



Background Report

July 2016



This study was prepared under contract with the City of Bastrop, Texas, with financial support from the Office of Economic Adjustment, Department of Defense. The content reflects the views of the City of Bastrop and the other JLUS Partners and does not necessarily reflect the views of the Office of Economic Adjustment.



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Prepared Under Contract with



City of Bastrop
1311 Chestnut Street
Bastrop, TX 78602

Prepared by



July 2016

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Policy Committee

The Policy Committee (PC) served an active and important role in providing policy direction during the development of the Camp Swift Joint Land Use Study. The Policy Committee was composed of the following individuals:

-
- | | |
|--|--|
| ■ LTC Jamey Creek
<i>Texas Military Department</i> | ■ BG Tracy Norris
<i>Texas Military Department</i> |
| ■ COL Robert Crow
<i>Texas Military Department</i> | ■ Paul Pape
<i>Bastrop County</i> |
| ■ Marc Holm
<i>City of Elgin</i> | ■ Emily Parks
<i>Bastrop Independent School District</i> |
| ■ Dock Jackson
<i>City of Bastrop</i> | ■ Bubba Snowden
<i>Bastrop County</i> |
| ■ LTC Phillip Kost
<i>Camp Swift Army National Guard</i> | ■ Michael Talbot
<i>City of Bastrop</i> |
| ■ Kerry Lacy
<i>City of Elgin</i> | |
-

Technical Committee

The Technical Committee (TC) served a key role in the development of the Camp Swift Joint Land Use Study. They provided the overall technical support, review, and guidance of the study. The TC was composed of the following individuals:

-
- | | |
|--|--|
| ■ Smith Covey
<i>Pines & Prairies Land Trust</i> | ■ Todd McClanahan
<i>Texas Parks and Wildlife</i> |
| ■ Carolyn Dill
<i>Bastrop County</i> | ■ Melissa McCollum
<i>City of Bastrop</i> |
| ■ Roy Dill
<i>Texas Department of Transportation</i> | ■ Amy Miller
<i>City of Elgin</i> |
| ■ Blake Dommert
<i>Bastrop County</i> | ■ Kirsten Mt. Joy
<i>Texas Military Department</i> |
| ■ Mike Fisher
<i>Emergency Operations Center</i> | ■ Joe Newman
<i>City of Elgin</i> |
-

Technical Committee (continued)

- **Robin Howard**
Texas Military Department
 - **LTC Phillip Kost**
Camp Swift Army National Guard
 - **John Landwehr**
Coast Range Investments
 - **Maj. Ed Limbo**
Camp Swift Army National Guard
 - **Melanie Pavlas**
Pines & Prairies Land Trust
 - **Colton Stabeno**
Lost Pines Habitat Conservation
 - **Cathy Stevens**
Capital Area Metropolitan Planning Organization
-

City of Bastrop

The City of Bastrop served as the overall JLUS project management agency and the administrator of the Office of Economic Adjustment grant that helped to fund the study.



- **Melissa McCollum, AICP, LEED-AP**
Director
Planning and Development Department
 - **Marie Murnan**
Planning Technician
Planning and Development Department
-

JLUS Consultant / Technical Advisors

Matrix Design Group was the project consultant hired to conduct the JLUS project through coordination with and assistance from the City of Bastrop, the PC, the TC, the public, and other stakeholders.



- **Mike Hrapla**
Project Manager
 - **Celeste Werner, AICP**
Deputy Project Manager
 - **Rick Rust, AICP**
Technical Manager
 - **Michele Zehr Mora**
Lead Planner
-



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A

ACUB	Army Compatible Use Buffer
ADNL	A-weighted Day-Night Average Sound Level
AGL	above ground level
AQCR	Air Quality Control Regions
APZ	Accident Potential Zone
APZ-LZ	Accident Potential Zone – Landing Zone
AR	Army Regulation
ARNG	Army National Guard
ARR	Austin-Round Rock
ASP	Ammunition Supply Point
AT / FP	Anti-Terrorism / Force Protection
ATC	Training Centers Garrison Command
ATC	Air Traffic Control

CDP	Census Designated Place
CFA	Controlled Firing Area
CH ₄	Methane
CMTA	Capital Metropolitan Transportation Authority
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
COM	Communication / Coordination
CP	Comprehensive Plan
CPQC	Combat Pistol Qualification Course
cps	octave band
CR	Cultural Resources
CRM	Cultural Resources Manager
CSA	Combined Statistical Area
CTC	Central Texas Clean Air Coalition
CWA	Clean Water Act
CZ	Clear Zone

B

BASH	Bird / Wildlife Aircraft Strike Hazard
BCCTP	Bastrop County Comprehensive Transportation Plan
BISD	Bastrop Independent School District
BRAC	Base Realignment and Closure
BUG	Backlight, Uplight, and Glare

C

CAA	Clean Air Act
CALS	Combat Assault Landing Strip
CAMPO	Capital Area Metropolitan Planning Organization
CAPCOG	Capital Area Council of Governments
CBSA	Core-based Statistical Area
CCD	Census County Divisions
CCLUA	Controlled Compatible Land Use Area
CDNL	C-weighted Day-Night Average Sound Level

D

DA PAM	Department of the Army Pamphlet
DAR	Department of Army Representative
dB	decibel
dba	A-weighted decibel
dBp	Peak decibels
DEAAG	Defense Economic Adjustment Assistance Grant
DNL	Day-Night Average Sound Level
DOD	Department of Defense
DODI	Department of Defense Instruction
DOI	United States Department of Interior
du	dwelling unit
DZ	Drop Zone

E

EA	Environmental Assessment
EAC	Early Action Compact
ED	Energy Development
e.g.	for example
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
ESQD	Explosive Safety Quantity Distance
ETJ	Extraterritorial Jurisdiction

F

FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
fc	footcandle (unit of measurement for light emission)
FLPMA	Federal Land Policy and Management Act
FM	Farm to Market Road
FM	Field Manual
FONSI	Finding of No Significant Impact
ft	feet (unit of measurement)
FY	fiscal year

G

GA	General Aviation
GIS	geographic information system

H

HB	House Bill
HCs	Hydro Carbons

I

ICRMP	Integrated Cultural Resources Management Plan
ID	Infantry Division
i.e.	for example
IED	Improvised Explosive Device
IESNA	Illuminating Engineering Society of North America
IGA	Intergovernmental agreements
INRMP	Integrated Natural Resources Management Plan
IP A-001	General Aviation Airports: Information Publication A-001
IWFMP	Integrated Wildland Fire Management Plan

J

JLUS	Joint Land Use Study
------	----------------------

K

kWh/m ² /day	kilowatt-hours per square meter per day
-------------------------	---

L

LGC	Local Government Code
LOA	Letter of Agreement
LOS	Level of Service
LP	Loop
LPHCP	Lost Pines Habitat Conservation Plan
LPS	Low-Pressure Sodium
LU	Land Use
LUPZ	Land Use Planning Zone

Acronyms

M

m/s	meters per second
Max Ord	Maximum Ordinate
MCA	Military Compatibility Area
MCOD	Military Compatibility Overlay District
MIL-HDBK	Military Handbook
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MOUT	Mobile Operations in Urban Terrain
mph	miles per hour
MPMG	Multi purpose machine gun
MSA	Metropolitan Statistical Area
MTC-L	Maneuver Training Center – Light
MW	megawatts

N

N	No
N _x	No, with exceptions
NACo	National Association of Counties
NAAQS	National Ambient Air Quality Standards
NBC	Nuclear, Biological, Chemical
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NLR	Noise Level Reduction
NMFS	National Marine Fisheries Service
NO ₂	Nitrogen Oxide
NOAA	National Oceanic and Atmospheric Administration
NOI	Noise
NOTAMs	Notices to Airmen
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NVG	night vision goggles
NZ	Noise Zone

O

O ₃	Ozone
OAP	Ozone Advance Program Action Plan
OE	Obstruction Evaluation
OEA	Office of Economic Adjustment
OIC	Officer-in-Charge
OMB	Office of Management and Budget
ONMP	Operational Noise Management Plan

P

PAO	Public Affairs Office / Officer
Pb	Lead
PC	Policy Committee
PK (met)	Impulse peak noise metric
PL	Public Law
PM	Particulate Matter
ppb	parts per billion
PRPRPA	Private Real Property Rights Preservation Act

Q

No entries

R

REPI	Readiness and Environment Protection Integration
RFMSS	Range Facility Management Support System
ROW	Right-of-Way

S

SA	Safety Zones
SARNAM	Small Arms Range Noise Assessment Model
SARSA	Small Arms Range Safety Areas
SASO	Security Operations
SDZ	surface danger zone
SFG	Special Forces Group
SH	State Highway
SIPs	State Implementation Plans
SO ₂	Sulfur Dioxide
SONMP	Statewide Operational Noise Management Plan
SOP	Standard Operating Procedures
SRP	Sustainable Ranges Program
STX	Squad Training
SUA	Special Use Airspace

T

TAC	Texas Administrative Code
TBD	To be determined
TC	Technical Committee
TCEQ	Texas Commission on Environmental Quality
TFS	Texas A & M Forest Service
TIA	Takings Impact Assessment
TMD	Texas Military Department
TMPC	Texas Military Preparedness Commission
TPWD	Texas Parks and Wildlife Department
TREC	Texas Real Estate Council
TSA	Transportation Security Administration
TSM	Training Site Manager
TXARNG	Texas Army National Guard
TXDOT	Texas Department of Transportation
TXNG	Texas National Guard

U

UAC	Urban Assault Course
UFC	Unified Facilities Criteria
UPRR	Union Pacific Railroad
USACE	United States Army Corps of Engineers
USAF	United States Air Force
U.S.	United States
U.S.C.	United States Code
USFWS	United States Fish and Wildlife Service
UTES	Unit Training Equipment Site

V

V	Vibration
VO	Vertical Obstructions

W

WQQ	Water Quality / Quantity
WWI	World War I
WWII	World War II

X, Y, Z

Y	Yes
Y _x	Yes, with exceptions



Inside Chapter 1...

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1.1 Introduction

Military installations are critical to local, regional, and state economies, generating thousands of jobs and millions of dollars in annual economic activity and tax revenue. In the past, incompatible development has been a factor in the loss of training operations and restructuring of mission-critical components to other military installations. The loss of military missions and closure of military installations have been detrimental to their host communities. To protect the missions of military installations and health of local economies and industries that rely on them, encroachment must be addressed through collaboration and joint planning between installations and local communities. This Joint Land Use Study (JLUS) attempts to mitigate existing compatibility issues, facilitate prevention of future issues, and improve coordination between Camp Swift and its surrounding communities.

Camp Swift is situated in north central Bastrop County, Texas covering approximately 11,750 acres, which includes facilities (e.g., administrative buildings, billets, classrooms, and offices), ranges (e.g., Automated M-16 Range, Known Distance Range, Combat Pistol Range, Grenade Range, and Demolition Range), and other training areas. The area surrounding Camp Swift is primarily rural in character and includes agricultural lands and open space, forested areas, minor water bodies, and several small suburban residential communities.

Because the Camp Swift mission operating area is expansive, several Texas communities participated as partners in this JLUS. The JLUS partner jurisdictions are Bastrop County, the City of Bastrop, the City of Elgin, and the Community of McDade. As a means to promote and coordinate the compatibility of future growth around the installation with military operational and training activities, an organized communication effort between Camp Swift, partner jurisdictions, and other stakeholder entities is essential.



Camp Swift Main Gate

The Camp Swift JLUS is a proactive approach for mitigating existing military compatibility issues and preventing future issues by facilitating collaboration between local communities, the public, and the Army National Guard. This JLUS advocates increased communication for decisions relative to land use regulation, conservation and natural resource management affecting both the community and the military. This study seeks to prevent conflicts experienced between the military and local communities in other parts of the country by engaging the military and local decision-makers in a collaborative multi-agency planning process.

1.2 Why Is It Important to Partner with Camp Swift?

Camp Swift provides unique and irreplaceable assets for the nation's military. The 11,750-acre Maneuver Training Center-Light (MTC-L) provides pre-mobilization and institutional training for the Texas Army National Guard (TXARNG) / Texas Military Department (TMD). Training activities include basic infantry skills, combat engineering skills, maneuver exercises, helicopter operations, personnel / cargo air drops, small arms and crew-served weapons firing, and demolition training.

Camp Swift provides these training capabilities through their training areas and ranges including nine live-fire ranges, a Light Demolition Range, and Improvised Explosive Device (IED) Lane, an air assault course, a "gas chamber" for gas-mask training, and drop zones

for airborne training. These training areas and facilities are available on a year-round basis to military and civilian organizations, and can accommodate up to a battalion size.

A battalion comprises 300 to 1,000 soldiers.

It is important to partner with the installation on relevant and long-range planning projects to ensure viability and sustainability of the economic impact and community benefit that Camp Swift provides to the local region. The base plays an important role in the security and the economic and social vitality of the region. The JLUS process strives to deepen the understanding of the mutual benefits shared between the installation and surrounding region.

1.3 What Is A Joint Land Use Study?

A JLUS is a planning process accomplished through the collaborative efforts of a comprehensive list of stakeholders in a defined study area. These stakeholders include local community, state, and federal officials; residents; and the military, who come together to identify compatible land uses and growth management recommendations within and adjacent to active military installations. The intent of the process is to establish and foster a relationship between the local communities, agencies, and Camp Swift.

Joint Land Use Study Goal

The goal of the Camp Swift JLUS is to protect the viability of current and future military operations, while simultaneously guiding community growth, sustaining the environmental and economic health of the region, and protecting public health, safety, and welfare.

To help meet this goal, three primary guiding principles were identified:

- **Understanding.** Convene community and military representatives to identify, confirm, and understand the issues in an open forum – taking into consideration both community and Camp Swift perspectives and needs. This includes public awareness, education, and input organized in a cohesive outreach program.
- **Collaboration.** Encourage cooperative land use and resource planning among Camp Swift and surrounding communities so future community growth and development are compatible with Camp Swift’s operational missions, while at the same time seeking ways to reduce operational impacts on adjacent lands and communities within the Study Area.
- **Actions.** Provide a set of mutually supported tools, activities, and procedures from which local jurisdictions, agencies, and Camp Swift can select, prepare, and approve / adopt, and then use to implement the recommendations developed during the JLUS process. The actions proposed include both operational measures to mitigate installation impacts on surrounding communities and local government and agency approaches to reduce community impacts on military operations. These tools will help decision makers resolve compatibility issues and prioritize projects within the annual budgeting process of their respective entity / jurisdiction.

1.4 Why Prepare A Joint Land Use Study?

Although military installations and nearby communities may be separated by a fence or geography including water bodies, they often share natural and manmade resources such as land, airspace, water, and infrastructure. Despite the many positive interactions among local jurisdictions, agencies, and the military, because so many resources are shared the activities or actions of one entity can produce unintended negative impacts on another, resulting in conflicts. As communities develop and expand in response to growth and market demands, land use approvals have the ability to locate potentially incompatible development closer to military installations and operational areas. The result can initiate new, or exacerbate existing land uses and other compatibility issues, often referred to as encroachment, which can have negative impacts on community safety, economic development, and sustainment of military activities and readiness. Currently, this threat to military readiness is one of the military’s greatest challenges.

Recognizing the close relationship that should exist between installations and adjacent communities, the Department of Defense, Office of Economic Adjustment (OEA) implemented the JLUS program in an effort to mitigate existing and future conflicts and enhance communication and coordination among all stakeholders. Collaboration and joint planning among military installations, local communities, and agencies should occur to protect the long-term viability of existing and future military missions. Working together also enhances the communities’ economies and industries before incompatibility becomes an issue. This program aims to preserve the sustainability of local communities within the JLUS Study Area while protecting current and future operational and training missions at Camp Swift.

1.5 Public Outreach

The JLUS process is designed to create a locally relevant document that builds consensus and obtains support from the various stakeholders involved. To achieve the JLUS goals and objectives, the process included a public outreach program with a variety of participation opportunities for interested and affected parties.

Stakeholders

An early step in any planning process is the identification of stakeholders. Informing and involving them early in the project is essential to understanding, addressing, and resolving their most important issues through the development of integrated strategies and measures. Stakeholders include individuals, groups, organizations, and governmental entities interested in, affected by, or who may have an impact on the outcome of the JLUS document. Stakeholders identified for the Camp Swift JLUS include, but are not limited to, the following:

- Local jurisdictions (counties and cities)
- DOD officials (including OEA representatives)
- Camp Swift / TMD
- Bastrop Independent School District (BISD)
- Local, regional, and state planning agencies
- Nongovernmental organizations
- The public (including residents and landowners)

Policy and Technical Committees

The development of the Camp Swift JLUS was guided by two committees, comprising city, county, Camp Swift personnel, federal and state agencies, local governments, and other stakeholders.

Policy Committee. The Policy Committee (PC) consists of officials from participating jurisdictions, military installation leadership, and representatives from Camp Swift and federal and state agencies. The PC is responsible for the overall direction of the JLUS, preparation and approval of the study design, approval of policy recommendations, and approval of draft and final JLUS documents.

Technical Committee. The Technical Committee (TC) is responsible for identifying and studying technical issues. Membership includes city planners and staff,

military base planners and staff, and other subject matter experts as needed to help assist in the development and evaluation of implementation strategies and tools. Items discussed by the TC were brought before the PC for consideration and action.

The PC and TC served as liaisons to their respective stakeholder groups. The PC and TC members were charged with conveying committee activities and information to their organizations and constituencies and relaying their organization's comments and suggestions to both committees for consideration. The PC members were encouraged to conduct meetings with their organizations and / or constituencies to facilitate this input. The responsibilities and participants for the JLUS sponsors, the PC, and the TC are identified in Tables 1-1, 1-2, and 1-3, respectively.

Table 1-1. JLUS Sponsor Responsibilities and Participants

Responsibilities	Participants
■ Coordination	■ Office of Economic Adjustment
■ Accountability	■ City of Bastrop
■ Grant Management	
■ Financial Contribution	

Table 1-2. JLUS Policy Committee Responsibilities and Participants

Responsibilities	Participants
■ Policy Direction	■ Bastrop County
■ Study Oversight	■ City of Bastrop
■ Monitoring	■ City of Elgin
■ Report Adoption	■ Community of McDade
	■ Camp Swift / (TMD)
	■ Bastrop Independent School District

Public. The public can be involved in the development of the JLUS by providing input and guidance to the process, by informing the representative of the PC of their concerns and recommendations, submitting comments and feedback online through the project website, and attending three public workshops.

Table 1-3. JLUS Technical Committee Responsibilities and Participants

Responsibilities	Participants
<ul style="list-style-type: none"> Identify Issues Provide Expertise to Address Technical Issues Evaluate and Recommend Implementation Options to the PC Provide Draft and Final Report Recommendations to the PC 	<ul style="list-style-type: none"> Bastrop County City of Bastrop City of Elgin Community of McDade Camp Swift / (TMD) Bastrop Independent School District Pines and Prairies Land Trust Lower Colorado River Authority Texas Department of Transportation Texas Army National Guard

Committee meetings were held throughout the process to ensure the JLUS identified and appropriately addressed local issues. The meetings conducted are highlighted as follows:

- **Meeting #1 (September 10, 2014).** This meeting served as the initial kick-off for the committees and provided an overview of the Camp Swift mission. The JLUS participants were introduced and provided an overview of the JLUS process, and information on the 25 compatibility factors evaluated in this JLUS was presented with the first public brochure.
- **Meeting #2 (July 7 & 8, 2015).** The TC meeting was held in the afternoon on July 7th while the PC meeting was held in the morning on July 8th. Both meetings were held at the City Council Chambers.

A formal presentation provided information about Camp Swift's military mission operational footprint to both the TC and PC; this laid the groundwork for understanding how the military affects nearby land uses and vice versa. Additional discussion about the compatibility issues also occurred, the meeting resulted in adding 12 new compatibility issues to the Camp Swift JLUS compatibility assessment.

- **Meeting #3 (September 9, 2015).** The TC meeting was held in the morning and the PC was held during lunch hours. Both meetings were located in the City Council Chambers.

These meetings included a formal presentation of the changes to the compatibility issues that were identified at previous meetings. The presentation also provided information about potential strategies that may be recommended to address some of the issues. This presentation facilitated an introductory discussion about types of strategies that may not be feasible in this geography.

- **Meeting #4 (December 8, 2015).** The TC meeting was held in the morning, and the PC meeting was held during lunch. Both meetings were located in the City Council Chambers.

These meetings included a formal presentation about the status of the Background Report, an overview of the JLUS Report, and an overview of the recommended options. This presentation provided information that facilitated discussion about the recommended options.

Public Workshops

In addition to the PC and TC meetings, a series of public workshops were held throughout the development of the JLUS. These workshops provided an opportunity to exchange information with the greater community, assist in identifying the issues to be addressed in the JLUS, and provide an opportunity for input on the proposed strategies. Each workshop included an interactive presentation and facilitated exercise for the public to participate in the development of the plan. The public workshops conducted are highlighted as follows:

- **Public Workshop #1 (July 7, 2015).** This meeting was held at the Bastrop Convention and Exhibit Center located at 1408 Chestnut Street at 6:00 pm. The public received a formal presentation that included discussion topics including what a JLUS is, the purpose of a JLUS, and the goal of a JLUS. The public also learned about the compatibility factors that are used to assess land uses surrounding Camp Swift.

Finally, the public learned about the Camp Swift mission. There were table-size maps available for the public to reference certain issue locations and other areas of concern to evaluate in this process.

- **Public Workshop #2 (December 7, 2015).** This meeting was held at the Bastrop City Council Chambers located at 1311 Chestnut Street at 6:00 pm. The public received a formal presentation designed to provide a JLUS update which included information about the compatibility assessment and its findings. The public also participated in an activity where they provided input into the priorities of the issues by placing sticky dots on wall-size maps to vote on what they thought should be of high, medium, or low awareness priority.
- **Public Workshop #3 (June 8, 2016).** This meeting was held at the Bastrop Convention Center located at 1408 Chestnut Street at 6 PM. The public received a formal presentation of the Draft JLUS including maps of the affected areas. The meeting provided the attendees an opportunity to provide comments.

Public Outreach Materials

Joint Land Use Study Overview / Compatibility Factors

Fact Sheet. At the beginning of the JLUS process, a Fact Sheet was developed describing the JLUS program, objectives, public participation methods, and the Camp Swift JLUS proposed Study Area. This Fact Sheet was made available at the meetings for review by interested members of the public.

This Fact Sheet also served as an informational brochure describing each of the 25 compatibility factors used for JLUS analysis. While not every factor applied to the Camp Swift JLUS, the list provides an effective tool to ensure a comprehensive evaluation of compatibility factors is conducted within the JLUS Study Area.

Strategy Tools Fact Sheet. JLUS strategies comprise a variety of actions that local governments, military installations, agencies, and other stakeholders can take to promote compatible land use planning. This Fact Sheet provides an overview of the strategy types that

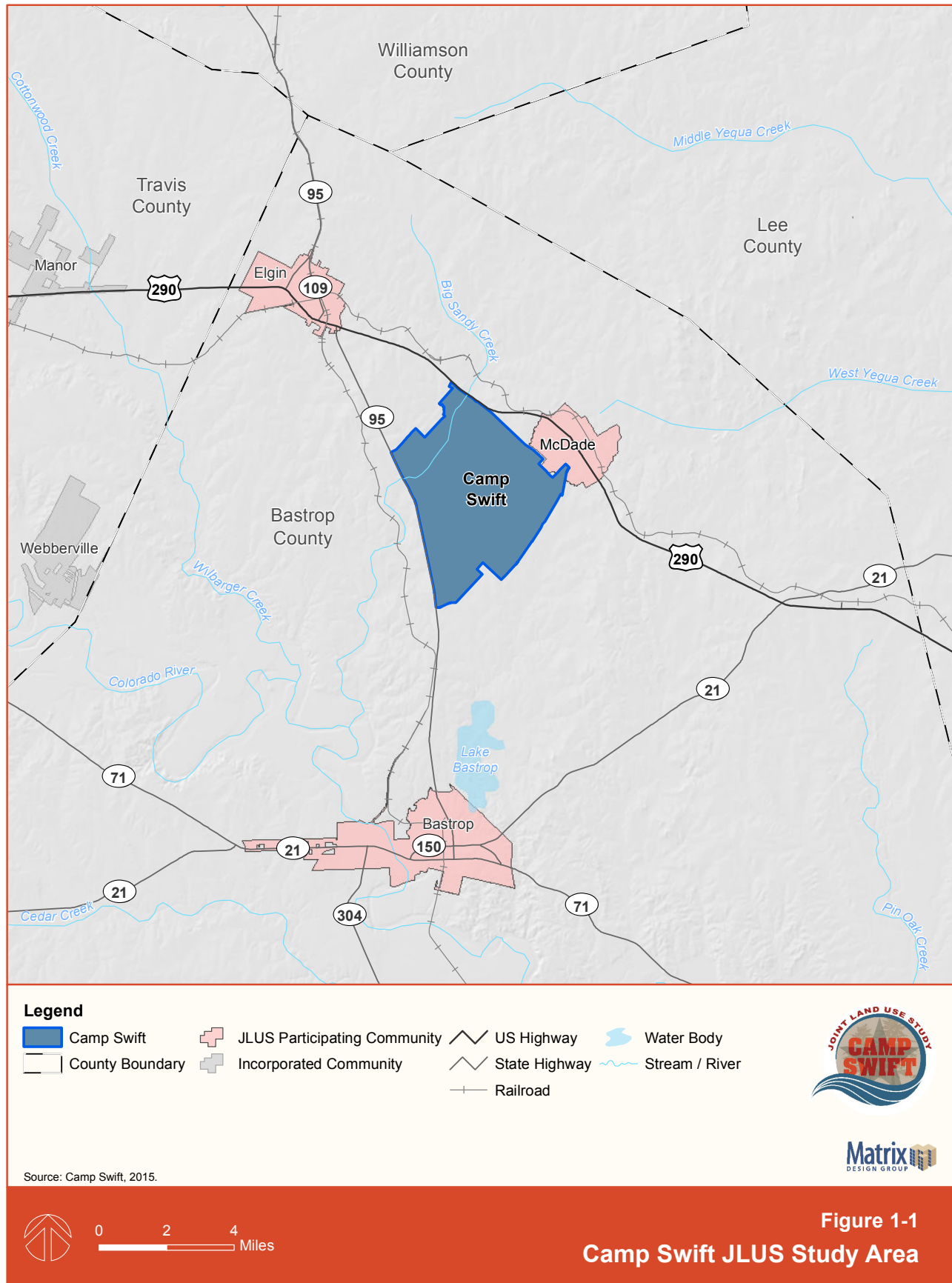
could be applied to address compatibility issues in the Study Area.

Website. A project website was developed to provide stakeholders, the public, and media representatives with access to project information. This website was maintained for the entire duration of the project to ensure information was easily accessible. Information contained on the website included program points of contact, documents, maps, public meeting information, and other JLUS resources. The project website is located at www.campswiftjlus.com.

1.6 JLUS Study Area

Camp Swift is located approximately nine miles north of the City of Bastrop and approximately eight miles south of the City of Elgin in Bastrop County, east of the City of Austin, Texas. The installation is located in a primarily rural agriculture area, surrounded by farmland, forests and small communities such as McDade. There are transportation corridors within the study area that are projected to grow. These corridors include State Highway 95 on the installation's western boundary and U.S. Highway 290 on the installation's northern boundary. It is important to note that the JLUS Study Area is located in the Capital Area Metropolitan Planning Organization (CAMPO) and Capital Area Council of Governments (CAPCOG) planning area. Although the Study Area is not as urban as Austin, Texas, the installation and surrounding communities are still connected geographically and economically to the Capital region.

The Camp Swift JLUS Study Area was designed to encompass all operational areas of the installation, including all land in the vicinity that may impact, or be impacted by, current or future military operations. These lands include areas associated with drop zone operations, training ranges and range noise contours within the county of Bastrop, the cities of Bastrop and Elgin, and the Community of McDade as illustrated in Figure 1-1.



1.7 JLUS Implementation

It is important to note that once the JLUS process is completed, the final document is not an adopted plan, but rather a set of strategies to be used by local jurisdictions, agencies, and organizations in the Camp Swift JLUS Study Area to guide their future compatibility efforts. Acceptance of the study by stakeholders will be sought to confirm their collective support for identified implementation efforts. For instance, local jurisdictions and counties may use the strategies in this JLUS to guide future subdivision regulation, growth policy, and zoning updates, as well as formal coordination procedures for the development proposal review. Camp Swift may use the JLUS process as a guide for interaction with local jurisdictions on future projects, and to manage internal planning processes with a compatibility-based approach.

1.8 JLUS Background Report Organization

The following is a brief overview of the organization of the Camp Swift JLUS Background Report, including the contents of each chapter.

Chapter 1: Introduction. Chapter 1 provides an introduction and overview of the Camp Swift JLUS. This chapter describes the working relationships among the entities, background and intent of the JLUS, Study Area definition, objectives used to guide development of the JLUS, stakeholders involved in developing the JLUS, public outreach methods, implementation premise, and organization of the document.

Chapter 2: Community Profile. This chapter provides an overview of the regional growth potential and a profile of key jurisdictions within the Study Area, including population, housing, economic, and transportation indicators.

Chapter 3: Military Profile. The military profile introduces Camp Swift and discusses the facility's missions; the strategic, local, and economic importance of Camp Swift; the importance of mission sustainment, facility and training capabilities, and operations; Camp

Swift's role in national defense; potential future missions; and the installation's challenges.

This chapter also defines the footprint of each military operating area (e.g., airspace, training ranges, noise contours, safety zones) that occur in the Study Area to foster an understanding of how military operations could potentially impact, or be impacted by, its surrounding communities.

Chapter 4: Existing Compatibility Tools. This chapter provides an overview of relevant plans, programs, and studies that are tools to address compatibility issues in the JLUS Study Area. The applicable tools are presented as a baseline for evaluation of the effectiveness of each existing tool relative to addressing compatibility issues identified in Chapter 5.

Chapter 5: Compatibility Assessment. This chapter presents the compatibility issues identified for the Camp Swift JLUS Study Area, with input from the PC and TC, members of the public, existing plans and technical reports, and evaluation by the project team. This chapter enumerates the issues and categorizes them into the following 25 compatibility factors.

- | | |
|---|----------------------------------|
| ■ Air Quality | ■ Infrastructure Extensions |
| ■ Anti-Terrorism / Force Protection | ■ Land and Air Space Competition |
| ■ Biological Resources | ■ Land Use |
| ■ Climate Adaptation | ■ Legislative Initiatives |
| ■ Communication / Coordination | ■ Light and Glare |
| ■ Cultural Resources | ■ Marine Environments |
| ■ Dust, Smoke, and Steam | ■ Noise |
| ■ Energy Development | ■ Public Trespassing |
| ■ Frequency Spectrum Capacity | ■ Roadway Capacity |
| ■ Frequency Spectrum Interference / Impedance | ■ Safety Zones |
| ■ Housing Availability | ■ Scarce Natural Resources |
| | ■ Vertical Obstructions |
| | ■ Vibration |
| | ■ Water Quality / Quantity |



Inside Chapter 2...

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2.1 Introduction

This chapter provides an overview of the civilian communities within the Camp Swift Joint Land Use Study (JLUS) area and their interrelationships with the Camp Swift / Texas Army National Guard (TXARNG) training complex. Bastrop County, the Cities of Bastrop and Elgin, and the community of McDade are all located near Camp Swift. The profiles presented in this chapter describe current and predicted population growth, housing availability, economic development, and transportation capacities, in addition to defining the general setting of the communities within the Study Area.

Capturing and describing certain demographic characteristics of the participating JLUS communities can help to provide a baseline context from which informed decisions can be made when developing compatibility strategies. The goal is to provide information that enables stakeholders to gain an understanding of population and development trends that have the potential to affect the future missions and operations of Camp Swift. It is intended that this information, combined with other factors presented herein, help decision-makers proactively develop consistent and informed planning policies about future development and economic growth of the communities they represent before compatibility issues arise. Further, this chapter is designed to foster an understanding by the military about the types of activities occurring “outside the fence” when considering future missions and operations.

2.2 Regional Overview

The JLUS Study Area is located within the boundaries of Bastrop County in the southeastern portion of central Texas. It includes the footprint of the Camp Swift training facility and operations (see Chapter 3, Military Profile), the nearby cities of Bastrop and Elgin, and the community of McDade, which are all located in Bastrop County.

The Colorado River traverses Bastrop County beginning in the west-northwest portion of the county running through to the east-southeast portion. The Lost Pines Forest consists of a band approximately 13 miles long of loblolly pines, which can live between 300-400 years. The forest, situated in central Texas, borders the City of Bastrop to the east and is partially protected by Bastrop and Buescher State Parks. Figure 2-1 shows the regional location of Camp Swift in Texas.

Comprised largely of agricultural lands and farming communities, the area has flourished in corn, cotton, and cattle ranching. In addition to agriculture, the lands within the region have benefited from the discovery of oil, coal, and from the rich clay soil used in the production of bricks, which has proved to be an economic boon and source of recognition for the region.

Source: Texas State Historical Association Handbook of Texas, online

Bastrop County

Bastrop County is situated in southeastern Texas on the upper Gulf coastal plains, with elevations ranging from 400 to 600 feet above sea level, and comprises 895 square miles. The terrain of Bastrop County is characterized by rolling uplands and broken hills with sandy and loamy soils. At the time of the 2010 census, Bastrop County had a reported population of 74,171.

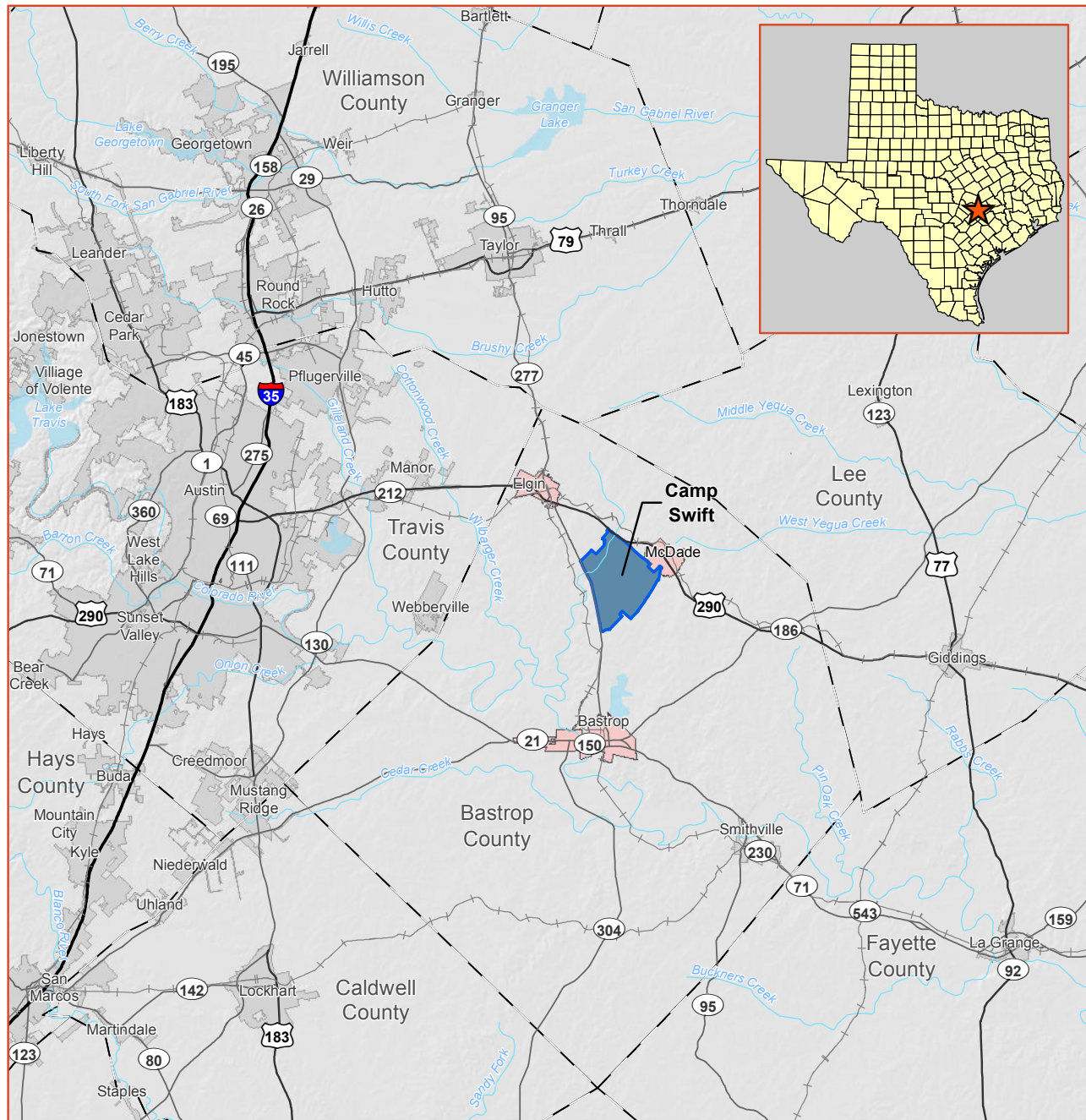


Bastrop County Courthouse

The cities of Bastrop, Elgin, and Smithville are all located in Bastrop County, with the City of Bastrop designated as the county seat. Bastrop County also has several census designated places and communities, including Camp Swift, Wyldwood, McDade, Cedar Creek, and Paige. Bastrop County is bordered by Travis and Caldwell counties to the west; Williamson County to the north; Lee and Fayette counties to the east; and Gonzales County to the south.

Bastrop County, initially established in 1831 under the name of Mina, changed its name to Bastrop in 1837 in honor of Dutch settler Philip Hendrick Nering-Bogel, Baron de Bastrop who had aspirations of establishing a German settlement on current City of Bastrop land.

The establishment of the Houston and Texas Central Railway and more than 30 manufacturing facilities in Bastrop during the early 1870s saw the area population rise to approximately 11,000. The railroad served as a catalyst for the inception of additional railway communities, including Bastrop, Elgin, and Smithville.



Legend

- Camp Swift
- County Boundary
- JLUS Participating Community
- Incorporated Community
- Interstate
- US Highway
- State Highway
- Railroad
- Water Body
- Stream / River



Sources: TNRIS, 2015; Esri, 2015.



0 5 10 Miles

Figure 2-1
Regional Area

In the 1920's, Bastrop was an important provider of oil, coal, and lumber. During this era, the Bastrop mill produced 30 million board-feet of lumber per year. The 1920s saw an increase in the mining of coal and clay, with rich clay deposits around Elgin. During this time, the area also saw a shift in land use from agricultural to cattle production, due to the 1920 farm depression, which was followed by the Great Depression of the 1930s.

A board-foot is a specialized unit of measurement for the volume of lumber in the United States and Canada. One board-foot is the length of one-foot of board, one foot wide and one inch thick.

With the shift in enterprise from war back to agriculture and farming, Bastrop farmers began to diversify by cultivating crops of sorghum, watermelons, peanuts, and pecans, with a significant allotment of land still reserved for the production of beef cattle. The population of Bastrop County was in a decline until 1960, when it reached a low point of less than 17,000 people. The 1990s brought new challenges to Bastrop communities with growth pressures from Austin spurred by suburban development. While maintaining its longtime economic endeavors in farming, cattle, and brick making, the county has also become known in the film industry, with more than 30 movies filmed there.

Source: www.bastropcountyhistoricalsociety.com; Texas State Historical Association Handbook of Texas, online

Community of McDade

McDade is an unincorporated community and census-designated place. It is located on approximately 6,000 acres within north Bastrop County along U.S. Highway 290, and is approximately eight miles southeast of the City of Elgin, and less than one mile east of Camp Swift. With a 2010 census population of 685, the community has experienced a 49 percent increase in its population since the 2000 census count of 459.

The town was established in 1869, in anticipation of the Houston and Texas Central Railroad. The town is also known as "Tie City" or "Tie Town", possibly due to its role in the cutting of railroad ties and logs used on the railroad. It was considered to be a successful depot town which facilitated the movement of freight to and from Bastrop, Smithville, and Austin.

McDade enjoys proximity to the rich clay deposits, and is known for McDade Pottery, which operated from 1890 until World War II (WWII). Throughout the population decline following the war, the town managed to remain an agricultural center by producing melons.

Source: Texas State Historical Association Handbook of Texas, online; 2010 U.S. Census

City of Bastrop

The City of Bastrop is located nine miles south of Camp Swift and 15 miles south of the City of Elgin, along State Highway 95 in Central Bastrop County. The city resides at the point of convergence for Texas State Routes 21, 71, and 95. The Bastrop city limits encompass approximately 9.1 square miles, and as of the 2010 Census, the city had a population of 7,218. Bastrop is the designated county seat and commercial center of Bastrop County.



Bastrop City Hall

Bastrop operates under a Council-Manager government. The city relies on an elective council to enact local legislation, determine policies, and adopt budgets. The Council is also responsible for the appointment of the City Manager, City Attorney, and the Judge of the Municipal Court.

Bastrop's Mission...

Bastrop is a charming, vibrant, and inclusive community where people are welcomed, valued, and appreciated. With an eye toward the future and natural resources, and maintains a small town neighborly attitude.

The current site of the City of Bastrop was originally occupied by a strategic fort at the Colorado River crossing of Old San Antonio Road in 1804. The city began as the principal settlement in the Stephen F. Austin Little Colony of 1827, which was formally platted in 1832. During the years 1834-1837, the name of the town was changed to Mina, after a Spanish war hero, by the Mexican government. In 1862, a devastating fire claimed most of Bastrop's downtown commercial buildings, along with the county courthouse.

Leading up to the establishment of the railroad in Bastrop County, Bastrop was the only town in the county. In 1937, under the laws of Texas, the town was incorporated and the name was changed back to Bastrop. The mainstay of the economy during this time was farming and the timber industry. In the 1920s, Bastrop was an important producer of lumber and coal.

The Lost Pines Forest stands overlooking the center of town. As the only available timber source in the area, the forest had a significant impact on the local economy.

Today, the city strives to preserve its historic character while promoting heritage tourism. In 1979, 131 Bastrop buildings and sites were admitted to the National Register of Historic Places, earning the city the designation of the "Most Historic Small Town in Texas". Bastrop has a vibrant local economy and is located in the heart of the Texas Triangle, providing easy accessibility for commuters to Austin, Houston, San Antonio, and Dallas/Fort Worth.

Source: 2010 U.S. Census; Bastrop Chamber of Commerce; visitbastroptx.com, Mar 2015; Bastrop City Charter; Texas State Historical Association Handbook of Texas, online

City of Elgin

The City of Elgin is located in Bastrop and Travis counties, and is situated approximately 19 miles east of Austin at the intersection of U.S. Highway 290 and Texas State Highway 95. The Elgin city limits encompass approximately 5.8 square miles, and as of the 2010 Census, it had a population of 8,135. Elgin is nine miles north of Camp Swift and 15 miles north of the City of Bastrop.

The Houston and Texas Central Railroad created Elgin in 1872 after a major flood in 1869 on the Colorado River caused the railroad to reroute through Elgin rather than through McDade as originally planned on its way to Austin. When the town was officially platted in 1872, the city was named in honor of the railroad's land commissioner and surveyor, Robert Morris Elgin.



Elgin City Hall

The city continued to thrive as a growing depot town through 1884, when brick making was first introduced by Thomas O'Connor. This endeavor, which led to the eventual title of "Brick Capital of the Southwest", was a successful addition to the economy of Elgin, with over 267 million bricks being produced annually from locally sourced materials.

Elgin was the recipient of economic stimulus spurred by its proximity to the largest army training camp in Texas during WWII. At this time, Camp Swift reached a peak of 90,000 troops and hosted numerous missions including the 95th, 97th, and 102nd Infantry Divisions.

In addition to notoriety brought by the local brick making establishments, the city also became known as the “Sausage Capital of Texas” in the 1990’s, with its famous “Hot Sausage”. Today the city produces more than three million pounds of its famous sausage. In 1990, Elgin obtained the title of “Texas Main Street Community”, and obtained national acclaim when it was recognized in 1996 by the National Trust for Historic Places as a National Main Street Community.

Source: Elgin Chamber of Commerce; Texas State Historical Association Handbook of Texas, online; Elgin Heritage Walking Tour Brochure

2.3 Study Area Growth Trends

It is important to examine past, current, and future growth trends to understand the types and amount of growth and development occurring within the Study Area. Identifying growth patterns for the area surrounding Camp Swift will help determine potential future compatibility issues or areas of concern where new growth may extend that could impact or be impacted by military operations. This section assesses the recent and projected future population changes within Bastrop County and the cities of Bastrop and Elgin, as well as housing and economic trends that could be indicators of future growth.

Extraordinary growth has been reported within the State of Texas, which was identified as the state with the highest number of individuals moving into it (529,000) between April 1, 2010 and July 1, 2011. The 2.9 percent increase in total population has the local communities planning for potential encroachment issues from larger surrounding cities. The eastward expansion from Austin is palpable, with the metropolitan area of Austin, Round Rock, and San Marcos being named as the second fastest growing metropolitan area in the U.S., with an increase in population of 3.9 percent.

Population

Population data for Texas, Bastrop County, and the communities within the Study Area is based on a combination of information provided by the U.S. Census Bureau and the Texas State Data Center. Population growth observed from the 2000 and 2010 Census counts show an increase of nearly

30 percent for Bastrop County, which is approximately 38 percent higher than the State of Texas as a whole. The communities identified in Table 2-1 are all within the Study Area, and all have demonstrated significant population increases ranging from 28-49 percent between 2000 and 2010. These communities all exhibited a greater increase in population than the growth recorded at the county and state levels.

