



ENVIRONMENTAL ASSESSMENT

Base Civil Engineer Complex

**United States Air Force
Air Education and Training Command
Altus Air Force Base, Oklahoma**

July 2003

Report Documentation Page			Form Approved OMB No. 0704-0188		
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE JUL 2003		2. REPORT TYPE		3. DATES COVERED 00-00-2003 to 00-00-2003	
4. TITLE AND SUBTITLE Environmental Assessment Base Civil Engineer Complex, Altus Air Force Base, Oklahoma			5a. CONTRACT NUMBER		
			5b. GRANT NUMBER		
			5c. PROGRAM ELEMENT NUMBER		
6. AUTHOR(S)			5d. PROJECT NUMBER		
			5e. TASK NUMBER		
			5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Science Applications International Corporation (SAIC),1710 SAIC Drive,McLean,VA,22102			8. PERFORMING ORGANIZATION REPORT NUMBER		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSOR/MONITOR'S ACRONYM(S)		
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)		
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT Base CE functions are required to develop, program, and execute requirements to maintain, repair, operate, and construct base facilities, pavements, and utility systems in support of the base mission and individual organizational customers. Several of the current Base CE facilities were constructed in the 1950s and have deteriorated beyond economical repair. In addition, Base CE functions now occupy 19 facilities located throughout Altus AFB which introduces workforce inefficiency and degrades prompt completion of engineering operations. The proposed action at Altus AFB includes the construction of a new consolidated Base CE Complex consisting of approximately 120,700 square feet (sf). Buildings would consist of concrete foundations and floor slabs, steel frames, concrete pre-cast walls, standing seam metal roofs, and supporting utilities. In addition, 10 buildings totaling about 81,100 sf would be demolished. Conversely, the Air Force could select to take no action (no-action alternative). The following biophysical resources were identified for study at Altus AFB: noise, air quality, earth resources, water resources, hazardous materials, biological resources, cultural resources, and environmental justice.					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 82	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

FINDING OF NO SIGNIFICANT IMPACT

BASE CIVIL ENGINEER COMPLEX ALTUS AIR FORCE BASE, OKLAHOMA

AGENCY: United States Air Force

PURPOSE: The 97th Air Mobility Wing (97 AMW) at Altus Air Force Base (AFB) has prepared an environmental assessment (EA) for the construction of a new Base Civil Engineer (CE) Complex located in Jackson County, Oklahoma, as described in the next paragraph. The July 2003 CE Complex EA has been incorporated by reference. This EA has been accomplished pursuant to the National Environmental Policy Act (NEPA); the Council of Environmental Quality regulations implementing the NEPA; Department of Defense (DoD) Directive 6050.1, *Environmental Effects in the United States of DoD Actions*; and Air Force Instruction (AFI) 32-7061, *The Environmental Impact Analysis Process*, Interim Change 2003-1, which implements these regulations.

PROPOSED ACTION: Base CE functions are required to develop, program, and execute requirements to maintain, repair, operate, and construct base facilities, pavements, and utility systems in support of the base mission and individual organizational customers. Several of the current Base CE facilities were constructed in the 1950s and have deteriorated beyond economical repair. In addition, Base CE functions now occupy 19 facilities located throughout Altus AFB which introduces workforce inefficiency and degrades prompt completion of engineering operations. The proposed action includes the construction of a new consolidated Base CE Complex consisting of approximately 120,700 square feet (sf). Buildings would consist of concrete foundations and floor slabs, steel frames, concrete pre-cast walls, standing seam metal roofs, and supporting utilities. In addition, 10 buildings totaling about 81,100 sf would be demolished.

FORESEEABLE ACTIONS: Foreseeable actions include the proposed privatization of military family housing (MFH) at Altus AFB, changes to the C-17 aircrew training program conducted at Altus AFB, and installation and operation of a Digital Airport Surveillance Radar (DASR) system at Altus AFB.

SUMMARY OF FINDINGS: This EA evaluated the environmental sensitivity of Altus AFB with regard to the proposed projects. Potential impacts are summarized below.

Noise. Demolition and construction activities in the vicinity of the proposed Base CE Complex will result in a minor temporary increase in noise levels. The primary noise from these construction activities will be generated by vehicles and equipment involved in site clearing and grading, construction, landscaping, and finishing work. Typical noise levels generated by these construction activities range from an energy equivalent sound level of 75 to 89 A-weighted sound level, measured in decibels, at 50 feet from the source. Potential cumulative impacts would increase noise only slightly. Impacts will not be significant.

Air Quality. Emissions of all pollutants will be less than 250 tons per year; therefore, the proposed action will not be considered regionally significant. The maximum annual increase in emissions for any pollutant as compared to baseline emissions will be less than 0.2 percent for particulate matter equal to or less than 10 microns in diameter (PM₁₀). The primary short-term air quality impacts resulting from these projects at Altus AFB will be a temporary increase of air pollutants within Jackson County and the Southwestern Oklahoma Intrastate Air Quality Control Region, which will cease as soon as the projects are completed. Fugitive dust emissions from ground-disturbing activities will be minimized and kept under proper control. The primary short-term air quality impacts resulting from these projects at Altus AFB will be the same as for the proposed action. Altus AFB is located in an area classified as attainment or unclassified for all criteria pollutants. Therefore, the proposed action is not subject to the de minimis and conformity determination requirements of the US Environmental Protection Agency Final Conformity Rule as defined in 40 CFR 93.153. Additionally, the proposed construction projects will be in compliance with the Oklahoma State Implementation Plan.

Earth Resources. Demolition and construction activities at Altus AFB will require limited soil disturbances. These activities are typical at construction sites. No impacts to geology and soils from the proposed action or ongoing actions are expected at any of the proposed project locations. Cumulative impacts to earth resources from the proposed and ongoing actions are not expected.

Water Resources. Approximately 0.91 acres of impervious (impenetrable) cover will be added from the construction of the proposed facilities. Compared to the estimated 713 acres of impervious cover on Altus AFB, this will increase the total amount of impervious cover (0.12 percent) and result in a minimal impact on the total volume of storm water runoff. The construction and addition projects at Altus AFB are expected to cumulatively increase impervious surface cover. The net cumulative effect on storm water at Altus AFB due to the proposed activities would be minimal when compared to the whole installation.

Hazardous Materials. Hazardous materials will not be used and hazardous waste will not be generated by Altus AFB as a result of the demolition and construction of the Base CE Complex. The proposed Base CE Complex would replace existing facilities that use and store hazardous materials. The new facilities would be constructed to meet current building codes and would provide for safer hazardous material storage and safer working environments for the craftsmen using the materials. It is not anticipated that asbestos and lead-based paint will be encountered during the demolition activities. However, if necessary, asbestos and lead-based paint will be managed separately from the rest of the construction waste materials. A contractor trained in the disposal and management of this special waste will be used to perform this work. If encountered, the asbestos and lead-based paint removal will be managed and disposed according to the Altus AFB's *Lead-Based Paint Management Plan*, *Asbestos Management Plan*, and the *Asbestos Operations Plan*. No impacts are expected.

Biological Resources. The proposed demolition and construction activities would occur within previously disturbed portions of Altus AFB. There would be no impacts to vegetation outside the proposed project areas and best management practices during demolition and construction would minimize impacts to vegetation at and near the construction sites. New trees, shrubs, and other landscaping would provide additional urban habitat for birds and other wildlife. As a result, overall impacts to vegetative resources will be minimal. Cumulative impacts will not be significant.

Cultural Resources. There will be no effect on listed or eligible historic resources located in the proposed project areas. Structures to be demolished are not eligible for listing on the National Register of Historic Places. Therefore, the proposed action will have no effect on historic resources. In addition, no structures have been identified for renovation under the proposed action. There will be no cumulative impact to cultural resources resulting from the implementation of the proposed action and ongoing actions. Consultation with the Oklahoma State Historic Preservation Officer has been initiated.

Environmental Justice. There would be no impacts to earth resources, water resources, hazardous materials, biological resources, and cultural resources impacts resulting from the proposed action. Activities that would impact air quality would disperse over the entire area and would not disproportionately affect minority or low-income populations. Noise generated from the short-term construction activities would not impact off-site sensitive receptors. Therefore, there would be no disproportionate or adverse effects on minority or low income populations from the proposed or ongoing actions.

NO-ACTION ALTERNATIVE: The conditions and characteristics anticipated under the no-action alternative for each of the biophysical resources will continue at levels equal to those occurring under the existing condition. No significant environmental impacts are experienced or generated by the existing condition. Likewise, no environmental regulations are violated by the existing operating procedures. Therefore, no significant impacts would be expected for the no-action alternative.

DECISION: Based on my review of the facts and analysis contained in this environmental assessment, I conclude the implementation of the proposed action will not produce significant impacts, either by itself, or considering cumulative impacts. Accordingly, the requirements of the National Environmental Policy Act, regulations promulgated by the President's Council on Environmental Quality, and Air Force Instruction 32-7061 are fulfilled and an environmental impact statement is not required.



DAVID R. MILLER, Colonel, USAF
Chairperson, Environmental Protection Committee
Altus Air Force Base, Oklahoma

4 SEP 03
Date

Environmental Assessment

**Base Civil Engineer Complex
Altus Air Force Base, Oklahoma**

**Department of the Air Force
97th Air Mobility Wing
Altus Air Force Base, Oklahoma**

July 2003



This Report Printed 20% on Recycled Paper

PRIVACY ADVISORY NOTICE

Your comments on this draft Environmental Assessment are requested. Letters or other written or oral comments provided may be published in the Final EA. As required by law, comments will be addressed in the Final EA and made available to the public. Any personal information provided will be used only to identify your intention to make a statement during the public comment portion of any public meetings or hearings, or to fulfill requests for copies of the Final EA or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of the Final EA. However, only names of the individuals making comments and specific comments will be disclosed. Personal home addresses and phone numbers will not be published in the Final EA.

