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Lackland AFB

JOINT LAND USE STUDY

PREPARED FOR: Bexar County

Acknowledgements

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The Lackland Air Force Base Joint Land Use Study (JLUS) is a cooperative land use planning initiative between the U.S. Air Force, Port San Antonio, Bexar County and the City of San Antonio, as well as other entities responsible for planning, development, and communication in the region.

This document serves as an ongoing framework for those local government and military actions necessary to enhance compatibility around Lackland AFB and improve quality of life in the surrounding community.

JLUS Executive Committee

CHAIR: Sergio "Chico" Rodriguez, Commissioner, Bexar County Precinct 1

William Atkins, Asst. Superintendent for Business & Finance, SWISD

Bruce Beard, Southwest Region, Federal Aviation Administration

Jorge Salazar, Team Leader, Small Business & Local Government, TCEQ

Danny Jones, Airport Manager, Port San Antonio

Philip Cortez, Councilman, San Antonio City Council District 4

Pat DiGiovanni, Deputy City Manager, City of San Antonio

Maria Hernandez Ferrier, President, Texas A & M San Antonio

David Medina, Jr., Councilman, San Antonio City Council District 5

Ray Lopez, Councilman, San Antonio City Council District 6

Howard Ham, Commissioner, Texas Military Preparedness Commission

Larry Heimer, Immediate Past President, Real Estate Council of San Antonio

David McQuade Leibowitz, Texas Representative District 117, Lackland AFB

Robyn Locke, Director, San Antonio Board of Realtors

CEM Maxwell, Air Education and Training Command, Randolph AFB

Dolores Mendez, President, Quintana Community Neighborhood Association

Tim O'Krongley, Assistant Aviation Director, City of San Antonio

Becky Oliver, Greater San Antonio Builders Association

Col William Mott, 37th TRW Commander, Lackland AFB

Col Patrick Fogarty, 802nd MSG Commander, Lackland AFB, Joint Base San Antonio

Col Kenneth Lewis, 433rd AW Commander, Lackland AFB

Albert Raymond, VP of Planning, Port Authority San Antonio

Orlando Salazar, Vice-Chair, City South Management Authority

Bernie Roper, Superintendent, Lackland ISD

Tomas Larralde, Texas Senator Carlos Uresti District 19, Lackland AFB

Art Reyna, Councilman, City of Leon Valley Place 2

JLUS Advisory Committee

CHAIR: Richard Trevino, 802nd MSG Deputy Commander, Lackland AFB

Jorge Salazar, Texas Commission on Environmental Quality (TCEQ)

Abbi Power, Texas Commission on Environmental Quality (TCEQ)

Michele Ross, San Antonio Board of Realtors (SABOR)

Ryan Rocha, San Antonio International Airport

Pete Campos, San Antonio International Airport

John Chase, San Antonio International Airport

Jesus Garza, City of San Antonio Planning and Development

Patricia Wallace, City of San Antonio Planning and Development

Albert Raymond, Port San Antonio

Gil Vargas, Port San Antonio

Danny Jones, Port San Antonio

Terry Britton, Port San Antonio

John Heye, Lackland Air Force Base

Ed Roberson, Lackland Air Force Base

Gabe Gonzales, Lackland Air Force Base

Lt Col Christopher Cozzi, Lackland Air Force Base

Al Zipprich, Lackland Air Force Base

Maj Don Kang, Lackland Air Force Base, 149th Fighter Wing

CMSgt Leonard Campos, Lackland Air Force Base, 149th Fighter Wing

Gilbert LaFuente, Congressman Henry Cuellar, District 28

Frank Moreno, Texas State Representative Leibowitz

Adam Cavazos, Texas State Representative Leibowitz

Erika Jucknies, SA Builders Association

Kimberly Kapavik, SA Builders Association

Tim Pruski, SA Builders Association

Bob Coffey, Federal Aviation Administration - SA Air Traffic Control Tower (ATCT)

Lynn Haney, Federal Aviation Administration - SA Air Traffic Control Tower (ATCT)

Lt Col Gus Kirkilis, Air Education Training Command (AETC)

John Gibson, Air Education Training Command (AETC)

Robert Leonhard, Real Estate Council of San Antonio

John T. Crone, III, Real Estate Council of San Antonio

SMS Dave Delgado, City of San Antonio Councilman District 4 Philip Cortez

Jeremy Hahn, City of San Antonio Councilman District 4 Philip Cortez

Kristie Flores, City of Leon Valley

Michele Parlett, Bexar County

Robert Brach, Bexar County

Todd Alvis, Bexar County

Orlando Salazar, City South Management Authority

Betsy Erne, City South Management Authority

Tomas Larralde, Senator Carlos Uresti

Felipe Martinez, San Antonio Water System

Lance Freeman, San Antonio Water System

Kerry McCollough, Bexar Metropolitan Water District

Miguel Lopez, Bexar Metropolitan Water District

Mel Garza, Greater San Antonio Chamber of Commerce

Prepared by:

AECOM

RJ RIVERA Associates, Inc

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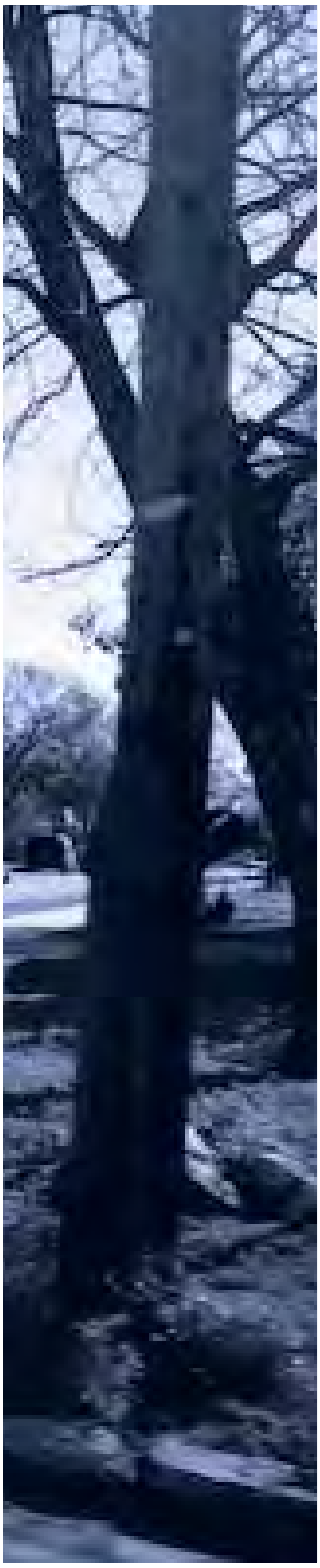


Executive Summary

The Lackland Air Force Base Joint Land Use Study (JLUS) is a cooperative land use planning initiative between the U.S. Air Force, Port San Antonio, Bexar County and the City of San Antonio, as well as other regional entities.

This document serves as an ongoing framework to enhance compatibility around Lackland AFB and improve quality of life in the surrounding community. The JLUS recommendations address a variety of possible land use and operational issues identified during the study process, including noise, physical adjacency to the airfield, main base or Lackland Training Annex, air safety, and light pollution.

Introduction

Lackland AFB is the Air Force's only site for enlisted Basic Military Training, and also offers professional, technical skills, and English language training for members of the U.S. Air Force, other military services, government agencies, and allies. Its four primary training functions graduate more than 80,000 students annually. Other major tenants include the Air Reserve Command's 433rd Airlift Wing, the Texas Air National Guard 149th Fighter Wing, the 59th Medical Wing, the Air Force Intelligence, Surveillance and Reconnaissance Agency, and the 67th Network Warfare Wing. Though the JLUS document refers to the Air Force presence in the study area as a single entity, Lackland AFB consists of three distinct facilities, each with its own set of training activities and associated operational impacts–the airfield, used jointly by the Air Force and Port San Antonio; the main base; and the Lackland Training Annex. Sections 3 and 4 include more detailed information on operations at each facility.

Lackland AFB grew with the annexation of Kelly AFB in 2001. While Kelly AFB officially closed as a result of Base Realignment and Closure (BRAC) actions, the Air Force retained use of the runway, portions of the apron east of the runway (designated as Runway 15/33), and taxiways and aprons west of the runway. Now known as the Kelly Field Annex, it is generally bounded by Leon Creek and Military Drive to the southwest, the industrial area of the former Kelly AFB to the east, Highway 90 to the north, and Lackland AFB to the west. The Air Force and PSA jointly utilize the Kelly Field runway for military and commercial airfield operations. On PSA , the Air Force continues to lease over 2,800,000 square feet of space as part of a BRAC leaseback footprint covering over 270 acres of PSA property. This area comprises approximately 14.5 percent of the developable property at the port. Approximately 3,900 Air Force and other DoD employees will work on PSA once the Air Force completes improvements to Building 171.

Growth is occurring in and around Lackland AFB due to ongoing BRAC actions and other Air Force organizational decisions. Recent MILCON projects on the installation include a C-5 training facility, Security Forces technical training facilities, new technical training and permanent dormitories, a military working dog hospital, and a telecommunications facility. Lackland AFB is gaining 1,131 new personnel due to BRAC and 940 new personnel from

Basic Expeditionary Airmen Skills Training occurs on the Lackland Training Annex

mission realignments including the Air Force Real Property Agency, Air Force Medical Operations Agency, Southwest Regional Contracting Center and Air Force Center for Engineering and the Environment.

Lackland AFB hosts basic military training for all Airmen, specialized training in multiple disciplines, the 433rd Airlift Wing's C-5 operations, the 149th Fighter Wing's F-16 flying mission, and the Air Force's main intelligence, and surveillance capabilities.

San Antonio and its surrounding communities have experienced significant population growth in recent years, particularly north of the downtown. However, several trends and new projects indicate the probability of increasing development pressure around Lackland AFB. Strong residential subdivision activity has occurred in the northwest portion of the study area, primarily north of Highway 90. The availability of infrastructure capacity, along with stakeholder feedback suggest the likely continued spread of residential growth south of Highway 90 and in proximity to the Lackland Training Annex.

Stakeholder and Community Involvement

Active public involvement is a critical component of the JLUS. Public forums create a valuable opportunity to educate residents about training operations and the economic impact of the mission and to build trust among the military, port, and community. Community members and residents who live around Lackland AFB cited aircraft noise as an ongoing concern. Participants also raised traffic as an issue, particularly on major corridors into and around the base, such as SW Military Drive, Loop 410, US 90, and Valley High Drive. Several participants noted issues related to stormwater and drainage. The planning team also worked closely with two committees throughout the planning process—the Advisory Committee and Executive Committee. The Committees identified a variety of critical issues facing Lackland AFB and the community, including noise, growth pressure and future development, drainage, airfield safety zones, Antiterrorism/Force Protection (AT /FP), ground transportation, neighborhood redevelopment, and improved communication.

Study Recommendations

Based on feedback received from the public, Advisory Committee, and Executive Committee, the Lackland AFB JLUS document establishes a set of short-, mid, and long-term actions to promote land use compatibility and strengthen coordination around the base and port. The tools are intended to address a variety of possible land use and operational issues, including physical adjacency to Lackland AFB and Port San Antonio, noise, aviation safety impacts, and outdoor lighting. These recommendations are tied to a series of geographic areas—Military Influence Areas and Areas of Concern—around Lackland AFB and the airfield that warrant special coordination procedures or land use regulation due to their proximity to aviation or training activities. Military Influence Areas reflect the results of technical modeling to demonstrate noise and air safety risks associated with aviation operations. The Areas of Concern are conceptual buffers that identify property with potential exposure to issues such as noise and light sensitivity from training activities at the Lackland Training Annex and main base. Following recommended additional studies for noise and outdoor lighting to refine boundaries, the Areas of Concern could be designated as Military Influence Areas for purposes of regulation.

Air Safety Military Influence Area - Clear Zones and Accident Potential Zones that extend from Kelly airfield runways into the community

Noise Military Influence Area – High noise areas identified by computer modeling that incorporates the frequency and type of military and port aircraft operations

Main Base Area of Concern – a 1,500 to 3,000 foot conceptual buffer around the perimeter of Lackland's main base

Lackland Training Annex Area of Concern – a 1,500 to 3,000 foot conceptual buffer around the perimeter of Lackland's West Training Annex.

Lackland JLUS Public Meeting

The most critical short-term recommendations are listed below. Though not specifically ranked in order of priority, the planning team has identified these actions as the most feasible for near-term implementation and most promising at addressing key compatibility issues.

- Implement science-based sound mitigation protocols for the airfield noise contours (Noise Military Influence Area)
- Explore a mechanism for voluntary real estate disclosure of noise and other factors that may affect property near commercial, industrial and/or military facilities. (Noise and Safety Military Influence Areas and Areas of Concern)
- Conduct a modeling study of noise-generating mission activities at the Lackland Training Annex to refine the geographic area in which subsequent sound attenuation mitigation may be applied and assess the feasibility of on-base noise mitigation measures based on Lackland JLUS Implementation Committee and stakeholder input
- Conduct a lighting study for night vision device operations at the Lackland Training Annex to refine the geographic area in which a Military Lighting Overlay District Overlay may be applied based on Lackland JLUS Implementation entity and stakeholder input
- Formalize communication procedures through a Memorandum of Understanding signed by the study partners

- Ensure the City of San Antonio West/Southwest Sector Plan considers the compatibility findings of the Joint Land Use Study, along with other relevant input such as approved master plans, stakeholder input, and existing uses

- In collaboration with JLUS Implementation entity and stakeholders, develop educational outreach materials for the community, including web sites, handouts, brochures, regular community briefings with Joint Base-Lackland and Port San Antonio representatives

- Establish an ongoing implementation entity with stakeholder and industry representatives of the Advisory Committee to put the plan into action in conjunction with existing entities, such as Joint Base San Antonio or the Military Transformation Task Force

Since its inception, Lackland AFB has continued to play a significant role in the Air Force and the DoD. Over the years, the City of San Antonio and Bexar County have grown along with the military, reinforcing the close relationship between the base and the nearby community. This interdependence, however, raises the central challenge of the Joint Land Use Study (JLUS) effort.

Study Purpose

As military installations expand, they bring new people and economic activity to an area. The communities then build houses, schools and infrastructure, and create new jobs to support military personnel, base workers, and their families. More people begin to live and work in proximity to the noise and safety risks generated by military installations. The presence of civilian uses can in turn place pressure on installations to modify their operations, possibly compromising overall mission viability.

- The purpose of this JLUS is to support the surrounding communities in sustaining economic activity without degrading the missions of Lackland AFB and PSA. The goals of the study are to:
- Evaluate the potential impacts of current and future military and port operations on the surrounding community;
- Evaluate the potential impacts of community growth on the long-term viability of Lackland AFB and PSA; and
- Recommend action items to reduce incompatibilities and facilitate future collaboration.

County and city government, along with Air Force and Port representatives, joined in initiating this effort to study current development issues, growth trends, and evolving mission needs around Lackland AFB and to strengthen planning practices and coordination at the overlap of military/civilian interface.

Study Area

Lackland Air Force Base (AFB) falls within the City of San Antonio and unincorporated Bexar County, Texas, approximately six miles southwest of the city center and bounded roughly by US Highway 90 to the north and Interstate 410 to the west. Situated on 9,600 acres, the base is one of three installations comprising Joint Base San Antonio. Lackland is home to more than 120 Department of Defense (DoD) and associate organizations, including the 37th Training Wing, the largest training wing in the U.S. Air Force. Over 49,000 military, civilian, student and contractor personnel work at Lackland AFB on a daily basis. The installation consists of the main base with housing, administrative, educational and medical components and the non-contiguous Lackland Training Annex (Medina Annex), which includes small weapons firing ranges, weapons storage areas, technical training, and facilities for Basic Expeditionary Airmen Skills Training. Port San Antonio

(PSA) occupies the former Kelly AFB grounds adjacent to the main base. Each of these facilities has its own set of training activities and associated operational impacts. See Figure 1.1.

Incompatibility

The long-term goal of the JLUS is to reduce potential incompatibility and accommodate safe local growth to sustain the regional economy. The term 'incompatibility" (or encroachment) describes the operational impacts of military and airport activities on surrounding communities and the reciprocal negative effects of adjacent and unmanaged community growth on training and aviation operations. Designated geographic boundaries that represent noise and air safety impacts – the Accident Potential Zones (APZs) and Noise Zones – extend beyond property owned by the Air Force and PSA and into surrounding communities. Section 7 explores the interaction of these areas with nearby existing land uses and foreseeable growth trends.

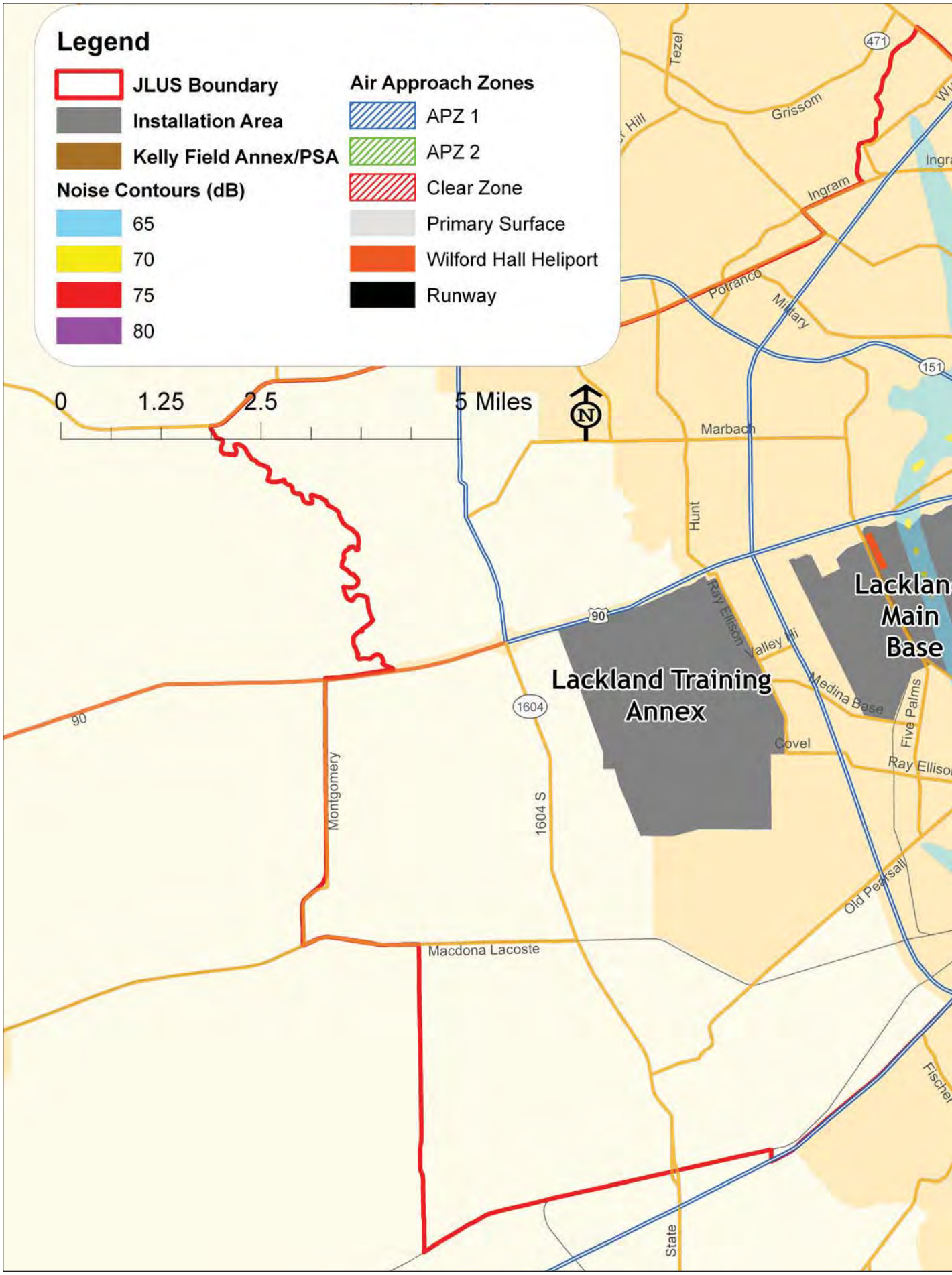
While noise and safety concerns can affect residents living and working around the base, certain nearby civilian land uses that concentrate people, such as higher density housing or public gathering places, can also threaten aviation operations and training activities. Ongoing complaints about noise and night flights can place pressure on the military or port to modify current operating procedures, thus reducing realistic training capabilities or curtailing business activity and economic growth.

Methods of reducing and preventing incompatibility include a menu of tools, such as compatible land use planning, infrastructure planning, real estate disclosure, site development requirements, operational changes on the base, and wildlife habitat conservation. One of the outcomes of the JLUS is to provide feasible and locally appropriate recommendations to minimize encroachment potential and develop clear guidance for assessing the compatibility of local growth options. This final document features a series of recommended policies and regulations for the Air Force, PSA and local governments to consider. It is the responsibility of each participating entity to review the proposals and implement recommendations applicable for their local context.

Communication and Coordination Strategy

The JLUS is as much about the process as it is the final document. It creates a public dialogue around the complex issues of land use, economic and population growth, infrastructure delivery, environmental sustainability, and mission change. The intent of the study is to highlight common interests—attractive development, healthier environments, more efficient infrastructure, economic prosperity, and better quality of life—and to protect the military mission, while sustaining local growth. The resulting report is not a binding document, but a dynamic blueprint of best practices and ideas to guide military and community policy actions in the years ahead.

The JLUS Report includes a coordination strategy to guide decision makers and the general public through the current planning process and to build the framework for successful implementation and monitoring.


Legend
JLUS Boundary
Installation Area
Kelly Field Annex/PSA
Noise Contours (dB)
65
70
75
80
Air Approach Zones
APZ 1
APZ 2
Clear Zone
Primary Surface
Wilford Hall Heliport
Runway
0
1.25
2.5
5 Miles
N
Lackland Training Annex
Lackland Main Base
Tezel
Grissom
Ingram
Potranco
Military
Marbach
Hunt
Ray Ellison
Valley Hi
Medina Base
Five Palms
Covel
Montgomery
1604 S
Old Pearsall
Macdona Lacoste
State
471
151
90
1604

Overview of Document

The JLUS document consists of the following sections.

Executive Summary

This section summarizes the main findings and recommendations of the report.

Study Purpose

This section gives an overview of the study's goals.

Community Involvement

This section contains a summary of committee participation, public involvement activities, and community priorities.

Military Mission and Port Operations

This section contains an overview of the military mission and history, and port operations.

Operational Impacts and Hazards

This section identifies the impacts of the military mission on nearby civilian land and potential hazards to training activities caused by proximate off-base development.

Overview of Compatibility Efforts

This section gives an overview of compatibility actions taken to date at the local, regional, state, and federal levels of government.

Study Area Profile

This section provides an overview of growth trends in the study area and environmental and infrastructure issues.

Compatibility Analysis

This section defines land use compatibility and highlights current or foreseeable land use conflicts in the neighborhoods surrounding Lackland AFB based on zoning and land use plans.

Compatibility Strategies

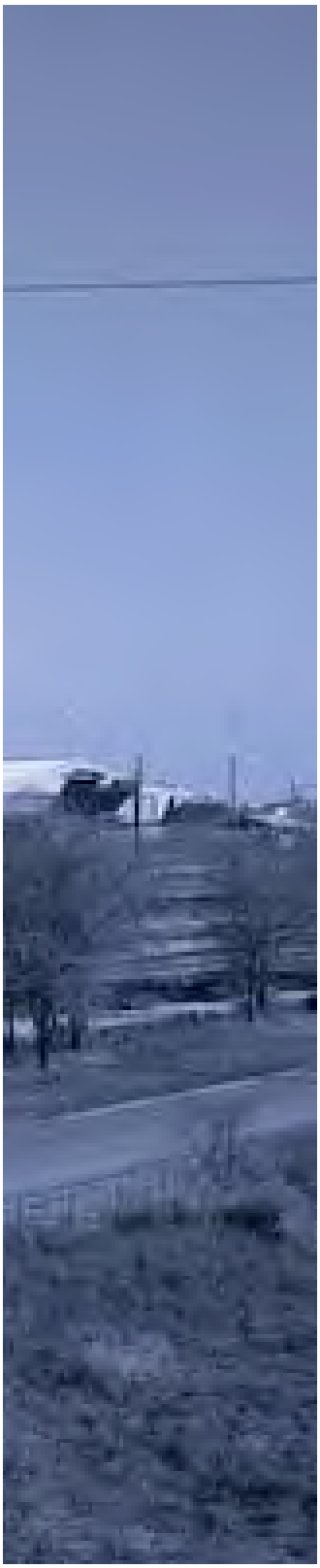
This section identifies general strategies to promote land use compatibility around Lackland AFB to reduce the risk of incompatibility in the most vulnerable areas.

Implementation Plan

This section establishes a set of prioritized actions and organizes recommended actions by partner and approximate costs of each recommendation.

Technical Appendices

The appendices contain guidelines and a series of sample or model tools for promoting land use compatibility around the installation.



A successful JLUS requires active and broad participation so that strategies reflect the diversity of the community, identify concerns, and build adequate support for ongoing implementation.

Summary of Public and Stakeholder Participation

The JLUS planning team worked closely with two committees throughout the planning process. The purpose of this organizational structure was to ensure that the final JLUS report included a cross-section of feasible, practical solutions to compatibility challenges. The team also conducted a series of interviews, community listening sessions and public meetings to gather critical feedback on issues and priorities.

Executive Committee

The Executive Committee consists of local elected officials, as well as senior Air Force and Port leadership and representatives from community and regional organizations. This Committee oversees the JLUS process, reviews draft and final written reports, and evaluates policy recommendations.

Advisory Committee

This working group consists of area planners, city and county officials, technical and professional staff and military planners. Members are responsible for assisting in data collection, identifying and studying technical issues, and developing recommendations to be evaluated by the Executive Committee. Section 3 on Operational Impacts summarizes feedback from Advisory Committee members on potential compatibility issues around Lackland AFB and PSA.

Table 2.1 - Executive and Advisory Committee Meeting Dates

Committee	Date
Kick Off Meeting with Executive Committee	December 3, 2009
Kick Off Meeting with Advisory Committee	December 2, 2009
Advisory Committee Meeting #2	March 26, 2010
Advisory Committee Meeting #3	May 17, 2010
Executive Committee Meeting #2	May 18, 2010
Advisory Committee #4	July 27, 2010
Executive Committee Meeting #3	July 28, 2010
Advisory Committee #5	October 8, 2010
Executive Committee Meeting #4	October 18, 2010

Table 2.1 - Executive and Advisory Committee Meeting Dates	
Advisory Committee #6	March 8, 2011
Executive Committee Meeting #5	April 21, 2011

Stakeholder Input

In addition to Committee meetings, the planning team conducted in-depth interviews with stakeholders in the public, private and community sectors to establish priorities for the study and identify issues to be examined more fully. Stakeholders cited a wide variety of themes, including:

The top priorities identified by the community include noise, localized flooding, and traffic congestion around the base.

- A desire to increase investment, spark redevelopment, and create jobs in the mature neighborhoods surrounding Lackland AFB;
- The importance of increasing community awareness of critical operations at Lackland AFB and Port San Antonio;
- The positive relationship between the military and community in San Antonio;
- The need for ongoing coordination and communication among military and community stakeholders;
- The likely spread of suburban growth to the south and west of downtown to areas around the base; and
- Ongoing construction activity and mission growth both at Lackland AFB and PSA.

Community Participation

Active public involvement is a critical component of the JLUS. Public forums create a valuable opportunity to educate residents about training operations and the economic impact of the mission and to build trust among the military, port, and community. Residents also educate the planning team about the operational impacts that affect quality of life in surrounding areas. Since study recommendations can affect nearby property owners, these sessions are also essential for conveying information about conservation or development options that maintain compatibility with adjacent training activities.

The planning team conducted the first of two rounds of public meetings in March 2010. The presentations gave an overview of the study process, including important milestones and the study area. In addition to general public meetings, the team held a series of more focused, neighborhood-based listening sessions throughout the Summer and Fall of 2010.

Table 2.2 - Public and Community Meeting Dates	
Meeting	Date
St. Mary's University	February 2, 2010
Quintana Road Neighborhood Association	February 9, 2010
Public Meeting Round #1	March 24, March 27, March 30 and March 31, 2010
Southwest ISD Planning Meeting	April 21, 2010
Springvale Neighborhood Association	April 27, 2010
Valley Hi Neighborhood Association	May 10, 2010

Los Jardines Neighborhood Association	May 19, 2010
PACE Neighborhood Association	May 27, 2010
Cable Westwood Neighborhood Association	September 7, 2010
Southwest Community Association	September 21, 2010
Memorial Heights Neighborhood Association	November 4, 2010
Rainbow Hills Neighborhood Association	November 9, 2010
Public Meeting Round #2	November 10 and 29, 2010
Lackland Training Annex Stakeholders Meeting	January 27, 2011
Neighborhood Assoc/Homeowner Assoc Meeting	February 23, 2011

Community Priorities

At three of the four meetings, the facilitator used a wireless response audience system called TurningPoint to seek input from attendees on the importance of several possible compatibility concerns around the base. TurningPoint consists of a series of small individually held remote clickers, which enable audience members to select from multiple response options shown on PowerPoint slides. The system then tallies all responses, instantaneously displaying the "voting" results. The exercise was intended to gauge priorities and to spark dialogue about specific issues in the community.

The facilitator asked participants to respond to the following question for aircraft noise; other noise; traffic; stormwater/drainage; and coordination/communication.

How important is each of the following issues to you?

1. Not important
2. Somewhat important
3. Very important
4. Not sure

Figure 2.1 shows the average percentage of participants in the three meetings that identified each issue as very important. Overall, respondents placed the most emphasis on strengthening communication and coordination between the military/port and the community. Results also highlighted ongoing resident concerns with stormwater drainage and vehicular traffic around the base. While approximately half of respondents chose aircraft noise as a very important issue, it should be noted that participants at meetings in the Edgewood and Brentwood neighborhoods identified aviation noise as a major factor affecting the community.

The planning team also received diverse comments during the public meetings on a full range of issues, including noise, traffic, safety, and outreach. Community members and residents who live around Lackland AFB cited aircraft noise as an ongoing concern. Some residents described recent increases in the noise levels and felt that the aircraft at Lackland were flying lower and more frequently than in previous years. Participants also raised traffic as an issue, particularly on major corridors into and around the base, such as SW Military Drive, Loop 410, US 90, and Valley High Drive. Several participants noted issues related to stormwater and drainage. Specific areas of flooding included: Lackland AFB at the intersection of Pearsall Road and SW Military Drive; Medina

Base Road; the engine testing area on Kelly Field; and east Kelly at Duncan and Quintana

Representatives of school and neighborhood associations expressed a desire to participate more proactively in the study process and to be fully engaged by the planning team. Other comments gathered during the meetings reflected concern over previous contamination issues at Kelly AFB, safety related to the risk of military aircraft accidents over residential areas, and the need for local job creation.

Members of the public also identified possible strategies to minimize conflicts, including:

- Scheduling missions during reasonable hours.
- Consider the addition of noise walls or other noise mitigation such as landscaping around the base.
- Providing staggered work times for base employees to minimize traffic impacts on US 90 and SW Military Drive.
- Providing residential mitigation such as requiring double pane windows on new construction and implementing a retrofitting program for existing residents.
- Making real estate disclosures mandatory.
- Providing a buffer zone west of Imperial Drive near Jamar Village.
- Communication is needed to notify the public of what is happening on base such as when trainings and other military activities are scheduled so the public can understand what is happening on base and work around it as much as possible.
- Better Coordination and communication within agencies and organizations in the area and the military.
- Cutting off evening training at 8 pm

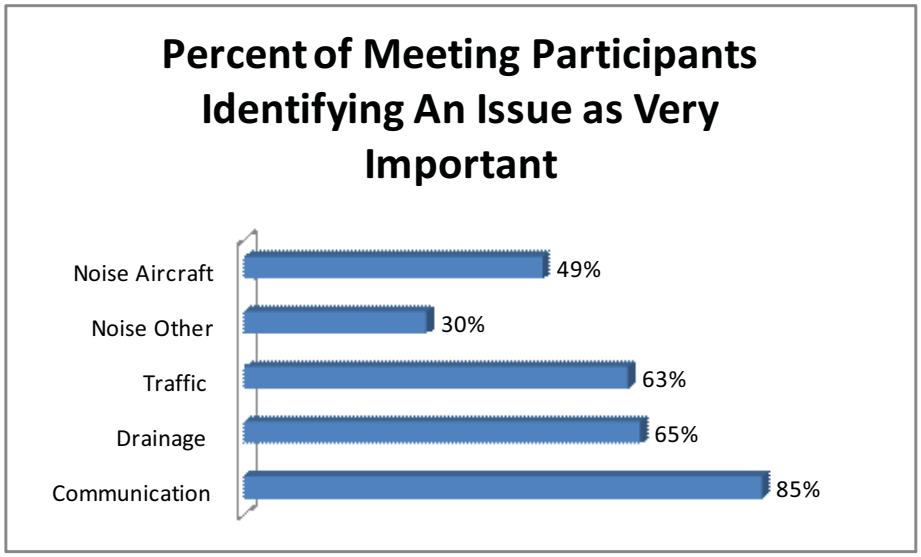


Figure 2.1 Community Issue Rankings

The planning team and Advisory Committee evaluated the feasibility of these ideas when developing study recommendations.

Web Site and Survey Results

In addition to public meetings, the public can access a website that tracks the progress and results of the Joint Land Use Study at http://lacklandjlus.com. The site hosts regular meeting notices, newsletters, Frequently Asked Questions, links to participating entities, technical reports and maps, and contact information.

Members of the public can also access a web-based survey to gather additional community input. This survey gauges public awareness about the military's and port's role in the region, concern about the operational impacts experienced in surrounding areas, and interest in possible compatibility strategies.

The planning team gathered a total of 452 surveys. Overall, community members expressed strong support for the military mission and port activities, but identified training noise or potential for aircraft accidents as issues, along with traffic and drainage. Residents were also interested in obtaining more information about current operations, particularly at Port San Antonio.

The Technical Appendix contains a full summary of all public participation feedback. See Table 2.3 for survey results.

Table 2.3: Survey Results

Survey Question	Yes	No
Do you consider the military operations to be important to the San Antonio community?	97%	2%
Do you consider the Port San Antonio operations to be important to the San Antonio community?	89%	9%
Are you aware of the type of operations that take place on Lackland AFB?	79%	21%
Are you aware that the type of operations that take place at the Port San Antonio?	59%	40%
Are you concerned that training noise or potential for aircraft accidents affects your property and the community?	44%	56%
Do you have any concerns about traffic, safety, drainage or other issues around Lackland AFB and the Port?	55%	44%
Do you support telling homeowners near the base about potential noise and safety issues?	86%	12%
Do you support special zoning near the base for new development?	87%	12%
Are you interested in receiving more information about base operations and plans?	68%	30%
Are you interested in receiving more information about port operations and plans?	66%	31%

Lackland AFB is the Air Force's only site for enlisted Basic Military Training and also offers professional, technical skills, and English language training for members of the U.S. Air Force, other military services, government agencies, and allies. Port San Antonio is a 1,880 acre master-planned site anchored by an aerospace complex and international logistics platform.

MILITARY MISSION AND HISTORY

Installation History

Lackland Air Force Base began as the San Antonio Aviation Cadet Center (SAACC) on July 4, 1942. Prior to this time, the portion of Kelly Field west of Leon Creek, where Lackland AFB is now situated, was known as "the Hill." The Hill was used as a bombing range and bivouac area for cadets until an increased demand for Airmen arose in the wake of Pearl Harbor. Inductees picked as aviation cadets quickly mobilized at Kelly Field for pilot, navigator, or bombardier training. Newly constructed facilities on the Hill west of Military Road accommodated Kelly Field's expanded role. To ensure the urgent demand for bomber pilots was met amidst the installation's rapid expansion, the SAACC facility received designation as an independent military installation with a preflight school, classification center, station hospital, and several other units.

The SAACC grew rapidly with the mobilization for World War II. Approximately 90,000 candidates for flying training passed through the preflight school before the need diminished, and the War Department ordered the school closed in 1945. With the end of preflight training, the San Antonio Aviation Cadet Center changed its name and mission. The installation's new mission became receiving veterans from the combat theaters and either reassigning or separating them, and was therefore redesignated as the San Antonio District, Army Air Forces Personnel Distribution Command. The base's 1,500-bed regional hospital played a significant role in its new mission in the care for Airmen returning from war.

The mission of the installation changed again in 1946 when the War Department redesignated the base as the Army Air Forces Military Training Center, becoming the sole basic military training mission for the Army Air Force. Today's host wing, the 37th, was established on base on October 28, 1949. On July 11, 1947, the base was renamed after Brigadier General Frank D. Lackland, who originated the idea of an aviation cadet reception and training center. From 1946 onwards, with few exceptions, all enlisted Airmen began their Air Force careers at Lackland.

Future officers were also trained at Lackland: an Officer Candidate School produced reserve officers from the enlisted corps until July 1962, and the Officer Training School (OTS), activated in July 1959, commissioned college graduates with no prior service, as well as Airmen who had earned undergraduate degrees. The Officer Training School was moved to Maxwell AFB in Alabama in 1993.

Over the years, Lackland acquired new technical training missions. Teaching English to

military personnel from foreign countries became one of Lackland's principal missions. Formal instruction began in 1954 to facilitate aircraft sales to friendly governments, whose contracts included pilot and maintenance training clauses. Now known as the Defense Language Institute English Language Center, the facility has taught military members from more than 100 countries.

On 1 April 2001, the 37th Training Wing took over airfield operations of the oldest active airfield in the Air Force, Kelly Field, established just prior to World War I. With the activation of the 37th Operations Support Squadron, the Air Force transferred the airfield operations mission and real property west of Kelly Field's hanger line to the wing and Lackland AFB. The accession of the Kelly Field Annex made Lackland one of the most heavily populated bases in the Air Force. A daily population of more than 33,000 at Lackland now works and trains in 1,799 buildings consisting of over 13 million square feet.

Lackland AFB and the shared-use airfield at the Kelly Field Annex are among the busiest faciliites in the US Air Force.

Current and Foreseeable Activities

Current Activities

Lackland AFB, the "Gateway to the Air Force," is home to the 37th Training Wing, the largest training wing in the U.S. Air Force. The wing is responsible for four primary training missions graduating more than 80,000 students annually and providing base operations and support to 45,000 people. The four missions include the Basic Military Training of all enlisted people entering the Air Force, Air Force Reserve and Air National Guard; technical training for a wide array of Air Force support functions encompassing more than 380 separate courses; English language training for international military personnel from more than 100 countries at the Defense Language Institute English Language Center; and specialized maintenance and security training for Latin American students from more than 20 countries at the Inter-American Air Forces Academy.

Lackland AFB also operates one of the busiest airfields in the DoD on the former Kelly AFB. The base is home to two flying units: the Air Force Reserve's 433rd Airlift Wing and the Texas Air National Guard's 149th Fighter Wing. Major units and tenants include:

- 37th Training Wing
- Air Force ISR Agency
- 59th Medical Wing
- 24th AF
- 802nd Mission Support Group
- 433rd Airlift Wing (Air Force Reserve)
- 67th Network Warfare Wing
- 149th Fighter Wing (Air National Guard)
- Cryptologic Systems Group
- National Security Agency/Central Security Service TX
- 70+ additional associate units

Major Units and Tenants

37th and 737th Training Groups

The host unit at Lackland AFB is the 37th Training Wing (37 TW), a subordinate unit of the Air Education and Training Command. The 37 TW is the largest training wing in the Air Force with a mission to develop and sustain warrior Airmen, train joint forces, and strengthen coalition partnerships. The Wing provides basic military, professional and technical skills, and English language training for the Air Force, other military services, government agencies, and allies. More than 80,000 students graduate annually from the base's training programs.

The base's 37th and 737th Training Groups provide Basic Military Training (BMT) for all enlisted people entering the Air Force, the Air Force Reserve Command, and the Air National Guard. In 2005, BMT changed its curriculum to focus on a new kind of Airman -- one who is a 'warrior first.' The goal is to reinforce war skills training and effectively prepare Airmen for the realities of combat. The enhanced BMT now includes an intense four-day Basic Expeditionary Airman Skills Training exercise called BEAST that replicates the sights, sounds and emotions Airmen will experience in the deployed environment. The Air Force conducts the BEAST exercise on the West Training Annex. Instruction focuses on combat and defense skills, field security, battlefield aid, shooting, tearing down and cleaning an M-16 rifle, and operating in an area under simulated attack situations.

Following graduation from eight-and-a-half weeks of intense military and academic training, Airmen go to technical training at Lackland AFB or elsewhere before their first Air Force assignment. The Training Groups provide a wide array of technical training for officers, noncommissioned officers, and Airmen.

149th Fighter Wing

The 149th Fighter Wing (149 FW), 433 AW, and Air Force Information Operations Center are the primary tenant units at the Kelly Field Annex. The 149th Fighter Wing is an F-16 flying training unit that includes a support group with a worldwide mobility commitment. The cornerstone of the 149 FW's flying mission is the 182nd Fighter Squadron, whose role is to take pilots, either experienced aircrew or recent graduates from USAF undergraduate pilot training, and qualify them to fly and employ the F-16 Fighting Falcon jet aircraft.

59th Medical Wing (WHMC)

The 59th Medical Wing provides operational capability through health care delivery, education, training, research, and readiness and offers state of the art medical care for the San Antonio region. The Medical Wing serves 213,000 beneficiaries at seven locations, including Wilford Hall Medical Center (WHMC). The unit is the largest medical mobility commitment in the AETC/AFMS, deploying more than 700 personnel each year around the world, responding to various humanitarian missions, and providing primary staffing for the largest Theater Hospital in Iraq.

AF Intelligence, Surveillance, and Reconnaissance (ISR) Agency

The mission of the AF ISR is to organize, train, and equip assigned forces to conduct intelligence, surveillance, and reconnaissance for combatant commanders and the nation and to expand Air Force ISR capabilities to meet current and future challenges.

24th Air Force

The 24th Air Force (24 AF) is a Numbered Air Force (NAF) with the United States Air Force (USAF). The 24 AF will be the Air Force component of the United States Cyber Command (USCYBER).The mission of the 24th Air Force will be to provide combat-ready forces trained and equipped to conduct sustained cyber operations, fully integrated within air and space operations. Its sub organizations will include the 688th Information Operations Wing, the 624th Operations Center, and the 67th Network Warfare Wing.

433rd Airlift Wing

The mission of the 433rd Airlift Wing (AW) is to recruit, train, sustain and provide combat ready resources to the Air Force. The 433rd AW, also known as the Alamo Wing, provides the managerial, administrative, and operational requirements necessary to operate 16 C-5A strategic airlift aircraft, the world's second largest aircraft. The Galaxy provides strategic airlift to support operations worldwide. The Wing also trains all student aircrew and ground personnel on the C-5 and ensures the wartime readiness of approximately 3,300 reservists assigned to 26 units. The 433rd AW has supported America's national defense since 1951 and remains active supporting contingency operations from Tsunami relief to Operation Iraqi Freedom.