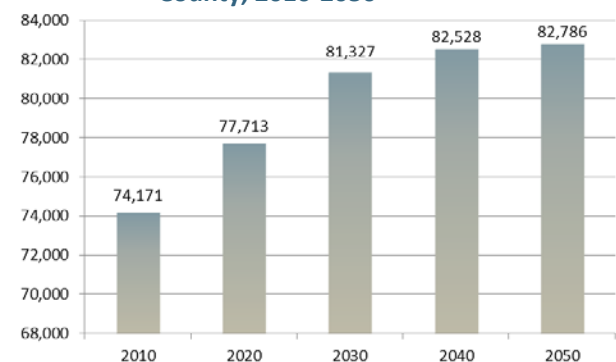
Table 2-1. Bastrop County Population, 2000-2010

Area	2000	2010	Number Change	Percent Change
Texas	20,851,820	25,145,561	4,293,741	20.6%
Bastrop County	57,733	74,171	16,438	28.5%
City of Bastrop	5,340	7,218	1,878	35.2%
City of Elgin	5,700	8,135	2,435	42.7%
McDade, CDP	459	685	226	49.2%

Source: U.S. Census Bureau 2000 & 2010

In addition to the population growth already experienced within Bastrop County between 2000 and 2010, the population forecast from 2010 to 2050 projects an additional 11.6 percent, or 8,615 additional people, as illustrated on Figure 2-2. The most significant increase in population is anticipated to occur within the next 15 years, with conditions projected to be relatively stable from 2040 to 2050.

Figure 2-2. Forecasted Population in Bastrop County, 2010-2050



Source: U.S. Census Bureau, 2010; Texas Data Center, 2014. Projections of the Population of Texas and Counties in Texas by Age, Sex and Race/Ethnicity for 2010-2050.

Housing Trends

Housing trends are an important indicator of economic activity and vitality, as they demonstrate the population growth or decline relative to new residential construction within an area. They also represent market decisions relative to home ownership versus rental properties. Ultimately, housing trends can indicate potential future locations for development, and the types of residential and economic development most likely to occur. The rate of housing development is a strong indicator of the overall rate of development taking place in a region, which may result in potential incompatible land uses in conjunction with operations at Camp Swift.

The 2010 Census identified 2,991 units or 10 percent of the total housing units in Bastrop County as being within the City of Bastrop, and 2,948 units or 10 percent of the total housing units located in the City of Elgin. The change in housing units from 2000 to 2010 for the two cities was 33.6 and 45.1 percent respectively, both of which are slightly higher than the countywide increase in total housing units of 32 percent, as identified in Table 2-2.

Table 2-2. Study Area Housing Stock, 2000-2010

Jurisdiction	Housing Units 2000	Housing Units 2010	Numeric Change	Percent Change
Bastrop County	22,254	29,316	7,062	31.7%
City of Bastrop	2,239	2,991	752	33.6%
City of Elgin	2,032	2,948	916	45.1%

Source: U.S. Census Bureau, 2010

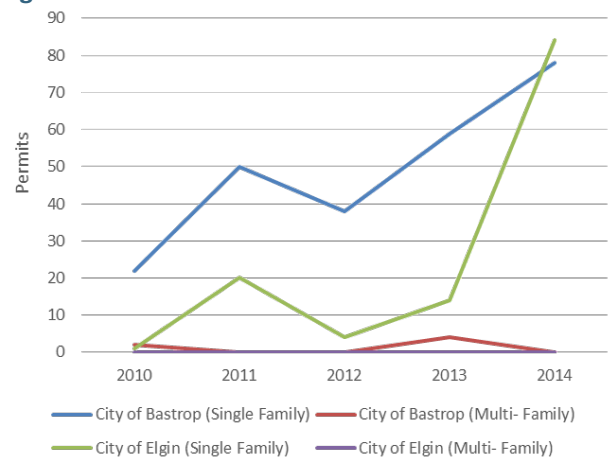
According to the 2010 Census, of the 2,991 total housing units in the City of Bastrop, 2,695 (90.1 percent) are occupied while the remaining 296 (9.9 percent) are vacant for various reasons (e.g., for rent, sale, or seasonal, recreational, or occasional use). For the City of Elgin, 2,662 (90.3 percent) of the total housing units are occupied and the remaining 286 (9.7 percent) are vacant. In Bastrop County, 25,840 (88.1 percent) of the total housing units are occupied

and 3,476 (11.9 percent) are vacant. The percentage of vacant homes is consistent between Bastrop County and the cities, with the county having a slightly higher housing vacancy than the cities.

The housing market performance can also be gauged by the number of building permits filed within specified areas. Figure 2-3 shows the supply of newly constructed single family and multifamily housing units for the cities of Bastrop and Elgin from 2010-2014.

The trend lines reflect the rural aspect of the communities with permits for single family home construction far exceeding permits acquired for multifamily housing units. The increase in the number of new construction permits for housing is consistent with the recent increases in population being experienced within the region. Over the last two years, Bastrop and Elgin have experienced increases greater than 100 percent in the number of construction permits issued for single family housing units. While the numbers indicate that Bastrop tends to average 20-30 more permits per year than Elgin, the patterns in activity remained consistent until 2012. Between 2012 and 2014, Bastrop saw a steady rise in new construction levels, while permit numbers in Elgin saw little increase from 2012 to 2013, but managed to slightly surpass the numbers recorded for Bastrop.

Figure 2-3. 2010-2014 Trends in Home Construction



Source: SOCDS Building Permits Database

Housing value trends assist in illustrating the changes in land and home values relative to market fluctuations. These fluctuations can be indicative of

development activity or inactivity as well as the location or migration patterns of populations. According to U.S. Census data, more than 70 percent of the population growth in the Austin area is outside of the Austin City limits, which continues to be a key influence on population growth for Bastrop County and the City of Bastrop, which is situated 30 miles from downtown Austin.

Table 2-3 shows the median housing value trends in the Study Area reported in 2000 to 2013.

Table 2-3. Study Area Median Housing Values, 2000-2013

Jurisdiction	2000	Median Housing Value 2009-2013*	Percent Change
Texas	82,500	128,900	56.2%
Bastrop County	93,400	117,700	26.0%
City of Bastrop CCD	102,400	127,200	24.2%
City of Elgin CCD	85,100	111,100	30.6%

Source: U.S. Census Bureau 2010.

*This is a five year estimate conducted for the 2010 U.S. Census.

Median housing values for the State of Texas have experienced an increase of more than 50 percent since 2000. Bastrop County and the Census County Divisions (CCD) for the City of Bastrop and the City of Elgin, have all experienced significant increases in median home values from 2000 to 2013, with the City of Bastrop having the smallest increase at 24 percent.

Table 2-4. Study Area Housing Types, 2009-2013*

Jurisdiction	Single Family	Multi Family	Mobile Home
Texas	70.1%	22.9%	7.0%
Bastrop County	64.6%	4.8%	30.7%
City of Bastrop CCD	63.7%	7.7%	28.6%
City of Elgin CCD	68.1%	5.6%	26.3%

Source: U.S. Census Bureau 2010.

*This is a five year estimate conducted for the 2010 U.S. Census.

While the median housing value for the State of Texas as a whole exceeds the median housing values for the communities within the JLUS Study Area, the percentage of mobile homes within the Study Area is much higher than the concentration of mobile homes throughout the state. Though the 2013 American Community Survey did determine the City of Bastrop CCD median home value to be close to the state median, the number of mobile homes remains a factor in the median values within the region. As identified in Table 2-4, mobile homes are prevalent in Bastrop County, and the Capital Area Council of Governments identified mobile homes as composing the second largest housing category in Bastrop County.

As development expands outward from the Austin metropolitan area to the east, it is easy to see its effects on median monthly rents within Bastrop and Elgin. These communities are both bedroom communities to the City of Austin, and as population increases in these cities, the increasing demand for housing is driving up home values as well as monthly rents. Additionally, the affordability of housing in Austin is also pushing people to outlying areas including the cities of Bastrop and Elgin, and Bastrop County. Table 2-5 shows the change in median monthly rents reported in 2000 to 2013.

Table 2-5. Study Area Median Monthly Gross Rent, 2000-2013

Jurisdiction	2000	Median Monthly Rent 2009-2013*	Percent Change
Texas	574	851	48%
Bastrop County	549	871	59%
Bastrop CCD	624	854	37%
Elgin CCD	504	864	71%

Source: U.S. Census Bureau 2010.

*This is a five year estimate conducted for the 2010 U.S. Census.

Development Trends

Bastrop County is part of the Austin-Roundrock Metropolitan Statistical Area (MSA), which has the lowest unemployment rate in the United States. Bastrop, with its proximity to Austin, is well positioned

to acquire some of the workforce demand. The cities of Bastrop and Elgin already have large factions of workers that have chosen to live in the rural historic communities and commute to Austin for work. In addition to the segment of the rural population commuting to Austin for work, there are an estimated 591 local businesses employing 3,604 employees within five minutes from downtown Bastrop. The Bastrop Independent School District is the largest employer in the area with over 1,300 employees.

The education sector makes up over 15 percent of employment in the City of Elgin, and with the new addition of a local branch of Austin Community College, the education sector is poised for additional employment opportunities. The majority of the population of Elgin is employed in retail trade, with education serving as the second largest employment industry. Elgin's economy is composed of approximately 440 businesses centered primarily on retail, food, and various local services. Elgin, like the City of Bastrop, is ideally situated for residents choosing the commuter route rather than work within the city as evidenced by the 60 percent of residents currently working outside of the city limits.

The proximity to Austin, and ease of travel have paved the way for economic and housing development within the Camp Swift JLUS Study Area, with major plans for shopping and retail aimed at increasing employment opportunities for Elgin, and the newly built higher learning institution, combined with plans for new large subdivisions south-southwest of Camp Swift, it is apparent that the rural communities of Bastrop County will be continuing their expansion at a rate that is on par with growth projections for the Austin-Roundrock MSA.

The majority of the lands surrounding Camp Swift are composed of county lands, or lands that have been included in the extra-territorial jurisdictions of the cities of Bastrop and Elgin. Development surrounding Camp Swift can be characterized by the following:

North

The Elgin master-planned community of the Arbors at Dogwood Creek is situated directly northwest of Camp Swift. The subdivision is composed of over 500 acres

of one- to five-acre custom home sites. The unincorporated community of McDade is situated northwest of the installation, and shares adjoining property lines with the Camp. McDade is a small rural community comprising about nine square miles of land, which had a population of approximately 685 at the time of the 2010 U.S. Census. McDade had a population density of 258 people per square mile at the time of the Census. At the time of this report, the community of McDade did not have any plans to expand or improve infrastructure.

South

Lake Bastrop Acres, also known as the Census Designated Place (CDP) Camp Swift is located to the south of the installation, which was part of the training facility up until after World War II when this land was returned to its original land owners. Today, the land is sparsely populated and largely agricultural in nature. According to 2010 U.S. Census data, the population of Lake Bastrop Acres (Camp Swift CDP) was approximately 6,300, with a density of 529 persons per square mile. Nearly nine percent of the population consisted of military veterans.

Also south-southwest of the installation is the future master planned community of XS Ranch, which will be situated west of State Highway 95 and extend as far north as Sayer's Road. The community, when fully built, is planned for 10,000 lots and approximately 300,000 square feet of commercial small-retail space, and 4,000 acres dedicated to open space, pasture land, and river. The predicted rate of development is estimated at 300 units per year.

East

The Lost Pines Habitat Conservation Plan (LPHCP) area is situated east of Camp Swift and comprises 124,000 acres. This area was identified and placed under a conservation plan to minimize and mitigate negative impacts to the federally and state endangered Houston Toad. While the Houston Toad has not been reported on Camp Swift, soil and habitat conditions at Camp Swift are conducive to the species, and the protected lands of the LPHCP share a common border on the installation's east side.

An industrial meat rendering facility located along the southeastern border of the installation is conducive to operations on the installation. This development provides an amicable and compatible use for the property bordering the installation.

West

The western border of Camp Swift runs along State Highway 95, connecting the cities of Elgin and Bastrop. State Highway 95 is a major transportation asset in the area, and also provides the main entrance to Camp Swift. To the west of State Highway 95 and along the most western edge of the installation's common border with State Highway 95, is the rural subdivision within Bastrop County named Cedar Hills which comprises less than 200 lots ranging from one to 14 acres in size.

Large private owned properties populate the remainder of State Highway 95 along the southwestern border of the installation, with the exception of a gas station convenience store which is also located along the western edge of State Highway 95, directly across from the installation's main entrance.

Sources: Market Analysis, Downtown Bastrop TX, June 2014; Elgin Comprehensive Plan, 2009; Elgin Economic Development Corporation, CAPCOG, Retail Trade Study 2013; Army Compatible Use Buffer (ACUB) Camp Swift Training Center, 2014; website: Bastrop Central Appraisal District; U.S. Census 2010

2.4 Transportation

The transportation network within the Camp Swift JLUS Study Area consists of junctions of several important roadways. To the south of the installation, in the City of Bastrop, State Highways 21, 71, and 95 all intersect. State Highway 95 is the main roadway connecting the cities of Bastrop and Elgin, and runs north along the western border of Camp Swift. Elgin is situated at the junction of State Highway 95, and U.S. Highway 290, which connects the major cities of Austin and Houston.

Camp Swift is situated on a triangular portion of land which is bordered by State Highway 95 on the west, U.S. Highway 290 to the north, and FM 2336 to the south, with main entrance to the Camp being off of

State Highway 95. Figure 2-4 provides an illustration of the transportation network within the Study Area.

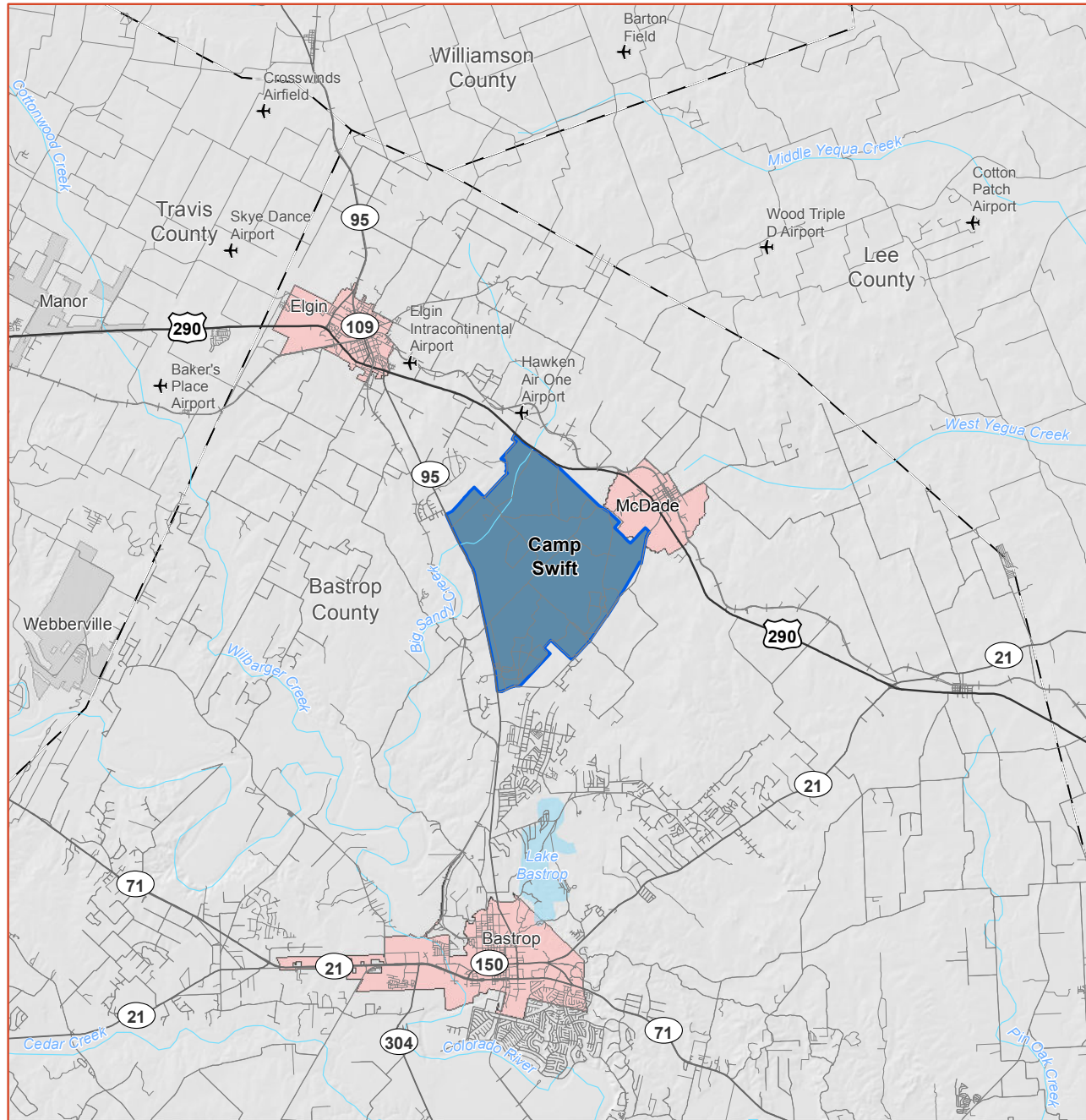
Interstate Highway 35 is the closest Interstate, and is located in Austin approximately 30 miles northwest of the City of Bastrop. The convergence of numerous regional roadways providing high levels of accessibility have helped to make the cities of Bastrop and Elgin ideal bedroom communities for Austin commuters.

The main airport for the region is the Bergstrom International Airport, which was formerly Bergstrom Air Force Base. Bergstrom is located on State Highway 71 in the city of Austin. In addition to Bergstrom International Airport, there is a municipal airport approximately 13 miles east of Bastrop, in the City of Smithville. The Smithville Crawford Municipal Airport is also situated along State Highway 71 and has a 4,000-foot lighted runway. Airport operations at the facility are described as general aviation, with 75 percent ascribed to local, and 25 percent to transient aviation.

There are two intersecting rail lines in the northern section of the JLUS Study Area. The two rail lines, belonging to Union Pacific Railroad (UPRR) and the Capital Metropolitan Transportation Authority (CMTA) Railroad cross paths in downtown Elgin. The CMTA line runs east-west, and serves two to five trains daily. This line currently offers freight only transport, but is presently under study by Elgin's Economic Development Corporation to assess potential future passenger rail service between Elgin and Austin.

The north-south line owned and operated by UPRR is also a freight line serving 10 trains per day, and Elgin has been exploring the feasibility of becoming a freight village, offering intermodal operations and transportation opportunities to businesses.

Sources: City of Bastrop Comprehensive Plan, 2000-2020; City of Elgin Comprehensive Plan, 2009-2029; website: airnav.com



Legend

- Airport
- Camp Swift
- JLUS Participating Community
- Water Body
- US Highway
- County Boundary
- Incorporated Community
- Stream / River
- State Highway
- Local Road
- Railroad

Sources: Bastrop County, 2015; TNIRIS, 2015.



0 2 4 Miles

Figure 2-4
JLUS Study Area Transportation

Please see the next page.



Inside Chapter 3...

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3.1 Introduction

This chapter provides an overview of the military history and current operations at Camp Swift. Identifying and describing the various activities performed on the military installation provides valuable insight into the importance of Camp Swift as a strong community partner and national strategic asset. This information will help stakeholders to make informed decisions relative to the future development and economic growth of their communities, which may be influenced by installation activities due to their relative proximity to Camp Swift. These decisions ultimately impact the continued existence and future role of the installation.

Texas Military Department

The Texas Military Department (TMD) consists of four organizations; they are:

- Adjutant General’s Office,
- Texas Air National Guard,
- Texas Army National Guard, and
- Texas State Guard.

The TMD is the largest military force in the country, and has deployed over 31,000 soldiers and airmen in support of the Global War on Terror since 2001. The mission of the TMD is to provide the governor and president with mission-ready, trained forces in support of state and federal initiatives. These initiatives include:

- Natural disasters,
- Civil unrest,
- Protect critical infrastructure and resources,
- Protect Texans from all hazards, and
- Protect Federal Emergency Management Agency Region VI.

In order to achieve the mission, over 5.5 million square feet of facility space is owned, leased, or licensed by the State of Texas to support the TMD. The TMD inventory has over 100 facilities in 65 counties across the State of Texas. These include:

- 62 State Readiness Centers (armories),
- 34 maintenance facilities,
- Four Army Aviation Support facilities,
- 18 Armed Forces Reserve Centers, and
- 10 Air Wings.

In addition, the TMD utilizes five training sites and ranges to prepare governmental, non-governmental, Department of Defense (DOD), and non-DOD organizations in a variety of skills to perform various missions for the Governor of Texas to fulfill the state mission, and the President of the United States to fulfill the federal mission. These sites are:

- Camp Mabry (Austin, Texas),
- Camp Swift (Bastrop, Texas),
- Camp Bowie (Brownwood, Texas),
- Camp Maxey (Powderly, Texas), and
- Fort Wolters (Mineral Wells, Texas).

Texas Army National Guard

The Texas Army National Guard (TXARNG), one of three guard entities in the TMD, comprises over 19,000 personnel living in 102 communities throughout the State of Texas. The major units of the TXARNG include:

- 36th Infantry Division
- 56th and 72nd Infantry Brigade Combat Teams
- 71st Battle Field Surveillance Brigade
- 36th Combat Aviation Brigade
- 71st Troop Command
- 19th Special Forces Groups C-5-19 SFG (A) and C-1-19 SFG (A)
- 1st Battalion (Airborne) 143rd Infantry

Currently, TXARNG units are involved in missions that range from engineering and military intelligence to airborne and combat helicopter support. These units serve multiple missions that provide security, disaster response, force-protection, medical emergency readiness, and movement and maneuver war fighting.

In addition, TXARNG facilities are utilized by the TMD to store and maintain military equipment and to train personnel.

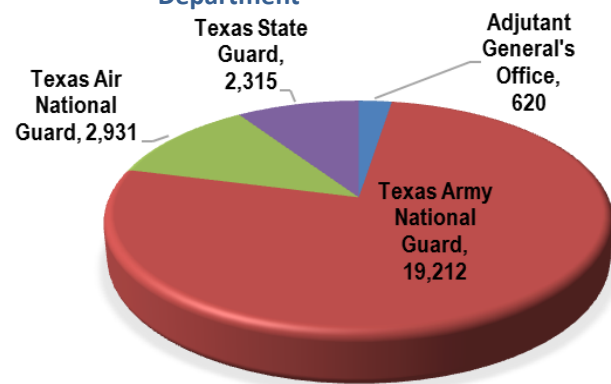
Source: Texas Military Biennial Report, December 2014

3.2 Economic and Community Impact

The 2014 Texas Military Biennial Report identified the thousands of soldiers throughout the State of Texas and the economic impact these soldiers and the military have on the State's economy. The report indicates Camp Swift as one of the 14 military installations in the state, and that it is a continued source of economic activity for the local community and economy of Bastrop County.

In Fiscal Year (FY) 2011, the TMD comprised 25,078 personnel, including citizen soldiers, air personnel, and civilian workers. The personnel are divided into four organizations, as illustrated in Figure 3-1:

Figure 3-1. Distribution of Texas Military Department



Source: Texas Military Biennial Report, December 2014

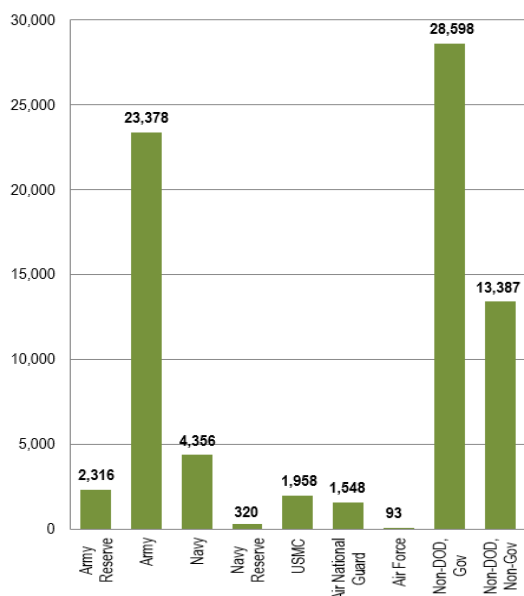
Camp Swift is under the TXARNG, which makes up the largest population segment in the TMD. In FY 2011, the Army National Guard awarded over \$5 million of military construction contracts to the State of Texas, \$2.6 million specifically for Camp Swift. This typically means increase in purchase of goods and services in the local communities.

In lieu of direct jobs and traditional economic output data, the intensity of usage at the installation helps to characterize the economic potential of Camp Swift on the local economies. Approximately 422,515 people, both military and civilian, trained at Camp Swift between 2012 and 2014. Of this, 346,561 were Army National Guard soldiers. Nearly seven percent of the total usage was from non-DOD governmental entities, and over three percent of the total usage was attributed to non-DOD, non-governmental citizens.

The non-DOD government usage is comprised of agencies associated with state and local law enforcement and fire departments, and non-DOD, non-government agencies. Figure 3-2 illustrates the breakdown of non-Army National Guard usage of Camp Swift by entity from 2012 to 2014.

Source: Camp Swift Range Facility Management Support System (RFMSS), 2012-2014.

Figure 3-2. Non-Army National Guard Usage of Camp Swift from 2012 – 2014



Source: Texas Military Preparedness Commission Report, 2011-2012; Texas Military Biennial Report, December 2014; Texas Military Forces and Texas A & M Forest Service MOU, 2014; Office of Economic Adjustment Camp Swift JLUS website (<http://www.oea.gov/project-highlights/compatible-use/camp-swift,-texas>)

Community Benefit

In addition to the various military entities utilizing the base facilities, there are many non-military users that benefit from Camp Swift. Groups associated with the Texas State Rifle Association, Bastrop Police Department, Austin Police Department (special units), ROTC and Junior ROTC groups from universities and high schools, all benefit from the Camp's training and range facilities. The TMD currently has a memorandum of understanding with the Texas A&M Forest Service for facilitating prescribed burn training and an annual Interagency Wildfire Academy every October at the Camp. During this training, Forest Service trainees meet annual training certification requirements while assisting the Camp with minimizing risks to wildfire.

3.3 Camp Swift History

Camp Swift was established as an active-duty U.S. Army training facility, comprising 55,900 acres, following the United States entry into World War II (WWII) in March 1942. The base was named after WW I commander and author, Eben Swift, and was utilized as a training facility for army infantry and combat nurses.

In addition to facilitating training activities during WWII, Camp Swift was also the largest army training and transshipment camp in Texas, and facilitated the internment of more than 3,500 German prisoners of war captured in North Africa and Normandy during the invasion of Europe.

Following the end of WWII, Camp Swift was portioned out to multiple government agencies, including 11,676 acres that were acquired by the State of Texas, which are currently utilized by the Texas National Guard; medium-security federal prison; and a University of Texas cancer research center.

Roughly 25,000 acres of the facility were sold or auctioned by 1950 as the result of the decrease in military action. However, the need to regain control over the facility for training U.S. Army personnel rose during the Korean Conflict in 1952. With the resolution of the Conflict in 1953, the Camp was then licensed to the State of Texas. The TXARNG began utilizing the

facilities for regular training activities in 1969, and continues to do so through a license from the U.S. Army Corps of Engineers. Despite the downsizing of the installation, the Camp is still the largest military training facility in Texas.

Throughout the course of U.S. conflict, Camp Swift has been utilized for advanced training activities for the 2nd, 95th, 97th, and 102nd infantry divisions, the 10th Mountain Division, and two Tank Destroyer groups.



WWII Camp Swift Main Entrance

Source: TXARNG Statewide Operational Noise Management Plan, 2014

3.4 Installation Setting

Camp Swift comprises approximately 11,750 acres in Central Texas. The facility is located in the County of Bastrop, part of the Austin-Round Rock Metropolitan Statistical Area. The installation is situated nine miles north of the City of Bastrop and 4.2 miles southeast of the City of Elgin. The installation is bordered on two sides by state or federal highways, including SH 95 along the western boundary and U.S. Highway 290 on the northern boundary. Southeast of Camp Swift there are residential properties across SH 95 and 2336, and to the west of the installation, across SH 95, are the residential communities of Sayersville and Cedar Hills. Prior to the existence of Camp Swift, the land was primarily agricultural, utilized for farming, ranching,

and grazing, along with open grasslands and woodlands.

Source: TXARNG Statewide Operational Noise Management Plan, 2014

Camp Swift is within an area known as the Southern Post Oak Savannah ecoregion. This region serves as the transitional area between woodlands and grasslands, and is most typically a mix of post oak woods, improved pastures, and rangelands. The eastern boundary of Camp Swift borders the western boundary of the conservation habitat area that has been placed into the Lost Pines Habitat Conservation Plan, which was developed to assist in mitigating and minimizing potential impacts to the endangered Houston Toad.

Source: Office of Economic Adjustment (www.oea.gov/project-highlight)

Of the 11,750 acres that make up Camp Swift, approximately 90 acres are improved and include buildings, 225 acres are utilized for ranges, and the remaining land is largely unimproved. The installation has a total of seven ranges, including a drop zone, six training areas, an armory, three land courses, an unimproved landing strip, a vehicle wash rack, and several other general and administrative use facilities. Table 3-1 provides a summary of the support and training facilities and corresponding training areas present at Camp Swift. The table should be read with the understanding the training area columns indicate the general location of the support and training facilities in the preceding column.

Source: Draft: Integrated Cultural Resources Management Plan for Installations of the Texas Army National Guard, 2014-2019



Camp Swift Automated Record Fire Range

Table 3-1. Support and Training Facilities and Associated Training Areas

Support Facilities	Training Area	Training Facilities	Training Area
Headquarters Building	I	Automated M-16 Range	I
Billets for 825 People	I	Known Distance Range	I
Large Dining Facility	I	Combat Pistol Range	I
Billets for 330 People	II	Combat Pistol Qualification Course (CPQC)	I
Small Dining Facility	II	MPMG Range	I
Offices (1 Building)	I	203 Range	I
Armory (Classrooms, Office)	I	Nuclear Biological Chemical (NBC) Chamber	I
State Maintenance Shop	I	Grenade Range	IA
Classroom and Warehouse Building	I	Demolition Range	II
Unit Training Equipment Site (UTES) Facility	I	Personnel and Equipment Drop Zone (DZ)	II
Wash Rack	I	Land Navigation Course	II
Squad Training (STX) Lanes	II	Mobile Operations in Urban Terrain (MOUT) Facilities (2)	IIA
		Security Operations (SASO) Lanes	II
		Rappel Tower	I
		Landing Strip	IIA
		Bivouac Sites	(3) III, IIIA

Source: Draft: Integrated Cultural Resources Management Plan for Installations of the Texas Army National Guard, 2014-2019



Camp Swift Cantonment Area

Cantonment Area

Camp Swift has two cantonment areas, which have the capacity to house 1,678 soldiers. The cantonment areas are the developed areas of the installation, and cover approximately 90 acres of land.

Cantonment Area I is the larger of the two areas and is located along the lower southwestern edge of the installation, while Cantonment Area II is situated along the southeastern portion of the property.

These designated areas provide for multiple billeting options which include 12- to 80-person facilities. In addition to housing, these areas have administrative buildings, educational facilities, dining halls, site support operations, the Unit Training Equipment Site (UTES), storage and maintenance facilities, and a Morale Welfare Recreation facility.

Source: Camp Swift Capabilities Brief, PowerPoint

3.5 Military Operations

Camp Swift is a Maneuver Training Center-Light (MTC-L) with both pre-mobilization and institutional training missions. It has six designated training areas (I, IA, II, IIA, III, IIIA), 200 acres of which consists of firing ranges. The Camp is the premier site for pre-mobilization training for the TXARNG, and is the preferred training center for the 72nd Infantry Brigade Combat Team.

As the State of Texas Institutional Center of Excellence, Camp Swift is responsible for supporting the Regional Training Institute. The installation has the capacity to accommodate two battalions and the Headquarters for the 36th Infantry Division simultaneously. Camp Swift

is utilized by various military entities, including the TXARNG, Texas Air National Guard, and all branches of the Reserves.

Training activities currently conducted at Camp Swift range from small arms and weapons qualifications and proficiency to land navigation and combat engineering skills. Training facilities on the base encompass seven live-fire ranges, which include a Light Demolition Range, an Improvised Explosive Device (IED) Lane, and a Drop Zone (DZ) for airborne training. Camp Swift training capabilities include: live weapons firing, demolition training, Mobile Operations in Urban Terrain (MOUT), IEDs, physical training, aerial personnel and equipment drops, land navigation, and night vision training operations. The various training capabilities make Camp Swift a versatile destination for training.

Camp Swift serves as a storage facility for troop vehicles and equipment, though it does not own any of the equipment stored at the installation. Air operations utilize helicopters, primarily for performing equipment drops and airborne training exercises, though occasionally airborne activities are also performed with fixed-wing aircraft. Figure 3-3 illustrates the training and range facilities at Camp Swift. In addition, Table 3-2 outlines the numerous capabilities for each range facility.

Table 3-2. Range Facilities and Capabilities

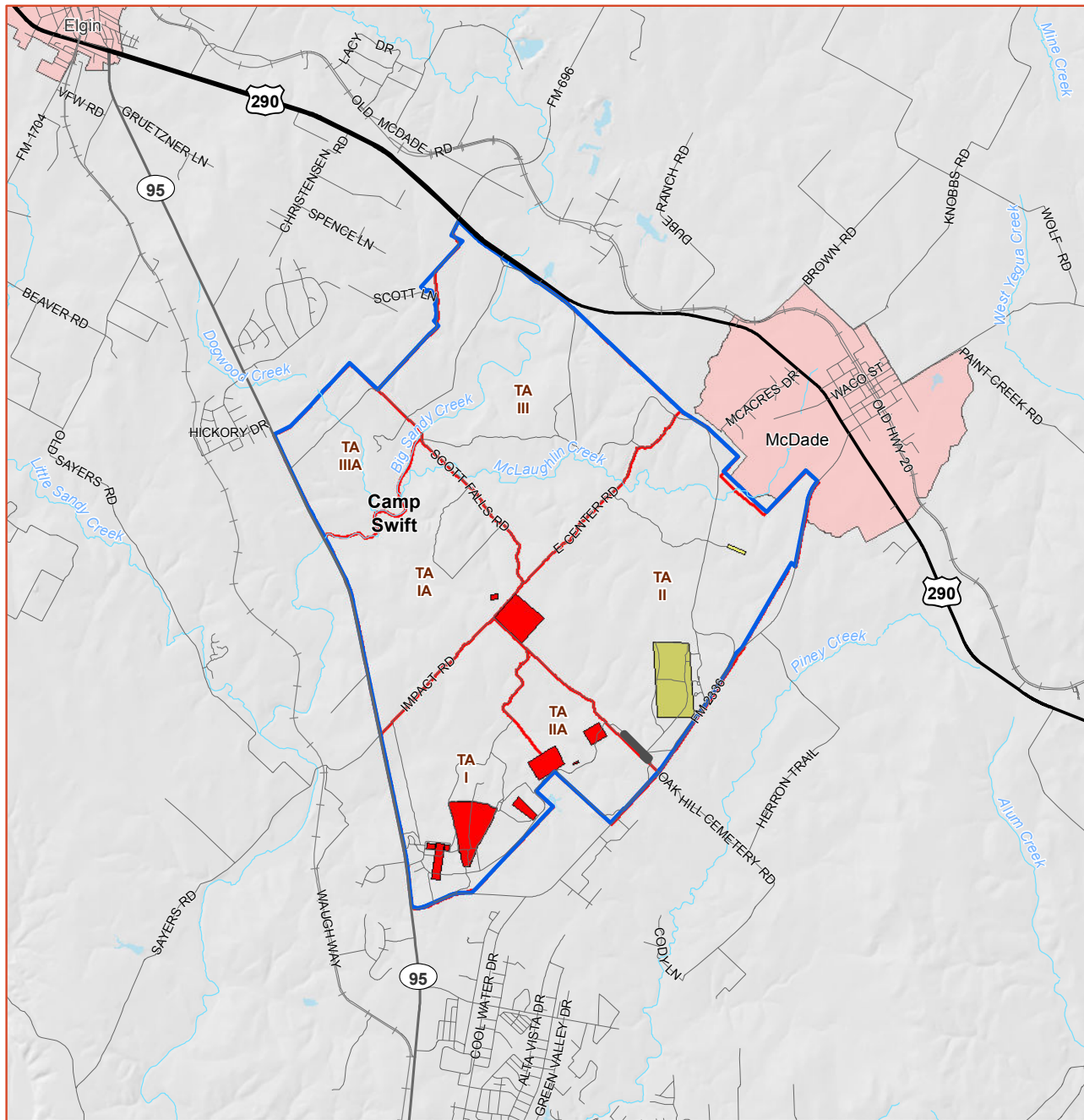
Ranges	Capabilities
Combat Pistol Qualification Range	16 firing points
Known Distance Range	32 firing points
Non-standard Shotgun Range	25 firing points
Multi-purpose Machine Gun Range	10 firing points
M203 Grenade / Anti-tank Range	4 firing points
Automated Record Fire Range	16 firing points
Zero Range	24 firing points

Ranges	Capabilities
IED Defeat Lanes	20KM available for mounted/dismounted operations
Demolition Range	Rated for 40 pounds of explosives
Live Grenade Range	2 firing points
Black Well Drop Zone	Capable for troop and equipment drops
MOUT Site #1	Constructed from combination concrete & containers, will accommodate a platoon level clearing operation
MOUT Site #2	Constructed from containers, will accommodate a company level clearing operation
Obstacle Course	U.S. Army Standard 9 evolution course
Rappel Tower	40 foot tower will accommodate 180 soldiers from the base to the rappel platform



Camp Swift Drop Zone

Although, the installation operates without any formal hours of operation, it is busiest during the summer and on weekends, when the National Guard and Reservists perform the majority of their training. The limited options for training days can often lead to sustained and concentrated training activities during peak times,



Legend

- | | | | |
|---|--|---------------|----------------|
| Training Area | Landing Strip | US Highway | Water Body |
| Military Range Area | Camp Swift | State Highway | Stream / River |
| Military Drop Zone Area | JLUS Participating Community | Local Road | |
| Ammunition Storage Area | | Railroad | |



Source: Camp Swift, 2015.



0 0.75 1.5
Miles

Figure 3-3
Range and Training Areas

which can result in an increase in public awareness of training activities during these times. In 2014, the Camp registered 186,000 “Man Days”, conducted mainly on weekends, though at the height of 9/11, the Camp was averaging approximately 375,000 man days annually. Camp Swift’s annual usage averages 150,000 man days, which equates to roughly 411 soldiers training daily.

A Man Day is a unit of one day’s work by one person.

Source: TXARNG Statewide Operational Noise Management Plan, 2014; Office of Economic Adjustment Camp Swift JLUS website (<http://www.oea.gov/project-highlights/compatible-use/camp-swift,-texas>)

Current Mission

The National Guard is unique in that it serves both federal (military response) and state (domestic response) missions. Camp Swift’s mission is to provide Inactive Duty Training and annual training, primarily for the TXARNG and Reserve Forces, but also active components of the Armed Forces and other government and civilian organizations. This serves to maintain a highly trained and ready force for wartime operations as well as a highly trained community-based capability to respond rapidly to the needs of civil authorities in times of natural or man-made disasters. Camp Swift is the TXARNG’s primary site for pre-mobilization training and is the preferred training location for the 72nd Infantry Brigade Combat Team. The Camp maintains institutional training as well as pre-mobilization missions, and is oriented towards providing national defense and troop readiness for the protection of the United States from foreign and domestic threats.

Future Missions

Approximately \$5.1 million are programmed for FY 2015 for infrastructure projects, including a live-fire shoothouse and a fire breach facility. Long range plans for expansion of the Regional Training Institute complex have also been discussed as future facility upgrades.

It should be noted that additional future missions have been proposed for TXARNG, including international peacekeeping operations and providing assistance in West Africa to combat the spread of the Ebola virus by building medical facilities and hospitals.

While no additional missions have been identified for the immediate future, it is always a goal of the JLUS to protect available assets in order to maintain future growth potential.

Source: TXARNG Statewide Operational Noise Management Plan, 2014

3.6 Operational Footprint

Mission and training activities at Camp Swift generate a number of impacts that can affect the health, safety, and quality of life of the general public in surrounding communities. Examples of mission impacts include noise and vibration from demolition activities or airborne operations.

Conversely, the military mission is susceptible to hazards created by nearby civilian activities, land use development, and environmental constraints. Understanding the overlapping spatial patterns of these impacts around the installation and ranges is essential for promoting compatible and fully coordinated land use decisions.

These overlapping spatial patterns create the mission footprint, which serves as a compatibility tool for surrounding communities in making informed land use decisions.

The mission profile comprises the mission operational footprints that extend beyond the boundaries of Camp Swift. These elements are either tangible, meaning they are either physically seen and / or heard, or intangible, meaning that they exist without being seen or heard.

Camp Swift’s Mission Footprint is composed of the following components:

- Unobstructed Clear Zone
- Explosive Safety Quantity Distance Arcs
- Range Surface Danger Zones
- Weapon Noise Contours
- Demolition Noise Contours
- Aircraft Safety Zones
- Imaginary Surfaces
- Bird / Wildlife Aircraft Strike Hazard

Unobstructed Clear Zone

The Military Handbook, Design Guidelines for Security Fencing, Gates, Barriers, and Guard Facilities identifies a combined interior / exterior clear zone distance of 50 feet minimum. A 30 feet minimum internal clear zone is mandatory, with the remaining 20 feet being reserved for outside of the fence line. The clear zone serves multiple purposes, including: reducing opportunities for intruder concealment, maintaining a 50 feet wide fire break, and in the case of Camp Swift, maintains adequate separation between the installation and the roadways. Figure 3-4 illustrates the 20 foot unobstructed clear zone outside the boundary of Camp Swift.

Explosive Safety Quantity Distance

In addition to the live-fire ranges, the Ammunition Supply Point (ASP), a munitions storage facility located within Training Area IIA, has an associated Explosive Safety Quantity Distance (ESQD) arc. The ESQD arc defines the area that would be affected by an explosion at the ASP. Inhabitable buildings are not allowed to be located within ESQD arcs. The contours of the ASP ESQD arcs are based on the type and amount of ammunition / ordnance stored. The current ASP ESQD arcs are contained within the boundaries of the installation, but the extreme southeast portion of the outer ring just touches the installation's fence line. Camp Swift's ESQD arcs are illustrated on Figure 3-5.

Surface Danger Zones

For safety purposes, each small arms live-fire range is required by Army Regulation to have a designated Surface Danger Zone (SDZ). SDZs encompass the anticipated area where munitions and debris could fall after fired from a certain point. Camp Swift can only allow weapons training with ammunition that generates SDZs that are contained entirely within the

boundary of the installation. The SDZs at Camp Swift are depicted on Figure 3-6.