COVER SHEET

Responsible Agency: United States Air Force, Altus Air Force Base (AFB), Oklahoma.

Proposed Action: Base Civil Engineer Complex, Altus AFB, Jackson County, Oklahoma.

Point of Contact: Mr. James Bellon, 97 CES/CEV, 401 L Avenue, Altus AFB, Oklahoma, 73523-5138, 580.481.7606.

Report Designation: Preliminary Draft Environmental Assessment (EA)

Abstract: Base CE functions are required to develop, program, and execute requirements to maintain, repair, operate, and construct base facilities, pavements, and utility systems in support of the base mission and individual organizational customers. Several of the current Base CE facilities were constructed in the 1950s and have deteriorated beyond economical repair. In addition, Base CE functions now occupy 19 facilities located throughout Altus AFB which introduces workforce inefficiency and degrades prompt completion of engineering operations. The proposed action at Altus AFB includes the construction of a new consolidated Base CE Complex consisting of approximately 120,700 square feet (sf). Buildings would consist of concrete foundations and floor slabs, steel frames, concrete pre-cast walls, standing seam metal roofs, and supporting utilities. In addition, 10 buildings totaling about 81,100 sf would be demolished. Conversely, the Air Force could select to take no action (no-action alternative). The following biophysical resources were identified for study at Altus AFB: noise, air quality, earth resources, water resources, hazardous materials, biological resources, cultural resources, and environmental justice.

CONTENTS	Page
Acronyms and Abbreviations.....	vii
Chapter 1 Purpose of and Need for Action.....	1-1
1.1 Purpose of and Need for Action	1-1
1.2 Location.....	1-1
1.3 Scope of the Environmental Review	1-5
1.4 Applicable Regulatory Requirements.....	1-6
Chapter 2 Description of Proposed Action and Alternatives	2-1
2.1 Introduction	2-1
2.2 History of the Formulation of Alternatives	2-1
2.2.1 Alternative Selection Criteria	2-1
2.2.2 Development of Alternatives	2-1
2.3 Identification of Alternatives Eliminated from Consideration.....	2-2
2.4 Detailed Description of the Proposed Action.....	2-2
2.5 Description of the No-Action Alternative	2-2
2.6 Detailed Description of Other Action Alternatives	2-2
2.7 Cumulative Impact Analysis	2-3
2.7.1 Military Family Housing Privatization	2-7
2.7.2 C-17 Program Changes	2-7
2.7.3 Digital Airport Surveillance Radar Facility	2-8
2.8 Comparison Matrix of Environmental Effects of All Alternatives	2-9
2.9 Mitigation	2-9

Chapter 3 Affected Environment	3-1
3.1 Introduction	3-1
3.2 Installation Location, History, and Current Mission	3-1
3.3 Description of the Affected Environment	3-2
3.3.1 Noise	3-2
3.3.1.1 Effects of Noise Exposure.....	3-5
3.3.1.2 Baseline Noise.....	3-5
3.3.1.3 Noise Complaints	3-9
3.3.2 Air Quality	3-9
3.3.2.1 Meteorology	3-9
3.3.2.2 Air Pollutants and Regulations.....	3-10
3.3.2.3 Regional Air Quality	3-12
3.3.3 Earth Resources	3-12
3.3.3.1 Geology	3-12
3.3.3.2 Topography	3-12
3.3.3.3 Soils.....	3-13
3.3.4 Water Resources	3-13
3.3.4.1 Surface Water	3-13
3.3.4.2 Groundwater.....	3-14
3.3.5 Hazardous Materials and Wastes	3-14
3.3.5.1 Hazardous Materials.....	3-14
3.3.5.2 Hazardous Waste.....	3-15
3.3.5.3 Installation Restoration Program.....	3-15
3.3.5.4 Lead-based Paint and Asbestos	3-16
3.3.6 Biological Resources	3-17
3.3.6.1 Vegetation	3-17
3.3.6.2 Wildlife.....	3-17
3.3.6.3 Threatened and Endangered Species.....	3-18
3.3.6.4 Wetlands.....	3-19
3.3.6.5 Floodplains	3-20
3.3.7 Cultural Resources	3-23
3.3.7.1 Historic Resources.....	3-24
3.3.7.2 Archaeological Resources	3-24
3.3.8 Environmental Justice.....	3-24

Chapter 4 Environmental Consequences	4-1
4.1 Introduction	4-1
4.2 Change in Current Mission.....	4-1
4.3 Description of the Effects of All Alternatives on the Affected Environment	4-1
4.3.1 Noise	4-1
4.3.1.1 Proposed Action	4-1
4.3.1.2 No-Action Alternative.....	4-3
4.3.1.3 Cumulative Impacts.....	4-3
4.3.1.4 Mitigative Actions.....	4-3
4.3.2 Air Quality	4-4
4.3.2.1 Proposed Action	4-4
4.3.2.2 No-Action Alternative.....	4-6
4.3.2.3 Cumulative Impacts.....	4-6
4.3.2.4 Mitigative Actions.....	4-6
4.3.3 Earth Resources	4-6
4.3.3.1 Proposed Action	4-6
4.3.3.2 No-Action Alternative.....	4-7
4.3.3.3 Cumulative Impacts.....	4-7
4.3.3.4 Mitigative Actions.....	4-7
4.3.4 Water Resources	4-7
4.3.4.1 Surface Water	4-7
4.3.4.1.1 Proposed Action.....	4-7
4.3.4.1.2 No-Action Alternative	4-8
4.3.4.1.3 Cumulative Impacts.....	4-8
4.3.4.1.4 Mitigative Actions	4-8
4.3.4.2 Groundwater.....	4-8
4.3.4.2.1 Proposed Action.....	4-8
4.3.4.2.2 No-Action Alternative	4-8
4.3.4.2.3 Cumulative Impacts	4-8
4.3.4.2.4 Mitigative Actions	4-8
4.3.5 Hazardous Materials	4-8
4.3.5.1 Proposed Action	4-9
4.3.5.2 No-Action Alternative.....	4-9
4.3.5.3 Cumulative Impacts.....	4-9
4.3.5.4 Mitigative Actions.....	4-10
4.3.6 Biological Resources	4-10
4.3.6.1 Proposed Action	4-10
4.3.6.1.1 Vegetation and Wildlife.....	4-10
4.3.6.1.2 Threatened and Endangered Species	4-10
4.3.6.1.3 Wetlands	4-10

4.3.6.1.4 Floodplains	4-10
4.3.6.2 No-Action Alternative.....	4-10
4.3.6.3 Cumulative Impacts.....	4-11
4.3.6.4 Mitigative Actions.....	4-11
4.3.7 Cultural Resources	4-11
4.3.7.1 Historic Resources.....	4-11
4.3.7.1.1 Proposed Action.....	4-11
4.3.7.1.2 No-Action Alternative	4-11
4.3.7.1.3 Cumulative Impacts	4-12
4.3.7.1.4 Mitigative Actions	4-12
4.3.7.2 Archaeological Resources	4-12
4.3.7.2.1 Proposed Action.....	4-12
4.3.7.2.2 No-Action Alternative	4-12
4.3.7.2.3 Cumulative Impacts	4-12
4.3.7.2.3 Mitigative Actions	4-12
4.3.8 Environmental Justice	4-12
4.3.8.1 Proposed Action	4-13
4.3.8.2 No-Action Alternative.....	4-13
4.3.8.3 Cumulative Impacts.....	4-13
4.3.8.4 Mitigative Actions.....	4-13
 Chapter 5 List of Preparers.....	 5-1
 Chapter 6 Persons and Agencies Consulted.....	 6-1
6.1 Federal Agencies	6-1
6.2 State Agencies	6-1
 Chapter 7 References.....	 7-1

FIGURES	Page
Figure 1-1 Regional Location Map	1-3
Figure 2-1 Base Civil Engineer Complex, Altus Air Force Base, Oklahoma.....	2-5
Figure 3-1 Typical A-weighted Sound Levels	3-3
Figure 3-2 Baseline Noise Contours, Altus Air Force Base	3-7
Figure 3-3 100-Year Floodplain, Altus Air Force Base.....	3-21

TABLES

	Page
Table 1-1 Potentially Required Federal Permit, License, or Entitlement	1-7
Table 2-1 Base Civil Engineer Facility Requirements, Proposed Action	2-3
Table 2-2 Summary of Environmental Effects	2-10
Table 3-1 Subjective Effects of Changes in Sound Pressure Level	3-2
Table 3-2 National Ambient Air Quality Standards	3-11
Table 3-3 Racial, Hispanic, and Poverty Characteristics, 2000.....	3-25
Table 4-1 Heavy Equipment Noise Levels at 50 Feet.....	4-2
Table 4-2 Distance to Sensitive Receptors and Predicted Sound Levels, Proposed Action	4-2
Table 4-3 Estimated Increase in Pollutant Emissions within AQCR 189, Proposed Action	4-5
Table 4-4 Summary of Impervious Cover Impacts, Proposed Action	4-7

ACRONYMS AND ABBREVIATIONS

$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
°F	Fahrenheit
433 MAW	433 rd Military Airlift Wing
97 AMW	97 th Air Mobility Wing
ACHP	Advisory Council on Historic Preservation
AETC	Air Education and Training Command
AFB	Air Force Base
AFI	Air Force Instruction
AMC	Air Mobility Command
AMW	Air Mobility Wing
AQCR	Air Quality Control Region
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	carbon monoxide
CRMP	Cultural Resources Management Plan
CWA	Clean Water Act
DB	Decibel
dBA	A-weighted sound level, measured in decibels
DoDD	DoD Directives
DRAS	dual row airdrop system
DZ	Drop Zone
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
FAA	Federal Aviation Administration
FONSI	Finding of No Significant Impact

FTS	Flight Test Squadron
HQ	Headquarters
IRP	Installation Restoration Program
KW	kilowatts
L _{dn}	day-night average sound level
L _{eq}	equivalent sound level
L _p	sound pressure level
MAC	Military Airlift Command
MFH	military family housing
mg/L	milligrams per liter
MHz	Megahertz
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NO _x	nitrogen oxide
NRHP	National Register of Historic Places
NVG	night vision goggle
O ₃	ozone
ODEQ	Oklahoma Department of Environmental Quality
OSHA	Occupational Safety and Health Administration
PI	point of impact
ppm	parts per million
SAC	Strategic Air Command
SFHA	special flood hazard area
SHPO	State Historic Preservation Officer
SO _x	sulfur dioxide
tpy	tons per year
USACE	US Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VOC	volatile organic compound

CHAPTER 1

PURPOSE OF AND NEED FOR ACTION

The Commander, 97th Air Mobility Wing (97 AMW) proposes to construct a Base Civil Engineer (CE) Complex at Altus Air Force Base (AFB). This description of proposed action and alternatives (DOPAA) consists of two chapters covering the purpose and need for action and a detailed description of the proposed action and alternatives. This chapter presents the purpose of and need for action, a description of the location, description of the scope of the environmental review, and an overview of environmental requirements.