Defense Language Institute English Language Center

The Defense Language Institute is the DoD executive agent responsible for English language training programs worldwide. The Institute trains international military and civilian personnel to speak and teach English and manages the English as a Second Language Program for the US military. 2,500 resident students from more than 100 countries study annually at the Institute. The campus includes headquarters and academic facilities, a library, dining hall, officer and enlisted quarters, and student administration buildings.

Inter-American Air Forces Academy

The Inter-American Air Forces Academy (IAAFA) educates and trains military and civilian students from across the Americas in 31 technical, professional, operations and support courses. The IAAFA graduates an average of 800 students a year. The intent of the training is to foster collaborative working relationships between the U.S. and its allies and to build shared vision.

Lackland Training Annex

The Lackland Training Annex (LTA) supports several key training and readiness functions for the Air Force and its tenant agencies, including the (See Figure 3.1):

- 37 TRSS: LTA Small Arms Ranges and (Tech Training) EOD Training Mission
- 737 TRSS: BEAST Mission
- 802 LRS/LGRB: Munitions Mission
- 802 CES/CED (EOD): EOD Mission
- 342 TRS: EOD Training Mission
- Military Working Dog program

LTA Small Arms Range

Each year, approximately 55,000 personnel from over 66 military organizations and 13 outside agencies use the small arms ranges at the Lackland Training Annex. The LTA is the busiest range complex in the United States Air Force and the sole provider for initial weapons qualification for all enlisted Air Force personnel. The complex is also the starting point for all Air Force Security Forces members to qualify on the weapon systems typically used in the mission of Force Protection. Additionally, the United States Navy maintains a very large foot print on the range with an annual training commitment of approximately 2,350 personnel. The complex features 12 firing ranges to accommodate the following weapons systems: M16A2 and M4 Rifle, M9 and M11 Pistol, M203 Grenade Launcher (40mm Training Practice round only), M870 and M500 Shotgun and MP5 submachine gun (9mm round). The Juliet Range could also potentially have machine gun tubes for the M240 and M249 weapons systems. The LTA Range Complex could become one of the largest contributors to Home Land Security in the United States. Normal duty hours are from 0700 until 1630 (7:00AM until 4:30PM), Monday through Friday. However, Security Forces, the US Navy, and outside agencies conduct nighttime firing after normal operational hours.

BEAST Mission

Prompted by an identified need for substantial changes in basic military preparation to fight global terrorism and extremism, the Air Force has emphasized war and expeditionary skills training under realistic field training conditions. Basic Expeditionary Airmen Skills Training (BEAST) enables Airmen to develop critical competencies in an environment that simulates a deployment or war-time setting. The BEAST Complex on the Lackland Training Annex accommodates between 30,000 and 40,000 Airmen on an annual basis and approximately 2,400 to 3,200 trainees per month. The BEAST represents a significant increase in training intensity on the annex. Prior to its operations, the Air Force used a very small footprint of the same area for the Basic Training Field Training Experience (FTX), a comparable, but much smaller scale version, of current training. To replicate the sounds of war, including "ground burst bombs," the two-week field exercises incorporate X02 Sound Simulators and Giant Voice System warning sirens. BEAST training activity occurs Monday through Friday from 0600 to 2000 hours (6:00AM to 8:00PM).

Munitions Mission

The Munitions Management Flight at the Lackland Training Annex is closely linked to all aspects of the 37th TRW and 802MSG mission, including storing, managing, issuing, and transporting ammunition in support of all basic trainees, as well as the tech training courses, Security Forces, EOD, BC3, and DoD Canine units. The Munitions Mission also controls and provides the explosives assets of aircraft to ensure the safety of the aircrews. The munitions storage area on the Lackland Training Annex currently contains more than 21 million rounds of ammunition, though the annual Lackland AFB allocation can

fluctuate up to 70 million rounds. The storage of ammunition must comply with various safety and security procedures to protect the base, personnel, and the surrounding population. These procedures include maintaining explosive safety quantity-distance arcs (ESQD), which prescribe a minimum distance between sites that handle, process, or store explosives materials and any nearby inhabited buildings, public areas, or other storage facilities to protect against explosive hazards. The size of the ESQD arc is proportional to the amount of the explosives materials stored in an area. Currently, the arcs are wholly contained within the Lackland Training Annex, but the required minimum distances limit flexibility in the use of land on the annex for training purposes.

EOD Mission and EOD Training Mission

802d EOD technicians are emergency responders, who use the Lackland Training Annex to conduct monthly explosives training and maintain proficiency in support of their mission. On the average, the 802nd and the 433rd detonate explosives at the Proficiency Range at least three times per month for training purposes. The EOD Mission supports all of Joint Base San Antonio and its tenant units use and provides emergency response throughout Southern Texas.

DoD Military Working Dog

The 341st Training Squadron provides trained military working dogs (MWD) used in patrol, drug and explosive detection, and specialized mission functions for the Department of Defense (DoD) and other government agencies. The Lackland Training Annex hosts the training of MWDs and their handlers.

Figure 3.1 Lackland Training Annex Mission Land Use Map

Foreseeable Activities

Lackland AFB and Port San Antonio remain highly dynamic facilities that will continue to see growth and mission expansion in the foreseeable future. Lackland AFB is gaining 1,131 new personnel due to BRAC and 940 new personnel from mission realignments including the Air Force Real Property Agency, Air Force Medical Operations Agency, Southwest Regional Contracting Center and Air Force Center for Engineering and the Environment.

Major initiatives that will shape the military mission include construction of the Airmen Training Complex on the main base, the replacement of Wilford Hall Medical Center (WHMC) with the San Antonio Military Medical Center (SAMMC) – South, and the location of Cyber Command and the consolidation of multiple support activities in Building 171 on PSA.

The Lackland AFB Airmen Training Complex is a five-year, 830 million dollar project to enhance classroom, training, and administrative space to support BMT functions for Airmen. Eight Airmen training complexes and four associated dining-classroom facilities will be organized on two campuses. The campuses will replace existing 1,000-man recruit housing and training buildings currently scattered around the base. Each Airmen training complex will have its own running track, drill pad, a war skills area and utility infrastructure. In addition to the campuses, Lackland AFB has plans for a new $20 million BMT processing and information center for the southeast corner of Truemper and Carswell, directly across from the west campus.

WHMC is the Air Force's largest medical facility, accommodating more than 16,000 inpatient admissions per year and more than 700,000 clinic visits. As a result of BRAC, all inpatient and emergency care will shift from WHMC to the SAMMC-North campus by late 2011. The existing WHMC facility will be razed and replaced with a new SAMMC-South that includes an Ambulatory Surgery Clinic, which will be one of the largest outpatient healthcare facilities in the DoD, medical, pediatric, and surgical sub-specialty clinics, and a new center of excellence for eye care.

Much of the personnel growth at Lackland AFB will be associated with new operations established at Building 171 (B-171) on PSA. By 2011, B-171 will contain approximately 2,900 employees in more than 450,000 square feet of office space, housing an array of critical security, administrative and research functions. Table 3.1 shows the number of personnel and square footage associated with the organizational entities assigned to the facility.

Table 3.1 - Building 171 Tenants

Org/Agency	Personnel	Square Footage
Air Force Center for Engineering and the Environment	714	82,505
Air Force Real Property Agency	114	22,767
General Counsel – Environmental Law	30	6,098
Air Force Law and Litigation Office	34	5,929
Air Force Medical Operations Agency and Air Force Medical Support Agency	550	58,332
Air Force Outreach Program Office	8	1,200
Air Force Services Agency	755	92,896
Headquarters, Personal Property Activity	44	6,399

JP Personal Property Support Office – San Antonio	117	11,496
Cyber NAF (24 AF & 624 Ops Center)	454	48,470
PROPOSED Cyber JTF	Unknown	Unknown
PROPOSED Air Force Public Affairs Agency	88	15,037

The vision of Lackland AFB is to relocate all of its missions onto Lackland AFB proper; an initiative called the "Go West" Plan. The Air Force currently occupies over 2,000,000 square feet of space at PSA, and the military presence is increasing with the assignment of BRAC and other Air Force missions into Building 171. Military personnel on PSA are at a greater security risk in uncontrolled, fully accessible facilities. The exposure of personnel will require additional security measures to comply with Anti-Terrorism/Force Protection guidance. The Air Force and Port are exploring opportunities to facilitate the planned relocation of Air Force missions out of port facilities and onto Lackland AFB, freeing developable properties for community and economic development.

Overall, military aircraft operations are assumed to be relatively stable in the foreseeable future. Fighter Wing personnel at the base have cited as their primary interest the preservation of the existing flying environment to accommodate future missions. As an example of possible future mission change, the 149th Fighter Wing of the Texas National Guard is looking to become an F-35 or Joint Strike Fighter unit, flying the most advanced aircraft in the US weapons arsenal. The F-35 is louder than previous jet fighters and thus generates a larger noise footprint. The ability to minimize residential and other noise sensitive development near anticipated noise areas is thus essential in maintaining the flexibility of the Air Force to receive new missions and absorb next generation technological capabilities.

Along with expanded functions in areas such as health care and network security, Lackland AFB will continue to fulfill its basic Airmen training, technical training, and aviation training and readiness missions. The Air Force anticipates continued intensive use of the Lackland Training Annex for BEAST training operations with 36,000 Airmen recruits expected in FY11 and 34,000 trainees in FY12. The Air Force has also indicated increased training activity at the annex range complex by outside agencies, including local and federal law enforcement officials. The transition of the 149th Fighter Wing to the F-35 aircraft would also require pilots to be trained on the most current weapons systems available, resulting in a significant increase in net explosive weight requirements and storage capabilities and structures on the annex.

Installation Facilities and Personnel

Lackland AFB's physical assets include almost 9,800 acres of land, 2,105 facilities, 1,300 buildings, and more than 1,100 housing units, serving a total military, dependent and civilian population of more than 45,000.

Table 3.2 - Personnel by Classification

Classification	Population	Payroll
Active Duty Military	26,397	$774,782,019
Total Military	26,397	
Civilian Employees	8,533	$362,047,038
Military Dependents	10,428	

Total Civilian Personnel	18,961	
Grand Total	45,358	$1.1 billion

Source: Lackland AFB "Facts and Stats" Report FY05; Kelly Field Annex at Lackland Air Force Base AICUZ Study (2008)

Economic Impacts of Lackland AFB

Military operations drive a significant portion of the San Antonio and Bexar County economy through direct investment in military missions, civilian contractors, and private enterprises serving the needs of a growing defense-related community. The greater San Antonio area is home to Fort Sam Houston, Camp Bullis, Lackland AFB, and Randolph AFB, over 195,000 Federal employees, including active-duty military in Bexar County, and the nation's largest retired military population.

In particular, Lackland AFB's economic influences are geographically far-reaching , affecting Atascosa, Bandera, Bexar, Comal, Guadalupe, Kendall, Medina, and Wilson Counties. The report "Economic Impact of the U.S. Department of Defense in San Antonio" (City of San Antonio Economic Development Department, 2006) and the 2008 Lackland AICUZ study provide insight into the economic impact of the installation. More than 34,000 personnel are directly employed by Lackland AFB, and the annual payroll of the installation is over $1.1 billion (see Table 3.3). According to the AICUZ study, as a result of payroll expenditures, annual expenses, and the estimated value of indirect jobs in the local area, Lackland AFB has an estimated total economic impact of approximately $2 billion on the local economy. The base is the second largest employer in the City of San Antonio.

The Economic Impact Study estimates that, in total, the DoD registered an impact of $13.3 billion in 2006 based on a wider survey of economic impact, including contracts received by local private defense contractors, General Purchase Card activity, and military retirees and their beneficiaries. Of the total economic impact, contracting activity (including spending by the military installations as well as economic activity generated by private sector companies receiving DoD contracts) accounts for the largest component, followed by spending by civilian and military personnel. In 2006, this level of economic activity made the DoD the fourth largest industry in terms of economic impact in the San Antonio metropolitan area. In terms of employment, the DoD was the largest employer in the San Antonio area in 2006 (employing 195,075 people). This created earnings of $9.4 billion (including multiplier effects), also the highest by sector in the San Antonio area. The economic impact from BRAC will also be substantial - projected to be around $5.7 billion. This includes $2.1 billion in military construction scheduled before September 2011 and nearly 5,000 net jobs expected to be relocated to San Antonio.

Table 3.3 - Lackland AFB Annual Expenditures

Category	Expenditures
Construction	
Military Construction	$34,637,189
Non-appropriated Fund	$9,405,776
Military Family Housing	$801,024
Operations and Maintenance	$84,523,169

Total	$129,746,758
Services	
Contracts	$167,898,477
Commissary	$288,056
Base Exchange	$1,735,551
Health (CHAMPUS, Govt Cost)	$20,515,543
Education	$11,650,203
TDY	$10,294,238
Other	$71,668,667
Total	$284,050,735
Secondary Jobs Created	
Total	$543,200,000
Grand Total	$2 billion

Source: Lackland AFB "Facts and Stats" Report FY05; Kelly Field Annex at Lackland Air Force Base AICUZ Study (2008)

Table 3.4 - Major Employers in San Antonio

Employer	Employees
H-E-B Grocery Company	56,000
Lackland AFB/37th TW	35,782
Valero Energy Corp	23,000
Fort Sam Houston – Army Garrison	15,200
USAA	13,800
Zachry Group	12,000
Randolph AFB	10,733
Northside ISD	10,352
City of San Antonio	9,637
San Antonio ISD	8,000

Source: San Antonio Chamber of Commerce (2008)

Port of San Antonio

Port Background

Port San Antonio is a 1,880 acre master-planned site anchored by an aerospace complex and international logistics platform. The Maintenance, Repair and Overhaul (MRO) sector of the aerospace industry forms the core of the industrial complex at the port. MRO tenants, including the Boeing Company, Lockheed-Martin and Standard Aero occupy over 2.8 million square feet of hangar and assembly space .The logistics platform features an 11,500 foot runway, used jointly with the Air Force, as well as ramp space, an air cargo terminal, and access to two Class I railroads, the Union Pacific (UP) and Burlington Northern Santa Fe (BNSF). The Railport is adjacent to the UP classification yard, which is the destination for most of the local industry traffic. The PSA offers warehouse and office/flex space and rail and non-rail sites for lease throughout the complex. All of the site falls within a General Purpose Foreign-Trade Zone (#80-10) designation, meaning that goods admitted are not subject to formal U.S. Customs entries or payment of duties while in the zone.

The Master Plan, which extends to 2017, reflects the port's strategic vision to expand its domestic and international air cargo operations. The plan also calls for a Town Center component to include residential and retail options that complement industrial and office activities. This 400-acre mixed use campus, known as Kelly Town Center, will feature additional office, shopping, dining and lodging, as well as housing. Among the first projects at Kelly Town Center will be Lindbergh Park, a 45-acre office complex in a high density mixed-use site. Development of the Town Center is expected to begin in 2010 and continue as part of a phased program.

Economic Impact

The development and promotion of San Antonio as an inland port has become one of the priority economic development strategies for the entire region. Port San Antonio commissioned the SABÉR institute to conduct a study of the contributions to the local economy by the aerospace industry at the port. The SABÉR Institute is a research collaborative of St. Mary's University and the San Antonio Hispanic Chamber of Commerce. The latest study results are not yet available, but a similar study completed in 2008 indicated that all the businesses at Port San Antonio generated an annual economic impact of $3.3 billion.

Table 3.5 - Aerospace Employers in San Antonio

Category	Impact
Aerospace-related companies at Port San Antonio	13
Combined direct employment	4,300
Combined indirect/induced employment	4,500
Combined annual payroll of direct and indirect/ induced employment	$487,000,000
Value added impacts	$683,000,000

Federal, state and local taxes	$144,500,000
Source: 2009 Annual Report	

Foreseeable Port Activities

The current Joint Use Agreement (JUA) between PSA and the Air Force limits civilian aircraft operations to 18,756 per year and caps nighttime (10:00PM to 7:00AM) operations at 9,337 annually. The agreement also restricts use of the airfield to the following four types of aircraft: commercial air carriers; corporate business aircraft; aircraft requiring maintenance, repair or overhaul; and locally manufactured aircraft. The JUA does not permit general aviation operations or access to the airport by the flying public.

In 2009, PSA conducted an Aviation Demand Forecast study for Kelly Field. The annual maximum number of operations under the JUA represents approximately nine percent of the total capacity of the runway, which is 210,000 operations. The study forecasts short-, mid-, and long-term operations under a constrained scenario that meets the restrictions established by the JUA and an unconstrained scenario that exceeds agreement limitations to attract rising demand.

The 2009 demand study notes that Kelly Field is a key element in the local aviation community and a potential relief facility for crowded and congested airports in the region. The study also concludes that diverse aviation interests are showing increasing interest in San Antonio's aviation marketplace and that Kelly Field should plan to capture future demand through facility and service expansion.

Table 3.6 includes a summary of annual aviation demand for both the constrained and unconstrained scenarios at a medium growth rate. In addition to increases in the total number of operations, future aviation demand forecasts reflect anticipated changes in the aircraft fleet mix operating at Kelly Field. The midgrowth forecasts anticipates that 24 aircraft would be based at the airfield.

Table 3.6 - Kelly Field Aviation Demand Forecast

	Short Term 2012	Mid Term 2017	Long Term 2027
Unconstrained			
TOTAL OPERATIONS	33,440	39,250	57,720
Constrained			
TOTAL OPERATIONS	32,040	34,700	42,330

Source: 2009 Kelly Field Aviation Demand Forecast Study, Sager and Associates

The Military Working Dog program conducts training at the Lackland Training Annex

SA
AF 374

Training and readiness activities at Lackland AFB and Port San Antonio produce impacts, such as noise and air safety hazards, that affect surrounding neighborhoods.

CURRENT OPERATIONS AND IMPACTS

Routine training activities at Lackland AFB generate various impacts that can affect the quality of life in surrounding neighborhoods. Examples of these impacts include noise and vibration from overhead flights or the risk of an aircraft accident. Conversely, these military and airport operations are susceptible to hazards created by certain nearby civilian activities that may concentrate people or noise sensitive users, obstruct air space, compete for electromagnetic spectrum use or generate light or other visual impairments. Understanding the overlapping spatial patterns of these impacts around the installation and airport is essential for promoting compatible and fully coordinated land use decisions.

The Air Force's Air Installation Compatible Use Zone Study (AICUZ) is the principle document for evaluating the noise footprint of Lackland AFB and the hazards associated with military training operations.

Aircraft Operations

According to the 2008 Kelly Field Annex AICUZ study, over 31,000 annual aircraft operations occurred at the Kelly Field Annex for the period October 2005-September 2006 based on aircraft operations data validated in November 2007. An aircraft operation is defined as one takeoff/departure, one approach/landing, or half a closed pattern. A closed pattern consists of two portions, a takeoff/departure and an approach/landing, i.e., two operations. 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).

Table 4.1 summarizes the average busy-day aircraft operations for the Kelly Field Annex airfield based on information provided by Base staff, flying organization, and air traffic control personnel. Aircraft operations data in Table 4.1 reflect the C-5, F-16, transient, and MRO aircraft operations as of November 2007 and the PASA operations projected for 2007. Aircraft types operating at the Base consist primarily of military aircraft. In addition to the Kelly Field Annex based aircraft, numerous types of transient military and civil aircraft conduct operations at the Base. The table reflects a total of about 218 operations on an average busy-day based on collected operations data. About 14 percent of the operations occur at night (10:00 p.m.-7:00 a.m.).

Table 4.1 - Average Busy-Day Aircraft Operations for 2007			
Category/Aircraft Type	Daily Arrival/ Departure	Daily Closed Pattern Operations	Total Operations
Kelly Field Annex Aircraft			
C-5	4.23	27.38	31.61
F-16	26.27	39.53	65.80
Subtotal	30.50	66.91	97.41
Transient Aircraft			
T-1	1.85	18.48	20.33
T-6	1.68	4.20	5.88
T-38	4.31	10.78	15.09
T-43	0.05	0.25	0.30
65 Types	11.95	0.00	11.95
Subtotal	19.84	33.71	53.55
Maintenance, Repair, and Overhaul			
C-17	0.41	0.04	0.45
KC-135	1.48	4.92	6.40
KC-10	0.28	0.00	0.28
C-130	0.05	0.15	0.20
Subtotal	2.22	5.11	7.33
Port Authority of San Antonio			
LWB	0.02	0.00	0.02
MWB	0.02	0.00	0.02
LNB	8.96	0.00	8.96
MNB	9.48	0.00	9.48
SNB	3.56	0.00	3.56
Piston	0.08	0.00	0.08
Turboprop	14.98	0.00	14.98
Small jet	22.66	0.00	22.66
Subtotal	59.76	0.00	59.76
TOTAL	112.32	105.73	218.05

Note: An operation is one takeoff/departure or one arrival/landing. A closed pattern consists of two operations, one takeoff and one landing. Acronyms for PASA aircraft with representative aircraft in parentheses: LWB – large wide body (B-747); MWB – medium wide body (DC-10); LNB – long narrow body (B-757); MNB – medium narrow body (B-727); and SNB – small narrow body (DC-9).
Source: Kelly Field Annex at Lackland Air Force Base AICUZ Study (2008)

Runway 15/33 is oriented 156°–336° when compared to magnetic north and is 11,500 feet long and 300 feet wide. The overrun at the South end of the runway is 1,000 feet long. There is no overrun at the north end of the runway. The airfield elevation is 691 feet above mean sea level (MSL). Overhead and rectangular patterns are flown at an altitude of about 2,000 feet above ground level (AGL).

Arrivals and departures for the airfield are integrated with a complex flow of aircraft operating to or

from other military and civil airports in the area surrounding the Kelly Field Annex. The other three airfields that influence traffic flows at the Kelly Field Annex are San Antonio International Airport (10 miles north-northeast of the Kelly Field Annex), Randolph AFB (18 miles northeast), and Stinson Municipal Airport (six miles southeast). The location and proximity of these airports relative to the Kelly Field Annex require that aircraft arrivals and departures be routed to avoid conflict.

Aircraft operating at the Kelly Field Annex use the following flight patterns:

- Straight-out departure;
- Straight-in approaches;
- Overhead landing patterns both east and west of the airfield;
- Takeoff patterns routed to avoid overflying populated areas as much as possible;
- Radar closed patterns to the west of the airfield; and,
- Re-entry patterns.

Flight patterns specific to the Kelly Field Annex result from several considerations, including:

- Takeoff patterns routed to avoid noise-sensitive areas as much as possible;
- Arrivals and departures routed to avoid restricted airspace;
- Criteria governing the speed, rate of climb, and turning radius for each type of aircraft;
- Efforts to control and schedule missions to keep noise levels low, especially at night; and
- Coordination with the FAA to minimize conflict with civil aircraft operations. operations.

Aircraft Noise

Noise Mitigation Procedures

Noise abatement procedures have been implemented for the period between 11:00 p.m. and 6:00 a.m. to reduce aircraft noise in the areas surrounding the airfield. During this period, all arrivals are flown to a full-stop landing and no afterburner takeoffs are permitted without prior approval. Additionally, no closed patterns, practice instrument approaches, landings, or takeoffs are accomplished during this period. The Airfield Operations Board monitors airfield activity to ensure there is no unnecessary nighttime aircraft maintenance activity and that noise from aircraft operations is minimized to avoid conflict.

To reduce the affect of noise, Kelly Field Annex limits transient aircraft (other than T-1, T-6, T-38, and T-43) to one approach to a full stop landing. Additionally, the base controls and schedules missions to keep noise levels low, especially at night.

To the maximum extent possible, aircraft maintenance engine runup locations have been established in areas to minimize noise for people in the surrounding communities, as well as for those on base. Aircraft maintenance engine runup operations are accomplished by the Kelly Field Annex-based flying units and their associated maintenance functions and the companies accomplishing MRO operations.

Average busy-day aircraft maintenance runup operations were calculated similarly to flight operations described in Section 3.1. Weekly, monthly, or annual estimates of runups provided by Kelly Field Annex aircraft maintenance and MRO personnel were divided by the typical number of days runups were performed over the respective period. Approximately 9 percent of the aircraft maintenance

runups at the Kelly Field Annex occur during nighttime (10:00 p.m. to 7:00 a.m.). About 76 percent of the nighttime aircraft maintenance engine runups are accomplished in a facility that suppresses the noise.

Day-Night Sound Level and Decibels

To measure environmental noise, the Department of Defense (DoD) use a widely accepted evaluator, the day-night sound level (DNL). The DNL evaluator describes the average daily acoustic energy over the period of one year—meaning that it averages moments of quiet with moments when loud noises can be heard.

Noise Zones

To assist the surrounding communities in land use decisions, the DoD uses decibel noise contours to illustrate the exposure to noise associated with aviation activities. Below is a general definition of these zones:

- Noise Zone III: This is an area around the source of noise in which the DNL is greater than 75 dBA. This zone is considered an area of severe noise exposure and is deemed unacceptable for noise sensitive activities.
- Noise Zone II: This area is considered to have significant noise exposure and is normally unacceptable for noise-sensitive land uses. It consists of an area where the DNL is between 65 and 75 dBA.
- Noise Zone I: This area, considered to have minimal noise exposure, includes areas in which DNL is less than 65 dBA and is acceptable for all types of land uses.

Off-Installation Noise Exposure

The noise contours identified in Figure 4.1 reflect the noise impacts of both military and commercial aircraft operating at Kelly Field. Current DoD guidance indicates that noise exposure in excess of 65 decibels can interfere with daily activities and affect quality of life for nearby residents. To assess the off-installation noise exposure within the DNL 65 dB and higher areas, the AICUZ study for Lackland AFB estimated the number of acres and people within each of the noise zones (using U.S. Census Bureau 2000 census figures).

As shown in Table 4.2, a total of 8,739 acres and 24,415 people could be affected by aviation noise around Kelly Field. The largest affected population is within the DNL 65–69 dB noise zone. This area is estimated to contain 5,693 acres in off-installation land area (65% of the total) and an estimated population of 21,102 persons (86% of the total) based on the calculated population densities for the area.

Table 4.2 - Area and Population within DNL 65 dB and Greater Noise Exposure Area (Off-Installation)

DNL Noise Zone	Acres	Population
65-69	5,693	21,102
70-74	2,247	2,747
75-79	637	379
80+	162	187
Total	8,739	24,415

Source: Kelly Field Annex at Lackland Air Force Base AICUZ Study (2008)

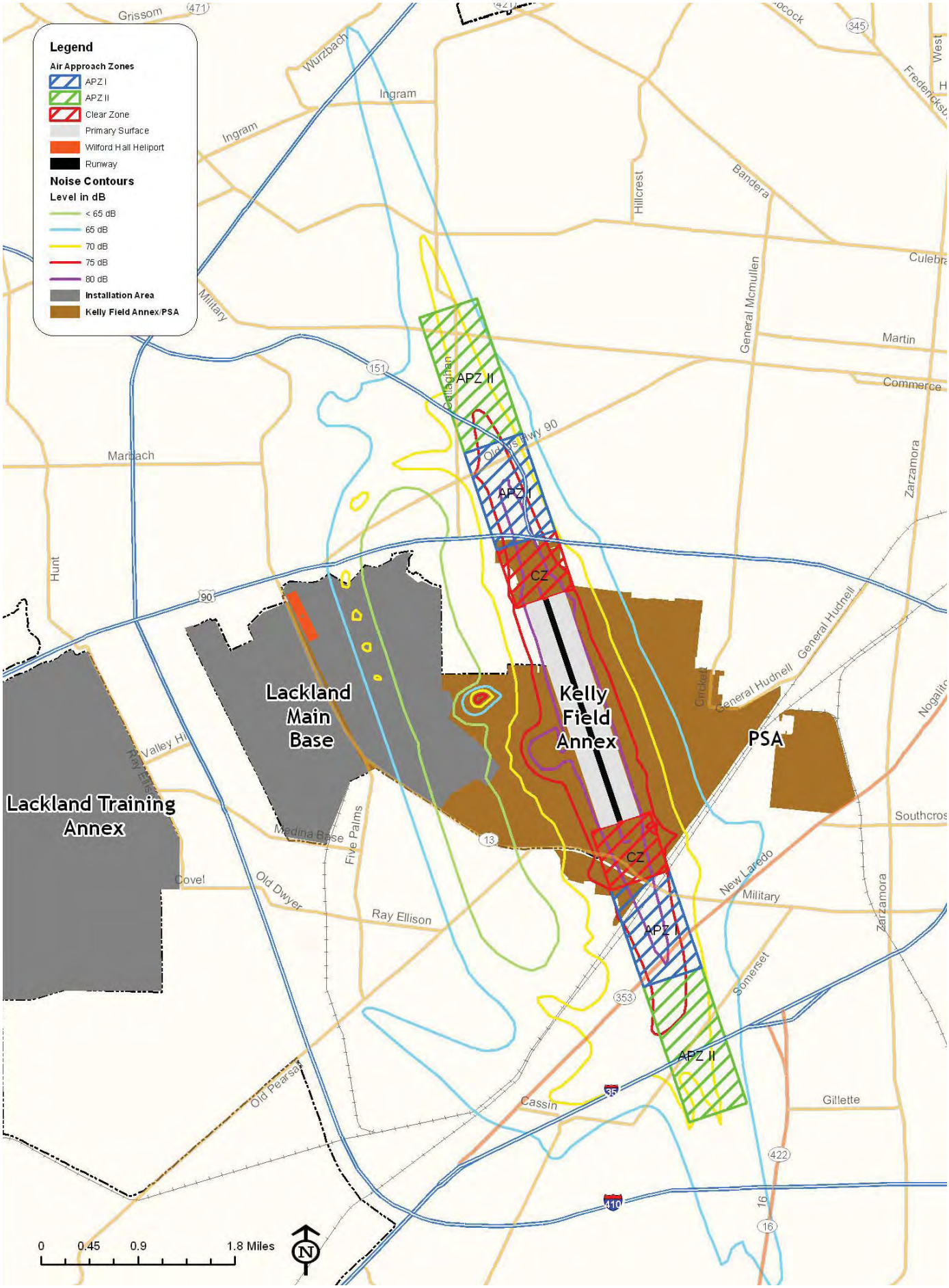


Figure 4.1. Kelly Field Noise Zones and APZs

Military personnel and community residents both indicated that C-5 operations generate more off-base noise issues than the F-16 aircraft. The C-5 is noted for its repetitive, higher-pitched sound, particularly in the older generation of jets currently assigned to Lackland, as well as a low-level flight pattern. Residents north of the JLUS study area in Leon Valley have also cited issues with aircraft noise. Controlled airspace associated with the San Antonio International Airport requires aircraft from Lackland AFB to fly at an altitude that may increase noise exposure for residential areas below the flight path. Residents also cited noise associated with jet engine testing at Kelly Field.

Air Safety

Runway Airspaces Imaginary Surfaces

Imaginary surfaces are three-dimensional areas around airfields that define the spaces that must be kept clear of obstacles to ensure safe aviation. The effect of noise on tall buildings is particularly relevant when referring to imaginary surfaces.

Military Clear Zones and Accident Potential Zones

Clear Zones (CZ) and Accident Potential Zones (APZ) are established near military airfields based on the analysis of military aircraft accident history and a determination of where, within airfield environs, an accident is likely to take place and how large an impact area is likely to result from any single accident.

- The Clear Zone (CZ) is located at the end of the runway, extends outward 3,000 feet, and is 1,500 feet on either side of the runway centerline. The accident potential in this area is so high that all structures are incompatible.
- Accident Potential Zone I (APZ I) is less critical than the CZ, but still possesses significant potential for accidents. Located just beyond the CZ, APZ I extends an additional 5,000 feet from the end of the CZ. Like all runway zones, the APZ I is 3,000 feet wide.
- Accident Potential Zone II (APZ II) extends beyond APZ I, is less critical than APZ I, but still poses some risk for accidents. The APZ II extends 7,000 feet from the end of APZ I.

Figure 4.1 shows the Clear Zones and APZs associated with Kelly Field.

Aviation impacts include noise, the risk of an aircraft accident, and conflicts with aviation hazards, such as lighting and tall structures.

Lackland Training Annex

People living near the Lackland Training Annex may be exposed to noise from training activities, including the firing of weapons at the Small Arms Ranges, periodic blasts from explosive ordnance training, and the use of sound simulators and voice systems as part of BEAST operations. Designed to prepare Airmen for effective performance in hostile settings, the X02 Sound Simulators and Giant Voice System warning sirens create the acoustical impression of battlefield effects, such as "ground burst bombs." The Air Force has not conducted technical modeling to determine the average level of off-base noise exposure generated by these training activities. Residents have also cited noise related to use of the Public Address system on the main base, the barking of dogs in the military training program on the Lackland Training Annex, and noise associated with jet engine testing at Kelly Field.

Night Vision Training Environment

The ability to fight at night is increasingly essential to the missions of the modern military and represents a significant advantage for US personnel. Night vision goggles (NVGs) or other types of night vision systems worn by personnel capture and amplify any illumination in the surrounding landscape, displaying an extreme sensitivity to broad spectrum of light sources. Light pollution, therefore, can

compromise the effectiveness of night vision training exercises. Exposure to stray light can cause the vision screen to white-out, temporarily robbing the wearer of vision. Overlighting and unshielded light, which causes the upward flow of light beyond a fixture into the dark sky, both act as sources of light pollution that interfere with night vision equipment.

Currently on the Lackland Training Annex, the 37 TRG/Combat Weapons Sections conducts weapons qualification training using night vision and laser aiming devices. The Combat Weapons Sections (CWS) in support of Joint Base San Antonio qualifies over 1,000 personnel per year. The CWS conducts firing on an as-needed basis depending on in-garrison mission requirements, deployment tempo, and the time of year. Though the Security Forces Tech School does not fire at night, operations are now under review. The Naval Technical Training Center also fires under low light conditions but does not employ night vision technology. Air Force representatives have also indicated NVG usage on the Lackland Training Annex by Military Working Dog handlers and Airmen participating in BEAST exercises.

Other Compatibility Risks

As noted earlier, incompatibility occurs when physically adjacent military and civilian land uses generate one or both of the following effects:

- Nearby community development interferes with the ability of the military to perform its mission or causes modifications to military operating procedures; or
- Members of the public are exposed to a higher than normal levels of operational impacts associated with military activities, such as noise or the risk of an aircraft mishap.

While noise and air safety risks are among the most common and visible of potential land use conflicts due to proximity to military operations, a wide array of development factors can raise compatibility issues near military installations, including:

- Vertical obstructions that can act as a physical intrusion into active air space, particularly for aircraft participating in low altitude operations;
- Civilian devices, such as radios, radars, and keyless entries that transmit in military assigned frequencies, affecting electronic systems and communications equipment.
- Uses, such as landfills or standing bodies of water, that attract birds or other wildlife and thus generate the risk of interference with aircraft
- Congested airspace that requires aviation entities to alter flight paths or operational procedures
- Any physical emission into the air, such as dust or steam, that could impair pilot vision, as well as lighting and visual markings that could distract pilots
- Threatened and endangered species that require protection through avoidance or habitat preservation and thus could diminish the size and flexibility of available training space
- Development directly adjacent to the installation boundaries or other factors that could reduce the security of the perimeter

Ranking of Compatibility Risks

As part of the March 26 JLUS Advisory Committee meeting, the planning team asked members to use the TurningPoint system to rank the significance of possible compatibility issues around the base and port.

Incompatibility is any action that could result in one or both of the following conditions:

1. Development in the community limits the ability of the Air Force or PSA to do their jobs
2. Military or port-related impact that affects quality of life in the community

Members evaluated the following list of possible compatibility issues according to whether they are:

- not a current or future factor (does not exist now and is not a foreseeable issue);
- a potential factor (does not exist now but could become an issue if mission or community conditions change); or
- a current factor (a factor that exists now and is likely to continue).

The number next to each issue in Table 4.3 indicates the percentage of Committee members selecting that particular issue as a current factor that is likely to continue. Factors identified as affecting the mission and/or the community both now and in the foreseeable future under anticipated growth trends and operational conditions are deemed to be the most significant compatibility issues.

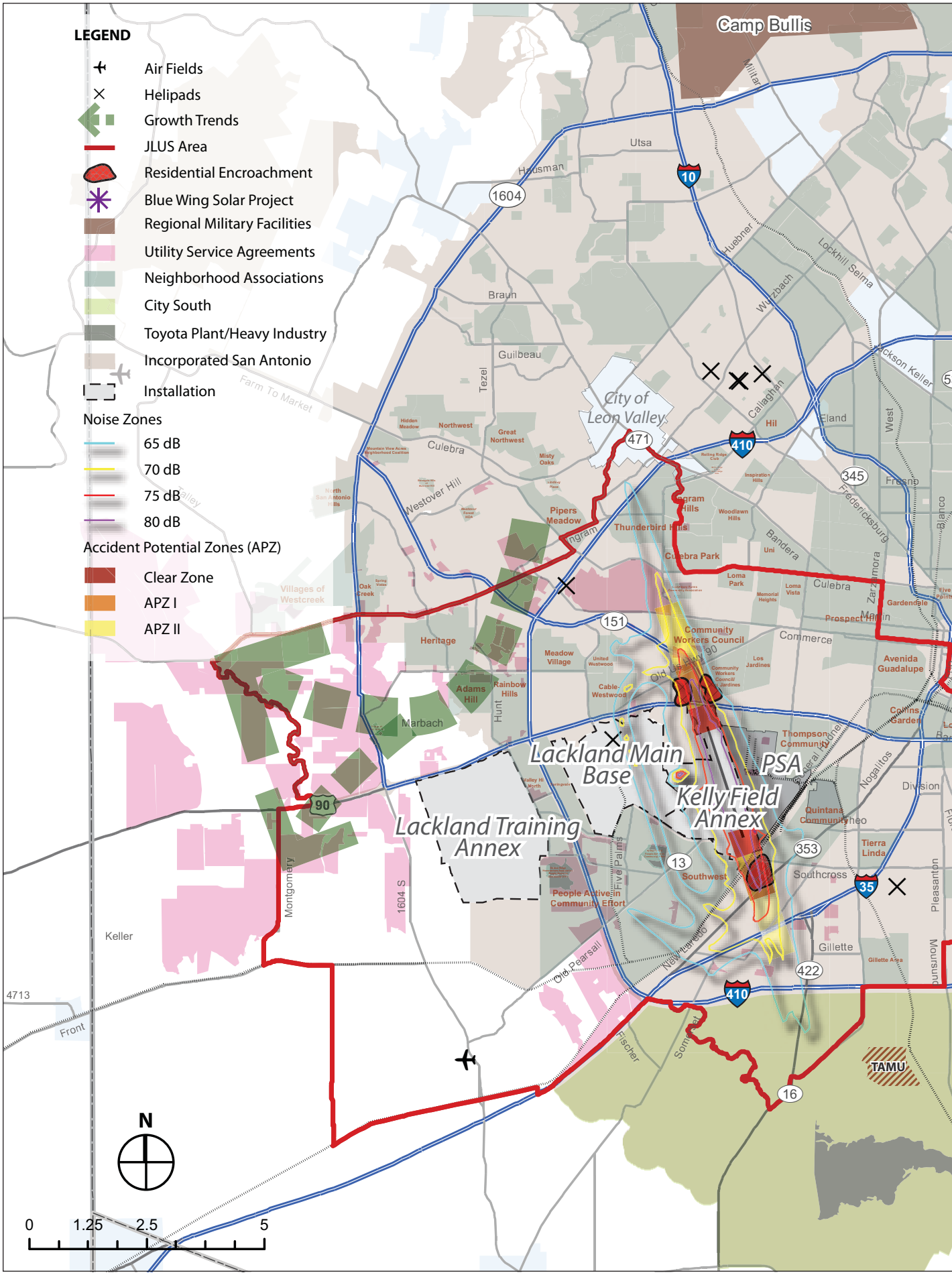
Based on Advisory Committee feedback, the top ranked issues facing Lackland AFB are noise, growth pressure and future development, drainage, airfield safety zones, Antiterrorism/Force Protection (AT/FP), and ground transportation. Figure 4.2. Regional Analysis Diagram conceptually depicts various growth, infrastructure, and development factors that are likely to influence compatibility issues around Lackland AFB in the years ahead.

Table 4.3 - Table Advisory Committee Compatibility Threat Ranking

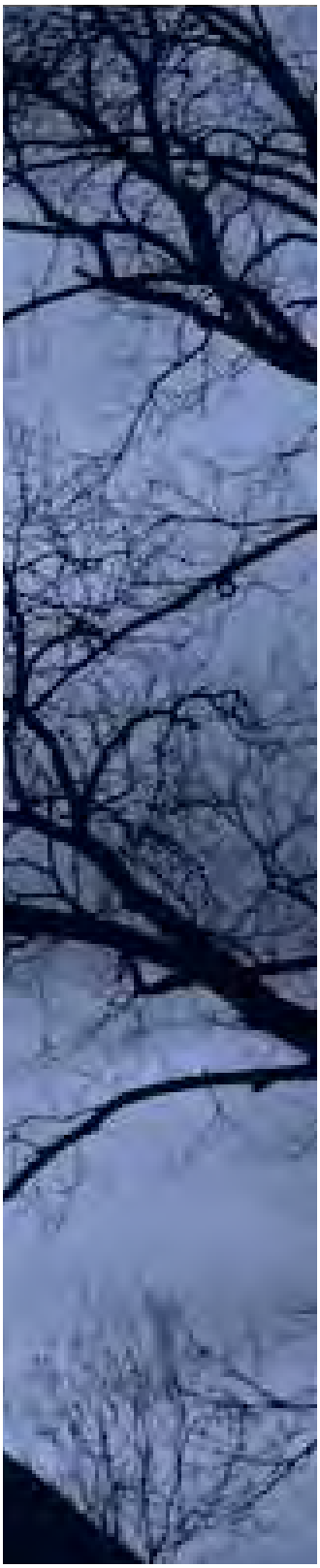
Issue	Percentage Indicating Both Current and Foreseeable Factor
Noise	100
Growth Pressures/Future Development	86
Drainage	84
Safety Zones (air)	77
Antiterrorism/Force Protection (AT/FP)	76
Ground Transportation	76
Bird or wildlife air strike hazards	65
Competition for Airspace	55
Interagency and Stakeholder Coordination	55

Safety Zones (training buffers)	55
Legislative Initiatives/Authority (either constrains the mission or limits the ability of local governments to manage growth)	53
Public Trespassing/Perimeter Security	52
Infrastructure Capacity	45
Water Quality	29
Light and Glare	27
Historic or Cultural Sites	24
Vibration	24
Vertical Obstructions	19
Air Quality	18
Alternative Energy Development (could produce glare, EMI, or tall structures)	10
Dust	10
Frequency Spectrum	10
Threatened and Endangered Species (requires protection and could reduce training flexibility)	10
Bold = High Priority Issue	

Basic Military Training Graduation Parade


LEGEND
Air Fields
Helipads
Growth Trends
JLUS Area
Residential Encroachment
Blue Wing Solar Project
Regional Military Facilities
Utility Service Agreements
Neighborhood Associations
City South
Toyota Plant/Heavy Industry
Incorporated San Antonio
Installation
Noise Zones
65 dB
70 dB
75 dB
80 dB
Accident Potential Zones (APZ)
Clear Zone
APZ I
APZ II
Camp Bullis
Lackland Main Base
Lackland Training Annex
Kelly Field Annex
PSA
City of Leon Valley
TAMU
N
0
1.25
2.5
5

Basic Combat Convoy Course



The complexity of coordinating land use issues across jurisdictional lines and the limited authority and resources of any individual entity require concerted action among multiple stakeholders, including federal, state, regional and local government governments; the military and civilian sectors; non-profit organizations; and private landowners.