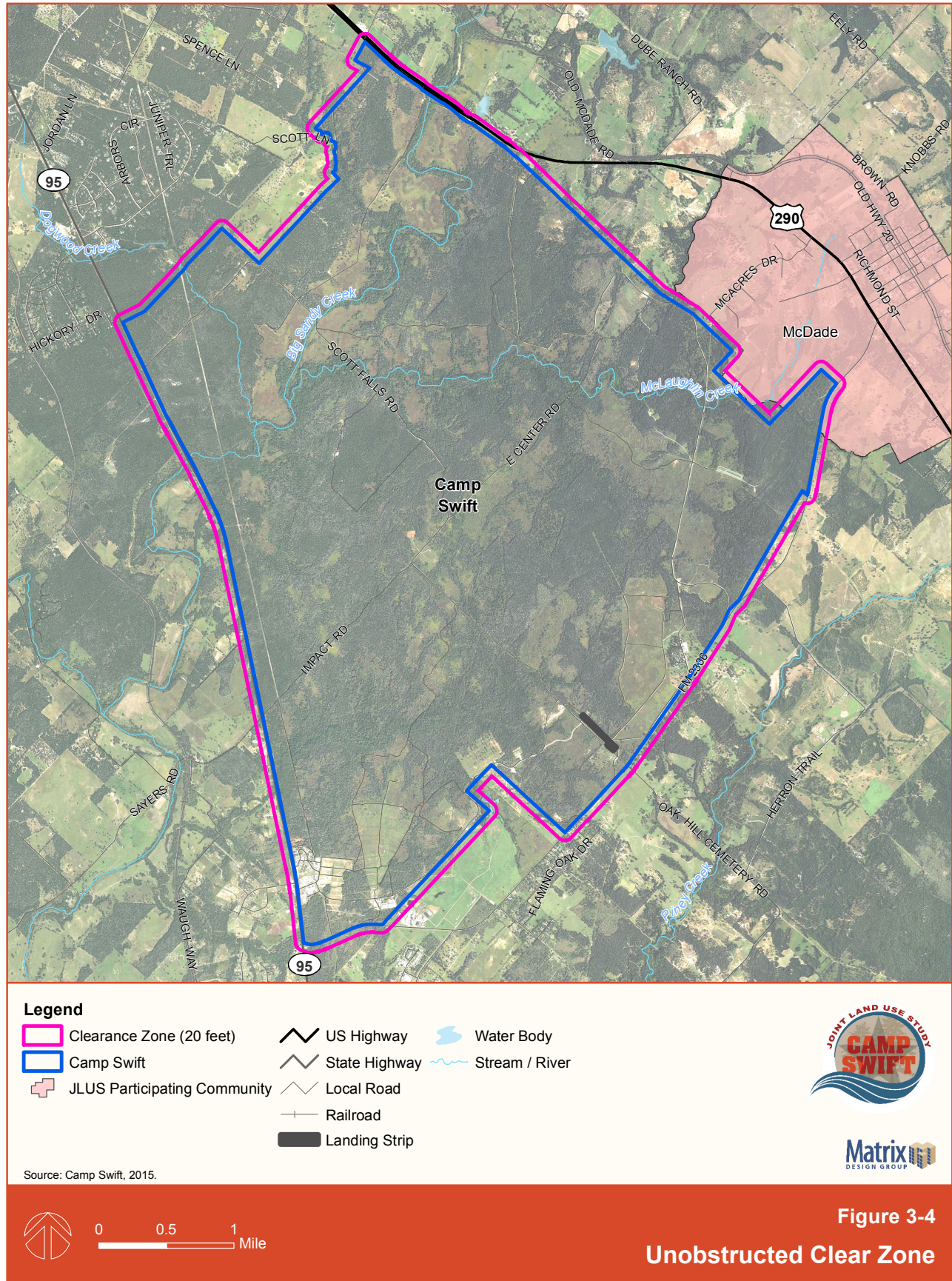
Large and Small Caliber Weapons and Demolition Noise Contours

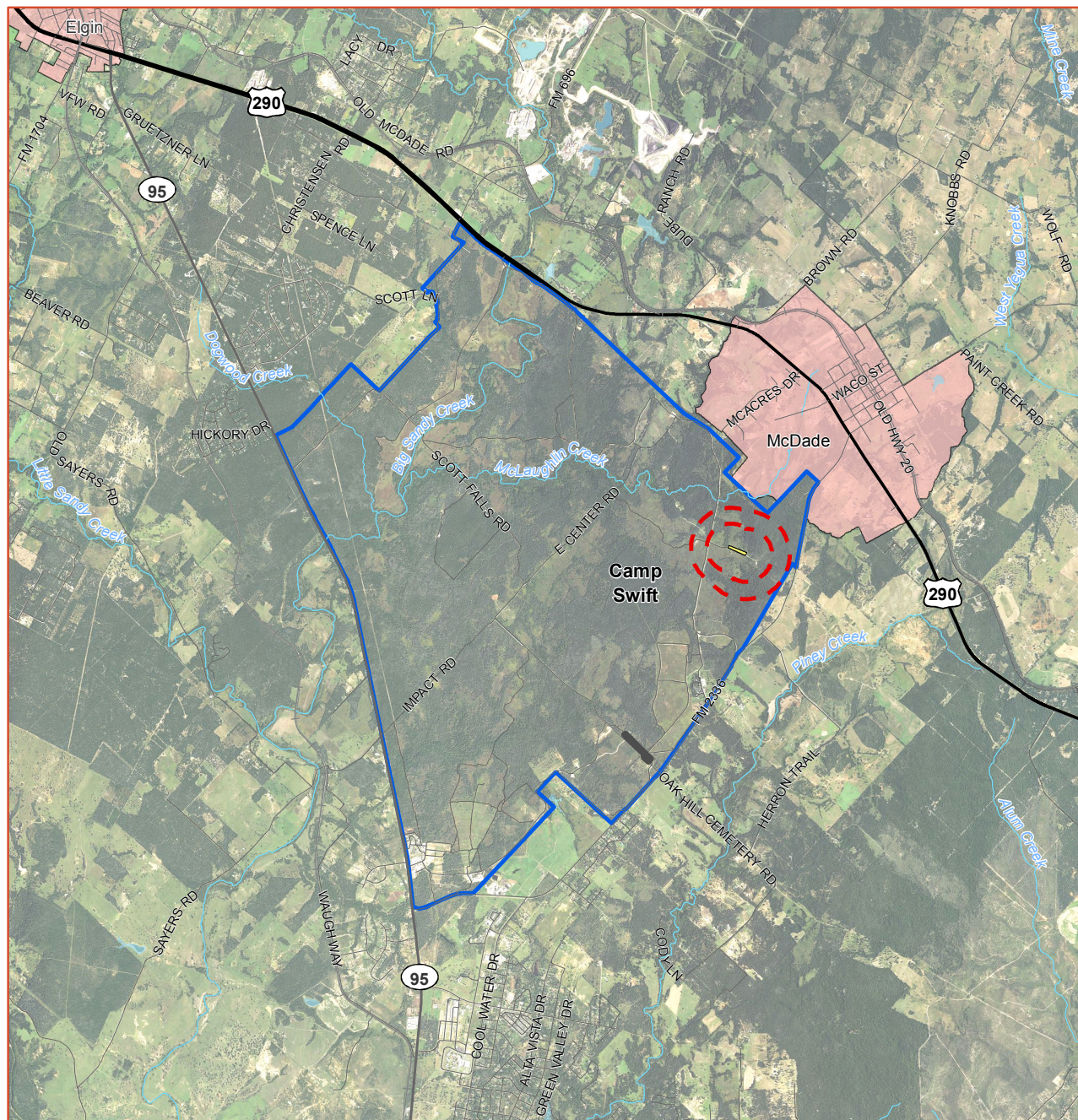
The primary sources of noise at Camp Swift include small caliber weapons firing and large caliber weapons—demolitions and grenade operations.

Noise Zones

The Army uses a series of noise zones to identify noise levels associated with military operations and what types of land uses should be allowable or not within the specific zones. Army Regulation 200-1 lists housing, schools, and medical facilities as examples of noise sensitive land uses. The Army utilizes three noise zones:

- **Noise Zone I** is the noise zone that includes all areas in which the PK15(met) decibels are less than 87 (for small arms), the A-weighted Day-Night Average Sound Level (ADNL) is less than 65 (for aircraft), and/or the C-weighted Day-Night Average Sound Level (CDNL) is less than 62 (for large arms and explosions). This area is usually the furthest zone away from the noise source and is generally suitable for most types of land use.
- **Noise Zone II** includes areas where the PK15(met) decibels are between 87 and 104, the ADNL is between 65 and 75, and/or the CDNL is between 62 and 70. Although local conditions such as availability of developable land or cost may require noise-sensitive land uses in Zone II, this type of land use is strongly discouraged on the installation and in surrounding communities. All viable alternatives should be considered to limit development in Zone II to non-sensitive activities such as industry, manufacturing, transportation, agriculture, and resource protection.
- **Noise Zone III** is the zone located closest to the source of noise. It includes PK15(met) decibels greater than 104, ADNL greater than 75, and/or CDNL greater than 70. Noise sensitive land uses are discouraged within this area due to the severity of noise.





Legend

- Explosive Safety Quantity
- Distance Arcs
- Ammunition Storage Area
- Landing Strip
- Camp Swift
- JLUS Participating Community
- US Highway
- State Highway
- Local Road
- Railroad
- Water Body
- Stream / River



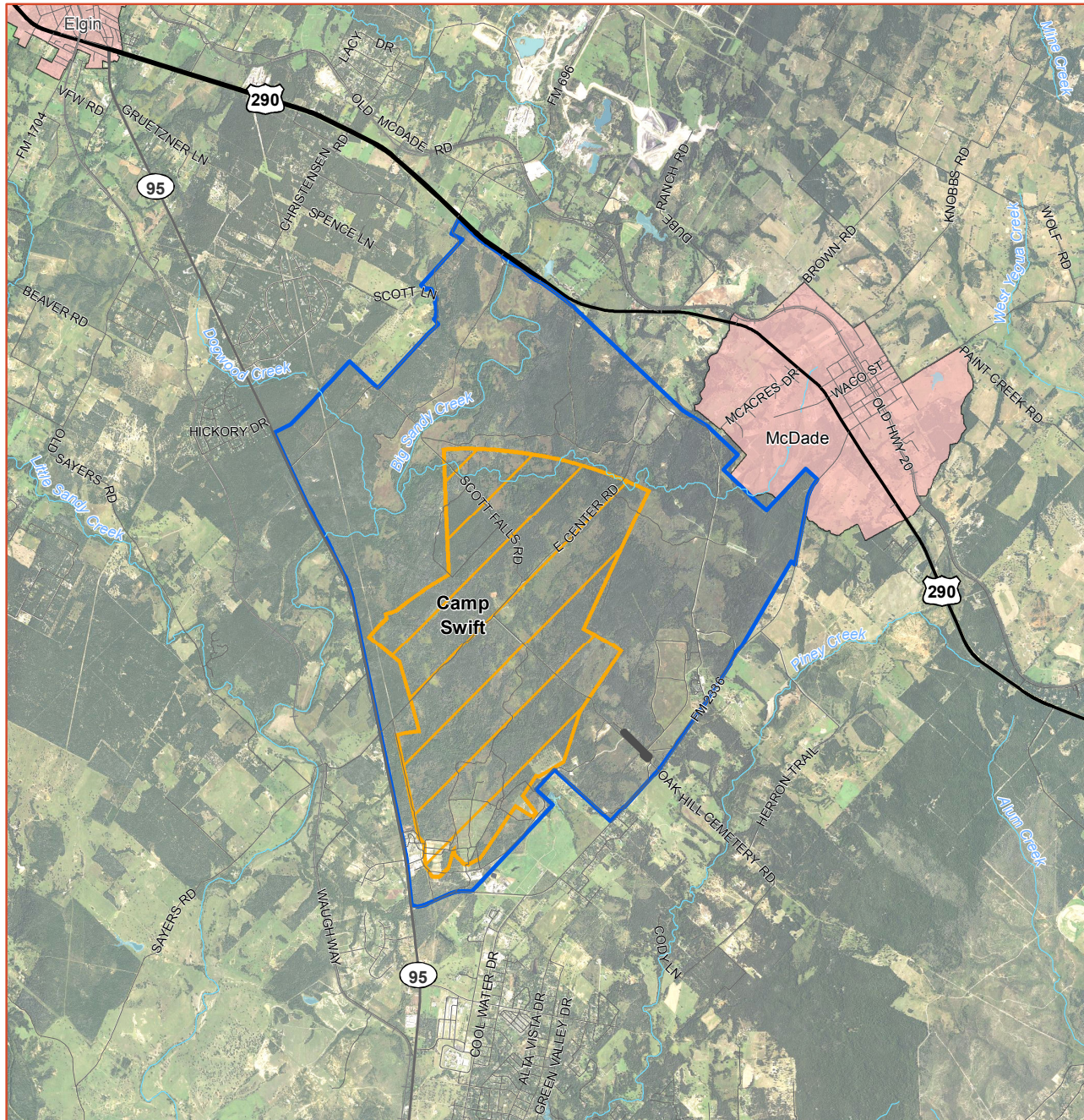
Source: Camp Swift, 2015.



0 0.75 1.5 Miles

Figure 3-5

Explosive Safety Quantity Distance Arcs



Legend

- | | | | |
|-------------------------------|------------------------------|---------------|----------------|
| Military Surface Danger Zones | Landing Strip | US Highway | Water Body |
| Camp Swift | JLUS Participating Community | State Highway | Stream / River |
| | | Local Road | |
| | | Railroad | |

Source: Camp Swift, 2015.



0 0.75 1.5 Miles

Figure 3-6
Surface Danger Zones

Fixed Range Small Caliber

Within the Camp Swift complex, pistols, rifles, and machine guns are fired. Under a maximum small arms training scenario, the Noise Zone III and Noise Zone II small arms contours both extend beyond the Camp Swift boundaries as shown on Figure 3-7. A portion of Zone II (3,462 acres) extends past the camp boundary to the south and west.

The Noise Zone III for fixed small caliber weapon firing extends beyond the installation boundary in three places, totaling 88 acres. In addition, Noise Zone III extends out to the west of the CPQC Range, by approximately 358 meters. Zone III also exceeds the boundary by 180 meters south of the KD Range, and 125 meters south of the ARF Range.

Non-Fixed Range Small Caliber

For non-fixed small arms noise assessments, predicted peak levels are analyzed to ascertain where the noise levels would approach Zone II levels. It has been determined in the TXARNG Statewide Operational Noise Management Plan that the Urban Assault Course (UAC) facility is positioned far enough inside Camp Swift's boundaries that the noise generated by non-fixed arms fire would be compatible with existing land uses.

Grenade

Noise produced from the M203 used in grenade launch operations was determined to be minimal, generating a low risk for complaints.

IED Lane

As illustrated in Figure 3-8, the IED Lane / Course generates noise from explosives. This course is used to train reservists and soldiers in recognizing and responding to IEDs. Explosives are used in this training and can generate noise impacts. The noise impacts modeled for this training course extend off-installation onto nearby land uses. While the noise is minimal, it is still important to note this impact.

Source: TXARNG Statewide Operational Noise Management Plan, 2014

Large Caliber Weapons and Demolition

TXARNG determined that the area defined as having the highest risk of complaint associated with the most frequent type of demolition activities was contained within the boundaries of Camp Swift. There are some areas that extend beyond the western boundary that are located within the moderate risk area for noise generated complaints.

Operations include the detonation of 2-pound charges and 40-pound charges that can produce noise at levels consistent with the high risk area (Noise Zone III) for generating complaints, illustrated on Figures 3-9 and 3-10.

The high complaint risk area for the 2-lb. charge demolition is contained wholly on the installation. However, there is minimal impact to land outside the installation for the moderate complaint risk for the 2-lb. charge demolition.

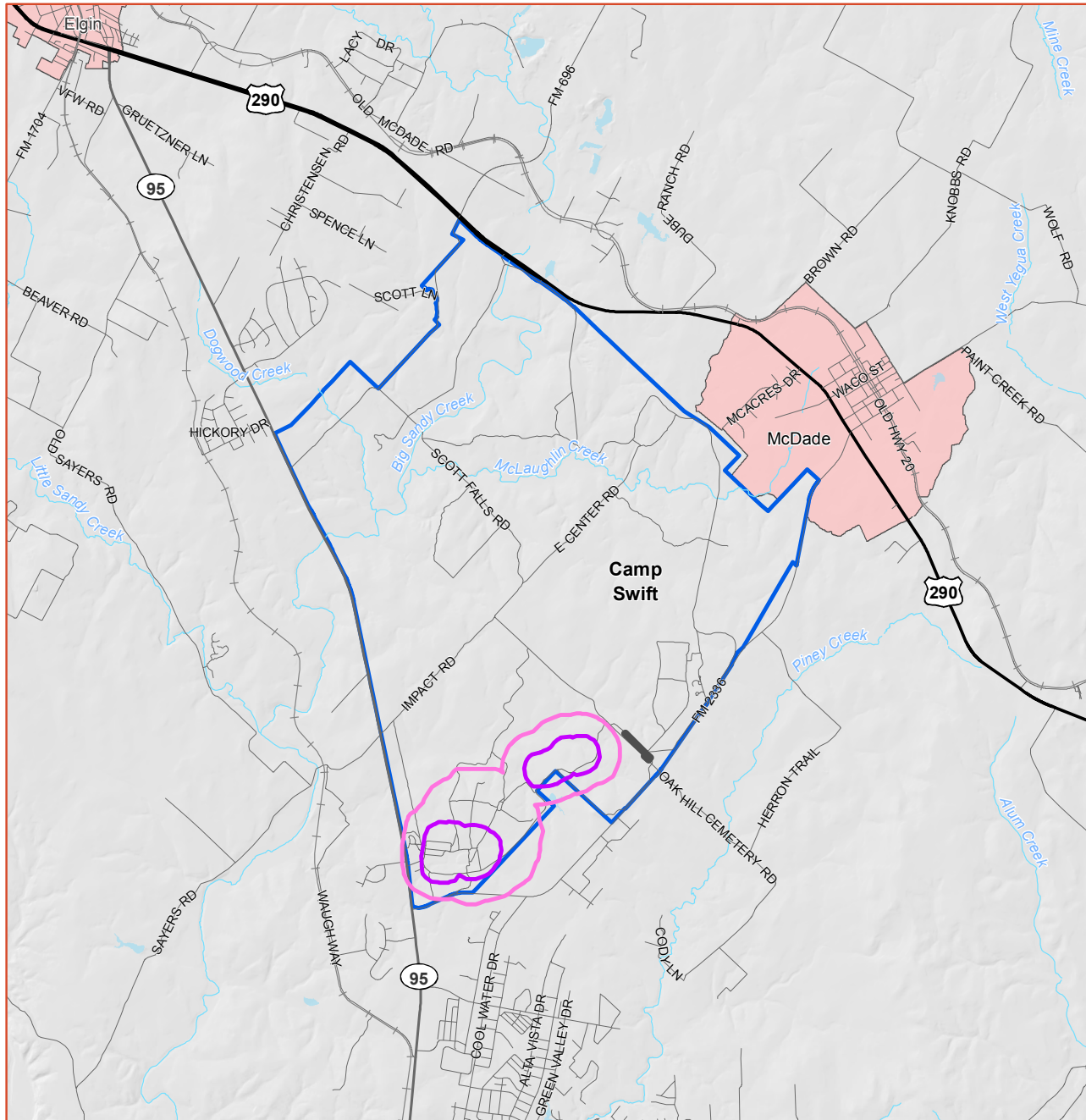
High risk land potentially affected by 40-pound charges is located in a small area that extends beyond the western boundary of the installation. The amount of land in the high complaint risk area is very small. This area is where potential vibrations may be felt and significant noise can impact noise sensitive land uses, i.e. residential, if uncoordinated.

While there is a minimal amount of impact associated with the high complaint risk area of the 40-lb. charge demolition, there is a substantial amount of impact / land under the moderate complaint risk area from 40-lb. charge demolition. A large portion of the land within the moderate complaint risk areas are located in the Town of McDade and include numerous noise sensitive land uses. It should be noted that these activities occur about once a year during the summer.

Source: TXARNG Statewide Operational Noise Management Plan, 2014

Aircraft Noise

According to the TXARNG Statewide Operational Noise Management Plan prepared in 2014, aircraft operations noise was determined to be minimal due to the infrequency of aircraft arriving at and departing from Camp Swift.



Legend

Fixed Small Caliber Noise Contour

- Zone II
87 dB PK15(MET)
- Zone III
104 dB PK15(MET)

Landing Strip

Camp Swift

JLUS Participating Community

US Highway

State Highway

Local Road

Railroad

Water Body

Stream / River



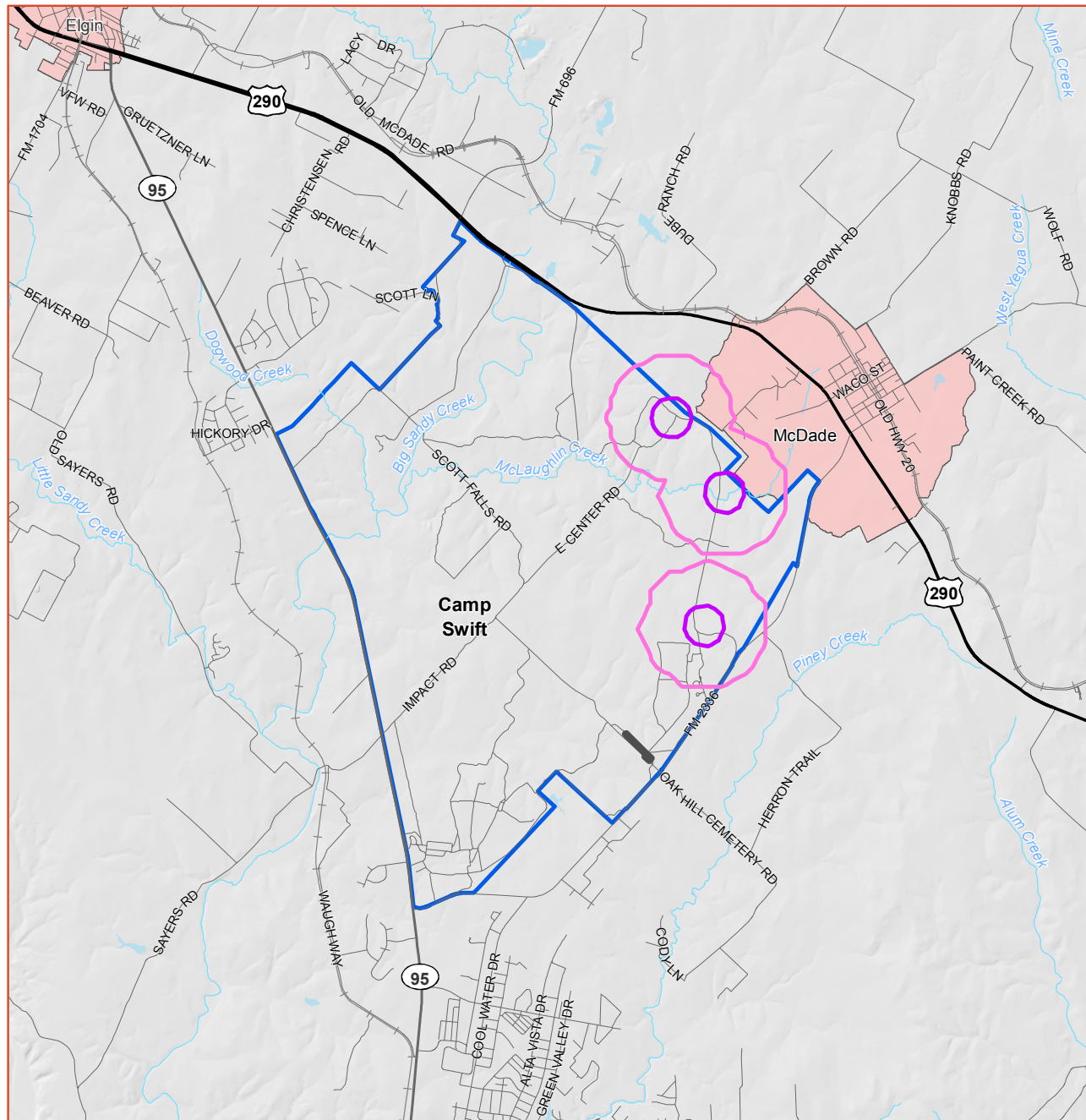
Source: Camp Swift, 2015.



0 0.75 1.5 Miles

Figure 3-7

Fixed Small Caliber Arms Noise Contours



Legend

IED Noise Contour

- Zone II
115 dB PK15(MET)
- Zone III
130 dB PK15(MET)

Landing Strip

Camp Swift

JLUS Participating Community

US Highway

State Highway

Local Road

Railroad

Water Body

Stream / River

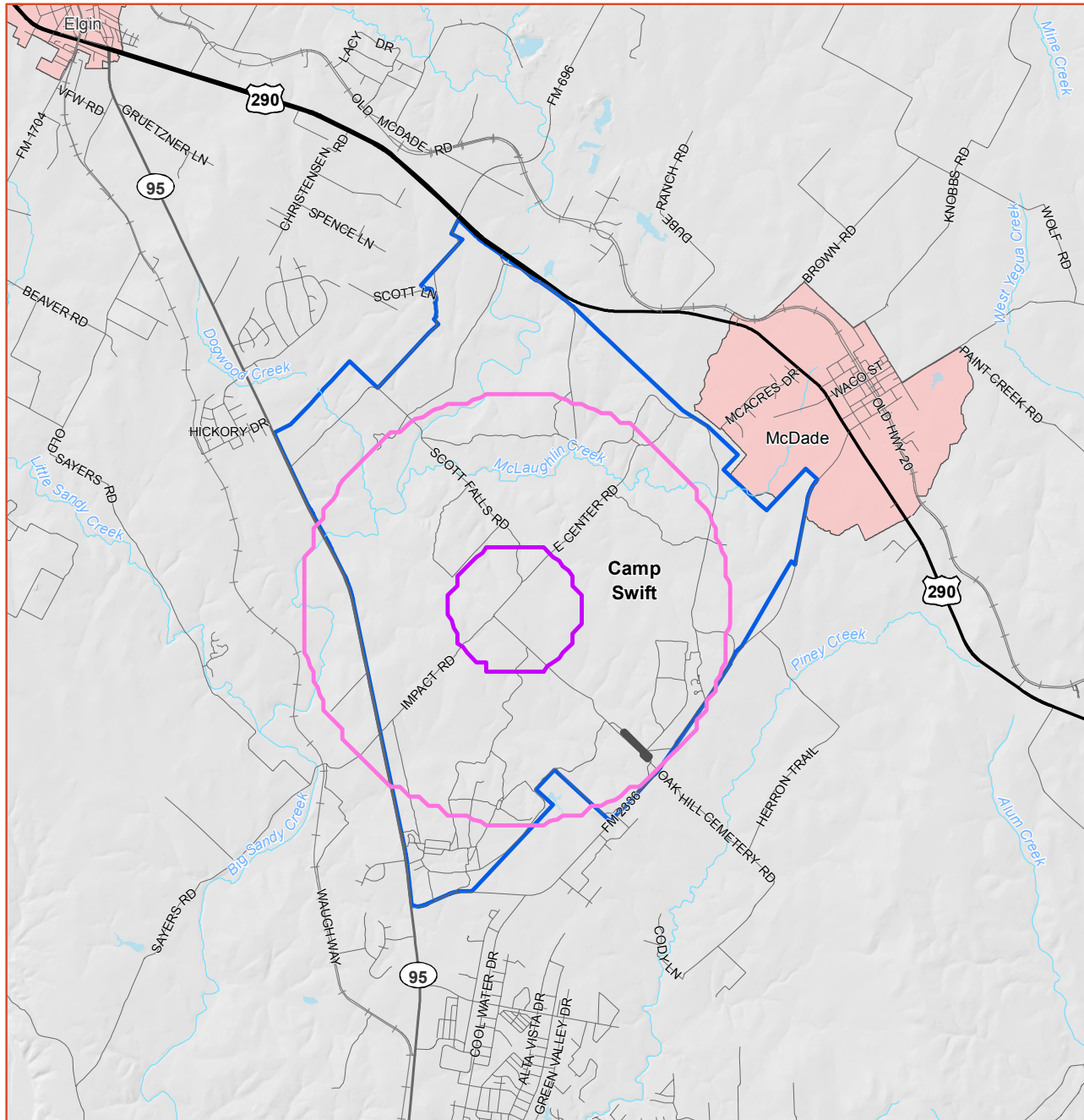


Source: Camp Swift, 2015.



0 0.75 1.5 Miles

Figure 3-8
Improvised Explosive Device (IED) Noise Contours



Legend

Demolition Two Pound Charge Noise Contour

- Moderate Complaint Risk
115 dB PK15(MET)
- High Complaint Risk
130 dB PK15(MET)

- Landing Strip
- Camp Swift
- JLUS Participating Community
- US Highway
- State Highway
- Local Road
- Railroad

- Water Body
- Stream / River

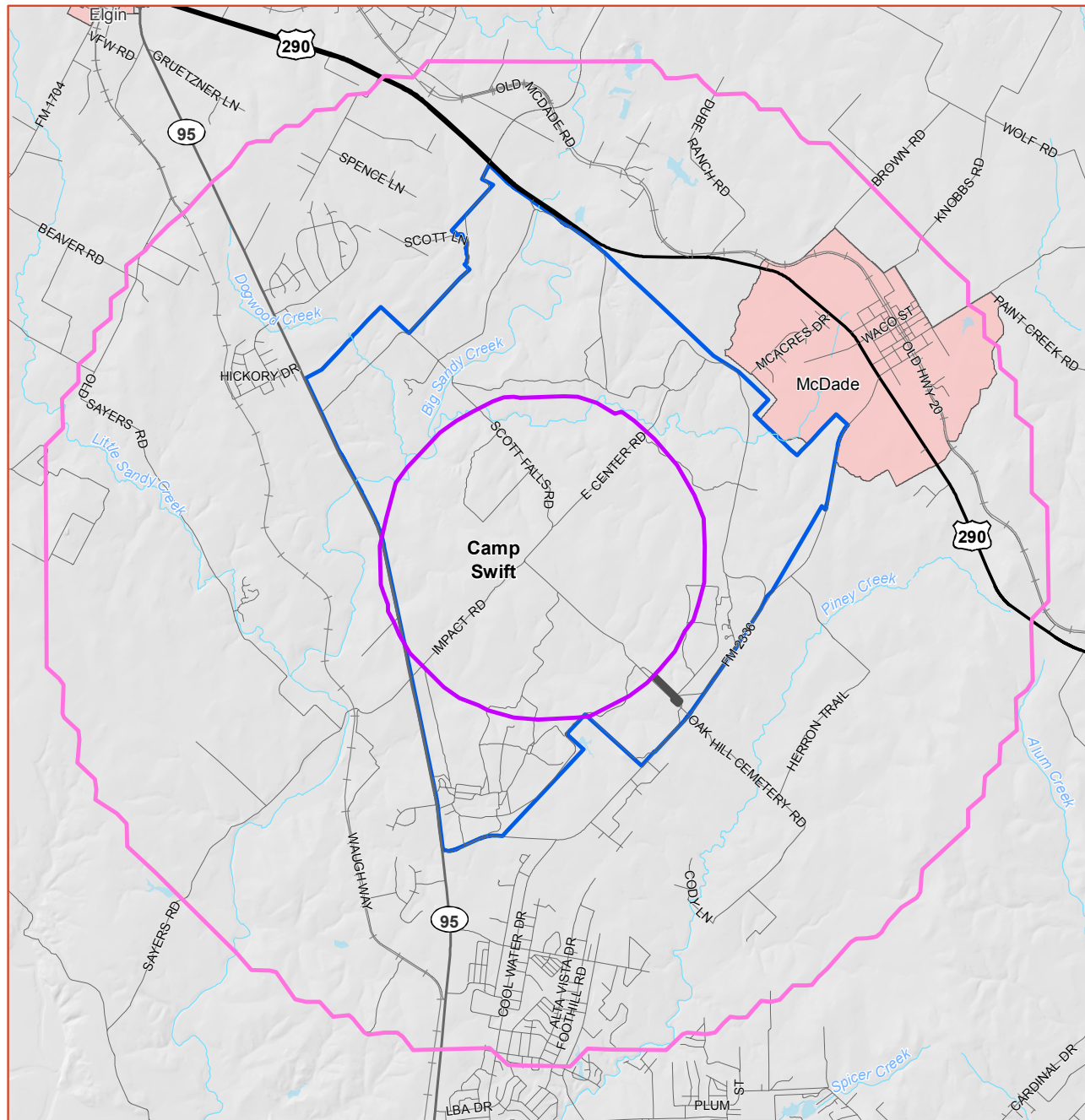


Source: Camp Swift, 2015.



0 0.75 1.5 Miles

Figure 3-9
Demolition Two Pound Charge Noise Contours



Legend

Demolition 40 Pound Charge Noise Contour

- Moderate Complaint Risk
115 dB PK15(MET)
- High Complaint Risk
130 dB PK15(MET)

- Landing Strip
- Camp Swift
- JLUS Participating Community
- US Highway
- State Highway
- Local Road
- Railroad

- Water Body
- Stream / River



Source: Camp Swift, 2015.



0 0.75 1.5 Miles

Figure 3-10
Demolition 40 Pound Charge Noise Contours

As no aircraft are stationed at Camp Swift, the rotary- and fixed-wing activities are transient in nature and generally originate from the Austin-Bergstrom Army Aviation Support Facility, entering Camp Swift's airspace from the west. Typical flight paths go just south of the cantonment area at less than 500 feet above ground level (AGL).

Rotary-wing aircraft utilize the installation an estimated five times per week, conducting three daytime and two nighttime operations. Training missions for helicopters include night vision goggle, Nap-of-the-Earth, and drop zone training.

The Air Force uses some of the training areas at Camp Swift to conduct training with fixed-wing aircraft, such as the C-130, though these activities are less frequent. These aircraft generally utilize the Camp for drop zone training. All aircraft maintain a minimum altitude of 500 feet AGL while outside of the installation fence line to minimize noise impacts.

Source: TXARNG Statewide Operational Noise Management Plan, 2014

Aircraft Safety Zones

Camp Swift has one unimproved runway that is approximately 1,400 feet long, which is currently unused. Available data indicates that the runway is characteristic of a Combat Assault Landing Strip (CALS), but is not long enough to accommodate fixed-wing aircraft. As there are existing limited rotary-wing operations conducted at the installation, and the landing strip could be improved to facilitate helicopter landings, the safety zones associated with rotary-wing landings have been included in this evaluation as a means of protecting existing assets and future mission potential.

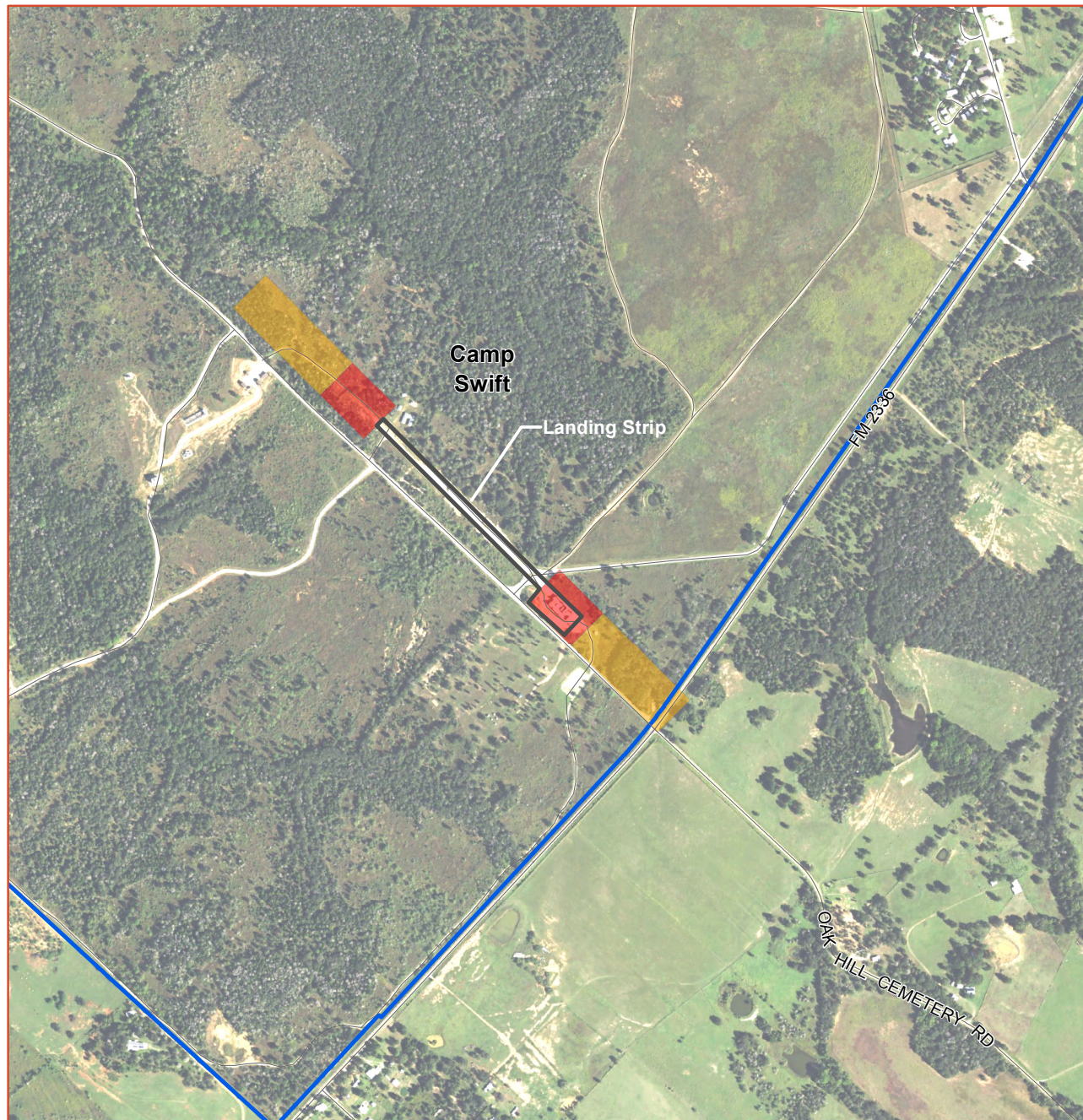


Camp Swift Unimproved Landing Strip

While an aircraft accident or crash is an unlikely event, the DOD has created safety zones around runways and landing areas based on historical data identifying areas most likely for such an event to occur. For rotary-wing aircraft, these safety zones are broken down into Clear Zones (CZ) and Accident Potential Zones - Landing Zones (APZ-LZ). For protection of the public and property, CZs should be entirely clear of any obstructions whether they are man-made or natural, unless they are necessary for aircraft landing. The guidelines for development within APZ-LZ are less stringent than in the CZ, but development should be limited, and residential is generally not recommended. These safety zones are illustrated on Figure 3-11.

Within these zones, there are restrictions on types, densities, and heights of land uses. CZ and APZ-LZ dimensions for rotary wing aircraft are defined in the DOD Unified Facilities Criteria manual as follows:

- **Clear Zones** for rotary wing runways start 75 feet from the ends of the runway and extend out 400 feet. CZs are 300 feet wide consistent with the width of the runway primary surface.
- **Accident Potential Zone-Landing Zones** for rotary wing aircraft begin at the distal ends of the CZs, and extend out an additional 800 feet from the ends of the CZs.



Legend

Air Safety Zone Landing Strip Local Road
 Clear Zone Camp Swift
 APZ I

Source: Camp Swift, 2015.



0 500 1,000
Feet

Figure 3-11
Rotary Wing Runway Safety Zones

Drop Zone Obstacle Free Area

The Drop Zone (DZ) Obstacle Free Area is a footprint of the personnel and equipment drops activities.

Camp Swift performs DZ operations and as such requires a 1,000 meter operational area from the Blackwell DZ. There are various requirements for this safety area, such as if there is a body of water that measures greater than 40 feet wide at any point and a minimum of four feet deep at any point then there should be a boat detail in the body of water to ensure personnel and equipment can be retrieved if landing occurs in the water. This DZ Obstacle Free Area is illustrated in Figure 3-12.

Helicopter Imaginary Surfaces

The Federal Aviation Administration (FAA) has developed regulations referred to as Part 77, which describe distances from airport and heliport sites that the height of buildings, structures, or objects should not exceed so that they do not interfere with aircraft takeoff and landing operations. The areas within which heights of objects are evaluated and suggested are referred to as imaginary surfaces, which define volumes of airspace that must remain free of obstructions in order to maintain safe navigable airspace around the airfield.

The key terms related to helicopter imaginary surfaces are illustrated on Figure 3-13 and described below. Improvement of the existing landing strip at Camp Swift to accommodate rotary-wing landings would require application of the following imaginary surfaces:

- **Primary surface.** The primary surface of a helicopter runway or landing lane is an area with a width of 300 feet wide by the length of the actual landing lane plus 75 feet extending on both ends of the runway.
- **Approach-departure clearance surface.** The approach-departure clearance surface is an area extending out from the primary surface to a length of 1,200 feet. The slope for this area is for every two horizontal feet, one vertical foot is allowed.
- **Transitional surface.** The transitional surface starts at the lateral edges of the primary surface and the approach departure clearance surface. It continues outward and upward at the prescribed slope to an elevation of 150 feet above the established airfield elevation. The slope for this area is one vertical foot for every eight horizontal feet.

The imaginary surfaces for the landing strip are mostly contained within the boundaries of Camp Swift, with the exception of the approach-departure clearance surface and transitional surface of the southern end of the runway, which extend past the installation boundary to SH 2336.

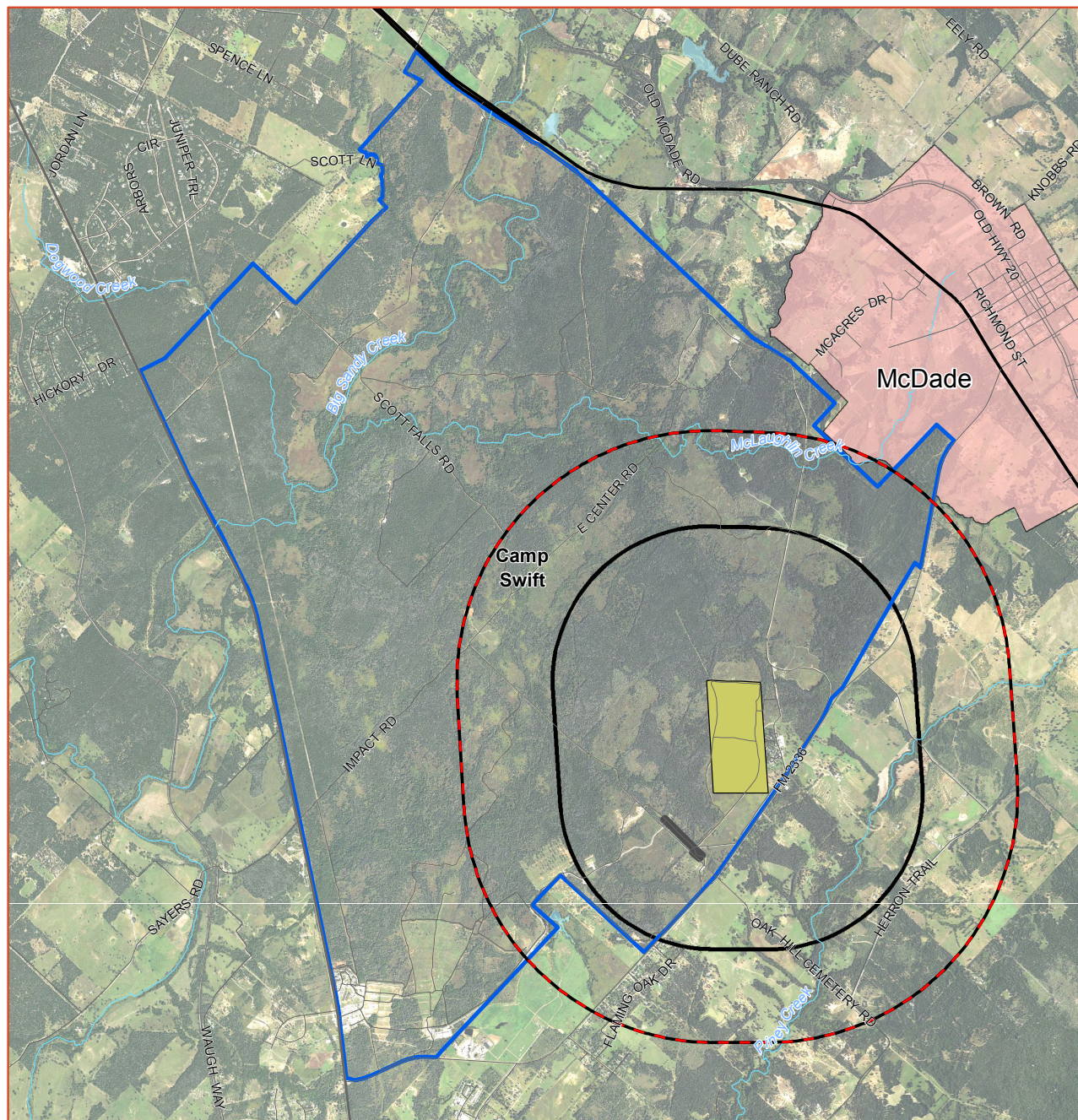
Source: United Facilities Criteria, Airfield and Heliport Planning and Design

Bird Wildlife Aircraft Strike Hazard

Birds represent a hazard to military training and aviation operations. Certain types of land uses attract birds and wildlife, such as standing water and certain grasslands.

Bird Wildlife Aircraft Strike Hazard (BASH) constitutes a safety concern because of the potential for damage to aircraft, property, and potential injury to aircrew and / or the general public if a collision occurred in a populated area. Although aircraft may encounter birds at altitudes of 30,000 feet AGL or higher, most birds fly close to the ground, and over 95 percent of reported bird strikes occur below 3,500 feet AGL. It is important to note that helicopters are less likely to incur major damage from BASH incidents due to the lower speeds at which they operate.

The primary recommendation made by the FAA is a minimum separation distance between an airfield and wildlife attractants. The minimum separation distance extends five miles out from the entire perimeter of the air operations area, including paved and unpaved areas associated with aircraft movement such as runways, taxiways, and aprons.



Legend

- | | | | |
|------------------------------|--------------------------------------|------------------------------|----------------|
| Drop Zone Obstacle-Free Area | Camp Swift | JLUS Participating Community | US Highway |
| Military Drop Zone Area | Blackwell Drop Zone Area of Activity | State Highway | Local Road |
| Landing Strip | | Railroad | Water Body |
| | | | Stream / River |

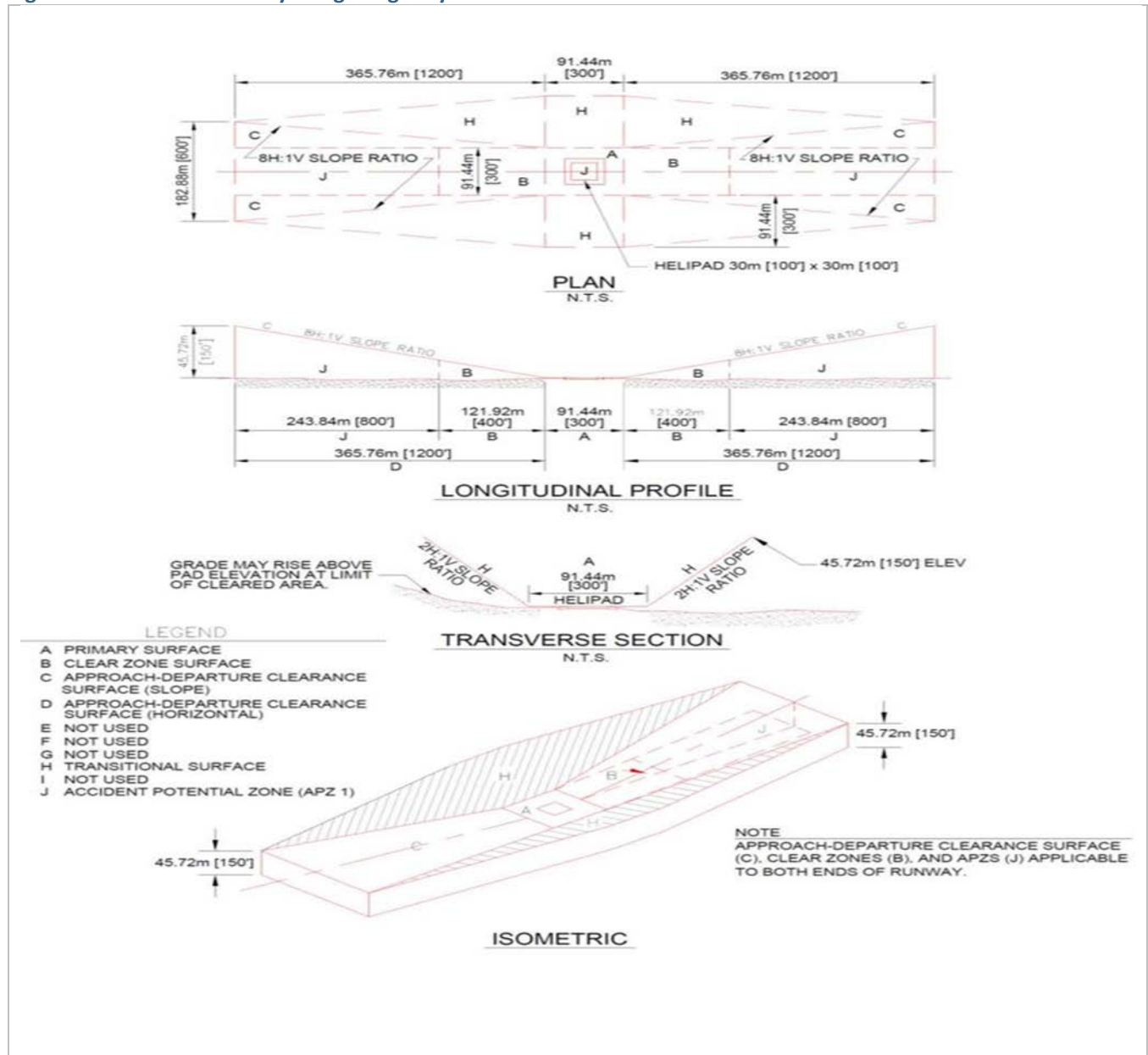
Source: Camp Swift, 2015.



