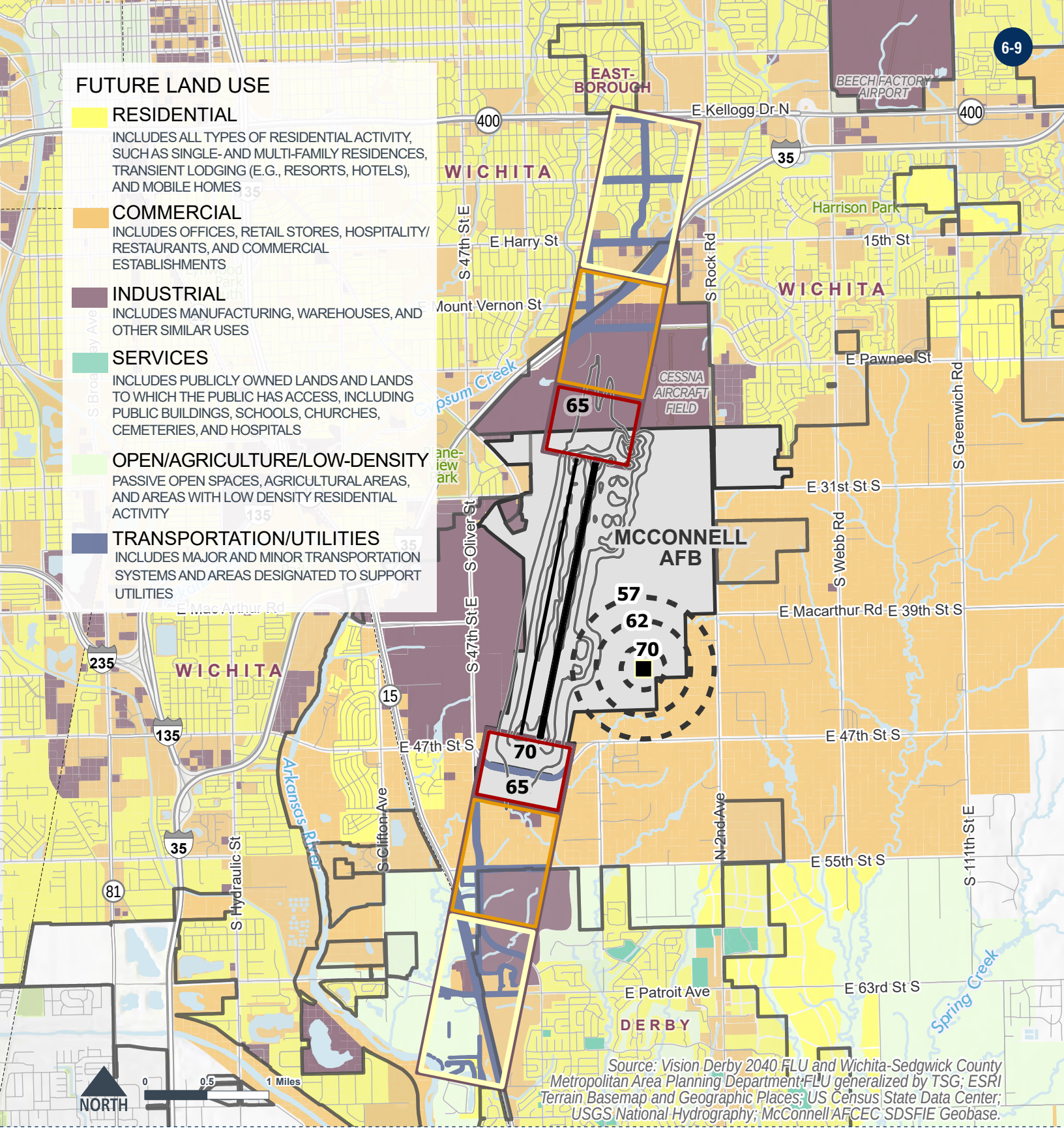
Figure 6-2
Existing Land Use and 2025 McConnell AFB AICUZ Study Noise Contours, CZs, APZs and EOD Noise Contours



Source: City of Derby Zoning and Wichita-Sedgwick County Metropolitan Area Planning Department Zoning generalized by TSG; ESRI Terrain Basemap and Geographic Places; US Census State Data Center; USGS National Hydrography; McConnell AFCEC SDSFIE Geobase.

- EOD Proficency Range
- EOD CDNL Noise Contour (dB)
- 2025 AICUZ Contours (dB)
- Clear Zone (CZ)
- Accident Potential Zone I (APZ-I)
- Accident Potential Zone II (APZ-II)
- Runway
- McConnell AFB
- City Limit

Figure 6-3
Existing Zoning and 2025 McConnell AFB AICUZ Study Noise Contours, CZs, and APZs and EOD Noise Contours



- EOD Proficency Range
- EOD CDNL Noise Contour (dB)
- 2025 AICUZ Contours (dB)
- Clear Zone (CZ)
- Accident Potential Zone I (APZ-I)
- Accident Potential Zone II (APZ-II)
- Runway
- McConnell AFB
- City Limit

Figure 6-4

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

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.

The land use compatibility analysis presented in this AICUZ Study evaluates existing and future land uses near McConnell 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 within the vicinity of McConnell AFB, specifically Wichita-Sedgwick County Planning and the City of Derby.

In order to analyze the compatibility of nearby land uses surrounding McConnell 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, with the exception of low-density residential (e.g., a single home on large farm).
- **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 specific to airfield generated noise and associated CZs and APZs. 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. Compatible with restrictions could mean a land use is compatible if the floor area ratio (FAR) is kept under a certain amount, while incompatible with exceptions could include certain land uses being incompatible unless certain building considerations are incorporated (i.e., a specified noise level reduction [NLR] measure is incorporated into the building).

Table 6-2 presents land use compatibility for range noise using the CDNL noise metric and has three compatibility categories—the Land Use Planning Zone (LUPZ), Noise Zone II and Noise Zone III.

Table 6-1

Generalized Land Use Categories and Noise/Safety Compatibility

GENERALIZED LAND USE CATEGORY[1]	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	Yes[4]	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 DoDI 4165.57.

Table 6-2

Generalized Land Use Compatibility for Large Caliber Weapon and Artillery/Explosive Noise

GENERALIZED LAND USE CATEGORY[1]	LAND USE COMPATIBILITY WITH NOISE ZONE C-WEIGHTED DAY-NIGHT AVERAGE SOUND LEVEL (CDNL)		
	LUPZ[2] 57-62 (CDNL)	Noise Zone II 62-70 (CDNL)	Noise Zone III >70 (CDNL)
Residential	Yes	No[3]	No
Commercial	Yes	Yes	No
Industrial	Yes	Yes[4]	Yes[4]
Services	Yes	No[3]	No
Recreation	Yes	Yes	No
Open/Agriculture/Low Density	Yes	Yes[4]	Yes[4]
Transportation/Utilities	Yes	Yes	Yes[4]
Undeveloped/Vacant	Yes	Yes	Yes

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

1. This generalized land use table provides an overview of recommended land uses. To determine specific land use compatibility, see **Appendix A.**

2. Land Use Planning Zone (LUPZ) is an area in which its implemented controls function to create a buffer for Noise Zone II to prevent possibility of future noise conflicts.

3. Residential land uses within the 62-70 CDNL noise contours are considered incompatible. However, if residential uses are considered essential, noise-attenuation measures should be incorporated into the building structures. Similarly, Services land uses, which could include schools/educational facilities, are considered incompatible, and similar noise-attenuation measures should be incorporated.

4. Compatible with restrictions.

Source: Adapted from DoDI 4165.57.