1.1 PURPOSE OF AND NEED FOR ACTION

Altus AFB, an Air Education and Training Command (AETC) installation, is a US Air Force Air Mobility Training Center for pilots, navigators, flight engineers, loadmasters, and boom operators. As such, the mission of the 97 AMW, the host unit at Altus AFB, is formal strategic airlift and aerial refueling flying training in C-5, C-17, and KC-135 aircraft for Air Force, Air Force Reserve Command, and Air National Guard units. The base also serves as the aerial port of embarkation for the US Army at Fort Sill, Oklahoma. Approximately 333 of the 97 AMW's training instructors are combat-ready aircrew members who are prepared, when needed, for immediate worldwide deployment to support the National Military Strategy by accomplishing airlift, airdrop, and refueling missions.

In January 1994, the Air Force activated the 97th Training Squadron at Altus AFB. This was the first move in the overall transfer of the KC-135 Combat Crew Training School (CCTS) from Castle AFB, California. The move was completed in March 1995. The Air Force established C-17 academic and simulator training beginning in fiscal year (FY) 1995 and flying training beginning in FY 96. By 2002, the Air Force assigned a total of 10 C-17 aircraft to Altus AFB.

Base CE functions are required to develop, program, and execute requirements to maintain, repair, operate, and construct base facilities, pavements, and utility systems in support of the base mission and individual organizational customers. Several of the current Base CE facilities were constructed in the 1950s and have deteriorated beyond economical repair. In addition, Base CE functions now occupy 19 facilities located throughout Altus AFB which introduces workforce inefficiency and degrades prompt completion of engineering operations. Due to the increased training requirements from CCTS and C-17 training at Altus AFB and the degradation of existing Base CE facilities, the Air Force proposes the construction of new CE facilities and the demolition of existing substandard CE facilities.

1.2 LOCATION

Altus AFB is located in Jackson County in southwestern Oklahoma, approximately 140 miles southwest of Oklahoma City, Oklahoma, as depicted on Figure 1-1.

THIS PAGE INTENTIONALLY LEFT BLANK

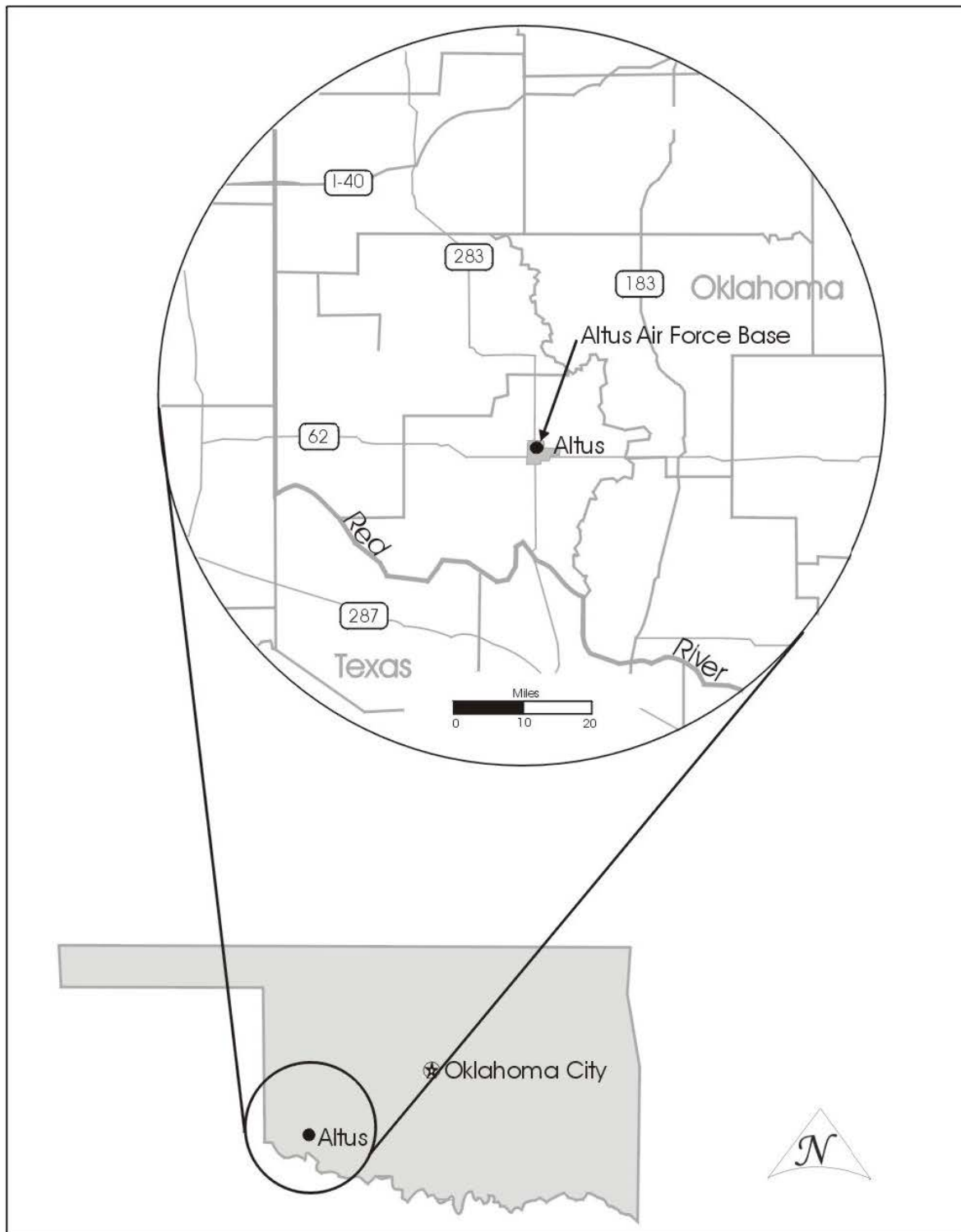


Figure 1-1 Regional Location Map

THIS PAGE INTENTIONALLY LEFT BLANK

1.3 SCOPE OF THE ENVIRONMENTAL REVIEW

The *National Environmental Policy Act* of 1969 (NEPA), as amended, requires federal agencies to consider environmental consequences in the decision-making process. The President's Council on Environmental Quality (CEQ) issued regulations to implement NEPA that include provisions for both the content and procedural aspects of the required environmental assessment (EA). The Air Force Environmental Impact Analysis Process (EIAP) is accomplished through adherence to the procedures set forth in CEQ regulations (40 Code of Federal Regulations [CFR] Sections 1500-1508) and Air Force Instruction 32-7061, *The Environmental Impact Analysis Process*, Interim Change 2003-1, 12 March 2003. These federal regulations establish both the administrative process and substantive scope of the environmental impact evaluation designed to ensure that deciding authorities have a proper understanding of the potential environmental consequences of a contemplated course of action. The CEQ regulations require that an EA:

- Provide sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).
- Facilitate the preparation of an EIS, when required.

An EA will assess the construction of the Base Civil Engineer Complex (including associated demolition projects) at Altus AFB. The EA will identify, describe, and evaluate the potential environmental impacts that may result from implementation of the proposed action or alternative actions as well as possible cumulative impacts from other reasonably foreseeable actions. As appropriate, the affected environment and environmental consequences of the proposed action, alternative actions, and no action alternative may be described in terms of site-specific descriptions or regional overview. Finally, the EA will identify mitigation measures to prevent or minimize environmental impacts, if required.

The following biophysical (combined biological and physical) resources were identified for study at Altus AFB: noise, air quality, earth resources, water resources, hazardous materials and wastes, biological resources, cultural resources, and environmental justice. Assessment of safety and health impacts is not included in this document; all contractors would be responsible for compliance with applicable Occupational Safety and Health Act (OSHA) regulations concerning occupational hazards and specifying appropriate protective measures for all employees. In addition, aircraft operations and maintenance activities, which would be subject to OSHA regulations, are not components of the proposed action.

Since no personnel changes are associated with the proposed action and construction workers would be drawn from the local area, there would be no change to the demand for housing or increased demands on the local school district. It is estimated the economic benefit from the project to the Jackson County area would be small when compared to the total economy of the area. There would be slight benefit to sales volume in the retail and services sectors, employment, and income. Accordingly, socioeconomic resources (demography, housing, education, and economy) are not assessed.

In addition, the proposed CE Complex does not involve changes in existing land use at Altus AFB. Accordingly, land use was not assessed.