0 0.5 1 Miles

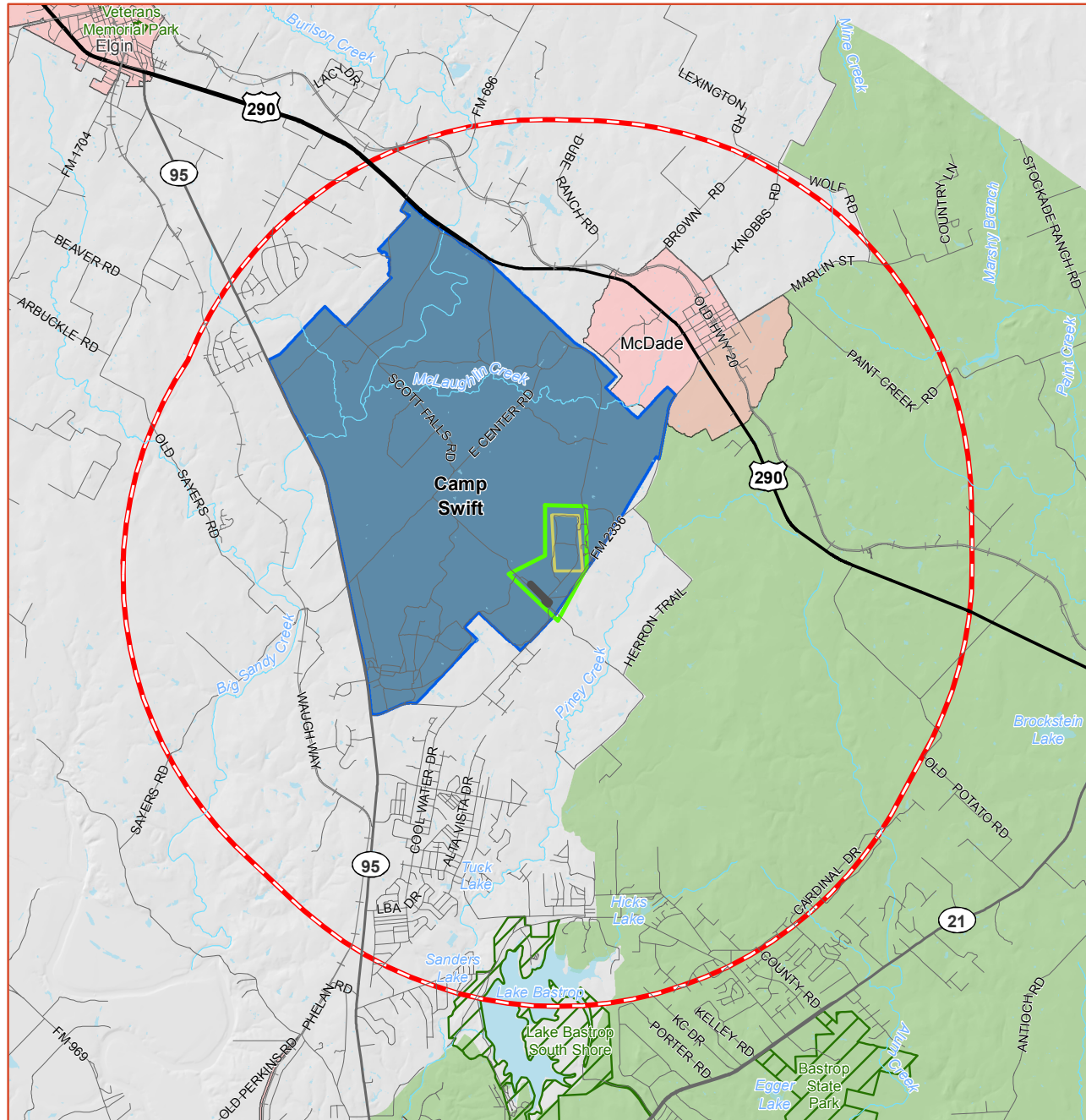
Figure 3-12
Drop Zone Obstacle-Free Area

Figure 3-13. DOD Rotary Wing Imaginary Surfaces



This area was determined to protect approach, departure and circling airspace, and like the previously mentioned imaginary surfaces is not a physical space. In contrast to the imaginary surfaces, however, the minimum separation distance does not include a height restriction, as it concerns only terrestrial features such as land use and water features.

Figure 3-14 illustrates the potential BASH relevancy area.



Legend

- | | | |
|----------------------------|---|------------------------------|
| 5-Mile BASH Relevancy Area | Lost Pines Habitat Conservation Plan Area (LPHCP) | JLUS Participating Community |
| Air Operations Area | Water Body /Wetland | US Highway |
| Military Drop Zone Area | Stream / River | State Highway |
| Parks | Landing Strip | Local Road |
| | Camp Swift | Railroad |

Source: Camp Swift, 2015.



0 1 2 Miles

Figure 3-14
BASH Relevancy Area



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4.1 Introduction

This chapter provides an overview of plans and programs that are currently used or applied in evaluating and addressing compatibility issues in the Camp Swift Joint Land Use Study (JLUS) area. There are three types of planning tools evaluated: permanent, semi-permanent, and conditional. Permanent planning tools include acquisition programs, either purchase of property or the purchase of development rights. Semi-permanent tools include regulations such as zoning or adopted legislation. Examples of conditional tools include comprehensive plans, memorandums of understanding, intergovernmental agreements, and other policy documents that can be modified.

This chapter is organized into sections to describe and evaluate the tools available and / or used by the federal government, the Texas Army National Guard (TXARNG) / Texas Military Department (TMD) / Camp Swift, the State of Texas, regional entities, and the JLUS communities.

4.2 Federal Plans and Programs

Ammunition and Explosives Safety Standards 385-64

The Department of the Army Pamphlet 385-64 details the Army's safety criteria and standards for operations involving ammunition and explosives. The pamphlet includes mandatory procedures and guidance as well as preferred methods of accomplishing those procedures. Pertinent information in the pamphlet includes, but is not limited to, explosives safety training standards, explosives safety management programs, safety inspection procedures, and guidance for the creation of installation ammunition/ explosive location maps. Camp Swift personnel utilize these standards when preparing for training to ensure safety management is of the essence.

Army Regulation 200-1, Environmental Protection and Enhancement

This regulation implements federal, state, and local environmental laws and DOD policies for preserving, conserving, and restoring the environment. This regulation should be used in conjunction with 32 Code of Federal Regulation Part 651, which provides Army policy on National Environmental Policy Act requirements and supplemental program guidance.

This regulation defines Army Environmental Management System (EMS) framework and the five interconnected EMS areas of policy which are policy, planning and implementation, program management and operation, checking and corrective action, and management review. This is pertinent to military installations that have environmental resources such as habitats for protected species.

Clean Air Act

The Clean Air Act governs air emissions from both stationary and mobile sources. Stationary sources include fixed-points such as power plants, while mobile sources include movable-points such as automobiles. The law authorizes the U.S. Environmental Protection Agency (EPA) to set the National Ambient Air Quality Standards (NAAQS). The NAAQS regulate six criteria pollutants harmful to public health and the environment: carbon monoxide, lead, nitrogen oxide, ozone, particulate matter, and sulfur dioxide.

Of the major air contaminants monitored under the Clean Air Act, ozone is known to be the contaminant of concern within the Austin-Round Rock (ARR) Metropolitan Statistical Area (MSA). In 2008, Bastrop County entered into a memorandum of agreement with ARR MSA as a proactive approach to controlling ozone levels in order to maintain compliance with ARR 1997 Eight Hour Ozone Flex Plan. Bastrop County is currently in attainment for all air quality pollutants associated with the NAAQS.

Source: <http://www.tceq.state.tx.us>

Clean Water Act

The Clean Water Act (CWA) governs the management of water resources and controls and monitors water pollution. The CWA establishes goals to eliminate the

release of toxic substances and other sources of water pollution to protect the high quality standards of surface waters. In so doing, the CWA prevents the contamination of near shore, underground, and surface water sources.

The Lost Pines Groundwater Conservation District was created by Texas legislation to safeguard the groundwater supply for Bastrop and Lee counties. Though the District does not have the authority to prevent water export from outside interests, it does have some power over water usage by large volume water users that threaten over-pumping of aquifers. This is an important regulatory tool for Bastrop and Lee counties, which depend on groundwater resources.

Source: <http://lostpineswater.org>

Department of Defense Conservation Partnering Initiative

In 2003, Congress amended Title 10 U.S.C. §2684a and §2692a (P.L. 107-314), the National Defense Authorization Act, to give authority to the DOD to partner with other federal agencies, states, local governments, and conservation based non-governmental organizations to set aside lands near military bases for conservation purposes and to prevent incompatible development from encroaching on and interfering with military missions. This law provides an additional tool to support conservation and environmental stewardship on and off military installations.

Endangered Species Act

The Endangered Species Act (ESA) of 1973 is an environmental law designed to conserve and protect threatened and endangered plants and animals and their habitats. The U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration, and the Commerce Department's National Marine Fisheries Service (NMFS) are lead implementing agencies of the ESA. The ESA requires federal agencies, in consultation with the USFWS and / or NMFS, to ensure that actions the agency authorizes, funds, or implements "are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species." The law prohibits any

action that causes a taking of any listed species of endangered fish or wildlife and plant species. The ESA provides a platform for the protection of critical habitat and species that may be at risk of extinction.

The TXARNG and Camp Swift must comply with this law, including modifying training operations and / or the environment to conserve and protect endangered species on the installation. Modifying the environment to accommodate for the species and / or training must be done with care and through the appropriate state offices.

Federal Aviation Act

The Federal Aviation Act was passed in 1958 to provide methods for overseeing and regulating civilian and military use of airspace over the U.S. The Act requires the Secretary of Transportation to make long-range plans that formulate policy for the orderly development and use of navigable airspace. The intent is to serve the needs of both civilian aeronautics and national defense, but does not specifically address the specific needs of military agencies. The Federal Aviation Administration (FAA) was created as a result of the Act and serves a variety of purposes, including the management of airspace.

The 500-foot rule, promulgated by the FAA, states that every citizen of the United States has “a public right of freedom of transit in air commerce through the navigable airspace of the United States.” The rule was formally announced in the 1963 Court of Claims ruling *Aaron v. United States*, and declares that flights 500 feet or higher above ground level (AGL) do not represent a compensable taking because flights 500 feet AGL enjoy a right of free passage without liability to the owners below.

Another important outcome of the Act is FAA Regulation Title 14 Part 77, commonly known as Part 77, which provides the basis for evaluation of vertical obstruction compatibility. This regulation determines compatibility based on the height of structures or natural features in relation to their distance from the ends of a runway. Local jurisdictions can use the distance formula from this regulation to easily access height restrictions near airfields.

Additional information on Part 77 is located on the FAA website at <http://www.faa.gov/>.

As of January 29, 2013 the main focus of Part 77.17 is to establish standards to determine obstructions within navigable airspace, typically within a certain distance from an airport or airfield. It defines an obstruction to air navigation as an object that is of greater height than any of the following heights or surfaces in the following manner:

- A height of 499 feet AGL at the site of the object;
- A height that is 200 feet AGL or above the established airport elevation, whichever is higher, within three nautical miles of the established reference point of an airport, excluding heliports, with its longest runway more than 3,200 feet in actual length. This height increases in the proportion of 100 feet for each additional nautical mile of distance from the airport up to a maximum of 499 feet;
- A height within a terminal obstacle clearance area, including an initial approach segment, a departure area, and a circling approach area, which would result in the vertical distance between any point on the object and an established minimum instrument flight altitude within that area or segment to be less than the required obstacle clearance;
- A height within an en route obstacle clearance area, including turn and termination areas, of a federal airway or approved off-airway route, that would increase the minimum obstacle clearance altitude;
- The surface of a takeoff and landing area of a civilian airport or any imaginary surface established under 77.19, DOD: 77.21, and heliports: 77.2. However, no part of the takeoff or landing area itself will be considered an obstruction; and
- Except for traverse ways on or near an airport with an operative ground traffic control service furnished by an airport traffic control tower or by the airport management and coordinated with the air traffic control service, the standards

of paragraph (a) of this section apply to traverse ways used or to be used for the passage of mobile objects only after the heights of these traverse ways are increased by:

- o 17 feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of 17-foot vertical distance.
- o 15 feet for any other public roadway.
- o 10 feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road.
- o 23 feet for a railroad.
- o For a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it.

The FAA has identified certain imaginary surfaces around runways to determine how structures and facilities are evaluated and whether they pose a vertical obstruction in relation to the airspace around a runway. The levels of imaginary surfaces build upon one another and are designed to eliminate obstructions to air navigation and operations, either natural or man-made. The dimension or size of an imaginary surface depends on the runway classification.

Federal Land Policy and Management Act

The Federal Land Policy and Management Act (FLPMA) of 1976 established the authority for public agencies that possess public lands to be managed and planned according to national and local interests. Additionally, the law prescribes that public lands that have been identified for development shall uphold and protect the scientific, scenic, historical, ecological, environmental, and other values that are unique to specific geographies. This law provides the impetus for the various resource management plans that have been developed and prepared for public agencies (i.e. Bureau of Land Management).

National Environmental Policy Act

The National Environmental Policy Act (NEPA) of 1969 is a federal law that established a U.S. national policy to promote the protection and enhancement of the environment and requires federal agencies to analyze and consider the potential environmental impacts of their actions. The purpose of NEPA is to promote informed decision-making by federal agencies by making detailed information concerning significant environmental impacts available to agency leaders and the public.

All projects receiving federal funding, requiring a federal permit, or occurring on federal property require NEPA compliance and documentation. NEPA is applicable to all federal agencies, including the military. Not all federal actions require a full Environmental Impact Statement (EIS). In some cases, an action may not cause a significant impact, whereby an agency is only required to prepare an Environmental Assessment (EA).

A NEPA document can serve as a valuable planning tool for local planning officials. An EA or EIS can assist in the determination of potential impacts that may result from changing military actions or operations and their effect on municipal policies, plans and programs, and the surrounding community. Public hearings are required for all EIS documents prepared under NEPA. The Act requires publishing of a draft EA and subsequent Finding of No Significant Impact (FONSI) allowing public comment for a period of 30 days. An EA may result in a FONSI or Record of Decision concluding that the action will have a significant impact and an EIS is required. The information obtained by the EA / EIS is valuable in planning coordination and policy formation at the local government level.

The NEPA mandates that the military analyze the impact of its actions and operations on the environment, including surrounding civilian communities. Inherent in this analysis is an exploration of methods to reduce any adverse environmental impacts.

National Historic Preservation Act

The National Historic Preservation Act (NHPA) of 1966 is a federal law meant to preserve historical and archaeological sites. Section 106 of the NHPA requires federal government agencies to account for the effects of their operations on historic properties. DOD Instruction 4715.3 requires installations to comply with Title 16 of the United States Code, which applies to conservation activities, and includes both natural and cultural resources. This Instruction is the impetus for Integrated Cultural Resource Management Plans.

National Pollutant Discharge Elimination System

Pursuant to the CWA, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into U.S. waters. Point sources are discrete conveyances such as pipes or man-made ditches. According to the law, individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need a NPDES permit, but industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters.

Noise Control Act

The Noise Control Act of 1972 determined that noise not adequately controlled has the potential to endanger the health and welfare of people. It states that all Americans are entitled to an environment free from noise that can jeopardize their general health and quality of life. Along with state, local, and territorial governments, actions from the federal government were needed to ensure that the objectives of the Act were met.

Concurrently, military installations were experiencing impacts related to encroaching urban development adjacent to an installation and the resulting complaints regarding noise from military flight operations. The Noise Control Act is important as encroaching development and increased population near military installations often creates compatibility concerns. As communities grow, it is important that the military installation, developers, and the communities work together to mitigate the issue of noise and develop ways to coexist compatibly.

Operational Noise Management Program

The Operational Noise Management Program is a program that provides a methodology for assessing impacts of noise generated by military operations on surrounding communities. This program was established by the Department of the Army to assist installations and surrounding communities develop guidelines for land use planning to mitigate noise and other hazards to the general public while protecting the public investment in the installation. This program encourages compatibility measures for both the U.S. Army and surrounding communities through the development of an Operational Noise Management Plan (ONMP).

Noise assessment is the cornerstone of the ONMP. Noise impacts translate into several zones for which land use planning guidelines are developed to protect the public. The three noise zones for addressing noise sensitive land uses consistent with federal law are:

Zone I – Noise that occurs in this area is compatible with most noise-sensitive land uses, such as housing, schools, and medical facilities.

Zone II – Noise occurring in this area is generally incompatible with noise-sensitive land uses.

Zone III – Noise occurring in this area is incompatible with noise-sensitive land uses.

In addition to these three zones, the ONMP includes a fourth zone known as the Land Use Planning Zone (LUPZ). The LUPZ is an area located between Zones I and II – allowing for greater noise impacts than Zone I, but less noise impacts than Zone II. Noise-sensitive land uses are still generally acceptable within this area.

Partners in Flight Program

The DOD has implemented a program entitled Partners in Flight that sustains and enhances military testing, training, and safety missions through habitat-based management strategies. The program assists natural resource managers in monitoring, inventory, research, and management of birds and their habitats. As part of the Partners in Flight program, a strategic plan was created that can be incorporated into a Bird / Wildlife Aircraft Strike Hazard (BASH) plan. This program

reaches beyond the boundaries of the installation to facilitate community partnerships and determine the current status of bird populations in order to prevent the further endangerment of birds, and also protect aircraft pilots from bird strikes.

The Sikes Act

The Sikes Act requires the DOD to develop and implement INRMPs for military installations across the United States. INRMPs are prepared in cooperation with the USFWS and state fish and wildlife agencies to ensure proper consideration of fish, wildlife, and habitat needs. The Sikes Act requires INRMPs to be reviewed at least every five years with the Service and the states. Army Regulation 200-1, "Environmental Protection and Enhancement," and policy memoranda guide the TXARNG's implementation of the Sikes Act.

Sustainable Range Program

Encroachment towards Army training and firing ranges has become a major concern in recent years. Pressures from urbanization, environmental protection, competition for airspace and electromagnetic frequencies, and reduced public perception of national security needs have limited mission capabilities and operations at multiple installations nationwide. Furthermore, open ranges are increasingly becoming "islands" of biodiversity amidst urban development. These concerns, in addition to public nuisances such as smoke, noise, and lack of accessibility have led to apprehension of the nature and use of military ranges.

The Sustainable Range Program (SRP) is the Army's overall approach to improving the design, operation, use, and management of its ranges to ensure the long term sustainability of these facilities. The Range and Training Land Program and the Integrated Training Area Management Program focus on the doctrinal capability of the Army's ranges and training land. In order to ensure the accessibility and availability of Army ranges and training land, the SRP core programs are integrated with the facilities management, environmental management, munitions management, and safety program functions supporting the doctrinal capability.

United States Fish and Wildlife Service

The ESA is administered by the United States Fish and Wildlife Service (USFWS) and the Commerce Department's NMFS. The USFWS has primary responsibility for terrestrial and freshwater organisms, while the responsibilities of NMFS are mainly marine wildlife. Under the ESA, species may be listed as either endangered or threatened. "Endangered" means a species is in danger of extinction throughout all or a significant portion of its range. "Threatened" means a species is likely to become endangered within the foreseeable future.

When a species is proposed for listing as endangered or threatened under the ESA, USFWS must consider whether there are areas of habitat believed to be essential to the species' conservation. Those areas may be proposed for designation as "critical habitat." The determination and designation of critical habitat is one of the most controversial and confusing aspects of the ESA. A critical habitat designation does not necessarily restrict further development; it is a reminder to federal agencies that they must make special efforts to protect the important characteristics of these areas.

Only activities that involve a federal permit, license, or funding and are likely to destroy or adversely modify the area of critical habitat will be affected. If this is the case, USFWS will work with the federal agency and, where appropriate, private or other landowners to amend their project to allow it to proceed without adversely affecting the critical habitat.

4.3 Texas Army National Guard / Camp Swift

Texas Army National Guard / Camp Swift plans and programs are the specific, existing tools available to the installation for developing and implementing various federal statutes and initiatives. These plans and programs may be changed or adjusted based on mission changes or requirements and funding availability.

Army Compatibility Use Buffer

Title 10, Section 2684a of the United States Code authorizes the Department of Defense (DOD) to partner with local and state governments and private organizations to establish buffer zones around active military assets. Within the Department of the Army, this program is called the Army Compatible Use Buffer (ACUB) program. Through the ACUB program, military installations work with partners (e.g., land trusts, Nature Conservancy, other established foundations, and willing landowners) to establish buffer zones that protect habitat, sensitive areas, and training areas without acquiring any new land for Army ownership. The ACUB for Camp Swift was approved by the Department of Army Assistant Chief of Staff for Installations Management (ACSIM) in 2014. The program identifies a long-term plan for identification of priority land to protect and place into conservation easements around the installation to maintain and enhance the current mission capabilities. The program identifies development on the eastern, southern, northern, and southwestern sides of the installation as potential areas of compatibility concern for future range and aircraft operations at Camp Swift, and prioritizes the parcels based on their Military Readiness Risk.

The ACUB also addresses compatibility related to environmental and noise concerns. Environmental considerations include the federally endangered Houston Toad and the Navasota Ladies'-tresses orchid, as well as other local and regional species and habitats of concern. The plan seeks to maximize the amount of land available for training operations while responsibly addressing conservation and potential nuisance concerns. The ACUB outlines areas where land conservation can limit development. ACUB Implementation would assist in coordinating local and regional compatibility measures around Camp Swift.

Integrated Cultural Resource Management Plan

The objective of the Integrated Cultural Resource Management Plan (ICRMP) is to balance the management of historic and cultural resources with mission readiness on Camp Swift. The ICRMP supports early identification of cultural and historic resources

and defines necessary actions for managing agencies to ensure the protection of resources during military operations and non-military activities.

The ICRMP establishes compliance procedures to properly manage cultural and historical resources. It establishes existing conditions for cultural and historical resources and identifies the potential impacts of Camp Swift's mission on cultural and historical resources. It also identifies impacts that preservation, maintenance, and repair of buildings and the continued use of historic buildings have on mission readiness. In addition, the ICRMP establishes a coordination process between the installation and many state or regional agencies including the State Historic Preservation Office, the Advisory Council on Historic Preservation, the National Park Service, Native American groups, and the interested public. This process is subject to Section 106 of the NHPA, which establishes a process for working with federal agencies on historic preservation issues.

Integrated Natural Resources Management Plan

As authorized by the Sikes Act, an Integrated Natural Resource Management Plan (INRMP) provides the opportunity for the proper inventorying, cataloging, and management of natural resources found on U.S. government-managed lands. The DOD must complete INRMPs for each installation every five years to update the needs of local natural resource management policies. These policies effect all aspects of an installation's physical environment, including water quality, biodiversity, ecosystem and habitat quality, and mineral resources. These plans create the opportunity for the DOD and local base commanders to work with other federal, state, and local agencies to properly manage significant local resources for the maximization of compatible mixed use.

Though there are no identified threatened or endangered species within the Camp Swift installation fence line, the Houston Toad, a federally endangered species, does reside within the Study Area. In addition, Camp Swift is home of the largest population of Harvester Ants in the world, according to Sam Houston State University. The INRMP was updated in 2006 to provide a framework for the management of natural

resources pursuant to the Sikes Act of 1960. This INRMP provides a means for balancing mission readiness with wildlife habitat protection.

The INRMP outlines the various natural resources and addresses other related topics including important habitat found on the installation, soil types, management of noxious weeds and wildland fire, wildlife and riparian management, water resources and water rights, inter-agency responsibilities and coordination efforts. It also provides the overall management plan for natural resources on Camp Swift to ensure no loss of capability for military training exercises.

Camp Swift utilizes the INRMP to identify natural resources located on the installation that require protection. The Camp Swift INRMP also identifies management measures to ensure the natural resources are protected concurrent to the training that occurs on installation.

Integrated Wildland Fire Management Plan

The current Integrated Wildland Fire Management Plan (IWFMP) was developed in 2014 to comply with the Army Wildland Fire Policy Guidance and provide instructions regarding fire management procedures at Camp Swift. This was done through a study of potential wildfire hazards and intergovernmental agreements to mitigate wildfire threats. These policies establish the stewardship responsibilities of the TXARNG, including procedures for prescribed fires and wildland fire response. The purpose of the plan is to reduce wildfire potential and impacts while protecting natural resources and Camp Swift mission capabilities.

Memorandum of Understanding between Texas Military Forces and Texas A & M Forest Service

The memorandum of understanding (MOU) between the Texas Military Department (TMD) and the Texas A&M Forest Service (TFS) establishes guidelines and responsibilities which relate to an agreement that provides use of pre-approved TXMF training centers for training conducted by TFS for prescribed burns and wildfire control. This agreement indicates that the TFS will provide prescribed burn planning for the TMD's Fire Management Plans and INRMPs, and provide

training and burner certification for a minimum of two TMD employees from each training center in return for the use of the TMD billets, facilities, and bivouac areas.

Texas Army National Guard Operational Noise Management Plan

The Operational Noise Management Program was established by the Army as the framework for the control of noise produced by Army activities. This plan acts in accordance with the Noise Control Act of 1972 which seeks to limit the effects of any activity which may, "present danger to the health and welfare of this Nation's population" (PL 92-574 1972). The primary strategy for noise management is the ONMP. The current TXARNG Statewide ONMP, which includes Camp Swift, was adopted in 2014.

The ONMP provides a methodology for analyzing noise related to military training operations, educates and discusses noise mitigation measures, noise complaint management procedures, and noise abatement protocol. The TXARNG ONMP outlines land use guidelines for communities to utilize in order to encourage and support compatibility planning. The plan discusses the installation and the community attitudes towards the installation relative to training exercises and subsequent noise generation. To address noise concerns, the TXARNG ONMP considers areas with noise-sensitive land uses that are exposed to generally unacceptable noise levels.

4.4 State of Texas Legislation, Agencies / Programs, and Initiatives / Other Information

Legislation

House Bill 2232 Creating a Regional Military Sustainability Commission

House Bill 2232 (HB 2232), Creating a Regional Military Sustainability Commission (RMSC) passed in the 2015 Texas Legislative Session. It is a tool that offers jurisdictions that meet certain criteria the authorization to provide limited land use planning that would be compatible with military operations.

Jurisdictions meeting the criteria would enact the HB, establish and fund a RMSC, and identify the appropriate planning area as delineated by the HB. Ultimately this would assist jurisdictions to consider military compatibility in areas where traditional land use planning may not apply.

Texas Local Government Code Chapter 42, Extraterritorial Jurisdiction of Municipalities

Chapter 42 of the Texas State Local Government Code: Extraterritorial Jurisdiction (ETJ) of Municipalities designates the area beyond a municipality's boundaries for future growth. The municipality has no zoning authority in this area, since the designated area is not incorporated into the municipality, but does give a municipality the right to regulate subdivision development within the ETJ. The extent of the ETJ is based on the municipal population and increases with population growth, ranging from one-half mile for municipalities with less than 5,000 inhabitants up to five miles for a municipality with 100,000 or more inhabitants. The ETJ also increases as land is annexed into a municipality.

Source: Texas Constitution and Statutes, 2011.

Texas Local Government Code Chapter 43, Municipal Annexation

Texas Local Government Code Chapter 43 includes the authority and process for local municipalities, meeting certain conditions, to annex property from the ETJ into their corporate limits. The code prescribes rules and authorities for annexation by home-rule and general-law cities, including the amount of area that may be annexed, when voter approval is required via election, the annexation of specific areas such as streams and sparsely occupied areas by petition of land owners subject to annexation, and annexation for certain uses such as agricultural or wildlife management.

If property is annexed, the annexing municipality's zoning and other municipal regulations become applicable and enforceable on the property following annexation precluding uses authorized by previously granted certificates, permits, etc.

Source: Texas Constitution and Statutes, 2007.

Texas Local Government Code Chapter 211, Municipal Zoning Authority

Chapter 211 of the Texas Local Government Code authorizes a municipality to adopt zoning regulations governing "the height, number of stories, and size of buildings and other structures; the percentage of a lot that may be occupied; the size of yards, courts, and other open spaces; population density; the location and use of buildings, other structures, and land for business, industrial, residential, or other purposes; and the pumping, extraction, and use of groundwater by persons other than retail public utilities." While zoning regulations are not incorporated into a municipality's comprehensive plan, they must comply with it.

Buildings, structures, or land "under the control, administration, or jurisdiction of a state or federal agency" are exempted from the authority in Chapter 211.

Source: Texas Constitution and Statutes, 1999.

Texas Local Government Code Chapter 213, Municipal Comprehensive Plans

While the State of Texas does not mandate that municipalities maintain a master or comprehensive / general plan, Chapter 213 of the Texas Local Government Code authorizes a municipality to create a comprehensive plan "for the purpose of promoting sound development of municipalities and promoting public health, safety, and welfare." Chapter 213 also authorizes a municipality, without limitation, to address future land, transportation, public facilities or other elements in the comprehensive plan, but requires a notation on the future land use map, if included, stating that: "A comprehensive plan shall not constitute zoning regulations or establish zoning district boundaries."

Source: Texas Constitution and Statutes, 2001.

Both cities of Bastrop and Elgin have comprehensive plans for which future land uses provide the guiding framework for planning.

Texas Local Government Code Chapter 232, County Regulation of Subdivisions

Chapter 232 of the Texas Local Government Code grants counties the authority to regulate the subdivision of land. A county's authority is limited to roads, streets, drainage, and rights-of-way. Subdivision regulation is accomplished through the review and approval of plats. Cities in Texas have the authority to regulate new subdivisions within their corporate limits and in unincorporated areas within their ETJ. Counties in Texas, by the authority granted from their commissioners' courts, also have subdivision regulation authority within unincorporated areas and may share authority in a city's ETJ. According to Chapter 232, Subchapter E: Infrastructure Planning Provisions in Certain Urban Counties, commissioners' courts can adopt rules governing plats and subdivisions; they cannot, however, use the plats and subdivisions rules to regulate:

- the use of any building or property for business, industrial, residential or other purposes;
- the bulk, height, or number of buildings constructed on a particular tract of land;
- the size of a building that can be constructed on a particular tract of land, including no limitation and restriction on the ratio of building floor space to the land square footage;
- the number of residential units that can be built per acre of land;
- a plat or subdivision in an adjoining county; or
- road access to a plat or subdivision in an adjoining county.

Although some limitations exist, subdivision regulations can still be effectively used for compatibility planning purposes. For example, in areas without existing wastewater infrastructure, subdivision regulations might prohibit or limit the development of land, require open space set asides, or minimize the impact on a sensitive environmental area.

Source: Texas Constitution and Statutes, 2003.

Texas Local Government Code Chapter 233, County Regulation of Housing and Other Structures

In 2009, Chapter 232 Subchapter F of the Texas Local Government Code provided counties with the authority to regulate residential building code standards for residential construction occurring after September 1, 2009 in unincorporated areas. The code affords the county a minimum of three inspections during construction to ensure code compliance, but does not confer county authority to bill for inspections. A county must have a population greater than 100 persons to exercise this authority.

Source: Texas Constitution and Statutes, 2009.

Texas Local Government Code Chapter 240.032, Outdoor Lighting

Texas Local Government Code, Title 7, Subtitle B, Chapter 240, Subchapter B-1: Outdoor Lighting near Observatories and Military Installations was enacted on September 1, 1987 and subsequently amended in September 2001, May 2007, and January 2012. The code grants certain Texas counties authority to regulate the use of lighting to mitigate interference with military training activities, operations, or research within five miles of a military installation. Counties authorized to adopt these regulations must meet two criteria: they must have a population greater than one million and host at least five military bases. An adjacent county to the sponsoring county also has the authority to regulate lighting types, adopt shielding requirements, and specify times of usage in their county areas within five miles of the designated military base.

Source: Texas International Dark Sky Association website; House Bill No. 1852, Texas Constitution and Statutes, 2001.

Texas Local Government Code Chapter 397, Notification Requirements for Land Use Regulations

Texas Local Government Code Section 397.005 comprises two components. The first requires local governments adjacent to or near a military installation to seek comments and analysis from the military installation concerning the compatibility of a proposed ordinance, rule, or plan with installation operations when the local government has determined that a proposed ordinance, rule, or plan may impact the

installation's exercise or training activities. The second component requires local governments to consider and analyze those comments and analysis prior to adopting the proposed ordinance, rule, or plan. The second component only applies to a community with a population of more than 110,000 in a county with a population of less than 135,000 that has not adopted airport zoning regulations, i.e., a joint airport zoning board.

Source: Texas Constitution and Statutes, 2005.

Texas Private Real Property Rights Preservation Act

The Private Real Property Rights Preservation Act (PRPRPA) was enacted by the Texas Legislature to recognize the importance of protecting private real property interests and ensure that certain governmental entities consider their actions on private real property rights. The PRPRPA defines whether or not an action of the government can be considered a taking. A taking, as defined by the PRPRPA, occurs when a government action causes a 25 percent or greater reduction in the value of private real property. Government actions identified by the PRPRPA include:

- The adoption or issuance of an ordinance, rule, regulatory requirement, resolution, policy, guideline, or similar measure;
- An action that imposes a physical invasion or requires a dedication or exaction of private real property;
- An action by a municipality that has an effect on the ETJ of a municipality, and that enacts or enforces an ordinance, rule, regulation, or plan that does not impose identical requirements or restrictions on the entire ETJ of the municipality; and
- Enforcement of a governmental action, whether the enforcement of the governmental action is accomplished through the use of permitting, citations, orders, judicial or quasi-judicial proceedings, or other similar mechanisms.

A governmental entity, based on a prescribed set of self-employed procedures, may be required to prepare a Takings Impact Assessment (TIA). If a governmental

entity fails to prepare a TIA when one is required, the governmental action may be invalidated.

The PRPRPA defines the required elements of a TIA and criteria for its evaluation. The TIA requires the government entity to list and evaluate potential alternatives that could accomplish the action and evaluate the alternatives to demonstrate that the proposed action is the most suitable option to achieve the proposed result.

The PRPRPA also incorporates the takings clauses of the U.S. and Texas Constitutions that private property shall not be taken for a public use without just compensation.

Source: State of Texas Office of the Attorney General website; Texas Constitution and Statutes, 1995.

Agencies / Programs

Texas Military Preparedness Commission

In 2003, Senate Bill No. 652 established the Texas Military Preparedness Commission (TMPC) and the Texas Military Value Revolving Loan Account. The Commission's responsibilities include reporting to the Governor's office and working with state agencies in preparing annual reports for the Governor and Legislature regarding the military installations, their adjacent communities, and the associated defense-related business within the state.

The TMPC recently revived the Defense Economic Adjustment Assistance Grant (DEAAG) Program. This grant was initiated in 1997 and assisted several communities that were impacted by the 2005 Base Realignment and Closure (BRAC) actions. However, since then, the grant program has not had appropriations.

As of September 1, 2015, the Texas Legislature appropriated \$30 million to the DEAAG program for the next two years. There is \$15 million currently available, and acceptance of applications will begin in late October 2015.

DEAAG funding is available to local municipalities, counties, defense base development authorities, junior college districts and Texas State Technical College campuses, and regional planning commissions. The funds may be used for purchase of DOD property, new construction or rehabilitation of facilities in support of job creating projects and opportunities, and for the purchase or leasing of capital equipment for the purpose of re-training displaced defense workers.

The Texas Military Value Revolving Loan Account can issue up to \$250 million in general obligation bonds to assist communities with significant defense-related attributes that enhance the value of their associated military installations and promote compatible land use. Under the law, a community near a military installation may request financial assistance to prepare a comprehensive defense installation and community strategic impact plan (SIP) that identifies the communities' long-range goals and development proposals. One objective of the SIP is to better manage the effects of future community growth on military installations and their training exercise activities.

Information required within the SIP includes a list of existing and future land uses surrounding the military installation; the proposed distribution, location, and extent of land uses (e.g., housing, business, industry, agriculture, recreation, public facilities and grounds); and other categories of existing and proposed land use regulations (e.g., zoning, annexation, and planning recommendations). Other elements required in the SIP include:

- Transportation: location and extent of existing and proposed freeways, streets, roads, and other modes of transportation;
- Population growth: past and anticipated population trends;
- Conservation: methods for conservation, development, and use of natural resources;
- Open space: inventory of current open space, analysis of the military base's forecasted needs for open-space areas to conduct its military training activities, and suggested strategies to

transition from currently developed land to open-space, if needed;

- Restricted airspace: creation of buffer zones, if needed, between the military installation and the existing land use pattern; and
- Military training routes: identification of existing routes and proposed plans for additional / revised routes.

Once the community has prepared a SIP, it is encouraged to develop, in coordination with the military installation, a planning manual based on the plan actions and recommendations. The manual should incorporate guidelines for community planning and development. The community is recommended to consult with the installation routinely to confirm that the manual continues to effectively address current installation concerns.

Source: Senate Bill No. 652, Texas Legislature, 2015. Retrieved from <http://www.legis.state.tx.us/tlodocs/78R/analysis/html/SB00652H.htm>.

Initiatives / Other Information

Real Estate Disclosures

Real estate disclosures are used in some Texas jurisdictions to notify potential homebuyers of conditions affecting the property which they should be aware of prior to purchase. Section 5.008 of the Texas Property Code requires real estate disclosures to be provided to the purchaser on or before the effective date of the contract binding the purchaser to a property purchase.

Pursuant to Section 5.008(a), a seller of residential real property comprising not more than one dwelling unit located in the state shall give to the purchaser of the property a written notice containing disclosures relating to the property condition.

The Texas Real Estate Commission (TREC) disseminates a Seller's Disclosure of Property Condition form for use in residential real estate transactions (TREC Form No. OP-H, revised September 2011). The purpose of the Seller's Disclosure is to document any appliances, equipment, and features on the property and whether

these items are in working condition. Real estate disclosures are also identified in the TREC Unimproved Property Contract Form 9-10 (revised, January 2012). If the seller discloses property conditions that affect the use of the property and cannot be addressed by the seller within a certain period of time, the buyer may terminate the contract within a mutually-agreed upon timeframe. Sellers are required to disclose knowledge about certain characteristics pertaining to the location of their property that may pose unique risks to the property such as location in a 100-year floodplain or other natural feature, landfill activity, settling, soil movement, or a fault line.

Although they are not currently used for this purpose Statewide, real estate disclosures can be used to notify buyers that a property offered for sale is in an area of military influence. The disclosure could also notify buyers of potential effects relating to the military influence area, such as lighting requirements, height limitations, required sound attenuation for new structures, and impacts to the property such as noise.

Source: Texas Real Estate Commission, 2015. Retrieved from http://www.trec.state.tx.us/formslawscontracts/rules_codes/Rule.asp.

Solid Waste Disposal Act

The Texas Health and Safety Code Chapter 361, Solid Waste Disposal Act, provides counties the authority to designate unincorporated land for solid waste disposal facilities, or to restrict the locations of solid waste disposal facilities. This is important with respect to flight activities because landfills and other solid waste facilities attract birds and other wildlife which can result in hazards to flight activities. While Camp Swift does not have an active air strip, the installation does support air training activities related to supply drops and personnel jumps from helicopters and fixed-wing aircraft.

4.5 Regional Planning Information and Tools

Capital Area Council of Governments

Twenty-four regional councils were implemented within the State of Texas between the years of 1966 and 1971. The purpose of these councils is to “deal with the problems and planning needs that cross the boundaries of individual local governments or that require regional attention,” as noted by the Texas Association of Regional Councils. Regional council #12 includes the counties of Bastrop, Blanco, Burnet, Caldwell, Fayette, Hays, Lee, Llano, Travis, and Williamson, which is represented by the Capital Area Council of Governments (CAPCOG). The CAPCOG primarily focuses on planning functions related to air quality / natural resources, economic and community development, and transit and transportation. The CAPCOG also manages a regional data center that provides city and regional planning expertise and geographic information system (GIS) support via data collection and synthesis of demographics and workforce / employment information.

Source: CAPCOG. Retrieved from <http://www.capcog.org/about-capcog/>.

Metropolitan Statistical Area

A metropolitan statistical area (MSA) is defined by the U.S. Office of Management and Budget (OMB). The OMB website for Open Government states, the OMB “assists the President in overseeing the preparation of the federal budget and evaluates the effectiveness of agency programs, policies, and procedures.” To prepare budgets and evaluate effectiveness, OMB manages a multitude of statistical programs ranging from the study of health and safety to economics. The OMB formulated MSAs for use in their statistical programs to group data for efficient use. The U.S. is separated into 366 MSAs, each comprising a population of at least 2.5 million people, allowing the federal government, among other agencies and users, comparable areas across the Nation for preparing and disseminating Federal statistics. (OMB, 2013).

The Austin-Round Rock MSA includes the counties of Bastrop, Caldwell, Hays, Travis, and Williamson. According to the Real Estate Center at the Texas A&M University, the Austin-Round Rock MSA provides data on the following:

- Demographics / population;
- Education;
- Employment;
- Hotel;
- Housing;
- Industrial;
- Infrastructure;
- Medical;
- Military;
- Multifamily;
- Office; and
- Retail.

Source: Texas Association of Regional Councils website; CAPCOG website; Office of Management and Budget website; OMB Bulletin No. 13-01, Feb 2013; Market Data Sources, Real Estate Center, Texas A&M University website.

Austin Eight-Hour Ozone Flex Plan

The 2008 Austin-Round Rock MSA Eight-Hour Ozone Flex Plan is a proactive, voluntary intergovernmental memorandum of agreement (MOA) between the EPA, the Texas Commission on Environmental Quality (TCEQ), and the local communities. It demonstrates the commitment to the implementation of the Early Action Compact and voluntary emission reduction measures, monitoring and evaluating emission growth. This also demonstrates area-wide programs which have been established to assist in the reduction of vehicle emissions.

Austin Area Early Action Compact Ozone State Implementation Plan Revision

The 2004 Austin Early Action Compact (EAC) was developed to assist the Austin area in achieving the eight-hour ozone standard. The EAC includes elements that tailor the plan to specific local needs, and provides the participating jurisdictions with ways to account for area growth and to develop and implement strategies for emission control.

4.6 County and Local Jurisdiction Planning Tools

It is important to note that unlike counties in other states, Texas counties do not have traditional land use authority (zoning), and there are a few counties in Texas that have minimal regulatory authority. Counties are not legally authorized to develop comprehensive plans, however, Section 232 of the Texas Local Government Code provides counties with the authority to regulate the subdivision of land. Under this authority, the focus of a county's ability to regulate the subdivision of land is limited to roads, streets, and rights-of-way.

Although these limitations exist, subdivision regulations can still be effectively used for compatibility planning purposes. For example, in areas without existing wastewater infrastructure, subdivision regulations might prohibit or limit the development of land, require open space set asides, or minimize the impact on a sensitive environmental area.

In general, land cannot be divided in Texas without local government approval. Dividing land for sale or lease is regulated by local ordinances based on the Texas Local Government Code (LGC) (Chapter 212 for cities and Chapter 232 for counties).

In cities the local comprehensive plan, zoning, subdivision, and other ordinances govern the design of the subdivision, the size of lots, and the types of allowed improvements (street construction, sewer lines, drainage facilities, etc.). Counties may only regulate subdivisions as they apply to roads, property setbacks and groundwater.

Bastrop County

Bastrop County is identified as an urban county with a 2010 Census population of 74,171. Regulatory tools for planning and zoning are limited for Bastrop County, as is typical for all counties in the State of Texas.

Comprehensive Plan

Bastrop County is not authorized by law to develop a comprehensive plan, nor do counties in Texas have a planning function.

Zoning

Bastrop County cannot exercise zoning authority per state law, but does regulate stormwater discharges associated with construction activities larger than one acre.

Subdivision Regulations

Bastrop County has adopted subdivision regulations pursuant to Texas LGC Chapter 232 to regulate lots, and street and drain rights-of-way, which can guide development within unincorporated areas.

Bastrop County does not have the ability to regulate subdivisions in any municipality's ETJ unless the land owner has entered into an agreement with the County.

Building Codes

Texas LGC Chapter 233, County Regulation of Housing and Other Structures, provides counties the authority to regulate residential building codes in unincorporated areas within the county. The authority is restricted to:

- new residential construction,
- additions comprising more than 50 percent of the original structure,
- occurring after September 1, 2009, and
- does not apply to modular home construction.

Bastrop County utilizes and references the 2009 International Code Series and amendments found in the Bastrop County Rules for the Enforcement of the International Fire Code and International Building Codes. In addition, references may be made to the National Fire Protection Association standards and other pertinent state laws.

Flood Control

By the authority provided in Chapter 16 of the Water Code, Provisions Generally Applicable to Water Development, Bastrop County regulates and restricts development within flood prone areas.

Community of McDade

The community of McDade is an unincorporated community in Bastrop County, so it does not have a planning function and does not exercise traditional land use authority. The limited responsibility for

planning reverts back to the county only in the sense of the county's subdivision regulations, and the Bastrop Independent School District as the scenarios pertain to the school district.