6.4.2 Existing Land Use Compatibility Concerns

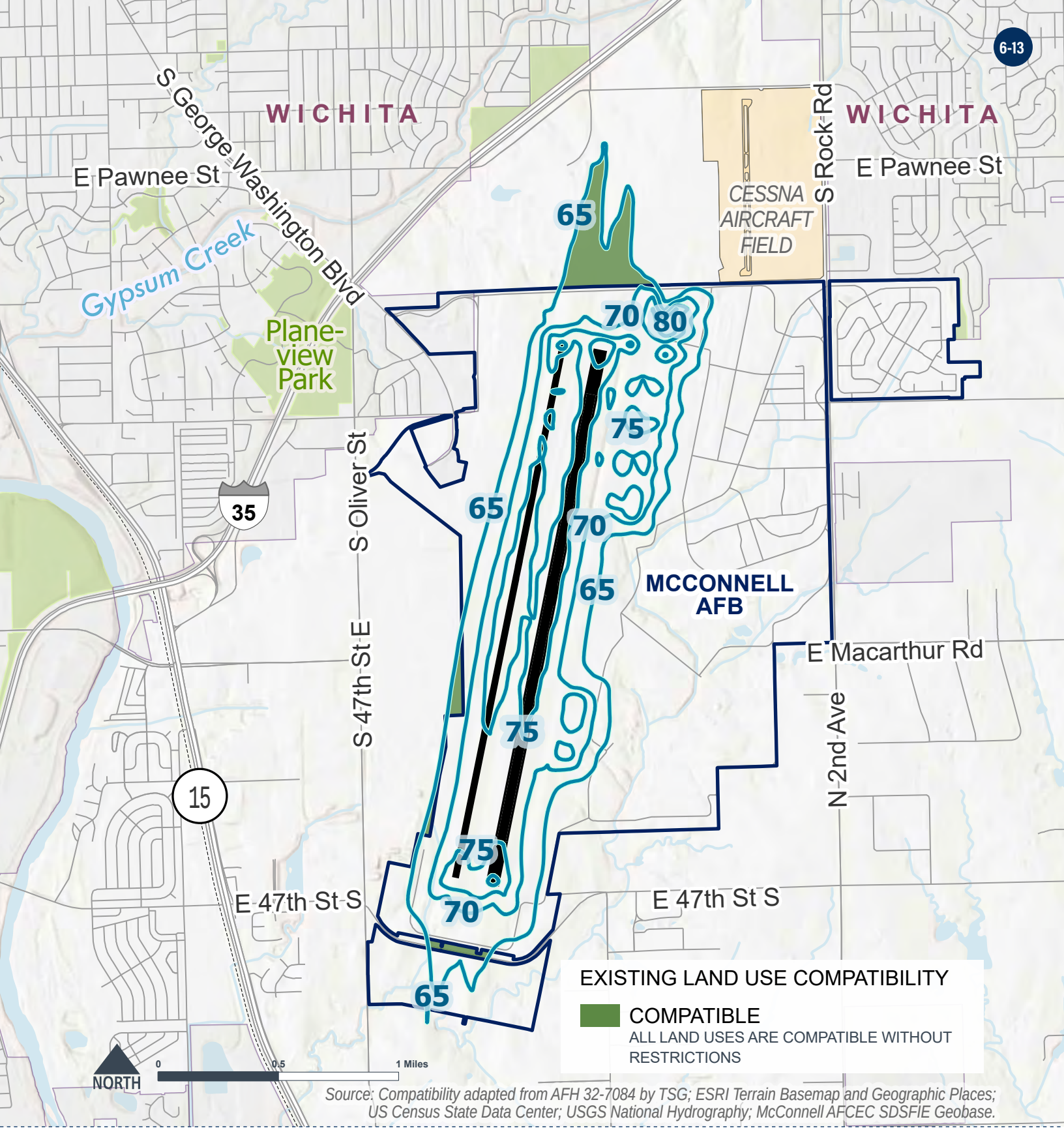
The 2025 McConnell AFB AICUZ noise contours extend slightly off installation property, primarily to the north and south. These areas, as shown in **Figure 6-5** are primarily over areas that are considered industrial per existing land uses and are considered compatible within the 65 dB DNL noise contour **(see Table 6-3)**. There is also a small area west of the installation that is over industrial land uses (e.g., aviation-related industry) and is considered compatible. The 70 dB DNL noise contour or any higher noise contours do not extend off installation property. Overall, given the size of the AICUZ noise contours based upon current operations and where they are off installation property, there are no major land use compatibility concerns.

The CZ and APZs extend off installation property to a much larger extent than the noise contours. As shown in **Figure 6-6** and **Table 6-4,** the CZ contains 168.7 acres of industrial uses that are considered incompatible or incompatible with exceptions; these are almost entirely located within the northern CZ. This parcel is associated with the Cessna Aircraft facility and has large areas that are vacant of structures; however, there are structures associated with the business in the western portion of the CZ. Despite these being aviation-related facilities, Air Force guidance dictates no structures besides airfield-related lighting and navigational aids are allowed within the CZs. However, these structures are considered pre-existing structures that are known and accepted by McConnell AFB. The southern CZ is almost entirely owned by McConnell AFB; however, there is a small corridor where E 47th Street crosses the CZ that is considered incompatible.

Land uses present within the APZ Is and IIs are a mix of residential, services, commercial, industrial, open/agricultural/low-density or transportation. Residential land uses are considered incompatible or incompatible with exceptions in both APZ I and II. Residential areas are in the northernmost APZ II between S Woodlawn Blvd and S Rock Rd. In addition, there are pockets of residential land uses along the western side of APZ I and II to the south of McConnell AFB.

Structures within Clear Zone North of Installation

Residential Development in APZ I and II North of Installation



Source: Compatibility adapted from AFH 32-7084 by TSG; ESRI Terrain Basemap and Geographic Places; US Census State Data Center; USGS National Hydrography; McConnell AFCEC SDSFIE Geobase.

Figure 6-5
McConnell AFB Incompatible Existing Land Use within Noise Contours

Table 6-3

McConnell AFB Off-Installation Existing Land Use Acreage within Noise Contours

DESIGNATION	GENERALIZED LAND USE CATEGORY[1]	65-70 dB	70-75 dB	GREATER THAN 75 dB DNL	TOTAL
Incompatible or Incompatible with Exceptions	Residential	—	—	—	—
	Commercial	—	—	—	—
	Industrial	—	—	—	—
	Services	—	—	—	—
	Recreation	—	—	—	—
	Open/Agriculture/Low Density	—	—	—	—
	Transportation/Utilities	—	—	—	—
	Undeveloped	—	—	—	—
Compatible or Compatible with Restrictions	Residential	—	—	—	—
	Commercial	—	—	—	—
	Industrial	81.6	—	—	**81.6**
	Services	—	—	—	—
	Recreation	—	—	—	—
	Open/Agriculture/Low Density	—	—	—	—
	Transportation/Utilities	—	—	—	—
	Undeveloped	—	—	—	—
Sub-total	**Incompatible**	**—**	**—**	**—**	**—**
	Compatible	**81.6**	**—**	**—**	**81.6**
Total		**81.6**	**—**	**—**	**81.6**

Note: Totals may not sum exactly due to rounding.

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

Table 6-4

McConnell AFB Off-Installation Existing Land Use Acreage within Clear Zones and Accident Potential Zones

DESIGNATION	GENERALIZED LAND USE CATEGORY[1]	CZ	APZ I	APZ II	TOTAL
Incompatible or Incompatible with Exceptions	Residential	—	66.5	427.8	**494.3**
	Commercial	—	—	—	**—**
	Industrial	168.7	—	—	**168.7**
	Services	—	20.7	—	**20.7**
	Recreation	—	—	—	**—**
	Open/Agriculture/Low Density	—	—	—	**—**
	Transportation/Utilities	—	—	—	**—**
	Undeveloped	—	—	—	**—**
Compatible or Compatible with Restrictions	Residential	—	—	—	**—**
	Commercial	—	35.3	259.4	**294.7**
	Industrial	—	593.5	79.1	**672.6**
	Services	—	—	2.5	**2.5**
	Recreation	—	—	—	**—**
	Open/Agriculture/Low Density	—	143.5	397.1	**540.6**
	Transportation/Utilities	—	19.1	—	**19.1**
	Undeveloped	—	—	—	**—**
Sub-total	**Incompatible**	**168.7**	**87.1**	**427.8**	**683.6**
	Compatible	**—**	**791.4**	**802.3**	**1,593.7**
Total		**168.7**	**878.5**	**1,230.1**	**2,277.3**

Note: Totals may not sum exactly due to rounding.

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

Services land use is incompatible or incompatible with exceptions in APZ I, but considered compatible in APZ II. In this case, the land use is associated with the City of Derby Public Works facility on E 55th Street.

Larger acreages are associated with compatible or compatible with restrictions land uses, such as commercial, industrial, open/agriculture/low density and transportation. These are located throughout APZ I and II to both the north and south and include pockets of low density residential or commercial development, along with industrial land uses.

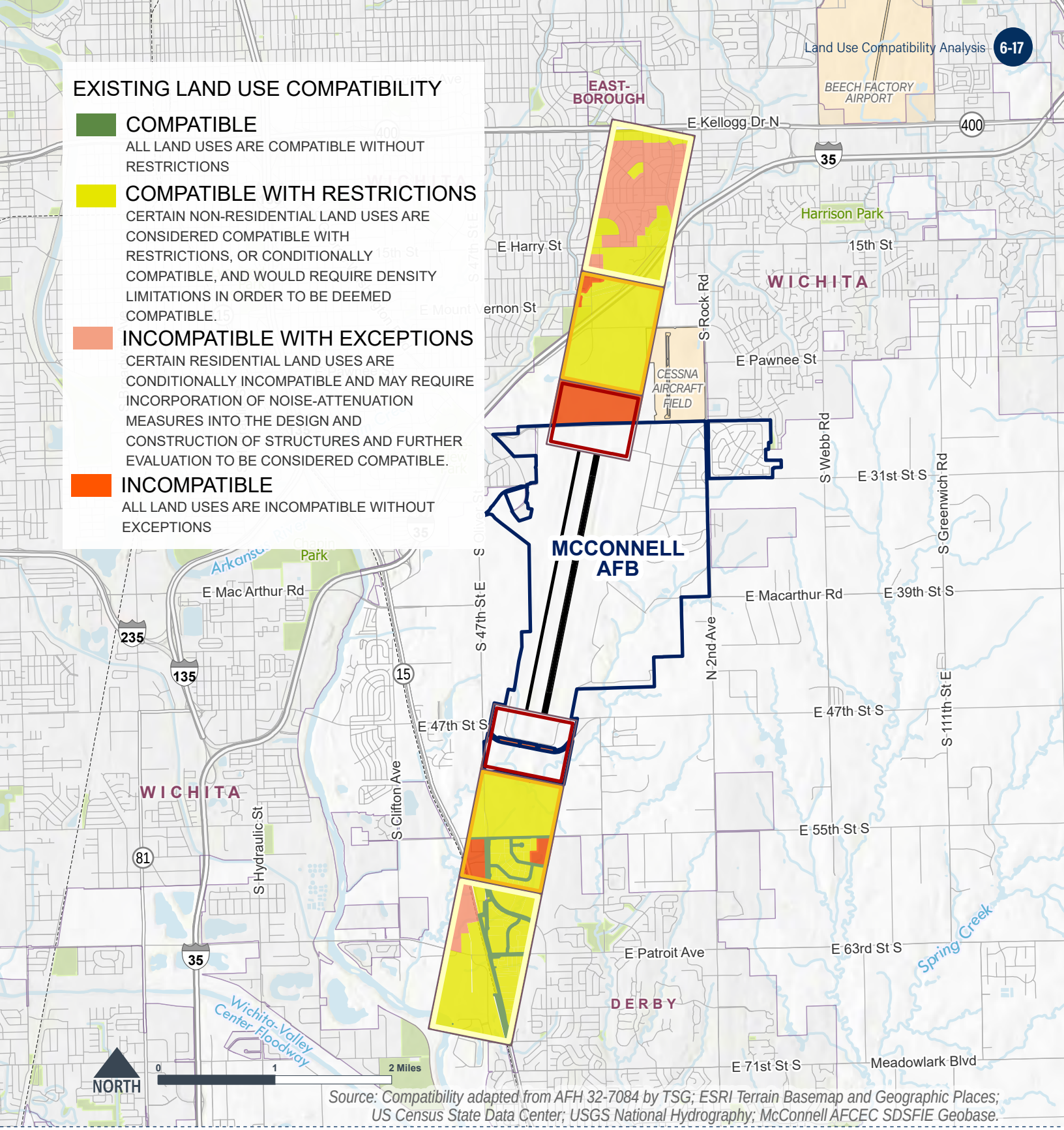
This area within primarily APZ II, but also APZ I, is considered pre-existing structures that are known and accepted by McConnell AFB. To the extent possible, further development in this area should be restricted; however, there are limited vacant areas of land that could be potentially developed.