Overview of Previous Compatibility Actions and Ongoing Initiatives

This section gives an overview of compatibility efforts undertaken to date by federal, state, and local partners to promote land use compatibility around Lackland AFB. The existing policies below could form the basis for subsequent recommendations to reduce compatibility risks and highlight potential implementation partnerships. Any identified gaps may also indicate opportunities to strengthen regulatory approaches around Lackland AFB and other military installations.

Federal and Military Compatibility Initiatives

Air Installation Compatibility Use Zone

In 1972, the DoD established the Air Installation Compatibility Use Zone (AICUZ) program to identify noise-affected areas around installations and to develop cooperative approaches for reducing adverse impacts. Lackland AFB updated its AICUZ report in August of 2008.

Joint Land Use Study

In 1985, the DoD initiated the Joint Land Use Study (JLUS) program to create a community-based framework for land use planning around military installations. The JLUS process encourages residents, local decision-makers, and installation representatives to examine current and foreseeable land use conflicts and develop collaborative solutions that balance military and civilian interests.

Participating communities initiated this JLUS effort for the region around Lackland Air Force Base. The Office of Economic Adjustment (OEA) within the DoD funded 90 percent of the study, while Bexar County supplemented the initiative with local funding sources.

Readiness and Environmental Protection Initiative

Once specifically placed in remote areas, military installations are now often in the path of advancing exurban development or have generated external growth through spin-off economic activities. Over the past decade, the DoD has increasingly recognized incompatibility as a major constraint in safely and effective mission performance.

In an effort to protect the future use of installations and training land, the FY2003 National

Defense Authorization Act authorized the Military Services (Army, Navy, Marine Corps and Air Force) to enter into agreements with non-federal conservation organizations to acquire real estate in the vicinity of military installations such as bases, posts and forts.

The Readiness and Environmental Protection Initiative (REPI) grants the military the ability to enter into agreements with eligible entities, such as local governments, non-governmental organizations, and willing land owners to secure conservation easements on property in the vicinity of, or ecologically related to, a military installation or military airspace.

The agreements enable private organizations to acquire, on a cost-shared basis, development interests in the properties of voluntary sellers. The property owner typically continues to hold the title for the land, but receives monetary compensation and tax breaks to maintain the encumbered property in a highly limited use that preserves habitat and avoids interference with the operational procedures of the nearby installation. REPI is the fastest growing conservation-based program in the federal government today.

The DoD has also formed a partnership with the United States Department of Agriculture (USDA) to conserve sensitive lands near military bases around the nation. Through the USDA, military planners can now access the resources of existing easement programs, such as the Farm and Ranch Lands Protection Program, the Wetlands Reserve Program, and the Grassland Reserve Program. The DoD's promotion of conservation and integrated planning enhances the choice of encroachment reduction tools available to today's installations and defense communities and supplements smart growth land use strategies pursued by many local governments.

State Compatibility Initiatives

Airport Compatibility Guidelines

The Texas Department of Transportation (TxDOT) Aviation Division published the report, Airport Compatibility Guidelines: Compatibility Planning, Compatible Land Use Zoning, Hazard Zoning for Airports in Texas in January 2003. According to TxDOT, the guidelines contained in the report are intended as a reference source for elected officials, zoning board members, and city and county staff members responsible for ensuring compatibility between an airport and the community. The report describes methods for planning in and around airport environments, such as assessing land use compatibility relative to height restrictions and noise exposure. Implementation measures for reducing noise exposures and actions to forestall incompatible development include development of airport compatible land use zoning regulations and hazard zone regulations. A chapter of the report also explores strategy and procedural steps related to the adoption of airport zoning regulations, and templates for model ordinances.

Real Estate Disclosure

In Texas, real estate disclosures are intended to inform homebuyers of property conditions in advance of the purchase of a home. The Texas Property Code (Section 5.008) requires the seller of a residential property to give the purchaser of the property a written notice disclosing the general condition of the property. At a minimum, the property owner must disclose information contained on notices from the Texas Real Estate Commission (TREC) (form OP-H) or Texas Association of Realtors (TAR)® (form 1406). (TAR Form 1506, General Notice to a Buyer, is another typically used form.) Such information includes the presence and working condition of the house's smoke detectors, plumbing and electrical systems, and gas lines, the presence of potentially harmful materials such as asbestos and lead paint, as well as the termites or previous flooding. Sellers must indicate if the property is located in sensitive areas, such as along the Gulf Intracoastal Waterway, which makes it subject to the Open Beaches Act or Dune Protection Act. Another form produced by TREC allows the buyer to obtain reports to identify environmental conditions that may adversely affect

the property, such as the presence of nearby wetlands or threatened and endangered species. Currently, however, real estate disclosures in Texas are not required to disclose proximity to military installations.

Communication and Economic Development Resources

Texas Military Preparedness Commission

In 2003, the state created the Texas Military Preparedness Commission within the Office of the Governor to assist local defense communities in identifying and using economic development resources that enhance the military value of their installations. The Commission's charge is to preserve and expand Texas's 18 major military installations and their missions, and assist those communities affected by BRAC action. The Commission advises the Governor and Legislature on defense-related issues affecting Texas military installations, and seeks additional defense missions for the state by working with local government and community leaders and senior military officials. Through its Annual Report: Master Plan for the Future publication, the Commission supplies information on military installations and recommendations to enhance the value of bases in the state.

Part of the Commission's charge is to provide financial assistance to defense communities affected by BRAC through the Texas Military Value Revolving Loan Fund program and the Defense Economic Adjustment Assistance Grant (DEAAG) program. The assistance programs enable defense communities to enhance the military value of a facility in their area, create economic development jobs, or finance infrastructure projects to accommodate new or expanded military missions. Grant awards range from $50,000 to $2 million, and Revolving Loan Fund amounts vary, although the minimum amount is $1 million. The state may provide up to 100 percent of the cost of a Revolving Loan Fund project, financed through the sale of general obligation bonds.

Financial assistance can be sought for the development of comprehensive defense installation and community strategic impact plans for communities in proximity to military bases. The plan must address existing and future issues relating to land use, transportation, population growth, conservation, open space, restricted airspace, and military training routes. The plan is meant to encourage the community to develop guidelines for future planning and development in coordination with the military installation through the creation of a planning manual. Ongoing coordination with the military installation is recommended to ensure the policies are effectively addressing the installation's concerns.

Legislation and Other Regulations

Texas Local Government Code Chapter 241, Municipal and County Zoning Authority around Airports

Land use can be regulated by a municipality or county within a designated airport hazard area, as permitted by Chapter 241 of the Texas State Local Government Code. The legislation states that it is in the public interest to protect the lives and property of those in the vicinity of airports who may be endangered by airport operations. Airport hazard area zoning regulations are permitted through the legislation. The land uses and height restrictions allowed should be specified as well as the type of structures to be regulated. Airport zoning regulations may require that permits are obtained before a new structure is constructed; an existing structure is substantially changed or repaired; a new use is established; or an existing use is substantially changed. A Joint Airport Zoning Board, consisting of a chairman and two members appointed by each participating jurisdiction, has the same power as municipalities to adopt, administer, and enforce airport hazard area zoning regulations or airport compatible land use zoning regulations.

Per the legislation, airport zoning regulations may be incorporated into a comprehensive zoning ordinance only if, however, building heights are regulated in the comprehensive zoning ordinance. Before an airport zoning regulation may be adopted, an airport zoning commission must be appointed. An established planning commission or comprehensive zoning commission may be

designated as the airport zoning commission. Among its duties, the commission recommends zone boundaries. The commission's findings are presented at a public hearing and ultimately drafted into a report.

Texas Local Government Code Chapter 42, Extraterritorial Jurisdictions of Municipalities

Chapter 42 of the Texas State Local Government Code, Extraterritorial Jurisdictions (ETJ) of

Municipalities, identifies unincorporated areas contiguous to the corporate boundaries of municipalities in which subdivision development can be regulated. Because the ETJ is outside city boundaries, the municipality has no zoning authority; however, the legislation allows for subdivision regulation to accommodate future growth around the city. Based on the City of San Antonio's current population, the ETJ is defined as the area within five miles of the city limits. According to the legislation, as the city's population increases and land is annexed, the ETJ may likewise grow to meet the needs of future expansion.

While Lackland's main base, Kelly Field and PSA are within the City of San Antonio limits, the West Training Annex falls partially within the ETJ. As described in detail later, this area, particularly to the west along Loop 1604 is particularly vulnerable to future development and the increasing risk of residential incompatibility. Currently, subdivision regulations are in effect in the ETJ, but the City of San Antonio cannot regulate lot size or land use within this area .

House Bill 1852

The State Legislature passed HB 1852 in 2007 to address the authority of counties to regulate incompatible outdoor lighting near military bases. The bill states that on the request of a military base, county officials with jurisdictions immediately adjacent to the base may adopt orders regulating the installation and use of outdoor lighting within five miles of the base. According to the bill, orders must be designed to protect against the use of outdoor lighting that interferes with military activities. The orders may require that a permit be obtained from the county before the installation and use of certain types of outdoor lighting in regulated areas; establish requirements for the shielding of outdoor lighting; and regulate the times during which certain types of outdoor lighting may be used. In addition, orders may prohibit the use of certain outdoor lighting that is incompatible with military training and operations.

Any outdoor lighting installed before the issuance of the order necessary for the operations of electric utilities, gas utilities, surface coal mining and reclamation operations, telecommunications providers, and manufacturing facilities required by Texas Commission on Environmental Quality rule to hold a permit are exempt. Other exemptions are outdoor lighting which illuminates:

- A tract of land used as a single family residence that is located outside the boundaries of a platted subdivision;
- Land maintained for agricultural use;
- An activity that takes place on agricultural land;
- Structures located on agricultural land; and
- A correctional facility operated by or under contract with the Texas Department of Criminal Justice.

Bexar County has used this authority to create lighting orders around Camp Bullis.

House Bill 2919

Passed by the State Legislature in 2009, HB 2919 authorize defense communities to establish and

fund a regional military sustainability commission to regulate development in the area surrounding a military installation. The bill requires the formation of a commission to recommend compatible development standards in the regulated area and to review a proposed project's impact on the military installation's mission and related operations.

The provisions for a regional military sustainability commission apply to a defense community that consists of a county with an unincorporated area located within five miles of the boundary line of a military installation, and a municipality with a population of 1.1 million or more and with extraterritorial jurisdiction located within five miles of the boundary line of a military installation.

House Bill 2919 also amends Local Government Code provisions for those defense communities with a municipality of more than 110,000 located in a county with a population of less than 135,000 that have not adopted airport zoning regulations under the Airport Zoning Act. The bill requires a defense community that proposes to adopt or amend an ordinance, rule, or plan or that receives a development application in an area within eight miles of the boundary line of a defense base, or the military exercise or training activities connected to the base, to seek comments and analysis from the defense base authorities concerning the compatibility of the proposed activity with base operations. The defense community must consider and analyze any comments received from the defense base authorities before making a final determination relating to the proposed policy or the approval of the development permit.

Though the legislature passed HB 2919, the bill has not yet been implemented due to issues related to funding, jurisdictional authority, and advisory authority.

Local Compatibility Initiatives

Port San Antonio Noise Assessment

PSA will undertake a study to develop noise contours based on the forecasted levels of aviation activity and compare the newly created noise contours to previous DoD studies, such as the 2008 AICUZ. The resulting analysis will assess potential impacts on noise sensitive areas due to changes in the aircraft fleet mix and/or the operational levels of port operations. Section 6: Port San Antonio describes forecasted aviation demand at Kelly Field.

City of San Antonio Office of Military Affairs

The Office of Military Affairs (OMA) coordinates and facilitates Base Realignment and Closure (BRAC) implementation within San Antonio. OMA works closely with the Military Transformation Task Force (MTTF) and other community leaders to develop Growth Management Plans to help guide BRAC-related growth in the city. In addition to coordinate the BRAC efforts within the San Antonio community, the OMA links to Federal contracting opportunities on its website and has commissioned a report that describes the economic impact of the U.S. Department of Defense in San Antonio.

The MTTF is a Community-Military Partnering Organization established by the City of San Antonio, Bexar County and the Greater San Antonio Chamber of Commerce whose mission also entails a significant community outreach component. Leveraging the benefits of BRAC, the MTTF shares information across jurisdictions and disciplines to help strengthen the local economy and revitalize neighborhoods. A number of committees exist around topical areas of concern. The Mission Readiness and Sustainability committee has been established to monitor JLUS and implementation initiatives at Lackland (as well as Camp Bullis and Randolph Air Force Base). Additional MTTF committees focus more broadly on:

- Business and Workforce Development (to assist the community with DoD business and workforce opportunities);

- Healthcare and Medical Partnerships (to monitor healthcare issues affecting the community and military and assist in the coordination of military medical training); and
- Legislative and Public Affairs (to keep the community apprised of BRAC and military related issues and assist the community with legislative issues that advance the work of the MTTF).

Overview of Community Plans and Regulatory Policy

The following local plans affect the policy, land use and regulatory environment around Lackland AFB.

City of San Antonio

United Southwest Communities Plan

The United Southwest Communities Plan includes a future land use framework for the area around Lackland AFB. The plan includes a commercial node at the intersection of Loop 410 and Pearsall Road, with a community commercial area where Pearsall Road meets the Lackland AFB boundary. Mostly residential development is projected for the area west of Loop 410. Industrial uses are expected to expand along Quintana Road and the Union Pacific Railroad. The City South Future Land Use Plan projects the land south of Loop 410 to develop in an "Urban Living" land use, containing a mix of residential and commercial.

City South

The City of San Antonio created the City South Management Authority to foster economic opportunity, job creation, and capital investment in the sector south of downtown. The City South Community Plan consists of approximately 73 square miles, bounded by Loop 410 on the north, IH 37 on the east, the Medina River on the south, and IH 35 on the west. The intent of the plan is to support sustainable development and neighborhood-based housing and community amenities. The plan calls for a denser, mixed use pattern of regional, village, and neighborhood centers along its northern edge, transitioning to rural living and buffered industrial areas to the south. Protected lands include sensitive areas with critical agricultural lands, ecological features, and natural hazards.

Planners and community stakeholders consistently cited City South as a major factor shaping growth patterns in the southern sector of the metropolitan area just south of the Lackland JLUS study area. Major uses that anchor the master planned community include a 2,600-acre Toyota auto manufacturing plant with an annual production capacity of 200,000 trucks and 2,000 jobs and the new Texas A&M-San Antonio campus.

Kelly/South San Pueblo Community Plan

Kelly/South San Pueblo Community Plan includes a future land map for the area east of Kelly Field Annex. The plan projects commercial uses to expand along the major corridors: Southwest Military Highway, Somerset Road, New Laredo Highway, and Quintana Road. Infill development is proposed in the existing residential areas, with industrial uses anticipated for the areas adjacent to the Kelly Field Annex runways.

City of San Antonio Master Plan

The Master Plan for the City of San Antonio is a functional framework to guide development that supports:

- Equal opportunity to all its citizens and equity in the distribution of benefits.
- Safe, dynamic and sustainable neighborhoods

- A vibrant economic climate
- Balanced and responsible urban design, planning and development, and responsible protection of the city's historical, cultural, and natural resources
- An open, accessible, responsive, and fiscally responsible government

The plan includes a series of vision statements, goals, and policies for neighborhoods, urban design, natural resources, economic development, growth management, and community services. The plan specifically calls out a goal to provide economic opportunities in targeted areas, particularly within Loop 410 and the southern sector.

The city promotes ongoing growth management through its sector planning process. The upcoming Southwest Sector Plan could be an opportunity to identify quality growth patterns that minimize the risk of future land use incompatibility in the Lackland JLUS study area.

City of San Antonio Zoning

San Antonio's Unified Development Code designates overlay zones to help protect the security of both users of the city's airports (both commercial and military) and those living in the vicinity of the airports.

Airport Hazard Overlay District (AHOD)

The AHOD was created to help prevent hazards associated with airports in San Antonio, including Kelly Field Annex as well as the San Antonio International Airport, Stinson Municipal Airport, and Randolph Air Force Base. The overlay district regulates development standards, height restrictions, and use restrictions.

Development Standards

- The overlay district stipulates the following development standards:
- Within any airport hazard area which is within, or extends into, the controlled area of these regulations, no material change in the use of land and no structure or tree can be erected, altered, planted or otherwise established at a height greater than two hundred (200) feet above the ground or above a 100 to 1 (100:1) slope from the nearest point of the nearest runway of any airport unless a permit therefore shall have been applied for and granted.
- A permit is required before any nonconforming structure, natural growth or land use in the airport hazard area may be altered, repaired, rebuilt, replaced, replanted or relocated. Any existing non-conforming uses abandoned or more than 80% torn down or deteriorated will not be granted another permit to re-establish the same use unless it is fully compliant with the restrictions set forth in the overlay district.
- Variances may be granted if it is shown that the regulations cause unnecessary hardship or practical difficulty.
- Anyone proposing construction, alteration, or tree growth in an airport hazard area must give notice to the Federal Aviation Administration if construction will be over 200 feet and, for military airports in particular, if the construction or alteration is of greater height than an imaginary surface extending upward and outward at a slope of 50 to 1 (50:1) for a horizontal distance of 10,000 feet from the nearest point of the runway.
- The owner of any nonconforming structure or natural growth is required, or any permit or variance granted may require, to install, operate and maintain, at his own expense, markers and lights on the structure to indicate to flyers the presence of an airport hazard.

- Imaginary planes or surfaces in the airspace above airport hazard areas specify height restrictions for structures and growth. These surfaces (primary, approach, transitional, horizontal, and conical) are illustrated on the airport hazards zoning maps. Additional regulations for the airfield are set forth in Section 77.28 of Par 77 of the Federal Aviation Regulations.

Height Restrictions

- The height restrictions for structures and growths in the airport hazard areas are specified by means of imaginary planes or surfaces in the airspace above the airport hazard areas. Key regulations are as follows:
- With few exceptions, no structure or natural growth can be erected, altered, increased in height, allowed to grow or maintained in an airport hazard area in excess of the height of the imaginary surface above the structure or natural growth.
- At the least, construction of structures, or growth of trees up to 20 feet above the surface of the land, is allowed.
- Whenever Federal Aviation Agency criteria for "Objects Affecting Navigable Airspace" (FAA Regulation Part 77) are more restrictive than the City of San Antonio code, the FAA regulations apply.

Use Restrictions

Use restrictions include those that:

- Create electrical or visual interference with any electronic facility or instrumentation, such as radio transmitters and receivers, radar installations, landing and navigational aids, and weather instruments when they are used in connection with the operation of aircraft.
- Make it difficult for flyers to distinguish between airport lights and others.
- Result in glare in the eyes of flyers using the airport.
- Impair visibility in the vicinity of the airport.
- Cause physical objects to penetrate the airspace above the imaginary surfaces, such as kites, balloons, projectiles, rockets, model aircraft, derricks and cranes, unless a special temporary permit be obtained from the authorities in charge of the affected airport.
- Establish or alter privately owned flying fields, strips or heliports, unless found not to be objectionable after a special aeronautical study by federal aviation authorities.
- Create bird strike hazards.
- Otherwise endanger the landing, taking-off, or maneuvering of aircraft.

<u>Special Imaginary Surface Regulations for Kelly Field</u>

Special regulations exist for the Air Force Bases in San Antonio. For Kelly Field, particular airport imaginary surfaces have been created to establish the limit above which any projection of a structure, natural growth, or object constitutes an airport hazard. The special imaginary surfaces are:

- Primary Surfaces of the runways (for Runway 15-22, the Primary Surface extends horizontally 2,000 feet beyond the actual runway; for Runway 14-32, 1,500 feet).

- Approach-departure Surfaces, which begin two hundred (200) feet beyond the primary surface and thereafter extends outward a distance of fifty thousand (50,000) feet, at which point it is sixteen thousand (16,000) feet wide. It extends upward at a slope of 50 to 1 (50:1) until it reaches an elevation five hundred (500) feet above the established airport elevation, then it continues horizontally to its outer end.
- Transitional Surfaces; however the horizontal portion of the approach-departure surface does not apply for military airports.
- Inner Horizontal Surfaces, where the horizontal plane is 150 feet above the established airport elevation. Its outer edge is determined by scribing an arc with a radius of 7,500 feet above a point on the centerline at the end of all runways and interconnecting these arcs with tangents.
- Conical Surfaces, which extend outward and upward from the outer edge of the inner horizontal surface at a slope of 20 to 1 (20:1) for a horizontal distance of 7,000 feet to a height of 500 feet above the established airport elevation.
- Outer Horizontal Surfaces, horizontal planes which extend from the outer edge of the conical surface a distance of 30,000 feet at a height 500 feet above the established airport elevation.

It is finally noted that Airport Zoning Maps, which accompany the code, supersede all prior airport zoning maps. The imaginary surface boundaries are shown on these maps by aerial contours.

Military Airport Overlay Zones (MAOZ)

San Antonio's Unified Development Code designates military airport overlay zones to the land areas below military airport take off and final approach paths. The military airport overlay zones are designed as overlays to the regular zoning districts, with limitations on the height, density, and intensity of development in these areas. The zoning overlay classifications include MAOZ-1 for the area within APZ I and MAOZ-2 for the area within APZ II.

For both districts, substances which may impair aircraft operations (such as steam, dust, or smoke) cannot be released into the air, nor can uses produce light emissions that may interfere with pilot vision. Uses that produce electrical emissions which could interfere with aircraft communications systems or navigational equipment or that attract birds or waterfowl are prohibited. Flammable solid materials can only be stored or manufactured within completely enclosed buildings having noncombustible exterior walls and protected throughout by an automatic fire extinguishing system. The storage or manufacture of explosive materials and of materials or products which decompose by detonation is prohibited. Similar restrictions exist for flammable and combustible liquids. The height of structures within the military airport overlay zones is guided by height requirements of the underlying zoning district as well as the provisions of the joint airport zoning regulations in the code.

Site plans must be submitted to the director of planning and development services for approval by the planning commission prior to the issuance of building permits for all uses except single-family residences. A notice shall be placed on all final plats for properties located within MAOZ -1 and MAOZ-2 that the property, either partially or wholly, lies within a military airport overlay zone and is subject to noise and/or aircraft accident potential which may be objectionable.

MAOZ-1

MAOZ-1 is defined as the area that extends approximately 5,000 feet in length and 3,000 feet in width beyond the clear zone. Single-family residences are not permitted in this zone. Residences existing before the MAOZ was put into place can be repaired and enlarged, however, provided that the number of dwelling units is not increased and all other applicable requirements of the district are met. Likewise, vacant platted lots which are zoned for single-family residential uses can be used for

single-family residences provided they conform to applicable requirements.

Generally, light industrial and heavy industrial uses are permitted. Some manufacturing is restricted if operations emit substances which would impair the visibility of aircraft, such as steam, dust, or smoke. Any uses which interfere with aircraft communication systems or navigational equipment through electrical disturbances are likewise restricted. Retail and offices are permitted; however building sizes are restricted to a maximum of 3,000 square feet. Recreational uses such as tennis courts and golf courses are permitted, however with no clubhouses. Cemeteries are permitted without chapels. Restaurants are permitted with a maximum building size of 3,000 square feet.

MAOZ-2

MAOZ-2 extends approximately 7,000 feet in length and 3,000 feet in width beyond district 1. Single family residences are permitted in this zone. Unplatted properties zoned for single-family residential may be platted and used for single-residences in the MAOZ-2, providing they conform to all other applicable requirements of this district. Such lots may not exceed a density of one (1) single-family residence per acre.

As with MAOZ-1, some manufacturing is restricted if operations emit substances that would impair the visibility of aircraft and/or interferes with aircraft communication systems. Retail and office uses are permitted; however building sizes for each are limited to a maximum of 250,000 square feet. As in MAOZ-1, cemeteries are permitted without chapels, and restaurants are permitted with a maximum building size of 3,000 square feet.

Other Overlay Districts

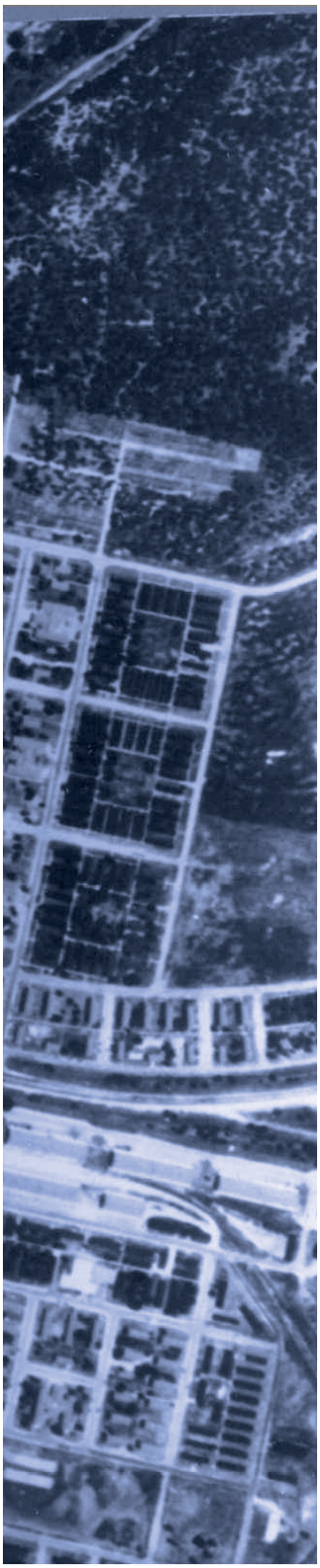
The City of San Antonio has created a Military Lighting Overlay District to regulate the installation and use of outdoor lighting within five (5) miles of the boundaries of military bases, camps and installations. The ordinance denotes appropriate lighting fixtures and illumination levels for new residential and commercial uses, as well as for outdoor signs and street lighting. The city has now amended its the Unified Development Code to incorporate a Military Sound Attenuation Overlay Zoning District (MSAO) . The district establishes construction-related standards to reduce the level of external noise heard within the interior of noise sensitive structures.

Bexar County Land Use Authority

Currently, Bexar County does not have the authority to zone and, therefore, cannot regulate permissible land uses and densities for its unincorporated areas. The absence of land use regulatory tools leaves those areas in the western portion of the JLUS study area and in proximity to the West Training Annex vulnerable to the increased risk of future development incompatibility. As noted earlier, this area, however, falls within the ETJ of the City of San Antonio and, thus, is subject to subdivision regulations and is part of the sector planning process.

The county has previously sought land use control authority from the state and may continue to explore a basic prohibitive authority that prohibits certain types of development in clearly designated areas such as a noise zone.

37th Training Wing Headquarters



Growth is occurring in and around Lackland AFB due to ongoing BRAC actions and other Air Force organizational decisions. Several factors, such as the availability of infrastructure capacity, transportation improvements, and planned or proposed development activity indicate a likely increase in development pressure in the study area.

Growth Trends and Regional Infrastructure

Growth Trends

Population Projections

Lackland AFB is within the San Antonio Metropolitan Statistical Area (MSA), comprised of Atascosa, Bandera, Bexar, Comal, Guadalupe, Kendall, Medina, and Wilson Counties. In 2005, the MSA had an estimated 2005 population of 1.75 million people. As of 2010, the San Antonio MSA is estimated to have a population of over 1.9 million, reflecting significant growth in and around San Antonio. As shown in Table 6.1, the MSA's population increased by approximately 20 percent in the previous decade.

The San Antonio – Bexar County Metropolitan Planning Organization (MPO) conducted demographic forecasting as part of its MOBILITY 2035 adopted in December of 2009. Model results, shown in Table 6.2 indicate strong continued growth in the planning area over the next two and a half decades.

The MPO modeling process assigns population and employment to a series of traffic serial zones (TSZ) in five year increments. The most current forecasting effort reflects a scenario that promotes transit

oriented development and infill development in contrast to the more conventional pattern of dispersed, lower density growth.

As shown in the graphic below, the number of regional households in 2035 will remain highest in the northern arc of the San Antonio metropolitan area, including a significant number of residential areas north of Lackland AFB. Modeling indicates more modest household growth south of Highway 90 and west of the base.

Table 6.1 - Population Growth for the City of San Antonio, Bexar County, and the San Antonio MSA, 1990 - 2010

Area	1990	2000	2005	2010
San Antonio	935,933	1,144,646	1,256,509	-
Bexar County	1,185,394	1,392,931	1,518,370	1,542,294
San Antonio MSA	1,324,749	1,592,383	1,754,949	1,911,238

Source: US Census Bureau, 2000; Kelly Field Annex at Lackland Air Force Base AICUZ Study (2008)

Table 6.2 - Population Projections for the MPO, 2010 - 2035						
	2010	2015	2020	2025	2030	2035
Population (in millions)	1.67	1.79	1.91	2.02	2.13	2.22
Households (in millions)	0.59	0.64	0.68	0.73	0.78	0.83
Employment (in millions)	0.86	0.93	0.98	1.05	1.11	1.20

Development Activity in Study Area

San Antonio and its surrounding communities have experienced significant population growth in recent years, particularly north of the downtown. However, several trends and new projects indicate the probability of increasing development pressure around Lackland AFB. Strong residential subdivision activity has occurred in the northwest portion of the study area, primarily north of Highway 90. The availability of infrastructure capacity, along with stakeholder feedback suggest the likely continued spread of residential growth south of Highway 90 and in proximity to the West Training Annex. The recently built Toyota manufacturing plant, which is part of the broader City South Sector Plan initiative, is also likely to spur more housing and jobs in the southwest, reinforcing this sector as a probable path for future outward growth from the urban core.

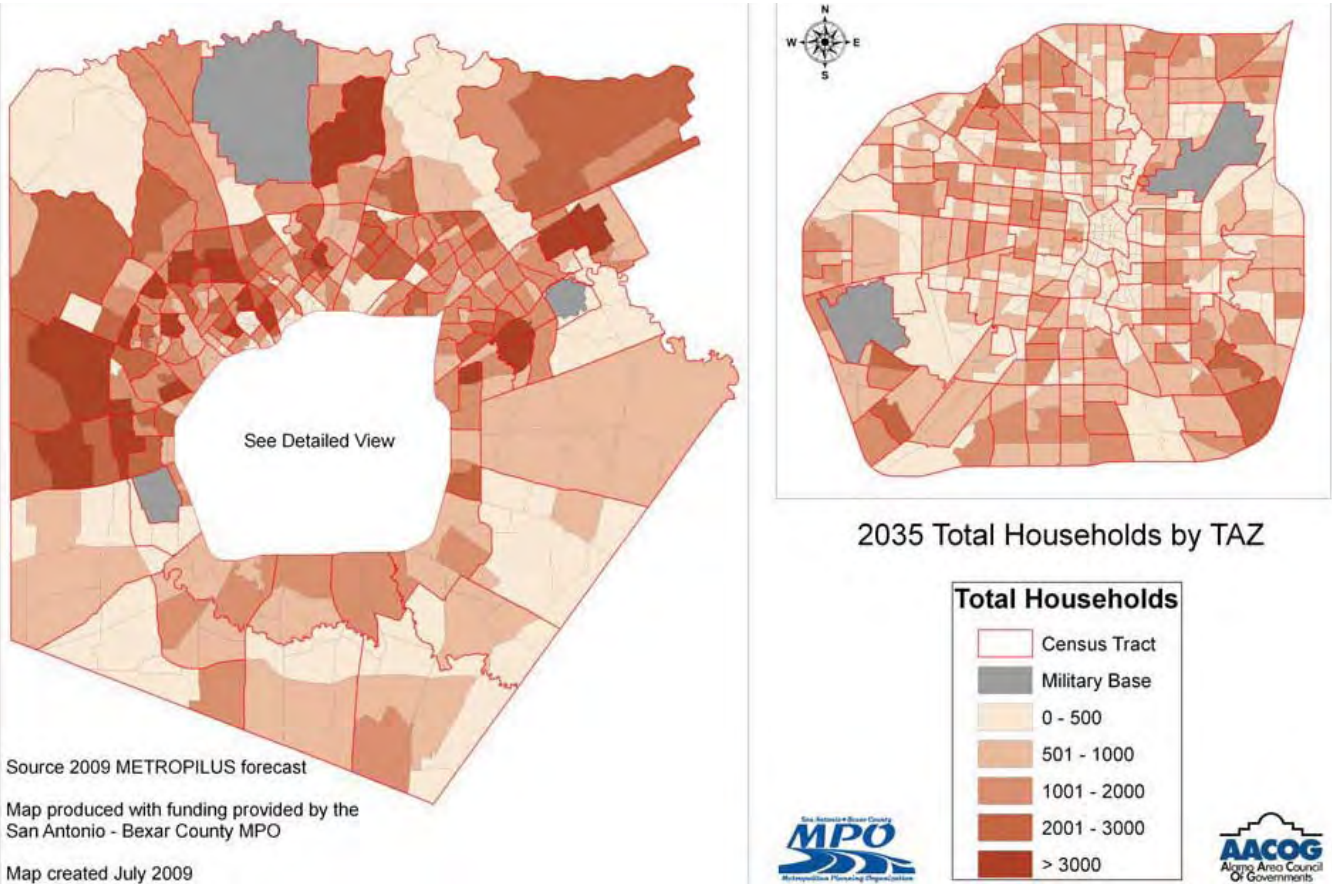


Figure 6.1: 2035 Total Households by TAZ for the San Antonio - Bexar County MPO

Regional Infrastructure

The location and funding of public works projects can exert strong influences over land use trends and demands. Wastewater treatment capacity and roadways in particular tend to induce growth at intensities that typically exceed un-serviced surrounding areas. When exercised judiciously, such capital improvement projects can guide growth and thus act as a powerful tool for promoting compatible land use around military installations.

Water and Wastewater

Based on feedback from stakeholders and service providers, the study area does not have any significant infrastructure or site constraints that would curb future growth. The San Antonio Water System (SAWS) provides wastewater treatment services to the communities surrounding Lackland AFB. The Bexar Metropolitan Water District (BexarMet) delivers water to two service areas near the JLUS boundary—the Northwest and Southside. Extensions of existing water and sewer systems typically result from direct action by new subdivision developers, as well as improvements to off-site facilities by the provider.

The Land Use Assumptions and Capital Improvements Plan for BexarMet (2009) indicates that areas outside of Loop 1604 in the Northwest have the highest potential for growth. The plan notes that the lack of major water system infrastructure beyond Loop 1604 will require the construction of new production and transmission systems to support this anticipated growth.

Figure 4.2 shows Utility Service Agreements (USA) around Lackland AFB. USAs depict sites for which developers have requested water/wastewater extensions to serve proposed developments and, thus, are strong indicators of emerging growth patterns. The number of USAs in place around the installation, particularly to the west of the Training Annex, suggest that the area will experience development pressure as the real estate market rebounds. CPS Energy, the provider of electric and natural gas retail for the study area, indicated that sufficient energy infrastructure is in place to accommodate significant growth around Lackland AFB.

Transportation Infrastructure

- Major corridors into and around the base include:
- SW Military Drive, which bisects the main base of Lackland;
- Loop 410, which runs north-south between the main base and Training Annex;
- US 90, running east and west just north of the installation; and

Loop 1604, which runs north –south just west of the Training Annex, and could anchor future development activity in an area subject to significant compatibility issues

According to the MPO's MOBILITY 2035 Plan, significant roadway projects expected to add capacity near the JLUS study area include:

- Loop 1604 from FM 1535 (NW Military Highway) to Military Drive West (expected to be operational by 2025)
- Loop 1604 from Military Drive West to US 90 (expected to be operational by 2035)

Increased roadway capacity is one of the site improvements that is likeliest to induce denser development patterns.

Ongoing construction and development on Lackland AFB and PSA also necessitate smaller-scale access improvements around the installation and airfield. The port and the City of San Antonio, for example, secured federal stimulus funding in 2009 that enables construction of the 36th Street extension project. An enhanced 36th Street will facilitate development of 150 acres of land adjacent to Kelly Field for aerospace and logistics uses. Completion of the road project is scheduled for mid 2012.

Stakeholders and members of the public consistently cited vehicular congestion as an issue that degraded mobility around the base. The City of San Antonio will undertake a transportation study around the Lackland AFB as part of a larger effort to manage growth impacts resulting from BRAC actions.

Base year (2005) and estimated future year (2015) traffic count data from the San Antonio Metropolitan Planning organization indicate significant projected increases in vehicular volume on key roadways and interstates in the study area, including Highway 90, SW Military Drive and Loop 410.

Regional Environmental Resources

The presence of sensitive environmental resources in proximity to military installations can serve as the basis for the conservation-related strategies described earlier and can leverage available DoD funds to accomplish encroachment reduction through open space and habitat preservation.

Bexar County is at the overlap of three biological provinces:

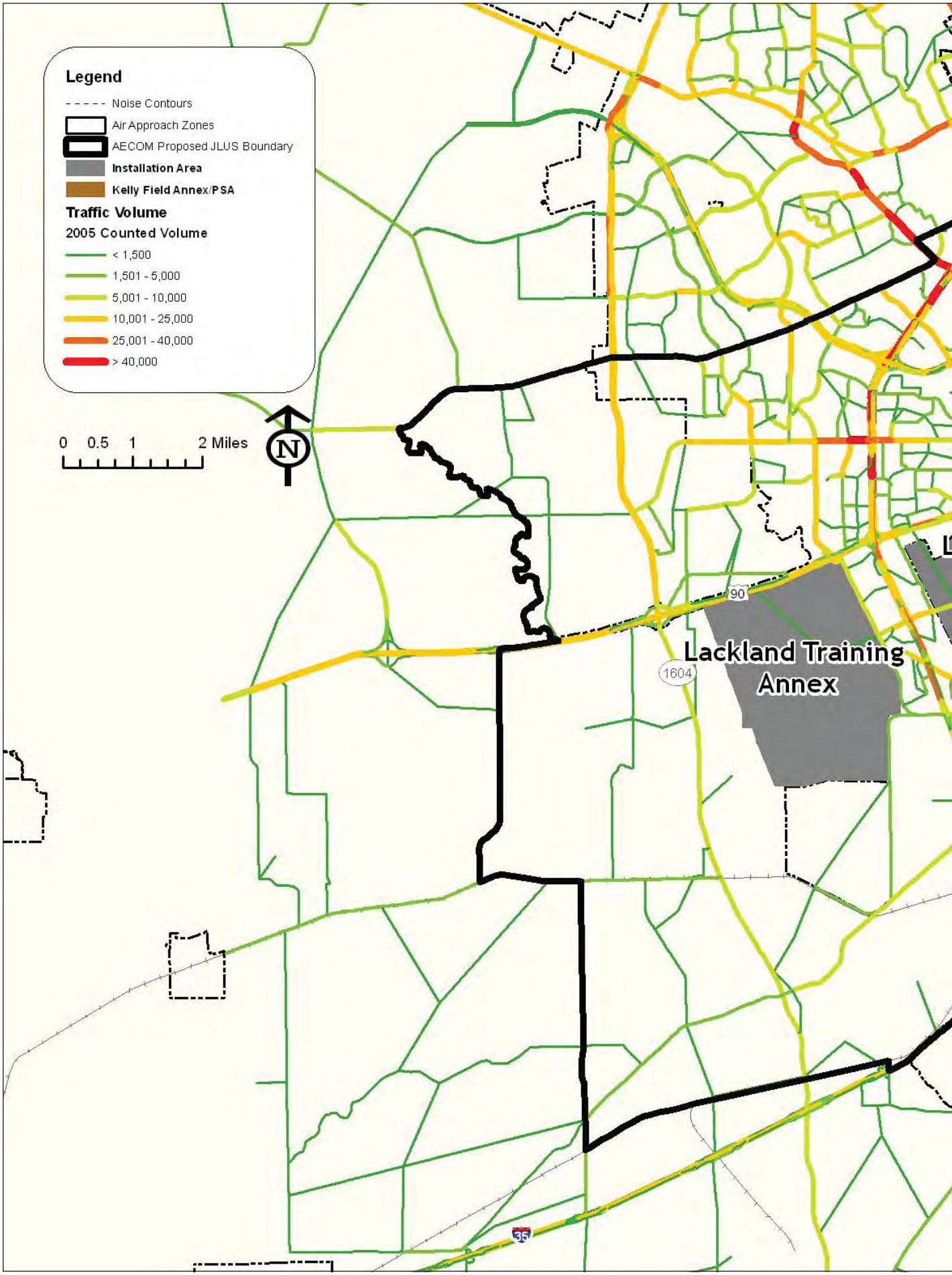
- Blackland Prairie, a belt of prairie that reaches its southern end in eastern Bexar County
- Edward's Plateau, which is a heavily eroded limestone uplift in Central Texas
- Tamaulipan Biotic Province

The area features a gently rolling landscape with fertile soils of dark clay and sandy loam covered with grasses. A variety of oaks, pecan, hackberry, elm and mesquite exist along streams. The dry land vegetation consists of small trees, shrubs, cactus, forbes and grasses. Soils support brush lands that provide a dense cover for a variety of wildlife and are commonly used for cattle raising.

The Edwards-Trinity Aquifer underlies Bexar County and yields fresh to slightly saline water. The hilltops of the Edwards Plateau support dense woodlands and open savannas of oak and Ash juniper that are home to thirteen federally threatened and endangered terrestrial species, including two birds, the golden-cheeked warbler (GCW, Dendroica chrysoparia) and black-capped vireo (BCV, Vireo atricapilla), and nine karst invertebrates, including the beetles Rhadine exilis, Rhadine infernalis and Batrisodes venyivi, the harvestman Texella cokendolpheri, and the spiders Neoleptoneta microps, Cicurina baronia, Cicurina madla, Cicurina venii and Cicurina vespera. Springs from the Edwards Plateau feed streams in Bexar, Bandera, Kendall, Kerr, and Medina Counties that flow overland to recharge the Edwards Aquifer. The aquifer then generally flows north to discharge at large springs that support eight listed endangered aquatic species.

Bexar County received a planning assistance grant in 2009 from the Texas Parks and Wildlife to create the Southern Edwards Plateau Habitat Conservation Plan (HCP). Bexar County and the City of San Antonio is the only remaining major urban center of Texas with more than 10 endangered species that has not yet developed a regional HCP. The plan will recommend conservation strategies, conduct additional biological assessments, and comply with National Environmental Protection Act documentation for all identified protection actions. Plan participants include the City of San Antonio, Helotes, Gray Forest, Fair Oaks, Bexar County, Bandera County, Comal County, Kendall County, Kerr County, Medina County, and Camp Bullis.

The HCP is focusing its initial conservation efforts on areas of interest for covered terrestrial species in Bexar County and Golden-cheeked Warbler Recovery Unit 5. Based on HCP mapping generated, the study area surrounding Lackland AFB does not contain higher-quality habitat for the golden-cheeked warbler or recognized karst zones. These more sensitive environmental resources lie north of the base. The HCP planning areas could, however, expand to include the adjacent areas, including the counties of Medina, Bandera, Kerr, Kendall, and Blanco.