City of Bastrop

The City of Bastrop is located along State Highway 95 in Central Bastrop County. The city resides at the point of convergence for Texas State Highways 21, 71, and 95. The Bastrop city limits encompass approximately 9.1 square miles, and as of the 2010 Census, the city had a population of 7,218.

In addition to the formal city limit boundaries, the city has a one mile buffer around its periphery defined as its ETJ. ETJs are allowed by the Texas LGC as a means for defining potential future growth and service boundaries. The City of Bastrop maintains an extensive voluntary ETJ, extending as far north as Sayers Road, which borders State Highway 95 along the western edge of Camp Swift.

Although the City of Bastrop is relatively small in size, the potential impact of regulatory actions pertaining to land use, light emissions, and sound attenuation could have a perpetual effect on Camp Swift's mission sustainability as well as quality of life for Bastrop residents.

Comprehensive Plan

Unanimously approved in May 2001, the city of Bastrop Comprehensive Plan focuses on preserving the historic character of the city while recognizing its place within a vibrant and bustling metropolitan region.

The City of Bastrop Comprehensive Plan does not recognize Camp Swift or contain any policies related to military compatibility planning.

Zoning Ordinance

The City of Bastrop's Zoning Code is Chapter 14 of the City Code and current zoning defines the maximum height limit for any building as 2 ½ stories or 35 feet, which typically does not pose as a threat to aviation operations.

In 2007, the city replaced Section 45 of Article 12 "Appendix A" of the Bastrop City Code, pertaining to

the rules governing lighting and glare standards, with new outdoor lighting standards. The purpose for the revision was to encourage lighting practices for the purpose of commerce and private use, without affecting or being affected by citizens desiring a more pristine night-time environment free from light pollution, waste, trespass, or clutter while maintaining night-time safety, security, and productivity. Regulations related to noise, dust and smoke, and vibration are covered in Section 44 of Chapter 12.

Subdivision Ordinance

Chapter 10 of the City Code sets forth standards for the subdivision of land. Provisions for the subdivision platting process, inspections, variances, and parks and public areas are included in Chapter 10, as well as design criteria for streets, alleys, sewers and drainage structures.

Building Code

Chapter 3 of the Bastrop City Code establishes building regulations, including construction standards, for construction within the city limits.

Annexation Ordinance

In November 2011, the City of Bastrop approved an annexation ordinance to annex approximately 1,265 acres into the city, extending the city limits by approximately one and a half miles to the east and a little over a half mile to the north from a sliver of a parcel totaling 17 acres. In addition, some of the annexed tracts of land contained development agreements. This means the development agreements are grandfathered in, so development agreements still exist for some of the annexed parcels.

It is unknown at the time of the Camp Swift JLUS if the city planned for additional annexations or if Camp Swift was notified of this action. While this annexation action does not directly impact Camp Swift, potential development spurring from the annexation could adversely impact the installation.

City of Elgin

The City of Elgin is located in Bastrop and Travis counties, and is situated at the intersection of U.S. Highway 290 and State Highway 95 approximately 19 miles east of Austin. The Elgin city limits are

contained within approximately 5.8 square miles, and as of the 2010 Census, the city had a population of 8,135.

The City of Elgin has a one mile ETJ surrounding the city limit, which is reserved for defining potential future growth and boundaries of service areas. Although the city limits do not abut Camp Swift's borders, several properties within the voluntary ETJ do; including residences of the Arbors of Dogwood Estates.

Comprehensive Plan

The City of Elgin Comprehensive Plan was officially adopted by City Council in October 2009. The Plan was developed to provide a foundation for the city's development codes and ordinances. Situated near the rapidly growing Austin metropolitan area, Elgin strives to maintain its character as a small rural community.

The City of Elgin's Comprehensive Plan does not recognize Camp Swift or contain any policies related to military compatibility planning.

Zoning Ordinance

The City of Elgin's Zoning Code is Chapter 46 of the City Code. Current city regulation defines the maximum height limit for any building as 90 feet, which corresponds to the maximum height allowed within the General Industrial District. While 90 feet is generally an acceptable height for buildings and structures, depending on several factors, including extent of aviation operations and elevation at the point of concern, 90 feet can pose a threat to safe aviation operations as it is close to the 100 foot height indicator to trigger concern and coordination with appropriate entities.

The city has not adopted a lighting ordinance.

Subdivision Ordinance

Chapter 36 of the City's Code establishes standards for the subdivision of land. Provisions for the subdivision platting process, inspections, variances, and parks and public areas are included in Chapter 36, as well as design criteria for streets, alleys, sewers and drainage structures.

Building Code

Elgin has adopted Building Codes by reference under Article II Section 6-19. Building codes regulate building construction, materials, alteration and occupancy to ensure health, safety and welfare within the community. The building codes regulate building construction to promote compatibility with military installations, including sound attenuation for residences within applicable noise zones. The City of Elgin has adopted the following Codes by reference:

- The International Building Code; 2006 Edition
- The International Residential Code for One and Two Family Dwellings 2006 Edition

Annexation History

The City of Elgin has not annexed any land in the last 10 years, though the planning and development department is considering annexation.

It is unknown at the time the Camp Swift JLUS was developed if Camp Swift / TXARNG has been notified of this potential action. While the annexation may not directly impact the installation, the development that could potentially spur from the annexation could adversely impact Camp Swift.

4.7 Other References

In the interest of land use compatibility between the military and the local community, the DOD Office of Economic Adjustment (OEA) and other public interest groups, such as the National Association of Counties (NACo), have prepared educational documents and videos to educate and inform the public about encroachment issues and methods to address existing or future compatibility concerns. Following are five resources that have been published to inform the public on land use compatibility.

Guides

The Practical Guide to Compatible Civilian Development near Military Installations (July 2007), OEA

This guide offers general information on community development and civilian encroachment issues. The

guide can be found on the OEA internet site at the following address: <http://www.oea.gov/>.

Joint Land Use Study Program Guidance Manual (November 2006)

This manual provides guidance on the JLUS program, process, and identifies efforts to support compatible development. This manual can be obtained on the OEA internet site at the following address: <http://www.oea.gov/>.

Encouraging Compatible Land Use between Local Governments and Military Installations: A Best Practices Guide (April 2007), NACo

This guidebook presents case studies of best practices between the military and communities through communication, regulatory approaches, and Joint Land Use Studies. The guide can be accessed on the NACo internet site at the following address: <http://www.naco.org/>.

Videos

The Base Next Door: Community Planning and the Joint Land Use Study Program, OEA

This informative video discusses the issue of encroachment near military installations as urban development occurs within the vicinity.

Managing Growth, Communities Respond, OEA

This video highlights the lessons learned from three communities (Kitsap Naval Base in Bangor, Washington; Fort Drum in Jefferson County, New York; and Fort Leonard Wood in Pulaski County, Missouri) that have successful programs for managing growth near their respective military installations.

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5.0 Introduction

Compatibility, in relation to military readiness, is defined as the balance or compromise between community needs and interests and military needs and interests. The goal of compatibility planning is to promote an environment where both community and military can coexist successfully.

Numerous factors influence whether community and military plans, programs, and activities are compatible or in conflict. For the Camp Swift Joint Land Use Study (JLUS), a total of 25 compatibility factors were reviewed to confirm the presence of, and establish priorities for, the key Study Area issues.

COMPATIBILITY FACTORS			
AQ	Air Quality	LAS	Land / Air / Sea Spaces
AT	Anti-Terrorism / Force Protection	LU	Land Use
BIO	Biological Resources	LEG	Legislative Initiatives
CA	Climate Adaptation	LG	Light and Glare
COM	Coordination / Communication	MAR	Marine Environments
CR	Cultural Resources	NOI	Noise
DSS	Dust / Smoke / Steam	PT	Public Trespassing
ED	Energy Development	RC	Roadway Capacity
FSC	Frequency Spectrum Capacity	SA	Safety Zones
FSI	Frequency Spectrum Impedance / Interference	SNR	Scarce Natural Resources
HA	Housing Availability	VO	Vertical Obstructions
IE	Infrastructure Extensions	V	Vibration
		WQQ	Water Quality / Quantity

An action undertaken by either the military or community that minimizes, hinders or presents an obstacle to the action of the other is characterized as an issue. Issues arising on the part of either or both the military and community are grouped according to the relevant factor and listed in this chapter. For each identified issue, a compatibility assessment is provided discussing the nature and cause or source of the issue followed by applicable existing tools currently used or that may be used to mitigate encroachment or prevent the emergence of encroachment in the future, including an assessment of their effectiveness.

Methodology and Evaluation

The purpose of this chapter is to describe the compatibility factors assessed in the identification of compatibility issues associated with the Camp Swift JLUS. The JLUS evaluation approach consisted of a comprehensive and inclusive discovery process, identifying the key stakeholder issues related to the common compatibility factors. The analysis of these issues directly or indirectly affected the recommended strategies in the JLUS Report. During the preparation of the JLUS, the Policy Committee (PC), the Technical Committee (TC), and the public assisted in working through all 25 factors to identify, describe, and prioritize the extent of existing and potential future compatibility issues that could impact lands within or near the Study Area.

At the initial committee meetings and public workshops, attendees were asked to identify the location and type of compatibility factors, along with specific issues they thought existed today or could occur in the future. Other factors and associated issues were added based on the evaluation of available information and the project consultant's relevant experience on similar projects.

When reviewing this information, it is important to note the following:

- This chapter provides a technical background on the factors and issues identified based on available information. The intent is to provide an adequate context for awareness, education, and development of JLUS recommendations. As such, it is not designed or intended to be utilized as an exhaustive technical evaluation of existing or future conditions within the Study Area.
- Each issue has an accompanying set of existing tools. These existing tools are meant to show the reader what is currently in place that affects the specific compatibility issue. Existing tools will not always aid compatibility, but can offer a certain relevancy that can be built off of to help create strategies for future implementation.
- Of the 25 compatibility factors considered, it was determined that eight factors did not apply to this JLUS:
 - Frequency Spectrum Capacity
 - Frequency Spectrum Impedance / Interference
 - Housing Availability
 - Infrastructure Extensions
 - Marine Environments
 - Scarce Natural Resources
 - Vibration
 - Water Quality / Quantity

The following sections discuss the issues and existing tools by alphabetized factor.

5.1 Air Quality

Air quality is defined by a number of components that are regulated at the federal and state level. For compatibility, the primary concerns are pollutants that potentially create non-attainment of air quality standards, which may limit future changes in operations at the installation or in the area.

Key Terms

Attainment Area. An attainment area is a geographic area that meets the National Ambient Air Quality Standards (NAAQS) for a criteria pollutant.

Criteria Pollutants. Criteria pollutants are the six principle pollutants harmful to public health and the environment for which the United States Environmental Protection Agency (U.S. EPA) has set NAAQS. The pollutants are: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM), and sulfur dioxide (SO₂).

Design Value. A design value is a statistic that describes the air quality status of a given location relative to the level of the NAAQS. For example, this value is attained by taking a three-year average of the fourth-highest daily maximum eight-hour average ozone concentrations measured annually at a regulated monitor.

National Ambient Air Quality Standards. The NAAQS are standards for outdoor air pollutants established by the U.S. EPA, under authority of the Clean Air Act for the protection of human health and the environment.

Nonattainment Area. A nonattainment area is an area designated by the U.S. EPA as not meeting a NAAQS or contributing to air quality in a nearby area that does not meet a NAAQS.

Ozone. Ozone (O₃) is a bluish gas that is harmful to breathe. Nearly 90 percent of the Earth's O₃ is in the stratosphere and is referred to as the O₃ layer. O₃ absorbs a band of ultraviolet radiation called UVB that is particularly harmful to living organisms. The O₃ layer prevents most ultraviolet-B light (UVB) from reaching the ground. O₃ is created when hydrocarbons and nitrogen oxides released from vehicles and industrial

sources react in the presence of sunlight. Because O₃ requires sunlight to form, it primarily occurs in concentrations considered serious between the months of April and October. It should be noted that high O₃ can occur any time between March and November, but O₃ tends to be the highest from May through September.

Unclassifiable Area. An unclassifiable area is an area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

Technical Background

Under the Clean Air Act, the U.S. EPA established NAAQS for air pollutants. Air quality control regions (AQCR) are classified either “attainment” or “nonattainment,” according to whether or not the concentrations of criteria pollutants exceed the NAAQS. For O₃, the combined statistical area (CSA) or core-based statistical area (CBSA) is typically used as the basis for the nonattainment area. The nonattainment designation categories are Marginal, Moderate, Serious, Severe, and Extreme.

The primary pollutants that create O₃ in the presence of sunlight are nitrogen oxides and volatile organic compounds. However, there are many gases present that increase the level of O₃, producing ground-level O₃. These precursor gases are carbon monoxide (CO), carbon dioxide (CO₂), hydrocarbons (HCs), and methane (CH₄), in addition to the primary pollutants. The main contributors of O₃ emissions include both natural and man-made sources, such as vehicle exhaust and industrial emissions.

The EPA's last review of the O₃ NAAQS was completed in 2008, which resulted in the reduction of the eight-hour primary O₃ levels to 75 parts per billion (ppb).

In November 2014, the EPA proposed a rule to reduce the primary NAAQS for ground-level O₃ from 75 ppb to within a range of 65 to 70 ppb.

AQ-1**Potential for Ozone Nonattainment**

The new national air quality standard for ozone could potentially put Bastrop County into nonattainment for ozone, which can have an impact on both community activities and military operations.

Compatibility Assessment

Ground-level O₃ is an air pollutant for which the EPA has established a primary and secondary standard. The primary standard sets limits on the volume of the pollutant in the air in order to protect the public health, including sensitive populations such as, children, senior citizens, and those people with respiratory conditions. The secondary standard establishes limits for protecting the public welfare, including protection against vision impairment and issues or damages to animals, crops, and vegetation.

Prior to the development of the JLUS, the current federal standard for ground-level O₃ is 75 ppb using the accepted rounding conventions. However, this was assessed during the JLUS process by the federal government and new regulations were implemented. The new regulations were approved and implemented, thus the new federal standard for ground-level O₃ is 70 ppb.

Camp Swift is located in the Austin-Round Rock MSA, which comprises Bastrop, Caldwell, Hays, Travis, and Williamson counties, and is the 35th largest metropolitan area in the U.S. The Austin–Round Rock Metropolitan Statistical Area (MSA) is currently designated as attainment / unclassifiable. Bastrop County, which includes Austin’s suburban communities of Elgin and Bastrop, contributes to the region’s O₃-forming emissions not only from vehicular traffic, but also industrial uses and facilities in the county. Adding to the concern for air quality conditions, the County of Bastrop is expected to steadily grow in population between 2010 and 2050, which could influence the O₃ concentrations for this region due to the potential increase in the number of vehicles on the roadways and an increase in demand for the products provided by the industrial uses in the county.

The Capital Area Council of Governments (CAPCOG), reports that the Austin-Round Rock MSA would be in attainment if the standard were revised to 70ppb, but would have difficulty achieving the lower level of 65ppb expeditiously enough to avoid being designated as a nonattainment area. A nonattainment designation could lead to general conformity requirements, including new limitations and restrictions for roadway construction, industrial expansion and construction, and various other activities, e.g., agriculture-related activities, which are linked to the economic vitality and mobility of the region. These general conformity requirements would require Camp Swift and the Texas Military Forces (TXMF) to comply with the new standards for any and all types of activities, including those mentioned above.

Transportation projects currently planned for expansions and improvements could be delayed if the area is designated nonattainment. The delays would result in additional time needed to approve the projects in order to ensure compliance with new standards. With additional regulations to comply with, the County, cities, and Camp Swift / TXMF will need to go through the same process for certain types of projects, e.g., roadway improvements. With the additional regulations, the amount of time for approvals could extend to lengthy and onerous time periods, as much as an additional seven – 10 months, rather than the current time period of 30 – 60 days.

Project delays could lead to traffic queuing issues and inefficient mobility along critical roadways that are currently at or near capacity. Roadway queuing issues or delays can potentially impact Camp Swift and the surrounding communities by:

- increasing travel times, which impact daily work schedules for commuters and military training personnel;
- producing additional air contaminants such as CO₂ through increased vehicular idle times; and

- increasing security concerns at Camp Swift from increased stacking of traffic around gates.

Sources: 8-Hour Ozone Flex Program Austin-Round Rock Metropolitan Statistical Area, 2008; Camp Swift interview communications, 2015.

Existing Tools

Austin-Round Rock Metropolitan Statistical Area Ozone Advance Program Action Plan

The Austin-Round Rock MSA Ozone Advance Program (OAP) Action Plan is the current plan implemented in this region. This plan is intended to keep the region in attainment for O₃ based on the current NAAQS for O₃, which is 75 ppb. The OAP Action Plan also intends to reduce emissions in order to remain in attainment for future anticipated population increases and future standards, and improve public health, especially of sensitive populations, e.g. elderly and persons that suffer from respiratory conditions. The OAP Action Plan was developed for, and includes, emissions reductions from all jurisdictions participating in the Central Texas Clean Air Coalition (CAC). This Plan also includes emissions reduction commitments from 11 governmental organizations, non-profits, and businesses. Table 5.1-1 enumerates the commitment efforts by the various entities involved in the development and implementation of this Plan.

Table 5.1-1. Emission Reduction Commitments for the Austin-Round Rock MSA

Emission Reduction Strategy	CAC Members	Other Entities	Total
Commute Trip Reduction Measures	31	33	64
Development Measures	22	8	30
Energy and Resource Efficiency Measures	20	9	29
Fleet and Fuel Efficiency Measures	66	21	87
Outreach, Awareness, and Education Measures	59	34	93
Regulation and Enforcement Measures	24	0	24
Sustainable Procurement and Operation Measures	50	14	64
Transportation Emission Reduction Measures	63	37	100
TOTAL	335	156	491

Source: Austin-Round Rock Metropolitan Statistical Area Ozone Advance Program Action Plan, 2013.

This OAP Action Plan includes three categories of emissions reduction measures:

1. Measures intended for region-wide implementation,
2. Measures intended for CAC implementation, and
3. Measures implemented by other participating organizations.

These categories assist in defining the actual measures based on the implementing agency. Examples of **regional measures** include but are not limited to:

- Commute Solutions Program,
- Leverage Local Clean Cities Programs, and
- Outreach, awareness, and education.

Examples of **CAC implementation measures** include:

- Commute trip reduction measures,
- Development measures,
- Fleet and fuel efficiency measures,
- Regulation and enforcement, and
- Sustainable procurement and operation measures.

Examples of **other participating entities implementation measures** include:

1. CAPCOG

- Flexible work week and compressed work week schedules,
- Direct deposit program, and
- Ozone Action Day education, awareness and education programs.

2. Capital Area Metropolitan Planning Organization

- Flexible work week schedules (compressed work week, part-time teleworking),
- Direct deposit, and
- e-Government.

3. CapMetro

- 12 different Transportation Emission Reduction Measures.

There are numerous other agencies that have an active commitment to reducing emissions in this region, including Texas Department of Transportation (TXDOT).

While the OAP Action Plan is a good tool to facilitate the reduction of emissions of O₃, it lacks performance metrics to assess if the reduction measures are actually reducing emissions. For example, with the direct deposit measure for local governments and organizations, there is a cross-section of the population that chooses not to use the direct deposit feature. As there is no stated goal or objective for facilitating that cross-section of the population to use the direct deposit benefit, there is no measurable means to assess if this is a viable action.

In addition, the OAP Action Plan does not consider military activities or exercises and their impact on the local and regional air quality. The only military reference in the Plan is in regards to the Section 30 Texas Administrative Code (TAC), Chapter 114, Subchapter J in which the Texas Commission on Environmental Quality (TCEQ) has granted authority to local jurisdictions, including counties, to write and enforce ordinances that reduce heavy-equipment idling activities. At the time of the development of this JLUS, Bastrop County and the cities of Bastrop and Elgin have not implemented said ordinances.

Austin Eight-Hour Ozone Flex Plan

This plan was developed in 2008 and is essentially a memorandum of agreement (MOA). It identifies an action plan that contains planning measures, primary measures and tiered contingency plans, in addition to the existing measures, for areas that reach a design value of 84 ppb for O₃. These contingency measures include:

- Applying for grants available for emission reduction,
- Anti-idling MOA with the TCEQ,

- Rideshare updates, and
- Voluntary use of nitrogen oxides emission, which reduces diesel additive for fleets and school buses.

While this Plan is a proactive approach for managing the ground-level O₃ in the area by identifying the point sources and providing and establishing measures to reduce the O₃ emissions in the area, the Plan does not consider the proposed standard for ground-level O₃ and the associated impacts on various community activities, such as construction projects. In addition, this Plan expired in 2013.

This Plan does not consider military compatibility, and it appears there was a lack of military representation in the participating stakeholders.

Austin Area Early Action Compact Ozone State Implementation Plan Revision

The 2004 Austin Early Action Compact (EAC) was developed to assist the Austin area in attaining the eight-hour O₃ standard. The EAC identifies locally-tailored needs related to O₃ emissions and provides jurisdiction-specific guidelines to manage and account for area growth and development while implementing strategies for emission control. The EAC principles are:

- *Utilizing early planning, implementation, and emission reductions to achieve expeditious attainment of eight-hour O₃ standard;*
- *Maintaining local control over the measures to be employed, incorporating broad public input;*
- *Including support at the state level to ensure technical integrity of the plan;*
- *Formal inclusion of EAC in the State Implementation Plan (SIP);*
- *Ability to defer effective dates of nonattainment designations and requirements through the continued achievement of EAC terms and milestones; and*
- *Ability of areas failing to meet EAC terms and milestones to revert back to traditional SIP requirements, with credit given for emission reduction measures implemented.*

This plan was a proactive approach to managing O₃ emissions in the early 2000's; however, it does not consider the new standard proposed by the EPA in 2014.

Findings

- The US EPA's new standard was approved at 70 ppb. Bastrop County and the cities would realize minimal impact with this new O₃ standard.
- The OAP Action Plan is effective January 1, 2014 through December 31, 2018. It is important to note that this plan is the fourth plan of its kind, and was developed to continue and improve the three previous plans. It is recognized that this region is actively engaged in reducing O₃ emissions and maintaining attainment status.
- The OAP Action Plan does not consider military compatibility; however, it sets precedent for voluntary participation through the organizations that are not in the CAC.
- Bastrop County and the cities of Bastrop and Elgin have not implemented heavy-equipment idling reduction ordinances.
- Military vehicles are exempt from Section 30 TAC Chapter 114 Subchapter J regulations. However, there is no mention of outreach to obtain voluntary compliance.

- The Austin Area EAC does not consider the proposed NAAQS for ground-level O₃ at 65 ppb to 70 ppb.
- The OAP and the Eight Hour Ozone Flex Plans do not consider military compatibility.

5.2 Anti-Terrorism / Force Protection

Anti-terrorism force protection (AT / FP) relates to the safety of personnel, facilities, and information on an installation from outside threats. Security breaches and trespassing are immediate compatibility concerns for installations. Due to current world conditions and recent events, military installations are required to implement more restrictive standards and protocols to address AT / FP concerns. These measures include increased security checks at installation gates and physical changes such as new gate / entry designs.

The Department of Defense (DOD) AT / FP standards require all DOD components to adhere to design / planning criteria and minimum construction standards to mitigate vulnerabilities and threats to an installation and its occupants. Important aspects of these criteria and standards include minimum standoff distances or required separation between buildings, roadways, parking lots, and trash enclosures. Security engineering criteria for entry facilities include: minimum spacing for areas within an entry facility including the approach area where vehicles queue, vehicle and ID check area and response area should a threat bypass an ID check; and minimum sight distances, lighting, and barriers to prevent unauthorized access.

AT-1

Security Concern around Gate Access

Roadway infrastructure improvements can increase queuing issues which causes a general security concern for the installation.

Compatibility Assessment

Approximately five miles of Camp Swift's western border abuts State Highway (SH) 95. The highway runs north-south, and is the main thoroughfare between the cities of Bastrop and Elgin. SH 95 is a two-lane, undivided highway with a posted speed limit of 65 miles per hour (mph). Currently SH 95 is at capacity, and any roadway improvements would require realignment, or the acquisition of additional right-of-way from the Texas National Guard (TXNG).

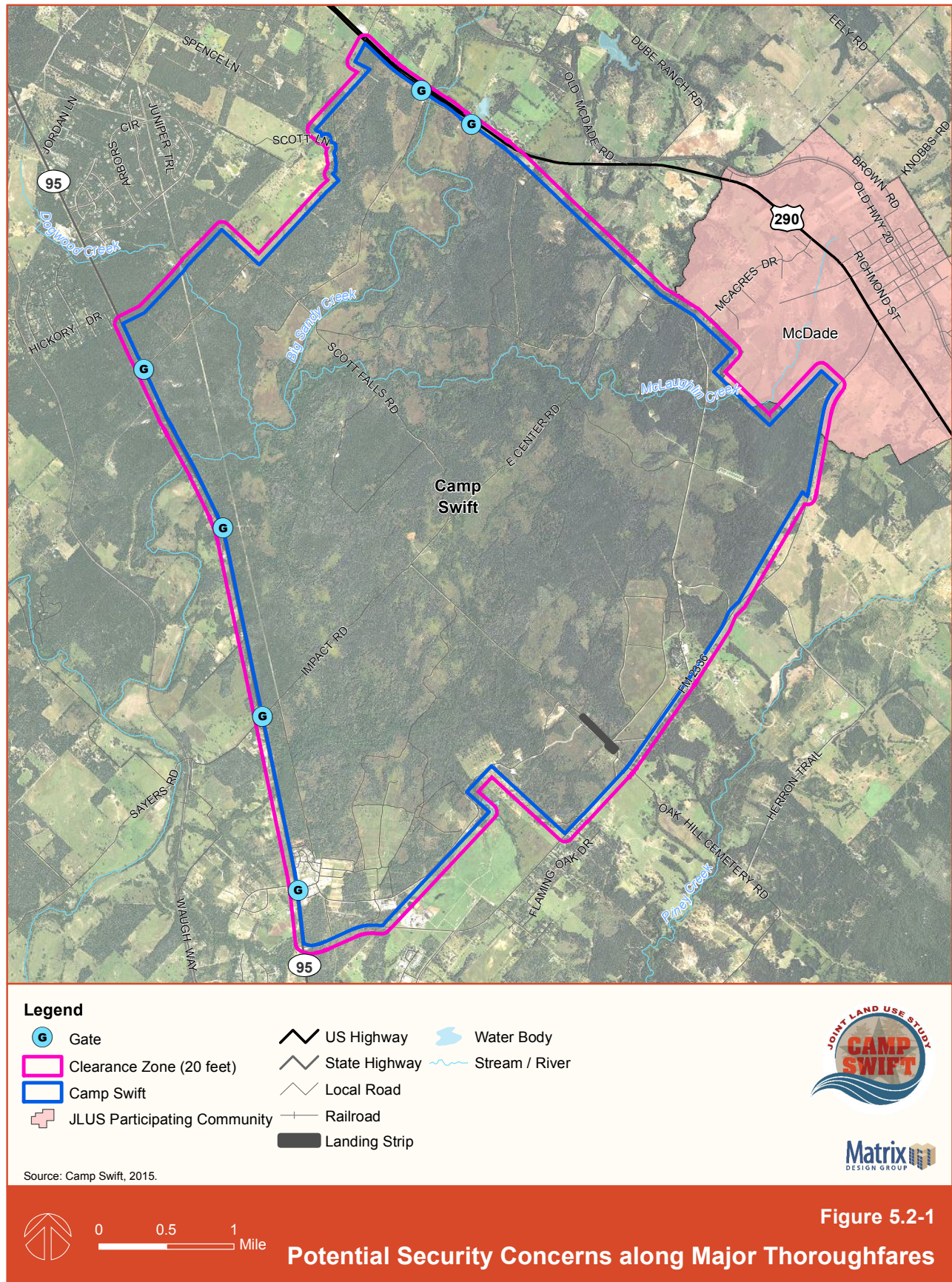
The installation has four gates along this segment of SH 95 that provide access into the installation.

The installation's fence line, from Farm-to-Market (FM) 2336 beyond Scott Falls Road, is affected by activities associated with this roadway. Average daily vehicle counts between FM 2336 and Elgin were conducted for this roadway in 2013. The counts resulted in a range of numbers from 7,788 to 8,795 vehicles counted by monitoring stations along this segment of SH 95.

The northeastern border of Camp Swift abuts United States (U.S.) Highway 290 for approximately one mile, between Three Cemetery Road and Scott Falls Road. Along this segment, there are two access control gates providing access to the installation. U.S. Highway 290 runs northwest to southeast, through Elgin and McDade, connecting the two major cities of Austin and Houston. As a U.S. Highway connecting two major cities, the average daily vehicle counts reported for this segment of the highway were higher in 2013, at 11,175 and 14,027 respectively. These numbers were reported from two separate monitoring stations.

Figure 5.2-1 identifies the various access gates located along SH 95 and U.S. Highway 290.

In addition, U.S. Highway 290, between McDade and Elgin, includes segments of roadway that have been improved to four-lane divided highways. The Texas Department of Transportation's 2012 Unified Transportation Program outlines a plan to improve 7.8 miles of U.S. Highway 290 to a four-lane divided highway beginning one mile east of FM 696 to approximately 8.9 miles east of FM 696, as indicated on Figure 5.2-2. During the development of this JLUS, a portion of the roadway between FM 696 to approximately 0.9 miles east of FM 696 has been improved.



This section of U.S. Highway 290 has high development potential given its proximity to McDade and Elgin and as a prominent transportation artery between two major metropolitan areas. The concern with this particular roadway and its improvements is that it will spur development in the area near the installation, potentially causing unintended viewsheds onto the installation, which is a breach of security.

The proximity of multiple gate access points along the primary roadways raises concerns of encroachment from roadway improvements designed to increase capacity, which for SH 95 would locate the roadway closer to the installation perimeter if this improvement is so desired. The western perimeter is currently located approximately 24 feet from the highway shoulder. Reducing this distance by expanding the roadway to provide additional capacity could lead to increases in encroachment, and generally locates the public closer to the installation perimeter.

Roadway improvements that involve acquisition of additional rights-of-way from TXNG / Camp Swift could also impact convoy queuing from vehicle stacking, which reduces the space at the main entrance and causes delay due to vehicles waiting inspection and entrance. This could increase safety hazards at the gates by creating congestion on narrow access roads and pushing queuing vehicles out onto the highway. This delay, and the vehicle stacking, can increase the potential for security threats at the main gate by impeding line-of-sight at the gate.

Existing Tools

Military Handbook, Design Guidelines for Security Fencing, Gates, Barriers, and Guard Facilities

The Military Handbook, Design Guidelines for Security Fencing, Gates, Barriers, and Guard Facilities defines requirements for security and perimeter fencing, gates, and barriers. Designed initially for Navy and Marine Corp installations, it provides sound guidelines for perimeter and restricted area fencing materials, placement, and clear zones. The handbook identifies a combined interior / exterior clear zone distance of 50 feet minimum, both a 30 feet minimum internal clear zone and the remaining 20 feet reserved for

outside of the fence line. The clear zone serves multiple purposes, including: reducing opportunities for intruder concealment, maintaining a 50 feet wide fire break, and in the case of Camp Swift, maintaining adequate separation between the installation and the roadways.

Findings

- There is military precedent which establishes clear zones that outside development must comply with. The roadways around the base are currently in compliance, but if additional rights-of-way are acquired and improvements made to these roadways, the infrastructure may not be in compliance unless coordinated with TXNG.

Development Compliance with AT / FP Standards

AT-2

Continued growth and future development near Camp Swift may increase issues with AT / FP compliance.

Compatibility Assessment

Bastrop County has experienced high rates of population growth over the past ten years, and is projected to continue to steadily grow between 2010 and 2050. New development radiating out from the Austin-Round Rock MSA is placing a large demand on the region, increasing the need for roadway improvements along with other similar needs.

The distance between Bastrop, Elgin, and Austin is convenient enough to entice residents to commute from outside of the City of Austin, and into the areas surrounding Camp Swift. As with any migration, growth is the catalyst for new development and new roadways with greater capacities. The concern of future development is that, if uncoordinated with the TXNG / Camp Swift, it can result in additional AT / FP (security) issues by enabling higher concentrations of people near the perimeter of the installation. This proximity to the installation perimeter can potentially facilitate the unintended or intended breach of the perimeter

via physical trespassing or via viewsheds from the outside looking onto the installation.

Existing Tools

Military Handbook, Design Guidelines for Security Fencing, Gates, Barriers, and Guard Facilities

The Military Handbook, Design Guidelines for Security Fencing, Gates, Barriers, and Guard Facilities defines requirements for security and perimeter fencing, gates, and barriers. Designed initially for Navy and Marine Corp installations, it provides sound guidelines for perimeter and restricted area fencing materials, placement, and clear zones. The handbook identifies a combined interior / exterior clear zone distance of 50 feet minimum, both a 30 feet minimum internal clear zone and the remaining 20 feet reserved for outside of the fence line. The clear zone serves to reduce opportunities for intruder concealment and maintains a 50 feet wide fire break.

While this handbook provides the military with the needed tools to establish appropriately compliant buildings and structures relative to Guard facilities, it does not require coordination with jurisdictions outside the fence line to ensure the community allows for the appropriate space between military installations and community activities.

Unified Facilities Criteria: Security Fences and Gates-UFC 4-022-03

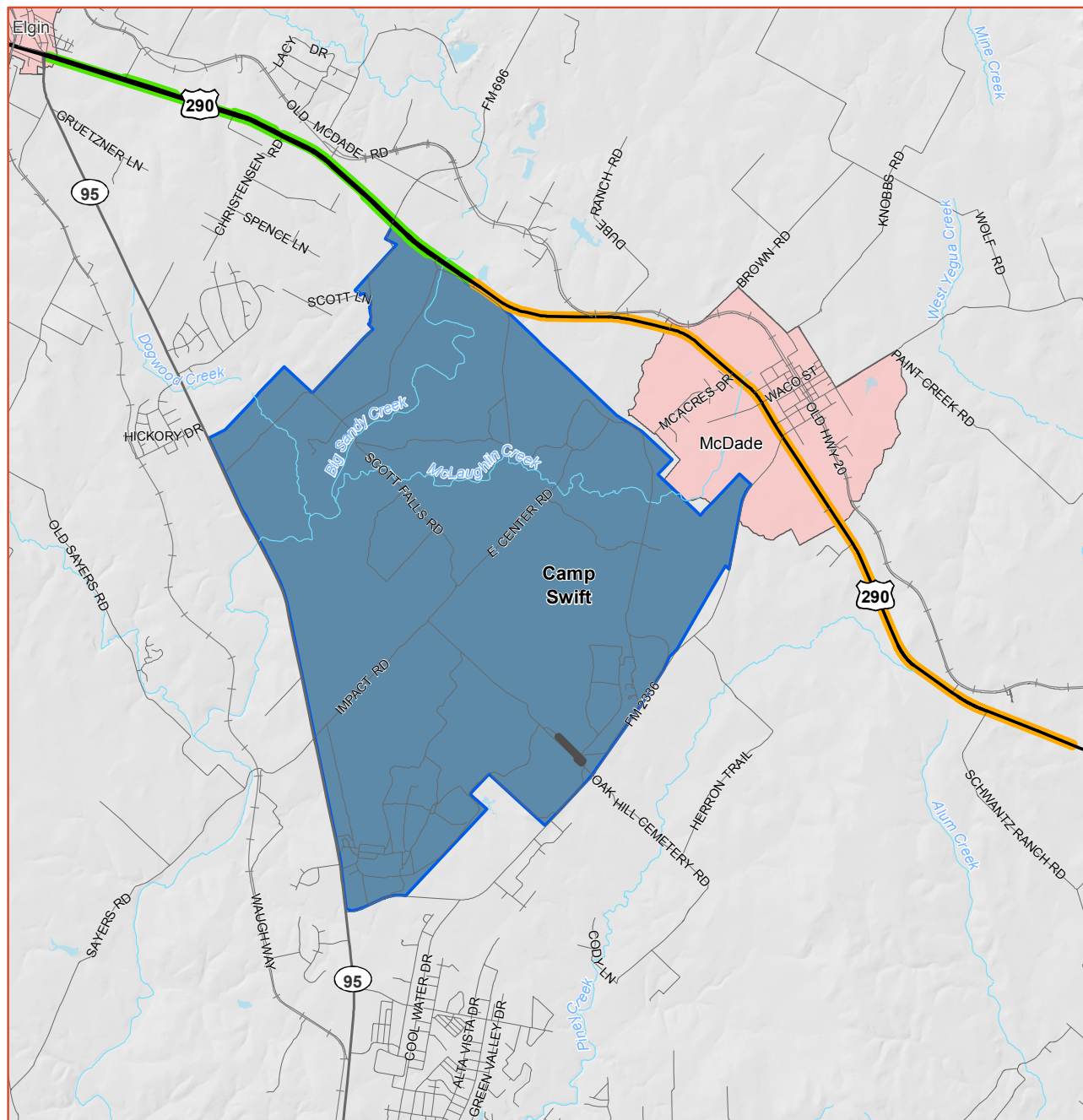
The Unified Facilities Criteria (UFC): Security Fences and Gates (UFC 4-022-03) establishes criteria for defining clear zones inside and outside perimeter fences to maintain line-of-sight necessary for the installation to detect and assess security issues. These types of clear zones can vary depending on the asset being protected and the current level of protection needed.

Findings

- The distance from Camp Swift's perimeter fence along SH 95 is approximately 24 feet, currently compliant with AT / FP standards. If right-of-way is acquired from the TXNG to improve SH 95 to support additional capacity,

then the 20 foot clear zone would not be preserved.

- The Military Handbook (MIL-HDBK-1013/10) does not provide guidance about the need for a clear, unobstructed viewshed from the perimeter to the communities.



Legend

- US 290 Improvements of Concern
- US 290 Improvements Completed
- Camp Swift Camp Swift
- JLUS Participating Community JLUS Participating Community
- US Highway
- State Highway
- Local Road
- Railroad
- Landing Strip
- Water Body
- Stream / River

Source: Texas Department of Transportation, 2015.



0 1 2 Miles

Figure 5.2-2
Completed and Future
US Highway 290 Improvements

Please see next page.

5.3 Biological Resources

Biological resources include federal and state listed species (threatened and endangered species) and their habitats. These resources may also include areas such as wetlands and migratory corridors that are critical to the overall health and productivity of an ecosystem. The presence of sensitive biological resources may require special development considerations and should be included early in the planning process.

Key Terms

Conservation Subdivision. A conservation subdivision is a design strategy to preserve undivided, buildable tracts of land into resident communal open space.

Critical Habitat. Specific areas found to be essential to the conservation of a threatened or endangered species and which may require special considerations or protection. Under this designation, the United States Fish and Wildlife Service (USFWS) must review all federal government activities within a designated critical habitat area to ensure that threatened and endangered species are protected.

Endangered Species. Endangered species are plant or animal species that have a very small population and are at greater risk of becoming extinct.

Endangered Species Act (ESA). ESA provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The lead federal agencies for implementing ESA are the USFWS and the U.S. National Oceanic and Atmospheric Administration (NOAA) Fisheries Service. Species include birds, insects, fish, reptiles, mammals, crustaceans, flowers, grasses, and trees. The presence of threatened and endangered species may require special development considerations, could halt development, and could impact the performance of military missions.

Incidental Take. An incidental take is a permit issued under Section 10 of the U.S. ESA to private, non-federal entity for a lawful project that might result in a taking of a listed species or its habitat.

Invasive Species. Invasive species are plants, animals, or pathogens that are not native (indigenous) to the particular environment and cause harm to indigenous plant and animal species.

Rare Species. Rare species are plants and animals that are not frequently encountered or are uncommon to a particular environment.

Threatened Species. According to the ESA a threatened species is “any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range”.

BIO-1 **Biological Resource Monitoring**
There are numerous biological resources in the area, including those that inhabit the Lost Pines Habitat Conservation Plan Area, which should be continually monitored, coordinated, and updated as necessary.

Compatibility Assessment

The geography near Camp Swift is composed of a rich, diverse ecology. While there are no federally listed threatened or endangered species on Camp Swift, there are several listed species that have habitat in Bastrop County and near the installation, or have been designated as rare species.

The Federally-listed bald eagles, Federal and Texas-Listed Houston toads, and Federal and Texas-Listed Navasota ladies' tresses have been seen in Bastrop County. Camp Swift does not have suitable habitat for the bald eagle; however, there have been instances where bald eagles have flown over / passed through Camp Swift. Additionally, the Houston toad and Navasota ladies' tresses are found close to Camp Swift.

According to the most recent Camp Swift Integrated Natural Resources Management Plan (INRMP) from 2010, the state-listed Texas horned lizard may be present at Camp Swift. The species has not been documented at Camp Swift during surveys but has been sighted on the installation on occasion,

particularly by training site personnel. It is important to note as this is a species identified by the INRMP that needs ongoing monitoring even if the species has not been documented during surveys as being seen on Camp Swift.



Texas Horned Lizard

Due to the numerous species in the JLUS Study Area, the primary concern expressed by the JLUS committees and the public is that the biological monitoring should continue and be shared with various stakeholders. This concern relates to several factors that can degrade biological resources such as weather conditions including drought and floods, development induced by area growth, and thriving invasive species. Ultimately, the biological monitoring should continue to occur regularly, and planning documents prepared from the monitoring should be living documents that change as the geography and land uses change.

It is important to monitor the management of not only rare species but also the invasive species that attack the rare species. The INRMP cited that there are two invasive species in particular that wreak havoc on the aforementioned rare and threatened species: fire ants and feral hogs. It should be noted that there is no hunting allowed on Camp Swift; however, the INRMP does provide guidelines for other management techniques for invasive species.

While the land that comprises the Lost Pines Habitat Conservation Plan Area, as illustrated on Figure 5.3-1, is protected and development is managed appropriately, the area outside the conservation plan

area is not as regulated. Uncoordinated development and planning can cause concern for the community in regards to the ongoing monitoring of the biological resources in the area, and can lead to uncontrolled development. As development in the county increases habitat typically becomes degraded, causing Camp Swift to become a refuge for wildlife and threatened or endangered species. If Camp Swift becomes a refuge for wildlife and listed species, there could be potential military readiness degradation due to realigning missions to other areas of the installation so as not to disturb listed species habitat. This refuge scenario can also cause potential postponements of training for seasons due to the breeding habits of certain species. These changes in mission capabilities would result in lost opportunity for the military and ultimately degrade military readiness.

Source: Camp Swift Integrated Natural Resource Management Plan, updated 2010.

Existing Tools

Camp Swift Integrated Natural Resources Management Plan, Updated 2010

The Camp Swift INRMP was last updated in 2010 and provides various goals and targets for managing the biological resources and habitat on the installation. The installation, under the authorization of the Sikes Act (see Chapter 4 of the Background Report), updates its INRMP every five years and inventories and establishes goals and actions for the management of the species and associated habitat on the installation. There are goals designed to maintain endangered, threatened, and rare species and protect them. Such goals include:

- ***Goal 1:*** *Maintain populations of rare species, and*
- ***Goal 2:*** *Identify any new occurrences of rare, endangered, or threatened species.*

These goals are executed by Natural Resource Management staff at the installation through targeted actions, including:

- *Identify current size and location of population by FY08,*
- *Identify critical areas and methods of protection with minimal impact to training by FY09,*
- *Target potential habitat and seasons to document rare species during planning level surveys, and*
- *Provide means to train site staff to communicate sightings to natural resources.*

The INRMP has also identified that the Natural Resources Management staff needs to provide a method to communicate with training site staff about rare species and what to do if training site staff sights a rare or endangered species. This is all in effort to protect the species from unintended degradation of their habitat and their survivability.

As reported in the INRMP, regular updates of the planning-level surveys manage majority of species located on or near the installation. These surveys assist the natural resources personnel in documenting any new species, monitoring existing species, and managing invasive species.

The INRMP delineates goals for the management of invasive species, such as coordinating with state resources, i.e. TPWD. These goals and actions include, but are not limited to, the following:

- ❖ **Goal 1:** *Prevent introduction of new invasive species or establishment of new populations*
 - *Remain current on statewide invasive species issues and patterns of spread near Camp Swift*
 - *Participate in Texas State Invasive Species Council as appropriate*
 - *Share invasive species spatial data with other state and federal agencies*

- *Coordinate with adjacent land owners to prevent new invasions*

❖ **Goal 2:** *Reduce or maintain existing populations of invasive species*

- *Communicate with adjacent landowners and extension agents*
- *Develop feral hog monitoring program by FY07*
- *Continue feral hog eradication program*
- *Conduct public education concerning risks from feral hogs*

Lost Pines Habitat Conservation Plan for Bastrop County, Texas

The Lost Pines Habitat Conservation Plan (LPHCP) is intended for the purpose of protecting the Houston toad species and its habitat in



Houston Toad

Bastrop County.

While there are other species in and around this area, this plan only provides protection, conservation, and mitigation strategies for the Houston toad.

The Plan allows for single-family residential and small-scale commercial development in the Plan Area. The Plan allows for an incidental take of up to one acre of land within the LPHCP Area for legally subdivided or platted lots for use as single-family residential and accessory buildings and structures. An incidental take is also allowed for small-scale commercial development and multi-family residential and associated structures within the same amount of space, up to one acre. The developer / property owner is subject to payment of mitigation fees or the recording of a conservation easement.

The LPHCP also permits conservation subdivision and establishes conservation subdivision regulations. For the conservation subdivision, there are two design options afforded to developers: a low density large-lot design and a higher density clustered design.

- **Option 1:** *The low density, large-lot subdivision design option requires a minimum lot size of at least 3 acres (1.21 hectares) and an average lot size of no less than 5 acres, and limits land use to single-family residential and small-scale commercial purposes.*
- **Option 2:** *The higher density, clustered design option initially allows development to occur on up to 20 percent of the subdivision (clustered into a single area), with the potential for gradual increases in the amount of land available for development and the density of dwelling units over 30 years.*

Agricultural uses are also allowed with a taking as long as land is not converting to intense agricultural uses.