Overall, 1,593.7 acres (or 70 percent) are considered compatible or compatible with restrictions with existing land uses, while 683.6 acres (or 30 percent) are considered incompatible or incompatible with exceptions.

With respect to noise from explosives from the EOD Range at McConnell AFB, a total of 239.8 acres extend off installation property into Sedgwick County, all of which are over existing land uses that are considered industrial. Industrial land uses are considered compatible or compatible with restrictions with the LUPZ, Noise Zone I and Noise Zone II per guidance. **See Table 6-5 and Figure 6-7** for more details on the areas covered by the EOD CDNL noise zones.

It should be noted that despite the data showing these areas currently as industrial, they are currently undeveloped and mostly vacant. Therefore, it would be important for both McConnell AFB and the local municipalities to take care in considering future development in these areas to ensure continued compatibility with the activities at the EOD Range.

Vacant areas within EOD Range CDNL Noise Zones



Source: Compatibility adapted from AFH 32-7084 by TSG; ESRI Terrain Basemap and Geographic Places; US Census State Data Center; USGS National Hydrography; McConnell AFCEC SDSFIE Geobase.

- Clear Zone (CZ)
- Accident Potential Zone I (APZ-I)
- Accident Potential Zone II (APZ-II)
- Runway
- McConnell AFB
- Nearby Airport
- City Limit

Figure 6-6
McConnell AFB Incompatible Existing Land Use within CZs and APZs

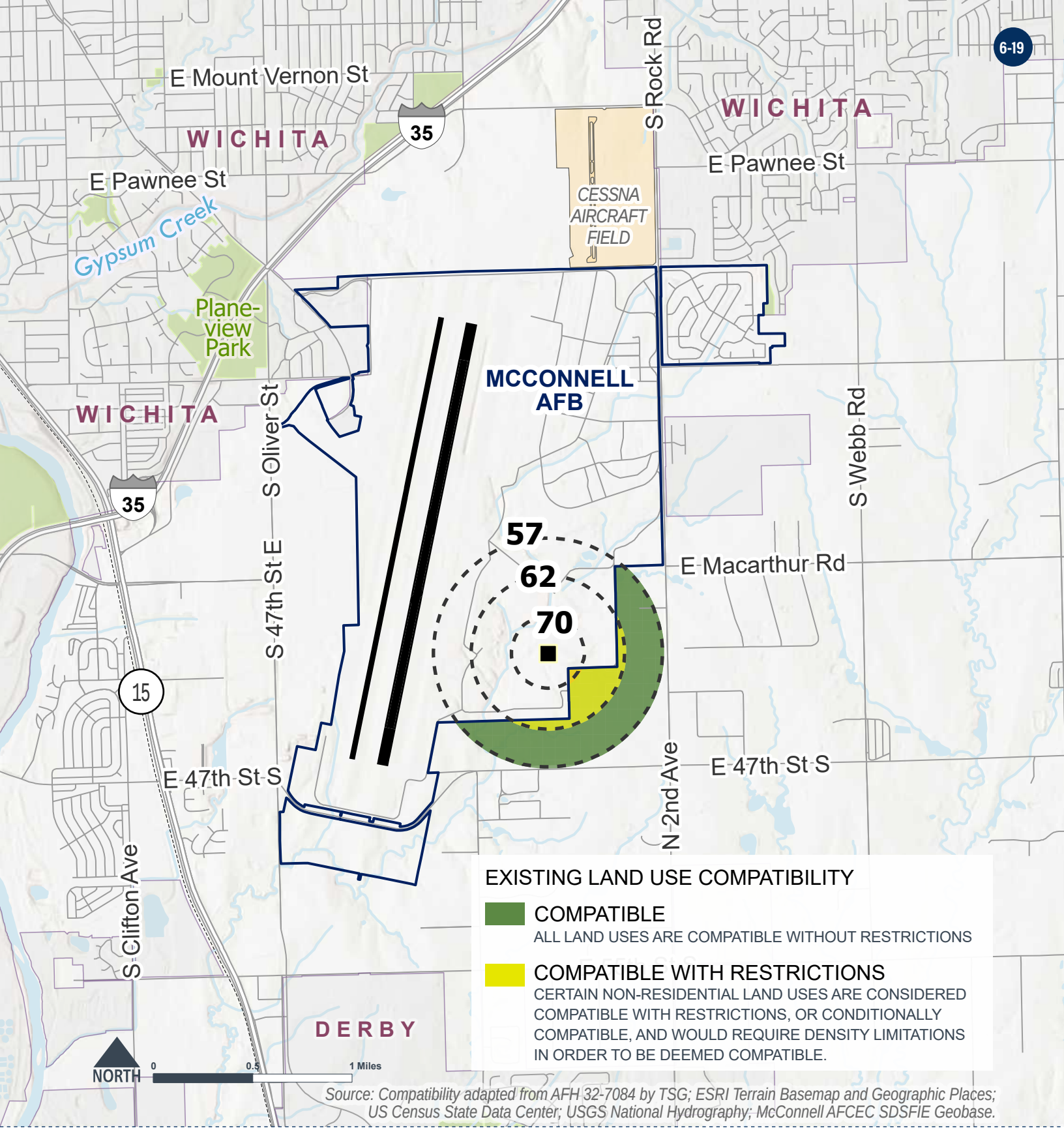
Table 6-5

McConnell AFB Off-Installation Existing Land Use Acreage within EOD CDNL Noise Zones

DESIGNATION	GENERALIZED LAND USE CATEGORY[1]	LUPZ	NOISE ZONE I	NOISE ZONE II	TOTAL
Incompatible or Incompatible with Exceptions	Residential	—	—	—	—
	Commercial	—	—	—	—
	Industrial	—	—	—	—
	Services	—	—	—	—
	Recreation	—	—	—	—
	Open/Agriculture/Low Density	—	—	—	—
	Transportation/Utilities	—	—	—	—
	Undeveloped	—	—	—	—
Compatible or Compatible with Restrictions	Residential	—	—	—	—
	Commercial	—	—	—	—
	Industrial	187.1	50.7	2.0	**239.8**
	Services	—	—	—	—
	Recreation	—	—	—	—
	Open/Agriculture/Low Density	—	—	—	—
	Transportation/Utilities	—	—	—	—
	Undeveloped	—	—	—	—
Sub-total	**Incompatible**	**—**	**—**	**—**	**—**
	Compatible	**187.1**	**50.7**	**2.0**	**239.8**
Total		**187.1**	**50.7**	**2.0**	**239.8**

Note: Totals may not sum exactly due to rounding.

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



Source: Compatibility adapted from AFH 32-7084 by TSG; ESRI Terrain Basemap and Geographic Places; US Census State Data Center; USGS National Hydrography; McConnell AFCEC SDSFIE Geobase.

EOD Proficency Range
EOD CDNL Noise Contour (dB)
Runway
McConnell AFB
Nearby Airport
City Limit

Figure 6-7
McConnell AFB Incompatible Existing Land Use within EOD CDNL Noise Zones

Table 6-6

McConnell AFB Off-Installation Existing Land Use Acreage within EOD CDNL Noise Zones

DESIGNATION	GENERALIZED LAND USE CATEGORY[1]	65-70 dB DNL	70-75 dB DNL	GREATER THAN 75 dB DNL	TOTALS
Incompatible or Incompatible with Exceptions	Residential	—	—	—	—
	Commercial	—	—	—	—
	Industrial	—	—	—	—
	Services	—	—	—	—
	Recreation	—	—	—	—
	Open/Agriculture/Low Density	—	—	—	—
	Transportation/Utilities	—	—	—	—
	Undeveloped	—	—	—	—
Compatible or Compatible with Restrictions	Residential	—	—	—	—
	Commercial	0.1	—	—	0.1
	Industrial	76.6	—	—	76.6
	Services	—	—	—	—
	Recreation	—	—	—	—
	Open/Agriculture/Low Density	—	—	—	—
	Transportation/Utilities	4.8	—	—	4.8
	Undeveloped	—	—	—	—
Sub-total	**Incompatible**	**—**	**—**	**—**	**—**
	Compatible	**81.6**	**0**	**0**	**81.6**
Total		**81.6**	**0**	**0**	**81.6**

Note: Totals may not sum exactly due to rounding.