Legend
Noise Contours
Air Approach Zones
AECOM Proposed JLUS Boundary
Installation Area
Kelly Field Annex/PSA
Traffic Volume
2005 Counted Volume
< 1,500
1,501 - 5,000
5,001 - 10,000
10,001 - 25,000
25,001 - 40,000
> 40,000
0 0.5 1 2 Miles
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1604
Lackland Training Annex
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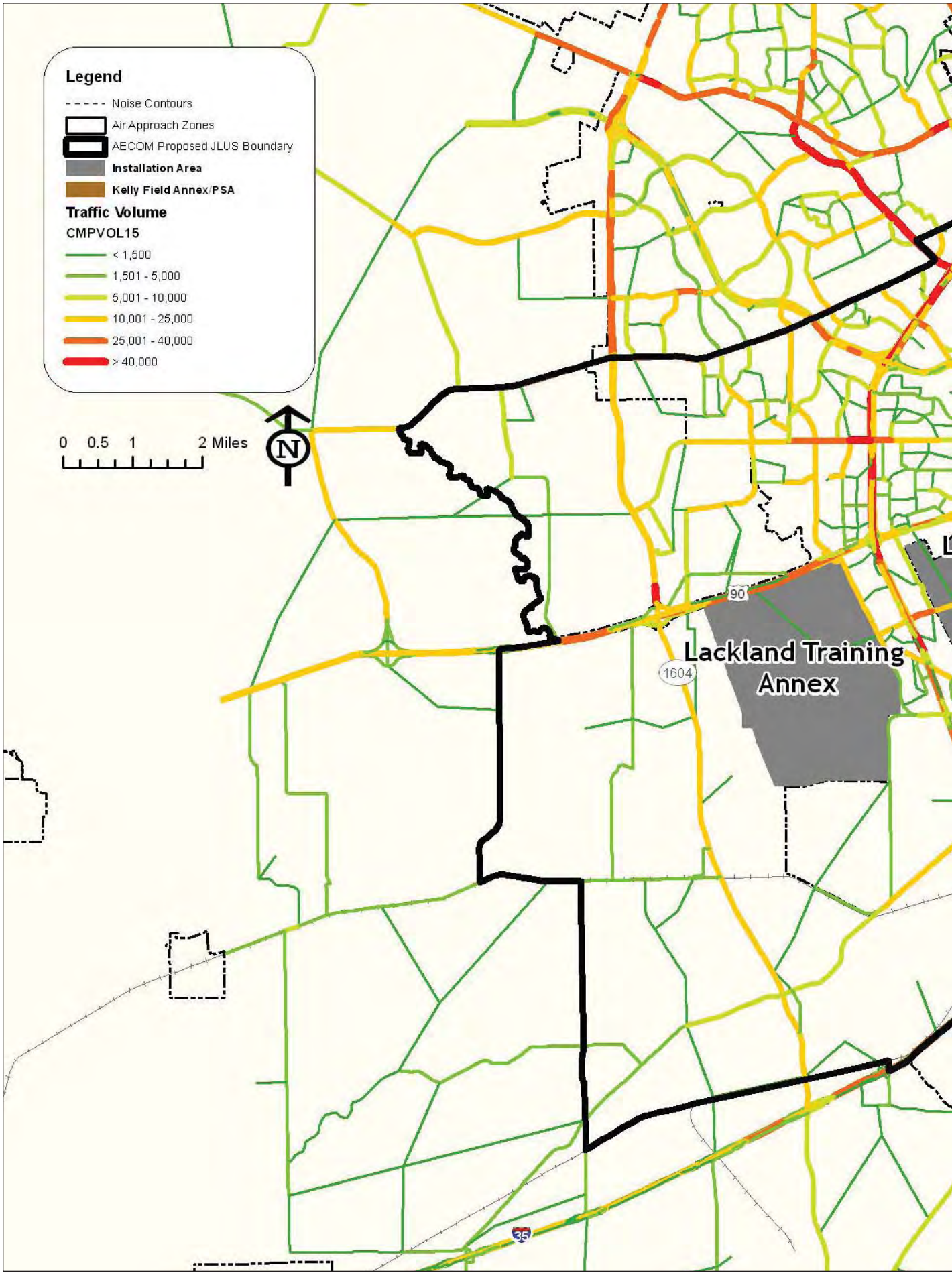
Legend
Noise Contours
Air Approach Zones
AECOM Proposed JLUS Boundary
Installation Area
Kelly Field Annex/PSA
Traffic Volume
CMPVOL15
< 1,500
1,501 - 5,000
5,001 - 10,000
10,001 - 25,000
25,001 - 40,000
> 40,000
0 0.5 1 2 Miles
N
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1604
Lackland Training Annex
35

When compatible, land uses can exist next to each other without causing interference with military training exercises or exposing people to undue safety risks or nuisance.

Land Use Compatibility Guidelines

Definition of Compatibility

In this JLUS context, aviation and training activities raise compatibility issues when next to the following nearby land uses:

- Noise sensitive uses, such as housing, schools, medical facilities or places of worship;
- Uses that tend to concentrate people (certain higher residential densities, schools, churches, hospitals);
- Uses that can interfere with safe air navigation, such as tall structures, or activities that throw off excessive lighting, smoke or dust and may impair vision, particularly during nighttime training exercises; and/or
- Uses which attract birds and other wildlife that can interfere with safe aviation.

According to the 2008 Kelly Field Annex AICUZ study, over 31,000 annual aircraft operations took place from October 2005 to September 2006, exposing areas beyond the airfield to aviation-related noise and air safety issues. People living near the West Training Annex may also periodically experience noise from the small arms training range, dog training or explosive ordnance blasts on the facility.

Air Force Compatibility Guidance

For purposes of evaluating compatibility in designated noise and air safety zones, the JLUS draws guidance from several sources, including The Federal Interagency Committee on Urban Noise Guidelines for Considering Noise in Land Use Planning (FICUN 1980), the Land Use Compatibility Guidelines for APZs (DoD 1977) and The Air Force Handbook 32-7084, 1 March 1999, AICUZ Program Manager's Guide. Table 7.1 shows the compatibility of various land uses in noise or risk-exposed areas. Uses depicted in yellow are conditionally compatible and may warrant further protection measures, such as indoor noise attenuation or real estate disclosure, to reduce conflicts. Activities shown in red are unacceptable within the given zones, indicating that a prohibition of the use is the most appropriate regulatory action. Land uses shown in green are deemed to be a safe fit with nearby noise-generating training activities and aviation operations. These guidelines are only advisory in nature. Only local governments have the authority to determine permissible land uses on private lands around a military installation.

Compatibility protects quality of life in the community and enables safe and effective mission performance.

Table 7.1 - Land Use Compatibility Guidance

Land Use		Accident Potential Zones			Noise Zones (dB)			
		Clear Zone	APZ 1	APZ 2	65-69	70-74	75-79	80+
10	Residential							
11	Household units							
11.11	Single units; detached	N	N	Y[1]	A[11]	B[11]	N	N
11.12	Single units; semi detached	N	N	N	A[11]	B[11]	N	N
11.13	Single units; attached row	N	N	N	A[11]	B[11]	N	N
11.21	Two units; side-by-side	N	N	N	A[11]	B[11]	N	N
11.22	Two units; stacked	N	N	N	A[11]	B[11]	N	N
11.31	Apartments; walk up	N	N	N	A[11]	B[11]	N	N
11.32	Apartments; elevator	N	N	N	A[11]	B[11]	N	N
12	Group quarters	N	N	N	A[11]	B[11]	N	N
13	Residential hotels	N	N	N	A[11]	B[11]	N	N
14	Mobile home parks or courts	N	N	N	N	N	N	N
15	Transient lodgings	N	N	N	A[11]	B[11]	C[11]	N
16	Other residential	N	N	N[1]	A11	B[11]	N	N
20	Manufacturing							
21	Food & kindred products; manufacturing	N	N[2]	Y	Y	Y[12]	Y[13]	Y[14]
22	Textile mill products; manufacturing	N	N[2]	Y	Y	Y[12]	Y[13]	Y[14]
23	Apparel and other finished products made from fabrics, leather, and similar materials; manufacturing	N	N	N[2]	Y	Y[12]	Y[13]	Y[14]
24	Lumber and wood products (except furniture); manufacturing	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]
25	Furniture and fixtures; manufacturing	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]
26	Paper & allied products; manufacturing	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]
27	Printing, publishing, and allied industries	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]

Source: 1999 AICUZ Project Manager's Handbook, Attachment 4 and Nov 2008 JLUS

Table 7.1 - Land Use Compatibility Guidance

28	Chemicals and allied products; manufacturing	N	N	N[2]	Y	Y[12]	Y[13]	Y[14]
29	Petroleum refining and related industries	N	N	N	Y	Y[12]	Y[13]	Y[14]
30	Manufacturing							
31	Rubber and miscellaneous plastic products	N	N[2]	N[2]	Y	Y[12]	Y[13]	Y[14]
32	Stone, clay and glass products	N	N[2]	Y	Y	Y[12]	Y[13]	Y[14]
33	Primary metal industries	N	N[2]	Y	Y	Y[12]	Y[13]	Y[14]
34	Fabricated metal products	N	N[2]	Y	Y	Y[12]	Y[13]	Y[14]
35	Professional and scientific instruments	N	N	N[2]	Y	A	B	N
39	Miscellaneous manufacturing	N	Y[2]	Y[2]	Y	Y[12]	Y[13]	Y[14]
40	Transportation, communications and utilities							
41	Railroad, rapid rail transit and street railroad transportation	N[3]	Y[4]	Y	Y	Y[12]	Y[13]	Y[14]
42	Motor vehicle transportation	N[3]	Y	Y	Y	Y[12]	Y[13]	Y[14]
43	Aircraft transportation	N[3]	Y[4]	Y	Y	Y[12]	Y[13]	Y[14]
44	Marine craft transportation	N[3]	Y[4]	Y	Y	Y[12]	Y[13]	Y[14]
45	Highway & street right-way	N[3]	Y	Y	Y	Y[12]	Y[13]	Y[14]
46	Automobile parking	N[3]	Y[4]	Y	Y	Y[12]	Y[13]	Y[14]
47	Communications	N[3]	Y[4]	Y	Y	A[15]	B[15]	N
48	Utilities	N[3]	Y[4]	Y	Y	Y	Y[12]	Y[13]
49	Other transportation communications and utilities	N[3]	Y[4]	Y	Y	A[15]	B[15]	N
50	Trade							
51	Wholesale trade	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]
52	Retail trade-building materials, hardware and farm equipment	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]

Source: 1999 AICUZ Project Manager's Handbook, Attachment 4 and Nov 2008 JLUS

Table 7.1 - Land Use Compatibility Guidance								
53	Retail trade- general merchandise	N	N[2]	Y[2]	Y	A	B	N
54	Retail trade- food	N	N[2]	Y[2]	Y	A	B	N
55	Retail trade- automotive, marine craft, aircraft and accessories	N	Y[2]	Y[2]	Y	A	B	N
56	Retail trade- apparel and accessories	N	N[2]	Y[2]	Y	A	B	N
57	Retail trade- furniture, home furnishings and equipment	N	N[2]	Y[2]	Y	A	B	N
58	Retail trade- eating and drinking establishments	N	N	N[2]	Y	A	B	N
59	Other retail trade	N	N[2]	Y[2]	Y	A	B	N
60	Services							
61	Finance, insurance and real estate services	N	N	Y[6]	Y	A	B	N
62	Personal services	N	N	Y[6]	Y	A	B	N
62.4	Cemeteries	N	Y7	Y7	Y	Y[12]	Y[13]	Y[14, 21]
63	Business services	N	Y[8]	Y[8]	Y	A	B	N
64	Repair services	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]
65	Professional services	N	N	Y[6]	Y	A	B	N
65.1	Hospitals, nursing homes	N	N	N	A*	B*	N	N
65.1	Other medical facilities	N	N	N	Y	A	B	N
66	Contract construction services	N	Y[6]	Y	Y	A	B	N
67	Governmental services	N	N	Y[6]	Y*	A*	B*	N
68	Educational services	N	N	N	A*	B*	N	N
69	Miscellaneous services	N	N[2]	Y[2]	Y	A	B	N
70	Cultural, entertainment and recreational							
71	Cultural activities (including churches)	N	N	N[2]	A*	B*	N	N
71.2	Nature exhibits	N	Y[2]	Y	Y*	N	N	N
72	Public assembly	N	N	N	Y	N	N	N

Source: 1999 AICUZ Project Manager's Handbook, Attachment 4 and Nov 2008 JLUS

Table 7.1 - Land Use Compatibility Guidance

72.1	Auditoriums, concert halls	N	N	N	A	B	N	N
72.11	Outdoor music shell, amphitheaters	N	N	N	N	N	N	N
72.2	Outdoor sport arenas, spectator sports	N	N	N	Y[17]	Y[17]	N	N
73	Amusements	N	N	Y[8]	Y	Y	N	N
74	Recreational activities (including golf courses, riding stables, water recreation)	N	Y[8, 9, 10]	Y	Y*	A*	B*	N
75	Resorts and group camps	N	N	N	Y*	Y*	N	N
76	Parks	N	Y[8]	Y[8]	Y*	Y*	N	N
79	Other cultural, entertainment and recreation	N	Y[9]	Y[9]	Y*	Y*	N	N
80	Resources production and extraction							
81	Agriculture (except livestock)	Y[16]	Y	Y	Y[18]	Y[19]	Y[20]	Y[20, 21]
81.5--81.7	Livestock farming and animal breeding	N	Y	Y	Y[18]	Y[19]	Y[20]	Y[20, 21]
82	Agricultural related activities	N	Y[5]	Y	Y[18]	Y[19]	Y[20]	N
83	Forestry activities and related services	N[5]	Y	Y	Y[18]	Y[19]	Y[20]	Y[20, 21]
84	Fishing activities and related services	N[5]	Y[5]	Y	Y	Y	Y	Y
85	Mining activities and related services	N	Y[5]	Y	Y	Y	Y	Y
89	Other resources production and extraction	N	Y[5]	Y	Y	Y	Y	Y

Source: 1999 AICUZ Project Manager's Handbook, Attachment 4 and Nov 2008 JLUS

LSLUCM - Standard Land Use Coding Manual, U.S. Department of Transportation.

Y - (Yes) - Land use and related structures are compatible without restriction.

N - (No) - Land use and related structures are not compatible and should be prohibited.

Yx - (yes with restrictions) - Land use and related structures generally compatible; see notes indicated by the superscript.

Nx - (no with exceptions) - See notes indicated by the superscript.

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

A, B, or C - Land use and related structures generally compatible; measures to achieve NLR for A(DNL/CNEL 65-69),

B(DNL/CNEL 70-74), C(DNL/CNEL 75-79), need to be incorporated into the design and construction of structures.

A*, B*, and C* - Land use generally compatible with NLR. However, measures to achieve an overall noise level reduction do not necessarily solve noise difficulties and additional evaluation is warranted. See appropriate footnotes.

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

1. Suggested maximum density of 1-2 dwelling units per acre, possibly increased under a Planned Unit Development

(PUD) where maximum lot coverage is less than 20 percent.

1*. maximum density of 1 dwelling units per acre. 2 dwelling units per acre permitted with a maximum building coverage of 20% per acre

2. Within each land use category, uses exist where further deliberating by local authorities may be needed due to the variation of densities in people and structures. Shopping malls and shopping centers are considered incompatible use in any accident potential zone (CZ, APZ I, or APZ II).

3. The placing of structures, buildings, or above-ground utility lines in the clear zone is subject to severe restrictions. In a majority of the clear zones, these items are prohibited. See AFI 32-7060 (formerly AFR 19-9) and AFJM 32-8008 (formerly AFM 86-14) for specific guidance.

4. No passenger terminals and no major above-ground transmission lines in APZ I.

5. Factors to be considered: labor intensity, structural coverage, explosive characteristics, and air pollution.

6. Low-intensity office uses only. Meeting places, auditoriums, etc., are not recommended.

7. Excludes chapels.

8. Facilities must be low intensity.

9. Clubhouse not recommended.

10. Areas for gatherings of people are not recommended.

A. Although local conditions may require residential use, it is discouraged in DNL/CNEL 65-69 dB and strongly discouraged in DNL/CNEL 70-74 dB. The absence of viable alternative development options should be determined and an evaluation indicating a demonstrated community need for residential use would not be met if development were prohibited in these zones should be conducted prior to approvals.

B. Where the community determines the residential uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) for DNL/CNEL 65-69 dB and DNL/CNEL 70-74 dB should be incorporated into building codes and considered in individual approvals

C. NLR criteria will not eliminate outdoor noise problems. However, building location and site planning, and design and use of berms (a mound or bank of earth, used especially as a barrier or to provide insulation) and barriers can help mitigate outdoor exposure, particularly from near ground level sources. Measures that reduce outdoor noise should be used whenever practical in preference to measures which only protect interior spaces.

D. Require noise attenuation standards to achieve NRL of at least 25 dB within Noise Contour 65-69 on all new residential construction. OR consider limiting to a maximum density of 1 dwelling unit per acre or 2 dwelling units per acre with a maximum building coverage of 20% per acre (the maximum portion of an acre which may be covered by all enclosed buildings or structures; intended to limit overall density)

E. Require noise attenuation standards to achieve NRL of at least 30 dB within Noise Contour 70-74 on all new residential construction. OR consider prohibiting all new residential development

12. Measures to achieve the same NLR as required for facilities in DNL/CNEL 65-69 dB range must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

13. Measures to achieve the same NLR as required for facilities in DNL/CNEL 70-74 dB range must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

14. Measures to achieve the same NLR as required for facilities in DNL/CNEL 75-79 dB range must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

15. If noise sensitive, use indicated NLR; if not, the use is compatible.

16. No buildings.

17. Land use is compatible provided special sound reinforcement systems are installed.

18. Residential buildings require the same NLR as required for facilities in DNL/CNEL 65-69 dB range.

19. Residential buildings require the same NLR as required for facilities in DNL/CNEL 70-74 dB range.

20. Residential buildings are not permitted.

21. Land use is not recommended. If the community decides the use is necessary, hearing protection devices should be worn by personnel

Existing and Future Compatibility Assessment

Assessment Methodology

To assess the consistency of existing and future land uses in the study area with compatibility guidance, the planning team first created a series of spatial areas that reflect operational impacts, such as noise, air safety, and physical security around the installation boundary. These areas—Military Influence Areas (MIA) and Areas of Concern (AOC)—are shown in Figure 7.1 and are described below:

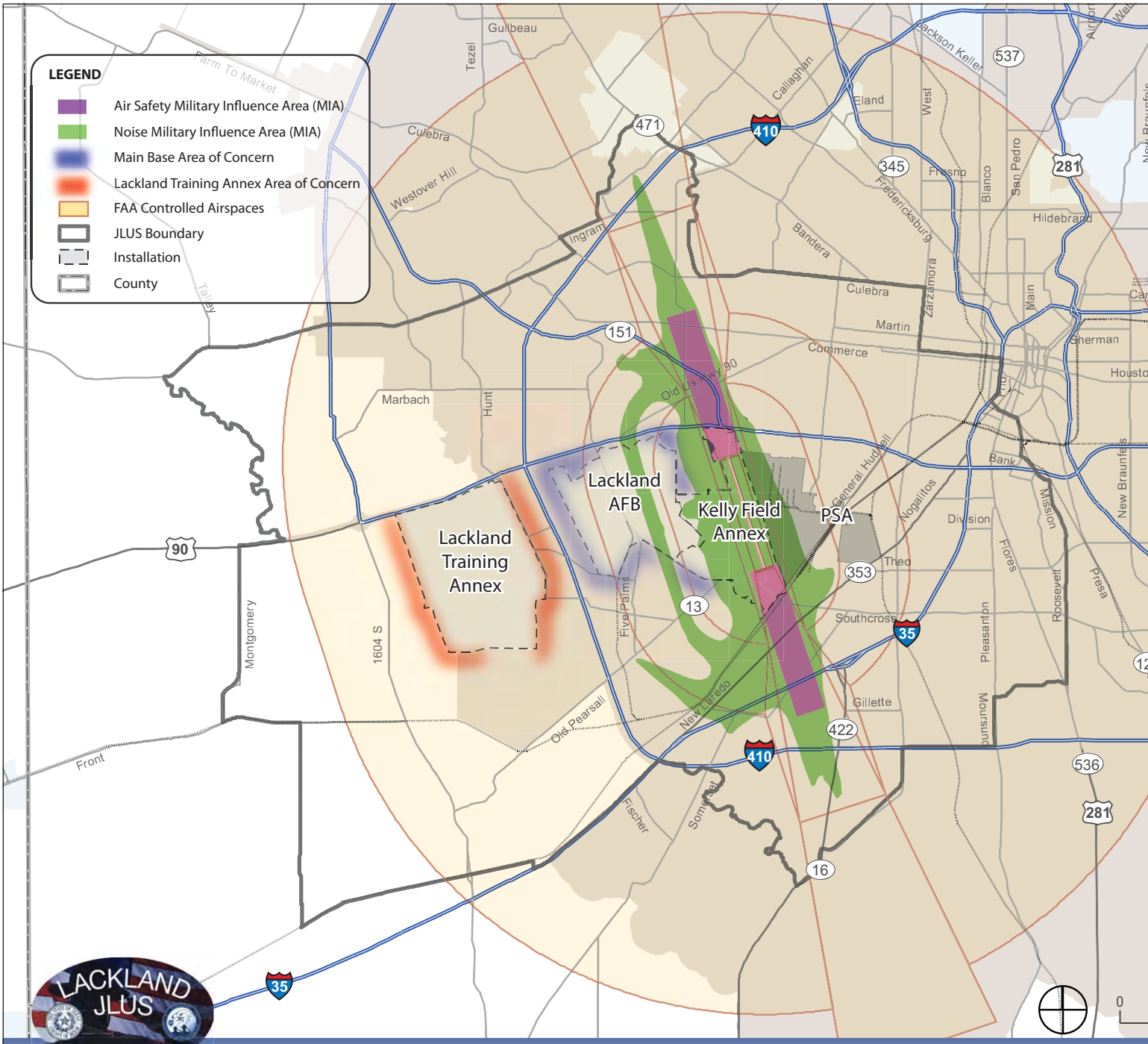
Air Safety Military Influence Area – The Clear Zones and Accident Potential Zones, which based on historical analysis, represent a statistically higher risk of an aircraft accident

Noise Military Influence Area – Areas of higher average aircraft noise exposure based on computer modeling that incorporates the frequency and type of aircraft operations

Main Base Area of Concern – a 1,500 to 3,000-foot conceptual buffer around the perimeter of Lackland's main base intended to encompass property with direct adjacency and to reflect areas of potential security vulnerability

Lackland Training Annex Area of Concern – a 1,500 to 3,000-foot conceptual buffer around the perimeter of Lackland's west training annex intended to encompass property with direct adjacency and to reflect areas subject to noise and outdoor lighting interference

The analysis then overlaid the boundaries of the MIAs and AOCs atop existing land use and future



JLUS Study Area MIAs and Areas of Concern

land use mapping data. Land uses that are potentially incompatible with aviation and training impacts are typically residential, commercial, and public/institutional, due either to the noise sensitivity of the use or the tendency of the activity to concentrate people in a compact area. The compatibility of commercial and institutional uses within accident potential zones is dependent on the intensity of activities. To highlight compatibility issues, the planning team color-coded those parcels whose uses are inconsistent with the guidance described earlier, as shown on Figures 7.2 through 7.9.

Buffer 1- Coincidence with Accident Potential Zones (APZs)

Parcels that fall within Buffer 1 are color-coded to correspond with the most restrictive APZ that intersects the parcel boundaries.

Buffer 2 - Coincidence with Noise Zones

Parcels that fall within Buffer 2 are coded with the decibel level of the most severe noise zone that intersects the parcel boundaries.

Buffer 3 and Buffer 4 - Adjacent to Lackland AFB (Subareas 3 and 4)

These parcels fall within 1,500 feet of the perimeter of the main base or Training Annex.

Existing Land Use Findings

The majority of the land surrounding the base consists of single family residential land uses. Commercial uses are found primarily along arterials (i.e. Loop 410, I-35, Highway 151, SW Military Drive, Castroville Road, Culebra Road). Industrial uses around the base include the Southwest Foundation for Biomedical Research and the Southwest Research Institute, northwest of Kelly Field, as well as Port San Antonio. Public uses around the base include schools to the north and south, as well as hospitals and Palo Alto College to the south.

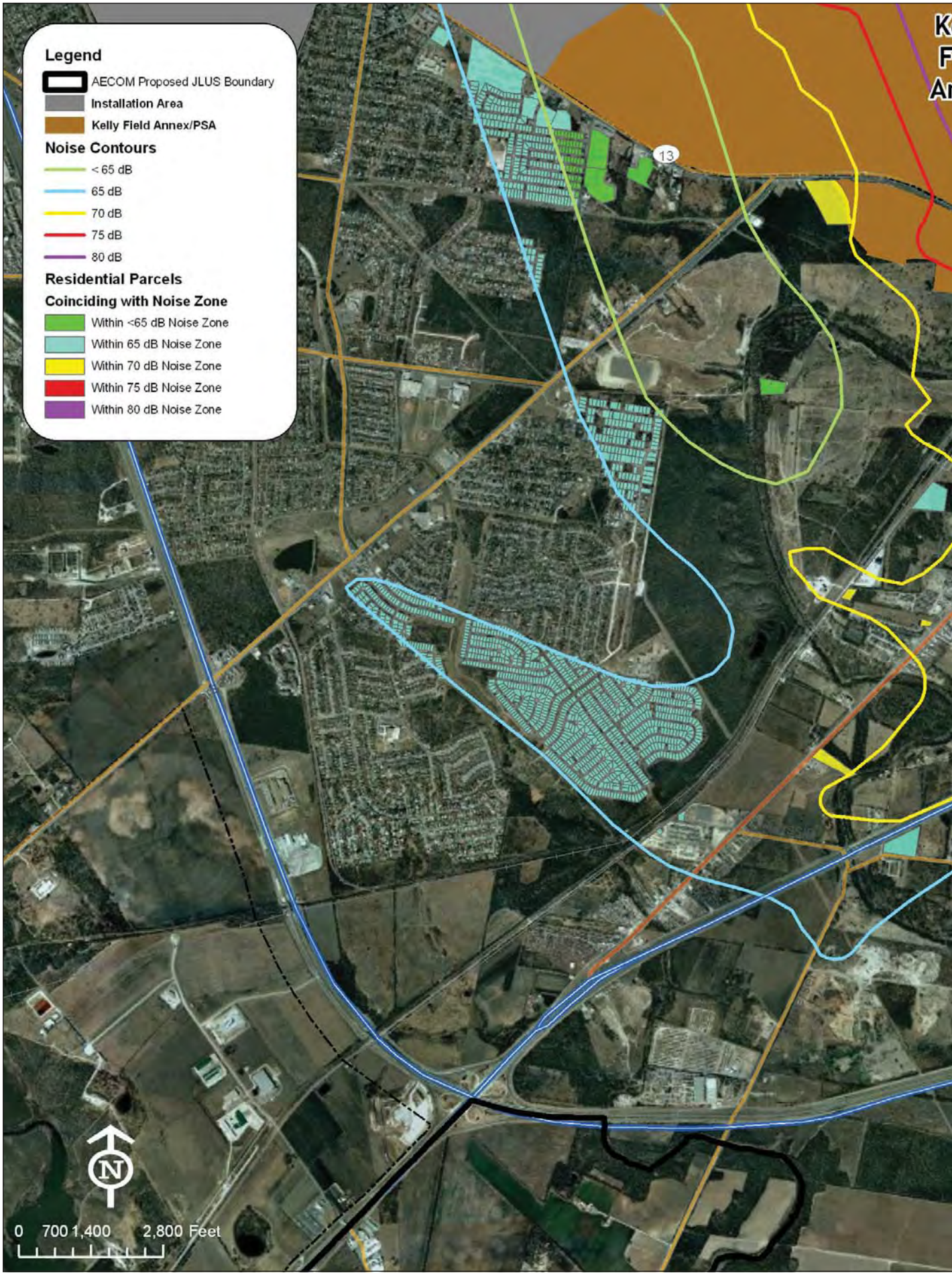
To the north of the base, a mixture of uses exists, notably commercial activity along the Northwest Loop 410, anchored by the Ingram Park Mall. Residential areas to the north of the base are primarily suburban, with limited multi-family housing. Several schools exist in the area, as well as the Nelson Wolff Municipal Stadium. Undeveloped, open lands are to the north of Kelly Field Annex, adjacent to Leon and Zarzamora Creeks.

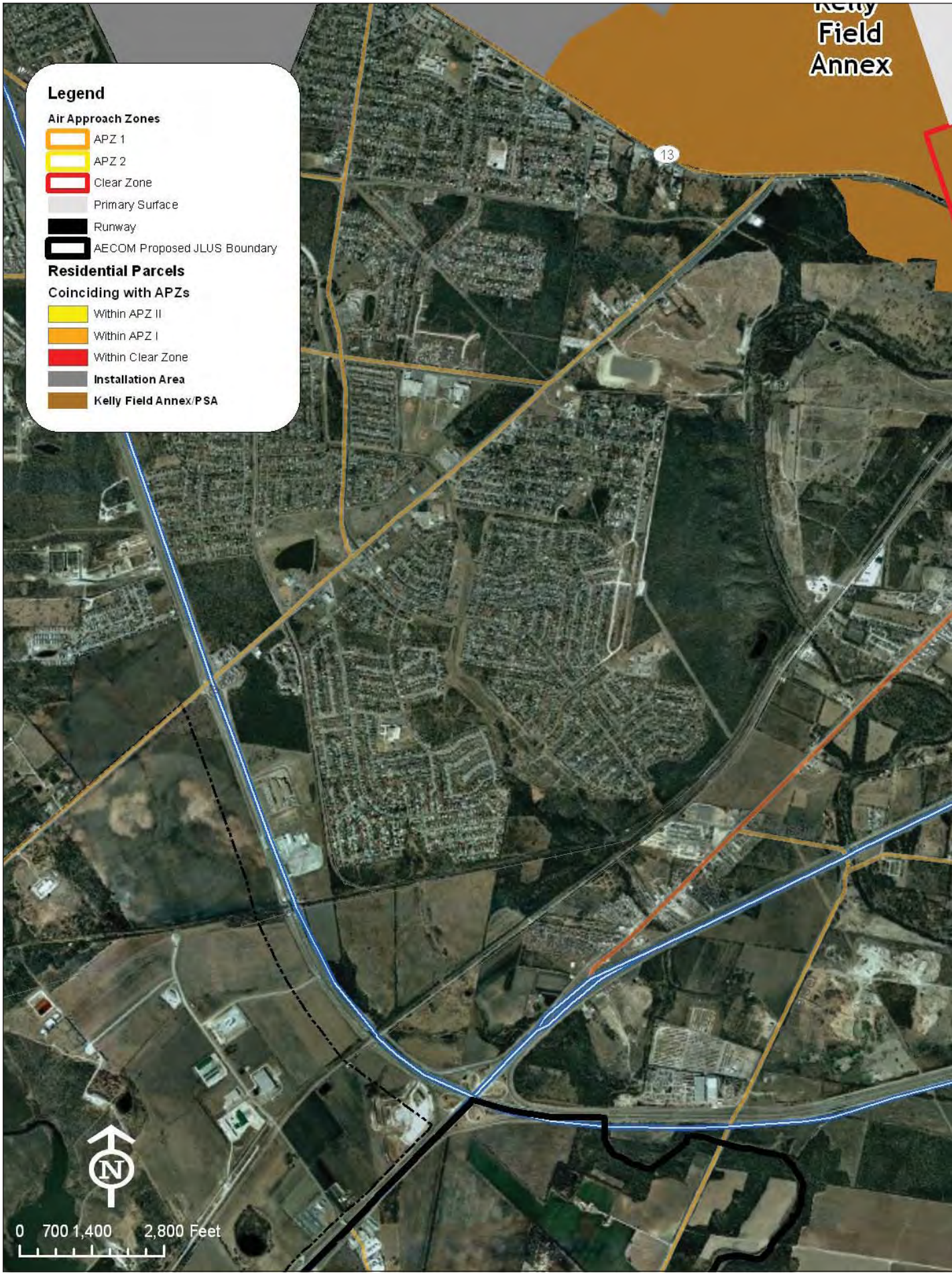
The vast majority of land to the west of Kelly Field Annex is used by the Air Force. To the south, the area is mostly residential, agricultural, or undeveloped. Some commercial and industrial activities exist along roadways to the south, as well as schools and hospitals, along Southwest Loop 410.

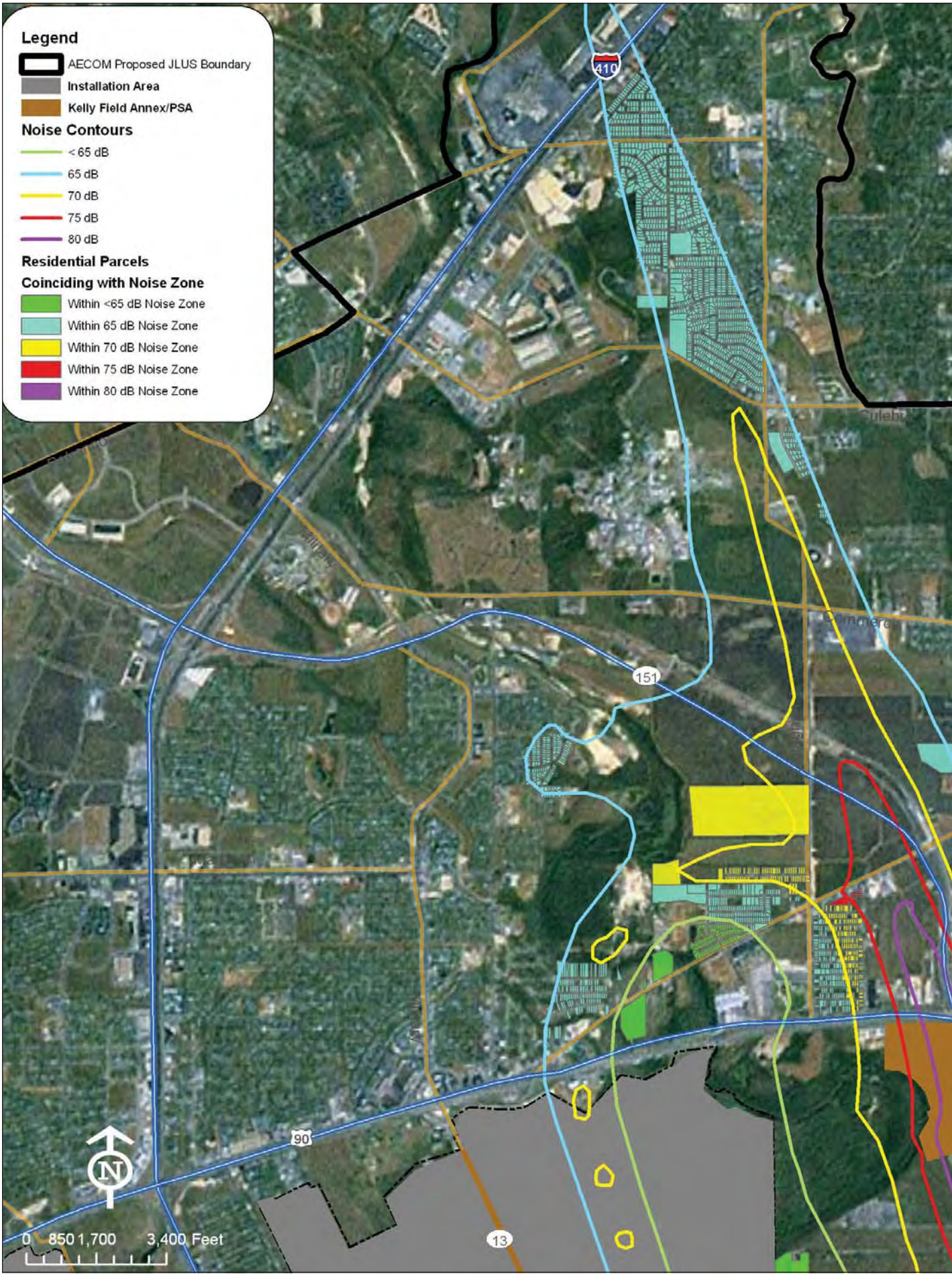
The area east of Kelly Field Annex is a mixture of residential, commercial, industrial, and public land uses. Port San Antonio contains mostly industrial tenants. The East Kelly Rail Port is an industrial area directly east of Port San Antonio. Additional industrial areas exist between Quintana Road and the Union Pacific Railroad.

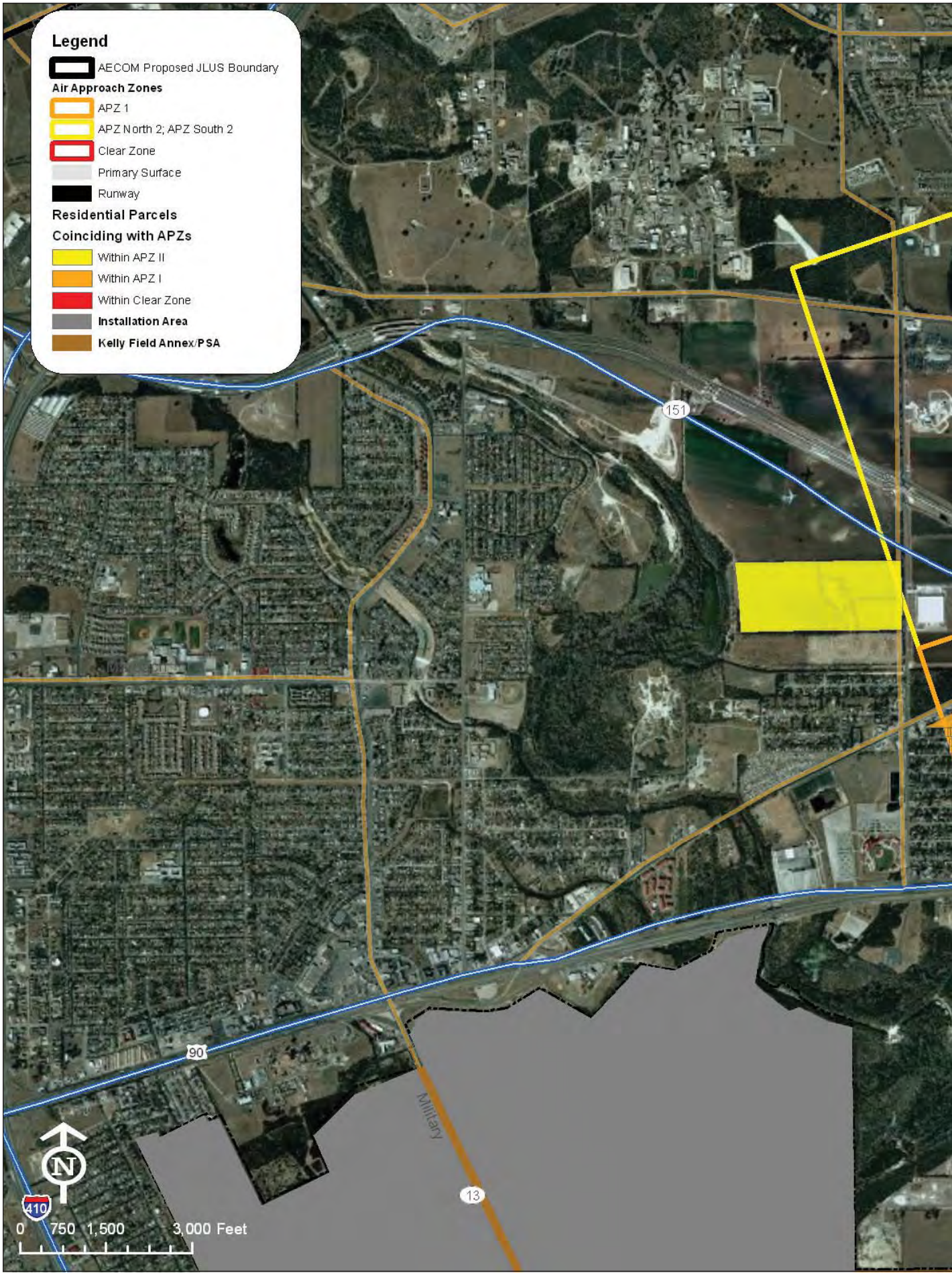
A fairly significant pocket of residential uses just to the south of Loop 410 create compatibility issues within the 65 dB contour north of the airfield. Scattered housing closer to the airfield is also exposed to aviation noise. Housing to the south falls within the 65 dB contour, as well as more severe noise-affected zones. Potential conflicts with air safety issues are also more evident to the south with residential uses that fall inside both APZ 1 and APZ 2. Multiple commercial and public/institutional uses are currently within air safety zones both to the north and south of the airfield. The study area contains housing along the periphery of the main base, as well as the training annex.

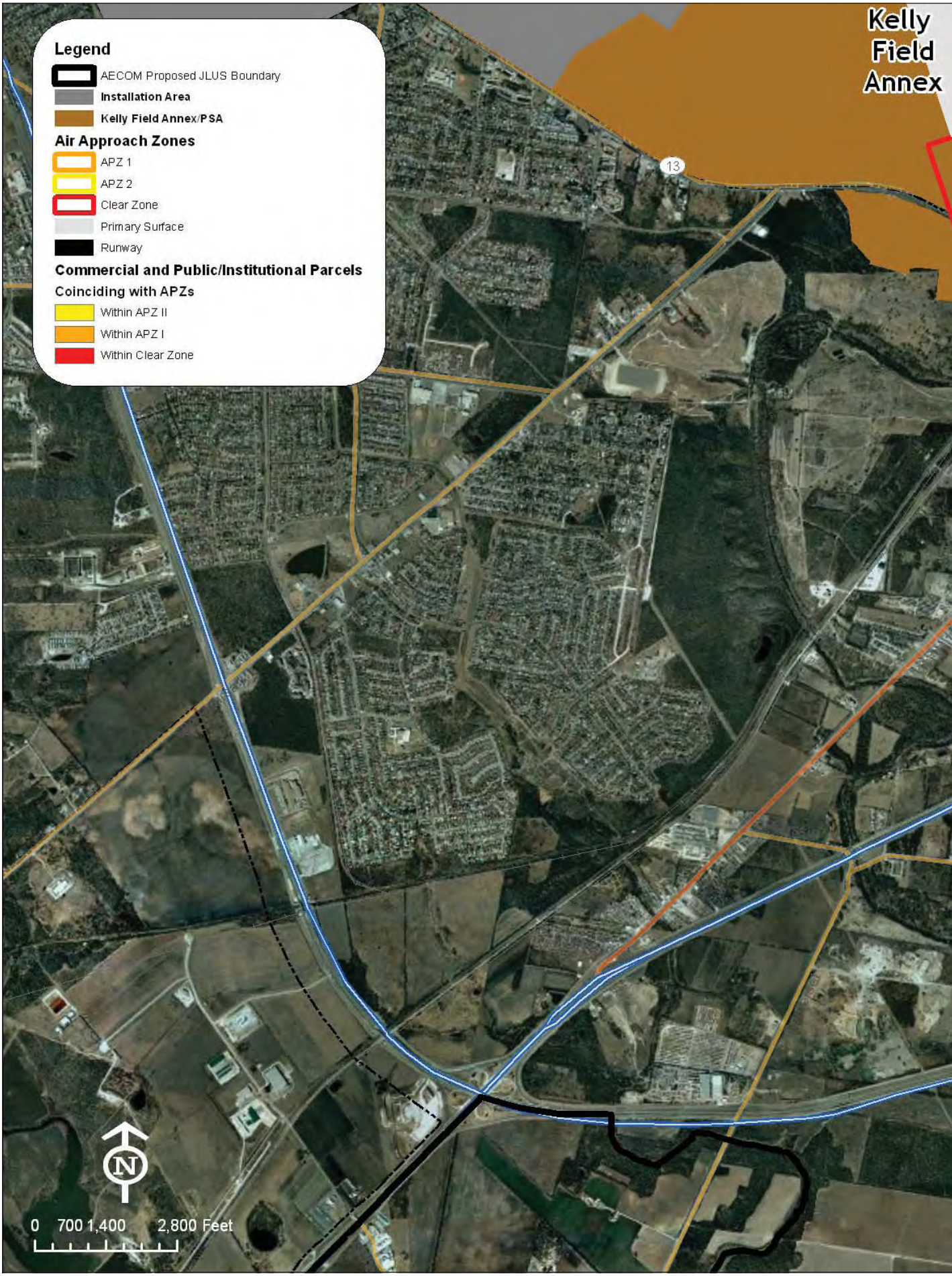
Table 7.2 summarizes existing land uses in noise and air safety zones around the airfield.