Appendices C and D delineate the process for applying for a conservation subdivision in the LPHCP area as well as the small single-family residential uses application process. Additionally, there are more explicit instructions and measures outlined in these appendices to ensure the protection and preservation of the Houston toad and its habitat, including but not limited to the following:

- *At least 80 percent of each individual lot must be permanently protected for the benefit of the Houston toad (referred to as the "Conservation Area"), such that:*

Conservation Areas shall be permanently protected from activities that would decrease the quality and quantity of Houston toad habitat that was present in the subdivision prior to development;
- *The subdivision applicant must submit a management plan for Conservation Areas*

with the application for final plat approval. The Management Plan must be approved prior to, or in conjunction with, the approval of the Final Plat. The management plan must follow the guidelines in Section 4.0; and

- *Each individual landowner shall be responsible for the management of the Conservation Area contained within his/her lot, in accordance with the management plan for the subdivision or with prior written approval by the Texas Parks and Wildlife Department (TPWD), the County of Bastrop or U.S. Fish and Wildlife Service (Service).*

It is indicated that Camp Swift is not a likely or suitable geography for the Houston toad due to the soils at Camp Swift and the subsurface geologic formation at the installation. It is important to note that the Houston toad has not been sighted at the installation in several decades.

Findings

- The INRMP established specific actions which include education and assistance from adjacent land owners in the management of invasive species.
- The INRMP is dated for 2010, and may not consider the population growth that has occurred since 2010.
- The LPHCP is only intended for the protection of the Houston toad and its habitat, neither of which are located on Camp Swift. The Plan does not consider other rare species such as the State-listed Texas horned lizard.
- There are educational / informational materials about the Houston toad that LPHCP has posted on the Bastrop County website in order for all property owners within the LPHCP to learn and understand what it means to be located or have property within the LPHCP.

5.4 Climate Adaptation

Climate adaptation is the gradual shift of global weather patterns and temperature resulting from natural factors and human activities, e.g., burning fossil fuels, that produce long-term impacts on atmospheric conditions. The effects of climate adaptation vary and may include fluctuations in sea levels, alterations of ecosystems, variations in weather patterns, and natural resource availability issues. The results of climate adaptation, e.g., ozone depletion and inefficiencies in land use, can present operational and planning challenges for the military and communities as resources are depleted and environments altered.

Climate adaptation also results in unstable weather patterns with greater chances of intense storm / drought events impacting the region. Training missions could be impacted by flooded roads / ranges, limited live fire activities due to drought conditions, life / safety hazards for soldiers due to impact to training lands, and financial costs for repair and maintenance from weather related damage.

Key Terms

Carrying Capacity. Carrying capacity is the ability of the military to provide the maximum amount of land, land features, or equipment capabilities to support the training mission in a specific geography, without resulting in a deterioration of military readiness.

CA-1

Climate Adaptation Related to Flooding and Drought Conditions

Concerns from years of severe drought conditions and recent flooding, and their associated impacts on the communities and base.

Compatibility Assessment

As climate changes severe weather conditions increase, this part of Texas can experience more frequent droughts and extreme flooding. These weather events can give rise to increased issues for the military when preparing and training military personnel

and assisting in humanitarian efforts caused by these natural disasters.

There are four ways climate changes impact the military, which include:

- Planning and operations,
- Training and testing,
- Built and natural infrastructure, and
- Acquisition and supply chain.

Climate change and its effects can adversely impact the military by producing a variety of effects including, but not limited to, the following:

- Increased number of “black flag” (suspended outdoor training) or fire hazard days;
- Decreased training / testing land carrying capacity to support current testing and training rotation types or levels. Some training / testing lands may lose their carrying capacity altogether;
- Increased dust generation during training activities which may interfere with sensitive equipment and result in additional repairs or require more extensive dust control measures to meet environmental compliance requirements; and
- Increased stress to threatened and endangered species and related ecosystems on and adjacent to DOD installations, resulting in endangered species relocating to DOD lands and land management requirements.

The primary concern for DOD and Camp Swift is the balance between maintaining enough capable space (land, air) to execute training missions and needing to protect the general public or natural resources and ecosystems.

Source: Department of Defense Climate Change Adaptation Roadmap, 2014.

Existing Tools

2014 Climate Change Adaptation Roadmap

The DOD identified that climate change and its associated impacts would have a significant impact on the nation's security and defense and created a coordinated body overseen by the Deputy Under Secretary of Defense for Installations and Environment. This led to the development of the 2014 Climate Change Adaptation Roadmap, meant to manage the impacts of climate change on the military. This roadmap assesses the effects of climate change on military assets as identified in the issue discussion.

The Roadmap assesses the vulnerabilities that could occur at various geographies regarding training and testing facilities. The plan also evaluates various types of adaptation practices in managing and mitigating the effects of climate change on the military. The Roadmap acknowledges that in order to manage and appropriately mitigate the effects of climate change, there must be country-specific plans and operations and, more importantly, cooperation and engagement from all levels of government. Some of the strategies identified in this Roadmap include, but are not limited to, the following:

- Overarching Department—wide plans and guidance to Combatant Commanders;
- Combatant Command deliberate planning, including theater campaign plans, operation plans, contingency plans, and theater security cooperation plans;
- Training and testing plans, including the location, frequency, and duration of training and testing rotations;
- Future Base Realignment and Closure (BRAC) and stationing decisions; and
- Health surveillance programs, including increased frequency of health monitoring and adequacy of personnel protective equipment.

This is a relatively new issue impacting the military and its ability to train and provide defense-related services.

This includes Domestic Support of Civil Authorities, which provides search and rescue services in the instances of flooding. The DOD is developing installation plans that address the climate change effects which impact different installations, and it is encouraged that local governments follow suit and integrate climate change and hazard mitigation in their comprehensive planning documents in order to ensure a cohesive and integrated approach in mitigating and preventing climate change impacts from destroying or degrading natural resources and built assets.

Findings

- The DOD has implemented a department-wide process for evaluating climate change on the military.
- The DOD response to climate change is to encourage country-wide cooperation and engagement including integration of hazard mitigation into local plans and policies.

5.5 Coordination / Communication

Interagency coordination and communication relates to the level of interaction on compatibility issues among military installations, jurisdictions, land and resource management agencies, conservation authorities, and other stakeholders. Interagency communication is important because it enhances general welfare by promoting a more comprehensive planning process, inclusive of all affected stakeholders. Interagency coordination also serves to develop mutually beneficial policies for both communities and the military for inclusion in local planning documents, such as comprehensive plans. Coordination and communication is a foundational compatibility factor that must be recognized to ensure successful balance and / or compromise between community and military needs and interests.

Lack of Formalized Communication Between Local Jurisdictions and the Installation

COM-1

Lack of formalized communication between Camp Swift and local communities makes it difficult to share vital information and voice concerns related to noise, safety, and military training operations.

Compatibility Assessment

Typically, installation personnel communicate with their community counterparts via personal communication, such as face-to-face at local community meetings, events, or activities (especially for installations in rural settings) and email. Installation personnel and municipal or community personnel do not necessarily follow a prescribed protocol for communicating with each other. This unplanned, informal way of communication can lead to oversight, miscommunication, and lack of timely response to military or community matters, especially in land use planning.

Relative to land use planning matters, when an installation and community do not have a formal communication system, then the military may not have the opportunity to properly advise local community officials that certain proposed development or proposed roadway expansion could actually promote development into areas may be incompatible with the military mission operations. Conversely, the community may not get a timely response from the military about some concerns the community has about the military operations ongoing at the installation. This lack of communication could result in many scenarios that would reduce the effectiveness of military readiness, including lost military missions, reduction in training days, or changes and / or realignments of training missions. This could result in lost economic opportunities for the communities if a developer withdraws from plans due to impacts by the military operations ongoing in the area. These modifications of training due to outside the fence line pressure caused by development are one of the components that ultimately result in a base closure.

A base closure results in lost federal and state revenues injected into the local communities, lost property taxes from dependents living in the area, and overall the loss of an economic generator in the local and regional communities.

Existing Tools

Subdivision Regulations for Bastrop County

Since counties in Texas do not have traditional land use authority, they can provide some protection through subdivision regulations. However, there are no references to Camp Swift identified in Bastrop County's subdivision regulations, which would apply to the unincorporated areas around and immediately adjacent to the installation. This lack of acknowledgement in the subdivision regulations indicating Camp Swift is within unincorporated Bastrop County and that coordination with the installation should occur could lead to platting and subdivision development that may become incompatible with the installation's activities, such as new residential development proximate the installation.

A further review of the county's subdivision regulations, plat, application form, and checklist for plat application submittal requirements, also shows no references to Camp Swift or military operations in the area. This can lead to exclusion the Texas Army National Guard (TXARNG) in important coordination when platting and proposing subdivision development matters.

Bastrop County Comprehensive Transportation Plan

The Bastrop County Comprehensive Transportation Plan (BCCTP) identifies and recognizes Camp Swift as a major economic generator, employer, and traffic generator in the region. While this plan identifies Camp Swift as a top employer and traffic generator in the area, it does not directly identify the installation as part of a greater planning committee.

After review of the BCCTP, the Steering Committee, the Technical Advisory Committee, and the Citizens Advisory Committee, it was found none include representation from the installation or TXARNG. However, Camp Swift representatives were present at the some of the community meetings for the development of this Plan.

While Camp Swift was represented at some of the community meetings, it is unknown how much of this plan incorporates and considers military concerns related to local and regional roadway improvements and expansions. In addition, it is unknown whether this plan received solid technical advice from the installation based on the representatives at the meetings.

City of Bastrop Comprehensive Plan

The City of Bastrop Comprehensive Plan is a planning document designed for a 20-year planning horizon. The Plan only references Camp Swift as an activity center that drew people to the area after World War II. Otherwise, Camp Swift is not reflected in this plan, and the plan does not consider military compatibility objectives, goals, and policies.

If this plan was updated to acknowledge and reflect the Camp Swift's economic and planning impact, it could be a better tool used for military compatibility. It

would assist developers and the general public realize there is military activity ongoing at Camp Swift and encourage good neighbor policies.

City of Bastrop Development Manual

The City of Bastrop has established a Development Manual to provide standard operating procedure (SOP) guidance to developers. This manual includes dates for submittal deadlines for the planning commission, applications information for subdivisions and zoning, site development applications, and fee schedules. This manual does not reference Camp Swift or the military reservation relative to coordinating with the installation in matters of development as necessary. This manual does not consider military compatibility.

Bastrop Economic Development Strategy: Strategic Plan

The Bastrop Economic Development Strategy: Strategic Plan only cites Camp Swift relative to conducting a study for water resources. However, no formal plans or policies exist to communicate or coordinate with Camp Swift or the TXARNG.

City of Elgin Comprehensive Plan

The City of Elgin Comprehensive Plan does not identify Camp Swift in its plan. There are no objectives, goals or policies that consider military compatibility in the Plan, and there are no goals or policies that address interagency communication and coordination.

Findings

- Local plans do not address communication and coordination with Camp Swift or the TXARNG.
- Local plans do not consider military compatibility.

COM-2

Limited Public Affairs

Limited military resources available to the local newspaper have minimized opportunities for coverage of activities at Camp Swift.

Communication of activities to different agencies assists in garnering support for activities and operations and vice versa informs the general public of an organization's operations or activities. Typically, municipal governments have a public affairs office / officer that manages the interagency communication for the government. However, due to the rural character of the communities in the JLUS Study Area, there are limited resources for this function in the communities. As Camp Swift is an installation licensed by the U.S. Army Corps of Engineers (USACE), there can be limited resources due to manpower authorizations. The USACE must manage national demand with minimal resources supply. This can cause the TXARNG to pool resources in other areas, while vacating areas such as community / public affairs, which can create a fragmented communication process.

Communities are more likely to support the TXARNG and its operations and activities when they are aware of the purpose and projected impacts. Therefore, the absence of a dedicated community / public affairs officer (PAO) at Camp Swift could reduce community support for the military mission at Camp Swift and desire to protect the installation from potential incompatible development.

It is important to note that Camp Swift notifies landowners and news outlets of important information, such as prescribed burns. It should also be noted that the majority of the smaller installations do not have a community affairs / PAO liaison, most likely due to manpower authorizations.

Existing Tools

Local Public Information Resources

There are several local public information sources that report on various community activities for the

communities within the JLUS Study Area. These sources include but are not limited to the following:

- Bastrop Advertiser,
- City of Bastrop Official Facebook page located at, <https://www.facebook.com/bastroptx/>, and
- The Office of Emergency Management.

Though these are good local resources to disseminate public information, there are no formal coordination procedures or protocols for coordinating with these entities for the military purpose.

Findings

- There are limited community resources for public information dissemination, and there are no formal coordination procedures or protocol with the existing resources.

COM-3

Limited Public Affairs for TXARNG / Camp Swift

Limited public affairs resources available for TXARNG / Camp Swift have minimized opportunities for coverage of installation operations and activities for community affairs.

Compatibility Assessment

A majority of DOD installations have public affairs departments or a PAO that manages the interactions between the military installation and the surrounding communities. However, for National Guard installations, resources are not as permanent as U.S. Air Force, Army, Navy, or Marine Corps bases. Therefore, the TXNG must balance the available resources with the needs of the installation and facilities. The balancing of resources, coupled with manpower authorizations, can make it challenging for PAOs to cover all press-worthy activities, especially at smaller installations. Consequently, the public affairs for Camp Swift and TXNG are upon request.

The primary concern is that the positive activities that are ongoing at Camp Swift are not getting appropriate publicity. This is of concern because there should be a more positive characterization of the activities and operations ongoing at Camp Swift in order to garner maximum community support and mission sustainability. Additionally, positive public affairs for Camp Swift would reduce possible confusion with other ongoing activities that are not related to Camp Swift including the USACE Munitions Study on the former Camp Swift property.

Existing Tools

There is an unofficial Facebook page for the Camp Swift Training Center that is used for internal information exchange.

During the development of the Camp Swift JLUS, it was identified that there was no official social media webpage that could be used as a tool to for notification and communication. Camp Swift realized the lack of tools available to the public and worked to develop a Facebook presence. The Camp Swift Training Center has an official Facebook presence that provides a variety of information including information to its visiting trainees and other visitors of the webpage. Camp Swift's Facebook page is located at <https://www.facebook.com/CampSwiftTC/>.

Findings

- The Facebook page is a method for public / community affairs; however, it is not an official Facebook page for the Training Center. The Facebook page contains recent posts from the Texas A&M ROTC training that occurred at Camp Swift in early December, and other posts of the quality of the training center from various individuals.
- The Camp Swift Training Center has an official Facebook presence located at <https://www.facebook.com/CampSwiftTC/>.



Camp Swift Facebook Page Post

5.6 Cultural Resources

Cultural resources are an aspect of a cultural system that are valued by or significantly representative of a culture or contain significant information about a culture. A cultural resource may be a tangible entity or a cultural practice. Tangible cultural resources are categorized as artifacts, records, districts, pre-contact archaeological sites, historic archaeological sites, buildings, structures, and objects. Historic properties are cultural resources that are eligible for or listed on the National Register of Historic Places. Cultural resources may prevent development, require development constraints, or require special access by Native American tribal governments or other authorities.

The protection of prehistoric and historic resources is provided through the National Historic Preservation Act (NHPA) as a means to protect historical and cultural items within the United States. The NHPA addresses the preservation of cultural resources including cultural landscapes, traditional cultural properties, sacred sites, and historic and archaeological resources. Documentation of cultural resources and NHPA compliance activities must be coordinated through the State Historic Preservation Office.

Cultural resources typically take one of four forms: archaeological, historical, architectural, or traditional cultural properties. Archaeological resources are considered material remains of past human life or activities that provide scientific or social insight into past human cultures. Historical resources are prehistoric or historic archaeological sites and / or the built environment including historic sites, buildings, structures, objects, districts, and landscapes. Architectural resources are structures which include standing buildings, bridges, dams, canals, etc. of historical, architectural, or engineering significance. Traditional cultural properties are places where associations with cultural practices or beliefs of a living community occurred in the past or are presently occurring.

Special considerations must be made for any development or expansion of military mission activities within areas of cultural significance or sensitivity.

CR-1

Access to Historic and Cultural Resources

Camp Swift has historic and cultural sites on the installation; including burial grounds and a historic wine cellar, which could have restricted access during times of heightened security or with mission changes.

Compatibility Assessment

There are current cultural resource investigations ongoing at Camp Swift, and the Camp Swift Training Center has undergone a number of surveys for the investigation of cultural resource sites in the past. It has been reported that the installation has approximately 294 archaeological sites identified, and of those sites about 228 were determined not eligible for listing with the National Register of Historic Places (NRHP). Of the remaining sites, 54 are potentially eligible and 12 are eligible.

The primary concern for cultural resources located on Camp Swift is accessibility during times of heightened security and / or mission changes that occur on the installation. The public identified the need to have access to the cultural resources during these times. There are Native American campsites, late nineteenth and early twentieth century homesteads and farms, including one of Texas' first wineries, two historic community cemeteries (New Hope and Mexican), one historic family cemetery (Chandler), an isolated historic gravesite, a lignite mining site, and a historic kiln site.

Source: Integrated Cultural Resources Management Plan for Installations of the Texas Army National Guard, Internal Preliminary Draft, 2014-2019.

Existing Tools

Department of Defense Cultural Resources Policy

Currently, the DOD instructs all installations that protection of cultural and historic resources is an inherent task for all operations that U.S. Forces may conduct in an area of responsibility. The policy indicates the DOD will protect and minimize damage to any known cultural / historic resources.

Source: DOD Cultural Resources Policy, retrieved from <http://cchag.org/index.php/legal-primer/military-regulations/dod-cultural-resources-policy/>, August 2015.

Integrated Cultural Resources Management Plan for Installations of the Texas Army National Guard, Internal Preliminary Draft, 2014-2019

The Integrated Cultural Resources Management Plan (ICRMP) for Installations of the TXARNG identifies measures to aid in the continued preservation and protection of the cultural resources found on Camp Swift. Such measures assign Training Centers Garrison Command (ATC) as the lead for maintaining all cultural / historic sites at the respective installations. The ATC works with various training staff to conduct reviews and investigations of cultural sites prior to any training or construction activities. The ATC is responsible for scheduling access to training sites for the TXARNG Cultural Resource (CR) staff and other users of the training center in the event of a site review during planning activities.

The ATC designates Training Site Managers (TSM) to assist in implementing the management measures of the ICRMP. The TSMs are responsible for coordinating with CR staff and personnel by distributing appropriate educational and informational materials, including standard operating procedures and environmental awareness materials to all military and non-military personnel training at Camp Swift. Additionally, TSMs and their staff are responsible for maintenance and scheduling access in accordance with mission requirements and safety considerations, as requested by CR staff and the community, which includes access to historic cemeteries for families and site visits.

Army Regulation 200-1, Chapter 6, Cultural Resources

The Army Regulation 200-1 (AR 200-1) establishes the authority for the management and protection of cultural resources and other resources. AR-200-1 establishes several program requirements specifically regarding cultural resources, including but not limited to the following:

- Develop ICRMPs,
- Develop programmatic agreements, MOAs, and other similar documents to encourage and foster compliance with federal laws,
- Appoint an installation-specific government employee as a cultural resources manager (CRM), and
- Establish appropriate relationships between governments or groups, et cetera.

Camp Swift has developed an installation-specific ICRMP, last updated in 2010. It is unknown if Camp Swift designated an employee as a CRM. From the beginning of this JLUS process, Camp Swift has strengthened its relationship with local governments, which could assist in resolving matters of concern such as this one.

Findings

- The DOD strives to minimize damage to cultural and historic resources caused by training, missions, and other operational activities.
- The ICRMP identifies there is a TSM and staff that is responsible for scheduling site visits for families to the cemeteries located on Camp Swift.

5.7 Dust / Smoke / Steam

Dust results from the suspension of particulate matter in the air. Dust (and smoke) can be created by fire (controlled or prescribed burns, agricultural burning, and artillery exercises), ground disturbance (agricultural activities, military operations, grading), industrial activities, or other similar processes. Dust, smoke and steam are compatibility issues if sufficient in quantity to impact flight operations, such as reduced visibility or causing equipment damage.

Key Terms

Particulate Matter (PM). Particulate matter consists of fine metal, smoke, soot, and dust particles suspended in the air. Particulate Matter is measured by two sizes. Course particles (PM10) are particles between 2.5 and 10 micrometers in diameter in size, and fine particles (PM2.5) are particles less than 2.5 micrometers in diameter.

Ringelmann Smoke Chart. The Ringelmann Smoke Chart is a chart at varying shades of gray by which the density of smoke can be compared. The chart was developed by Paris Professor Maximilian Ringelmann.

Technical Background

At certain concentrations, PM10 can be harmful to humans and animals if inhaled, causing strain on the heart and lungs, which provide oxygen to the body. PM10 can be caused by many activities including driving on unpaved roads and surfaces, wind erosion from unpaved vacant lots, disruption of land from vehicle maneuvers, explosions, aircraft operations, and other earth-moving activities such as construction, demolition, and grading. Its primary source is typically the exhaust emitted by vehicles, wood burning, and industrial processes.

Prescribed burns, agricultural burning and even wildfires can also contribute to the creation of particulate matter. Prescribed burning is intended to eliminate invasive weed species, reduce wildfire fuels, and restore the area's natural ecosystem. By applying this method, wildfires have a lower chance of occurring. It is required to report the date of the burn, acreage, type of fuel to be used, and the estimated emissions for all times prescribed burning is used.

Prescribed Burn Smoke Impacts

DSS-1

Smoke from prescribed burns conducted at Camp Swift migrates off installation onto public and private properties.

Compatibility Assessment

Camp Swift works with the Texas A&M Forest Service to conduct prescribed burns at the installation. Prescribed burn exercises aim to improve technology and better understand fire behavior. Learning more about wildfire suppression and prevention for local geography will reduce the chances of major wildfires occurring, such as the 2011 Bastrop County Complex Fire, which destroyed 34,000 acres and 1,700 homes.

Each year since 1999 Camp Swift, the National Institute for Standards and Technology, has hosted the Capital Area Interagency Wildfire and Incident Management Academy, which is one of the largest wildfire academies in the U.S. Many fire departments and other agencies from around the

world have attended this fire academy. This academy is set in the Fall and runs for two weeks where attendees receive instruction about various aspects of fire behavior and management, including both beginning and advanced firefighting skills. In addition, prescribed burns are set during the two-week academy so that instructors may educate the attendees about fires—their movement, difference in fuels, et cetera.

The Texas Military Department (TMD) develops press releases about scheduled prescribed burns and posts them to their website, <https://www.txmf.us/press-release-archive>.

Additionally, the TMD operates and maintains an official Facebook page that provides some notification to its subscribers.



Monitoring ongoing at Camp Swift during a Prescribed Burn

The prescribed burn fire activity at Camp Swift tends to create large smoke plumes that can spur and incite concern in nearby communities that may believe there is an impending wildfire in the area. Through the TMD, Camp Swift coordinates with local newspapers, including the Elgin Courier and the Austin American Statesman, to publish announcements reporting the prescribed burns activities; however, this method of notification does not reach all residents. Notices are also mailed to proximate property owners.

Camp Swift schedules prescribed burns - Elgin Courier: News

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Archives Search

Camp Swift schedules prescribed burns

Posted: Thursday, February 6, 2014 5:00 pm

The Texas Military Forces are scheduled to conduct prescribed burns within training areas on Camp Swift, a Texas Army National Guard Training Facility, in Bastrop, beginning on Monday, February 10, through Wednesday, February 12, and again from Monday, February 24, through Friday, February 28, weather permitting.

The Texas National Guard's military readiness and natural resources management objectives require a comprehensive wildland fire management program aimed at protecting life and property, supporting military training and promoting ecosystem health. Prescribed burns are an integral part of this program.

The organization uses a well-designed burn plan to safely conduct its prescribed burns.

The burn plan states the atmospheric and environmental conditions necessary to conduct a safe burn. Additionally it clearly defines the boundaries of the area to be burned and provides details of specific precautionary measures that must be implemented prior to each burn.

To further ensure the safety and effectiveness of its wildland fire management program, the Texas Military Forces conducts its prescribed burns in cooperation with the Texas Forest Service.

For more information regarding the prescribed burn program at Camp Swift, contact the Texas Army National Guard's Natural Resources Specialist at 512-782-6227.

Camp Swift Schedules Prescribed Burns web posting

In addition to the press and media releases illustrated above, the TMD PAO is the lead in disseminating public information about burns, and they may also notify radio / electronic media outlets.

Existing Tools

Wildland Fire Management Program

The TXNG's military readiness and natural resources management objectives require a comprehensive wildland fire management program aimed at protecting life and property, supporting military training, and promoting healthy ecosystems. Prescribed burns are an integral part of this program.

The organization uses a well-designed burn plan to safely conduct its prescribed burns. The burn plan states the atmospheric and environmental conditions necessary to conduct a safe burn. Additionally it clearly

defines the boundaries of the area to be burned and provides details of specific precautionary measures that must be implemented prior to each burn.

To further ensure the safety and effectiveness of its wildland fire management program, the TXMF conducts its prescribed burns in cooperation with the Texas A&M Forest Service.

Findings

- Notification for prescribed burns conducted at Camp Swift is delivered many ways, including press releases and the use of radio and media outlets.
- Prescribed fires are conducted at Camp Swift to reduce fuels that can cause wildland fires. They are also conducted during the Capital Area Interagency Wildfire and Incident Management Academy, for training and education purposes.

Dust and Smoke from Community Activities Can Impact Base Operations

DSS-2

Dust and smoke generated from agricultural and construction activities can impede, delay, or postpone base operations and activities.

Compatibility Assessment

Dust and smoke from community activities such as agricultural activities, crop spraying, and construction activities, e.g., industrial or road improvements, can generate dust and smoke that are emitted into the air, increasing air pollutants. This increase in air pollutants may require local jurisdictions to impose greater restrictions on construction and agricultural activities. These restrictions would also be applied to Camp Swift and their operations that generate dust when explosion and detonation occurs, including training and ground maneuvering.

The primary concern for this issue is that community activities can generate inordinate amounts of dust and smoke, which can increase the air pollutants in the local region. This could increase restrictions for any

activity that produces dust and smoke. With increased restrictions, it is possible that military training and readiness activities could be delayed, postponed, or even canceled due to the volume of air pollutants in the air at a given date. This delay, postponement, or cancellation of military preparedness operations or activities, ultimately results in a less prepared Texas Military Force and impacts national defense.

Existing Tools

City of Bastrop Zoning Ordinance, Section 44 Performance Standards

The City of Bastrop Zoning Ordinance, Section 44.3 prescribes regulations established by the City for the emission of smoke and PM. The regulations set indicate that no operation or activity is permitted in the city that creates the emission of air contaminants for more than three minutes per any one hour at the emission point or within the property for which the activity is occurring if those contaminants meet one of the following criteria:

- *A. As dark or darker in shade as that designated as No. 2 on the Ringleman Chart as published by the United States Bureau of Mines Information Circular 7118.*
- *B. Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke or contaminants in the standard prescribed in 3-1302-1 above [sic] except that, when the presence of uncombined water is the only reason for failure to comply or when such contaminants are emitted inside a building which prevents their escape into the atmosphere, the standards specified in 3-1302-4 and -2 shall not apply.*
- *C. The emission of particulate matter from all sources shall not exceed 0.5 pounds per acre of property within the plant site per any one hour.*

- *D. Open storage and open processing operations, including on-site transportation movements which are the source of wind or air borne dust or other particulate matter; or which involves dust or other particulate air contaminants generating equipment such as used in paint spraying, grain handling, sand or gravel processing or storage or sand blasting shall be so conducted that dust and other particulate matter so generated are not transported across the boundary line of the tract on which the use is located in concentrations exceeding four grains per 1000 cubic feet of air.*

These regulations apply to all zoning districts and permitted uses, including those allowed by planned development or conditional use permit within the city. While this ordinance establishes regulations for the properties and activities within the city, there are no regulations that control the emission of dust and smoke outside the city limits.

Other Local Regulations for Smoke / Dust Control

The City of Elgin is approximately three miles north-northwest of Camp Swift and unincorporated Bastrop County borders the installation on all sides. The City of Elgin has not established dust and smoke management controls. The subdivision ordinance of the City of Elgin does not contain monitoring or coordination procedures or controls for fugitive dust or smoke. This can be important to the city to ensure PM and other air pollutants emitted are monitored according to state and federal standards.

Findings

- The City of Bastrop has controls for the emission of smoke and dust that apply to properties and activities within the city's jurisdiction.
- The City of Elgin has not established controls for the management of dust and smoke emissions caused from various community activities.
- The City of Elgin does not have monitoring or coordination procedures or controls within its subdivision regulations that facilitate the mitigation or prevention of fugitive dust or smoke.

5.8 Energy Development

Development of energy sources including alternative energy sources (such as solar, wind, or biofuels) could pose compatibility issues related to glare (solar energy), vertical obstruction (wind generation), or water quality / quantity.

Key Terms

Solar energy development. Solar energy development is light and heat from the sun harvested using an array of continually-evolving technologies such as solar heating, photovoltaics, and solar thermal energy. Solar energy development can be either small-scale (for private, residential use) or large-scale / utility-scale developments (centralized facilities that comprise the primary or principal use on a site).

Wind energy development. Wind energy development is the use of a device that converts kinetic energy from the wind into electrical power. These types of development can be found in small-scale (personal, residential use) and large-scale / utility-scale (centralized facilities that comprise the primary or principal use on a site with typical capacities at 1.5 to 3 Megawatts [MW]).

ED-1

Potential for Future Alternative Energy Development

There are no controls for alternative energy development in the area.

Compatibility Assessment

The potential for alternative energy developments in the JLUS Study Area include solar and wind energy. According to the National Renewable Energy Laboratory for the U.S. Department of Energy, Bastrop County has been identified as having a moderate to high potential for the generation of solar energy. The Study Area is located in the 5.1 to 5.3 kilowatt-hours per square meter per day (kWh/m²/day) range, as illustrated on Figure 5.8-1. This is fairly high, and could result in renewable solar energy potential from photovoltaic solar systems.

The wind energy potential in this Study Area is at a moderate level, approximately 5.5 to 6.5 meters per

second (m/s), as illustrated on Figure 5.8-2. While the potential for wind energy is not as great as solar energy, there is still some moderate potential for smaller-scale wind energy conversion units to be located in the area.

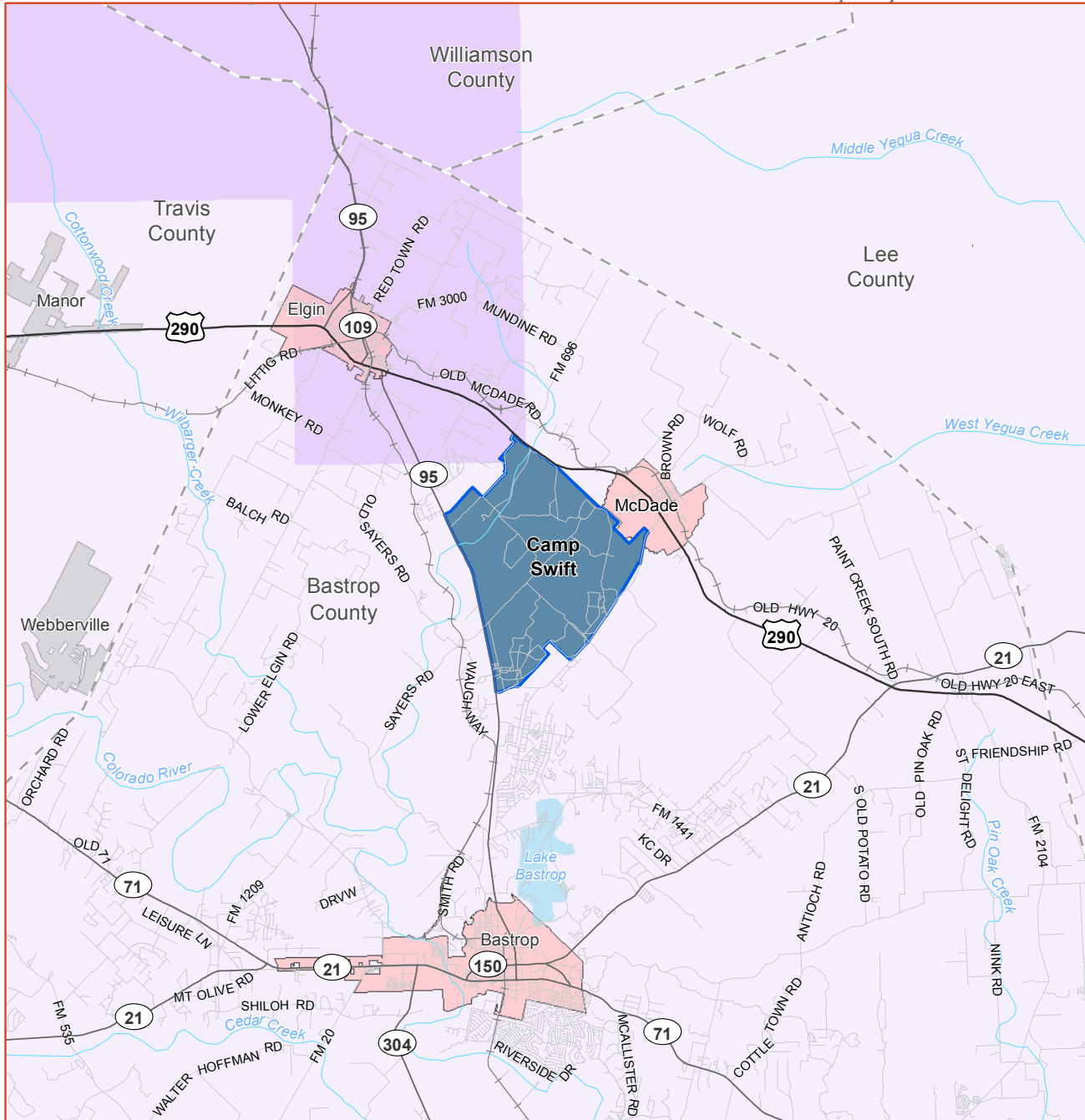
The primary concern of this issue is that none of the jurisdictions have established regulations regarding the permitting and construction of alternative energy developments. While Bastrop County does not have the authority to engage in land use planning functions, the county can communicate with the military if it is known that there are proposals for energy development in the county. An uncoordinated and uncontrolled situation allowing commercial-scale alternative energy developments in this area could be detrimental to aviation operations performed by Camp Swift and units from other installations in the State of Texas. This could ultimately lead to realignments or possible reduction of capabilities for Camp Swift, which could result in the installation and region losing missions that create economic revenue.

Existing Tools

Department of Defense Siting Clearinghouse

Section 358 of the 2011 National Defense Authorization Act pertains to studying the impacts of the development of new energy production facilities on military operations and readiness. The Energy Siting Clearinghouse serves to coordinate the DOD review of existing applications for energy projects, including applications for renewable energy development such as wind, solar, geothermal, and transmission, utility, and power lines projects.

Several key elements of Section 358 include designation of a senior official and lead organization to conduct the review of energy project applications, a specific time frame for completion of a hazard assessment associated with an application (30 days), specific criteria for DOD objections to projects and a requirement to provide an annual status report to Congress. This legislation facilitates procedural certainty and a predictable process that promotes compatibility between energy independence and military capability.



Legend

KWh/m²/Day

5.1 - 5.2

5.2 - 5.3

Camp Swift

County Boundary

JLUS Participating Community

Incorporated Community

US Highway

State Highway

Railroad

Water Body

Stream / River

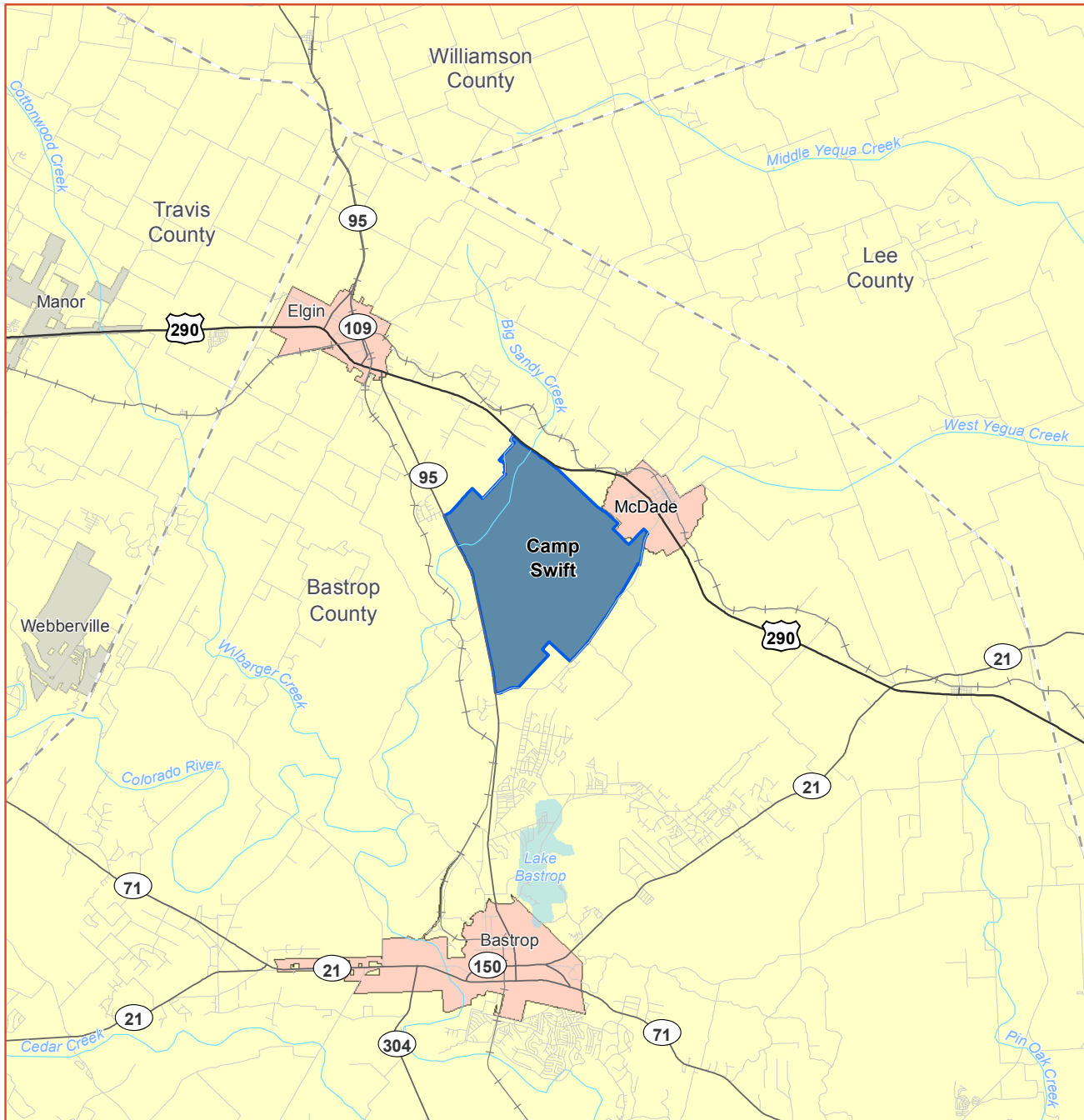


Sources: Camp Swift, 2015; NREL, 2012



0 2 4 Miles

Figure 5.8-1
Potential for Solar Energy Development



Legend

- | | | | |
|---|------------------------------|---------------|----------------|
| Wind Power Density = 200 (Wm ²) | Camp Swift | US Highway | Water Body |
| County Boundary | JLUS Participating Community | State Highway | Stream / River |
| Incorporated Community | Local Road | Railroad | |

Sources: Camp Swift, 2015; NREL, 2012



0 2 4 Miles

Figure 5.8-2
Potential for Wind Energy Development

In a formal review, the general process is for a developer, military installation, and / or local, state, or federal agency to submit an application to the Secretary of Transportation. The Secretary of Transportation will convey the application to the DOD Siting Clearinghouse upon determination that the application is complete, accurate and ready for review. Once received by the DOD Siting Clearinghouse, the Clearinghouse forwards it onto the DOD Components (installations or other DOD agencies or facilities potentially impacted) for input and comments. The DOD Components are required to give the Clearinghouse their comments and recommendations within a 20-day period after receipt of the application. The Clearinghouse has 30 days to take action after receiving the application from the Secretary of Transportation and the comments from the DOD Components. The Clearinghouse can take one of three actions:

(i) Determine that the proposed project will not have an adverse impact on military operations and readiness, in which case it shall notify the Secretary of Transportation of such determination.

(ii) Determine that the proposed project will have an adverse impact on military operations and readiness but that the adverse impact involved is sufficiently attenuated that it does not require mitigation. When the Clearinghouse makes such a determination, it shall notify the Secretary of Transportation of such determination.

(iii) Determine that the proposed project may have an adverse impact on military operations and readiness. When the Clearinghouse makes such a determination it shall immediately—

(A) Notify the applicant of the determination of the Clearinghouse and offer to discuss mitigation with the applicant to reduce the adverse impact;

(B) Designate one or more DoD Components to engage in discussions with

the applicant to attempt to mitigate the adverse impact;

(C) Notify the Secretary of Transportation that the Department of Defense has determined that the proposed project may have an adverse impact on military operations and readiness, and, if the cause of the adverse impact is due to the proposed project exceeding an obstruction standard set forth in subpart C of part 77 of title 14 of the Code of Federal Regulations, identify the specific standard and how it would be exceeded; and

(D) Notify the Secretary of Transportation and the Secretary of Homeland Security that the Clearinghouse has offered to engage in mitigation discussions with the applicant.

In addition, the Clearinghouse conducts informal reviews to provide a general idea of whether a proposed project may be in conflict with military operations or readiness activities in the area. More information about the informal review process and what is required can be found at the following website, <http://www.acq.osd.mil/dodsc/contact/dod-review-process.html>.

There are no policies or regulations in any of the jurisdictions' plans or development codes that indicate coordination with the DOD Siting Clearinghouse. Moreover, there are no policies or standards in the Camp Swift documents evaluated that indicate coordination with the DOD Siting Clearinghouse.

Findings

- There is potential for solar energy development in the JLUS Study Area.
- There are no controls for the permitting, construction, and development of alternative energy developments in the Cities of Bastrop and Elgin.
- There are no formal communication procedures established between the military and county to inform each entity of changes in development or missions.

Please see the next page.

5.9 Land / Air Space Competition

The military manages or uses land and air space to accomplish testing, training, and operational missions. These resources must be available and of a sufficient size, cohesiveness, and quality to accommodate effective training and testing. Military and civilian air operations can compete for limited air space, especially when the airfields are proximate to each other. Use of this shared resource can impact future growth in operations for all users.

Key Terms

Controlled Firing Area. A controlled firing area (CFA) is an area in which ordnance firing is conducted under controlled conditions so as to eliminate hazards to aircraft in flight.

LAS-1

Unrestricted Airspace Over Camp Swift

General aviation and personal aircraft enter the airspace over the live fire training ranges without proper notification.

Compatibility Assessment

Currently, there is no restricted airspace over Camp Swift. This is of concern to the military as general aviation and personal aircraft have flown over the live-fire training ranges at Camp Swift without notifying Camp Swift of the operations. The primary concern is the live-fire training that occurs at Camp Swift, which could result in ricochet that can have varying vertical limits depending upon the type of ordnance fired and other factors. Thus, the airspace above the training ranges should be restricted for safety from errant military operations or ordnance.

It is understood that the airspace over Camp Swift is available to various aviation operations. There have been reports of personal aircraft and other aviation operations in the area, including general aviation and model aircraft. While the airspace is unrestricted to civilians, there is still a need to preserve the airspace above the Camp Swift training ranges to ensure the military training operations can be maintained and executed in an appropriate, timely, and safe manner.

Existing Tools

Security Guidelines for General Aviation Airports: Information Publication A-001

This Transportation Security Administration (TSA) publication recognizes that military installations including airports are sensitive sites or critical infrastructure. The Security Guidelines for General Aviation Airports: Information Publication A-001 (IP A-001) establishes guidelines for General Aviation (GA) owners and operators to coordinate with all sensitive sites or critical infrastructure.

The IP A-001 indicates that military installations typically have unique needs to execute and carry out their mission, so it is incumbent on the GA owners and operators to coordinate appropriately and effectively with these critical infrastructure assets. Such coordination can include, but is not limited to, access points, areas of access, security patrol boundaries, and security response responsibilities. However, these guidelines do not include explicit instruction about notification to pilots or notice to airmen (NOTAMs). This NOTAM is critical in scenarios such as the one at Camp Swift with the unrestricted airspace.

Source: *Security Guidelines for General Aviation Airport*, 2004;

https://www.tsa.gov/sites/default/files/assets/pdf/Intermodal/security_guidelines_for_general_aviation_airports.pdf

Department of the Army Pamphlet 385-63: Range Safety (DA-PAM 385-63)

Camp Swift has small arms ranges with associated designated safety areas known as surface danger zones (SDZs). There is a component of airspace within the SDZ which must be accounted for when planning aviation operations. Depending on the ordnance type, firing points—fixed or mobile, and other factors, the airspace is controlled at the installation-level, or it is referred to as a CFA. The following are the procedures the Army must follow when managing a CFA:

- a. To protect aircraft, the garrison commander or designated representative (normally the installation range manager) will establish or abolish SARSAs at each small arms range not located within SUA as required by this pamphlet. Unless otherwise

identified in this pamphlet, the data in tables 4-1 through 4-23, will be used as the basic vertical component for each weapon system used on the range. When determining small arms range safety areas (SARSA) altitude boundaries, 152 m (500 ft) will be added to that value and rounded up to the next 152-m increment of altitude as a safety buffer. Garrison commanders will take appropriate action to ensure that airspace above and adjacent to small arms ranges is adequately monitored to preclude endangering aircraft operations. Garrison commanders will also consider maximum ordinate (Max Ord) and highest altitude of fire where the specific range operations call for it.