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

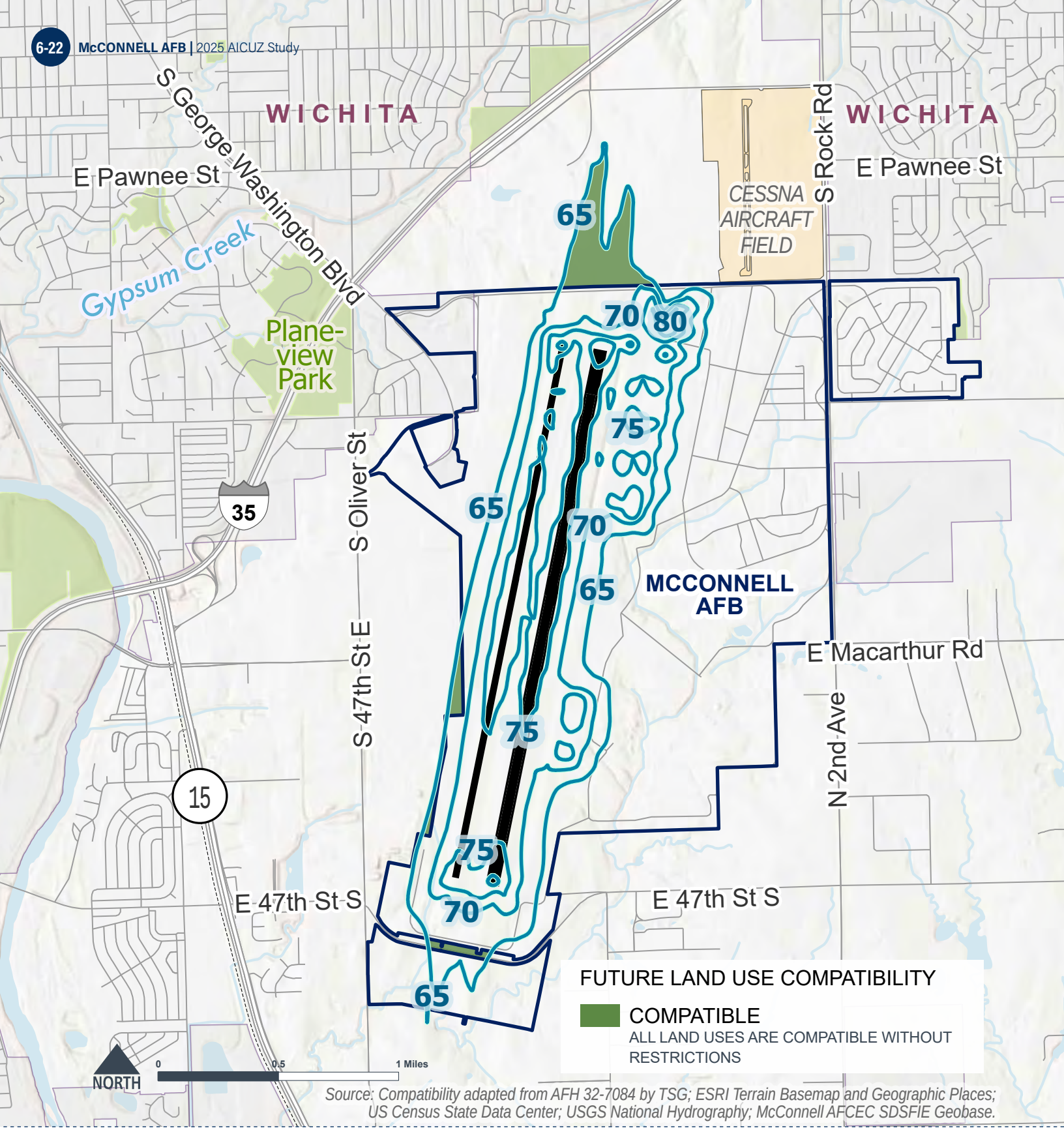
6.4.3 Future Land Use Compatibility Concerns

Future land uses within the 2025 McConnell AFB AICUZ noise contours are primarily consistent with the existing land use compatibility noted in **Section 6.4.2,** where all the acreage off installation is considered compatible **(see Figure 6-8).**

The CZs and APZ I and II also have a similar mix of land uses when compared to the existing land use compatibility analysis, but with a few differences. The CZs have a combination of future land uses that are industrial, commercial and transportation/utilities, all of which are considered incompatible or incompatible with exceptions.

The only future land use in both APZ I and II that is considered incompatible or incompatible with exceptions is residential, which includes 14.9 acres in APZ I and 289.0 acres in APZ II. All other future land uses are considered compatible or compatible with restrictions. These are **presented in Table 6-7** and **depicted in Figure 6-9.** The largest future land use category is commercial, followed closely by industrial. The commercial and industrial land uses in the APZs are generally considered compatible if they do not attract concentrations of people greater than 50 people 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. These are two land uses the municipalities use to control development around the installation to appropriate uses that are compatible with military activities. This is **discussed further in Section 7.3.**

Overall, 1,804.8 acres (or 79 percent) are considered compatible or compatible with restrictions with existing land uses, while 472.6 acres (or 21 percent) are considered incompatible or incompatible with exceptions.



Source: Compatibility adapted from AFH 32-7084 by TSG; ESRI Terrain Basemap and Geographic Places; US Census State Data Center; USGS National Hydrography; McConnell AFCEC SDSFIE Geobase.

Figure 6-8
Incompatible Future Land Use within Noise Contours

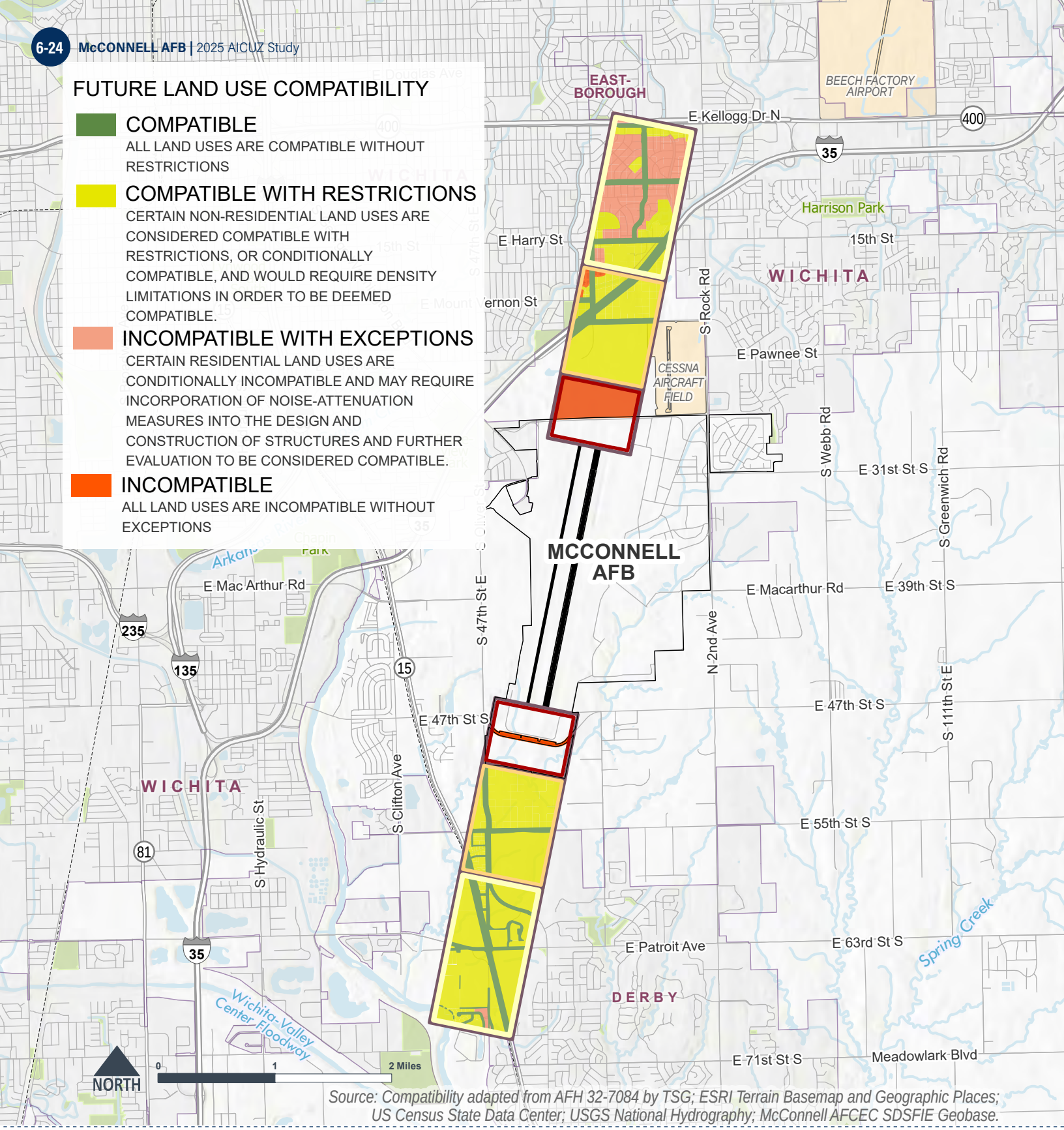
Table 6-7

McConnell AFB Off-Installation Future Land Use Acreage within CZs and APZs

DESIGNATION	GENERALIZED LAND USE CATEGORY[1]	CZ	APZ I	APZ II	TOTALS
Incompatible or Incompatible with Exceptions	Residential	—	14.9	289.0	**303.9**
	Commercial	1.5	—	—	**1.5**
	Industrial	152.1	—	—	**152.1**
	Services	—	—	—	**—**
	Recreation	—	—	—	**—**
	Open/Agriculture/Low Density	—	—	—	**—**
	Transportation/Utilities	15.1	—	—	**15.1**
	Undeveloped	—	—	—	**—**
Compatible or Compatible with Restrictions	Residential	—	—	—	**—**
	Commercial	—	276.8	411.9	**688.7**
	Industrial	—	444.8	137.7	**582.5**
	Services	—	—	—	**—**
	Recreation	—	—	—	**—**
	Open/Agriculture/Low Density	—	34.0	210.6	**244.6**
	Transportation/Utilities	—	110.1	178.9	**289.0**
	Undeveloped	—	—	—	**—**
Subtotals	**Incompatible**	**168.7**	**14.9**	**289.0**	**472.6**
	Compatible	**—**	**865.7**	**939.1**	**1,804.8**
Totals		**168.7**	**880.6**	**1,228.1**	**2,277.4**

Note: Totals may not sum exactly due to rounding.