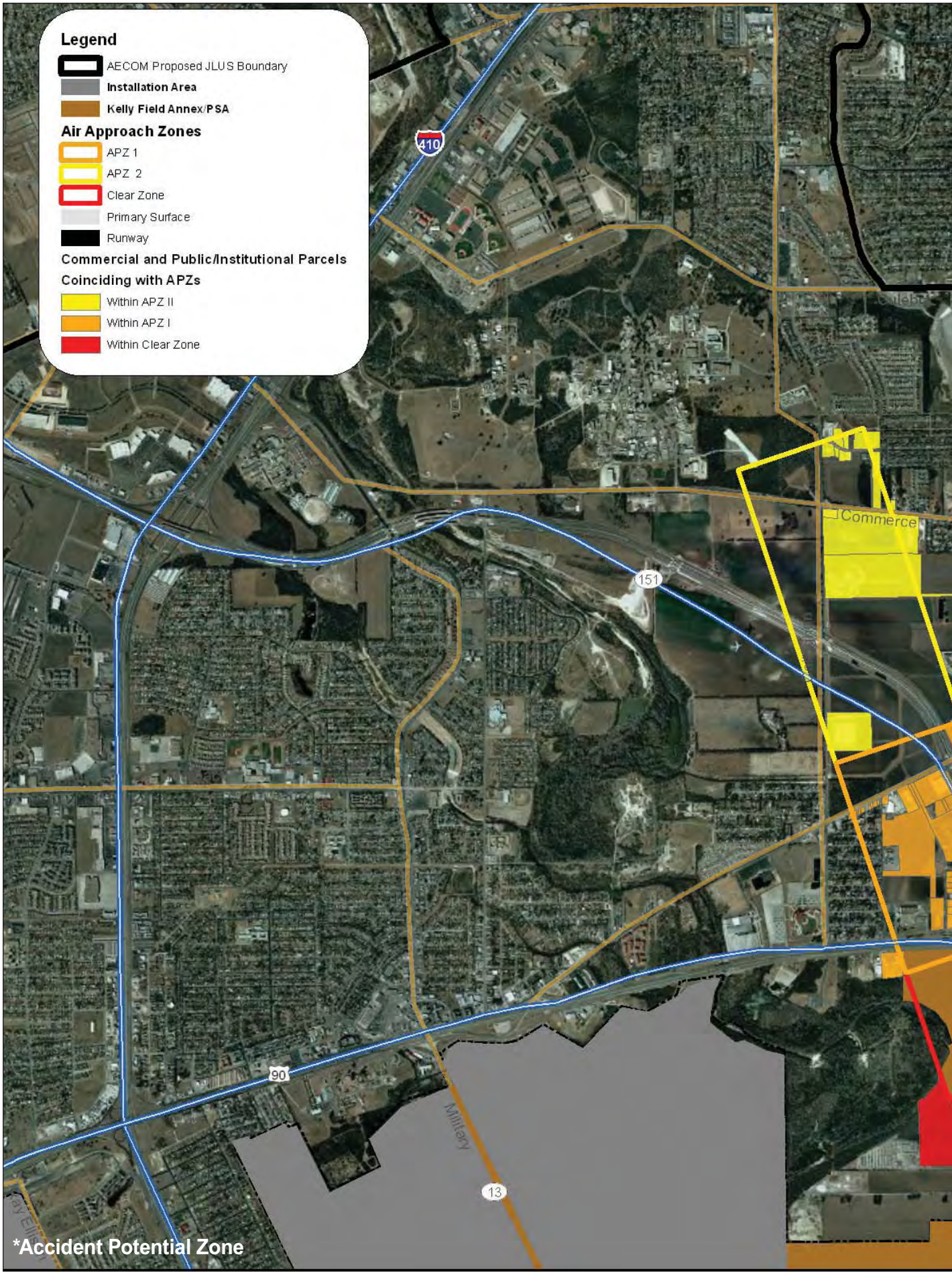

Legend
AECOM Proposed JLUS Boundary
Installation Area
Kelly Field Annex/PSA
Noise Contours
< 65 dB
65 dB
70 dB
75 dB
80 dB
Residential Parcels
Coinciding with Noise Zone
Within <65 dB Noise Zone
Within 65 dB Noise Zone
Within 70 dB Noise Zone
Within 75 dB Noise Zone
Within 80 dB Noise Zone
13
N
0 700 1,400 2,800 Feet


Kelly Field Annex
13
Legend
Air Approach Zones
APZ 1
APZ 2
Clear Zone
Primary Surface
Runway
AECOM Proposed JLUS Boundary
Residential Parcels
Coinciding with APZs
Within APZ II
Within APZ I
Within Clear Zone
Installation Area
Kelly Field Annex/PSA
N
0 700 1,400 2,800 Feet


Legend
AECOM Proposed JLUS Boundary
Installation Area
Kelly Field Annex/PSA
Noise Contours
< 65 dB
65 dB
70 dB
75 dB
80 dB
Residential Parcels
Coinciding with Noise Zone
Within <65 dB Noise Zone
Within 65 dB Noise Zone
Within 70 dB Noise Zone
Within 75 dB Noise Zone
Within 80 dB Noise Zone
410
151
90
13
N
0 850 1,700 3,400 Feet


Legend
AECOM Proposed JLUS Boundary
Air Approach Zones
APZ 1
APZ North 2; APZ South 2
Clear Zone
Primary Surface
Runway
Residential Parcels
Coinciding with APZs
Within APZ II
Within APZ I
Within Clear Zone
Installation Area
Kelly Field Annex/PSA
151
90
Military
13
410
N
0 750 1,500 3,000 Feet


Kelly Field Annex
Legend
AECOM Proposed JLUS Boundary
Installation Area
Kelly Field Annex/PSA
Air Approach Zones
APZ 1
APZ 2
Clear Zone
Primary Surface
Runway
Commercial and Public/Institutional Parcels
Coinciding with APZs
Within APZ II
Within APZ I
Within Clear Zone
13
N
0 700 1,400 2,800 Feet



*Accident Potential Zone

Legend
Residential Parcels Adjacent to Lackland AFB
Installation Area
Kelly Field Annex/PSA
90
Lackland
Main
Base
Lackland
Training
Annex
Kay Ellison
Old Dwyer
Medina Base
410

Legend
Commercial and Public/Institutional Parcels adjacent to AFB
Installation Area
Kelly Field Annex/PSA
90
Lackland
Main
Base
Lackland
Training
Annex
Ray Ellison
Medina Base
Old Dwyer
410

Table 7.2 - Existing Land Use in Areas of Concern (Total Acres)		
	ELU within DNL 65+ dB Noise Exposure Area (acres)	ELU within Kelly Field CZs and APZs* (acres)
Residential	1,901	203
Commercial	328	90
Industrial	1,486	221
Public/Quasi-public	102	46
Recreational/Open/ Agricultural/Low Density	4,704	1,056
Total	8,521	1,616

*Off-installation areas only
Source: Kelly Field Annex at Lackland Air Force Base AICUZ Study (2008)

Future Land Use Findings

Future land use in the study area is predominantly single family residential to the east with commercial along major corridors and large areas of undeveloped or agricultural land to the west. The analysis as shown in Figures 7.10 through 7.14 highlights not only those specific future land uses, such as residential, that could conflict with operational impacts, but those categories that are highly susceptible to change in the future, including current agriculture, undeveloped areas, or lands in the residential inventory. While these areas may remain in low intensity uses that pose minimal risk of incompatibility, they could also anchor additional growth that conflicts with noise or air safety risks.

Noise zones to the north contain tracts of land that are currently part of the residential inventory or are undeveloped, thus indicating the ability of these noise-affected areas to absorb additional residential development. Areas of high noise exposure to the south contain land that is specifically designated for future residential and commercial or public/institutional uses. Areas to the south also include land that is currently undeveloped, agricultural or part of the residential inventory. While Lackland's main base has some directly adjacent undeveloped property, the land to the west of the training annex is far less solidified in its likely future character with large areas of agricultural land that could develop into more intensive uses.

Table 7.3 details the number of acres that are identified as potentially incompatible with noise contours and accident potential zones.

Table 7.3 - Potentially Incompatible Uses in Areas of Concern (Total Acres)				
Potentially Incompatible	Subarea 1	Subarea 2	Subarea 3	Subarea 4
	APZs	Noise Zones	Main Base/ Kelly Field	Training Annex
Commercial, Office, Public/ Institutional	1,934.45	3,467.78	67.14	458.86
Mixed Use	0.00	462.43	0.00	0.00
Residential	252.25	1,917.44	49.65	120.04
Current Land Uses Susceptible to Change				
Agriculture	1,118.54	2,010.00	0.00	1,094.10

Undeveloped	498.45	1,298.90	119.50	0.00
Residential Inventory	0.00	6.90	0.00	0.00

Source: Kelly Field Annex at Lackland Air Force Base AICUZ Study (2008)

Zoning Findings

Since approximately half of the study area is in unincorporated Bexar County and thus does not have zoning, the planning team did not conduct the full spatial analysis using zoning data, but has qualitatively summarized potential zoning issues below.

Zoning in the study area generally reflects existing land use patterns, especially to the north, west, and east of the installation. The vast majority of the residentially zoned land is for low to moderate density single-family residential development. Small areas zoned for multi-family residential are generally concentrated near the major commercial corridors, such as Loop 410 and Highway 90. The undeveloped and agricultural lands in the vicinity are mostly zoned for industrial or commercial uses, with smaller areas zoned for future residential.

Table 7.4 details the number of acres within each zoning district that fall within noise contours and accident potential zones.

Table 7.4 - Existing Zoning in Areas of Concern (Total Acres)

	Zoning within DNL 65+ dB Noise Exposure Area (acres)	Zoning within Kelly Field CZs and APZs* (acres)
Residential	2,883	184
Commercial	1,346	248
Industrial	2,417	1,184
Public/Quasi-public	0	0
Rec./Open/Ag./Low Density	0	0
Urban Development	266	0
Total	6,912	1,616

Source: Kelly Field Annex at Lackland Air Force Base AICUZ Study (2008)

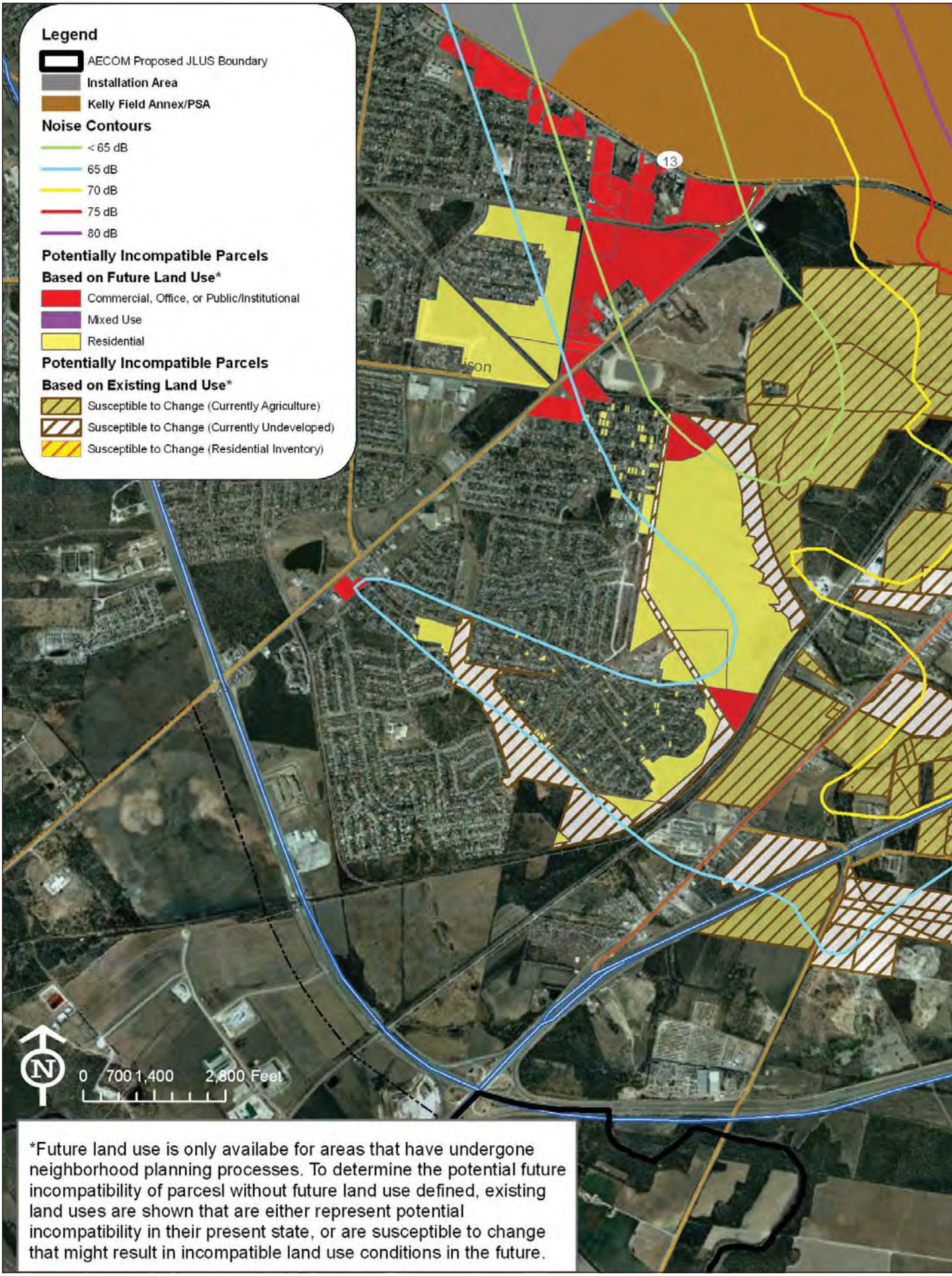
Areas of Potential Incompatibility

Based on aerial and spatial analysis and stakeholder feedback, the planning team has identified the following specific areas of existing or potential incompatibility around Lackland AFB. Subsequent recommendations for increased communication and land use regulation specifically target these areas. The findings also clearly indicate a need to develop recommendations that address the following major issues:

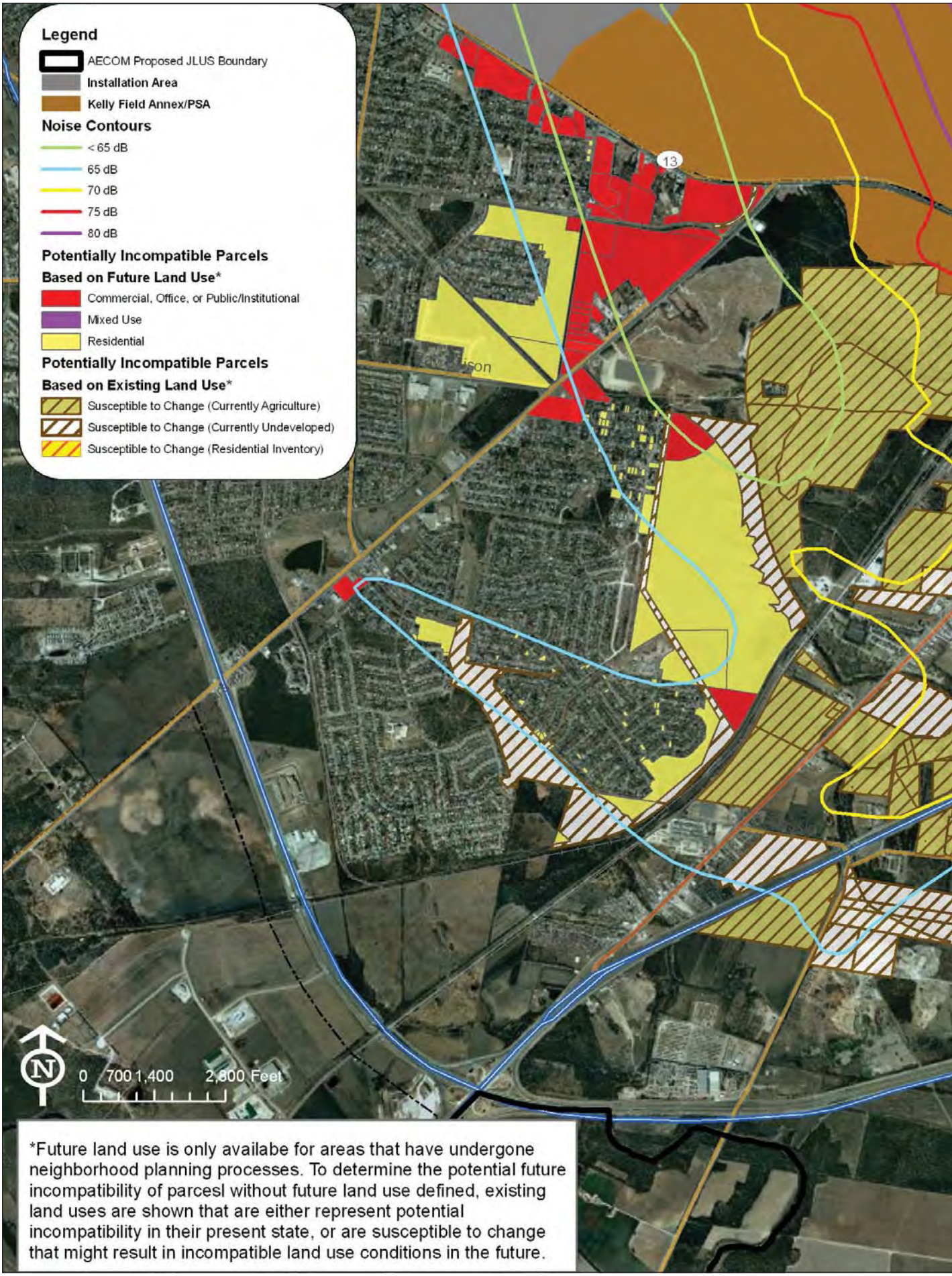
1. The presence of existing housing in high noise zones both to the north and south of the airfield;

2. The risk of future residential development in high noise zones both to the north and south of the airfield; and

3. The susceptibility of agricultural lands to the west of the training annex to draw more intensive, and thus potentially incompatible, uses to areas affected by noise and possible outdoor light intrusion.



*Future land use is only availabe for areas that have undergone neighborhood planning processes. To determine the potential future incompatibility of parcesl without future land use defined, existing land uses are shown that are either represent potential incompatibility in their present state, or are susceptible to change that might result in incompatible land use conditions in the future.



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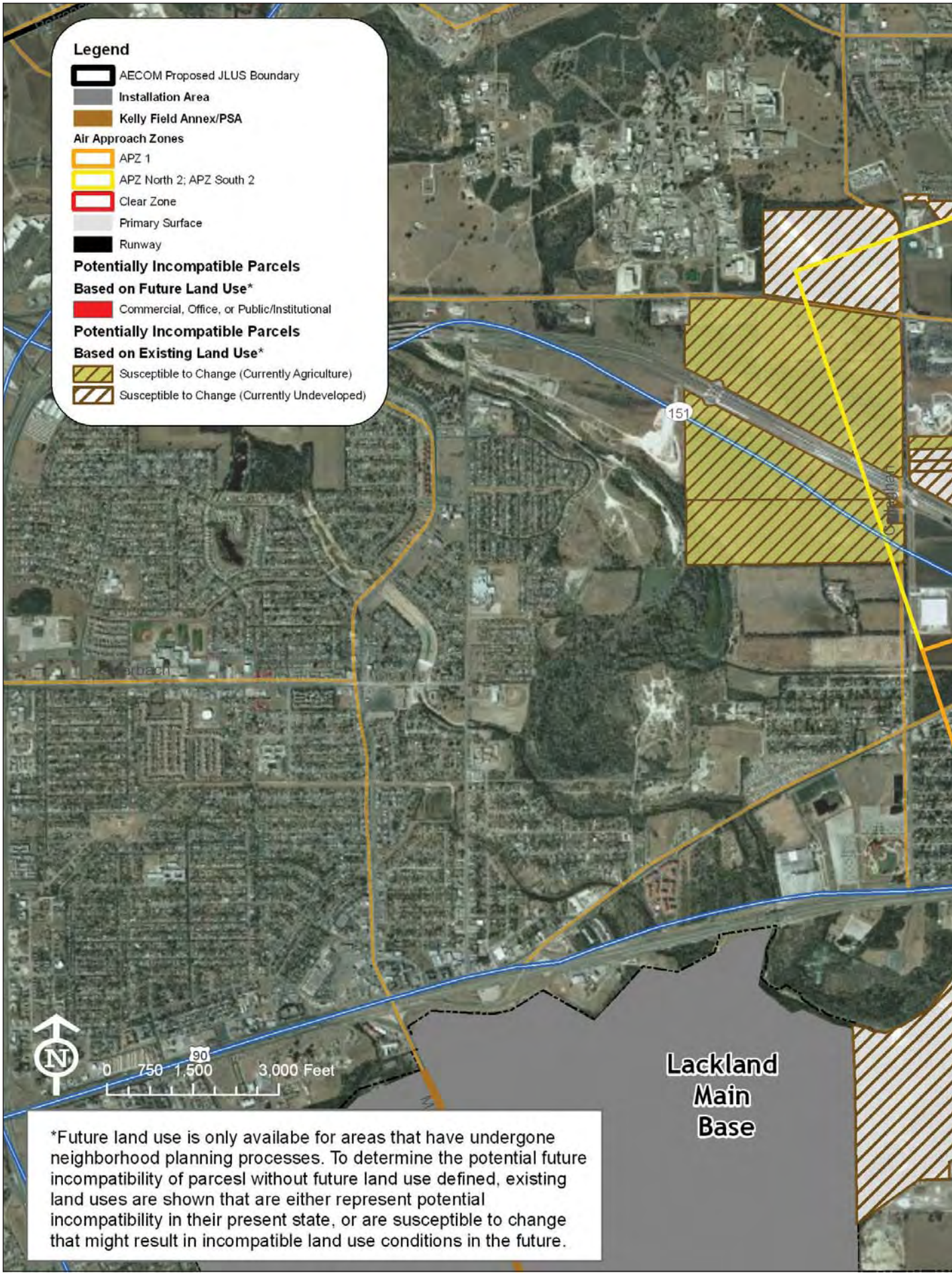
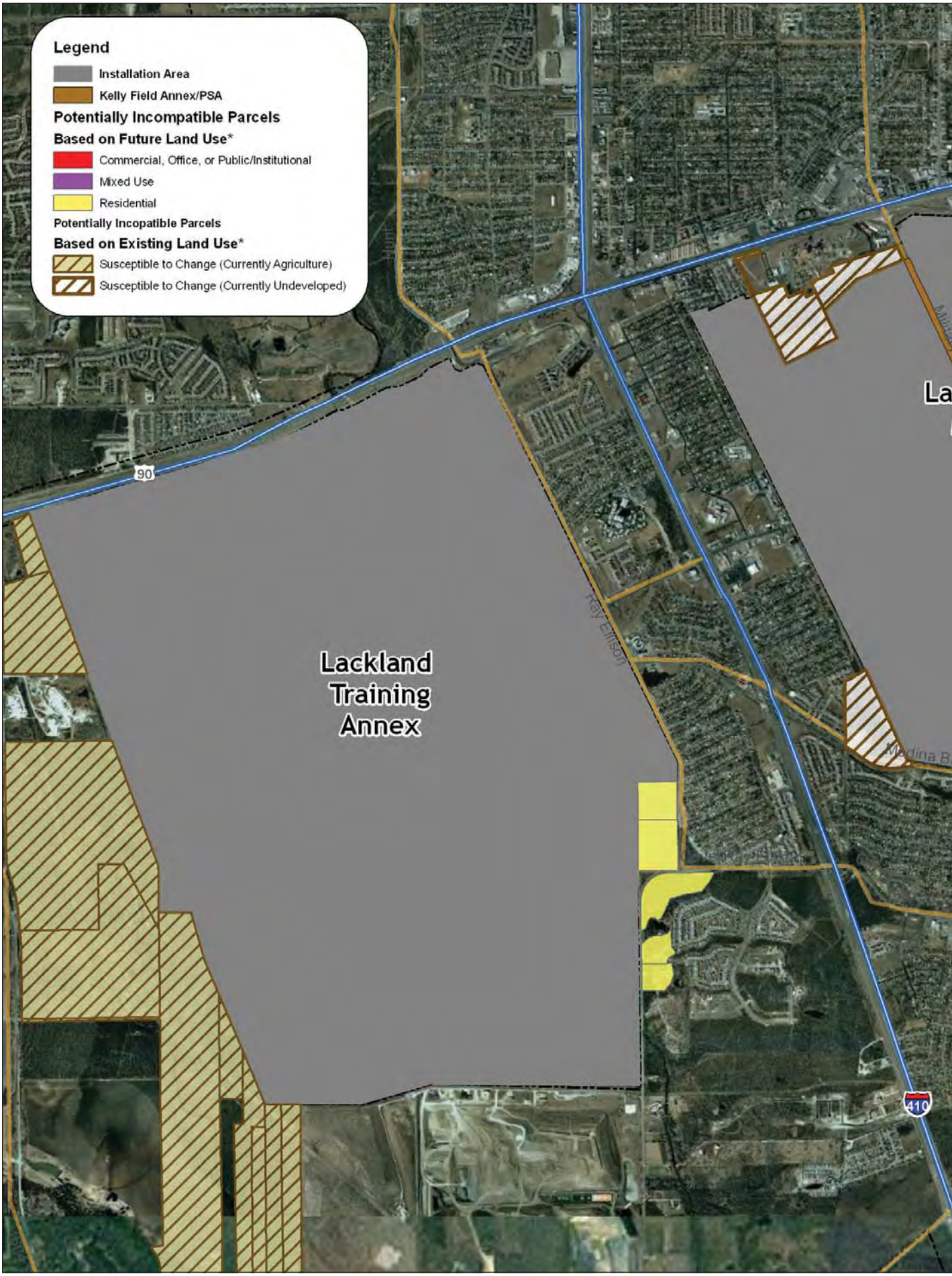


*Future land use is only availabe for areas that have undergone neighborhood planning processes. To determine the potential future incompatibility of parcesl without future land use defined, existing land uses are shown that are either represent potential incompatibility in their present state, or are susceptible to change that might result in incompatible land use conditions in the future.


Legend
Installation Area
Kelly Field Annex/PSA
Potentially Incompatible Parcels
Based on Future Land Use*
Commercial, Office, or Public/Institutional
Mixed Use
Residential
Potentially Incopatible Parcels
Based on Existing Land Use*
Susceptible to Change (Currently Agriculture)
Susceptible to Change (Currently Undeveloped)
Lackland Training Annex
90
410
Kay Ellison

Noise Zones

As noted earlier, significant residential uses exist in noise-affected areas to the north and south of the airfield. Medium density residential development falls within the 65-69 dB noise contours. Smaller areas of housing are in the 70-79 dB noise contours both north and south of the installation. Residences to the south, along Briggs and Pitluk Avenues, are in the extreme noise area of 80+ dB. Two public uses, the Guerra Development Center and the San Antonio Fire Academy, are within the 70-79 dB noise contour to the north of the airfield.

Accident Potential Zones – North

In general, industrial, vacant, recreational, and agricultural/open land uses are compatible with established safety guidelines. A small area of medium-density residential development exists in both the eastern and western edge of APZ I. Incompatible commercial uses exist along Old Highway 90. The Guerra Development Center is along Herbert Lane, on the western edge of APZ I. One incompatible public land use (San Antonio Fire Academy) is in the central portion of APZ II.

Accident Potential Zones – South

Low-density residential housing within APZ I along Briggs and Pitluk Avenues is incompatible. Medium-density residential uses and multi-family residential in the southern end of APZ II, south of Interstate 35 also poses safety issues. The commercial uses in APZ II are considered compatible based on the intensity of use.

Lackland Training Annex – Highway 1604

While current uses create relatively few conflicts with training activities, the susceptibility of agricultural lands to future development generates a significant risk of incompatibility in the years ahead. Any emerging residential areas west of the training annex, particularly near the southeast corner of the installation, are likely to be exposed to ongoing noise and other operational impacts generated by the BEAST and other technical training facilities.

Future Growth Compatibility Assessment

Though documenting existing compatibility issues is critical, it is also essential that the JLUS anticipate land use conflicts based on current growth trends and development capacity. To assist in identifying the future risk of incompatibility around Lackland AFB, the planning team developed future land use scenarios using CommunityViz, a Geographic Information System-based growth model. The model evaluates the "attractiveness" or suitability of parcels of land to accommodate development and then assigns growth based on a series of assumptions related to land availability, density, and land use type.

The model uses the follow steps to allocate projected growth in the JLUS study area around Lackland AFB as shown in Figure 7.15.

As a first step in conducting growth modeling, the planning team collected population and employment projection data developed by the Alamo Area Council as part of its long-range transportation planning process. Using area-weighted analysis, the team determined that by 2035 the JLUS study area would experience growth as shown in Table 7.5.

Table 7.5 - JLUS Study Area Population and Employment Projections, 2008-2035					
2008 Population	2035 Population	Projected Population Change	2008 Employment	2035 Employment	Projected Employment Change
382,788	477,278	94,490	106,348	138,348	32,000

To assign growth to suitable areas, the planning team created a buildable lands layer by eliminating parcels that are already built out or have an environmentally sensitive feature. The resulting layer is shown in Figure 7.16. The analysis then created a generalized future land use layer based on zoning maps, neighborhood plans, local development proposals, Master Development Plans (MDPs) and Utility Service Agreements (USAs). Though unincorporated Bexar County within the study area does not have future land use, the MDPs and USAs are a strong indicator of likely growth (See Figure 7.17). It should be noted that this generalized future land use layer was generated solely for purposes of allocating growth as part of this compatibility

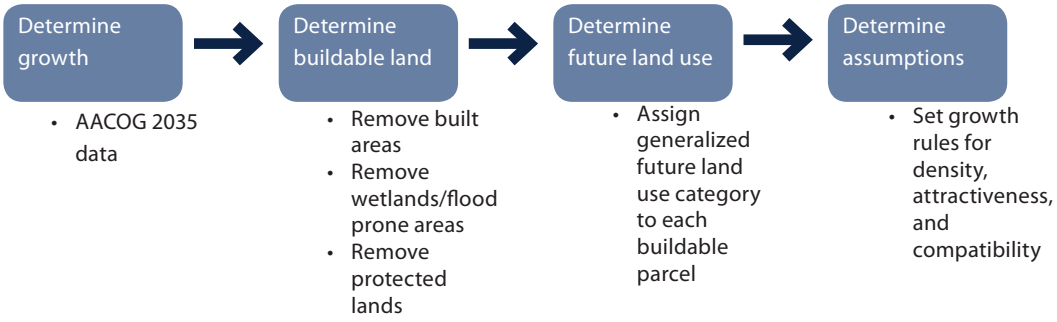


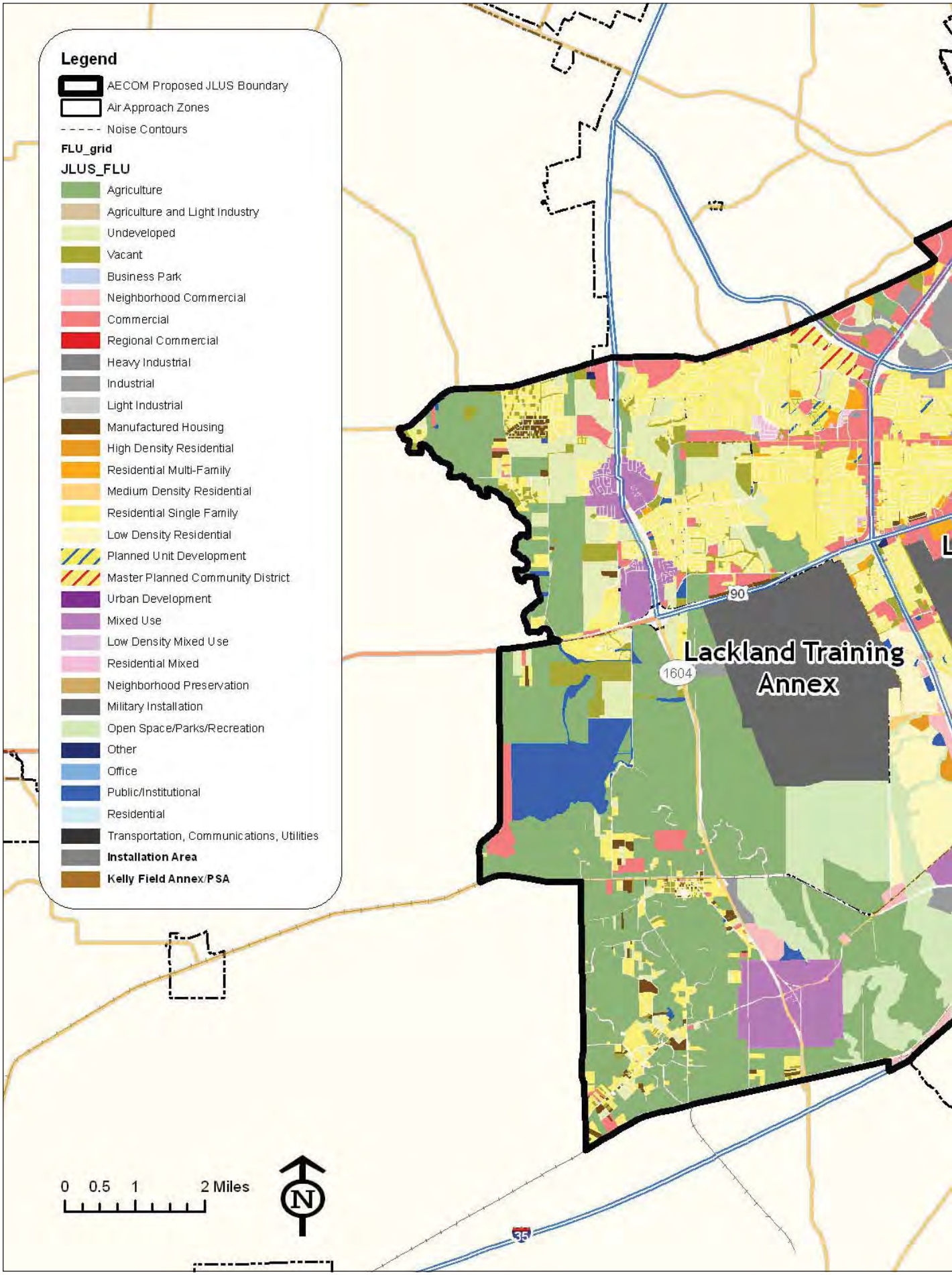
Figure 7.15. CommunityViz Growth Modeling Process

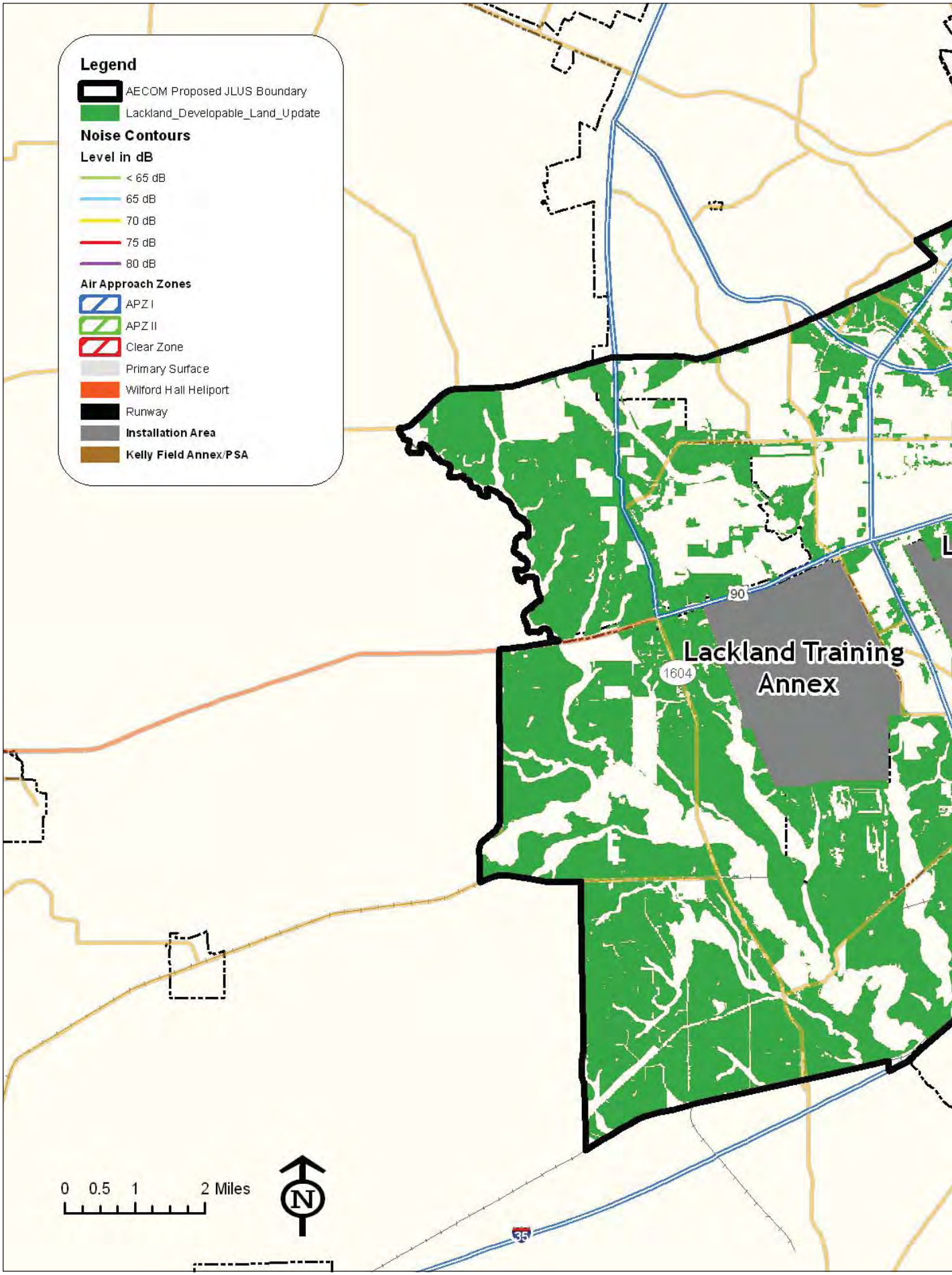
exercise and is not intended to supersede any land use map created as part of an official, community-driven planning process, such as a sector plan.

As a last step, the modeling process sets the rules by which growth is assigned. Since there will be more areas for growth than actual people and jobs coming to the area by 2035, the model must rank the attractiveness of available land, using the factors shown in Table 7.6. The model thus sends growth first to areas that are more "suitable" based on proximity to infrastructure or other developed areas.

Table 7.6 - Attractiveness Factors		
Factor	Residential Weight	Employment Weight
Proximity to highways	8	10
Proximity to major roads	10	8
Proximity to city limits	6	6
Proximity to hotspots	8	6
Proximity to employment centers	6	8

After ranking those areas most suitable for growth, the model must determine where each type of growth—residential or employment—is assigned using the future land use layer and how densely the


Legend
AECOM Proposed JLUS Boundary
Air Approach Zones
Noise Contours
FLU_grid
JLUS_FLU
Agriculture
Agriculture and Light Industry
Undeveloped
Vacant
Business Park
Neighborhood Commercial
Commercial
Regional Commercial
Heavy Industrial
Industrial
Light Industrial
Manufactured Housing
High Density Residential
Residential Multi-Family
Medium Density Residential
Residential Single Family
Low Density Residential
Planned Unit Development
Master Planned Community District
Urban Development
Mixed Use
Low Density Mixed Use
Residential Mixed
Neighborhood Preservation
Military Installation
Open Space/Parks/Recreation
Other
Office
Public/Institutional
Residential
Transportation, Communications, Utilities
Installation Area
Kelly Field Annex/PSA
Lackland Training Annex
90
1604
35
0 0.5 1 2 Miles
N


Legend
AECOM Proposed JLUS Boundary
Lackland_Developable_Land_Update
Noise Contours
Level in dB
< 65 dB
65 dB
70 dB
75 dB
80 dB
Air Approach Zones
APZ I
APZ II
Clear Zone
Primary Surface
Wilford Hall Heliport
Runway
Installation Area
Kelly Field Annex/PSA
Lackland Training Annex
90
1604
35
0 0.5 1 2 Miles
N

development is placed. Growth can occur in a lower density pattern that spreads development more widely across a landscape or in a more compact form that uses less raw land. Tables 7.7 and 7.8 show the density assumptions associated with the future land use or zoning categories used in the model.

Table 7.7 - Density Assumptions, Zoning

Zoning Category	Average Dwelling Units Per Acre (DUA)	Employment Per Acre
Residential Single Family	2	0
Residential	7	0
Residential Multi-Family	25	0
Residential Mixed	9	5
Manufactured Housing	7	0
Neighborhood Preservation	4	0
Planned Unit Development	9	15
Master Planned Community District	9	15
Urban Development	15	25
Infill Development	15	25
Business Park	0	35
Office	0	35
Neighborhood Commercial	0	15
Commercial	0	35
Light Industrial	0	15
Industrial	0	35

Table 7.8 - Density Assumptions, Future Land Use

FLU Category	Average Dwelling Units Per Acre (DUA)	Employment Per Acre
Agriculture	.25	0
Agriculture/Light Industrial	.25	15
Low Density Residential	2	0
Residential	5	0
Medium Density Residential	9	0
High Density Residential	15	0
Mixed Use	9	15
Neighborhood Commercial	0	15
Commercial	0	25

Regional Commercial	0	35
Public/Institutional	0	35
Office	0	35
Light Industrial	0	15
Industrial	0	25
Heavy Industrial	0	35
Open Space/Parks/ Recreation	0	0

The planning team created alternative growth scenarios as described below. The contrasting scenarios illustrate that long-term choices regarding land use, density, and development character have profound impacts on compatibility around Lackland AFB and Port San Antonio. Table 7.9 summarizes model assumptions about the placement of growth under each scenario.

Scenario 1 – Business As Usual – the intent of this scenario is to reflect current growth and development trends; this scenario assumes that growth will continue to develop in a more dispersed and low density pattern.

Scenario 2 – Compatibility – the intent of this scenario is to accommodate the same amount of growth (people, households and jobs) but to guide development away from areas that experience operational impacts. This scenario uses increased densities at designated activity centers, infill land redevelopment of existing neighborhoods, and more mixed use patterns to minimize conflicts with noise and air safety zones.