- *b. The garrison commander or designated AT&A officer will coordinate with the appropriate senior commander's AT&A officer and DAR for development of SARSA proposals and letters of agreement (LOA) with local air traffic control (ATC) facility personnel to assist in the early detection and notification of approaching aircraft. Garrison commanders will coordinate SARSA proposals through Headquarters, U.S. Army Aeronautical Services Agency for areas not covered by the Department of the Army representative (DAR). SARSA proposal requests will include—*

- (1) Activity for which approval is being requested.*
- (2) Specific location and boundaries.*
- (3) Altitudes.*
- (4) Name, address, and phone number of the originator of the request.*
- (5) Proposed times of use.*
- (6) Desired effective date.*

(7) Proposed safety precautions including visibility requirements, ceiling (cloud height) requirements, safety observers, communication links, and any other factors that enhance range safety.

(8) Instructions, if applicable, for the installation range OIC to notify the owner or manager of airports that might be affected by the SARSA.

(9) Attachments: risk assessment, map with SDZ and 5 miles buffer depicted and ATC LOA (if applicable).

c. Upon receipt of SARSA proposal, the DAR:

(1) Reviews the garrison commander's proposal to determine if the proposed SARSA presents conflict with the requirements of other airspace users.

d. The following precautionary measures are mandatory requirements for all small arms ranges, as applicable:

(1) The ceiling (cloud height) will be at least 305 m (1000 ft) above the ricochet height. The garrison commander or their designated representative should also consider highest altitude of fire and Max Ord in addition to ricochet height as a part of risk assessment.

(2) Visibility will be sufficient to detect nonparticipating aircraft and then establish a cease fire before penetration of the aircraft into the SDZ.

The CFA procedures require control of the airspace above the ranges, and this control occurs at ground-level. This means that for some installations this control is executed using the human naked eye as a tool for maintaining free and clear airspace in order to carry out the training mission. This method can be a concern as the human eye cannot always see everything. While there are always range personnel monitoring the airspace above the ranges, the same level of vigilance is not exercised by the jurisdictions or organizations in the area to assist in improved and enhanced awareness and appreciate the training ongoing at Camp Swift.

Camp Swift does comply with these regulations and places red flags around the range when the range is “hot,” or when live-fire training is occurring. This is a see-and-avoid method for approaching aircraft that indicates to the pilot the ground below and airspace is subject to potential ordnance ricochet.

Findings

- The DA-PAM 385-63 provides explicit instructions for controlling the airspace above a CFA; however, the regulation does not provide guidance to community organizations or agencies that operate aircraft in an area near a CFA.
- Camp Swift does not provide notice to area airports and general aviation facilities about the status of the ranges when they are “hot” or not active.

Please see next page.

5.10 Land Use

The basis of land use planning relates to the government’s role in protecting the public’s health, safety, and welfare. Local jurisdictions’ comprehensive plans, zoning ordinances, and subdivision regulations can be the most effective tools for preventing or resolving land use compatibility issues. These tools ensure land uses that differ significantly in character are separated. Land use separation also when the use of one property may impact the use of another. For instance, industrial uses are often separated from residential uses to avoid impacts related to noise, odors, lighting, etc.

Key Terms

Land Use Planning. Land use planning stems from the Supreme Court decision *Euclid vs. Ambler*, which enabled jurisdictions to regulate land use through zoning land in order to protect the public’s health, safety, morals, and welfare. Zoning is a land use regulation tool used by local jurisdictions that generally provides controls for use, density, intensity, building heights, and setbacks on a parcel or lot. Most states enacted legislation enabling local jurisdictions to create and adopt general or comprehensive plans. These are land use documents that broadly establish visions, goals, policies, and implementation activities for a jurisdiction over a long-range period of time—typically 10 to 20 years—to promote compatible land uses, guide growth, and facilitate logical development.

Local jurisdictions’ comprehensive plans and zoning ordinances are the most effective tools to avoid and resolve land use compatibility issues. These tools ensure similar and compatible land uses are properly located and can co-exist while separating land uses that differ significantly in use and potential nuisance.

Sensitive Land Uses. In terms of compatibility assessment, sensitive land uses are uses that are susceptible to, and effected by, nuisances such as noise, dust, and air pollution. Sensitive land uses typically include residential areas, hospitals, convalescent homes and facilities, schools, libraries, churches, recreational areas, and other similar land uses.

Technical Background

Land use planning around military installations is similar to the process for evaluating other types of land uses. For instance, local jurisdictions consider compatibility factors such as noise when locating residential developments near commercial or industrial uses. As the land between local municipalities is developed – or the land between a local municipality and the perimeter of a military installation is developed both entities are affected. New residents, tenants, or building owners are typically not fully aware of the implications of locating proximate to an active military installation and / or training area.

Among the most pressing factors causing incompatibility with installations containing a military airfield and weapons training are the proximate areas of encroaching development. The development of land uses incompatible with the installation’s military operations threatens that installation’s mission success and its continued existence.

It should be noted for this JLUS Study Area, Bastrop County does not have land use regulatory authority to assist in controlling certain types of land use actions and activities. Thus, communication and limited coordination between the military and the county must be evaluated to determine how the county can assist, through its lawful powers, in protecting the economic generator that Camp Swift provides to the county and the local economies in the study area.

LU-1

Potential Development Adjacent to Camp Swift.

If the community acquires the right-of-way for State Highway 95, then it can be expanded, which could potentially spur development in areas near the base that may not be compatible.

Compatibility Assessment

Camp Swift is situated in Bastrop County between State Highway 95 to the west and south and U.S. Highway 290 to the north and east. State Highway 95 runs north to south and is located along the western border of Camp Swift. The primary concern regarding

land use around the installation and capacity improvements to this roadway is transportation improvements, especially those that increase mobility and access, usually spur development. Uncoordinated development and development that occurs in the right-of-way will encroach on the installation due to Department of Defense (DOD) installation security requirements..

According to UFC for Fences and Gates, there should be clear zones established by DOD installations to maintain an unobstructed view from the inside out. State Highway 95 currently exists relatively close to the perimeter of Camp Swift. If the right-of-way is acquired and the roadway is expanded, then this improvement, along with any unintentional consequences, such as development, can create obstructed views from the inside of the installation out. This would create not only land use encroachment for Camp Swift but also possibly increase public trespassing and other security concerns.

Ultimately, these different types of concerns can degrade military training if persons or property should make their way onto Camp Swift during times of training, causing the base to cease training if a danger to life or property was present.

Existing Tools

Unified Facilities Criteria: Security Fences and Gates – UFC 4-022-03

The Unified Facilities Criteria (UFC): Security Fences and Gates (UFC 4-022-03) establishes clear zones (CZs) inside and outside fences to provide an unobstructed view for the installation so as to detect and assess security issues proactively. When these CZs are required, the dimensions of the CZs can vary depending on the asset that is being protected and the current level of protection needed.

Subdivision Regulations for Bastrop County, Approved April 23, 2007; Amended March 24, 2009

The subdivision regulations specify that adjacent property owners and adjacent subdivision owners be listed in the proposed plat for approval as being part of

the process and notified. In the case of development proposed for the area immediately adjacent to the installation, the county's subdivision regulations would capture the installation as a property owner adjacent to the proposed development. However, there are no specifications in the subdivision regulations as to who the developer should list or coordinate with regarding the military use of the land for Camp Swift. There is no contact information listed in the subdivision regulations for military land ownership.

Findings

- Bastrop County's subdivision regulations do not consider military compatibility.
- While it is understood that Bastrop County does not have authority to regulate land uses, there are no formal planning coordination measures between the County and Camp Swift / TXNG that assist in compatible growth planning near the installation.

5.11 Legislative Initiatives

Legislative initiatives are federal, state, or local laws and regulations that may have a direct or indirect effect on a military installation to conduct its current or future mission. They can also constrain development potential in areas surrounding the installation.

Key Terms

Controlled Compatible Land Use Area. A controlled compatible land use area (CCLUA), as defined by Texas Local Government Code, Chapter 241, is an area that measures 1.5 statute mile distance from the center line of a runway extending outward from each side of the runway and a five statute mile area extending outward from each end of the runway of an active airfield in which an airport zoning board or a regional military sustainability commission can establish limited land use controls to regulate land in this area.

Defense Community. A defense community is adjacent to active and closed defense installations, and they are distinct places which America's defense installations depend on for housing, services and even operational support. This connection and responsibility is what makes these communities unique. In the instance that a community is located adjacent to an active installation, then the community's state and local governments generally work closely with the installation to support their needs outside the fence line. In the instance of a community located adjacent to a closed installation, then the community's state and local governments generally lead the way for finding new economic opportunities for the former base to ensure the infrastructure's continued, productive use.

LEG-1

State Legislation Applicability

There are two new House Bills that potentially address limited land use authority for counties in Texas that could be applied to this area.

Compatibility Assessment

During the discovery portion of this JLUS project, there was a potential opportunity to determine if recent Texas Legislature House Bills (HB) were applicable to

the Bastrop area relative to protecting Camp Swift and its missions. HBs 1640 and 2232 were passed in June 2015 and authorize certain counties and municipalities (defense communities), if locally-enacted, to perform limited land use authority in the unincorporated portions of the county or incorporated municipality. This authorization can complement city land use authority in the state of Texas to ensure a balance between the county and city authority regarding land use authority.

Currently, counties can only regulate water and utilities and some roadway infrastructure through their subdivision regulations. However, the subdivision regulations do not establish restrictions for density / intensity (or non-residential density) or building and structure height in the unincorporated areas. The lack of controls for these components of land uses can potentially allow for development to locate near a military installation causing varying degrees of encroachment. This encroachment could potentially delay or impede certain types of training missions due to safety concerns and / or noise complaints.

Existing Tools

House Bill 1640, Compatibility of Certain Defense Community Regulations and Structures with Military Operations.

HB 1640 authorizes a county or municipality that has not adopted airport zoning regulations under Texas Local Government Code (LGC), Chapter 241, then the jurisdiction would use the CCLUA, as established by Texas LGC 241, as the area to coordinate land uses with the affected military installation by developing a memorandum of agreement if they meet one of the following criteria:

(1) is a county with a population of more than 1.5 million that contains a municipality in which at least 75 percent of the county's population resides;

(2) is a county with a population of 130,000 or more that is adjacent to a county described by Subdivision (1);

(3) is located in a county described by Subdivision (1) or (2); or

(4) is or includes a municipality that is located in a county with a population of more than 130,000 that borders the Red River.

Of the jurisdictions adjacent or near Camp Swift, none meet any of the criteria. Therefore, this HB would not apply to the Camp Swift JLUS Study Area.

House Bill 2232, Creation of Regional Military Sustainability Commissions for Certain Military Installations

HB 2232 authorizes jurisdictions in Texas to create a regional military sustainability commission (RMSC). This bill applies to the following:

(a) This section applies only to:

(1) a county in which three or more locations of a joint military base are located with a population of more than 1.7 million;

(2) a county that is adjacent to a county described by Subdivision (1); and

(3) a municipality located in a county described by Subdivision (1) or (2).

(b) One or more municipalities with extraterritorial jurisdiction located within five miles of the boundary line of a military installation and one or more counties with unincorporated area located within five miles of the boundary of a military installation.

The City of Elgin and Bastrop County do not meet the criteria and are not eligible to establish a RMSC.

As prescribed HB 2232, the commission's territory is the land within two miles of the installation's boundary. This area is defined by law as the installation does not have a fixed wing / flight training mission.

If Camp Swift received a flying training mission and the current landing strip was improved, the commission's territory would follow the area identified for the Joint Airport Zoning Board (Texas LGC Chapter 241), which is a 1.5 statute mile distance from the center line of the runway extending outward from each side of the runway and a five statute mile extending outward from each end of the runway.

Findings

- HB 1640 does not apply to any participating jurisdictions in the Camp Swift JLUS Study Area.
- HB 2232 does not apply to any participating jurisdictions in the Camp Swift JLUS Study Area.
- While HB 2232 does not apply to any of the participating jurisdictions, this law could be amended in the future to apply to and support this area if it should be needed.

5.12 Light and Glare

This factor refers to man-made lighting (street lights, airfield lighting, building lights) and glare (direct or reflected light) that disrupts or impacts vision. Light sources from commercial, industrial, recreational, and residential uses at night can cause excessive glare and illumination, impacting the use of military night vision devices and air operations. Conversely, high intensity light sources generated from a military area may have a negative impact on the adjacent community.

Key Terms

Glare. Glare is the presence of bright light, such as direct or reflected sunlight or artificial light including sport field and stadium lights. Glare reduces visibility and can temporarily impair vision when very intense.

Light Pollution. Light pollution is created by the artificial brightening of sky caused by development, including street lights and other man-made sources. This has a disruptive effect on natural cycles, inhibits the observation of stars and planets, and can render night vision devices ineffective.

Technical Background

Under dark sky conditions, the use of night vision goggles (NVG) allows military personnel to view objects up to a distance of 984 feet (300 meters); however, lighting located outside of an installation can decrease the NVG effectiveness to a distance of 164 feet (50 meters). Off-installation lighting, such as street lights or other elevated structures that are lit at night, produce a halo effect around objects which further reduces visibility and resolution for air and ground personnel. The amount of ambient light experienced on the ground is a function of:

- Intensity of nearby light sources (up to 20 miles away);
- Distance from the sources;
- Spectra of the light sources (blue light decays faster in the atmosphere);
- Density of the cloud deck;

- Height of clouds; and
- Relative humidity.

When measuring light pollution, the proximity to a community has a significant effect on the amount of light pollution that saturates the sky. Proximity twice as close to a community makes its sky glow appear approximately six times brighter.

Sky glow from communities typically diminishes in the later hours of the night, when businesses close and lights are turned off. As development expands outward from a community, the area and amount of light pollution can increase, creating compatibility issues with military missions.

The impacts of outdoor lighting on the dark skies over Camp Swift are determined by two primary factors – the amount of developed land (density) and the distance of the developed land from the installation. The relationship between density and distance can be determined using a formula for urban sky glow called Walker’s Law, which was developed based on measurements of sky glow for a number of cities in California. The following formula is used to estimate sky glow at an observing site looking at a zenith angle of 45 degrees toward an urban source:

$$I = C \times P \times R(n)$$

Where:

I = Percent increase of the night sky brightness above the natural background, at 45° down from directly overhead (facing the community, directly overhead is roughly ¼ of this value),

P = Population of the community,

R = Distance, in kilometers, from the observing site to the center of the community,

“C” = 0.01 for “R” values between 10 and 50 km, and

“n” = 2.5 for “R” values between 10 and 50 km

According to the National Oceanic and Atmospheric Administration (NOAA), the assumed radius of a community is a function of its population, ranging from 2.5 km to 24 km. Walker's Law applies if the installation is outside the city radius. If located inside the community radius, the sky glow increases in a linear manner toward the center by another factor of 2.5.

Consider the following examples:

Scenario 1: A 100-acre development located two kilometers from the installation with a density of six units per acre (assuming 2.5 persons per household) would impact the sky background by over 260 percent (nearly 663 percent with NOAA factor).

Scenario 2: A 100-acre development located 20 kilometers from the installation with a density of six units per acre (assuming 2.5 persons per household) would impact the sky background by less than 1 percent (just over 2 percent with NOAA factor).

If the density was decreased to one unit per acre, the resulting scenarios would result in the following increased sky glow:

Scenario 1: Approximately 44 percent (almost 111 percent with NOAA factor).

Scenario 2: Less than 1 percent (still less than 1 percent with NOAA factor).

In general, the following trends are demonstrated:

- The denser the urban development, the greater the potential for light intrusion.
- The closer development is to the installation, the greater the potential for light intrusion.

Light Encroachment from New Development

LG-1

Unregulated lighting in nearby jurisdictions can facilitate light encroachment on Camp Swift, which could adversely impact night vision training operations.

Compatibility Assessment

Light pollution directly from fixtures or reflected off the ground or other surfaces can interfere with military nighttime training activities.

Local jurisdictions can employ lighting regulations and dark skies ordinances to reduce the impact of light pollution on dark skies. Nighttime training does occur at Camp Swift, but it is infrequent and only during the summer months. This dark nighttime environment is important to ensure the military can simulate real world combat theatres.

Camp Swift is located in unincorporated Bastrop County, which does not have the authority to regulate lighting. The City of Elgin is approximately three miles north-northwest of the installation, but it has not employed outdoor lighting standards, and lighting fixtures are unregulated in the city.

The City of Bastrop is the only JLUS participating jurisdiction that has adopted lighting regulations that minimize light pollution. Located approximately nine miles south of Camp Swift. The United States Army Corps of Engineers have developed studies that indicate light pollution can have an impact on nighttime military training activities in locations upwards of 10 miles away from the installation. The City of Bastrop's lighting standards are quite extensive and comprehensive.

Existing Tools

City of Bastrop Zoning Ordinance, Section 45 Outdoor Lighting Standards

It is the intent of the City of Bastrop Zoning Ordinance, Section 45 Outdoor Lighting Standards to use lighting practices and systems that will minimize light pollution, glare, light trespass, and energy usage while maintaining nighttime safety, utility, security and productivity. The ordinance applies to all new uses, buildings, and structures as well as uses that significantly change the use or intensity of the original use. In addition, single-family residential uses shall be enforced and compliant.

Generally, the City prefers the use of low-pressure sodium (LPS) lighting fixtures throughout the city. The LPS fixtures are considered highly energy efficient, long-lasting, and have characteristics that are conducive to city uses; these lighting fixtures are encouraged for outdoor illumination wherever possible.

The outdoor lighting standards are specific in that they include classifications of certain uses to adhere to standards designed for each class:

Class 1 lighting, including but not limited to, sales, service, commercial, assembly, repair, maintenance, and industrial areas, may only continue in operation until 10:00 p.m., or for as long as the area is in active use. This provision is not applicable to fixtures lawfully installed or implemented prior to the adoption of the Ordinance.

Class 2 lighting, shall have no time restrictions except as specified by the City Council for new projects as specified herein.

Class 3 lighting, except for flagpole lighting, should be extinguished after 10:00 p.m. or when the business closes, whichever is later, except that low-wattage holiday decorations may remain on all night from November 1 to January 30.

Multi-class lighting, except for security lights, must conform to the time limitations of the strictest class.

In addition, the lighting standards also require shut-off times, a maximum lumens per site or per net acre for some uses, and a maximum of site spill of foot candles (fc). The inclusion of lumens per site / per net acre is a good example of extensive lighting standards that regulate for light pollution. The ordinance requires no development project shall exceed 100,000 lumens per net acre averaged over the entire property for shielded fixtures. For unshielded fixtures, the ordinance requires compliance with a 5,500 lumens per net acre. The ordinance does have some exceptions to the lumens per site / per acre which include

Excerpted from Subsection K:

...When the proposed lumens per acre exceed the limits of subsection J of this section the installation shall be designed to achieve no greater than the minimum luminance levels for the activity as recommended by the Illuminating Engineering Society of North America (IESNA).

Subsection J is:

Except as permitted in subsections K, L and M of this section, total outdoor light output, excluding streetlights used for illumination of public rights-of-way, of any development project shall not exceed 100,000 lumens per net acre, averaged over the entire property. No more than 5,500 lumens per net acre may be accounted for by lamps in unshielded fixtures permitted in subsection Q of this section.

In addition, the zoning ordinance for outdoor lighting standards regulates specific heights of lighting fixtures (poles) are not to exceed 30 feet for parking lots, unless otherwise approved by City Council. The ordinance also regulates infrared security lighting and outdoor advertising signs, and establishes regulations for temporary lighting permits.

This section of the zoning ordinance includes recommendations from the IESNA, however this lighting ordinance does not necessarily reflect the most recent recommendations regarding light fixtures including the use and rating of Backlight, Uplight, and Glare (BUG).

House Bill 2232, Creation of Regional Military Sustainability Commissions for Certain Military Installations

HB 2232 authorizes jurisdictions in Texas to create a regional military sustainability commission (RMSC). This bill applies to the following:

(a) This section applies only to:

(1) a county:

(A) in which three or more locations of a joint military base are located; and

(B) with a population of more than 1.7 million;

(2) a county that is adjacent to a county described by Subdivision (1); and

(3) a municipality located in a county described by Subdivision (1) or (2).

(b) One or more municipalities with extraterritorial jurisdiction located within five miles of the boundary line of a military installation and one or more counties with unincorporated area located within five miles of the boundary of a military installation.

The City of Elgin and Bastrop County could agree, vote, enact, fund, and establish a regional military sustainability commission in which land uses, including lighting of land uses, within two miles around Camp Swift could be planned and protected for the future.

Findings

- The City of Bastrop has an extensive lighting ordinance to prevent light pollution in the city limits; however, the ordinance does not reflect the use of BUG lighting fixtures, which is the most recent recommendation from the IESNA.
- The City of Elgin does not have outdoor lighting standards.
- Bastrop County does not have the authority to regulate lighting.
- The City of Elgin and Bastrop County have the authority to enact, fund, and establish a regional military sustainability commission, as authorized by HB 2232 that can assist these jurisdictions to regulate for lighting in unincorporated areas.

5.13 Noise

The central issue with noise is the impact, or perceived impact, on people, animals (wild and domestic), and general land use compatibility. Exposure to high noise levels can have a significant impact on human activity, health, and safety. The decibel (dB) scale is used to quantify sound intensity. To understand the relevance of decibels, a normal conversation often occurs at 60 dB, while an ambulance siren from 100 feet away is about 100 dB. Noise associated with military operations (arrival / departure of military aircraft, firing of weapons, etc.) may create noises in higher dB ranges.

Key Terms

Ambient Noise. The total noise associated with an existing environment (built or natural) and usually comprising sounds from many sources, both near and far.

Day-Night Average Sound Level (DNL). DNL represents an average sound exposure over a 24-hour period. During the nighttime period (10:00 p.m. to 7:00 a.m.), averages are artificially increased by 10 dB. This weighting reflects the added intrusiveness and the greater disturbance potential of nighttime noise events attributable to the fact that community background noise typically decreases by 10 dB at night.

Decibel (dB). A decibel is the physical unit commonly used to describe noise levels, describing the amplitude of sound as heard by the human ear.

dB peak (dBP). A peak unweighted decibel (or Linear Peak Decibel) is a unit designation for the peak unweighted decibel level.

Feathering the Rotor. Feathering the rotor is the term for changing rotor blade angle (pitch), which changes the blade's angle of attack. Turning the angle of attack of the blades of a propeller or helicopter rotor into or out of the wind controls the production or absorption of power. Feathering refers to increasing the angle of pitch by turning the blades parallel with the airflow; this minimizes drag from a stopped propeller following an engine failure in flight.

Noise. Noise refers to unwanted levels of sound, mechanical energy transmitted by pressure waves in a compressible medium such as air that make up what we hear.

Noise Contour. Noise contours consist of noise impact lines constructed by connecting points of equal noise level measured in dB and identifying areas on a map that fall within that particular dB noise contour.

Noise Sensitive Receptors / Sensitive Land

Uses. Sensitive receptors are locations and uses typically more sensitive to noise impacts, including residential areas, hospitals, convalescent homes and facilities, schools, libraries, churches, recreational areas, and other similar land uses.

Sound Attenuation. Sound attenuation is a reduction in the level of sound resulting from an object's distance from the noise source or absorption by the surrounding topography, atmosphere, barriers, construction techniques and materials, and other factors. Sound attenuation in buildings can be achieved through the use of special construction practices, reducing the amount of noise that penetrates the windows, doors, and walls of a building. Sound attenuation measures may be incorporated during initial construction for new buildings or as additional construction for existing buildings.

Technical Background

Due to the technical nature of this topic and its importance to the JLUS process, this section provides a discussion of the characteristics of sound and the modeling process used to evaluate noise impacts.

Characteristics of Sound

It is important to understand that there is no single method of measuring sound due to variations used by different entities when conducting sound studies or sound modeling. Sound is characterized and can be measured by various parameters, including the oscillation rate of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). The sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. The dB scale is used to quantify sound intensity, as

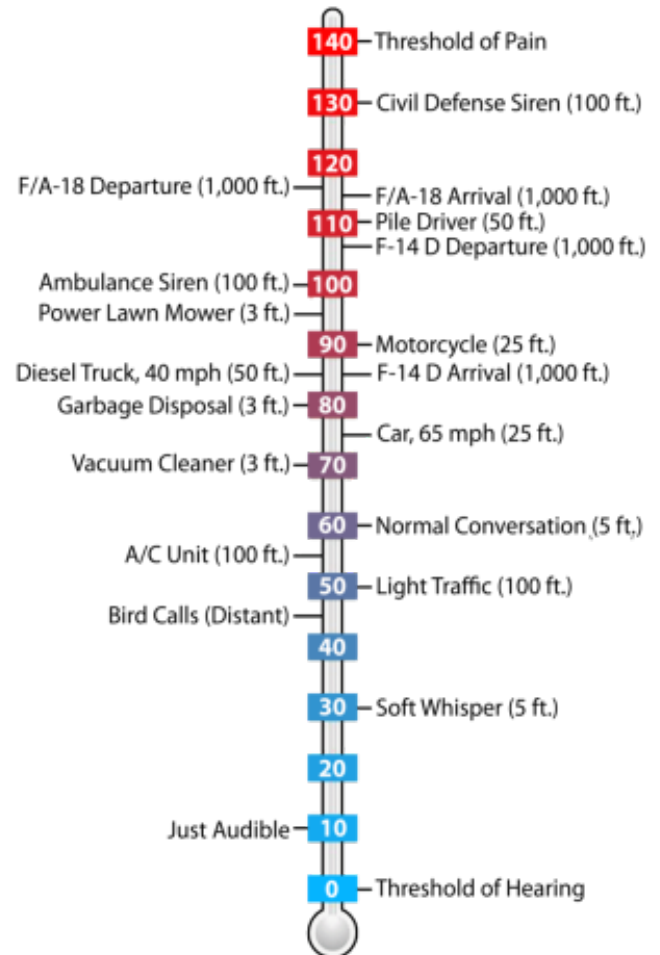
sound pressure can vary by over one trillion times within the range of human hearing. The dB scale is a logarithmic loudness scale used to present sound intensity levels in a convenient format.

The human ear is not equally sensitive to all frequencies, so noise measurements are weighted more heavily within those frequencies of maximum human sensitivity in a process called “A-weighting,” written as dBA. The human ear can detect changes in sound levels of approximately 3-dBA under normal conditions. Changes of 1 to 3-dBA are typically noticeable under controlled conditions, while changes of less than 1dBA are only discernible under controlled, extremely quiet conditions.

A change of 5-dBA is typically noticeable to the average person in an outdoor environment. Figure 5.13-1 summarizes typical A-weighted sound levels for a range of indoor and outdoor activities.

Environmental noise fluctuates over time, and while some noise fluctuations are minor, others can be substantial. These fluctuations include regular and random patterns, how fast the noise fluctuates, and the amount of variation. Weather patterns can have a strong effect on how far sound travels and how loud it is perceived. Certain weather events can change the consistency of the air and cause sound to travel further and be louder, or reduce the distance traveled and the level at which the sound can be heard. Temperature and wind velocity are prime examples of factors that can affect sound travel. Specific combinations of temperature and wind direction can create atmospheric refraction, which occurs when atmospheric conditions bend and/or focus sound waves towards certain areas and away from others. When describing noise impacts, it is common to look at the average noise levels over an entire average day.

Figure 5.13-1 Summary of A-weighted Sound Levels and Examples



Small arms, weapons that fire rounds of a caliber less than 20 mm, are the most common type of weapons fired at training ranges. The Small Arms Range Noise Assessment Model is a computer program used by the Army to model small arms Noise Zones. It uses the peak noise level and incorporates the most recent available information on weapons noise source models, sound propagation, topography, ricochet barriers, noise mitigation, safety structures, and the direction weapons are fired to create the Noise Zones. These can change based on terrain, weather, and other site specific conditions.

Sound associated with demolitions and other impulse noises are more likely to produce noise complaints, as these sounds tend to travel further and are harder to mitigate. They are often accompanied by vibrations that can impact quality of life or potentially cause structural damage to buildings, depending on the size and proximity of the demolition / impulse activity. Studies on vibration have shown that homeowners typically become concerned about potential structural damage due to rattling when the peak dB exceeds 120 dB peak (dBP), however actual damage is not likely to occur until a level of 150 dBP is reached.

According to the DOD and the Federal Aviation Administration (FAA), 65 DNL is defined as the threshold for significant noise exposure, while noise exposure within the 55 to 65 DNL noise contours is regarded as moderate and land use controls should be considered. Federal guidelines have been adopted to guide appropriate development and land use planning for noise contours greater than 65 DNL, and noise sensitive uses such as residential and schools should not be built in these areas without proper sound attenuation. It should be noted that the DNL contours represent an average sound level over a 24-hour period and that individual instances may be louder than the noise contour in which they are located. Noise may still cause an annoyance even if it is below 65 DNL.

Noise Generated by Community Activities

NOI-1

Noise associated with past activities at nearby ALCOA mine were often attributed to Camp Swift, prompting complaints from the surrounding communities.

Compatibility Assessment

The Bastrop region has a history of coal and lignite mining from the late 1800s and early 1900s up through the early 1940s, when over 25 million tons of coal and 60 million tons of lignite were produced in Texas. Lignite is a low-grade coal used for energy and power generation. Coal and lignite were the main energy sources in Texas before the production of oil and gas. The area near Camp Swift has a rich deposit of coal and lignite.

During the discovery portion of this project, there was concern that blasting activities had occurred at an old ALCOA mine near Camp Swift. The noise associated with the blasting activities was sometimes attributed by neighboring communities to Camp Swift range and demolition activities.

While the TXNG and various other military and local law enforcement agencies use Camp Swift ranges, it is important to note that not all the noise heard in the area is generated from activities at Camp Swift. It is important to characterize and attribute the noise appropriately, as the more noise complaints an installation has accounted for can be used against the installation during a Base Realignment and Closure (BRAC) assessment.

While noise is not the only factor assessed during BRAC rounds, it is considered when realigning missions and closing installations. A realignment of units or missions could mean lost revenue for the local communities as those military personnel will no longer be living in local housing and purchasing local goods and services.

Existing Tools

There are no existing tools for this issue. This issue discussion should serve to address the issue of attribution of noise to appropriate sources.

No further assessment is required.

NOI-2	<p>Noise Generated by Training Activities</p> <p>Noise generated from training activities at Camp Swift can prompt complaints from the surrounding communities.</p>
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As illustrated on Figures 5.13-2 and 5.13-3, the small caliber and large caliber noise contours both extend off-installation; however, the small caliber weapons only have a minimal impact. While there are single-family residential, farm and ranch, agriculture, and commercial uses dotted sporadically under these noise contours, the density associated with these uses would not trigger major concern for the communities and the installation. However, if denser development is proposed for these areas in the future, there is greater potential for incompatible development. This, coupled with the unincorporated area lacking traditional land use controls due to state law, provides opportunity for incompatible development.

Large caliber weapons, the 2-lb. and 40-lb. charges for demolition, create a different set of noise contours, as illustrated in Figure 5.13-3. The 2-lb. charge, NZ II extends off installation to the west, but does not impact any existing uses as this land is designated as agriculture. However, the demolition of 40-lb. charges impacts a much more significant area as illustrated on the figure. Noise complaints from this type of activity are likely, especially from the Town of McDade, City of Elgin, and / or the private land owners located in unincorporated Bastrop County.

Large caliber weapons have a higher impact, however the 40-lb. charge demolition activity only occurs once a year. There are almost 3,000 acres of single- and multi-family (combined) within the 2-lb. charge and 40-lb. charge noise contours that are considered incompatible by the DOD due to the impacts of noise

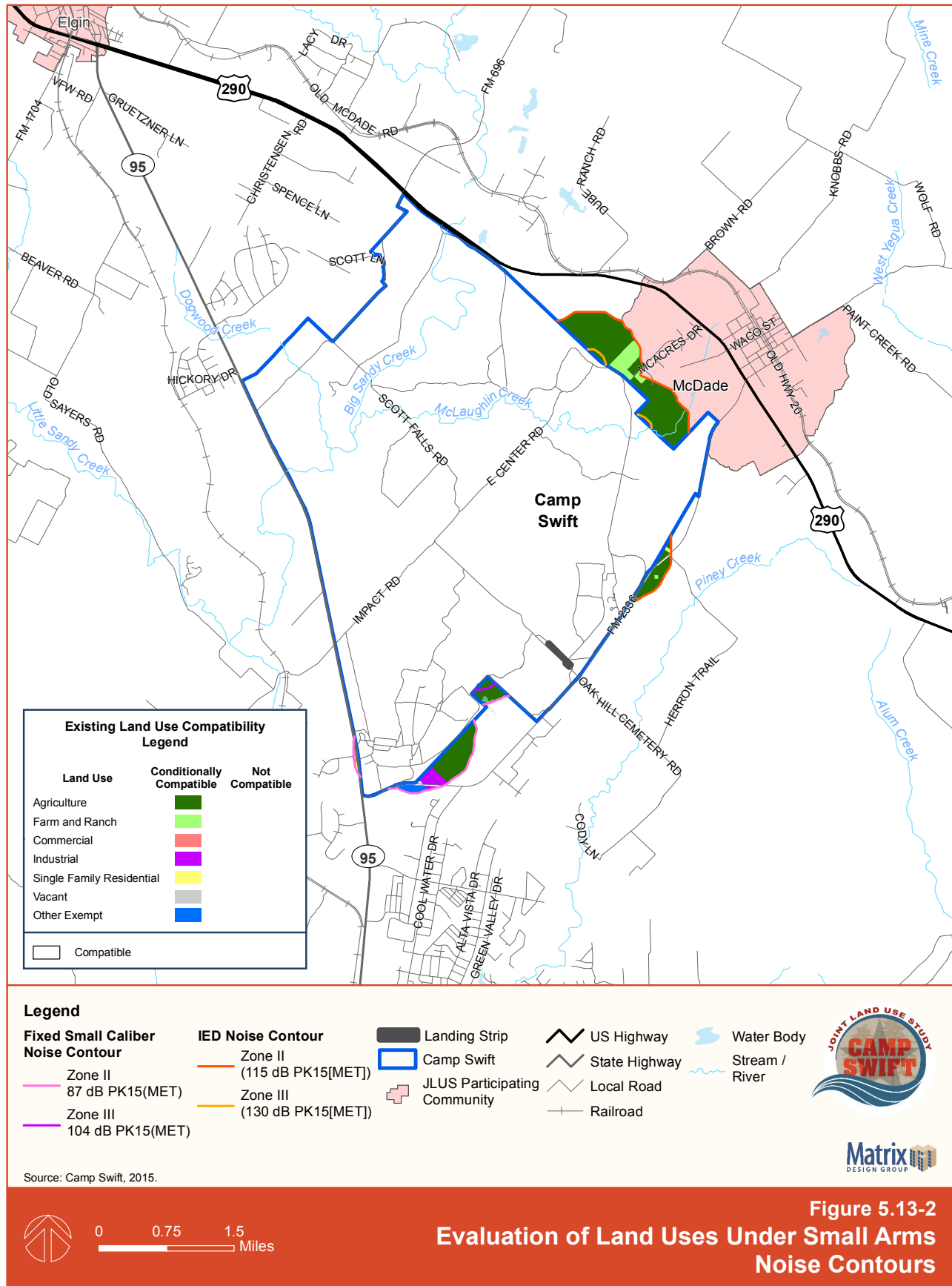
on quality of life. As this area is unincorporated, there are no local controls that regulate sound attenuation for residential uses.

Existing Tools

Texas Army National Guard Statewide Operational Noise Management Plan, September 2014

The September 2014 Texas Army National Guard Statewide Operational Noise Management Plan (SONMP) reports the noise impacts from Camp Swift. The SONMP indicates that there is minimal impact from small caliber weapons, as only a very small portion of Noise Zone (NZ) II extends off installation, and does not currently impact any noise sensitive land uses near Camp Swift. NZ III extends further off-installation, impacting some private residential uses.

The SONMP provides guidance for recommended land uses for noise associated with state National Guard installations. However, after a review of the recommended land uses, it was determined they do not consider the updated recommended land uses for small arms noise provided by the Department of Defense in their update of the Air Installations Compatible Use Zone Program in March 2015.



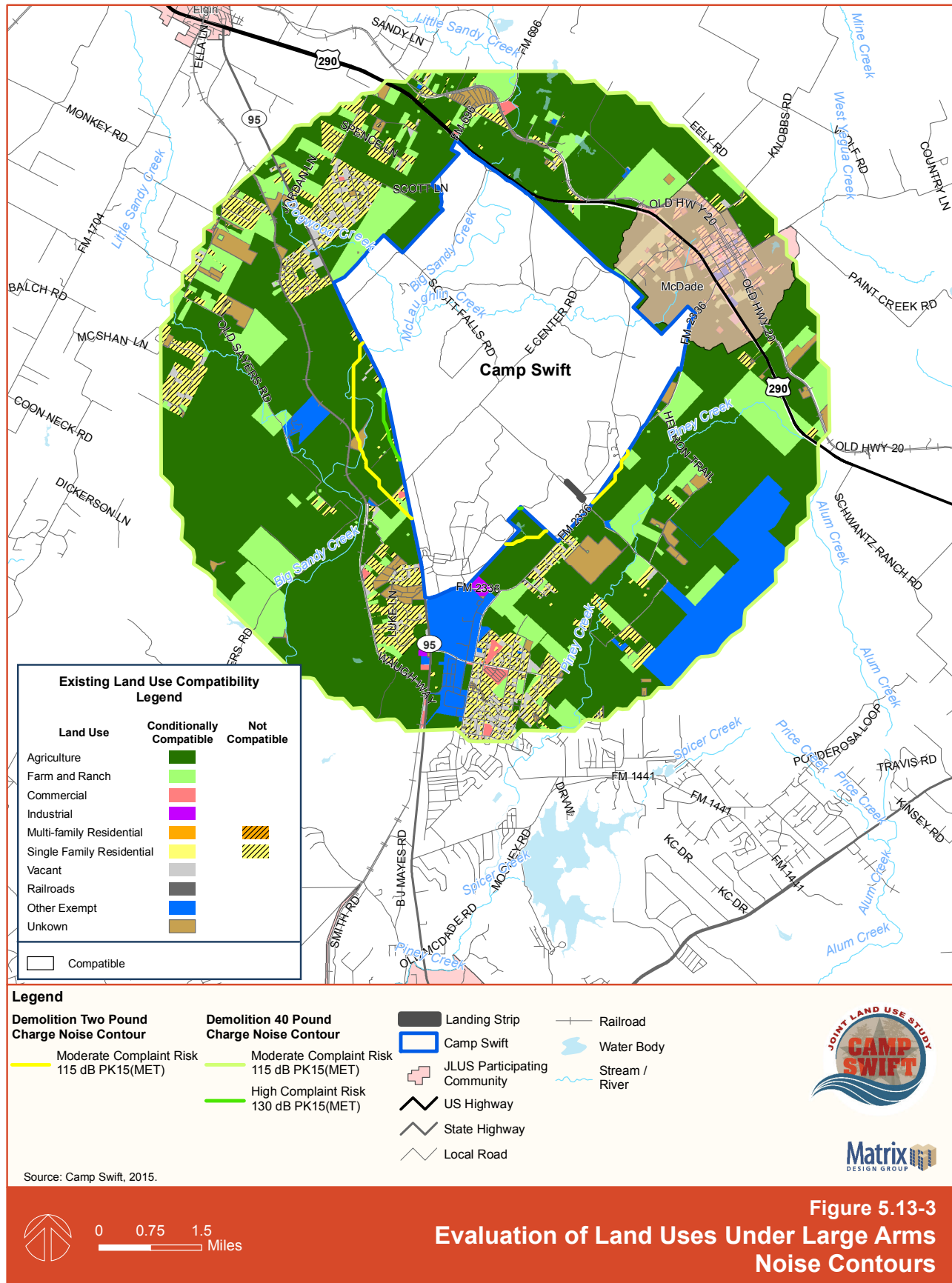


Figure 5.13-3
Evaluation of Land Uses Under Large Arms
Noise Contours

Air Force Instruction 32-7063, Air Installations Compatible Use Zone Program

Though all military services recognize the importance of compatible land use with noise, only the Air Force has published specific land use compatibility guidelines for small caliber weapons noise based on the PK15(met) noise measurement in Air Force Instruction (AFI) 32-7063. As the intent of the JLUS is to promote land use compatibility regardless of military service, and the land use compatibility assessment for noise from small caliber weapons is based on these recommendations as a best practice. Land use compatibility, along with notes defining recommended noise level reductions (NLRs) for specific land uses, are provided in Table 5.13-1.

Table 5.13-1 Land Use Compatibility for Small Arms Noise Zones

SLUCM No.	Land Use Name	Noise Zone II (87-104 dBP)	Noise Zone III (>104 dBP)
10	Residential		
11	Household units	N ¹	N
11.11	Single units: detached	N ¹	N
11.12	Single units: semidetached	N ₁	N
11.13	Single units: attached row	N ¹	N
11.21	Two units: side-by-side	N ¹	N
11.22	Two units: one above the other	N ¹	N
11.31	Apartments: walk-up	N ¹	N
11.32	Apartment: elevator	N ¹	N
12	Group quarters	N ¹	N
13	Residential hotels	N ¹	N
14	Mobile home parks or courts	N ¹	N
15	Transient lodgings	25	N
16	Other residential	N ¹	N

SLUCM No.	Land Use Name	Noise Zone II (87-104 dBP)	Noise Zone III (>104 dBP)
20	Manufacturing		
21	Food and kindred products; manufacturing	Y ²	Y ³
22	Textile mill products; manufacturing	Y ²	Y ³
23	Apparel and other finished products; products made from fabrics, leather, and similar materials; manufacturing	Y ²	Y ³
24	Lumber and wood products (except furniture); manufacturing	Y ²	Y ³
25	Furniture and fixtures; manufacturing	Y ²	Y ³
26	Paper and allied products; manufacturing	Y ²	Y ³
27	Printing, publishing, and allied industries	Y ²	Y ³
28	Chemicals and allied products; manufacturing	Y ²	Y ³
29	Petroleum refining and related industries	Y ²	Y ³
31	Rubber and misc. plastic products; manufacturing	Y ²	Y ³
32	Stone, clay and glass products; manufacturing	Y ²	Y ³
33	Primary metal products; manufacturing	Y ²	Y ³
34	Fabricated metal products; manufacturing	Y ²	Y ³

SLUCM No.	Land Use Name	Noise Zone II (87-104 dBP)	Noise Zone III (>104 dBP)
35	Professional scientific, and controlling instruments; photographic and optical goods; watches and clocks	25	35
39	Miscellaneous manufacturing	Y ²	Y ³
40	Transportation, communication and utilities		
41	Railroad, rapid rail transit, and street railway transportation	Y ²	Y ³
42	Motor vehicle transportation	Y ²	Y ³
43	Aircraft transportation	Y ²	Y ³
44	Marine craft transportation	Y ²	Y ³
45	Highway and street right-of-way	Y ²	Y ³
46	Automobile parking	Y ²	Y ³
47	Communication	25	35
48	Utilities	Y ²	Y
49	Other transportation, communication and utilities	25	35
50	Trade		
51	Wholesale trade	Y ²	Y ³
52	Retail trade – building materials, hardware and farm equipment	25	35
53	Retail trade – including shopping centers, discount clubs, home improvement stores, electronics superstores, etc.	25	35
54	Retail trade – food	25	35
55	Retail trade – automotive, marine craft, aircraft and accessories	25	35

SLUCM No.	Land Use Name	Noise Zone II (87-104 dBP)	Noise Zone III (>104 dBP)
56	Retail trade – apparel and accessories	25	35
57	Retail trade – furniture, home, furnishings and equipment	25	35
58	Retail trade – eating and drinking establishments	25	35
59	Other retail trade	25	35
60	Services		
61	Finance, insurance, and real estate services	25	35
62	Personal services	25	35
62.4	Cemeteries	Y ²	Y ³
63	Business services	25	35
63.7	Warehousing and storage	Y ²	Y ³
64	Repair services	Y ²	Y ³
65	Professional services	25	N
65.1	Hospitals, other medical facilities	N	N
65.16	Nursing homes	N	N
66	Contract construction services	25	35
67	Government services	25	35
68	Educational services	35	N
68.1	Child care services, child development centers, and nurseries	35	N
69	Miscellaneous services	35	N
69.1	Religious activities (including places of worship)	35	N
70	Cultural, entertainment and recreational		
71	Cultural activities	35	N
71.2	Nature exhibits	N	N
72	Public assembly	N	N

SLUCM No.	Land Use Name	Noise Zone II (87-104 dBP)	Noise Zone III (>104 dBP)
72.1	Auditoriums, concert halls	35	N
72.11	Outdoor music shells, amphitheaters	N	N
72.2	Outdoor sports arenas, spectator sports	N	N
73	Amusements	Y	N
74	Recreational activities (including golf courses, riding stables, water recreation)	N	N
75	Resorts and group camps	N	N
76	Parks	N	N
79	Other cultural, entertainment and recreation	N	N
80	Resource production and extraction		
81	Agriculture (except livestock)	Y ⁴	Y ⁵
81.5	Livestock farming	Y ⁴	N
81.7	Animal breeding	Y ⁴	N
82	Agriculture related activities	Y ⁴	Y ⁵
83	Forestry activities	Y ⁴	Y ⁵
84	Fishing activities	Y	Y
85	Mining activities	Y	Y
89	Other resource production or extraction	Y	Y

Notes for Table 5.13-1

SLUCM – Standard Land Use Code Manual

dBP – unweighted Peak decibel level

Y (Yes) – Land use and related structures compatible without restrictions.

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

Y^x – Yes with restrictions. The land use and related structures generally are compatible. However, see note(s) indicated by the superscript.

SLUCM No.	Land Use Name	Noise Zone II (87-104 dBP)	Noise Zone III (>104 dBP)
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N^x – No, with exceptions. The land use and related structures are generally incompatible. However, see note(s) indicated by the superscript.

25, 30, or 35 – The numbers refer to noise level reduction (NLR) levels. NLR (outdoor to indoor) is achieved through the incorporation of noise attenuation into the design and construction of a structure. Land use and related structures.