Also, the proposed action for this EA does not include the addition of personnel. Therefore, there would be no change in wastewater and solid waste generation rates or in energy consumption. Furthermore, new facilities constructed as part of the proposed action would be insulated to the code standards and new heating and air conditioning equipment would have higher Energy Efficiency Ratios. Lighting fixtures would also be more efficient utilizing newest technologies. For these reasons, sanitary sewer, solid waste, and electricity and natural gas, which are typically assessed under infrastructure and utilities, are not included in this EA.

The affected environment as presented in the *Environmental Impact Statement for Proposed Airfield Repairs, Improvements, and Adjustments to Aircrew Training for Altus AFB*, (May 2002) will be used to establish the baseline conditions. The EA will address peak impacts and expected long term impacts for the proposed or alternative actions.

Other actions or potential actions that may be concurrent with the proposed action could contribute to cumulative impacts. The environmental impacts of these other actions are addressed in this EA only in the context of potential cumulative impacts, if any. A cumulative impact, as defined by the CEQ (40 CFR 1508.7), is the “impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”

1.4 APPLICABLE REGULATORY REQUIREMENTS

Regulatory requirements potentially applicable to the proposed action and alternatives are presented in Table 1-1.

1.5 INTRODUCTION TO THE ORGANIZATION OF THE DOCUMENT

This EA is organized into seven chapters. Chapter 1 contains a statement of the purpose of and need for action, the location of the proposed action, a statement of the decision to be made and identification of the decision maker, a summary of the scope of the environmental review, identification of applicable regulatory requirements, and a description of the organization of the EA. Chapter 2 contains a brief introduction, a description of the history of the formation of alternatives, describes the alternatives eliminated from further consideration, provides a detailed description of the proposed action, identifies other action alternatives, summarizes other actions announced for Altus AFB, provides a comparison matrix of environmental effects for all alternatives, identifies the preferred alternative, and identifies mitigation requirements, if required. Chapter 3 contains a general description of the biophysical resources that potentially could be affected by the proposed action or alternatives. Chapter 4 is an analysis of the environmental consequences. Chapter 5 lists preparers of this document. Chapter 6 lists persons and agencies consulted in the preparation of this EA. Chapter 7 is a list of source documents relevant to the preparation of this EA. Appendix A contains documentation relevant to interagency and intergovernmental coordination. Air pollutant emission calculations for the various construction projects are included in Appendix B.

Table 1-1 Potentially Required Federal Permit, License, or Entitlement

Federal Permit, License, or Entitlement	Typical Activity, Facility, or Category of Persons Required to Obtain the Federal Permit, License, or Entitlement	Authority	Regulatory Agency
Title V permit under the Clean Air Act (CAA)	<p>Sources subject to the Title V permit program include:</p> <p>Any major source:</p> <p>(1) A stationary source that emits or has the potential to emit 100 tons per year (tpy) of any pollutant (major source threshold can be lower in nonattainment areas),</p> <p>(2) A major source of air toxics regulated under Section 112 of Title III (sources that emit or have the potential to emit 10 tpy or more of a hazardous air pollutant or 25 tpy or more of any combination of hazardous air pollutants).</p> <p>Any “affected source” as defined in Title IV (acid rain) of the CAA.</p> <p>Any source subject to New Source Performance Standards under Section 111 of the CAA.</p> <p>Sources required to have new source or modification permits under Parts C [Prevention of Significant Deterioration (attainment areas)] or D [New Source Review (nonattainment areas)] of Title I of the CAA.</p> <p>Any source subject to standards, limitations, or other requirements under Section 112 of the CAA.</p> <p>Other sources designated by US Environmental Protection Agency (USEPA) in the regulations.</p>	Title V of CAA, as amended by the 1990 CAA Amendments	USEPA; Oklahoma Department of Environmental Quality (ODEQ)
National Pollutant Discharge Elimination System permit	Discharge of pollutant from any point source into navigable waters of the United States.	§ 402 of Clean Water Act (CWA); 33 United States Code (USC), §1342	USEPA; ODEQ
National Historic Preservation Act consultation	Excavation and/or removal of archaeological resources from public lands or Indian lands and carrying out activities associated with such excavation and/or removal.	National Historic Preservation Act, § 106	US Department of the Interior - National Park Service, Oklahoma Historical Society

Table 1-1, Continued

Federal Permit, License, or Entitlement	Typical Activity, Facility, or Category of Persons Required to Obtain the Federal Permit, License, or Entitlement	Authority	Regulatory Agency
Endangered Species Act § 7 consultation	Taking endangered or threatened wildlife species; engaging in certain commercial trade of endangered or threatened plants or removing such plants on property subject to federal jurisdiction.	§ 7 of Endangered Species Act, 16 USC § 1539; 50 CFR 17 Subparts C, D, F, and G	US Department of the Interior - Fish and Wildlife Service (USFWS)
Clean Water Act § 404 permit	Actions to reduce the risk of flood loss to minimize the impact of floods on human safety, health, and welfare; to restore and preserve the natural and beneficial values served by floodplains; actions to minimize destruction, loss, or degradation of wetlands; and to preserve and enhance the natural and beneficial values of wetlands.	Executive Orders (EOs) 11988 and 11990, § 404 of CWA, 33 USC § 1251	US Army Corps of Engineers (USACE), USFWS

CHAPTER 2

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

This chapter is composed of nine sections: an introduction, a brief history of the formulation of alternatives to the proposed action, identification of alternatives eliminated from further consideration, a detailed description of the proposed action, a description of the no-action alternative, a detailed description of other alternative actions, identification of other actions, a summary of environmental impacts of all alternatives, and identification of mitigative actions, if applicable.

2.2 HISTORY OF THE FORMULATION OF ALTERNATIVES

2.2.1 Alternative Selection Criteria

The factors considered when developing the alternatives were based on the operational requirements of Altus AFB associated with consolidation of Base CE functions. The consolidation of Base CE functions would improve man-hour utilization, and facilitate management decisions. Therefore, selection criteria were based on the following considerations:

- Consolidation of Base CE functions.
- Locate Base CE Complex in close proximity to main base facilities that the organization is responsible for operating, maintaining, and repairing.
- Make use of current Base Master Plan industrial land use areas.
- Demolition of substandard facilities.

2.2.2 Development of Alternatives

Based on the selection criteria presented in Section 2.2.1, the following alternatives were developed:

- Construct Base CE complex by altering and repairing existing Base CE facilities (Alternative 1).
- Construct new Base CE complex in CE area and demolish substandard Base CE buildings (Alternative 2).
- Construct new Base CE complex in CE area and retain substandard facilities for future use (Alternative 3).

- Construct new Base CE complex in an alternate location and demolish substandard Base CE buildings (Alternative 4).
- Construct new Base CE complex in an alternate location and retain substandard facilities for future use (Alternative 5).
- Take no action (Alternative 6).

2.3 IDENTIFICATION OF ALTERNATIVES ELIMINATED FROM CONSIDERATION

Construction of Base CE complex alternatives focused on the consolidation of Base CE functions at Altus AFB. Alteration and repair of existing Base CE facilities would not be a cost-effective solution. Base CE facilities are beyond useful life and extensive renovation would be needed. Accordingly, retaining these facilities for other uses was eliminated from further consideration. Therefore, alternatives 1, 3 and 5 were eliminated.

With the elimination of the alteration and repair of Base CE facilities, the construction of a new Base CE complex in the vicinity of existing substandard Base CE functions at Altus AFB became the primary area of consideration. To allow for the construction of a new Base CE Complex, demolition of substandard facilities is needed to create space for construction of the new base CE Complex as room for facilities is not available in areas designated for industrial use in the Base's Master Plan. Therefore, alternative 4 was eliminated. Alternative 6 will be discussed in section 4.

2.4 DETAILED DESCRIPTION OF THE PROPOSED ACTION

The 97 AMW proposes to construct a Base CE complex consisting of approximately 120,700 square feet (sf). Buildings would consist of concrete foundations and floor slabs, steel frames, concrete pre-cast walls, standing seam metal roofs, and supporting utilities. In addition, 10 buildings totaling about 81,100 sf would be demolished. The specific projects are included on Table 2-1 and are depicted on Figure 2-1.

2.5 DESCRIPTION OF THE NO-ACTION ALTERNATIVE

Altus AFB would not implement any of the actions proposed in Section 2.4. Base CE functions would be conducted in 19 facilities located across the base. CE functions would continue to utilize substandard facilities and the consolidation of CE activities, improvements to man-hour utilization, and facilitation of management decisions would not occur.

2.6 DETAILED DESCRIPTION OF OTHER ACTION ALTERNATIVES

The purpose of the proposed action is to construct a Base CE Complex that would consolidate base CE functions and to eliminate substandard CE facilities at Altus AFB. Alternate locations for the new Base CE Complex would not be located in close proximity to existing facilities. Therefore, there are no alternatives to the proposed action as detailed in Section 2.4.

Table 2-1 Base Civil Engineer Facility Requirements, Proposed Action

Project Name	Requirement	Description
Construction Projects		
Administration Facility	30,000 sf	Conference Room, Storage, Central File Storage, Mechanical Room, Toilets, Training Room, Drafting Room/Vault, Technical Publication Library, and Automatic Data Processing Equipment
Pavement and Grounds Shop	6,200 sf	Tool and vehicle storage areas along with shop space for maintenance and servicing equipment and vehicles. The new area is to include a wash rack for cleaning equipment and vehicles.
Maintenance Shops	26,000 sf	Collocated shops to include: Electrical, Utilities, Wood Shop, Entomology Shop, Metal Shop, Paint Shop/Storage and Environmental Monitoring and Control Systems along with Supervisors offices/break areas.
Covered High Bay Storage	26,000 sf	Material Control, Contractor Operated Civil Engineer Supply Store, and Self-Help warehouse and offices.
Covered Low Bay Storage Shed	32,500 sf	Vehicle parking area and covered, locked storage for hazardous materials.
Demolition Projects		
Building 30	1,900 sf	Metal, Built in 1978
Building 347	6,650 sf	Wood, Built in 1956
Building 355	1,000 sf	Concrete, Built in 1961
Building 356	12,100 sf	Wood, Built in 1953
Building 357	7,000 sf	Wood, Built in 1956
Building 359	1,250 sf	Wood, Built in 1965
Building 362	9,200 sf	Wood, Built in 1954
Building 365	15,000 sf	Metal, Built in 1954
Building 373	23,000 sf	Wood, Built in 1956
Building 447	4,000 sf	Metal, Built in 1974

sf = square feet

2.7 CUMULATIVE IMPACT ANALYSIS

Cumulative impacts to environmental resources result from the incremental effects of proposed actions when combined with other past, present, and reasonably foreseeable future projects in the region of influence (ROI). Cumulative impacts can result from individually minor, but collectively substantial, actions undertaken over a period of time by various agencies (federal, state, or local) or individuals. In accordance with NEPA, a discussion of cumulative impacts resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the foreseeable future is required.