Figures 7.18 through 7.21 show the results of the modeling exercise under both scenarios. The maps show only new population (shown as household units) and employment (shown as jobs per acre) growth placed in the study area between the base year 2008 and 2035. The business-as-usual results indicate that if current trends continue without additional policy guidance, growth will occur in areas that are exposed to noise or air safety issues and thus create future land use conflicts. Areas to the west of the training annex, as well as noise zones to the north and south of the airfield, are particularly vulnerable to future residential development. The compatibility growth scenario in contrast reduces the number of future residents and jobs in areas of operational impact by focusing growth around designated, mixed use activity centers.

Figures 7.22 through 7.26 quantify the numbers of future residents and jobs that could be affected by noise and air safety impacts around the airfield and west training annex under each of the growth scenarios. By guiding growth away from areas near training and aviation activity, the compatibility scenario achieves a significantly lower level of potential land use conflict and thus underscores the importance of proactively establishing desired land use policies around Lackland AFB.

Table 7.9 - Military Compatibility Assumptions in Growth Scenarios

	Scenario 1 – Business As Usual	Scenario 2 – Compatibility
Clear Zone	No residential or employment growth allocated	No residential or employment growth allocated
Accident Potential Zone 1	Minimal single-family residential allocated only to Residential Inventory category; minimal employment growth due to restrictive building size in zoning	No residential or employment growth allocated
Accident Potential Zone 2	Residential growth allocated at 1 DUA; no restrictions on allocation of employment growth	No residential or employment growth allocated
Noise Contours 80 decibels +	No restrictions on allocation of residential and employment growth	No residential growth allocated; no employment growth allocated
Noise Contours 75 to 79 decibels	No restrictions on allocation of residential and employment growth	No residential growth allocated; employment growth allocated
Noise Contours 70 to 74 decibels	No restrictions on allocation of residential and employment growth	No residential growth allocated; employment growth allocated
Noise Contours 65 to 69 decibels	No restrictions on allocation of residential and employment growth	Residential allocation at 1 DUA only; employment growth allocated
Lackland Training Annex and Main Base Areas	No restrictions on allocation of residential and employment growth	No residential or employment growth allocated to any areas outside of existing MDPs that are within 3,000 feet of the base or training annex perimeter

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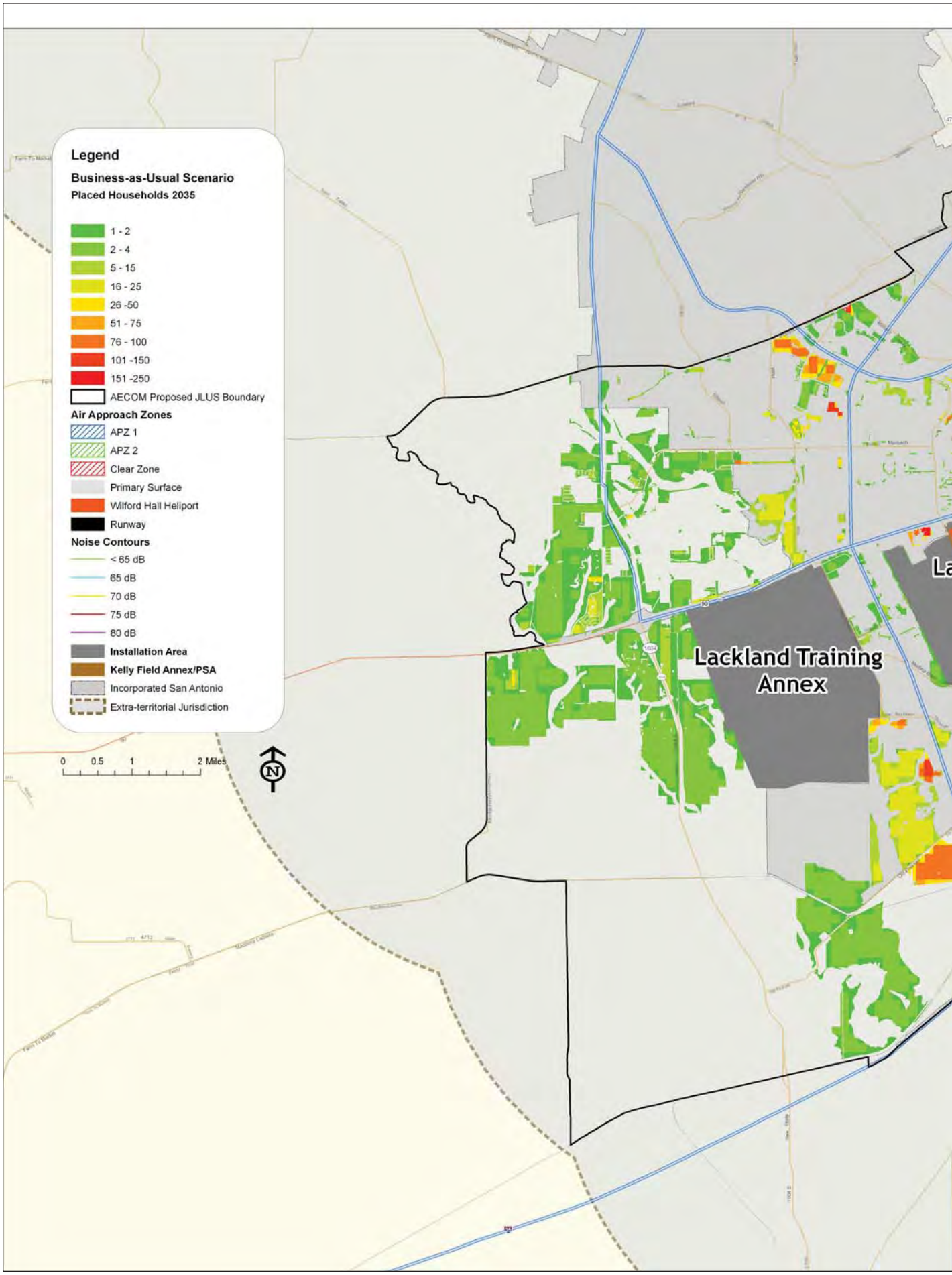
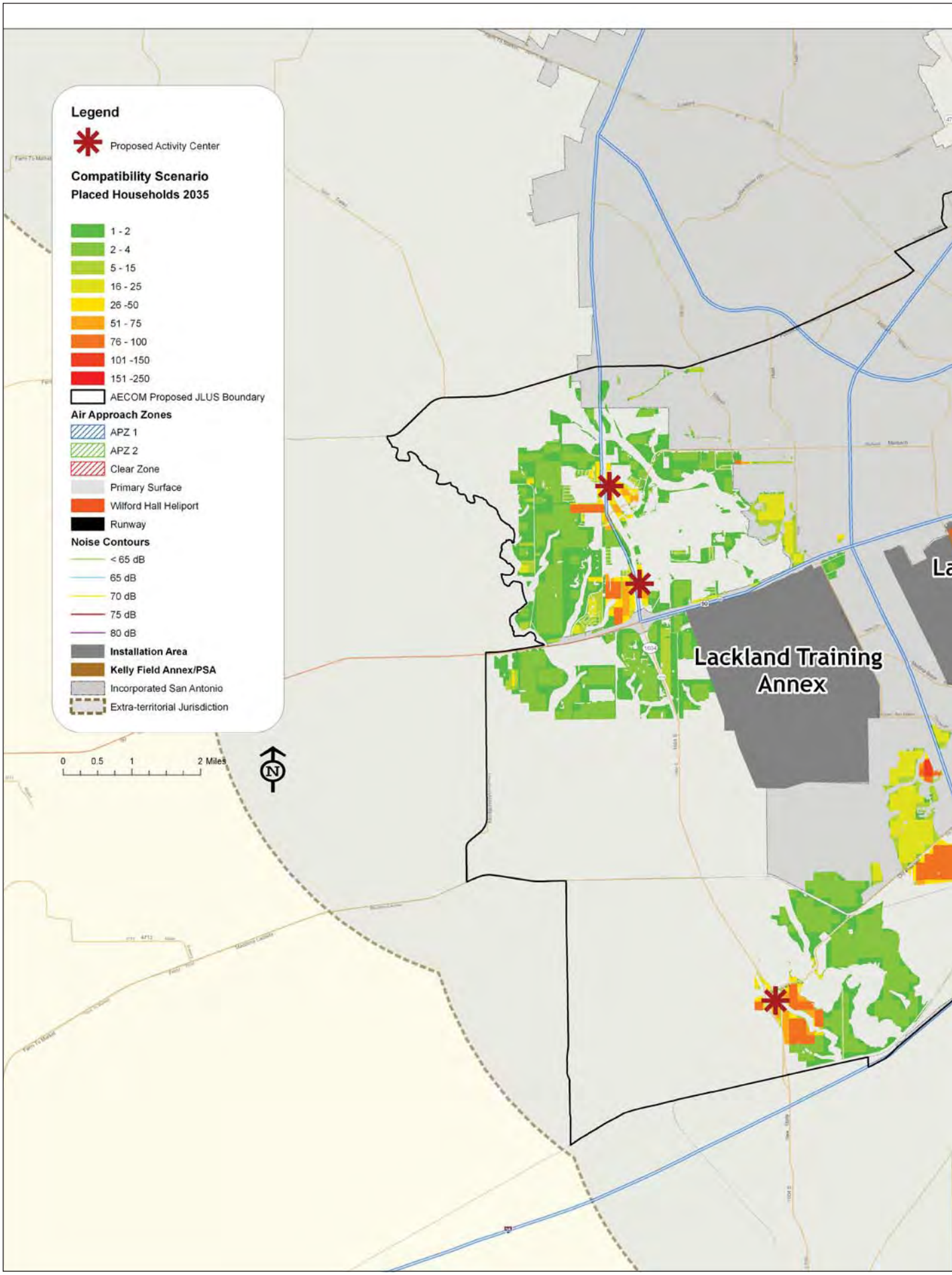
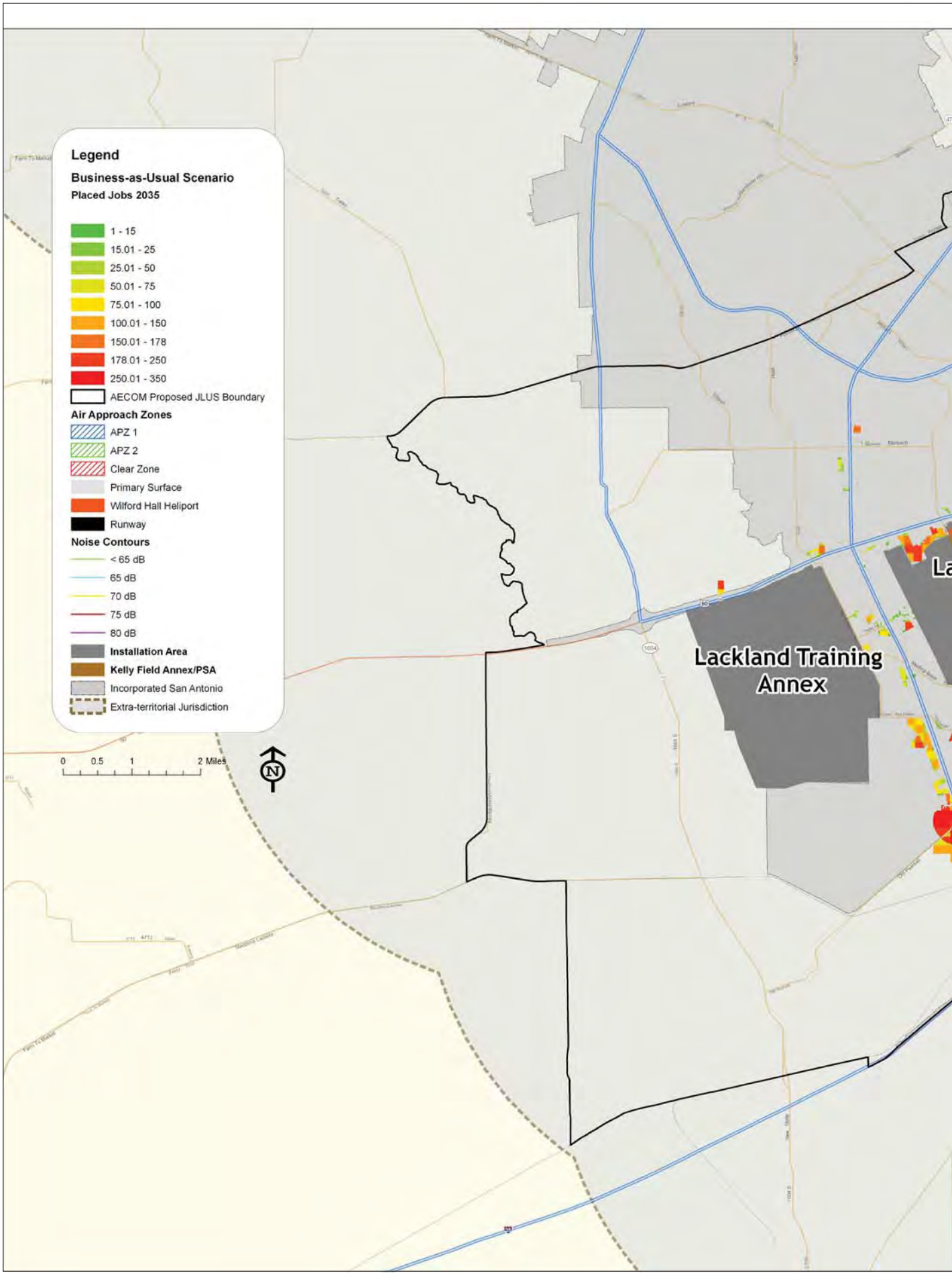

Legend
Business-as-Usual Scenario
Placed Households 2035
1 - 2
2 - 4
5 - 15
16 - 25
26 -50
51 - 75
76 - 100
101 -150
151 -250
AECOM Proposed JLUS Boundary
Air Approach Zones
APZ 1
APZ 2
Clear Zone
Primary Surface
Wilford Hall Heliport
Runway
Noise Contours
< 65 dB
65 dB
70 dB
75 dB
80 dB
Installation Area
Kelly Field Annex/PSA
Incorporated San Antonio
Extra-territorial Jurisdiction
0 0.5 1 2 Miles
N
Lackland Training Annex


Legend
Proposed Activity Center
Compatibility Scenario
Placed Households 2035
1 - 2
2 - 4
5 - 15
16 - 25
26 -50
51 - 75
76 - 100
101 -150
151 -250
AECOM Proposed JLUS Boundary
Air Approach Zones
APZ 1
APZ 2
Clear Zone
Primary Surface
Wilford Hall Heliport
Runway
Noise Contours
< 65 dB
65 dB
70 dB
75 dB
80 dB
Installation Area
Kelly Field Annex/PSA
Incorporated San Antonio
Extra-territorial Jurisdiction
0 0.5 1 2 Miles
N
Lackland Training Annex


Legend
Business-as-Usual Scenario
Placed Jobs 2035
1 - 15
15.01 - 25
25.01 - 50
50.01 - 75
75.01 - 100
100.01 - 150
150.01 - 178
178.01 - 250
250.01 - 350
AECOM Proposed JLUS Boundary
Air Approach Zones
APZ 1
APZ 2
Clear Zone
Primary Surface
Wilford Hall Heliport
Runway
Noise Contours
< 65 dB
65 dB
70 dB
75 dB
80 dB
Installation Area
Kelly Field Annex/PSA
Incorporated San Antonio
Extra-territorial Jurisdiction
0 0.5 1 2 Miles
N
Lackland Training Annex

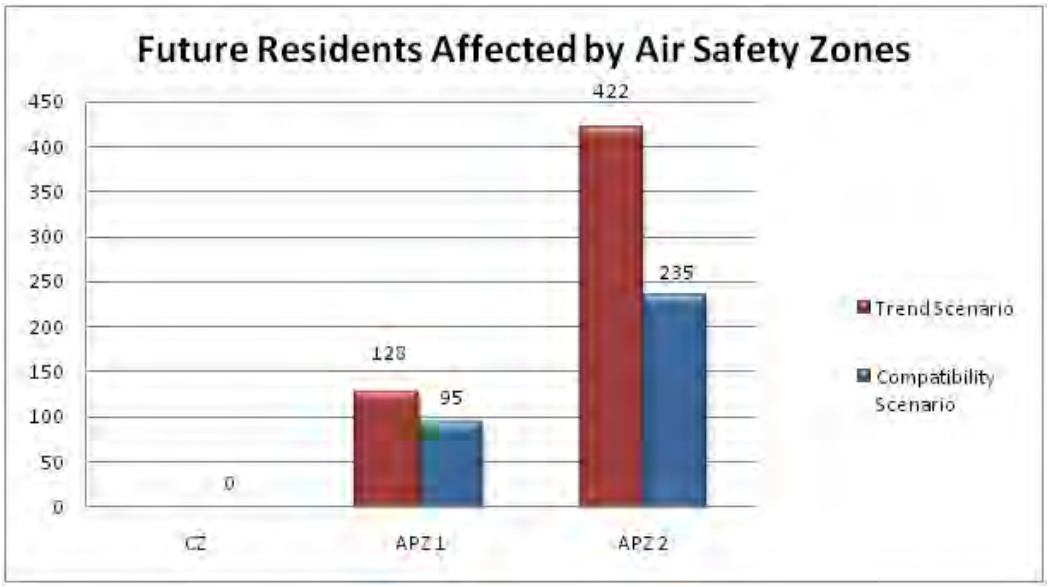


Figure 7.22 Future Residents Affected by Air Safety Zones

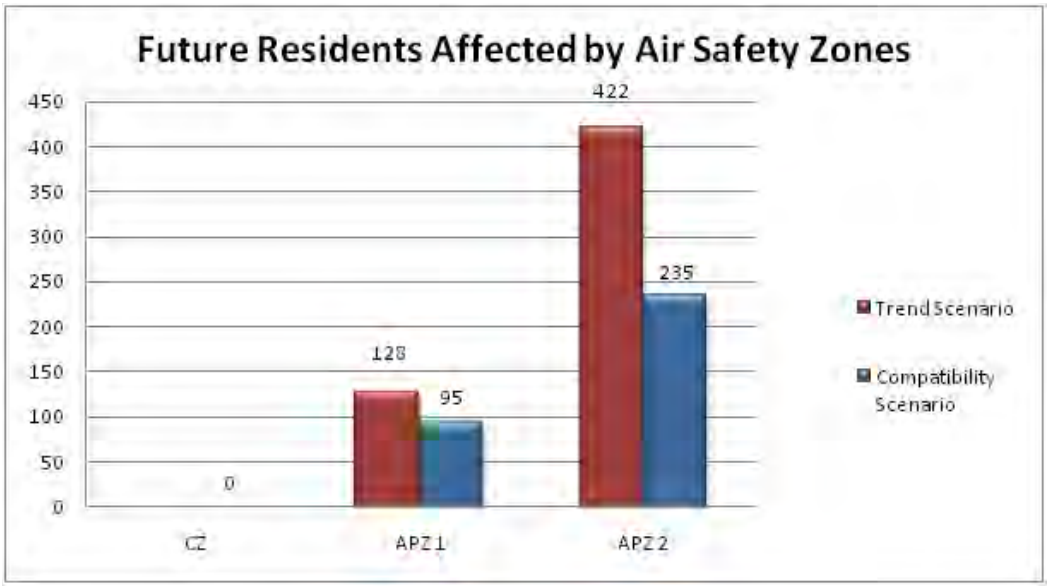


Figure 7.23 Future Residents Affected by Noise Zones

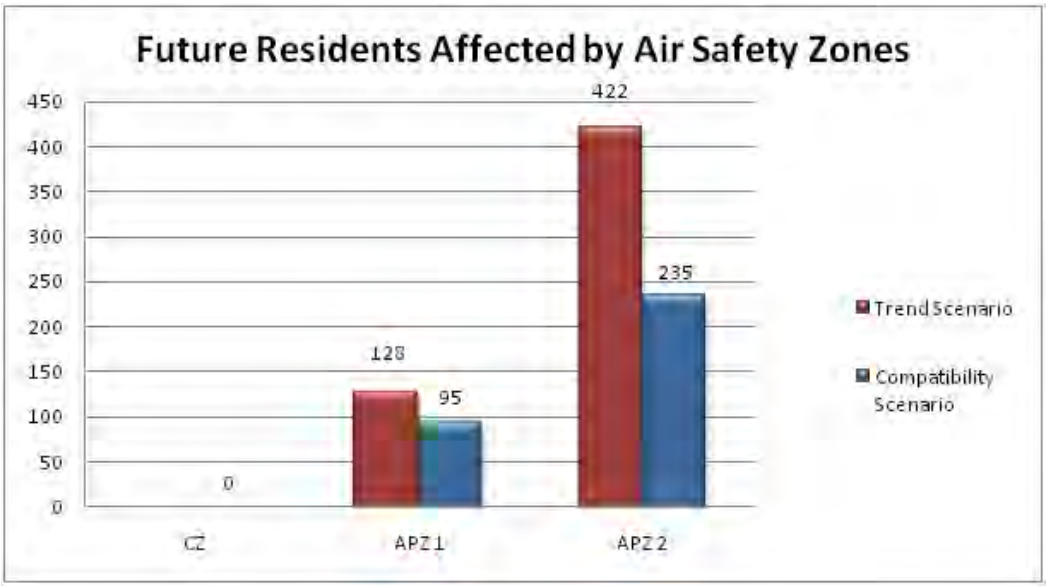


Figure 7.24. Future Residents Affected by West Training Annex Impacts

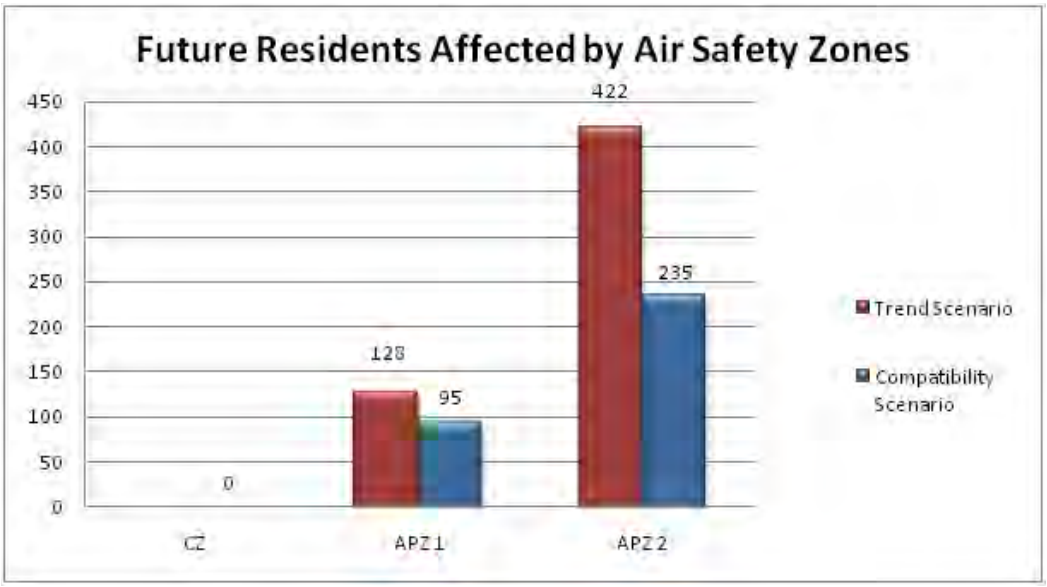


Figure 7.25. Future Employment Affected by Air Safety Zones 7

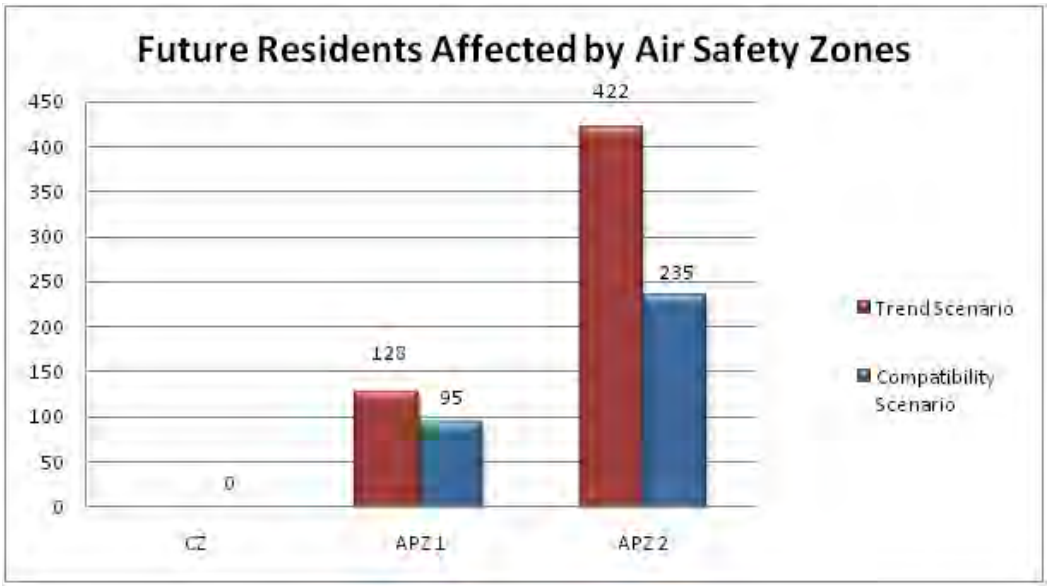


Figure 7.26. Future Employment Affected by Noise Zones

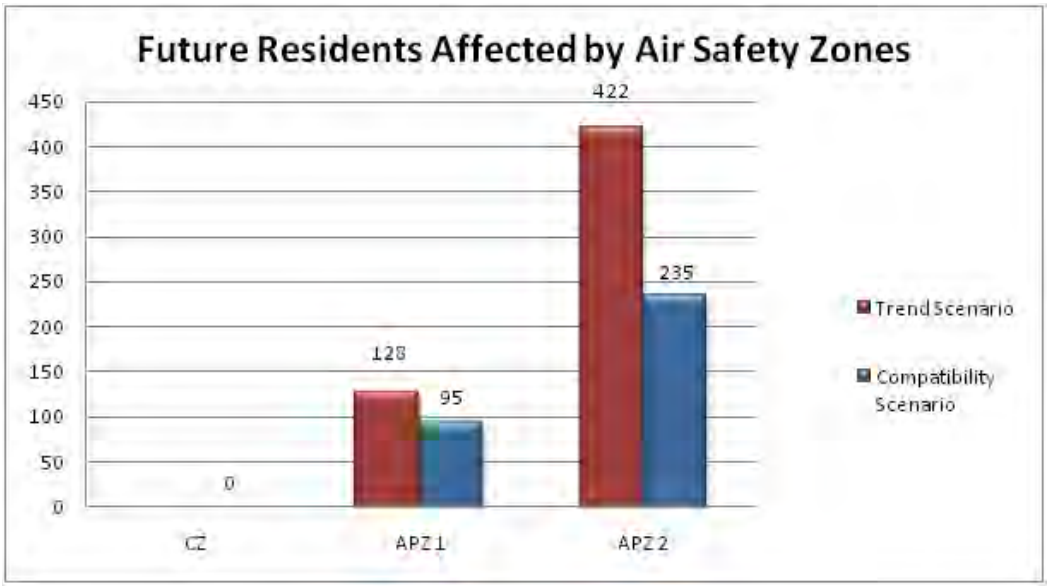
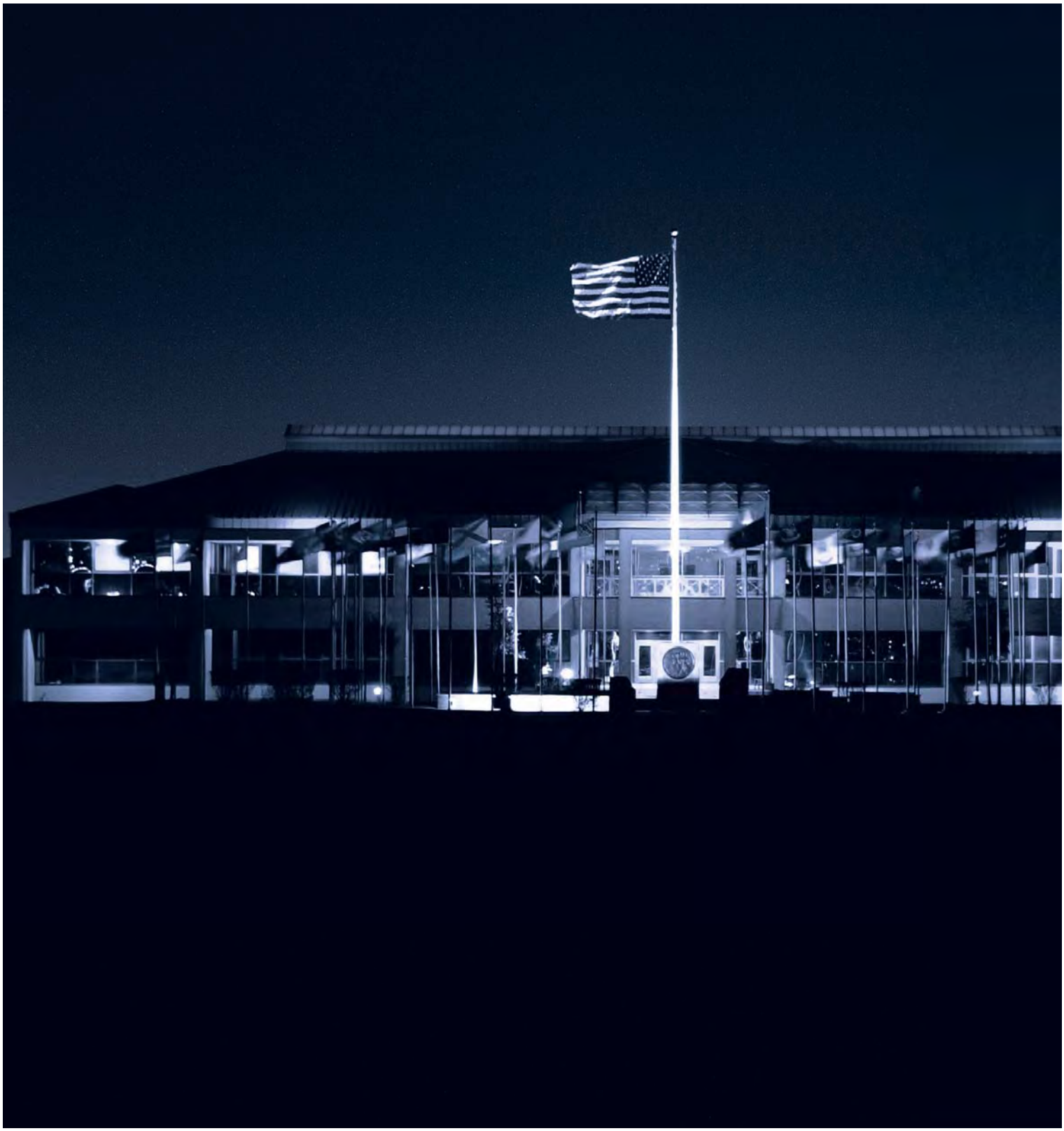


Figure 7.27. Future Employment Affected by Lackland Training Annex Impacts



Sec. 8 Compatibility Strategies

Strategies address a variety of possible land use and operational issues, including physical adjacency to the main base, Lackland Training Annex and airfield, aviation- and non-aviation related noise, aviation safety impacts, and outdoor lighting.

Introduction

Based on feedback received from the public, Advisory Committee, and Executive Committee, this document for the Lackland AFB JLUS establishes a set of short-, mid, and long-term actions to promote land use compatibility and strengthen coordination around the base and port.

As noted earlier, Bexar County and the City of San Antonio have adopted some compatibility practices to protect essential aviation and training activities at the base and airfield. A review of current measures, however, indicates gaps in the approach to encroachment reduction, both in the form of geographic areas that remain unregulated and in existing policies that require additional regulatory provisions or communication procedures. The recommendations and Implementation Plan are intended to strengthen critical policy challenges and enhance the capacity of the city, county, and regional stakeholders to promote compatible land use in the study area.

The following sections organize these recommendations in three ways:

By Type of Tool – the Compatibility Options section describes general compatibility approaches to address critical issues raised during the JLUS process.

By Geography – the Planning Areas section identifies Military Influence Areas and Areas of Concern around Lackland AFB and Port San Antonio (PSA) in which the JLUS recommends land use regulation and communication procedures.

By Implementation – The Implementation Plan evaluates options according to key criteria and identifies the most feasible and critical short-term measures to reduce encroachment risk, as well as mid- and long-term strategic efforts. In addition to summarizing all recommendations, the implementation section organizes actions by study partner and establishes detailed steps for the most critical short-term actions.

These sections are intended to address the following critical questions:

What strategies are available to study partners?

Where do we apply recommended best practices?

How do study partners put measures into place and what are the most critical steps to take?

Compatibility Options

The following tools are intended to address a variety of possible land use and operational issues, including physical adjacency to Lackland AFB and Port San Antonio, noise, aviation safety impacts, and outdoor lighting.

The descriptions below include strategies that may not yet be fully feasible in the study

area, but have value as long-term approaches to minimizing incompatible development around the base and port. In other cases, the city and county have partially adopted available strategies and the options can focus on enhancing these current measures. As development conditions and mission impacts evolve, the JLUS encourages local officials and planners to revisit this list of strategies to further refine and strengthen their set of compatibility tools.

Compatibility options include communication, acquisition, conservation, and regulatory strategies

Conservation/Land Acquisition or Transfer

Conservation

Conservation refers to a series of tools designed to eliminate land use incompatibilities through voluntary transactions in the real estate market and local development process. These strategies are particularly effective because they advance the complementary goals of shifting future growth away from the base and its impacts, while protecting the environment and wildlife habitat, maintaining agriculture, and conserving open spaces and rural character.

The core implementation strategy of the conservation approach is to acquire easements that prohibit incompatible development in perpetuity, while allowing the land to remain in private hands. While the restrictive covenant prohibits more intensive development, it accommodates low impact uses such as farming or passive recreation that do not pose a risk of interference with nearby training activities. Landowners receive fair-market compensation and/or tax credits for the loss of the development rights associated with the affected property.

The Readiness and Environmental Protection Initiative (REPI) grants the military the ability to enter into agreements with eligible entities, such as local governments, non-governmental organizations, and willing land owners to secure conservation easements on property in the vicinity of, or ecologically related to, a military installation or military airspace.

The DoD has also formed a partnership with the United States Department of Agriculture (USDA) to conserve sensitive lands near military bases around the nation. Through the USDA, military planners can now access the resources of existing easement programs, such as the Farm and Ranch Lands Protection Program, the Wetlands Reserve Program, and the Grassland Reserve Program.

Local governments can participate in the conservation process by acting as direct cost-sharing partners with the military in conservation easement purchases or by aligning their infrastructure and land use policy to reinforce the rural/agricultural character of areas near or within REPI targets. Limiting growth potential in an area, for example, decreases market pressure and thus the market cost of development rights.

Camp Bullis has worked closely with the US Fish and Wildlife Service and Texas Parks and Wildlife Department to protect the endangered golden-cheeked warbler and other endangered species around the installation, while also protecting its military mission. Their efforts have since been folded into the broader Southern Edwards Plateau Regional Habitat Conservation Plan for multiple endangered species.

While the Lackland JLUS study area lacks the environmental sensitivity of northern parts of Bexar County, as noted earlier, agricultural and ranch land preservation could be an effective focus for initiating conservation-based strategies. Senate Bill 1273 passed in 2005 established the Texas Farm and Ranch Lands Conservation Program, which enables the state to work with landowners in facilitating the purchase of development rights. The intent of the program, housed under the Texas General Land Office, is to protect against the fragmentation of the state's farm lands.

Lackland AFB should pursue opportunities to establish buffers on land to the west of the Training Annex through current voluntary conservation programs, particularly agricultural preservation. One of the most effective means of initiating conservation efforts is to develop key partnerships with land trusts or other private entities actively working in the area, such as the Texas Agricultural Land Trust, Green Spaces Alliance of South Texas, and the Trust for Public Land. These organizations

bring valuable expertise in the assessment of sensitive natural resources, access to private funding sources, and can leverage their existing relationships with rural landowners to conduct outreach and education on conservation options. The Air Force, in partnership with the City of San Antonio and Bexar County, should also seek to link available conservation opportunities at Lackland AFB with ongoing regional planning efforts, such as the Southern Edwards Plateau Habitat Conservation Plan to increase its competitiveness when applying for limited REPI funds.

Land Acquisition or Land Transfer

These approaches differ from conservation because the affected land changes ownership between the private landowner and a local government or the military. The transfer of ownership effectively eliminates the risk of private development. As with conservation, however, these transactions are strictly voluntary.

Acquisition entails the outright purchase of land that is exposed to the impacts of military training. H.J.R. No. 132, passed as a constitutional amendment in 2009, authorizes a city or county in the State of Texas to issue bonds or notes to finance the purchase of buffer areas or open spaces adjacent to a military installation to prevent encroachment and protect the military mission. Local governments can finance the purchase through tax increment financing in which future increases from property tax revenue are pledged to retire bonds. Bexar County and the City of San Antonio could use this mechanism to buy currently undeveloped land subject to training and aviation noise for the purpose of creating a compatible use, such as recreational areas.

The Air Force would initiate this strategy by prioritizing the most critical lands on which to establish buffers (with a likely emphasis on those undeveloped lands in unincorporated Bexar County to the west of the Lackland Training Annex) and collaborating with Bexar County and the City of San Antonio to identify compatible low impact future uses. The county and city should assess the need for creating green space corridors, natural areas and parks in the JLUS study area and identify acquisition candidates as part of ongoing recreation and facilities planning and explore possible funding options for the acquisition of land.

In another type of voluntary property transaction that results in a transfer of ownership, the US military can conduct a land "swap" with willing property owners. The agreement exchanges land held by the military that is not subject to operational impacts for privately owned land of comparable market value that experiences noise, safety risks, or related training issues. The transaction permanently changes the physical military footprint in the area, but does not necessarily result in an increase in training lands. As part of this strategy, the Air Force would identify candidate parcels and conduct negotiations with interested landowners.

City/County/Service Provider Plans

Local Government Plans

Master Plans or area plans can shape compatible development patterns around a military installation by establishing a specific framework for future land uses and designating areas suitable for growth. As part of this option, the City of San Antonio would include specific language on JLUS coordination as part of its Master Plan policy updates. These policies establish a firm legal basis for the implementation of compatibility actions and set the framework to manage growth through local land use regulations. An increasingly popular strategy is for local governments to develop a Military Influence Planning District (MIPD) Element within the Comprehensive or Master Plan. This element is devoted exclusively to the collaborative relationship between the local government and military installation and integrates all policies that may promote compatible development, including communication procedures, conservation and land use policy, and transportation and infrastructure policy.

In addition to the Master Plan, the City of San Antonio conducts sector planning within its corporate limits and extraterritorial jurisdiction. The intent of these more targeted planning efforts is to support overall plan policies and to develop guidance on land use, transportation, and public facilities

for each of the five geographic areas. Though the sector plan is a helpful vehicle for articulating compatibility policies around Lackland AFB, it should be noted that it cannot establish or enforce a land use regulatory framework in unincorporated Bexar County. The sector plans, however, can develop an advisory template for desired land uses that supports planners in evaluating future development proposals.

The City of San Antonio began the West/Southwest Sector Plan in September of 2010 and the study process will continue through April of 2011. Once completed, the plan will become an adopted component of the city's Master Plan. Previous sector planning efforts, such as the North Sector Plan surrounding Camp Bullis, have incorporated a military compatibility section that lays out objectives and recommends compatible development standards and land uses.

The West/Southwest Sector Plan represents a similar opportunity to highlight compatibility issues in the Lackland JLUS study area and illustrate a compatible future growth pattern. The City of San Antonio should collaborate with the Lackland AFB, Bexar County, and community stakeholders to develop a sector Land Use Plan that reflects growth and development options that do not conflict with nearby military training activities. The sector plan should also contain guidance on military compatibility, including potential noise, lighting and safety issues and recommended development mitigation measures, such as the shielded lighting, real estate disclosure, and noise attenuation to address operational impacts in exposed areas. The plan should also reflect other relevant input such as approved master plans, stakeholder input, and existing uses

Utility and Infrastructure Plans

The provision of infrastructure is typically based on public need and necessity and reflects the Comprehensive Plan of the city or county. As part of this strategy, local governments would consider the impacts of both public and private infrastructure installation/extension (e.g. water and sewer facilities) into noise and safety affected areas around Lackland AFB. New infrastructure can induce or support incompatible growth patterns, such as denser residential development, especially if compatible zoning and land use guidelines are not in place to guide future land use.

Since capital investment decisions in turn influence private market location decisions, it is critical that local governments link their capital improvement programs and projects to compatibility goals. Installing infrastructure such as water, sewer, and roads in planned growth areas and away from land with operational impacts clearly reduces the conflicts associated with denser development near the base.

Regional transportation-related plans, such as the Metropolitan Transportation Plan, Transportation Improvement Plan, and Unified Planning Work Program should also reflect the need to limit increases in road capacity in areas of operational impact.

Similarly, public utilities such as the San Antonio Water System and the Bexar Metropolitan Water District, conduct capital improvement planning to ensure that infrastructure systems are sufficient to support long-term growth in service areas and to meet the needs of current and future customers. The careful planning of utility system extensions can work in concert with local government policy to limit growth in critical areas subject to training impacts and safety risks. It should be noted, however, that the State of Texas lacks concurrency requirements, which mandate that infrastructure with adequate capacity to support growth (sewers, roads, parks, and more.) must first be in place before new development occurs. The ability of development to precede supporting infrastructure significantly reduces the use of utility planning as a tool to shape urban growth patterns. A majority of property owners in a proposed district can also petition the Texas Commission of Environmental Quality to create a Municipal Utility District that provides water, sewage, drainage, and other services and thus essentially eliminates dependence on regionally-run systems.

Though there are limitations on the use of utility planning to guide future growth, infrastructure planning should, at a minimum, establish consistent dialogue between local and military stakeholders on the potential impacts of infrastructure investment decisions. As part of this strategy, area utility providers, including the San Antonio Water System, Bexar Metropolitan Water District, and City Public Service Energy would join as signatories in a Memorandum of Agreement outlining notification procedures for Utility Service Agreements and major infrastructure projects within the JLUS study area. These providers would also participate in the automated notification system described in the following section on communications and coordination.

Beyond facilitating ongoing dialogue among area stakeholders, the use of utility planning as a formal growth management tool would require state-level initiatives. Cities and counties could, for example, engage in a coordinated process of planning future growth areas as part of a joint-service growth boundary agreement that identifies a phased, contiguous and orderly trajectory for suburban development and associated utilities in unincorporated areas within the ETJ. Accommodating future development and public investments within an explicitly drawn planned growth boundary supports several complementary goals, including directing development pressure back toward mature communities, promoting more efficient delivery of infrastructure, and protecting rural character and environmental resources. Land in unincorporated Bexar County west of the Lackland Training Annex could be part of an Area of Mutual Planning Concern that is outside of the planned growth/ urban area and is not subject to annexation in the near term. The city and county, however, would fully coordinate land use activity within this area. Similarly, any effort to establish infrastructure concurrency mandates would necessitate a state-level requirement to provide adequate public facilities in support of proposed development. Such policies limit the ability of growth to "leap-frog" existing service areas. Given the complexity of these issues, the JLUS identifies formal utility planning strategies as a long-term option for effective growth management.