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



Source: Compatibility adapted from AFH 32-7084 by TSG; ESRI Terrain Basemap and Geographic Places; US Census State Data Center; USGS National Hydrography; McConnell AFCEC SDSFIE Geobase.

- Clear Zone (CZ)
- Accident Potential Zone I (APZ-I)
- Accident Potential Zone II (APZ-II)
- Runway
- McConnell AFB
- Nearby Airport
- City Limit

Figure 6-9
Incompatible Future Land Use within CZs and APZs

For future land uses within the EOD Range noise contours, the majority of the land is considered commercial and compatible or compatible with restrictions. The commercial future land use is only considered incompatible or incompatible with exceptions in the 2 acres within Noise Zone II, which is the highest noise area, closest to the installation **(see Figure 6-10).** The other future land use present is industrial, which is also considered compatible or compatible with restrictions **(see Table 6-8).**

Overall, the majority of future land uses are compatible or compatible with restrictions within the EOD CDNL noise zones. However, as noted in **Section 6.4.2,** most of this area is currently undeveloped and vacant. Therefore, it would be important for both McConnell AFB and the local municipalities to take care in considering future development in these areas to ensure continued compatibility with the activities at the EOD Range.

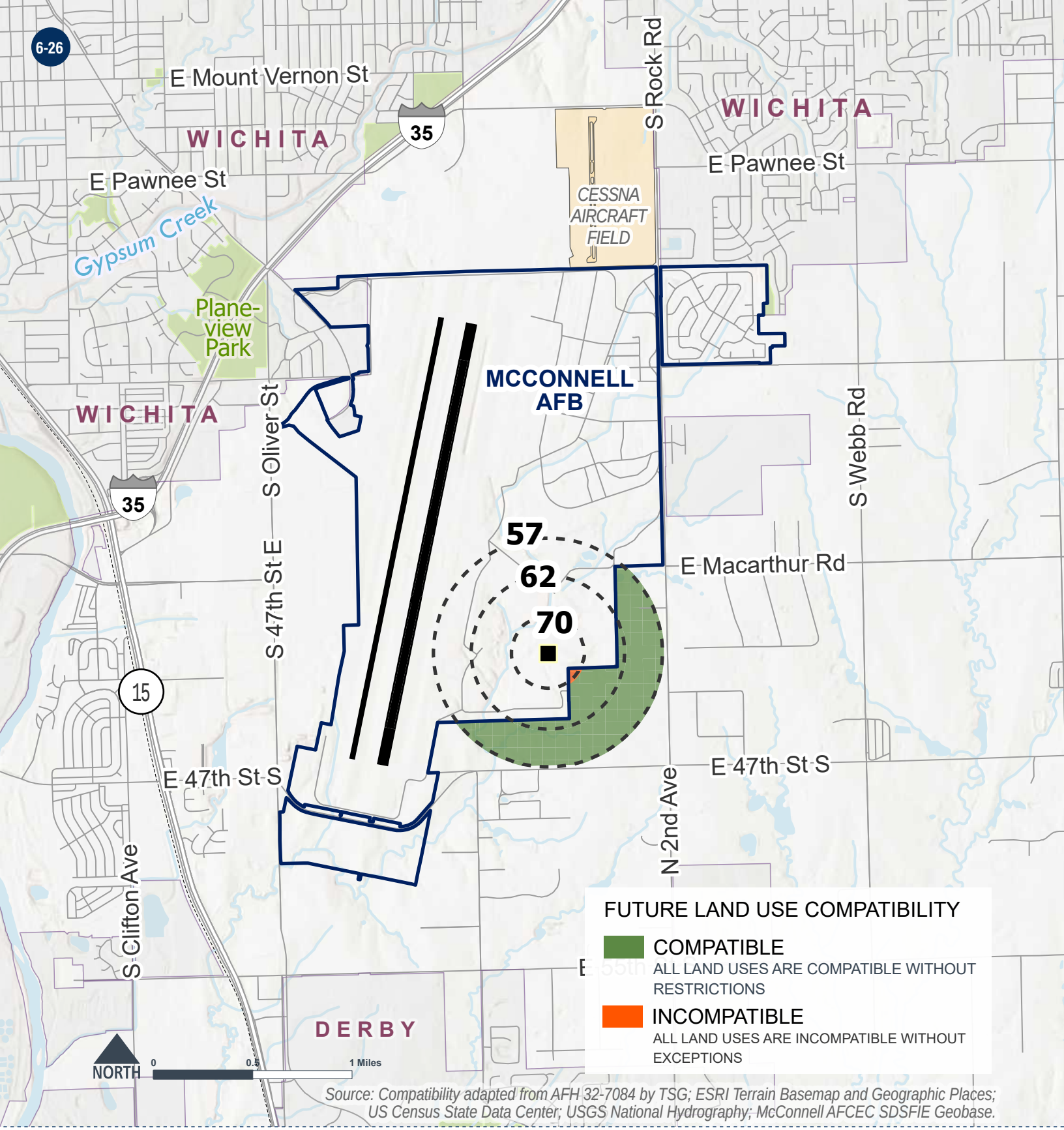
Table 6-8

McConnell AFB Off-Installation Future Land Use Acreage within EOD CDNL Noise Zones

DESIGNATION	GENERALIZED LAND USE CATEGORY[1]	LUPZ	NOISE ZONE I	NOISE ZONE II	TOTAL
Incompatible or Incompatible with Exceptions	Residential	—	—	—	**—**
	Commercial	—	—	2.0	**2.0**
	Industrial	—	—	—	**—**
	Services	—	—	—	**—**
	Recreation	—	—	—	**—**
	Open/Agriculture/Low Density	—	—	—	**—**
	Transportation/Utilities	—	—	—	**—**
	Undeveloped	—	—	—	**—**
Compatible or Compatible with Restrictions	Residential	—	—	—	**—**
	Commercial	184.5	—	—	**184.5**
	Industrial	0.6	50.2	—	**50.8**
	Services	—	—	—	**—**
	Recreation	—	—	—	**—**
	Open/Agriculture/Low Density	—	—	—	**—**
	Transportation/Utilities	—	—	—	**—**
	Undeveloped	—	—	—	**—**
Sub-total	**Incompatible**	**0**	**0**	**2.0**	**2.0**
	Compatible	**185.1**	**50.2**	**0**	**235.2**
Total		**185.1**	**50.2**	**2.0**	**237.2**

Note: Totals may not sum exactly due to rounding.

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



Source: Compatibility adapted from AFH 32-7084 by TSG; ESRI Terrain Basemap and Geographic Places; US Census State Data Center; USGS National Hydrography; McConnell AFCEC SDSFIE Geobase.

EOD Proficency Range

EOD CDNL Noise Contour (dB)

Runway

McConnell AFB

Nearby Airport

City Limit

Figure 6-10
Incompatible Future Land Use within EOD CDNL Noise Zones

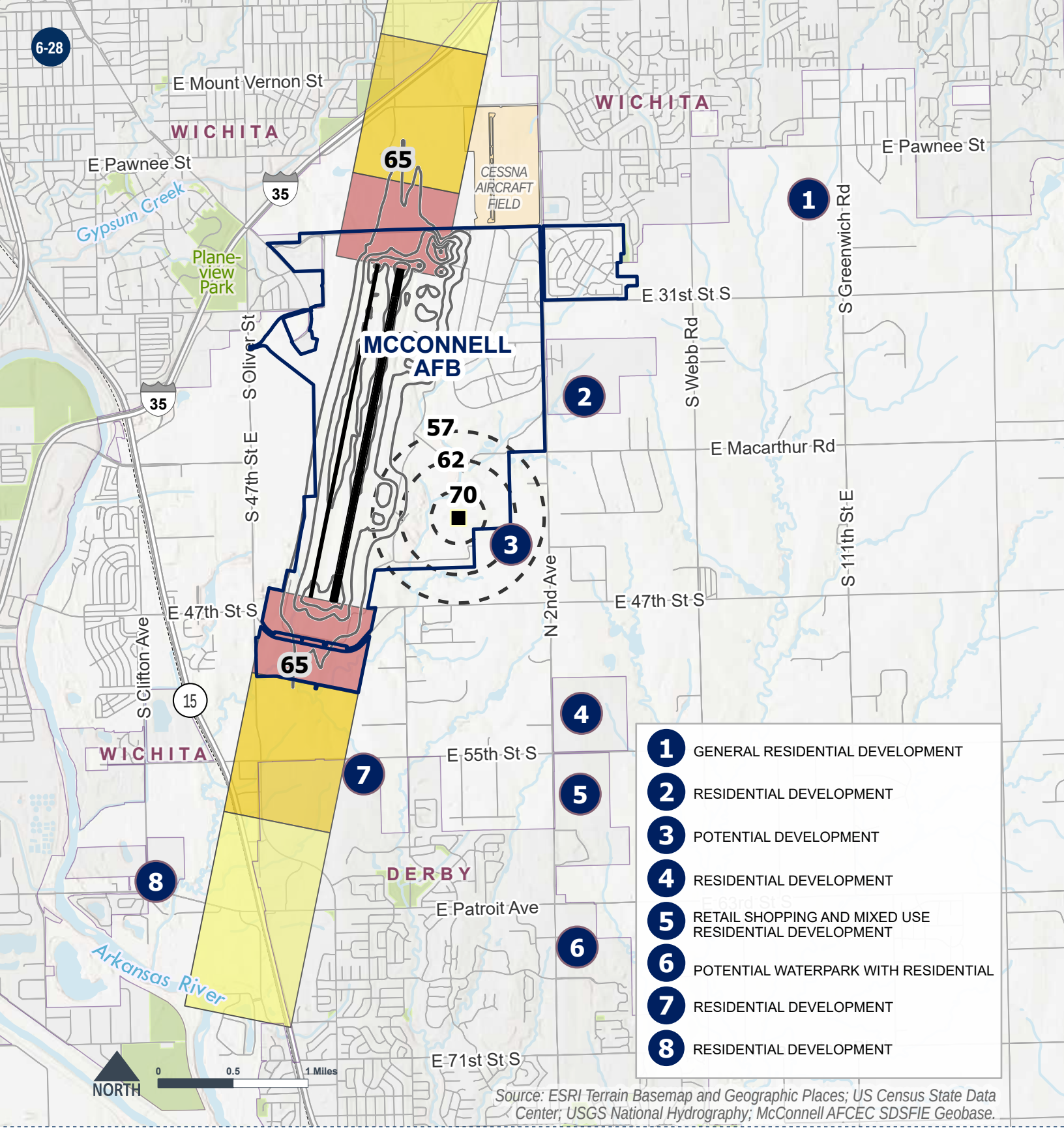
6.4.4 Future Growth Areas and Potential Development Projects around McConnell AFB