THIS PAGE INTENTIONALLY LEFT BLANK

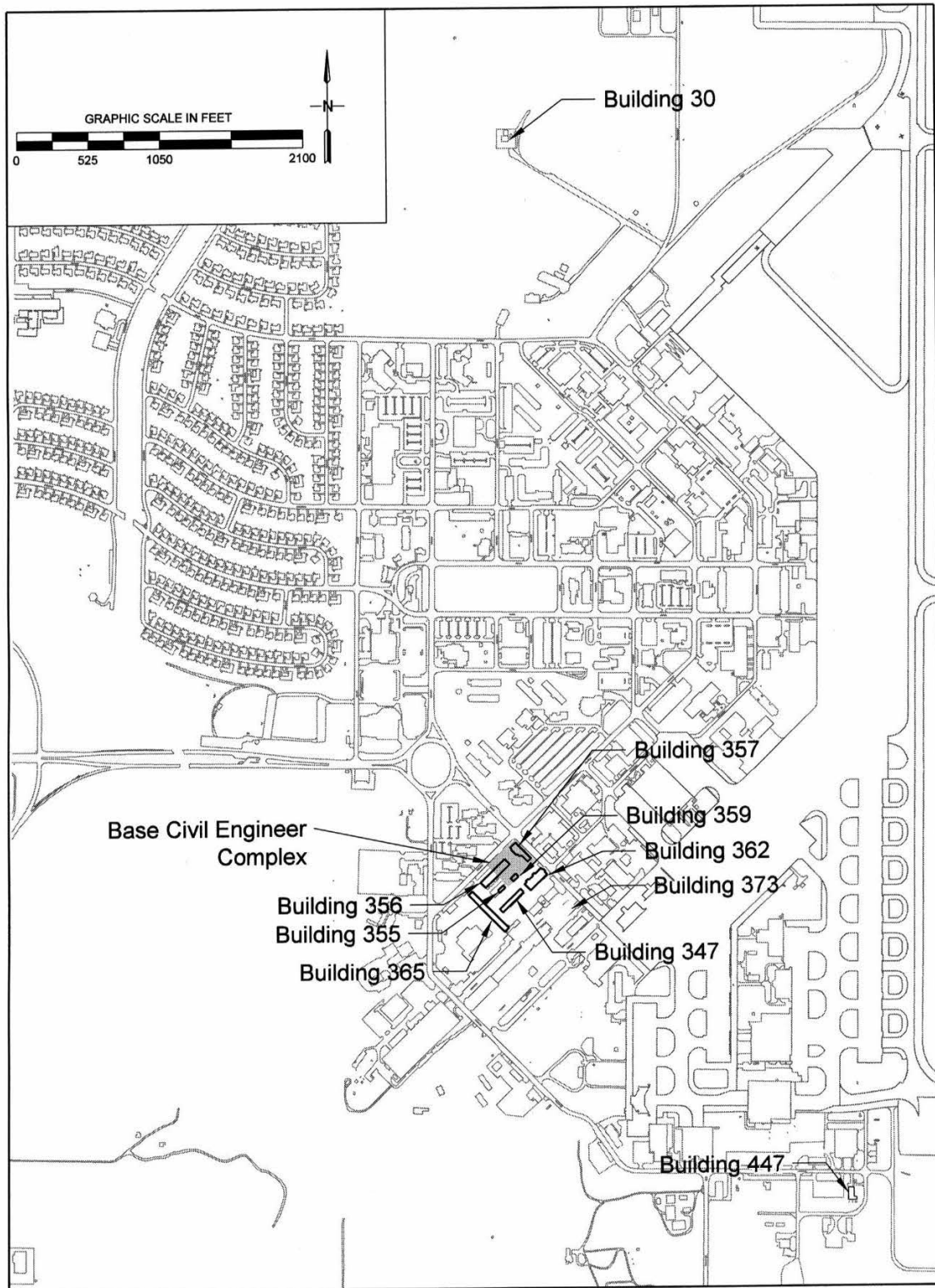


Figure 2-1 Base Civil Engineer Complex, Altus Air Force Base, Oklahoma

THIS PAGE INTENTIONALLY LEFT BLANK

Known independent actions proposed for the ROI of this proposal to construct a Base CE Complex are privatization of military family housing (MFH) at Altus AFB, changes to the C-17 aircrew training program conducted at Altus AFB, and installation and operation of a Digital Airport Surveillance Radar (DASR) system at Altus AFB. These actions are not directly related to the proposal to construct a new Base CE Complex but may contribute to cumulative impacts. This EA for the construction of a new Base CE Complex will address the environmental impacts of other actions only in the context of potential cumulative impacts, if any. The environmental impacts of these additional actions will be analyzed in separate NEPA documents, as appropriate. Specific projects are described in the sections below.

2.7.1 Military Family Housing Privatization

Altus AFB proposes to privatize MFH at the installation by entering into a real estate transaction with a private developer to plan, design, develop, demolish, construct, renovate, replace, own, operate, maintain, and manage the MFH for military personnel for a period of 50 years. All of the 966 MFH units are considered severable, and therefore eligible for privatization. Based on the condition, size and functionality assessments noted above, 87 units have been identified for complete replacement, 317 units require whole-house renovation, 517 units require partial renovation, and 140 surplus units would be demolished. Housing proposed for privatization includes the Bicentennial (86 units), Great Plains (184 units), and Capehart (700 units) housing areas. Overall, privatization would include conveyance of 966 MFH units to a private developer for a period of 50 years beginning in FY 03. All of the utility lines (water, sewer, and gas mains and laterals) in the housing areas would also be conveyed to the privatization contractor. As part of the revitalized housing areas, a 15,000 sf swimming pool and 9,000 sf activity center would be constructed. The Government would retain ownership of the underlying land and lease it to the private developer.

2.7.2 C-17 Program Changes

Altus AFB proposes to add up to 8 additional C-17 aircraft at Altus AFB in order to meet the additional crew training requirements. Corresponding increases to training devices, manpower, and facilities are also required. Increases in the frequency of use are expected on existing low-level routes, transition airfields, Drop Zones, and Landing Zones that are utilized for C-17 training. An additional training location would be needed for Assault Landing Zone training. Two candidate sites have been identified near Sooner Drop Zone. An alternative to the C-17 proposal is that an additional eight C-17 aircraft arrive by June 2004 in order to support the new Single Pilot Track Program under development by Headquarters Air Mobility Command (AMC). The goal of this program is to produce a Mission Ready pilot capable of operating their aircraft from either seat, eliminating the need to return for aircraft commander upgrade training. The additional C-17 aircraft would result in additional airspace utilization, increased transition training, student load and manpower increases, and the construction of facilities.

Night Vision Goggle (NVG) training for C-17 aircrews at Altus AFB is an foreseeable element of the C-17 Program Changes. NVG training provides aircrews with increased situational awareness during night missions and the training would be incorporated into the

existing training syllabus by adding six flights per week. It is estimated that each flight would be four hours in duration and would be conducted 50 weeks of the year. Therefore, NVG training would add about 1,200 hours of C-17 flying time annually.

Specifically, the training would include 1) departing Altus AFB; 2) conducting low level training on Visual Route 190; and 3) training at Clinton-Sherman Industrial Airpark. The aircraft would then return to Altus AFB. The pattern profile would be flown about four times per sortie.

2.7.3 Digital Airport Surveillance Radar Facility

The Federal Aviation Administration (FAA) has proposed the installation and operation of a DASR system at Altus AFB. DASR is a new terminal air traffic control radar system that replaces current analog systems with new digital technology. The Air Force Electronics Systems Center and the FAA are in the process of procuring DASR systems to upgrade existing radar facilities for Department of Defense and civilian airfields. The DASR system detects aircraft position and weather conditions in the vicinity of civilian and military airfields. The Government nomenclature for this radar is the ASR-11. The ASR-11 system consists of two electronic subsystems: a primary surveillance radar and a secondary surveillance radar, sometimes called the beacon. The primary surveillance radar uses a continually rotating antenna mounted on a tower to transmit electromagnetic waves which reflect or backscatter from the surface of aircraft up to 60 miles from the radar. The radar system measures the time required for a radar echo to return and the direction of the signal. From this data the system can then measure the distance of the aircraft from the radar antenna and the azimuth or direction of the aircraft from the antenna. The primary radar also provides data on six levels of rainfall intensity. The primary radar operates in the range of 2,700 to 2,900 megahertz (MHz). The transmitter generates a peak effective power of 25 kilowatts (kW) and an average power of 2.1 kW. Average power density of the ASR-11 signal decreases with distance from the antenna. At distances of more than 43 feet from the antenna, the power density of the ASR-11 signal will fall below the maximum permissible exposure levels established by the Federal Communications Commission.