Communications/ Coordination

This approach refers to a series of strategies to ensure that residents, developers, businesses, and local decision-makers have adequate information about military and port operations and possible impacts on lands surrounding Lackland AFB, and the ability to submit comments on proposed land use changes around the base and airfield.

General Outreach Materials

Communication activities can be more general, focused on increasing awareness about mission activities, operational issues such as noise, economic impacts, and joint basing and military transformation activities. Community study partners should use all available media, including posters, brochures, and city and county web sites to convey information. Similarly, the Air Force and PSA would build on existing communication with its neighbors through methods such conducting community information briefings; ensuring a continued role for a highly visible Lackland AFB liaison to address noise and other issues in the community; and generating outreach materials on base mission and port activities, operational impacts, mapped noise contours, and other compatibility issues.

While educating the community about general issues is critical, study partners must also continue to develop mechanisms to inform property owners, prospective buyers, and businesses about operational impacts and any associated land use or development restrictions. Examples would include the posting of maps on websites to identify parcels affected by designated noise, safety and planning buffers. As part of this strategy, the county, city, Air Force and PSA would collaborate on the production of educational materials to be distributed as part of regular development processes for properties within the JLUS study area. Advocacy and outreach entities, such as the City of San Antonio Office of Military Affairs, would also feature links to JLUS findings, maps and applicable

ordinances. The San Antonio Board of Realtors should also continue to provide information on military compatibility issues as part of the Governmental Affairs-Joint Land Use Studies link on its web site.

Searchable Database

To ensure additional access to information for land owners, developers, and prospective renters or buyers, the JLUS also recommends creation of a searchable database for properties in affected areas, similar to the City of San Antonio's Interactive Mapping System Web Site (https://gis.sanantonio.gov/PDS/MIA/index.html). The presence of a parcel within an established regulatory district, such as outdoor lighting or sound attenuation overlay could, for example, be noted through the Bexar Appraisal District's property search engine (http://www.bcad.org/), which currently displays land, deed history, improvement/building, and taxing jurisdiction descriptors.

Real Estate Disclosure

A related strategy is the use of real estate disclosure, which requires the release of information on possible impacts (noise/vibration, air safety zones, outdoor lighting) to prospective buyers or renters as part of real estate transactions for properties close to Lackland AFB and PSA. Disclosure can be mandatory when adopted by state law or voluntarily implemented through the participation of real estate professionals. Currently, the Texas Property Code (Section 5.008) requires the seller of a residential property to give the purchaser of the property a written notice disclosing the general condition of the property. At a minimum, the property owner must disclose information contained on notices from the Texas Real Estate Commission (TREC) (form OP-H) or Texas Association of Realtors (TAR Form 1406). TAR Form 1506, General Notice to a Buyer, is another typically used form that notes areas in which the buyer should conduct a due diligence review of housing and lot conditions. Such information on smoke detectors, plumbing and electrical systems, gas lines, the presence of potentially harmful materials such as asbestos and lead paint, as well as the termites or previous flooding. Currently, however, real estate disclosures in Texas are not required to disclose proximity to military installations.

The San Antonio Board of Realtors (SABOR) and the City of San Antonio have, however, developed procedures for voluntary notification in areas around Camp Bullis. The JLUS recommends a comparable set of voluntary disclosure procedures as a short-term action to promote increased community awareness of military impacts. The city and county should develop a basic disclosure statement for the JLUS study area similar to the language crafted for the Camp Bullis Awareness Zone. Members of the SABOR would then incorporate the statement as part of its real estate transactions in the area. Study partners should pursue the inclusion of proximity to a military installation on state-mandated disclosure forms as part of a mid-term communication strategy.

Memorandum of Understanding

While most communication procedures focus on strengthening awareness in the surrounding community, many strategies are also geared toward improving the flow of information among study partners in the military and government sectors. Study partners can, for example, sign a Memorandum of Understanding (MOU), which is a "good faith" document that establishes procedures for communication and formalizes collaboration among multiple stakeholders, including the Air Force, Port San Antonio, Bexar County, the City of San Antonio, and utility providers. The MOU would identify land use or mission actions appropriate for consultation, list procedures for communication, and establish primary points of contact for each stakeholder group. The City of San Antonio and Fort Sam Houston (including Camp Bullis and Camp Stanley) signed an MOU in December of 2008 that clearly establishes notification procedures to protect land within the defined Military Influence Area around Camp Bullis.

Current regulatory measures only require that the City of San Antonio consult with the Air Force

regarding land use and development actions that take place within 200 feet of the installation boundary. In practice, the city and Air Force consult on proposed activity within a broader area. The MOU strategy represents an opportunity for all study partners to build on the history of positive collaboration by revisiting the geographic area that triggers consultation and formalizing procedures, giving greater continuity and predictability to current practices. The major JLUS study partners–Bexar County, the City of San Antonio, Lackland AFB, and Port San Antonio–should implement this strategy by agreeing upon the key communication procedures contained in the draft MOU and identifying primary internal points of contact to produce and receive notices.

Automated Notification Process

While an MOU lays out procedures for ongoing interaction among stakeholders, a linked message exchange can ensure that all study partners receive, at a minimum, an initial notice of proposed development activity on parcels within designated air safety, noise or other planning buffers. As part of this system, a submitted request by a developer or builder for required permits, applications or plan approvals would generate an automatic e-mail message to specified entities, including Lackland AFB, PSA, Bexar County, the City of San Antonio, SAWS, BexarMet, and CPS Energy. For example, submittals for any of the following actions would trigger notice to designated primary points of contact:

- Request for a Permit or a Utility Service Agreement or application for subdivision plat review from SAWS or BexarMet
- Request new service delivery or infrastructure from CPS Energy
- Request for subdivision plat review from Bexar County and the City of San Antonio
- Request for zoning approval, Master Development Plan review or Planned Unit Development review from the City of San Antonio
- Requests for Building Permit, Storm Water Quality Site Development Permit and On-site Sewage Facility OSSF Permit from Bexar County

The intent of the automated system is to facilitate quick coordination across multiple agencies and to enable a preliminary assessment of any military compatibility issues associated with a specific development proposal. As with all consultation between the military and local governments, any comments received from the Air Force or port would be of a strictly advisory nature for use by the approving agency. The county, city and major utility providers should initiate this communication strategy by exploring their capabilities to link internal databases with an automated messaging protocol.

Ongoing Implementation Body

Multi-jurisdictional and multi-sector collaborations are more effective when led by a single entity. An additional step in coordination is for the military, government, and community study partners to form an ongoing implementation body that meets on a regularly scheduled basis to share information on mission or land use changes, monitor implementation progress, and revisit longer-term compatibility strategies as conditions warrant. The JLUS recommends that the entity's membership consist of a mix of Executive and Advisory Committee participants, representing Lackland AFB, PSA, Bexar County, the City of San Antonio, private sector developers and landowners, community and neighborhood groups, and major utility providers. The organization should seek opportunities to combine with existing regional partnerships, such as the Camp Bullis Preservation Partnership or the Military Transformation Task Force. Regardless of the eventual organizational structure, the entity should maintain a specific focus on issues and strategies pertinent to the Lackland JLUS context.

When establishing the initial framework, partner governments and military stakeholders should focus

on several key steps, including:

- Identifying members;
- Establishing notification procedures;
- Developing outreach material and collateral, such as yearly reports;
- Defining issues to review and information to share, including monitoring mechanisms such as the tracking building permit and subdivision data within the JLUS study area around the base, airfield and training annex; and
- Developing a list of ongoing implementation measures, such as recommended technical modeling of noise and light issues around the Lackland Training Annex or detailed small area studies.

While the formality of incorporation and the adoption of by-laws may be unnecessary, particularly during the early stages of formation, stakeholders can include provisions for ongoing meetings and exchanges of information as part of a signed Memoranda of Understanding described earlier.

Two of the best examples of regional JLUS frameworks are the Fort Campbell JLUS Partnership in Kentucky and Tennessee and the Fort Bragg/Pope Air Force Base Regional Land Use Advisory Commission in North Carolina. The Fort Campbell Partnership meets on an annual basis. The installation's community planner prepares a yearly briefing for all participants that includes statistics on mission change and realignment, expenditures, transportation, infrastructure and facility improvements, and growth near the installation. One of the most sophisticated of ongoing regional JLUS frameworks, the Fort Bragg/Pope Air Force Base Regional Land Use Advisory Commission (RLUAC) first organized in 191 and incorporated in 2004. RLUAC holds quarterly meetings and has conducted detailed encroachment studies of issues such as telecommunications towers and light pollution. Members also have reviewed over 130 rezoning cases, subdivision proposals, and proposed telecom tower locations. All findings are non-binding and intended to be of technical assistance to local communities and the military when making decisions on resource and land use. The RLUAC consists of approximately 60 members, including local elected officials, city and county administrators, planners, environmental and GIS specialists, and military personnel. The organization has a part-time Executive Director and raises funding from the member governments and the State of North Carolina.

Legislative Initiatives

Limited County Land Use Authority

A central challenge of the JLUS for Lackland AFB is that some of the land most vulnerable to development and the future risk of incompatibility fall within unincorporated Bexar County. State of Texas law does not explicitly grant the right of land use regulation to counties, though municipalities can adopt and implement various land use and development controls. As a result, Bexar County lacks the capacity to proactively shape land use patterns and development outcomes.

To narrow this gap, the initiatives approach would seek additional state-enabling legislation to pursue limited land use regulation in portions of Bexar County affected by noise or safety risks. The intent of the legislation would be to establish very targeted and specific authority to protect public health, safety and welfare. Regulatory measures could include required sound attenuation for new noise sensitive construction near the Lackland Training Annex or prohibitive land use regulations to prevent certain land uses triggering safety conflicts with nearby training. This authority would not, however, prescriptively determine density and development character in the broader area. The JLUS recognizes the full adoption and use of this tool as a long-term compatibility option and calls for mid-

term action to build political momentum and initiate a legislative strategy to request limited land use authority, particularly the ability to require noise attenuation, from the state.

Enhanced Extra-Territorial Jurisdiction Authority

The State of Texas enables its municipalities to promote orderly growth and protect public health within an extra-territorial jurisdiction (ETJ). In San Antonio, this five-mile buffer from the corporate limits includes all impact-affected areas around Lackland AFB and the training annex. Consistent with state law, the City of San Antonio exercises subdivision authority in this area, but cannot regulate lot size or land use as part of its established powers. A related legislative initiative would seek an expanded use of existing ETJ authority to protect a regionally significant asset, such as a military installation. Enhanced ETJ authority could, for example, include prohibitive land use regulations in designated areas, including noise or air safety zones, or requirements for specific building standards, including noise attenuation. Effective use of broadened ETJ powers would require express state approval and viable enforcement mechanisms at the local level.

This strategy would essentially accomplish the same desired outcome as limited land use authority for the county–a local governing body with the established powers to promote military compatibility through regulatory means in unincorporated parts of the county. The JLUS also recognizes this tool as a long-term measure, but recommends that the City of San Antonio, in collaboration with Bexar County, pursue a mid-term legislative strategy to explore strengthened ETJ provisions around military installations.

Annexation

Several other options exist for broadening municipal-level land use regulation into unincorporated areas with high compatibility risks. Incorporation by the City of San Antonio would establish sufficient land use regulatory powers to manage future development activity and reduce encroachment threats, particularly in the Lackland Training Annex Area of Concern. Annexation has complex fiscal, legal and political issues to be explored. Current state law also limits the use of annexation as mechanism for land use regulation since existing development rights can be grandfathered for a period of up to 15 years. The JLUS does not identify annexation as a currently viable, near-term recommendation for compatibility.

Joint City-County Airport Zoning Board

Texas Code authorizes the creation of a joint city-county airport zoning board that can enforce regulations to promote compatibility around airports and air navigation facility or airport hazard areas. Before an airport zoning regulation may be adopted, the participating political subdivisions must appoint an airport zoning commission. Joint boards can enable the exercise of limited compatibility regulations outside of city boundaries. Currently, the City of San Antonio has a designated Joint Airport Zoning Board (JAZB) that includes Bexar County and Guadalupe County and all incorporated towns and cities lying under the imaginary surfaces of aviation facilities. The purpose of the JAZB is to enforce airport compatibility land use regulations. The lack of aviation-related operations at the Lackland Training Annex, however, limits the applicability of this option to regulate compatibility in unincorporated Bexar County unless the express powers of the joint board are more broadly defined to include protection of other military training facilities. The JLUS does not identify use of a JAZB as a currently viable, near-term compatibility measure.

Transportation

Transportation impacts in the study area reflect general community concern about traffic congestion along key roadways, such as SW Military Drive, as well as security and access issues for those roadways around the base and annex. SW Military Drive is of particular concern since this heavily traveled corridor physically divides the main base. Study partners are scheduled to begin a detailed

transportation study around Lackland AFB in 2011. JLUS participants should continue to collaborate with the Metropolitan Planning Organization and Department of Transportation during the study to examine feasible options to improve security and mobility conditions, including new roadway configurations, access management strategies or signal timing adjustments to facilitate the flow of traffic during peak hours. Stakeholders should, however, thoroughly study any proposal to close, reduce, or expand roadway access as part of an overall assessment of the local transportation network to minimize adverse impacts on surrounding areas.

The JLUS also recommends that the Air Force, PSA and other facility tenants, as well as VIA, collaborate on implementation of a traffic demand management plan for base and port employees to reduce reliance on personal vehicle commuting. Options can include van pools, transit use, and flexible work schedules.

Outdoor Lighting

The use of excessive and unshielded outdoor lighting can interfere with aircraft operations and training activities. Night vision training, in which pilots and airmen use night vision goggles (NVGs) or other types of night vision systems, is essential to the mission of the modern military and represents a significant tactical advantage for US forces. Overlighting and unshielded light both act as sources of light pollution that affect night vision equipment.

Outdoor lighting systems, especially lighting associated with billboards, gas stations, major roadways, athletic fields, and large commercial or industrial uses, allow significant light to travel upward into an otherwise darkened sky. The resulting "light pollution" can obscure pilot vision or interfere with the use of night vision training devices.

Regulations that minimize interference with the night vision training environment do not require the strict prohibition of exterior lighting or the complete replacement of existing lighting fixtures. Instead, regulations focus on installing less intrusive lighting applications either for new development or as part of the routine maintenance/replacement of public utilities.

The City of San Antonio has created a Military Lighting Overlay District to regulate the installation and use of outdoor lighting within five miles of the boundaries of military bases, camps, and installations. The ordinance denotes appropriate lighting fixtures and illumination levels for new residential and commercial uses, as well as for outdoor signs and street lighting. This ordinance establishes the full authority to regulate outdoor lighting impacts in critical areas around the airfield, main base, and Lackland Training Annex. As noted earlier, several missions at the Lackland Training Annex, including weapons qualifications, BEAST field exercises and the Military Working Dog program, currently rely on nighttime training and the use of night vision systems. Air Force representatives, however, have indicated limited night vision training during aviation operations at the Kelly Field annex. The JLUS, therefore, prioritizes the protection of the night vision training environment at the Lackland Training Annex. The geographic area of concern around the annex (Lackland Training Annex AOC) is a conceptual buffer. As a short-term measure to reduce the risk of light intrusion on sensitive operations, the Air Force should conduct a detailed lighting and screening study to refine the area of applicability in support of a designated Military Lighting Overlay District around the Lackland Training Annex. Though a lower priority, the JLUS also recommends that the City of San Antonio rezone parcels to apply a Military Lighting Overlay District around the airfield to protect pilot vision and ensure maximum flexibility in future aviation missions. The city should pursue this mid-term option by collaborating with Lackland AFB and PSA to identify appropriate boundaries for the overlay designation. The JLUS currently proposes use of the inner approach and departure zones to represent these light-sensitive areas.

In the short-term, the city and county should review development proposals for compliance with

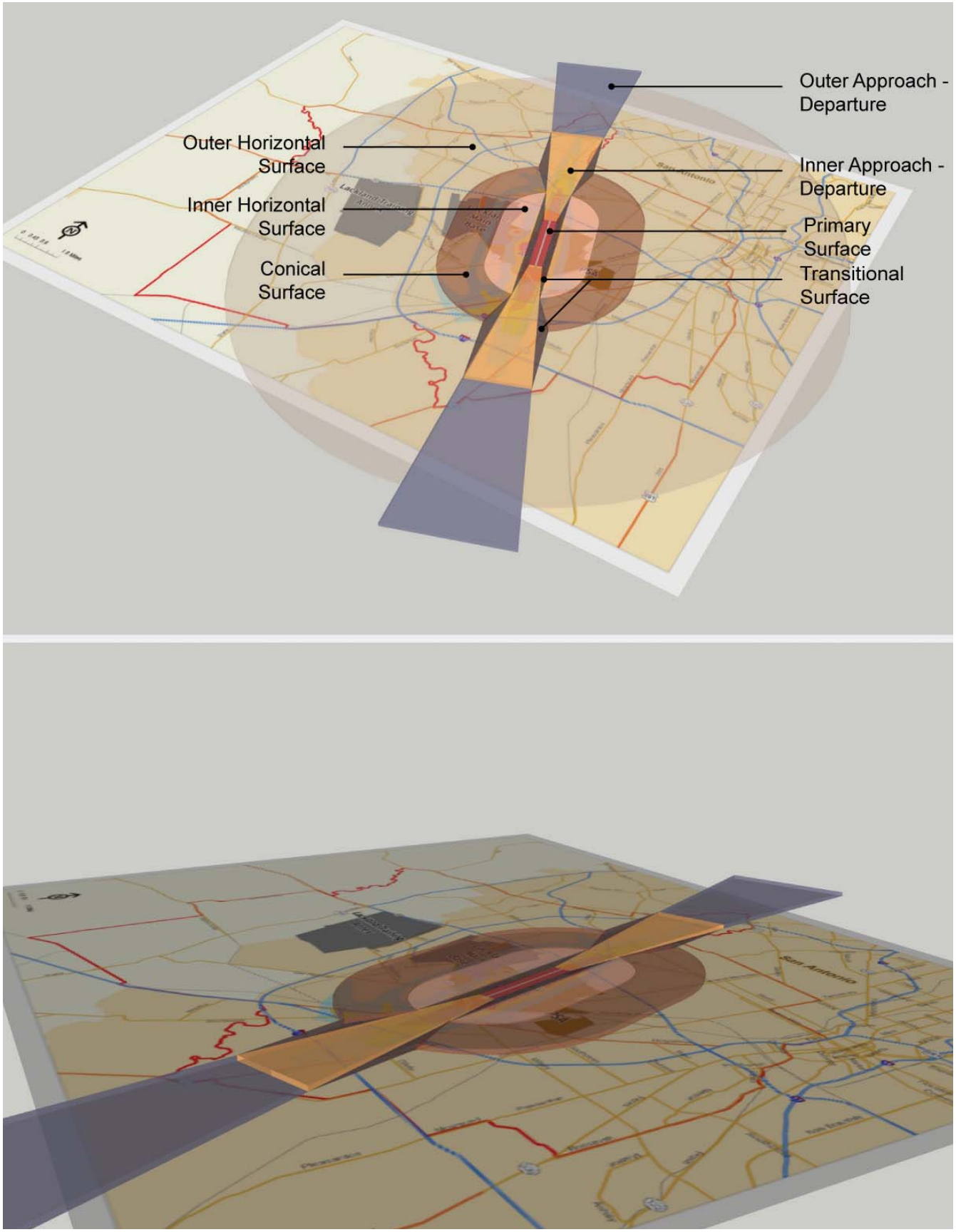


Figure 8.1. Controlled Airspace around Kelly Field Annex

ordinance provisions and conduct educational outreach to property owners, developers and utilities on the benefits of shielded lighting fixtures. Study partners should also encourage the voluntary replacement of non-compliant outdoor lighting systems to reduce light pollution.

Noise/Sound Attenuation

Military Sound Attenuation Overlay Zoning District

As noted in the review of existing regulations, the City of San Antonio's Unified Development Code designates overlay zones to protect the security of the city's commercial and military airports and those living and working in the vicinity of these airfields. The city has an Airport Hazard Overlay District (AHOD) to prevent aviation hazards around the Kelly Field Annex, the San Antonio International Airport, Stinson Municipal Airport, and Randolph Air Force Base. The overlay district regulates development standards and height restrictions within the Federal Aviation Administration controlled airspaces shown. The Unified Development Code also designates Military Airport Overlay Zones (MAOZ) for property below the military airport take off and final approach paths. The military airport overlay zones are designed as overlays to the regular zoning districts and specify limitations on the height, density, and intensity of development. The zoning overlay classifications include MAOZ-1 for the area within APZ 1 and MAOZ-2 for the area within APZ 2. Both of these areas are shown as part of the Air Safety Military Influence Area.

Attenuation refers to special design and construction practices intended to lower the amount of noise and vibration that penetrates the windows, doors, and walls of a building. Local governments can require attenuation as part of building code enforcement for new residential and other noise sensitive construction in certain noise-affected areas (typically in excess of 65 dB around Lackland AFB). Attenuation practices are most effective for areas subject to A-weighted noise generated by aviation activity and small weapons firing. Complete sound attenuation guidelines are available in the latest advisory document on: Guidelines for Sound Insulation of Residences Exposed to Aircraft Operations, 2005.

While these overlays are effective at reducing compatibility risks in air safety zones, the current code lacks adequate protection for noise-exposed areas (Noise Military Influence Area). The primary strategy of the land use regulation approach is to enhance City of San Antonio's land use authority to minimize and protect noise sensitive uses in these areas. The city has now amended its the Unified Development Code to incorporate a Military Sound Attenuation Overlay Zoning District (MSAO). The district establishes construction-related standards to reduce the level of external noise heard within the interior of noise sensitive structures. The recently adopted ordinance establishes Camp Bullis as MSAO-1. The City of San Antonio should rezone parcels in the Noise MIA to apply appropriate sound attenuation overlay to noise contours around Kelly Field. The JLUS supports the adoption of either the existing sound attenuation standards identified in the MSAO or the use of similarly effective, science-based construction practices that achieve the desired level of indoor noise reduction.

As has been emphasized previously, Bexar County and the City of San Antonio have no comparable power to require noise attenuation on unincorporated properties near the Lackland Training Annex. The legislative initiative tools focus on pursuing this additional regulatory authority in the unincorporated county. The JLUS also recommends in the short-term that the Air Force conduct detailed technical modeling of noise impacts around the Lackland Training Annex to refine the geographic area of applicability for sound attenuation practices and to assess the feasibility of on-base sound mitigation.

Residential Retrofitting Program

An earlier tool suggests seeking state authorization to permit the county to regulate the sound attenuating properties of new construction materials. For current housing units under the flight paths,

attenuation would require structural modifications. The JLUS recommends that the city and county conduct a feasibility study to determine the extent of physical improvements required to achieve sufficient interior noise reduction. Aging housing stock, which does exist in the study area, often lacks the insulation or possibly even the structural integrity to meet attenuation standards in a cost efficient manner. After assessing the economic effectiveness of this option, study partners should explore the establishment of a voluntary sound attenuation retrofitting program.

The City of San Antonio International Airport and other airport facilities around the country have implemented similar programs that allocate funds to improve the sound insulation characteristics of affected houses. The process usually requires participating homeowners to dedicate an avigation easement. An easement is the right granted to a third person to use private real property in a specified manner. An easement may be given, for example, for overhead wires, underground gas, power, sewer or storm drain lines, and sidewalks or roads. An avigation easement affects the use of airspace above the privately owned property. It essentially is a property right acquired from a land owner that grants the right of military training activities—in this case flight activity-- in proximity to the affected parcel. The easement runs in perpetuity with the deed to the property. Avigation easements may:

- Include language that expressly grants the right of the Air Force and Port San Antonio to cause noise and vibration caused by standard flight operations;
- Restrict or prohibit certain lights, electromagnetic signals, or land uses that could interfere with communications technology and safe aircraft operation; and
- Require unobstructed airspace over the property above a specified height

The Federal Aviation Administration and the participating airport can act as funding partners for sound insulation retrofitting programs around civilian airports. Funding can be generated through passenger facility charges and airport revenue. Similar funding mechanisms, particularity passenger fees, are not feasible for military airports and cargo facilities given the lack of commercial flight activity. Given the presence of some distressed neighborhoods with aging housing stock in the noise contours around the airport, study partners should explore alternative funding mechanisms geared toward housing rehabilitation, neighborhood revitalization, or efforts to increase the energy efficiency of existing structures through better windows and insulation. The Texas Department of Housing and Community Affairs, for example, has a Weatherization Assistance Program that can fund the installation of weatherization measures to improve energy efficiency in low-income households The weatherization work consists of caulking; weather-stripping; adding ceiling, wall, and floor insulation; patching holes in the building envelope; and repairing duct work. To be eligible, the property structure must be able to benefit from weatherization. Though intended as energy programs, these improvements can also contribute to sound insulation.

Avigation Easements

Easements can also be used to protect the military mission prior to actual construction. Local governments, for example, may establish the granting of a noise easement by the developer as a condition for the approval of a proposed new home subdivision in areas subject to military training impacts, such as a high noise zone or Accident Potential Zone. The jurisdiction would then hold the easement for the life of the title. The city, county and utility providers could thus require the dedication of an easement prior to the approval of a Utility Service Agreement, Master Development Plan or other discretionary development approvals in the MIAs and AOCs.

Bird Aircraft Strike Hazard (BASH)

Aircraft collisions with birds and other wildlife annually cause millions of dollars in aircraft damage and may result in loss of aircraft and aircrews. Human-made or natural areas, such as poorly-drained land, retention ponds, roosting habitats on buildings, landscaping, putrescible-waste disposal operations, wastewater treatment plants, agricultural or aquacultural activities, or wetlands can attract birds and wildlife to aviation areas.

The Air Force has specific guidance that requires installations with flying operations to establish a BASH program on airfield facilities. Local governments can supplement military efforts by adopting certain standards for the siting and design of facilities, such as stormwater infrastructure or landfills, in the vicinity of the airfield, particularly the approach and departure zones. The Federal Aviation Administration, for example, recommends that retention basins be designed with steep sides, narrow water bodies, and riprap lining to reduce use by birds and that such facilities be placed away from aircraft movement areas to minimize collision risks. Bexar County and the City of San Antonio should incorporate these standards as part of zoning and the subdivision and Master Development Plan review processes. Utility providers should also emphasize compliance with BASH practices in the construction and design of stormwater infrastructure.

Height/Airspace Restrictions

Airfields feature a series of imaginary spaces above the runways that must be free of vertical, visual or electrical interference to enable safe use of landing and departing aircraft. The most common hazards stem from either man-made or natural features, such as buildings, telecommunications towers or trees that are tall enough to penetrate the airspace. As shown in Figure 8.1, the controlled airspaces around Kelly Field are sloped, meaning that limitations on height become more restrictive closer to the runways when aircraft are at their lowest altitude. With distance from the runways, the heights can increase without causing physical interference. Other hazards include uses that could impair pilot vision by generating light glare, steam, or dust or confuse pilot orientation by producing lighting similar to airfield navigational signals.

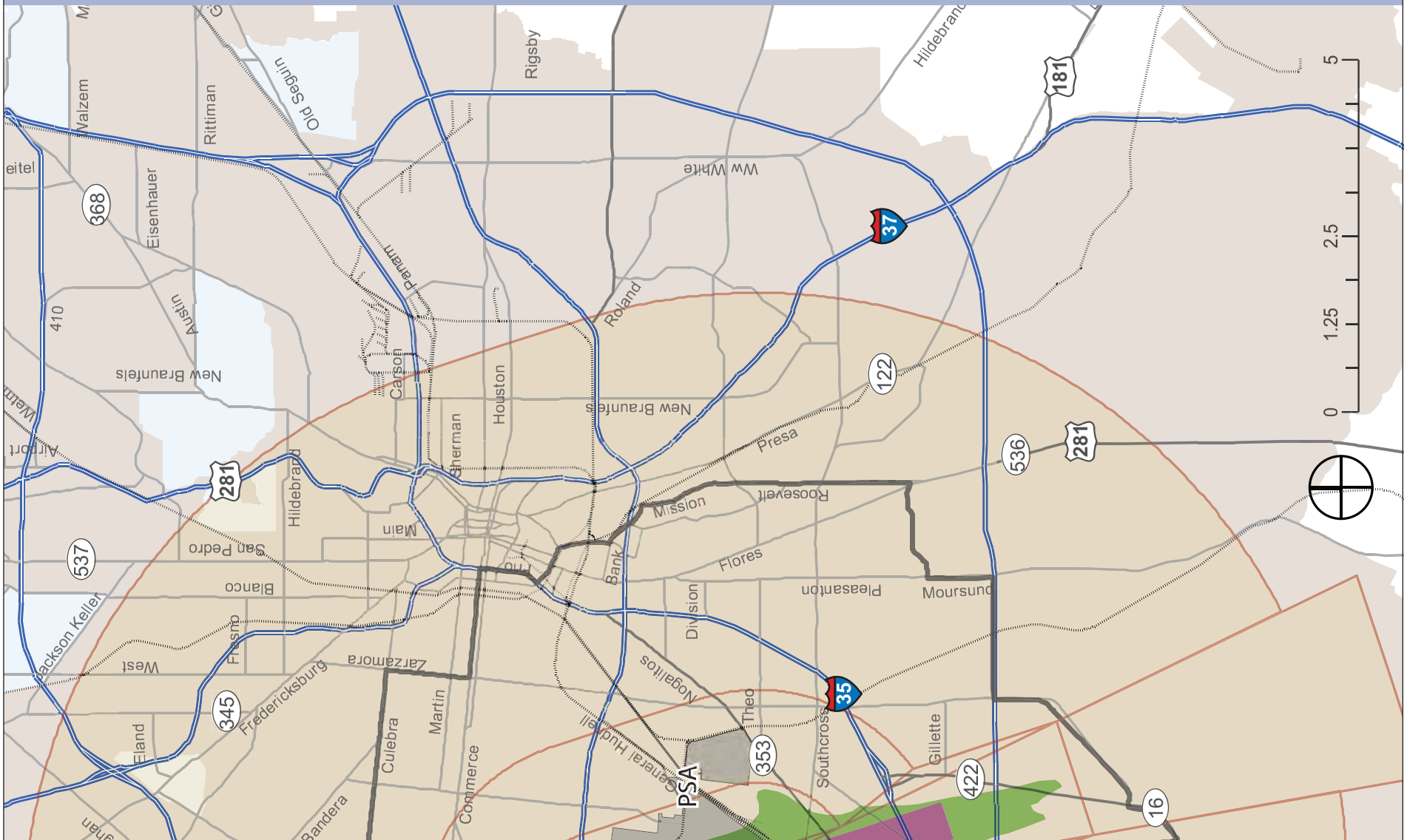
The Federal Aviation Administration controls the airspaces around the airfield. As noted earlier, the city also has an Airport Hazard Overlay District (AHOD) that regulates development standards and height restrictions within the Federal Aviation Administration controlled airspaces. The AHOD establishes sufficient regulatory provisions to protect these airspaces from potential aviation hazards. This approach recommends supplementing the existing ordinance with further educational outreach on property that falls under controlled airspaces and the associated development standards or height restrictions. The City of San Antonio should explore development of a three-dimensional modeling in Geographic Information Systems to assist planners and decision-makers in more easily interpreting the sloped flight paths and assessing the height risks of proposed buildings and infrastructure.

Radio Frequency Interference (RFI)

Civilian radio frequency devices, such as those used by industry or public safety agencies that overlap with military radio frequencies, could affect on-board electronic systems, communications equipment or other communications and security technologies used at Lackland AFB. This unintended disruption is referred to as Radio Frequency Interference or RFI. The JLUS recommends coordination between local governments and base officials to ensure that proposed spectrum uses do not conflict with military communications and security operations.

Similarly, base operations can disrupt common household wireless devices, such as garage door openers, that operate on a military-owned spectrum. To address this issue, study partners should

Figure 8.2. JLUS Study Area MIAs and Areas of Concern



conduct outreach on the availability of homeowner retrofit kits that can switch the frequency used by the household device and thus eliminate any interference.

Drainage

Appendix M contains a separate, technical review of drainage issues and ongoing or planned stormwater projects within the JLUS area. The primary drainage issue in the study area is the flood hazard associated with out-of-banks creek flooding. According to the recent FEMA DFIRM updates for Bexar County (Sep. 2010), 15% (23.1 sq. mi.) of the study area is within the 1% annual flood risk area.

Specific flooding issues at the base occur at some of the storm sewer outfall structures, and at the security grates placed at the installation boundary. Flooding from Leon Creek has been identified as an issue at the Test Cell facility, which requires periodic hoisting of equipment to avoid significant flood damage. With significant undeveloped areas in the upstream portions of the Leon and Medio Creek watersheds, the potential exists for increases to flood levels along the creeks. There are also issues with localized flooding within the installation and across the study area, where curb inlets and storm sewer networks do not have the conveyance capacity to carry the larger storm flows.

Several approaches to mitigating flood hazard risks are currently in use or under consideration by various entities within the study area and contributing drainage area:

Traditional Approaches

- Stormwater Detention: This method involves the construction of pond facilities for the purpose of reducing the peak storm discharge that occurs in the downstream portion of the creek. In essence, the flooding is moved from downstream areas to inside of the pond, which will then drains out after the highest flows have passed. There are numerous existing onsite detention ponds within the contributing drainage area, virtually all of which designed to offset increased peak discharge from each separate developed area. The San Antonio River Authority is currently studying the potential impacts of constructing larger, “regional” stormwater detention facilities to reduce existing flood hazards. Ten of these are currently proposed in the Leon Creek watershed, all of them upstream of the Lackland installation, however the proposed benefits at the installation are estimated to be minimal.

- Channelization: By expanding the width and/or depth of a stream, the ability to convey floodwaters can be improved, bringing the floodplain elevations down. A typical approach for historical channelization projects was to widen channels with a trapezoidal cross-sectional geometry, often times adding concrete lining (rip-rap) to reduce the surface friction. Current trends however, attempt to perform channelization with designs that more closely mimic the natural stream formation processes (fluvial geomorphology). There are no significant channelization projects currently defined within the study area.

- Property Buyout: When there are structures located within flood hazard areas, one of the most effective means of reducing flood risk is to physically remove the structure through a property acquisition by a public entity. Once the title has transferred and the structures have been removed, these buyout properties can often be utilized as public open space or parks. Buyouts are also often coupled with the construction of stormwater detention or channelization projects. There are no significant flood hazard property buyout projects currently defined within the study area.

- Water Quality Ponds: The initial runoff from storm events tends to carry the highest loading of surface pollutants, and ponds are typically constructed to capture this “first flush” and filter the pollutants before they can enter the streams. There are no significant water quality projects

currently defined within the study area.

New Trends:

- No Adverse Impact (NAI): While most communities within study area have adopted ordinances that restrict activities which would raise floodplain elevations, these are most often aimed at developments within the floodplain boundaries, while other sources of increased flood levels over time may not receive the same level of attention. The No Adverse Impact initiative is intended to have communities take a more comprehensive look at all potential sources of flooding, and to prevent not only floodplain encroachments, but also to manage the short and long term impacts from surface changes in the watershed, loss of valley storage in the streams, increased storm runoff volumes, and flood velocities / streambank erosion issues. The goal is to stop the "creep" that has continued to occur in the growth of floodplains over time.
- Low Impact Development (LID): Development activities typically increase the levels of impervious cover through street paving, parking lots, rooftops, driveways and sidewalks. Through the use of pervious surfaces, reduced development densities, rainwater collection, and other innovative techniques, Low Impact Developments are designed to reduce stormwater runoff volumes and peak storm discharges, enhance groundwater infiltration, and reduce pollutant runoff into the streams.

The most significant drainage issues that affect Lackland AFB and PSA are the following:

- Flooding from Leon Creek, due to offsite development (upstream of the installation) issues, which increase the flood discharges that flow towards and through the installation.
- Flooding from Leon Creek, due to obstructions in the creek within the installation boundary.
- Flooding from Medio Creek, due to offsite development (upstream of the installation) issues, which increase the flood discharges that flow towards and through the installation.
- Localized street flooding on the installation, likely due to undersized storm sewer conveyance networks.
- Concern from area residents related to the perception that flood levels or water quality issues are being driven by activities from within the installation.

The JLUS recommends that future planning activities and communications consider the following:

1. Maintain close communications between staff at Lackland AFB, Port of San Antonio, Bexar County, the City of San Antonio, the San Antonio River Authority, and the U.S. Army Corps of Engineers. The continued sharing of project planning and design information will also result in better project outcomes for all.
2. Remove obstructions within Leon and Medio Creeks (and other streams, as appropriate) to reduce flood levels within the Installation.
3. Redesign the security grate(s) in Leon and Medio Creeks (and other streams, as appropriate) at the Installation boundaries, to reduce upstream flood levels.
4. Provide funding support for upstream stormwater detention facilities and onsite channelization planning, construction and maintenance.
5. Provide education for base personnel and area residents that describe the area flood risks, and actions that are being undertaken to reduce flood and water quality issues.

Planning Areas

Members of the planning team and Advisory Committee identified a series of overlapping geographic areas around Lackland AFB and the airfield that warrant special coordination procedures or land use regulation due to their proximity to aviation or training activities. Each of the planning areas is exposed to one or more operational impacts related to the military mission, such as noise, the risk of an aircraft accident, or lighting pollution. These boundaries reflect both the results of computer modeling to identify specific areas of impact or Military Influence Areas, as well as conceptual buffers or Areas of Concern intended to capture those areas that are likeliest to be affected by training activities. When combined, these planning areas serve as the spatial framework for compatible land use planning around the installation as shown in Figure 8.2. These areas also form the geographic basis for a Military Influence Planning District around Lackland AFB.

Table 8.1. summarizes the geographic areas covered, associated operational impacts, and the basis for their designation.

Table 8.1 - Planning Subareas

Area	Geographic Area	Basis for Designation	Operational Impacts/ Issues
Air Safety Military Influence Area	Clear Zones and Accident Potential Zones that extend from Kelly airfield runways into the community	Historical analysis of military aircraft accidents indicate a statistically higher risk of an accident in these areas	Risk of an aircraft accident; these areas also typically exposed to higher aircraft noise levels
Noise Military Influecne Area	Identified by computer modeling that incorporates the frequency and type of military and port aircraft operations	These are areas of higher average aircraft noise exposure	The average noise level is high enough to interfere with the daily activities of some residents
Main Base Area of Concern	1,500 to 3,000 foot conceptual buffer around the perimeter of Lackland's main base	This area encompasses property with direct adjacency and to the base	Potential security vulnerability for military personnel on the installation and some noise exposure from activities at the main base
Lackland Training Annex Area of Concern	1,500 to 3,000 foot conceptual buffer around the perimeter of Lackland's West Training Annex	This area encompasses property with direct adjacency and to the training annex	Noise exposure from training activities at the BEAST, small weapons ranges and ordnance detonation; potential for outdoor lighting interference with nighttime training activities

Table 8.2. summarizes recommendations by area and indicates current policies or any additional local regulatory or state legislative actions that are necessary to protect the safety of affected property. The implementation plan includes the county or region-wide implementation strategies.

The table below summarizes recommendation by:

Communication tool – methods to increase awareness of operational impacts and strengthen local coordination on land use, development, and infrastructure decisions

Performance standards – methods to control the impacts produced by an activity or the performance of a structure, rather than regulations that specify a permissible land use type for the area

Compatible Uses – specific land use types that based on Air Installation Compatible Use Zone guidance are a safe fit with nearby training activities and operational impacts; compatible land uses are typically regulated through land use codes, but as highlighted in Table 8.2, local governments may not have the current authority to control permissible land uses.

Table 8.2 - Summary of Main Recommendations by Planning Area

Sub-Area	Communication Tools	Performance Standards	Compatible Uses/Limitations	Current Controls/ Additional Actions Required
Air Safety MIA – Clear Zone	• No uses permitted	• No uses permitted	• No uses permitted	• CZ is mostly owned by the AF
Air Safety MIA – APZ 1	• Real estate disclosure • Joint consultation through an MOU • Searchable database	• Height restrictions • No electrical or visual interference • No BASH hazards • Shielded outdoor lighting	• No new single-family housing • Maximum 3,000 square foot building size for industrial and commercial uses	• MAOZ is in place • MLOD is in place • Develop disclosure methods • Develop MOU • Rezone for MLOD • Develop BASH standards
Air Safety MIA – APZ 2	• Real estate disclosure • Joint consultation through an MOU • Searchable database	• Height restrictions • No electrical or visual interference • No BASH hazards • Shielded outdoor lighting	• One (1) new single-family residence per acre • Maximum 250,000 square foot building size for industrial and commercial uses	• MAOZ is in place • MLOD is in place • Develop disclosure methods • Develop MOU • Rezone for MLOD Develop BASH standards

Noise MIA	• Real estate disclosure • Joint consultation through an MOU • Searchable database	• Sound attenuation for permitted noise sensitive uses	• Non-noise sensitive uses (retail, industrial) are most compatible • Noise sensitive uses (houses, schools, medical facilities) should be attenuated or limited in density	• MSAO is in place • Develop disclosure methods • Develop MOU • Rezone for MSAO • Explore easement or acquisition options • Explore attenuation retrofitting
Main Base AOC	• Real estate disclosure • Joint consultation through an MOU • Searchable database	• Shielded outdoor lighting	• No use limitations recommended • Redevelopment should increase buffer from base perimeter where possible and avoid tall structures or dense development to enhance installation security	• MLOD is in place • Develop disclosure methods • Develop MOU • Rezone for MLOD
Lackland Training Annex AOC	• Real estate disclosure • Joint consultation through an MOU • Searchable database	• Sound attenuation for permitted noise sensitive uses • Shielded outdoor lighting	• Non-noise sensitive uses (retail, industrial) are most compatible • Noise sensitive uses (houses, schools, medical facilities) should be attenuated or limited	• Conduct additional lighting and noise modeling to refine area of applicability • MLOD is in place • Develop disclosure methods • Develop MOU • Explore easement or acquisition options • Designate MLOD overlay

Legend:
AHOD = Airport Hazard Overlay District
APZ = Accident Potential Zone
BASH= Bird-Airstrike Hazard
CZ = Clear Zone
MAOZ = Military Airport Overlay Zones
MLOD = Military Lighting Overlay District
MOU= Memorandum of Understanding
MSAO = Military Sound Attenuation Overlay District

Recommendations include a series of partnership-based actions to be accomplished in the short-, mid- and long-term.

Implementation Plan

The planning team worked closely with the Advisory and Executive Committees to evaluate all possible strategies to promote compatibility and reduce land use conflicts in areas affected by training and aviation activity. Committee members assessed the options described above based on criteria such as: feasibility; likely effectiveness; the availability of resources for implementation; the existing legal framework in Texas; the ability to protect the military mission and port operations; the ability to protect the economic health of the region and individual property rights; and the overall ability to protect health, safety, welfare, and quality of life.

The recommendations summarized in Table 9.1 are also intended to address a variety of possible land use and operational issues identified during the JLUS process, including noise, physical adjacency to Lackland AFB, air safety (both for people on the ground and for aviators), and light pollution. Since each of the study partners will play a critical role in the effective implementation of recommended strategies, Table 9.2 also organizes action steps by major stakeholder. Including Lackland AFB, Port San Antonio, Bexar County, the City of San Antonio, area utilities, and the real estate community.