Areas that are near 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 areas exist in all regions 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—both in the white spaces and within the designated AICUZ—in the region of influence surrounding McConnell AFB that are, or were at one time, planned and that warrant attention from a land use compatibility standpoint include the following (these projects are also shown on **Figure 6-11).**

1. **Area of General Residential Development (E Pawnee Street and Greenwich Road).** There has been recent residential development along E Pawnee Street, including the Cedar Creek development on the northside of the road and other infill parcels. There remain several large parcels on the southside of the road that could potentially be developed, as individuals and families take advantage of the proximity to local schools and other amenities.
2. **Additional Residential Development South of Rocky Ford.** The Rocky Ford residential development across Rock Road from McConnell AFB was recently developed and built out. There are plans for another, similar residential development on the parcel to the south of the current development on the east side of Rock Road.
3. **Potential Development Adjacent to Installation (Rock Road).** A parcel immediately adjacent to the installation fence line is currently vacant but has been considered for residential development.
4. **Residential Development (E 55th Street and Rock Road).** Several large parcels along Rock Road are being proposed for residential development.
5. **Retail Shopping and Mixed-Use Residential Development (E 55th Street and Rock Road).** Large parcel being proposed for a retail shopping along with mixed-use residential development on the eastern side of Rock Road.
6. **Potential Waterpark with Residential Development (Rock Road).** There is a proposed waterpark that also includes some multi-family residential development along Rock Road.
7. **Residential Development (E 55th Street S).** A parcel on the south side of E 55th Street S is being developed as residential. This is located just outside of the APZ I and not within a noise contour, but it is in close proximity to the installation and the associated aircraft flightpaths.
8. **Residential Development (63rd Street/Patriot Ave and S. Clifton Ave).** Large parcel proposed for residential development located just outside of APZ II and not within a noise contour.

Generally speaking, and as noted previously in this section, development and growth in the vicinity of McConnell AFB is occurring to the east of the installation. In these areas, there are large parcels along Rock Road, north of Derby and south of Wichita, where new residential and commercial construction is taking place.



Source: ESRI Terrain Basemap and Geographic Places; US Census State Data Center; USGS National Hydrography; McConnell AFCEC SDSFIE Geobase.

- EOD Proficency Range
- EOD CDNL Noise Contour (dB)
- 2025 AICUZ Contours (dB)
- Clear Zone (CZ)
- Accident Potential Zone I (APZ-I)
- Accident Potential Zone II (APZ-II)
- Runway
- McConnell AFB
- Nearby Airport
- City Limit

Figure 6-11
Future Development Projects Around McConnell AFB

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7. IMPLEMENTATION

Implementation of the AICUZ Study must be a joint effort between McConnell AFB and 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 the 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.

McConnell 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.

McConnell 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, county, 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 this McConnell AFB AICUZ Study is one phase of continued Air Force participation in the local planning process. The Air Force recognizes that, as the local community updates its land use plans, McConnell AFB must be ready to provide additional input, as needed.

DoD Office of Local Defense Community Cooperation (OLDCC)

The OLDCC supports the readiness and resiliency of military installations and surrounding communities across the country. It offers several grants and programs to strengthen relationships between the DoD and civilian communities, including funding for construction projects, infrastructure overhauls, studies and plans, and stakeholder engagement forums. For air installation communities, the OLDCC sponsors the Community Noise Mitigation program that offers grant funding for civilian noise mitigation projects in high-noise zones of military installations. The FAA publishes guidance on sound insulation for structures exposed to aircraft noise, available on the OLDCC Community Noise Mitigation website.

7.2 STATE/REGIONAL ROLES

In the State of Kansas, land use planning and zoning are delegated to municipal and county 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.**

State of Kansas

The State of Kansas has several statutes in place to protect military installations, that outline duties and communication with respect to both the municipalities surrounding these military facilities, as well as the installations themselves. These statues (KS 12-772, KS 12-773, KS 12-774, and KS 12-775) acknowledge the importance of land use planning documents, such as this AICUZ Study, the JLUS and other planning tools that provide recommendations on the types of development that are compatible with military activities and mission. It also establishes critical notification procedures and timeframes so that communication is open and all parties can be made aware of proposed developments as quickly as possible.

In addition, on July 1, 2010, the Legislature of the State of Kansas enacted House Bill No. 2445 concerning land use related to military installations and adjacent areas. This House Bill further provided context for protecting the mission of military installations around the State of Kansas, as well as the desire to promote communication and cooperation between the military and local planning jurisdictions.

These statutes and house bills provide the framework within which the municipalities and military installations can work together to ensure the long-term success and viability of the mission. However, they also are clear in that the final decision on all planning, development, zoning and land use issues shall be made by each municipality adjacent to or surrounding a military installation.

Friends of McConnell ▪ Wichita Regional Chamber of Commerce

The Friends of McConnell (FOM) organization was formed in the 1960s and is an affiliate organization of the Wichita Regional Chamber of Commerce. Its mission is to provide a support group of area business leaders and residents that are dedicated to providing meaningful social and economic linkages between senior military leaders and their metropolitan civilian counterparts. These types of organizations are common around military installations and provide an important role of support and coordination between these entities. One of the primary goals of the FOM is to make McConnell AFB the most desirable assignment of an Airman's career.

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 McConnell AFB.

There have been several airport-related actions that pertain to McConnell AFB that have been adopted by the local municipalities over the years.

- **The first establishing agreement was the Airport Hazard Zoning Ordinance (Chapter 28.08)** that was adopted by the Wichita City Council in October 1955 and then amended in 1983 to protect airports in which there is a public interest from encroachment hazards that could potentially impair operations of the facility.
- **The second important area created was the Airport Overlay District (AOD) (Article III, Section IIIc)** that was adopted by the cities of Wichita and Derby as well as Sedgwick County in 1991 at the request of McConnell AFB to restrict land uses in the APZs. This District was successfully defended three times at the Federal District Court level and once at the Tenth Circuit Court of Appeals. The plaintiff's challenge was "taking, due process, and equal protection," and the defendants were the City of Wichita and Sedgwick County.
- **In April 2007, the City of Wichita and Sedgwick County adopted an Anti-Terrorism/Force Protection Overlay (DR2005-21)** to minimize surveillance and weapons launch vulnerabilities against McConnell AFB. The Statute limits the height of all structures within one-half mile of the installation perimeter to a height of 25 feet. This also serves to protect the flying mission by limiting potential height obstructions for aircraft.

A version of this area was later adopted through an Memorandum of Understanding (MOU) and referred to as the Critical Area of Interest, see item number 6 below along with **Figure 7-2.**

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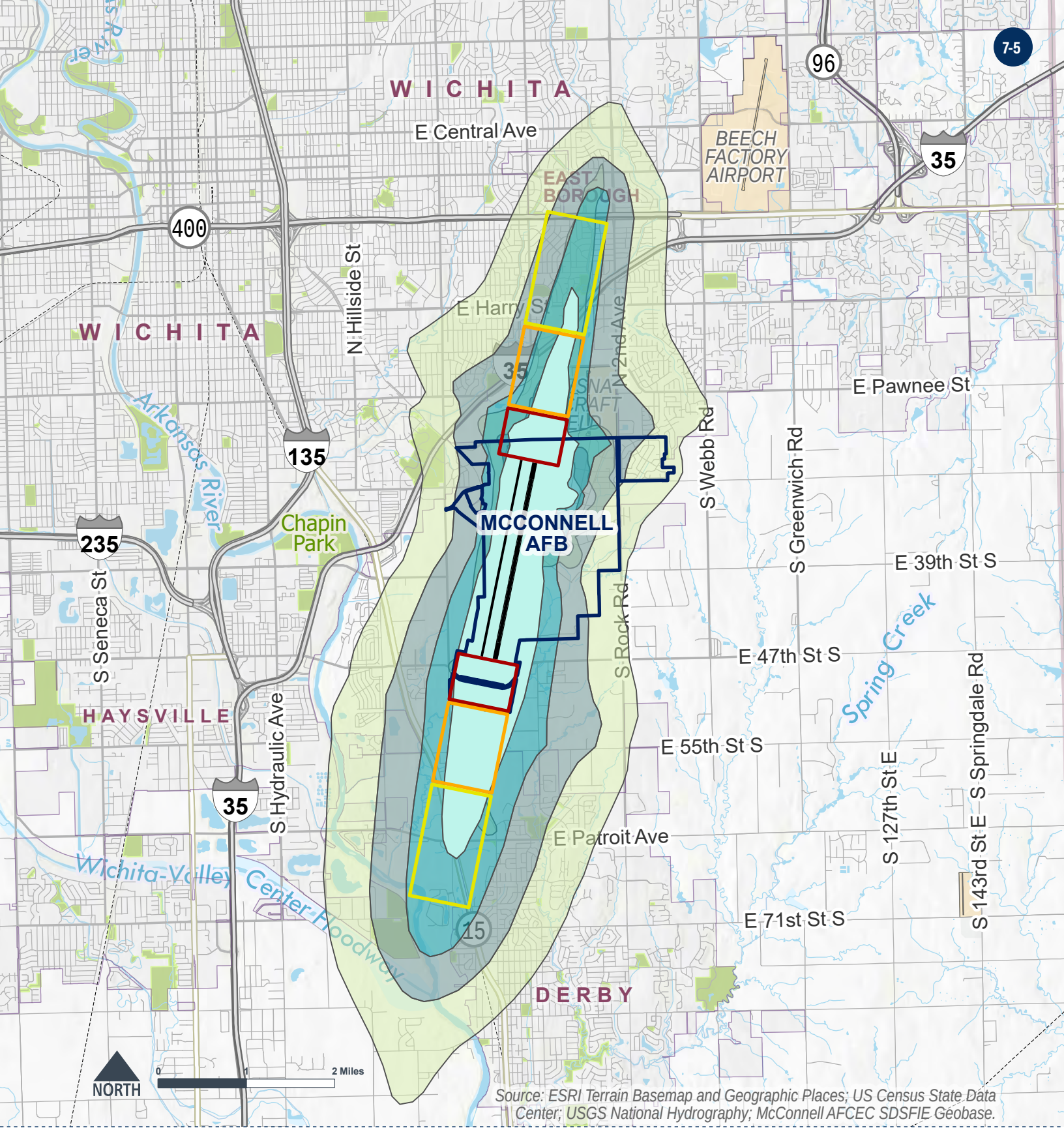