The secondary radar, also called the monopulse secondary surveillance radar, uses a second radar antenna attached to the top of the primary radar antenna to transmit and receive area aircraft data for barometric altitude, identification code, and emergency conditions. Military and commercial aircraft have transmitters that automatically respond to a signal from the secondary radar by reporting an identification code and altitude. The air traffic control uses this system to verify the location of aircraft within a 120-mile radius of the radar site. The beacon radar also provides rapid identification of aircraft in distress. The secondary radar operates in the range of 1,030 to 1,090 MHz. Transmitting power ranges from 160 to 1,500 watts.

The total ASR-11 system also includes the following facilities: an antenna tower; an electronic equipment shelter/building with heating, ventilation, and air conditioning; a power distribution system; an uninterruptible power supply; a back-up emergency engine/generator set; fire detection, security; and cabling to connect the radar to the local radar approach control

center. Telephone and power lines will also be provided to the site. The tower will be from 17 to 87 feet in height, depending upon local surrounding obstructions to the radar signal such as trees, buildings and local terrain. The radar antenna and lightning masts on the top of the tower add an additional 20 feet to the total height of the structure. An optional radome would extend approximately 10 feet above the antenna for a total structure height of 47 to 107 feet. The typical ASR-11 site footprint is 140 by 140 feet plus a maintenance access road.

2.8 COMPARISON MATRIX OF ENVIRONMENTAL EFFECTS OF ALL ALTERNATIVES

Table 2-2 summarizes the impacts of the proposed and alternative actions. Chapter 4 of this EA presents detailed analysis for the proposed and alternative actions, including a cumulative impact analysis for all reasonably foreseeable actions. Potential cumulative impacts of other actions in concert with the proposed action and alternative are not expected to exceed known thresholds and no known synergistic impacts were noted. The impacts for the no-action alternative are the same as baseline conditions.

2.9 MITIGATION

Mitigation measures would not be required for the implementation of the proposed action. Although mitigation measures are not required, this EA identifies actions that could be taken to minimize environmental impacts which are detailed in Chapter 4, when applicable.

Table 2-2 Summary of Environmental Effects

Resource	Proposed Action	No-action Alternative
Noise	Sensitive receptors on, or adjacent to Altus AFB, would not be impacted. Cumulative impacts to sensitive receptors for the proposed action and ongoing actions will not be significant.	Same as for baseline conditions as presented in Section 3.3.1. Cumulative impacts to sensitive receptors for the no-action alternative action and ongoing actions will not be significant.
Air Quality	Emissions of all pollutants would be less than 250 tons per year (tpy); therefore, the proposed action would not be considered regionally significant. The maximum annual increase in emissions for any pollutant as compared to baseline emissions would be less than 0.20 percent for particulate matter equal to or less than 10 microns in diameter (PM ₁₀). The cumulative emissions of all pollutants will be less than 250 tons per year; therefore, the proposed action will not be considered regionally significant.	Same as for baseline conditions as presented in Section 3.3.2. The cumulative emissions of all pollutants will be less than 250 tons per year; therefore, the proposed action will not be considered regionally significant.
Earth Resources	Limited soil disturbing activities from Base CE construction and demolition projects. All activities would occur in previously disturbed areas. Cumulative impacts to earth resources from the proposed and ongoing actions are not expected.	Same as for baseline conditions as presented in Section 3.3.3. Cumulative impacts to earth resources from the no-action alternative and ongoing actions are not expected.
Water Resources	The demolition of facilities would reduce impervious (impenetrable) cover at Altus AFB by 1.86 acres. Construction of the Base CE Complex would add 2.77 acres of impervious (impenetrable) cover. The net increase in 0.91 acres is expected to have a minimal impact on the total amount of impervious cover (0.12 percent) and on the total volume of storm water runoff. The construction and addition projects at Altus AFB are expected to cumulatively increase impervious surface cover.	Same as for baseline conditions as presented in Section 3.3.4. Cumulative impacts to water resources from the no-action alternative and ongoing actions are not expected.
Hazardous Materials	Hazardous materials would be consumed during the demolition and construction project. Hazardous waste would not be generated from demolition and construction activities. The new facilities would be constructed to meet current building codes and would provide for safer hazardous material storage and safer working environments for the craftsmen using the materials. Lead-based paint and asbestos, if encountered, would be managed and disposed according to Altus AFB's <i>Lead-Based Paint Management Plan</i> , <i>Asbestos Management Plan</i> , and the <i>Asbestos Operations Plan</i> . Cumulative impacts to hazardous materials, hazardous waste, asbestos, and lead-based paint are not expected from the proposed or ongoing actions.	Same as for baseline conditions as presented in Section 3.3.5. Cumulative impacts to hazardous materials, hazardous waste, asbestos, and lead-based paint are not expected from the no-action alternative or ongoing actions.

Table 2-2, Continued

Resource	Proposed Action	No-action Alternative
Biological Resources	<p>Impacts to vegetative resources would not occur. No impacts to wildlife resources would occur. The proposed action would have no impact on federal and state listed endangered and threatened species as they are not known to occur on or near Altus AFB. The construction activities associated with the proposed action would not occur in wetland areas. All projects associated with the proposed action would not be located within or adjacent to the 100-year floodplain.</p> <p>The construction activities associated with the proposed action will not occur in floodplain or wetland areas. The proposed and ongoing actions at Altus AFB will not contribute to cumulative impacts on biological resources.</p>	<p>Same as for baseline conditions as presented in Section 3.3.6.</p> <p>Cumulative impacts to biological resources from the no-action alternative and ongoing actions are not expected.</p>
Cultural Resources	<p>Facilities scheduled for demolition have not been identified as listed or eligible historic resources. In addition, these facilities have not been identified as Cold War properties. Impacts to cultural resources would not occur.</p> <p>There will be no cumulative impact to cultural resources resulting from the implementation of the proposed action and ongoing actions.</p>	<p>Same as for baseline conditions as presented in Section 3.3.7.</p> <p>Cumulative impacts to cultural resources from the no-action alternative and ongoing actions are not expected.</p>
Environmental Justice	<p>Impacts to environmental justice are not anticipated from the Base CE Complex projects.</p>	<p>Same as for baseline conditions as presented in Section 3.3.8.</p> <p>Cumulative impacts to transportation from the no-action alternative and ongoing actions are not expected.</p>

THIS PAGE INTENTIONALLY LEFT BLANK

CHAPTER 3

AFFECTED ENVIRONMENT

The affected environment is the baseline against which potential impacts caused by the proposed action are assessed. This chapter focuses on the human environment that has the potential to be affected by the proposed land acquisition for airdrop training use. As stated in 40 CFR §1508.14, the human environment potentially affected is interpreted comprehensively to include the natural and physical resources and the relationship of people with those resources. The approach to defining the environmental baseline was to first identify potential issues and concerns of the proposed action, as discussed in Section 4.0. From this information, the relevant resources are described.

3.1 INTRODUCTION

This chapter provides baseline data for the man-made and natural environmental elements that could potentially be affected by the proposed action and alternatives at Altus AFB. Information is presented in this section to the level of detail necessary to support the analysis of potential impacts in Chapter 4, Environmental Consequences.

3.2 INSTALLATION LOCATION, HISTORY, AND CURRENT MISSION

Altus AFB is located in Jackson County in southwestern Oklahoma, 140 miles southwest of Oklahoma City, Oklahoma, and 60 miles west of Lawton, Oklahoma. Altus AFB, consisting of approximately 3,875 acres is located on the eastern edge of the City of Altus, Oklahoma.

The evolution of Altus AFB began during World War II when the base was established by the War Department on June 17, 1942. Designated as Altus Army Air Field, the installation served as an advanced flying training school for twin engine aircraft during the war. In May 1945, the base was deactivated by the US Army. In September 1948, the War Assets Department turned over the installation to the City of Altus and it became the Altus Municipal Airport. In January 1953, the base was reactivated and eventually placed under the Strategic Air Command (SAC) which assumed full control in June 1954. SAC flew B-47s and KC-97s until 1958 when they were replaced by B-52s and KC-135s (USAF 2002).

In July 1968, control of Altus AFB was transferred to the Military Airlift Command (MAC). The KC-135s continued their air refueling mission at the base through tenant units. In May 1969, MAC transferred the 433rd Military Airlift Wing (433 MAW) from Tinker AFB, Oklahoma, to Altus AFB. The 433 MAW's mission was to train C-141 and C-5 air crews. MAC was redesignated as AMC in June 1992. The 443 MAW and the 340th Air Refueling Wing merged to form the 97 AMW and was incorporated into AMC. On July 1,

1993, the 97 AMW was realigned under AETC, with responsibility for formal aircrew training in C-5, C-141, and KC-135 aircraft (USAF 2002).

The 97 AMW's mission is to operate AETC's strategic airlift and aerial refueling flying training schools, to provide airlift and air refueling support for the Joint Chiefs of Staff Single Integrated Operations Plans, to maintain and support C-5, KC-135, and C-17 aircraft, and to serve as the aerial port of embarkation for the US Army at Fort Sill, Oklahoma (USAF 2002).

3.3 DESCRIPTION OF THE AFFECTED ENVIRONMENT

3.3.1 Noise

Noise is usually defined as unwanted sound, a definition that includes both the psychological and physical nature of the sound (AIHA, 1986). Under certain conditions, noise may cause hearing loss, interfere with human activities at home and work, and may affect human health and well-being in various ways.

Sound pressure level (L_p) can vary over an extremely large range of amplitudes. The decibel (dB) is the accepted standard unit for measuring the amplitude of sound because it accounts for the large variations in amplitude and reflects the way people perceive changes in sound amplitude. Sound levels are easily measured, but the variability is subjective and physical response to sound complicates the analysis of its impact on people. People judge the relative magnitude of sound sensation by subjective terms such as "loudness" or "noisiness." Table 3-1 presents the subjective effect of changes in sound pressure level.