When developing the recommendations, participants sorted actions into short-, mid- and long-term as follows:

Short-term	Less than 1 year
Mid-term	1 to 3 years
Long-term	More than 3 years

Actions identified as long-term can be viewed as more strategic or aspirational due to challenges, such as limited funding, the lack of legal authority to enact policy, the need to conduct additional study to determine feasibility or the need to build additional regional and community support for implementation.

The most critical short-term recommendations are listed below. Though not specifically ranked in order of priority, the planning team has identified these actions as the most feasible to be implemented in the near term and the most promising at addressing key compatibility issues.

- Implement science-based sound mitigation protocols for the airfield noise contours (Noise Military Influence Area)

- Explore a mechanism for voluntary real estate disclosure of noise and other factors that may affect property near commercial, industrial and/or military facilities. (Noise and Safety Military Influence Areas and Areas of Concern)

- Conduct a modeling study of noise-generating mission activities at the Lackland Training Annex to refine the geographic area in which subsequent sound attenuation mitigation may be applied and assess the feasibility of on-base noise mitigation measures based on Lackland JLUS Implementation Committee and stakeholder input

- Conduct a lighting study for night vision device operations at the Lackland Training Annex to refine the geographic area in which a Military Lighting Overlay District Overlay may be applied based on Lackland JLUS Implementation entity and stakeholder input

- Formalize communication procedures through a Memorandum of Understanding signed by the study partners

- Ensure the City of San Antonio West/Southwest Sector Plan considers the compatibility findings of the Joint Land Use Study, along with other relevant input such as approved master plans, stakeholder input, and existing uses

- In collaboration with JLUS Implementation entity and stakeholders, develop educational outreach materials for the community, including web sites, handouts, brochures, regular community briefings with Joint Base-Lackland and Port San Antonio representatives

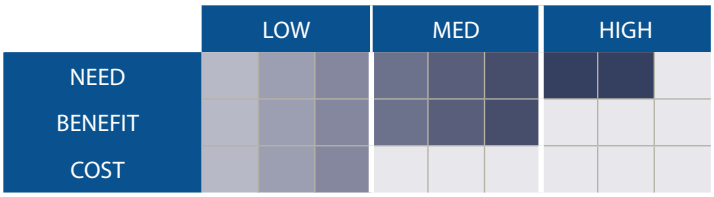
- Establish an ongoing implementation entity with stakeholder and industry representatives of the Advisory Committee to put the plan into action in conjunction with existing entities, such as Joint Base San Antonio or the Military Transformation Task Force

The project summaries that follow provide more detailed information on these near-term, foundational action steps.

Recommendation 8

Strategy: Communication and Coordination

Action: Establish an ongoing implementation entity with stakeholder and industry representatives of the Advisory Committee to put the plan into action in conjunction with existing entities, such as Joint Base San Antonio or the Military Transformation Task Force



Community Benefits	Coordination
Lead Partner	Bexar County
Cost	Less than $50,000
Timeline	Short-term (less than one year)
Benchmarks	Designation of a functional organizational structure

Strategy: Multi-jurisdictional and multi-sector collaborations are more effective when led by a single entity. The military, government, and community study partners to form an ongoing implementation body that meets on a regularly scheduled basis to share information on mission or land use changes, monitor implementation progress, and revisit longer-term compatibility strategies as conditions warrant.

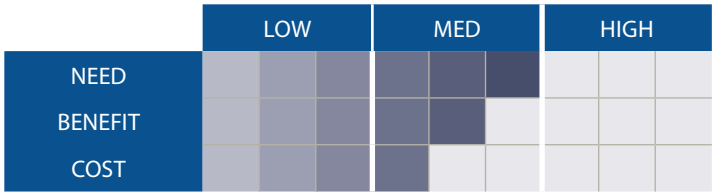
Action Steps:

- Collaborate with AF and COSA to develop the initial organizational framework for the entity
- Focus on Identifying members; establishing notification procedures; developing outreach material; defining issues to review and information to share; and developing a list of ongoing implementation measures to fund and carry out
- Explore allocation of available Bexar County resources, such as staffing, meeting facilities, funding and administrative functions to support entity operations

Recommendation 7

Strategy: In collaboration with JLUS Implementation entity and stakeholders, develop educational outreach materials for the community, including web sites, handouts, brochures, regular community briefings with Joint Base-Lackland and Port San Antonio representatives

Action: Develop educational outreach materials for the community, including web sites, handouts, brochures



Community Benefits	Coordination Public Awareness
Lead Partner	Bexar County
Cost	Less than $50,000
Timeline	Short-term (less than one year)
Benchmarks	Availability of printed and electronic outreach materials

Strategy: Communication activities ensure that residents, developers, businesses, and local decision-makers have adequate information about military and port operations and possible impacts on lands surrounding Lackland AFB. Community study partners should use all available media, including posters, brochures, and city and county web sites to convey information.

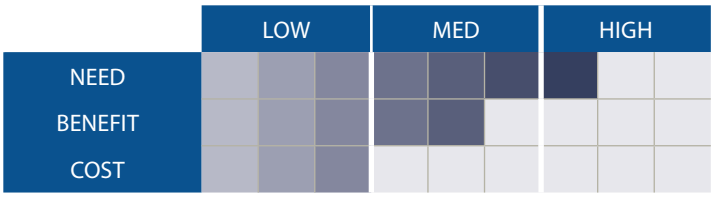
Action Steps:

- Spearhead efforts to produce and distribute printed and electronic outreach materials, including maps, JLUS findings, background on AF and PSA activities, and economic impact
- Create a link on the Bexar County web site that ties to JLUS findings and background information

Recommendation 6

Strategy: City and County Plans

Action: Ensure the City of San Antonio West/Southwest Sector Plan considers the compatibility findings of the Joint Land Use Study, along with other relevant input such as approved master plans, stakeholder input, and existing uses



Community Benefits	Coordination
Lead Partner	City of San Antonio
Cost	Less than $50,000
Timeline	Short-term (less than one year)
Benchmarks	Compatible land use scenario and inclusion of a military compatibility section

Strategy: The City of San Antonio began the West/Southwest Sector Plan in September of 2010 and the study process continued through April of 2011. Once completed, the plan will become an adopted component of the city's Master Plan. Previous sector planning efforts, such as the North Sector Plan surrounding Camp Bullis, have incorporated a military compatibility section that lays out objectives and recommends compatible development standards and land uses. The ongoing West/Southwest Sector Plan represents a similar opportunity to highlight compatibility issues in the Lackland JLUS study area and illustrate a compatible future growth pattern.

Action Steps:

- Collaborate with Bexar County on the West/Southwest Sector Plan process to develop a sector Land Use Plan that reflects growth and development options compatible with nearby military training activities
- Sector plan should contain guidance on military compatibility, including potential noise, lighting and safety issues and recommended development mitigation measures, such as the shielded lighting, real estate disclosure, and noise attenuation to address operational impacts in exposed areas

Recommendation 5

Strategy: Communication and Coordination

Action: Formalize communication procedures through a Memorandum of Understanding signed by the study partners

Community Benefits	Coordination
Lead Partner	Bexar County
Cost	Less than $50,000
Timeline	Short-term (less than one year)
Benchmarks	Signed MOU

Strategy: A Memorandum of Understanding (MOU) is a "good faith" document that establishes procedures for communication and formalizes collaboration among multiple stakeholders, including the Air Force, Port San Antonio, Bexar County, the City of San Antonio, and utility providers. The MOU would identify land use or mission actions appropriate for consultation, list procedures for communication, and establish primary points of contact for each stakeholder group.

Action Steps:

- Collaborate with AF and COSA to develop the initial organizational framework for the entity
- Focus on Identifying members; establishing notification procedures; developing outreach material; defining issues to review and information to share; and developing a list of ongoing implementation measures to fund and carry out
- Explore allocation of available Bexar County resources, such as staffing, meeting facilities, funding and administrative functions to support entity operations

Recommendation 4

Strategy: Outdoor Lighting

Action: Conduct a lighting study for night vision device operations at the Lackland Training Annex to refine the geographic area in which a Military Lighting Overlay District Overlay may be applied based on Lackland JLUS Implementation entity and stakeholder input

	LOW	MED	HIGH
NEED			
BENEFIT			
COST			

Community Benefits	Outdoor Lighting
Lead Partner	Lackland AFB
Cost	Less than $100,000
Timeline	Short-term (less than one year)
Benchmarks	Technically modeling and light measurements to identify lighting environmental zones

Strategy: The Lackland Training Annex Area of Concern is a conceptual buffer. As a short-term measure to reduce the risk of light intrusion on sensitive operations, the Air Force should conduct a detailed lighting and screening study to refine the area of applicability in support of a designated Military Lighting Overlay District around the Lackland Training Annex.

Action Steps:

- Air Force to scope, fund and conduct noise modeling
- Coordinate study results with Bexar County in support of a request to designate a Military Lighting Overlay District around the Lackland Training Annex

Recommendation 3

Strategy: Sound Attenuation

Action: Conduct a modeling study of noise-generating mission activities at the Lackland Training Annex to refine the geographic area in which subsequent sound attenuation mitigation may be applied and assess the feasibility of on-base noise mitigation measures based on Lackland JLUS Implementation Committee and stakeholder input

	LOW	MED	HIGH
NEED			
BENEFIT			
COST			

Community Benefits	Noise
Lead Partner	Lackland AFB
Cost	Less than $100,000
Timeline	Short-term (less than one year)
Benchmarks	Technically modeled noise contours to represent average decibel training noise exposure for off-annex land

Strategy: The Lackland Training Annex Area of Concern as identified in the JLUS is currently a conceptual buffer. The Air Force should conduct detailed technical modeling to determine the level and geographic area of noise exposure from weapons firing, periodic ordnance explosions and BEAST sound simulation exercises at the Lackland Training Annex to refine the geographic area of applicability for sound attenuation practices and to assess the feasibility of feasible on-base sound mitigation.

Action Steps:

- Air Force to scope, fund and conduct noise modeling
- Coordinate model results with Bexar County in support of a mid-term legislative request to establish the authority to require sound attenuation in unincorporated county
- Air Force to identify feasible on-base sound mitigation strategies

Recommendation 2

Strategy: Communication and Coordination

Action: Explore a mechanism for voluntary real estate disclosure of noise and other factors that may affect property near commercial, industrial and/or military facilities. (Noise and Safety Military Influence Areas and Areas of Concern)

	LOW	MED	HIGH
NEED			
BENEFIT			
COST			

Community Benefits	Coordination	Public Awareness	Noise
Lead Partners	City of San Antonio, Bexar County, SABOR		
Cost	Less than $50,000		
Timeline	Short-term (less than one year)		
Benchmarks	Availability of a basic disclosure statement for the JLUS study area		

Strategy: Real estate disclosure requires the release of information on possible impacts (noise/vibration, air safety zones, outdoor lighting) to prospective buyers or renters as part of real estate transactions for properties close to Lackland AFB and PSA. Disclosure can be mandatory when adopted by state law or voluntarily implemented through the participation of real estate professionals. The city and county should develop a basic disclosure statement for the JLUS study area similar to the language crafted for the Camp Bullis Awareness Zone. Members of the SABOR would then incorporate the statement as part of its real estate transactions in the area.

Action Steps:

- Finalize the language in the draft Lackland AFB and Port San Antonio Voluntary Real Estate Disclosure Statement
- Stakeholders to identify appropriate geographic area to designate for disclosure; the JLUS recommends at a minimum airfield noise contours and air safety zones and direct adjacency to the main base and Lackland Training Annex pending further technical study of noise
- Bexar County and COSA to coordinate with members of the SABOR to incorporate the statement as part of its real estate transactions in the area
- SABOR to display statement, map, and study findings on web sites

Recommendation 1

Strategy: Sound Attenuation

Action: Implement science-based sound mitigation protocols for the airfield noise contours (Noise Military Influence Area)

Community Benefits	Noise
Lead Partner	City of San Antonio
Cost	Less than $50,000
Timeline	Short-term (less than one year)
Benchmarks	Adoption of a MSAO District

Strategy: The primary strategy of the land use regulation approach is to enhance City of San Antonio's land use authority to minimize and protect noise sensitive uses in these areas. The city has now amended its the Unified Development Code to incorporate a Military Sound Attenuation Overlay Zoning District (MSAO). The district establishes construction-related standards to reduce the level of external noise heard within the interior of noise sensitive structures. The recently adopted ordinance establishes Camp Bullis as MSAO-1. The City of San Antonio should rezone parcels in Sub-Area 2 to apply the sound attenuation overlay to noise contours around Kelly Field. The JLUS supports the adoption of either the existing sound attenuation standards identified in the MSAO or the use of similarly effective, science-based construction practices that achieve the desired level of indoor noise reduction.

Action Steps:

- Identify all parcels inside designated AICUZ noise contours of 65 decibels or higher for inclusion in a MSAO
- Implement zoning boundary changes to reflect new district designation
- Allocate sufficient internal resources in the Planning and Development Services Department Prior to certify compliance with sound attenuation standards prior to approval of final inspection or issuance of a certificate of occupancy
- Conduct outreach to area builders and developers to promote awareness of sound attenuation practices
- Development industry to conduct acoustical modeling to demonstrate the effectiveness of any sound attenuation practices proposed as an alternative to existing MSAO standards

ining Annex through current voluntary conservation programs, particularly agricultural preservation			
	Mid-term	• ***Primary Partners***: Individual landowners, non-profit conservation entities to hold and enforce easements • ***Secondary Partners***: COSA, Bexar County, State of Texas	$$$
r land of comparable market value that is sensitive to operational impacts			
	Mid-term	• ***Primary Partners***: AF and individual landowners	$
media to increase awareness of mission, training activities, and economic impacts			
	hort-term	• ***Primary Partners***: Bexar County, PSA • ***Secondary Partners***: COSA, NAs and HOAs, SABOR	$
more information on base activities and improve community relations			
	hort-term	• ***Primary Partners***: PSA • ***Secondary Partners***: Bexar County, COSA, NAs and HOAs, SABOR	$

1 year Mid-term=1 to 3 years Long-term=More than 3 years

ounty; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
Realtors; SARA-San Antonio River Authority

ent proposals in areas near training activity		
hort-term	• ***Primary Partners***: COSA, Bexar County, PSA • ***Secondary Partners***: BexarMet, SAWS, AACOG	$
patibility measures and promote continued dialogue		
hort-term	• ***Primary Partners***: Bexar County, COSA , PSA • ***Secondary Partners***: BexarMet, SAWS, AACOG, CPS	$
nables a preliminary assessment of any military compatibility issues associated with a specific development proposal		
Mid-term	• ***Primary Partners***: Bexar County, COSA, BexarMet, SAWS, CPS • ***Secondary Partners***: PSA	$
he ability of a local government (city or county) to enact sound attenuation requirements in unincorporated areas in proximity to		
hort-term	• ***Primary Partners***: Bexar County, COSA, State of Texas	$

an 1 year Mid-term=1 to 3 years Long-term=More than 3 years

County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
as Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
of Realtors; SARA-San Antonio River Authority

essing the base and port		
Mid-term	• ***Primary Partners***: PSA • ***Secondary Partners***: Bexar County, VIA, MPO	$
hort-term	• ***Primary Partners***: PSA, COSA, Bexar County, TxDOT • ***Secondary Partners***: VIA, MPO, community stakeholders	$$
requiring the installation of fully shielded, cut-off outdoor lighting applications in proximity to the airfield		
Mid-term	• ***Primary Partners***: COSA	$
aining Annex		
hort-term	• ***Secondary Partners***: Bexar County	$
at the Lackland Training Annex in support of noise attenuation standards		
hort-term	• ***Secondary Partners***: Bexar County	$

than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

xar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
exas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
rd of Realtors; SARA-San Antonio River Authority

hort-term	• ***Primary Partners***: COSA, Bexar County, any utilities that build or design stormwater infrastructure	$
sehold wireless devices, such as garage door openers		
hort-term	• ***Primary Partners***: COSA, Bexar County • ***Secondary Partners***: PSA	$
an create issues of electronic interference with military radar and communications systems and in some cases physical or lighting		
Mid-term	• ***Primary Partners***: PSA, COSA, Bexar County, Texas A&M	$
planning throughout the watershed		
hort-term	• ***Primary Partners***: AF, PSA, COSA, Bexar County, SARA	$

than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

xar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
exas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
rd of Realtors; SARA-San Antonio River Authority

ining Annex through current voluntary conservation programs, particularly agricultural preservation		
Mid-term	• ***Primary Partners***: AF, Individual landowners, non-profit conservation entities to hold and enforce easements • ***Secondary Partners***: COSA, State of Texas	$
a buffer		
Mid-term	• ***Primary Partners***: Individual landowners, COSA • ***Secondary Partners***: AF	$$$
s in proximity to military training activities		
hort-term	• ***Primary Partners***: Individual landowners, COSA • ***Secondary Partners***: AF	$
wth to guide denser growth away from areas exposed to military operational impacts		
ong-term	• ***Primary Partners***: COSA, Bexar County, SAWS, and BexarMet • ***Secondary Partners***: State of Texas	$
itive areas		
	• ***Primary Partners***: COSA • ***Secondary Partners***: AF and other sector stakeholders	$

ess than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

Bexar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
t-Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
oard of Realtors; SARA-San Antonio River Authority

media to increase awareness of mission, training activities, and economic impacts		
hort-term	• ***Primary Partners***: AF, PSA • ***Secondary Partners***: COSA, NAs and HOAs, SABOR	$
b-area of the Military Influence District and determine associated development restrictions		
Mid-term	• ***Secondary Partners***: COSA	$$
ent proposals in areas near training activity		
hort-term	• ***Primary Partners***: COSA, AF, PSA • ***Secondary Partners***: BexarMet, SAWS, AACOG	$
patibility measures and promote continued dialogue		
hort-term	• ***Primary Partners***: AF, COSA , PSA • ***Secondary Partners***: BexarMet, SAWS, AACOG, CPS	$
ive buyers or renters as part of real estate transactions for properties close to training impacts		
hort-term	• ***Primary Partners***: COSA, SABOR • ***Secondary Partners***: AF	$

ss than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

Bexar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
t-Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
oard of Realtors; SARA-San Antonio River Authority

nters as part of real estate transactions for properties close to training impacts		
Mid-term	• ***Primary Partners***: COSA, SABOR • ***Secondary Partners***: State of Texas, AF	$
nables a preliminary assessment of any military compatibility issues associated with a specific development proposal		
Mid-term	• ***Primary Partners***: AF, COSA, BexarMet, SAWS, CPS • ***Secondary Partners***: PSA	$
ces in unincorporated areas near noise-generating military activity		
Mid-term	• ***Primary Partners***: State of Texas	$
in unincorporated areas in proximity to military installations		
ong-term	• ***Primary Partners***: State of Texas	$
essing the base and port		
hort-term	• ***Primary Partners***: PSA, COSA, AF, TxDOT • ***Secondary Partners***: VIA, MPO, community stakeholders	$$
stallation of fully shielded, cut-off outdoor lighting applications		
Mid-term	• ***Secondary Partners***: AF	$

ss than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

Bexar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
t-Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
oard of Realtors; SARA-San Antonio River Authority

etrofitting near light sensitive training areas		
hort-term	• ***Primary Partners***: COSA • ***Secondary Partners***: AF, PSA, TxDOT, individual landowners	$
ning Annex		
ong-term	• ***Secondary Partners***: AF, PSA	$
treatment treatments to their homes to reduce indoor noise		
id-term	• ***Primary Partners***: COSA • ***Secondary Partners***: AF, PSA, FAA, State of Texas, other entities that could assist with housing rehabilitation funding	$
hort-term	• ***Secondary Partners***: AF, PSA	$
sehold wireless devices, such as garage door openers		
hort-term	• ***Primary Partners***: COSA, AF • ***Secondary Partners***: PSA	$

=Less than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

ty-Bexar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
Dot-Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
Board of Realtors; SARA-San Antonio River Authority

an create issues of electronic interference with military radar and communications systems and in some cases physical or lighting		
Mid-term	• ***Primary Partners***: PSA, COSA, AF, Texas A&M	$
planning throughout the watershed		
hort-term	• ***Primary Partners***: AF, PSA, COSA, SARA	$
vious surfaces into site design, to reduce the volume of post-development stormwater runoff		
Mid-term	• ***Primary Partners***: SARA, COSA • ***Secondary Partners****:* Developers	$
area and promote stronger regional stormwater planning throughout the watershed		
ong-term	• ***Primary Partners***: AF, PSA, COSA, SARA	$$$

m=Less than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

unty-Bexar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San TxDot-Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR= nio Board of Realtors; SARA-San Antonio River Authority

ining Annex through current voluntary conservation programs, particularly agricultural preservation		
Mid-term	• ***Primary Partners***: AF, Individual landowners, non-profit conservation entities to hold and enforce easements • ***Secondary Partners***: Bexar County, State of Texas	$
a buffer		
Mid-term	• ***Primary Partners***: Individual landowners, Bexar County • ***Secondary Partners***: AF	$$$
s in proximity to military training activities		
hort-term	• ***Primary Partners***: Individual landowners, Bexar County • ***Secondary Partners***: AF	$
wth to guide denser growth away from areas exposed to military operational impacts		
ong-term	• ***Primary Partners***: Bexar County, SAWS, and BexarMet • ***Secondary Partners***: State of Texas	$
ry impact sensitive areas		
hort-term	• ***Primary Partners***: Bexar County • ***Secondary Partners***: AF and other sector stakeholders	$

ess than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

-Bexar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
ot-Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
Board of Realtors; SARA-San Antonio River Authority

media to increase awareness of mission, training activities, and economic impacts		
hort-term	• ***Primary Partners***: AF, PSA, Bexar County • ***Secondary Partners***: NAs and HOAs, SABOR	$
ent proposals in areas near training activity		
hort-term	• ***Primary Partners***: AF, Bexar County, PSA • ***Secondary Partners***: BexarMet, SAWS, AACOG	$
patibility measures and promote continued dialogue		
hort-term	• ***Primary Partners***: AF, Bexar County, PSA • ***Secondary Partners***: BexarMet, SAWS, AACOG, CPS	$
ive buyers or renters as part of real estate transactions for properties close to training impacts		
hort-term	• ***Primary Partners***: Bexar County, SABOR • ***Secondary Partners***: AF	$
nters as part of real estate transactions for properties close to training impacts		
Mid-term	• ***Primary Partners***: Bexar County, SABOR • ***Secondary Partners***: State of Texas, AF	$

=Less than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

nty-Bexar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
xDot-Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
o Board of Realtors; SARA-San Antonio River Authority

nables a preliminary assessment of any military compatibility issues associated with a specific development proposal		
Mid-term	• ***Primary Partners***: AF, Bexar County, BexarMet, SAWS, CPS • ***Secondary Partners***: PSA	$
J areas exposed to military activity		
Mid-term	• ***Primary Partners***: State of Texas • ***Secondary Partners***: Bexar County	$
pment activity in unincorporated areas through incorporation		
ong-term	• ***Secondary Partners***: State of Texas, Bexar County, individual landowners	$$
essing the base and port		
hort-term	• ***Primary Partners***: PSA, Bexar County, AF, TxDOT • ***Secondary Partners***: VIA, MPO, community stakeholders	$$
stallation of fully shielded, cut-off outdoor lighting applications		
Mid-term	• ***Secondary Partners***: AF	$

an 1 year Mid-term=1 to 3 years Long-term=More than 3 years

r County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
as Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
of Realtors; SARA-San Antonio River Authority

etrofitting near light sensitive training areas		
hort-term	• ***Primary Partners***: Bexar County • ***Secondary Partners***: AF, PSA, TxDOT, individual landowners	$
ard within the interior of noise sensitive structures, particularly housing, in proximity to aviation activity		
hort-term	• ***Secondary Partners***: Bexar County, Development Industry	$
Kelly Field Annex		
ong-term	• ***Secondary Partners***: AF, PSA	$
treatment treatments to their homes to reduce indoor noise		
d-term	• ***Primary Partners***: Bexar County • ***Secondary Partners***: AF, PSA, FAA, State of Texas, other entities that could assist with housing rehabilitation funding	$
hort-term	• ***Secondary Partners***: AF, PSA	$

than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

xar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
rd of Realtors; SARA-San Antonio River Authority

nd reduce the risk of physical intrusions into navigable airspace		
Mid-term	• ***Secondary Partners***: AF, PSA	$
sehold wireless devices, such as garage door openers		
hort-term	• ***Primary Partners***: Bexar County, AF • ***Secondary Partners***: PSA	$
an create issues of electronic interference with military radar and communications systems and in some cases physical or lighting		
Mid-term	• ***Primary Partners***: PSA, Bexar County, AF, Texas A&M	$
planning throughout the watershed		
hort-term	• ***Primary Partners***: AF, PSA, Bexar County, SARA	$
vious surfaces into site design, to reduce the volume of post-development stormwater runoff		
Mid-term	• ***Primary Partners***: SARA. Bexar County • ***Secondary Partners****:* Developers	$
area and promote stronger regional stormwater planning throughout the watershed		
ong-term	• ***Primary Partners***: AF, PSA, Bexar County, SARA	$$$

han 1 year Mid-term=1 to 3 years Long-term=More than 3 years

ar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
xas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
d of Realtors; SARA-San Antonio River Authority

media to increase awareness of mission, training activities, and economic impacts		
hort-term	• ***Primary Partners***: Bexar County, AF • ***Secondary Partners***: COSA, NAs and HOAs, SABOR	$
more information on base activities and improve community relations		
hort-term	• ***Primary Partners***: AF • ***Secondary Partners***: Bexar County, COSA, NAs and HOAs, SABOR	$
ent proposals in areas near training activity		
hort-term	• ***Primary Partners***: COSA, Bexar County, AF • ***Secondary Partners***: BexarMet, SAWS, AACOG	$
patibility measures and promote continued dialogue		
hort-term	• ***Primary Partners***: Bexar County, COSA , AF • ***Secondary Partners***: BexarMet, SAWS, AACOG, CPS	$

than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

xar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
rd of Realtors; SARA-San Antonio River Authority

nables a preliminary assessment of any military compatibility issues associated with a specific development proposal		
Mid-term	• ***Primary Partners***: Bexar County, COSA, BexarMet, SAWS, CPS, AF	$
essing the base and port		
Mid-term	• ***Primary Partners***: AF • ***Secondary Partners***: Bexar County, VIA, MPO	$
hort-term	• ***Primary Partners***: AF, COSA, Bexar County, TxDOT • ***Secondary Partners***: VIA, MPO, community stakeholders	$$
hort-term	• ***Primary Partners***: AF, COSA, Bexar County, any utilities that build or design stormwater infrastructure	$
an create issues of electronic interference with military radar and communications systems and in some cases physical or lighting		
Mid-term	• ***Primary Partners***: AF, COSA, Bexar County, Texas A&M	$

ss than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

Bexar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
t-Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
oard of Realtors; SARA-San Antonio River Authority

planning throughout the watershed		
hort-term	• ***Primary Partners***: AF, COSA, Bexar County, SARA	$

=Less than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

ty-Bexar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
Dot-Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
Board of Realtors; SARA-San Antonio River Authority

media to increase awareness of mission, training activities, and economic impacts		
hort-term	• ***Primary Partners***: AF, PSA, Bexar County, COSA	$
ent proposals in areas near training activity		
hort-term	• ***Primary Partners***: COSA, Bexar County, PSA, AF	$
patibility measures and promote continued dialogue		
hort-term	• ***Primary Partners***: Bexar County, COSA , PSA, AF	$
nables a preliminary assessment of any military compatibility issues associated with a specific development proposal		
Mid-term	• ***Primary Partners***: Bexar County, COSA	$
hort-term	• ***Primary Partners***: AF, PSA, Bexar County, COSA	$

m=Less than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

unty-Bexar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
TxDot-Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
nio Board of Realtors; SARA-San Antonio River Authority

media to increase awareness of mission, training activities, and economic impacts		
hort-term	• ***Primary Partners***: AF, PSA, Bexar County, COSA	$
patibility measures and promote continued dialogue		
hort-term	• ***Primary Partners***: Bexar County, COSA , PSA, AF	$
ive buyers or renters as part of real estate transactions for properties close to training impacts		
hort-term	• ***Primary Partners***: Bexar County, COSA • ***Secondary Partners***: AF	$
ard within the interior of noise sensitive structures, particularly housing, in proximity to aviation activity		
hort-term	• ***Primary Partners***: Bexar County, COSA	$

m=Less than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

nty-Bexar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
TxDot-Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
io Board of Realtors; SARA-San Antonio River Authority

Actions Required	Timeframe	Partnerships	Order of Magnitude Cost
• Lackland AFB should pursue opportunities to establish buffers on land to the west of the Training Annex through current voluntary conservation programs, particularly agricultural preservation • Initial steps should include forming key partnerships with land trusts or other private entities actively working in the area, such as the Texas Agricultural Land Trust, Green Spaces Alliance of South Texas, and the Trust for Public Land and preparing a REPI application to the DoD • Air Force, in partnership with the City of San Antonio and Bexar County, to link available conservation opportunities with ongoing regional planning efforts, such as the Southern Edwards Plateau Habitat Conservation Plan • Bexar County and COSA should align land use policies to guide growth away from candidate conservation areas	Mid-term	• ***Primary Partners***: Individual landowners, AF, non-profit conservation entities to hold and enforce easements • ***Secondary Partners***: COSA, Bexar County, State of Texas	$$$

s than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

exar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
-Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
ard of Realtors; SARA-San Antonio River Authority; MIA = Military Influence Area; AOC = Area of Concern

Actions Required	Timeframe	Partnerships	Order of Magnitude Cost
• As part of this strategy, the Air Force would identify candidate parcels and conduct negotiations with interested landowners • Land exchange would be executed through a formal agreement with the property owner	Mid-term	• ***Primary Partners***: AF and individual landowners	$
• Air Force to prioritize the most critical lands for buffers (with a likely emphasis on those undeveloped lands in unincorporated Bexar County to the west of the Lackland Training Annex) and collaborate with Bexar County and COSA to identify compatible low impact future uses • Bexar County and COSA to assess the need for creating green space corridors, natural areas and parks in the JLUS study area and identify acquisition candidates as part of ongoing recreation and facilities planning and explore possible financing mechanisms for the acquisition of land	Mid-term	• ***Primary Partners***: Individual landowners, COSA, Bexar County • ***Secondary Partners***: AF	$$$
• Bexar County and COSA to develop illustrative examples of site planning buffers and incorporate techniques into subdivision and plan review	Short-term	• ***Primary Partners***: Individual landowners, COSA, Bexar County • ***Secondary Partners***: AF	$

han 1 year Mid-term=1 to 3 years Long-term=More than 3 years

ar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
xas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
l of Realtors; SARA-San Antonio River Authority; MIA = Military Influence Area; AOC = Area of Concern

Actions Required	Timeframe	Partnerships	Order of Magnitude Cost
• SAWS and BexarMet to participate in consultation procedures identified in MOU and join as ongoing members of a JLUS implementation body	• Short-term	• ***Primary Partners***: COSA, Bexar County, SAWS, and BexarMet • ***Secondary Partners***: State of Texas	$
• Requires joint-service growth boundary agreement that identifies a phased, contiguous and orderly trajectory for suburban development and associated utilities and could specifically discourage growth in areas sensitive to military impacts • Requires legislative strategy to change in state law, making infrastructure planning a more viable land use tool	• Long-term	• ***Primary Partners***: COSA, Bexar County, SAWS, and BexarMet • ***Secondary Partners***: State of Texas	$

Less than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

-Bexar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
ot-Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
Board of Realtors; SARA-San Antonio River Authority ; MIA = Military Influence Area; AOC = Area of Concern

Actions Required	Timeframe	Partnerships	Order of Magnitude Cost
• City of San Antonio should collaborate with the Lackland AFB, Bexar County, and community stakeholders to develop a sector Land Use Plan that reflects growth and development options compatible with nearby military training activities • Sector plan should contain guidance on military compatibility, including potential noise, lighting and safety issues and recommended development mitigation measures, such as the shielded lighting, real estate disclosure, and noise attenuation to address operational impacts in exposed areas	Short-term	• ***Primary Partners***: COSA • ***Secondary Partners***: Bexar County, AF, and other sector stakeholders	$

n=Less than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

nty-Bexar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
xDot-Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
io Board of Realtors; SARA-San Antonio River Authority; MIA = Military Influence Area; AOC = Area of Concern

Actions Required	Timeframe	Partnerships	Order of Magnitude Cost
• Bexar County, in collaboration with the AF and PSA, should spearhead efforts to create outreach materials, including an informational brochure, map, and a deck of briefing slides for use at agency and community meetings • Secondary partners should link to county materials	Short-term	• ***Primary Partners***: Bexar County, AF, PSA • ***Secondary Partners***: COSA, NAs and HOAs, SABOR	$
• AF and PSA to designate representatives to participate and identify an appropriate community forum • AF and PSA to develop an annual briefing report that summarizes mission, economic activity and ongoing initiatives	Short-term	• ***Primary Partners***: AF, PSA • ***Secondary Partners***: Bexar County, COSA, NAs and HOAs, SABOR	$
• Bexar County to explore opportunities to link existing Appraisal District's property search engine to display compatibility information	• Short-term for the development of parcel-based maps • Mid-term for development of the searchable database	• ***Primary Partners***: Bexar County • ***Secondary Partners***: COSA	$$

erm=Less than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

ounty-Bexar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San ; TxDot-Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR= onio Board of Realtors; SARA-San Antonio River Authority; MIA = Military Influence Area; AOC = Area of Concern

Actions Required	Timeframe	Partnerships	Order of Magnitude Cost
• Major JLUS study partners–Bexar County, COSA, AF, and PSA–should implement this strategy by agreeing upon the key communication procedures contained in the draft MOU and identifying primary internal points of contact to produce and receive notices • Identify appropriate secondary partners for participation in the MOU	Short-term	• *Primary Partners*: COSA, Bexar County, AF, PSA • ***Secondary Partners***: BexarMet, SAWS, AACOG	$
• Partner governments and military stakeholders should explore the initial organizational framework • Subsequent tasks should focus on Identifying members; establishing notification procedures; developing outreach material; defining issues to review and information to share; and developing a list of ongoing implementation measures	Short-term	• ***Primary Partners***: Bexar County, COSA , AF, PSA • ***Secondary Partners***: BexarMet, SAWS, AACOG, CPS	$

=Less than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

ty-Bexar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
Dot-Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
o Board of Realtors; SARA-San Antonio River Authority; MIA = Military Influence Area; AOC = Area of Concern

Actions Required	Timeframe	Partnerships	Order of Magnitude Cost
• Voluntary disclosure can occur through changes to SABOR procedures • Bexar County and COSA should develop a basic disclosure statement for the JLUS study area similar to the language crafted for the Camp Bullis Awareness Zone • SABOR to incorporate the statement as part of its real estate transactions • Bexar County and COSA should explore mandatory disclosure could occur as part of a state-wide modification of Texas Association of Realtors Forms 1506 or 1406 to include military impact as a disclosure item	• Short-term for initiation of voluntary disclosure language with SABOR • Mid-term for modification of state TAR forms or other formal methods of disclosure	• ***Primary Partners***: COSA, Bexar County, SABOR • ***Secondary Partners***: State of Texas, AF	$

=Less than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

nty-Bexar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
xDot-Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
o Board of Realtors; SARA-San Antonio River Authority; MIA = Military Influence Area; AOC = Area of Concern

• Bexar County, COSA and major utility providers should explore their capabilities to link internal databases with an automated messaging protocol • Stakeholders should determine the actions that trigger automated notices • Participating entities to include: Lackland AFB, PSA, Bexar County, COSA, SAWS, BexarMet, and CPS Energy	• Mid-term	• ***Primary Partners***: Bexar County, COSA, BexarMet, SAWS, CPS • ***Secondary Partners***: AF, PSA	$

rm=Less than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

ounty-Bexar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San ; TxDot-Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR= onio Board of Realtors; SARA-San Antonio River Authority; MIA = Military Influence Area; AOC = Area of Concern

Actions Required	Timeframe	Partnerships	Order of Magnitude Cost
• Bexar County to develop legislative strategy to submit bill to state legislature, including finalizing draft bill language and identifying political support	Mid-term to build political momentum and initiate a legislative strategy Long-term for implementation	• ***Primary Partners***: Bexar County, State of Texas	$
• Bexar County to build political momentum and initiate a legislative strategy to request limited land use authority from the state	Long-term	• ***Primary Partners***: Bexar County, State of Texas	$
• COSA to pursue a short-term legislative strategy to explore strengthened ETJ provisions around military installations, particularly the ability to require sound attenuation	Mid-term to build political momentum and initiate a legislative strategy Long-term for implementation	• ***Primary Partners***: COSA, State of Texas • ***Secondary Partners***: Bexar County	$
• COSA to prepare annexation plan for area west of the Lackland Training Annex • Would require changes in state law to make annexation a more viable land use tool	Long-term	• ***Primary Partners***: COSA • ***Secondary Partners***: State of Texas, Bexar County, individual landowners	$$

ss than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

Bexar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
t-Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
oard of Realtors; SARA-San Antonio River Authority; MIA = Military Influence Area; AOC = Area of Concern

Actions Required	Timeframe	Partnerships	Order of Magnitude Cost
• AF and PSA to develop and implement Transportation Demand Management plan	Mid-term	• ***Primary Partners***: AF, PSA • ***Secondary Partners***: Bexar County, VIA, MPO	$
• Collaborative effort with AFB, PSA, COSA, Bexar County, ACOG, TxDOT	Short-term	• ***Primary Partners***: AF, PSA, COSA, Bexar County, TxDOT • ***Secondary Partners***: VIA, MPO, community stakeholders	$$
• COSA to rezone parcels and designate Military Lighting Overlay District in the inner approach and departure zones of the airfield • COSA to collaborate with AF to verify geographic area of applicability	Mid-term	• ***Primary Partners***: COSA • ***Secondary Partners***: AF	$

Less than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

y-Bexar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
Dot-Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
Board of Realtors; SARA-San Antonio River Authority; MIA = Military Influence Area; AOC = Area of Concern

Actions Required	Timeframe	Partnerships	Order of Magnitude Cost
• Bexar County to adopt a Lackland AFB Military Lighting Overlay District for unincorporated areas in proximity to Lackland Training Annex • Bexar County to collaborate with AF to verify geographic area of applicability	Mid-term	• ***Primary Partners***: Bexar County • ***Secondary Partners***: AF	$
• COSA and Bexar County to produce outreach materials, illustrative examples and guidelines and incorporate lighting best practices into standard subdivision and plan review processes	Short-term	• ***Primary Partners***: COSA, Bexar County • ***Secondary Partners***: AF, PSA, TxDOT, individual landowners	$
• Air Force to scope, fund and conduct lighting study at Lackland Training Annex to refine geographic area of applicability for outdoor lighting regulation	Short-term	• ***Primary Partners***: AF • ***Secondary Partners***: Bexar County	$
• COSA to rezone land in noise contours around airfield to apply MSAO standards or similarly effective sound attenuation practices	Short-term	• ***Primary Partners***: COSA • ***Secondary Partners***: Bexar County	$

Less than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

y-Bexar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
Dot-Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
Board of Realtors; SARA-San Antonio River Authority; MIA = Military Influence Area; AOC = Area of Concern

Actions Required	Timeframe	Partnerships	Order of Magnitude Cost
• Bexar County and COSA to incorporate easement requirements into regular subdivision and plan approval processes, including development of an easement form to be signed by the landowners • Bexar County and COSA to develop mechanisms to record, map, and enforce granted easements	Long-term	• ***Primary Partners***: COSA, Bexar County • ***Secondary Partners***: AF, PSA	$
• Air Force to scope, fund and conduct noise modeling at Lackland Training Annex to refine geographic area of applicability for sound attenuation and assess feasibility of on-base mitigation strategies	Short-term	• ***Primary Partners***: AF • ***Secondary Partners***: Bexar County	$

an 1 year Mid-term=1 to 3 years Long-term=More than 3 years

County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
as Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
of Realtors; SARA-San Antonio River Authority; MIA = Military Influence Area; AOC = Area of Concern

Actions Required	Timeframe	Partnerships	Order of Magnitude Cost
• Bexar County and COSA to jointly scope, fund, and conduct a feasibility study for a residential retrofit program, including assessing the structural suitability of the housing stock in affected areas to be cost effectively modified and identifying alternative funding sources	• Mid-term for initiating a study to explore the cost effectiveness, financing options, and feasibility of housing stock modifications • Long-term for establishment of the program	• ***Primary Partners***: Bexar County, COSA, • ***Secondary Partners***: AF, PSA, FAA, State of Texas, other entities that could assist with housing rehabilitation funding	$$$
• Bexar County and the City of San Antonio to incorporate these standards as part of zoning and the subdivision and Master Development Plan review processes • Utility providers to incorporate BASH practices in the construction and design of stormwater infrastructure	Short-term	• ***Primary Partners***: COSA, Bexar County, any utilities that build or design stormwater infrastructure • *Secondary Partners*: AF, PSA	$
• COSA to develop 3D model of approach and departure zones around the airfield	Mid-term	• ***Primary Partners***: COSA • ***Secondary Partners***: AF, PSA	$
• Bexar County and COSA to develop outreach materials to educate homeowners on RFI issues and raise awareness of conversion options	Short-term	• ***Primary Partners***: COSA, Bexar County • ***Secondary Partners***: AF, PSA	$

ss than 1 year Mid-term=1 to 3 years Long-term=More than 3 years

exar County; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
-Texas Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
ard of Realtors; SARA-San Antonio River Authority; MIA = Military Influence Area; AOC = Area of Concern

Actions Required	Timeframe	Partnerships	Order of Magnitude Cost
• Bexar County, COSA, AF and PSA to participate in regional mapping exercises	Mid-term	• ***Primary Partners***: AF, PSA, COSA, Bexar County, Texas A&M	$
• Joint participation by the Bexar Regional Watershed Management partners, including Bexar County, the City of San Antonio, and San Antonio River Authority and AF in watershed planning efforts	Short-term	• ***Primary Partners***: AF, PSA, COSA, Bexar County, SARA	$
• Bexar Regional Watershed Management partners to develop guidelines and conduct outreach to developers • Bexar County and COSA to incorporate LID best practices into subdivision and plan review processes	Mid-term	• ***Primary Partners***: COSA, Bexar County, SARA • ***Secondary Partners****: Developers*	$
	Mid-term	• ***Primary Partners***: AF, PSA, COSA, Bexar County, SARA	$$

1 year Mid-term=1 to 3 years Long-term=More than 3 years

ounty; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
Department of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
Realtors; SARA-San Antonio River Authority; MIA = Military Influence Area; AOC = Area of Concern

Actions Required	Timeframe	Partnerships	Order of Magnitude Cost
	Mid-term	• ***Primary Partners***: AF, PSA, COSA, Bexar County, SARA	$$
	Long-term	• ***Primary Partners***: AF, PSA, COSA, Bexar County, SARA	$$$
• AF and PSA to incorporate drainage issues into community briefings	Short-term	• ***Primary Partners***: AF, PSA, COSA, Bexar County, SARA	$

year Mid-term=1 to 3 years Long-term=More than 3 years

unty; COSA-City of San Antonio; AF-Air Force (Lackland); MPO-Metropolitan Planning Organization; PSA-Port San
epartment of Transportation; AACOG-Alamo Area Council of Governments; State of Texas-State of Texas; SABOR=
ealtors; SARA-San Antonio River Authority; MIA = Military Influence Area; AOC = Area of Concern