Note 1:

a. Although local requirements for on- and off-base housing may require noise-sensitive land uses within Noise Zone II, such land use is generally not recommended. The absence of viable alternative development options should be determined and an evaluation should be conducted locally prior to local approvals indicating that a demonstrated community need for the residential use would not be met if development were prohibited in these zones. Existing residential development is considered as pre-existing, non-conforming land uses.

b. Where the community determines that these uses must be allowed, measures to achieve outdoor to indoor NLR of at least 30 decibels (dB) in Noise Zone II should be incorporated into building codes and be considered in individual approvals.

c. Normal permanent construction can be expected to provide an NLR of 20 dB, thus the reduction requirements are often stated as 10 dB over standard construction and normally assume mechanical ventilation, upgraded sound transmission class ratings in windows and doors, and closed windows year round.

d. NLR criteria will not eliminate outdoor noise problems. However, building location, site planning, design, and use of berms and barriers can help mitigate outdoor noise exposure particularly from ground level sources. Measures that reduce noise at a site should be used wherever practical in preference to measures that only protect interior spaces.

2. Measures to achieve NLR of 25 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.

3. Measures to achieve NLR of 30 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.

4. Residential buildings require an NLR of 30.

5. Residential buildings are not permitted.

Source: Air Force Instruction AFI 32-7063, December 2015.

State Tools

House Bill 2232, Creation of Regional Military Sustainability Commissions for Certain Military Installations

HB 2232 provides the authority for a county to establish a regional military sustainability commission that has land within five miles of the said installation. The commission would enact land use plans and regulations for an area around the said installation. In the case of Camp Swift, the area is limited to two miles around the entire installation.

This bill could be applied to the unincorporated portions of Bastrop County within two miles of Camp Swift. If enacted and funded by Bastrop County, then HB 2232 could provide a tool and an area for the county to establish limited land use regulations to control the interior noise levels of certain types of land uses that are constructed in the high-impact noise areas generated by Camp Swift activities.

Local Tools

City of Bastrop, Section 44.2, Noise Zoning Ordinance

The Performance Standards Section in the City of Bastrop's Zoning Ordinance under Section 44.2 addresses noise. The noise section in the ordinance identifies that no land uses should cause noise to go beyond the property boundaries. The city uses an Octave Band Table with translations of decibels. Table 5.13-2 shows the Octave Band Table with the associated decibels. However this is only for daytime levels of noise, which is defined for activities that occur between the hours of 7:00 am to 7:00 pm.

Table 5.13-2 Octave Band / Decibel Band Noise Measurements at Bounding Line in City of Bastrop

Octave Band (cps)		Decibel Band Limit
A	Scale	(db re 0.000286 Microbar)
37	75	76
75	150	
150	300	70
300	600	65
600	1200	63
1200	2400	58
2400	4800	55
4800	9600	53

Source: City of Bastrop, Zoning Ordinance, Section 44.2 Noise, Ordinance 99-37 adopted September 1999.

In addition to this decibel / octave band scale of measuring noise at the boundary line of a property, the city establishes regulations for nighttime hours by subtracting seven dB from the allowable decibels. The city also establishes regulations for noise that is impulsive in nature or has a "strong pure-tone component," which seven dB must be subtracted from the scale measurement in Table 5.13-2.

Additionally, the city's regulations also give an increase in 10 dB if noise occurs in the following frequencies:

1/2 minute in any 1/2 hour period,

1 minute in any 1 hour period,

10 minutes in any 2 hour period, or

20 minutes in any 4 hour period.

The regulations indicate that all noise will be assessed using an octave band analyzer.

While the noise ordinance establishes regulations for measuring noise at the boundary line, the ordinance does not consider military compatibility by addressing interior noise levels or recommended land uses in certain areas.

City of Elgin Noise Ordinance

The operation of any sound amplifier or audio device in such a manner as to be plainly audible or to cause vibrations to be felt at a distance of thirty (30) feet or more beyond the property line on which the sound is being emitted, which exceeds the applicable dB (A) level listed below, shall be presumed to be in violation of the noise ordinance. The maximum allowable decibels for land uses are identified in the ordinance as follows:

(1) Residential property:

a. Sixty-seven (67) dB (A) during daytime hours.

b. Sixty (60) dB (A) during nighttime hours.

(2) Nonresidential property:

Seventy (70) dB (A) during either daytime or night time hours.

While these allowable noise decibels are identified in the ordinance, the it does not define daytime hours or nighttime hours. Additionally, the ordinance does not account for what the interior noise level should be, especially for noise sensitive land uses including residential uses, hospitals, nursing homes, other medical facilities, schools, and childcare centers.

The ordinance also identifies exemptions, the following of which would apply to this situation:

H. Defenses.

(4) The sound was produced by any governmental body in the performance of a governmental function.

The City of Elgin's noise ordinance is limited and does not consider military compatibility, so the noise sensitive land uses under the city's jurisdiction are not protected from unnecessary noise generated by military installations or other similar activities such as mine blasting.

Elgin Tax Increment Reinvestment Zone #1

The Elgin Tax Increment Reinvestment Zone (TIRZ) #1 comprises 844 acres within the city limits of Elgin. The majority of the project is contained within Bastrop County and will result in the construction of 11th Street from U.S. Highway 290 in a southwesterly direction to a future intersection with Saratoga Farms Boulevard, and then in a northerly direction, connecting in the general area of the current end of Saratoga Farms Boulevard. The project will consist of a four lane section divided with median or continuous turn lane. In the area immediately west of U.S. Highway 290, that street section may be modified based upon right of way and other similar constraints.

While this tool could be used, if modified, to guide future compatible growth with the military at Camp Swift, its location is not presently impacted by Camp Swift military operations.

Findings

- The City of Elgin has a noise ordinance but it does not consider military compatibility for addressing noise impacting noise sensitive land uses.
- The City of Elgin noise ordinance does not establish interior noise levels associated with the noise impacts from various community activities.
- HB 2232 may provide some options for Bastrop County to regulate land uses immediately around Camp Swift within two miles of the installation boundary.
- The Elgin TIRZ #1 does not currently reflect guidelines for military compatibility, but the project area is not currently impacted by Camp Swift military operations.

NOI-3**Noise Generated by Transient Helicopters**

Several military / National Guard rotary wing units within the region and state traverse the area over Camp Swift, which causes noise that is attributed to the installation.

Compatibility Assessment

Rotary-wing aircraft tend to fly at lower altitudes and slower speeds than fixed-wing aircraft, which can create noise that impacts noise sensitive land uses. When pilots of rotary-wing aircraft feather the rotor depending on various factors, the noise generated by this activity can be louder and cause greater noise. This feathering can occur both during flight or while stationary on the ground.

In addition, there are other rotary-wing operations that occur in the area over Camp Swift, including the Blackhawk unit stationed at Austin-Bergstrom International Airport, the Chinook unit out of the Dallas-Fort Worth area, and the Medivac unit out of the Houston area. These rotary-wing units all traverse the airspace over Camp Swift, and these transient aircraft at times operate at lower altitudes, causing noise complaints attributed to Camp Swift. Figure 5.13-4 illustrates the general flight route that traverses the area. There are land uses that are conditionally compatible due to this type of aviation operation. The majority of the land uses under the flight route comprise agriculture, farm, and ranch uses. While these uses are typically compatible with aviation operations, they sometimes allow for noise sensitive land uses such as churches, schools, residential uses, and healthcare facilities. However, these operations occur in such a low frequency that it does not warrant major changes to policy or regulations.

Existing Tools***City of Elgin Noise Ordinance***

See the assessment of this tool under issue NOI-1. The ordinance identifies exemptions that would apply to this situation:

H. Defenses.

(4) The sound was produced by any governmental body in the performance of a governmental function.

(7) The sound was produced by aircraft in flight or in operation at an airport, or railroad equipment in operation on railroad rights-of-way.

City of Bastrop, Section 44.2, Noise Zoning Ordinance

See the assessment of this tool under issue NOI-1. The ordinance identifies exemptions that would apply to this situation. Like the City of Elgin's noise ordinance, there are exemptions that have been established for noise in the city of Bastrop. The exemptions that apply to this area include:

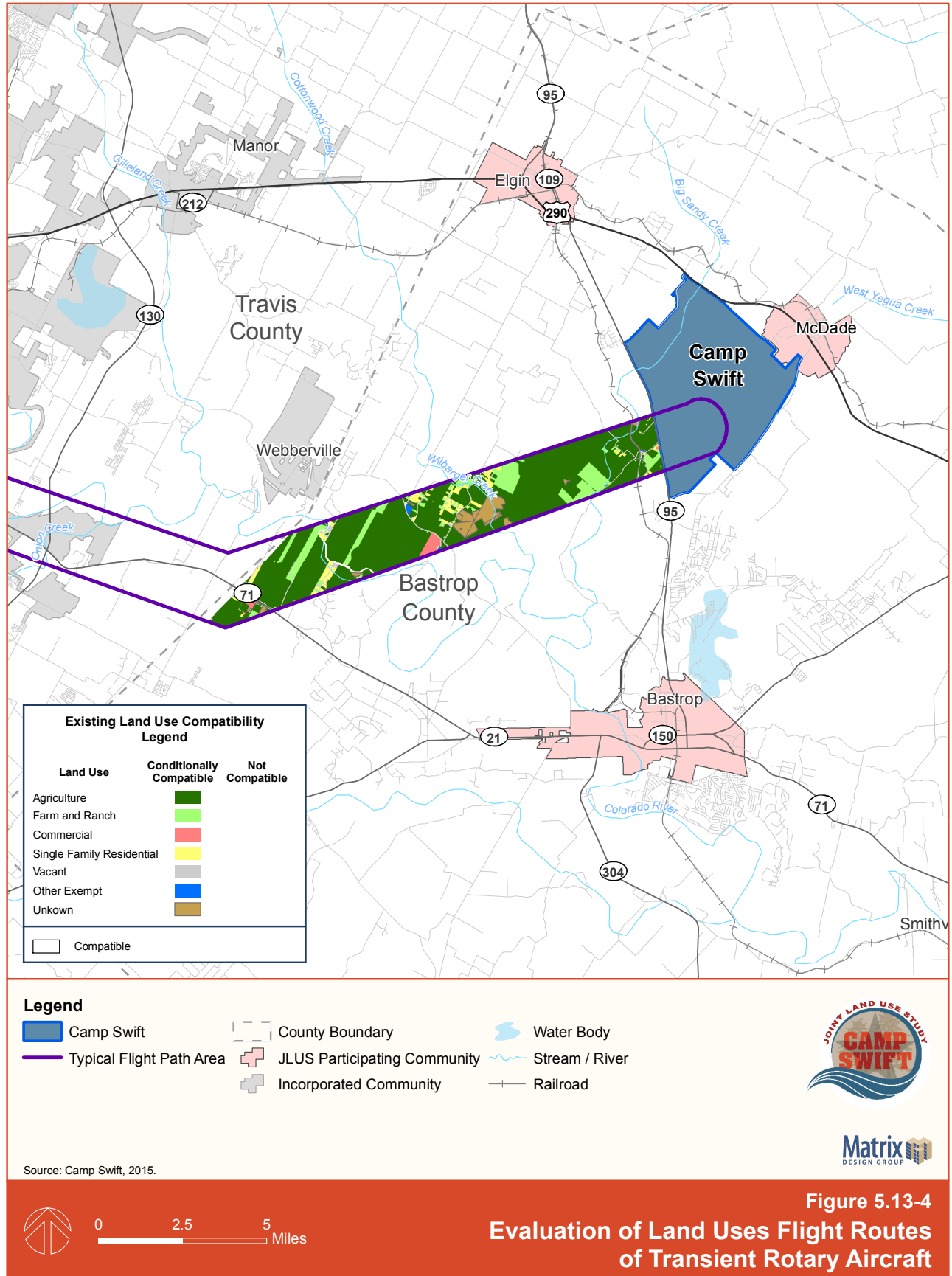
2. Noises emanating from construction and maintenance activities between the hours of 7:00 a.m. and 7:00 p.m. (daylight hours).

4. Transient noise of moving sources such as automobiles, trucks, and airplanes.

These noise regulations do not consider military compatibility.

Findings

- The City of Elgin Noise Ordinance does not define daytime and nighttime hours. Additionally, the ordinance does not account for what interior noise level should be, especially for noise sensitive land uses.
- Both cities of Bastrop and Elgin noise ordinances do not consider military compatibility.
- There are no controls for noise in the unincorporated area of Bastrop County.



Please see the next page.

5.14 Public Trespassing

Public trespassing addresses either purposeful or unintentional trespassing onto a military installation. The potential for trespassing increases when public use areas are in proximation to the installation.

Key Terms

Surface Danger Zone. A surface danger zone (SDZ) is an area around weapons firing ranges with restricted access for all military personnel and civilians due to the inherent dangers associated with the firing of live munitions. An SDZ can include the surface (and subsurface) of land and water, as well as the overhead air space, which provides the medium for launched projectiles. An SDZ includes the weapons firing position, target impact area and a secondary buffer area, which is an additional distance where errant projectile/munitions fragments may land without risking harm to life or property. The area of a SDZ can vary in size and shape, depending on the type of weapon(s) fired, their firing location, and projectile trajectory.

PT-1

Trespassing on Camp Swift

Trespassing in the northwest corner of the installation near the historic dam is a safety concern as people shoot guns and, at times, engage in unlawful activities.

Compatibility Assessment

Oftentimes when land is designated as public access or is private property located adjacent to a military installation, the potential for trespassing onto the installation increases. This issue was identified as a concern for this JLUS due to the various types of activities that take place on-installation and off-installation. Camp Swift is a premier training center for the TXARNG, which trains Texas Army / Air National Guardsmen, but it also provides a training center for local law enforcement and other agencies. The training that occurs on-installation includes small arms and large arms firing.

The surface danger zones, as shown on Figure 5.14-1, illustrate the location where munitions or debris from munitions have potential to land. The TXARNG raised this issue as a concern because the private property located adjacent to the northwest corner of the installation as well as the area near Scott Falls Dam provide opportunities for property owners / public to engage in dangerous activities such as shooting guns. This activity, while not immediately near the SDZs, creates safety concerns for the military and those in the area.

While the SDZs are not near the Scott Falls Dam, the Dam is an entry point into the installation that is not always monitored by Camp Swift personnel. This area has been and can be a safety risk for the installation and individuals who may choose to roam inward towards the SDZs.

Existing Tools

Army Regulation 190-16: Physical Security, Military Police

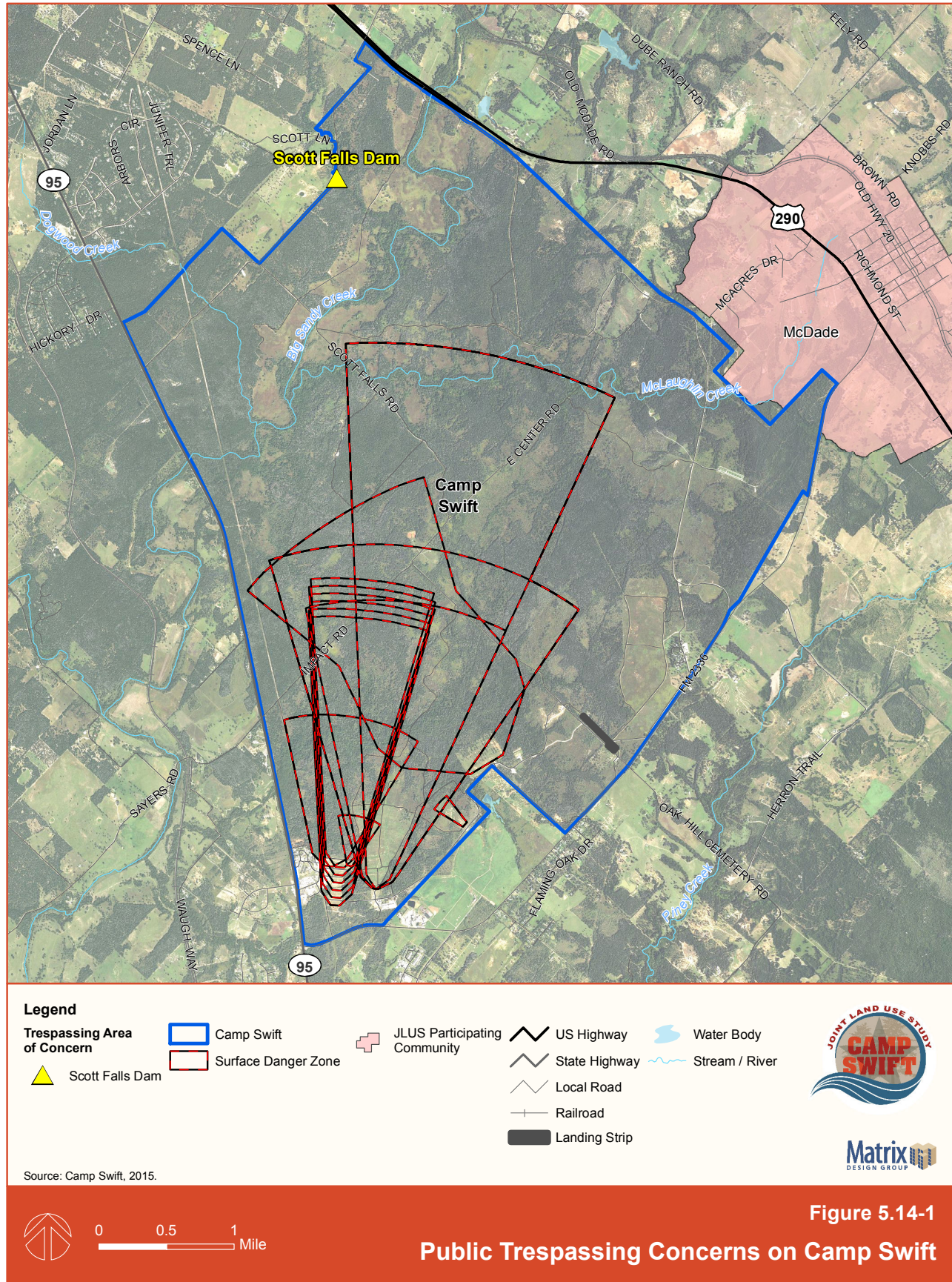
The Army Regulation 190-16: Physical Security establishes the authority for the installation to develop plans to protect against trespass, terrorism, and other such activities.

Coordination with Bastrop County Sheriff's Office

Upon notice of trespassers on Camp Swift, the installation immediately notifies Bastrop County Sheriff's Office to escort the trespasser off the installation. This is a good compatibility relationship, but is not formalized.

Findings

- Currently, there is no evidence that Camp Swift has any agreements with local law enforcement for monitoring the area around Scott Falls Dam.
- While Camp Swift notifies Bastrop County Sheriff's Office to escort trespassers off the installation, these actions and coordination are not formalized.



5.15 Roadway Capacity

Roadway capacity relates to the ability of existing freeways, highways, arterials, and other local roads to provide adequate mobility and access between military installations and their surrounding communities.

Key Terms

Convoy. A convoy is an assembly (3 to 10+) of military vehicles traveling to or from a military installation.

Level of Service (LOS). A common measurement used by traffic engineers to determine the effectiveness of a traffic system which assigns a letter grade from A to F based upon traffic flow and safety characteristics, as shown in Table 5.15-1.

Table 5.15-1 Level of Service of Roadway

LOS	Definition
ACCEPTABLE	A Represents a free-flow operation. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.
	B Represents reasonably free-flow operation. Ability to maneuver within the traffic stream is slightly restricted.
	C Represents a traffic flow with speeds near or at free-flow speed of the freeway. There is noticeable restricted ability to maneuver within the stream of traffic.
BORDERLINE	D Speeds begin to decline with increased density. Ability to maneuver within the traffic stream is noticeably limited.
UNACCEPTABLE	E Operation is at capacity. Vehicles are closely spaced within the traffic stream and there are no useable gaps to maneuver.
	F A breakdown of vehicle flow is present. This condition exists within the queues forming behind the breakdown points.

Background

As urban development expands into rural areas, roads once used primarily to provide access for agricultural uses and limited local traffic may begin to function as urban arterial roadways. These once rural roads can become the main transportation corridors for all traffic, including access to military installations. As transportation systems grow and provide more capacity, these facilities induce growth as rural areas become more accessible.

Camp Swift is a Light Maneuver, Mobilization and Training site, and mobilization operations occur during the training activities, typically during the summer

months and national and state emergency efforts. Camp Swift also supports training for other military units, as well as local law enforcement agencies. In order to prepare for and execute military mission readiness, a component of the Guardsmen and Reservists' training involves light maneuver, convoys, mobilization, and transportation of equipment and troops to and from Camp Swift and other areas to meet the dual mission of the federal and state governments.

The military mobilization and transportation activity requires the use of heavy vehicles to transport and mobilize equipment and troops. The weight of the vehicles may cause an unplanned need for the maintenance of specific roadways depending on mobilization frequency, weather conditions, and roadway composition. Having a safe, dependable, and efficient roadway system is not only important to Camp Swift to fulfill its mission, but is also essential for the demands of interstate commerce and safety of the local communities. In addition to the maintenance of roadways, the mobilization and convoys can be seven to 10 vehicles long, taking up a significant amount of roadway while traveling along public roadways. These convoys can make sudden stops, travel at slower speeds, and perform other such activities that can cause additional delays and capacity issues for roadways that are already operating at or at exceeding capacity. Both maintenance concerns and roadway capacity issues can cause inefficiencies in military readiness if coordinated inadequately.

RC-1

State Highway 95 is at Capacity

SR 95 is operating at capacity at some segments of the roadway. To meet future demand, some roadway improvements would require obtaining right-of-way from Camp Swift.

Compatibility Assessment

TXDOT and Bastrop County have both identified that the growth in Bastrop County is expected to increase significantly by 2035. According to the Bastrop County Comprehensive Transportation Plan (BCCTP) and data from Texas State Data Center, Bastrop County is expected to increase in population from 69,500 in 2005 to 215,500 in 2035. Currently, the population of the county is approximately 102,300.

Since Bastrop County is within the Austin-Round Rock Metropolitan Statistical Area, it absorbs commuter traffic on two major roadways: State Highways 71 and 95.

TXDOT reviewed the traffic count maps for Bastrop County for the period of 1997 – 2006, and performed an average annual growth rate methodology to identify roadways that would most likely require improvements to meet the future demands. TXDOT executed this assumed growth rate methodology by adding an additional 2.5 percent growth rate to existing traffic volumes to account for the rural character of Bastrop County, which is outside the major metropolitan area of Austin but is still sustaining a moderate growth rate.

After performing the methodology, TXDOT identified several U.S. Highways and State Routes as requiring improvements to meet the demand capacity projected for 2035. State Highway 95 (SR 95) was one of the roadways identified for improvements.

The BCCTP also identified Camp Swift as an economic generator for Bastrop County, reporting that it was also a trip or traffic generator. The Plan reported that in 2009, there were 10 training cycles of approximately 700 to 1,000 troops that generated traffic. While the non-commissioned troops are housed at Camp Swift, there are over 300 officers and other higher ranking officials that stay in hotels and motels in the City of

Bastrop and other surrounding communities, generating trips and traffic to and from the Camp during their stay. This can generate additional capacity on major thoroughfares.

In addition to training cycles, convoys are used to mobilize and transport equipment and troops to and from Camp Swift. Due to internal safety and restriction issues, heavy vehicles in these convoys utilize SR 95 and Farm-to-Market (FM) 2336 to access Camp Swift and other training facilities in the state. These convoys occur daily during training cycles and can be upwards of 10 to 20 vehicles, increasing capacity on roadways from military vehicles and creating congestion for civilian vehicular traffic.

The BCCTP identified certain segments of SH 95 that are currently operating at a LOS D during peak morning hours, an unacceptable rating, and will require improvements in order to meet the future demand, the segments are:

SH 95, between U.S. 290 and south of Old Sayers Rd.; and

SH 95, between FM 1441 and Loop (LP) 150, which is at the low end of the LOS D range.

In addition, the Plan identified roadways that are currently operating at a LOS C during peak morning hours. This is an acceptable rating, however with the increased future demand the identified roadways LOS may fall below acceptable ratings to potentially LOS D, E, and F. The majority of SH 95 has been identified as having a low LOS.

In order for SH 95 to meet future demand, improvements are required. However, if additional capacity is desired for certain areas of SH 95, this may require acquisition of right-of-way (ROW) from Camp Swift / Texas National in order to increase capacity of certain segments of SH 95. This acquisition of ROW could encroach on Camp Swift, making it a general concern for the installation, especially to security.

Existing Tools

Bastrop County Comprehensive Transportation Plan

Bastrop County adopted the BCCTP in May 2010. The participants of the plan indicated that the SH 95 projects, along with other transportation and mobility projects, were designated (in decreasing order of priority) as Most Important, Very Important, and Important projects. Of the projects that were considered Most Important, the following SH 95 projects were identified:

- *SH 95 from Elgin city limits to SH 71 – upgrade to four-lane divided highway and intersection improvements at FM 2336 and Pershing Lane; and*
- *FM 1100 from County Line Road to SH 95 – upgrade to include curb and gutter, sidewalks, and intersection realignment and improvements.*



FM 2236 branches southwest around Camp Swift Military Reservation to Texas 95 north of Bastrop.

Of the projects considered Very Important, the following SH 95 projects were identified in this category:

- *SH 95 from Travis County line through city of Elgin – upgrade to four-lane divided highway and intersection improvements at Loop 109*

- *SH 95 from Loop 230 to Fayette County line – upgrade to four lanes, divided, with grade separation at railroad crossing in Smithville*
- *FM 1100 from SH 95 to U.S. 290 – upgrade to four-lane divided highway*
- *FM 535 from SH 304 to SH 95 – upgrade to two lanes with shoulders*

Of the projects considered Important, there were no projects identified in this category for SH 95.

SH 95 is viewed as a major transportation thoroughfare and should maintain a LOS acceptable for existing and future conditions. In doing so, the plan identified several funding resources including, but not limited to, fuel, local sales, and property taxes; pass-through financing; federal funding; and municipal bonds.

This plan did a good job in identifying existing and future conditions, needs, and representing public participation in the development of this plan. However, this plan did not identify the ROW as a possible issue or concern with certain segments of SH 95. Moreover, while the Steering and Technical Advisory Committees were identified by their representatives in this plan, it did not identify military representation or involvement in this plan, other than recognizing Camp Swift as an economic and traffic and trip generator.

Findings

- SH 95 is identified as a major thoroughfare requiring improvements and additional capacity to meet projected future demand.
- Various funding resources have been identified for the Most Important and Very Important projects of SH 95; however, acquisition of ROW was not discussed in the Bastrop County Comprehensive Transportation Plan.
- Currently, there are no other tools that assist in addressing the issue related to the ROW acquisition from Camp Swift / TXNG for SH 95.

5.16 Safety Zones

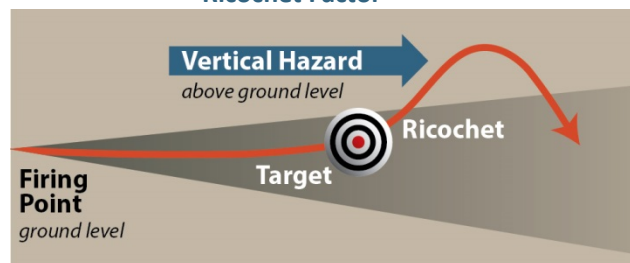
Safety zones are areas in which development should be more restrictive in terms of use and concentrations of people due to the higher risks to public safety. Issues to consider include aircraft accident potential zones, weapons firing range safety zones, and explosive safety zones.

Key Terms

Drop Zone. A drop zone (DZ) is an area established in which troops or supplies are dropped by parachute.

Small Arms Range Safety Areas (SARSA)-controlled Airspace. A SARSA-controlled airspace is an airspace controlled at the installation level. This is a recognized designation with the major Army Command (MACOM) and Air Traffic and Airspace Officer (AT&A). In a SARSA-controlled airspace, the installation commander is required to ensure all above and adjacent ranges are monitored to protect aircraft operations from the ricochet factor, as illustrated in Figure 5.16-1. While there are SDZs that are established to account for ricochet and ordnance that is short of the target, this ground-control or installation-level control of the airspace above the range provides another measure of protection from ordnance ricochet or debris dispersion.

Figure 5.16-1 Vertical Hazard Associated with Ricochet Factor



Surface Danger Zone. A surface danger zone (SDZ) is an area around a weapons firing range from which the access of all military personnel and civilians is restricted due to the inherent dangers associated with the firing of live munitions. An SDZ can include the surface (and subsurface) of land and water, as well as the overhead air space which provides the medium for launched projectiles. An SDZ includes the weapons

firing position, target impact area and a secondary buffer area, which is an additional distance where errant projectile/munitions fragments may land without risking harm to life or property. The area of a SDZ can vary in size and shape and is specifically dependent on the type of weapon(s) fired, their firing location and projectile trajectory.

SA-1

Obstacles near Drop Zone

There are obstacles near Blackwell Drop Zone that have the potential to impede military training activities.

Compatibility Assessment

Camp Swift reported that there are obstacles near the Blackwell Drop Zone (DZ). According to Field Manual 57-38 (FM 57-38), there are many natural or man-made items that are categorized as an obstacle to establishing and / or operating a DZ, including trees in excess of 35 feet, bodies of water more than four feet deep and within 1,000 meters of a DZ, any other items that will impede recovery of personnel and equipment such as barbed wire fences, swamps, rocks, ditches, gullies, and power lines with voltage in excess of 50 volts.

If a body of water more than four feet deep is within 1,000 meters of a DZ, Army Regulations require a rescue boat stationed in the water with adequate and working life preservation jackets. Camp Swift reported that there is a body of water within 1,000 meters of the DZ and is more than four feet deep, but this body of water is situated on private property; therefore Army Regulations cannot be enforced. While not a major issue, if personnel or equipment land in the water body, there will be no rescue boat to retrieve them. This could cause unnecessary delays or postponement of military training exercises and activities, which could degrade military readiness.

Existing Tools

Army Field Manual 57-38, Chapter 6 Drop Zones

Section 6-5 of the Field Manual (FM 57-38) identifies the various types of obstacles that affect DZs. As previously mentioned, obstacles can be man-made or

natural. The obstacles are assessed by Army / National Guardsmen personnel prior to establishing a DZ.

While FM 57-38 provides guidance about obstacles and establishing a DZ, it does not provide guidance on working with property owners to achieve maximum compatibility with DZs.

Army Field Manual 3-21.38, Pathfinder Operations, Chapter 6

In FM 3-21.38, Chapter 6 identifies the need of a rescue boat in a body of water obstacle that is within 1,000 meters of any edge of a DZ. The rescue boat is required if the body of water is at minimum four feet deep, at any point at a width of 40 feet. However, the FM 3-21.38 reports if the body of water is not 40 feet wide at any point, then a rescue boat is not required.

As illustrated on Figure 5.16-2, the body of water within 1,000 meters of Blackwell DZ is approximately 200 feet wide at its widest point therefore, it does require a boat with life jackets in the water.

While this FM 3-21.38 provides guidance for determining if water obstacles require boats, it does not provide guidance on coordinating with property owners for any kind of obstacles.

Findings

- The water body within 1,000 meters of Blackwell DZ does require a boat detail.
- FM 57-38 and FM 3-21.38 do not delineate guidance in managing obstacles near a DZ when the obstacles are located on private property.
- The 1,000 meters is a good influence area to use for planning purposes and can be termed, “DZ Obstacle-Free Zone”.

SA-2

Uncontrolled Airspace Over Training Ranges

General aviation and personal aircraft operations in the area over the training ranges can pose safety hazards for both pilots and training personnel.

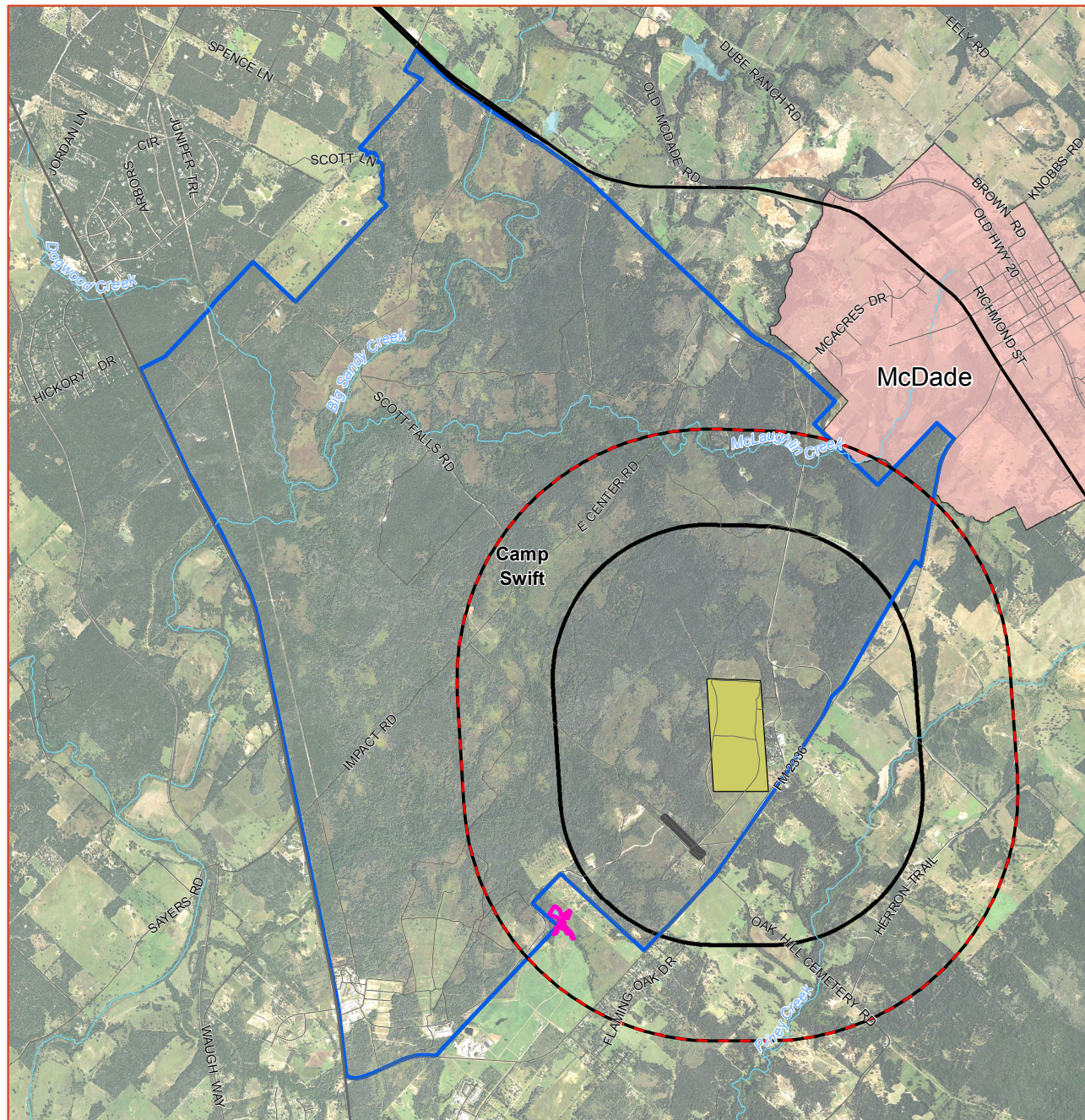
Compatibility Assessment

Camp Swift indicated that there was a concern regarding the uncontrolled airspace above the training ranges. The training ranges at Camp Swift provide numerous capabilities for training on a variety of weapons including, but are not limited to, the following:

- Automated M-16 training,
- Multi-purpose machine gun training, and
- Grenade training.

The primary concern is that the uncontrolled airspace can pose a threat to other general and personal aviators that operate over the Camp Swift Ranges. While Camp Swift posts red flags over the ranges upwards of 15 feet above the ranges, the general and personal aviators if approaching from the southwest may not see the red flags due to topography and other flight factors. This creates a safety risk to both the pilot and the personnel training on the ranges.

It should be noted that Camp Swift is not under a designated Small Arms Range Safety Areas (SARSA) airspace control. With this designation, there are notices to airmen (NOTAMs) issued to inform general and personal aviators. In addition, if the airspace is designated as SARSA-controlled, then it becomes known to all aviators or operators in the area, which allows for necessary awareness and avoidance measures to be executed to ensure safety of all involved in aviation and range training activities.



Legend

- | | | | |
|------------------------------|--------------------------------------|------------------------------|----------------|
| Obstacles of Concern | Camp Swift | JLUS Participating Community | US Highway |
| Drop Zone Obstacle-Free Area | Blackwell Drop Zone Area of Activity | State Highway | Local Road |
| Military Drop Zone Area | Landing Strip | Railroad | Water Body |
| | | | Stream / River |

Source: Camp Swift, 2015.



0 0.5 1 Miles

Figure 5.16-2
Obstacles Near Drop Zone

Existing Tools

Security Guidelines for General Aviation Airports: Information Publication A-001

The Transportation Security Administration (TSA) publication recognizes that military installations, including airports are sensitive sites or critical infrastructure. The Security Guidelines for General Aviation Airports: Information Publication A-001 (IP A-001) establishes guidelines for General Aviation (GA) owners and operators to coordinate with all sensitive sites or critical infrastructure. The IP A-001 indicates that military installations typically have unique needs to execute and carry out their mission, so it is incumbent on the GA owners and operators to coordinate appropriately and effectively with these critical infrastructure assets. Such coordination can include but not be limited to access points, areas of access, security patrol boundaries, and security response responsibilities. However, these guidelines do not include explicit instruction about notification to pilots or NOTAM. This NOTAM is critical in scenarios such as the one at Camp Swift without the SARSA-controlled airspace.

Source: Security Guidelines for General Aviation Airport, 2004; https://www.tsa.gov/sites/default/files/assets/pdf/Intermodal/security_guidelines_for_general_aviation_airports.pdf

Department of the Army Pamphlet 385-63: Range Safety

According to the Department of the Army Pamphlet 385-63 (DA PAM 385-63): Range Safety, firing activities at sites such as Camp Swift are not to be conducted if the cloud height is less than 305 meters above the ricochet height of the ordnance being fired. The Garrison Commander or Range Officer in Charge (OIC) should consider highest altitude of fire and maximum ordnance in addition to the ricochet factor in the risk assessment. It is the responsibility of the OIC to have visibility of the airspace from the boundaries of the SDZ to detect approaching aircraft. The maximum vertical limits is determined by various factors including type of ordnance fired, location of target, stationary or mobile targets, etc. The DA PAM 385-63: Range Safety provides information for all the types of ordnance fired on training ranges with associated vertical limits.

If an aircraft does enter the airspace over the ranges, the OIC must call an immediate cease fire until the aircraft has left visibility over the range.

Army Regulation 350-19: The Army Sustainable Range Program

The Army Regulation 350-19 (AR 350-19) reports that before any firing occurs on any ranges that could potentially impact the public, a firing notification must be given to the news media from the installation's Public Affairs Officer (PAO). The AR 350-19 indicates this requirement is also stated in the DA PAM 385-63.

While this provides a requirement to notify the public through release to news media, this does not consider civilians who do not monitor news or local media. This AR 350-19 also does not require notification to nearby private or municipal airports or collaboration with the aviation operators.

Findings

- The TSA's IP A-001 document does not define a formal coordination process such as the use of NOTAMs for notifying airmen that could enter the airspace over Camp Swift.
- The DA PAM 385-63 only protects aircraft by a visual recognition from the OIC. This does not address the concerns if visibility is limited.
- While AR 350-19 requires notice of firing prior to any firing activities occurring on ranges, it only requires notice to news media. This does not specify other outlets or platforms for notification, especially to general and private aviation operators in an area.

5.17 Vertical Obstructions

Vertical obstructions are created by buildings, trees, structures, or other features that may encroach into the navigable airspace used for military operations (aircraft approach, transitional, inner horizontal, outer horizontal, and conical areas as well as military training routes). These can present a safety hazard to both the public and military personnel.

Key Terms

Approach-Departure Clearance Surface. The approach-departure clearance surface is an area extending out from the primary surface to a length of 1,200 feet. The slope for this area is one vertical foot for every two horizontal.

Imaginary Surface. Imaginary surfaces are the areas surrounding a heliport or runway that must be kept clear of objects that might damage an aircraft. A manmade or natural object that projects above an imaginary surface is an obstruction.

Primary Surface. The primary surface of a helicopter runway or landing lane is an area with a width of 300 feet wide by the length of the actual landing lane plus 75 feet extending on both ends of the runway.

Transitional Surface. The transitional surface starts at the lateral edges of the primary surface and the approach departure clearance surface. It continues outward and upward at the prescribed slope to an elevation of 150 feet above the established airfield elevation. The slope for this area is one foot vertical for every eight horizontal feet.

Technical Background

The Federal Aviation Administration (FAA) has developed regulations, referred to as Part 77, which describe distances from airport and heliport sites that restrict building, structure, or object height so that they do not interfere with aircraft takeoff and landing operations. Part 77 requires that for a ratio of “25 to 1 for a horizontal distance of 5,000 feet from the nearest point of the nearest landing and takeoff area of each [DoD] heliport” (airport), any structure being proposed must have a notice filed with the FAA. The FAA also states:

“The airport imaginary surfaces proposed for helicopters have been substantially revised for compatibility with the current “Heliport Design Guide.” The primary surfaces coincide in size and shape with the takeoff and landing area of each heliport. The designated approach clearance surfaces begin at the edge(s) of the primary surface and extend outward and upward at a slope of 8 to 1. The approach surface is a trapezoid whose inner width is coincident with the width of the primary surface and which extends to the minimum en route altitude where its width is 500 feet. Transitional surfaces extend outward and upward at a slope of 2 to 1 from the lateral boundaries of each primary surface and approach surface for a horizontal distance of 250 feet from the centerline of these surfaces.”

VO-1

Imaginary Surfaces Extend Off-Installation into Unincorporated Areas

There are no controls for building or structure heights including trees in the unincorporated areas where the imaginary surfaces extend off-installation.

Compatibility Assessment

One of the capabilities at Camp Swift is the Combat Assault Landing Strip (CALS). According to the Unified Facilities Criteria 3-260-01 (UFC 3-260-01) Airfield and Heliport Planning and Design, imaginary surfaces are established for heliports, helipads / hovering areas, and helicopter runway and landing lanes. The Camp Swift helicopter runway and landing lane, or the CALS, has a primary surface, transitional surface, and an approach-departure clearance surface. The transitional surface and the approach-departure clearance surface go off-installation to the southeast in the right-of-way very slightly. Thus, land uses are minimally impacted by the imaginary surfaces at Camp Swift.

Although it is a minimal direct impact to the community in this area, it is still important to note this operational footprint as an issue to ensure the land uses under the imaginary surfaces are compatible with the aviation operations that occur in this area.

Additionally, it appears the land uses in this area are undeveloped woodlands and forest lands. While there is currently no development in this area, the natural environment (i.e. trees, in this situation) can still create vertical obstructions to airspace. These vertical obstructions can impede aviation operations and increase the risk profile to pilots and anything on the ground.

The primary issue is that there are no controls for this area to regulate land uses, specifically building or structure heights, nor is there a tree ordinance that establishes procedures for the maintenance of the trees in this area. It should be noted that this landing strip is currently not in use; however this could be an asset that is reinstated at a future date.

Existing Tools

Unified Facilities Criteria 3-260-01: Airfield and Heliport Planning and Design

According to UFC 3-260-01, the imaginary surfaces for a helicopter runway and landing lane includes the design and designation of a primary surface with a width of 300 feet wide by the length of the actual landing lane plus 75 feet extending on both ends of the runway. The approach-departure clearance surface is an area extending out from the primary surface to a length of 1,200 feet.

The transitional surface starts at the lateral edges of the primary surface and the approach-departure clearance surface. It continues outward and upward at the prescribed slope to an elevation of 150 feet above the established airfield elevation.

This tool provides the slopes for allowable heights of structures including natural-occurring objects which provide safe navigable airspace.

Subdivision Regulations for Bastrop County Approved April 23, 2007, Amended March 24, 2009

The county's subdivision regulations provide only limited land use authority to the county to control infrastructure installation as long as it complies with the metropolitan planning organization's transportation plans. Therefore, there are no controls within the area of the imaginary surfaces that extend off installation.

Findings

- The imaginary surfaces that extend off-installation only impact the right-of-way of Farm-to-Market Road 2336.
- UFC 3-260-01 provides the slopes for allowable heights for the areas that go off installation relative to the Camp Swift imaginary surfaces.
- There are no land use controls including for naturally-occurring objects such as trees in the imaginary surfaces off the Camp Swift installation.

VO-2

Wind Energy Potential at Heights of 80 Meters

There are no land use controls in areas around Camp Swift for wind energy development above 80 meters.

Compatibility Assessment

Certain types of solar energy developments can include installation of a tracking tower, which at certain locations can be upwards of 150 feet. In the same vein, wind energy developments that include installations of tall turbines, depending on ground level elevation, can penetrate navigable airspace upwards of 500 feet. These types of development can impede navigable airspace, especially for low-altitude aviation operations at Camp Swift.

As illustrated by Figures 5.8-1 and 5.8-2 in Section 5.8 Energy Development, there is potential for both solar and wind energy developments in this area. However, the primary concern regarding this issue is that there are no controls for structure heights in the

unincorporated county, which characterizes the majority of the land around Camp Swift.

Existing Tools

Subdivision Regulations for Bastrop County, Approved April 23, 2007; Amended March 24, 2009

In the Interim Subdivision Regulations for Bastrop County, the County specifies that a preliminary plat package and its subsequent final plat package must contain names of the adjoining or adjacent property owners to include any deed references per tax records.

While this provides a high level measure of coordination with Camp Swift and the TXNG, the subdivision regulations do not indicate if any other nearby property owners, i.e. the military, should be included in the plat packages. The subdivision regulations only specify that adjacent property owners and adjacent subdivision owners be listed in the proposed plat for approval. This can lead to uncoordinated location of solar and wind energy developments in the unincorporated county.

Additionally, there is no reference for coordination with the military in Bastrop County.

Findings

- There are no communication and coordination procedures for alternative energy development in the unincorporated county.

Please see next page.



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