Table 3-1 Subjective Effects of Changes in Sound Pressure Level

Change in Sound Level (dB)	Change in Power		Change in Apparent Loudness
	Decrease	Increase	
3	1/2	2	Just perceptible
5	1/3	3	Clearly noticeable
10	1/10	10	Half or twice as loud
20	1/100	100	Much quieter or louder

Source: Bies and Hansen 1988

Different sounds contain different frequencies. When describing sound and its effect on a human population, A-weighted (dBA) sound levels are typically used to account for the response of the human ear. The term "A-weighted" refers to a filtering of the noise signal which emphasizes frequencies in the middle of the audible spectrum and de-emphasizes low and high frequencies in a manner corresponding to the way the human ear perceives sound. This filtering network has been established by the American National Standards Institute (ANSI 1983). The A-weighted noise level has been found to correlate well with people's judgments of the noisiness of different sounds and has been used for many years as a measure of community noise. Figure 3-1 shows the typical A-weighted sound levels for various sources.

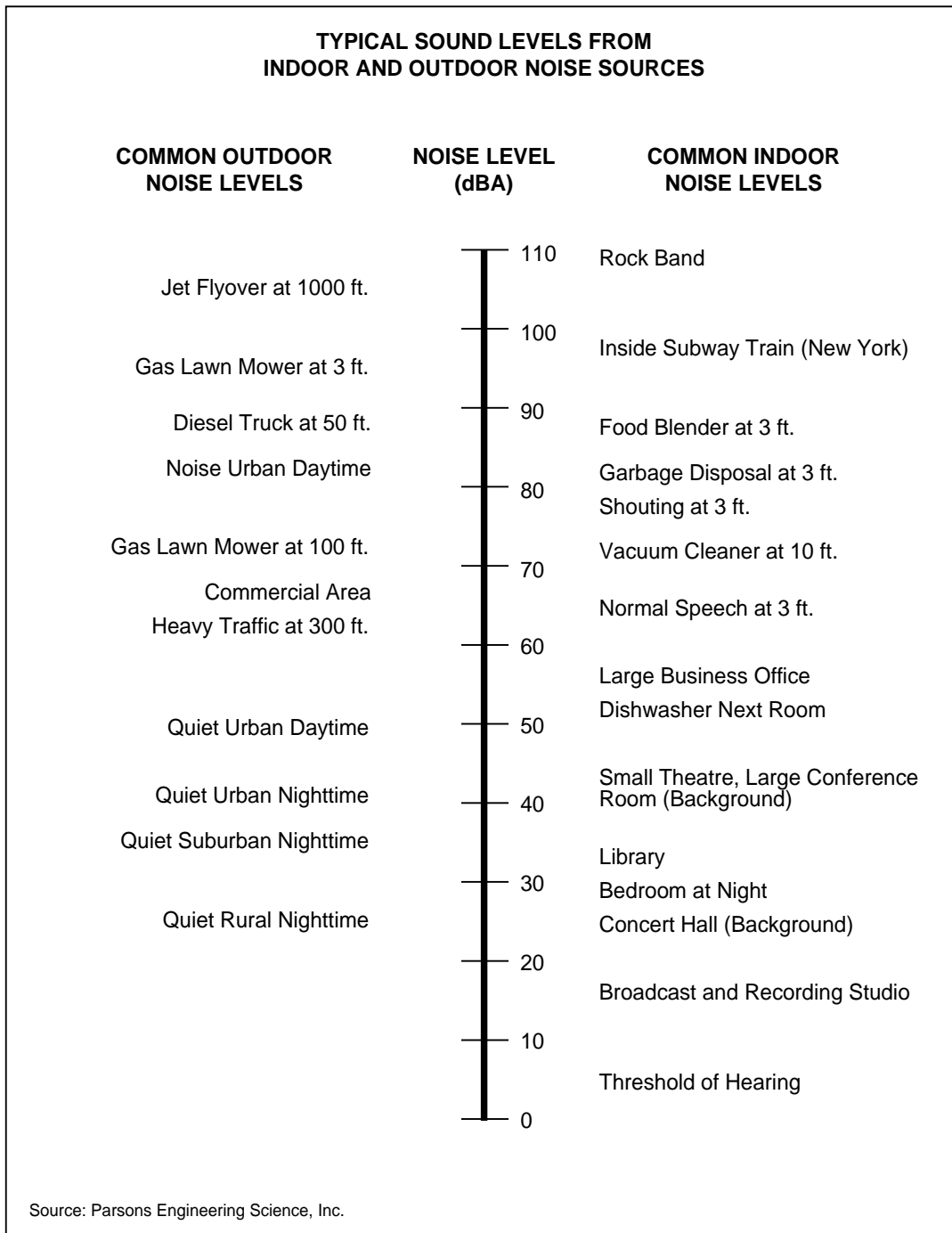


Figure 3-1 Typical A-weighted Sound Levels

THIS PAGE INTENTIONALLY LEFT BLANK

Community noise levels usually change continuously during the day. However, community noise exhibits a daily, weekly, and yearly pattern. Several descriptors have been developed to compare noise levels over different time periods. One descriptor is the equivalent sound level (L_{eq}). The L_{eq} is the equivalent steady-state A-weighted sound level that would contain the same acoustical energy as the time-varying A-weighted sound level during the same time interval.

Another descriptor, the day-night average sound level (L_{dn}), was developed to evaluate the total daily community noise environment. L_{dn} is the average A-weighted acoustical energy for a 24-hour period with a 10 dB upward adjustment added to the nighttime levels (10:00 p.m. to 7:00 a.m.). This adjustment is an effort to account for the increased sensitivity of most people to noise in the nighttime hours. The L_{dn} has been adopted by the USEPA, the FAA, and the Department of Housing and Urban Development as the accepted unit for quantifying human annoyance to general environmental noise.

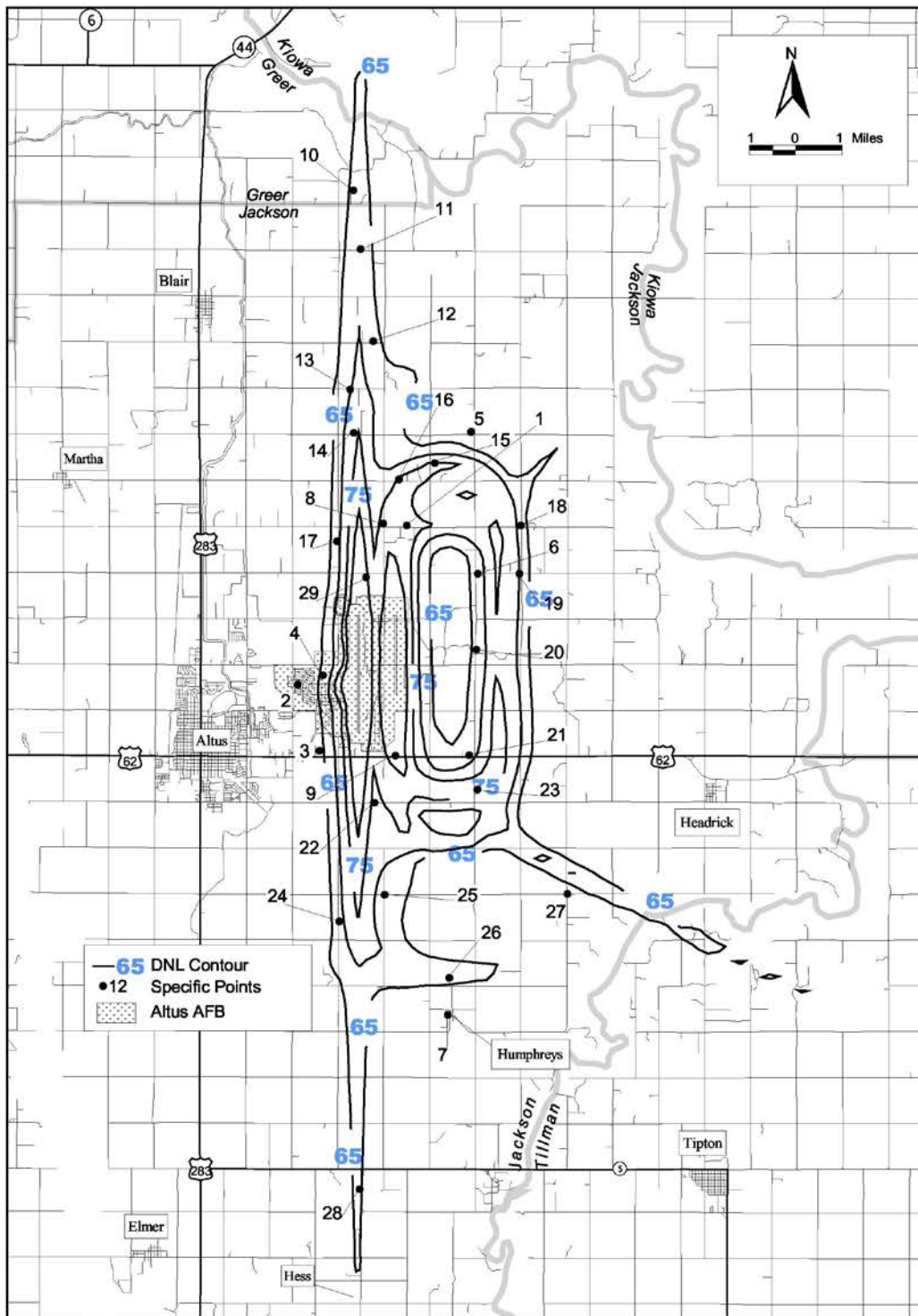
3.3.1.1 Effects of Noise Exposure

Annoyance is the primary human response to intermittent environmental noise, that includes relatively long intervals of quiet (AIHA 1986). The degree of annoyance has been found to correlate well with the L_{dn} . A comparison of the L_{dn} with the percentage of the exposed population that is “highly annoyed” in combination with the estimated population exposed to L_{dn} levels greater than 65 dBA provides an estimate of the number of persons “highly annoyed” by aircraft noise. These levels of annoyance are based on long-term exposure. Annoyance for short-term activities, such as construction noise and new flight patterns, can be influenced by many factors, including habituation and attitude toward the activity creating the noise. Nonetheless, a comparison of this type provides the best available information to predict reactions to a new noise exposure.