Maximum Mission Area

1994 AICUZ Contours (dB)
- 65-69
- 70-74
- 75-79
- 80 and Greater

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

- Runway
- McConnell AFB
- Nearby Airport
- City Limit

Figure 7-1
Joint Land Use Study
Maximum Mission Area

Source: Airport Overlay District (AOD) Amendment (DR2005-21)

1. Airport Overlay District (AOD) Amendment (DR2005-21) – This amendment was adopted by the City of Wichita and Sedgwick County at a 2007 meeting to protect the noise contours generated by the loudest aircraft assigned to the installation (B-1B bomber) against incompatible development as defined by SLUCM **(see Figure 7-1).** These noise contours associated with the B-1B bomber are referred to in the 2005 JLUS as the "maximum mission area" noise contours and it was recommended that the local municipalities move to protect this area and regulate land use activities such that if McConnell AFB's mission should ever evolve to a point where there was more aircraft activity or louder aircraft, the flying mission would not result in prohibitive land use compatibility concerns.

2. In December 2007, the City of Wichita and Sedgwick County adopted the Industrial Park Airport Zoning District (DR2005-21) into their code, which would re-zone all property around McConnell AFB to more restrictive land uses deemed compatible to mission viability. This is consistent with the description of zoning presented in **Section 6.3.2 and Figure 6-4** and allows the municipalities to evaluate proposed developments based on compatibility with the activities at McConnell AFB.

3. Most recently, in November 2010, a Memorandum of Understanding (MOU) was established between Sedgwick County, the City of Wichita, the City of Derby, and McConnell AFB entitled *Communication, Cooperation, and Collaboration Regarding McConnell Air Force Base and Adjacent Critical Area of Interest*. This followed and was directly related to the Legislature of the State of Kansas enacting House Bill No. 2445 on July 1, 2010. This MOU designates areas that are wholly or partially within the area of the McConnell AFB JLUS (May 2005) as a state area of interest vital to national security and the economic well being of Kansas. As such, certain definitions, responsibilities and requirements were set into place, including the identification of a critical area of interest **(see Figure 7-2),** designated representatives, annual meetings, municipal responsibilities, and military responsibilities.

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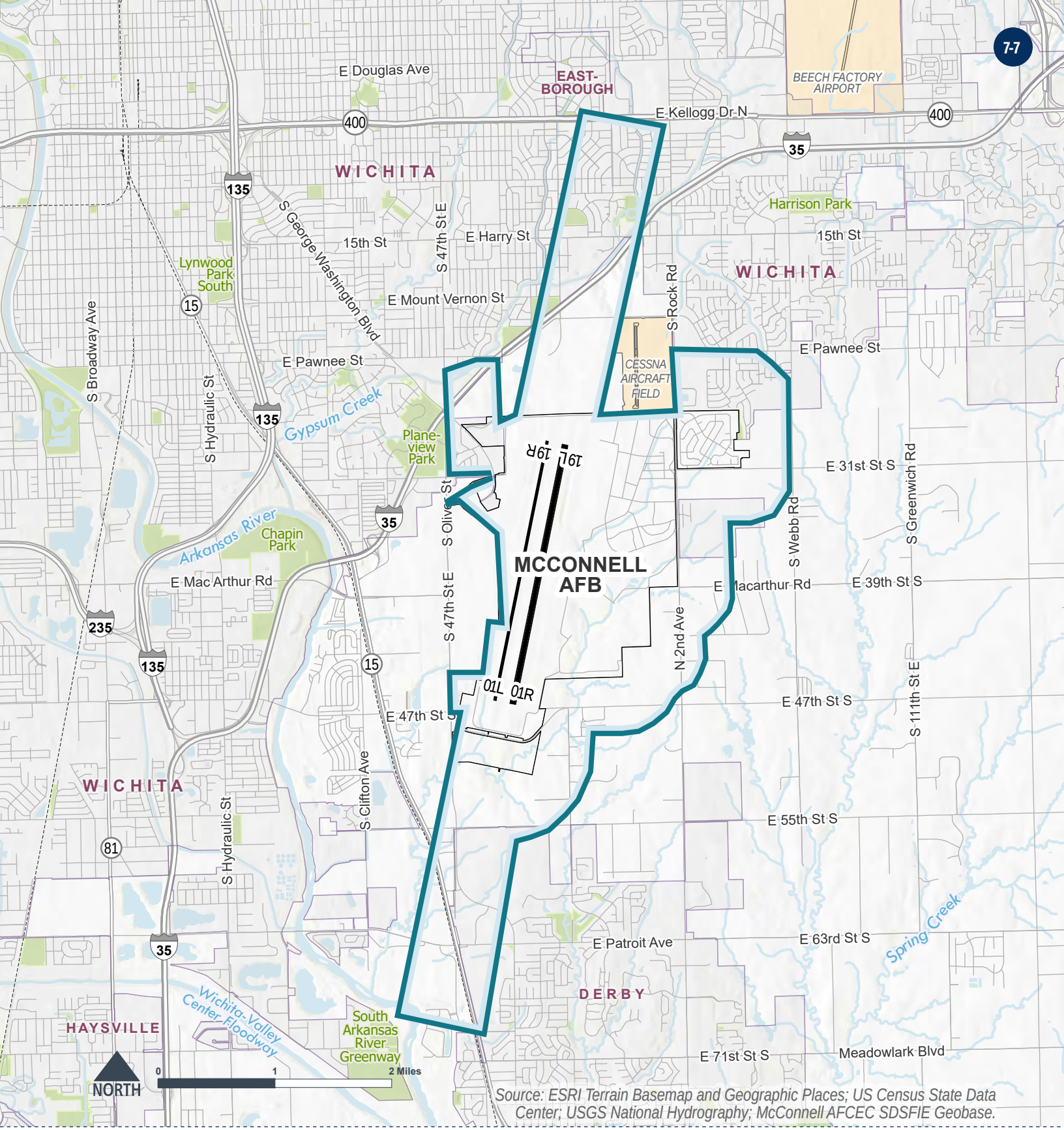

Source: ESRI Terrain Basemap and Geographic Places; US Census State Data Center; USGS National Hydrography; McConnell AFCEC SDSFIE Geobase.

- Critical Area of Interest
- Runway
- McConnell AFB
- Nearby Airport
- City Limit

Figure 7-2
MOU Critical Area of Interest for McConnell AFB

These combined and focused efforts by the municipalities surrounding McConnell AFB have established a strong commitment to the long-term viability of the installation and its mission, along with being a partner in the encouragement of appropriate economic development and growth in the region. Continuing this cooperation in a concerted effort would only serve to improve the communication and success of all entities. To that end, where appropriate and not in conflict with existing efforts, adopting 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:

- **Ensure local government land use plans and ordinances** reflect AICUZ Study recommendations for development located within safety and noise zones.
- **Continue to incorporate applicable recommendations from the 2005 JLUS based on community and installation agreements.** As noted previously, many of the recommendations have been implemented; however, where additional improvements or agreements can be made to assist in preserving McConnell AFB's mission, they should be considered.
- **Consult with McConnell AFB on planning and zoning actions that have the potential to affect installation operations.** Established processes dictated by Kansas State Law requires formal notice to McConnell AFB for proposed site developments in areas around McConnell AFB, including the Airport Overlay District and the Anti-Terrorism/ Force Protection Overlay. To ensure these open lines of communication continue, contact information should be shared and updated regularly so that if individuals change, there is still connectivity between appropriate offices.
- **Invite the Air Force installation leadership** to be ex officio members on boards, commissions, and regional councils addressing long-range development and other planning policies.
- **Consider AICUZ policies and guidelines** when developing or revising city comprehensive plans. 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 McConnell AFB** so the base can assess those applications for potential impacts on defense missions. The McConnell AFB PA Office can provide a land use planning point of contact.
- **Adopt or modify zoning ordinances to reflect the compatible land uses** outlined in the AICUZ Study, including the creation of military airport overlay zones, or modifying existing overlay zones as appropriate.
- **Review capital improvement plans, infrastructure investments, and development policies** to ensure they do not encourage incompatible land use patterns near McConnell AFB, with particular emphasis on utility extension and transportation plans.
- **Implement height and obstruction restrictions in local ordinances** that reflect current Air Force and 14 CFR 77 requirements, presented in this study as HAFZs **(see Section 5.3).**
- **Enact fair disclosure ordinances** to require informing the public of AICUZ items that directly relate to military flying operations at McConnell AFB.
- **Require real estate disclosure for individuals purchasing or leasing property** within noise zones or CZs/APZs where allowed.
- **Enact or modify building/residential codes** to ensure that any new construction near McConnell AFB has the recommended noise level reduction (NLR) measures incorporated into the design and construction of structures.
- **Coordinate with the FAA on the height of tall structures,** such as wind turbines and communication towers, to ensure that new construction does not pose a hazard to navigable airspace around McConnell AFB.
- **Encourage the development of a working group** to include the city, county, and McConnell AFB representatives to discuss land use concerns and major development proposals that could affect military operations.

7.4 COMMUNITY ROLE

Neighboring residents and installation personnel have a long-established history of working together for the mutual benefit of the McConnell 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 noise impacts to all prospective buyers of properties within the EOD Range noise contours.
- 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 McConnell 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.

QUESTIONS?

While the installation and community are separated by a fence, McConnell AFB activities and operations could adversely affect the community. Likewise, community activities and development decisions can impair McConnell 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 PA Office at:

WEB
WWW.MCCONNELL.AF.MIL

EMAIL
22.PA@US.AF.MIL

8. REFERENCES

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APPENDIX A. LAND USE COMPATIBILITY TABLES

Land Use Compatibility Recommendations in APZs and CZs

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 (SLCUM)* 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.

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.

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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	
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	

SLUCM No.	LAND USE NAME	CZ[1]	APZ I[1]	APZ II[1]	DENSITY[1] RECOMMENDATION
	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 MANUFACTURING3 (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
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

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SLUCM No./LAND USE NAME		CZ[1]	APZ I[1]	APZ II[1]	DENSITY[1] RECOMMENDATION
	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
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

SLUCM No./LAND USE NAME		CZ[1]	APZ I[1]	APZ II[1]	DENSITY[1] RECOMMENDATION
	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	
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	

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SLUCM No.	LAND USE NAME	CZ[1]	APZ I[1]	APZ II[1]	DENSITY[1] RECOMMENDATION
	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
	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

SLUCM No.	LAND USE NAME	CZ[1]	APZ I[1]	APZ II[1]	DENSITY[1] RECOMMENDATION
	90 OTHER				
91	Undeveloped Land	Y	Y	Y	
93	Water Areas[19]	N[19]	N[19]	N[19]	

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 CZ areas on or off the air installation. The CZ is subject to the most severe restrictions.
5. Roads within the graded portion of the CZ are prohibited. All roads within the CZ 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 521) are 0.20 in APZ-I and 0.40 in APZ-II; the maximum FARs for hardware, paint, and farm equipment stores, (SLUCM Code 525), 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.

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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 CZ 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 greater than 50 people 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.

Recommended Land Use Compatibility for Noise Zones

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
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

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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
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
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

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
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	255	305	N	N
48	Utilities	Y	Y[2]	Y[3]	Y[4]	N
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

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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
	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
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

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
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
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 Livestock)	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

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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.

Recommended Land Use Compatibility for Large Caliber and Explosives Noise Zones

Table A-3 shows recommended land use compatibility guidelines in large caliber 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 Caliber 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 CATEGORY 10)				
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

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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
Amusements: Fairgrounds, Miniature Golf, Driving Ranges; Amusement Parks, etc.	Y	Y	Y	N

LAND USE	C-WEIGHTED DNL/CNEL LEVELS			
LAND USE NAME & SLUCM CATEGORY	<57 dB	57-62 dB	62-70 dB	>70 dB
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 Caliber 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

Average Annual Day (AAD). The "average annual day" methodology is the EPA-recommended approach to representing noise exposure, which is over a 365-day year.

Average Busy Day (ABD). For many years, the Air Force approximated the "average busy day" concept, which acknowledged that flying at some installations seldom occurred on weekends and that, therefore, annual operations were divided by the number of operational days (e.g., five flying days multiplied by 52 weeks equals 260 operational days).

C-weighted Day-Night Average Sound Level (CDNL). CDNL is used to present noise contours related to large caliber weapons training, detonation of explosives, and other impulsive noise. This weighting factor emphasizes the lower frequencies, or rumbles, that commonly accompany explosive sounds. The CDNL metric is also a cumulative noise metric; however, it uses a C-weighted scale, which captures lower-frequency sound levels.

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.

Noise Level Reduction (NLR). The amount of noise reduction in decibels between the outside and inside of a building. It is calculated by subtracting the A-weighted sound level outside a building from the A-weighted sound level inside a designated room.

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).

Peak 15 (PK15). PK15 is the peak sound level, factoring in the statistical variations caused by weather, that is likely to be exceeded only 15 percent of the time (i.e., there is an 85-percent certainty that the sound will be within this range). It allows assessment of noise from large caliber gunfire and impulsive demolition activities, as well as from firing at small-arms ranges.

C. LAND USE AND ZONING COMPARISON

Existing Land Use, Future Land Use, and Zoning Comparison

Appendix C contains the existing land use, zoning, and future land use categories for the Wichita-Sedgwick County Planning Commission, which covers both the City of Wichita and unincorporated areas of Sedgwick County, as well as the same information for the City of Derby. These were the primary sources of the land use compatibility analysis presented in **Section 6.4.**

Table C-1

McConnell AFB Existing Land Use Generalizations

WICHITA-SEDGWICK COUNTY

EXISTING LAND USE CATEGORY	AICUZ LAND USE CATEGORY
Downtown Regional Center	Commercial
Employment/Industry Center	Industrial
Local Commercial	Commercial
Major Institutional	Industrial
Major Utility/Transportation	Transportation/Utilities
Park and Open Space	Open/Agriculture/Low Density
Processing Industry	Industrial
Regional Commercial	Commercial
Urban Development Mix	Residential
Urban Residential	Residential

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CITY OF DERBY

EXISTING LAND USE CATEGORY	AICUZ LAND USE CATEGORY
Agricultural	Open/Agriculture/Low Density
Civic	Services
Commercial	Commercial
Golf Course	Open/Agriculture/Low Density
High Density - Residential	Residential
Industrial	Industrial
Low Density - Residential	Residential
Medium Density - Residential	Residential
Park/Greenway	Open/Agriculture/Low Density
Right-of-Way (ROW)	Transportation/Utilities
Rural Residential	Open/Agriculture/Low Density
Vacant	Open/Agriculture/Low Density

Table C-2

McConnell AFB Future Land Use Generalizations

WICHITA-SEDGWICK COUNTY

FUTURE LAND USE CATEGORY	AICUZ LAND USE CATEGORY
Employment/Industry Center	Commercial
Local Commercial	Commercial
Major Institutional	Industrial
Park and Open Space	Open/Agriculture/Low Density
Processing Industry	Industrial
Regional Commercial	Commercial
Urban Residential	Residential

CITY OF DERBY

FUTURE LAND USE CATEGORY		AICUZ LAND USE CATEGORY
AG	Agricultural	Open/Agriculture/Low Density
BP	Industrial/Business Park	Industrial
C	Commercial	Commercial
CR	Conservation Reserve	Open/Agriculture/Low Density
CV	Civic	Services
DR	Development Reserve	Open/Agriculture/Low Density
GB	Greenbelt (floodplain)	Open/Agriculture/Low Density
GC	Golf Course	Open/Agriculture/Low Density
HDR	High Density Residential	Residential
LDR	Low Density Residential	Residential
MDR	Medium Density Residential	Residential
MU	Mixed Use	Residential
P	Park/Open Space	Open/Agriculture/Low Density
RR	Rural Residential	Open/Agriculture/Low Density
SD	Special Development Area: Buckner BD	Commercial
SD	Special Development Area: K-15 Comm District	Commercial

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Table C-3

McConnell AFB Zoning Generalizations

WICHITA-SEDGWICK COUNTY

ZONING CODE/DESCRIPTION		AICUZ GENERALIZED ZONING CATEGORY
AFB	Air Force Base	Military
B	Multi-Family Residential	Residential
CBD	Central Business District	Commercial
GC	General Commercial	Commercial
GI	General Industrial	Industrial
GO	General Office	Commercial
IP-A	Industrial Park - Airport	Industrial
LC	Limited Commercial	Commercial
LI	Limited Industrial	Industrial
MF-18	Multi-Family Residential	Residential
MF-29	Multi-Family Residential	Residential
MH	Manufactured Housing	Residential
NO	Neighborhood Office	Commercial
NR	Neighborhood Retail	Commercial
OW	Office Warehouse	Commercial
PUD	Planned Unit Development	Residential
RR	Rural Residential	Open/Agriculture/Low Density
SF-10	Single-Family Residential	Residential
SF-20	Single-Family Residential	Residential
SF-5	Single-Family Residential	Residential
TF-3	Two-Family Residential	Residential

CITY OF DERBY

ZONING CODE	DESCRIPTION	AICUZ GENERALIZED ZONING CATEGORY
B-1	Office Business District	Commercial
B-2	Neighborhood Business District	Commercial
B-2A	Buckner Business District	Commercial
B-3	General Business District	Commercial
B-4	Central Shopping District	Commercial
B-5	Restricted Commercial, Warehousing and Limited Manufacturing District	Commercial
I-1	Industrial District	Industrial
NR-PUD	Non-Residential PUD	Commercial
PUD	Planned Unit Development	Residential
R-1	Single-Family Residential	Residential
R-1A	Urban Density Residential	Residential
R-1C	Suburban Single-Family Residential	Residential
R-2	Two-Family Residential	Residential
R-3	Multiple-Family Residential	Residential
R-4	Multiple-Family Residential	Residential

U.S. AIR FORCE

McConnell AFB also posts information on the installation website, including alerts about upcoming aircraft operations that can be shared publicly:

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