3.3.1.2 Baseline Noise

Noise associated with activities at Altus AFB is characteristic of that associated with most Air Force installations with a flying mission. During periods of no aircraft activity, noise associated with base operations results primarily from maintenance and shop activities, ground traffic movement, occasional construction, and similar sources. The resultant noise is almost entirely restricted to the base itself and is comparable to that which might occur in adjacent community areas. It is only during periods of aircraft ground or flight activity that the situation changes. As Altus AFB is primarily a training base, most operations are conducted during daylight hours and on weekdays. Due to airfield operations, existing noise levels are typical of an urban residential area near a major airport. The L_{eq} measured in such an area during the daytime average around 59 dBA, whereas nighttime A-weighted sound levels average around 50 dBA (Harris 1991). Existing L_{dn} noise levels at Altus AFB would therefore be expected to be less than 65 dBA. Existing noise levels at Altus AFB due to flying operations are presented on Figure 3-2.

THIS PAGE INTENTIONALLY LEFT BLANK



Source: USAF 2002

Figure 3-2 Baseline Noise Contours, Altus Air Force Base

THIS PAGE INTENTIONALLY LEFT BLANK

3.3.1.3 Noise Complaints

The current body of evidence indicates that complaints are an inadequate indicator of noise effects on a population. The Air Force, nonetheless, has a strong commitment to address the concerns of the public in its effort to maintain excellent relations with the communities surrounding its installations. As such, the 97 AMW has a well-established and publicized noise complaint process to educate the local community, create goodwill, and promote openness between the base and the community.

The Public Affairs Office processes noise complaints by completing a noise complaint form from information provided by the complainant, logging the complaint, and referring the incident to the 97 AMW Operations Group for investigation. The Public Affairs Office will respond to the complainant with the results of the investigation via a telephone call, a visit, or through correspondence. The noise complaint form, specifically designed for Altus AFB, includes a description of the noise incident and other pertinent information.

3.3.2 Air Quality

3.3.2.1 Meteorology

The meteorological conditions in the vicinity of Altus AFB are extremely diverse. Location, air-mass characteristics, and the jet stream combine to create a wide range of weather activity. The resulting atmospheric conditions may change suddenly and with little warning.

Altus AFB is located in an area with diverse regional weather conditions. Maritime tropical air masses from the Gulf of Mexico move seasonally over the eastern portion of North America. The north-central part of Mexico spawns dry, hot continental air masses. These two air masses dominate the weather activity of southwestern Oklahoma. Altus AFB has a humid, subtropical climate; more rainfall occurs during the warmest six months of the year than the coldest six months. Severe weather conditions may manifest as droughts, tornadoes, and blizzards (USAF 2002).

The average annual mean temperature for Altus AFB is 62 degrees Fahrenheit (°F). The average temperature during the summer months is 83°F with record extremes ranging from 49°F to 116°F. The average mean temperature during the winter is 38°F with record extremes ranging from -4°F to 91°F. Altus AFB averages 24 days per year with temperatures in excess of 100°F and 94 days with temperatures above 90°F. Sub-freezing temperatures occur an average of 73 days per year with 3 days per year reaching below 10°F (USAF 2002).

The average annual relative humidity is 72 percent in the morning and 46 percent in early afternoon. The climate of Altus AFB is described as humid and subtropical, with the greatest amounts of rainfall occurring during the warmest 6 months of the year. Mean precipitation is 24.7 inches per year, with May being the wettest month and January the driest. Mean snowfall averages 7 inches per year with most occurring in February (USAF 2002).

The predominant wind direction is from the southeast. The average wind velocity is 6 knots with a maximum recorded wind speed of 82 knots. Thunderstorms occur an average of 46 days per year. Fog, with accompanying visibility less than 7 miles, occurs an average of 69 days per year with extremes of 8 days per month from December through March (USAF 2002).

3.3.2.2 Air Pollutants and Regulations

The USEPA has established primary and secondary National Ambient Air Quality Standards (NAAQS) under the provisions of the CAA. The CAA not only established the NAAQS, but also set emission limits for certain air pollutants from specific sources, set new source performance standards based on best demonstrated technologies, and established national emissions standards for hazardous air pollutants.

The USEPA classifies the air quality within an Air Quality Control Region (AQCR) according to whether the region meets federal primary and secondary NAAQS. Primary standards define levels of air quality necessary to protect public health with an adequate margin of safety. Secondary standards define levels of air quality necessary to protect public welfare (i.e., soils, vegetation, and wildlife) from any known or anticipated adverse effects of a pollutant. Federal NAAQS are currently established for six pollutants (known as “criteria pollutants”); including carbon monoxide (CO), nitrogen dioxide, ozone (O₃), sulfur oxides (SO_x, commonly measured as sulfur dioxide), lead, and PM₁₀. Although O₃ is considered a criteria pollutant, and is measurable in the atmosphere, it is not often considered as a pollutant when reporting emissions from specific sources. O₃ is not typically emitted directly from most emissions sources. It is formed in the atmosphere from its precursors, nitrogen oxides (NO_x) and volatile organic compounds (VOCs), which are directly emitted from various sources. Thus, NO_x and VOCs are commonly reported instead of O₃.

The EPA Office of Air Quality Planning and Standards has set national ambient air quality standards for the six criteria pollutants (see Table 3-2). Units of measure for the standards shown in this table are micrograms per cubic meter of air (µg/m³), except for ozone, which is in parts per million (ppm).

Table 3-2 National Ambient Air Quality Standards

Pollutant	Standard Value ($\mu\text{g}/\text{m}^3$) ^a	Standard Type
CO		
1 hr average	40,000	Primary
8 hr average	10,000	Primary
NO ₂		
Annual average	100	Primary and secondary
O ₃		
1 hr average	0.12	Primary and secondary
8 hr average ^b	0.08	Primary
Lead		
Quarterly average	1.5	Primary
PM ₁₀		
24 hr average ^c	150	Primary and secondary
Annual average ^d	50	Primary and secondary
PM _{2.5}		
24 hr average ^e	65	Primary
Annual average ^f	15	Primary
SO ₂		
3 hr average	1,300	Secondary
24 hr average	365	Primary
Annual average	80	Primary

^a Except for ppm for ozone.

^b New ozone 8 hr standard does not become effective until area demonstrates compliance with existing 1 hr standard.

^c Existing 24 hr standard for particulate matter equal to or less than 10 micrometers in aerodynamic diameter (PM₁₀) will remain in effect but will be adjusted to 99th percentile of concentrations within an area.

^d Existing PM₁₀ annual standard will remain in effect as is.

^e New PM_{2.5} 24 hr standard is based on 98th percentile of concentrations over 1 year (averaged over 3 years) at population-oriented monitors using highest measured values.

^f New PM_{2.5} annual standard is based on 3-year average of annual arithmetic means.

The EPA classifies the air quality within an AQCR according to whether the region meets federal primary and secondary air quality standards. An AQCR or portion of an AQCR may be classified as attainment, non-attainment, or unclassified with regard to the air quality standards for each of the six criteria pollutants. "Attainment" describes a condition in which standards for one or more of the six pollutants are being met in an area. The area is considered an attainment area for only those criteria pollutants for which the national standards are being met. "Nonattainment" describes a condition in which standards for one or more of the six pollutants are not being met in an area. "Unclassified" indicates that air quality in the area cannot be classified and the area is treated as attainment. An area may have all three classifications for different criteria pollutants.

Air quality management at Air Force installations is established in Air Force Instruction (AFI) 32-7040, *Air Quality Compliance*. AFI 32-7040 requires installations to achieve and

maintain compliance with all applicable federal, state, and local standards for air quality compliance. Air quality compliance involves prevention, control, abatement, documentation, and reporting of air pollution from stationary and mobile sources. Maintaining compliance with air quality regulations may require reduction or elimination of pollutant emissions from existing sources, and control of new pollution sources.

3.3.2.3 Regional Air Quality

Altus AFB is located within southwestern Oklahoma Intrastate AQCR 189. The air quality in the region is generally good. All 12 counties within AQCR 189 are classified by the EPA as attainment or unclassified for all criteria pollutants. A review of recent (1998 and 1997) air quality data from AQCR 189 showed no exceedances of the air quality standards for the monitored pollutants (CO, NO₂, O₃, and PM₁₀) (USAF 2002).

An accurate regional emissions inventory is needed for assessing the potential contribution of a source or group of sources to regional air quality. An emissions inventory is an estimate of the actual and potential pollutant emissions generated by a source or sources over a period of time, normally a calendar year. The inventory accounts for permitted stationary sources that are required to report annual emissions to the ODEQ. It does not include emissions from mobile sources. Total annual (1997) emissions reported for stationary sources within AQCR 189 for five air pollutants are CO–21,374 tpy; VOC – 2,560 tpy; NO_x– 14,906 tpy; SO₂– 1,185 tpy; and PM₁₀– 353 tpy (USAF 2002).

Altus AFB received its Title V Operating Permit (No. 99-117-0) from the ODEQ in August 2000. Because actual emissions from Altus AFB operations are relatively small (i.e., well below the “major source” threshold of 100 tpy), ODEQ has categorized Altus AFB as a “minor” source. Therefore, the Title V Operating Permit is formally labeled by ODEQ as a minor permit. Because potential NO_x emissions theoretically could be greater than 100 tpy (assuming all equipment operates 24 hours a day, 365 days a year), this type of operating permit is commonly referred to as a “synthetic minor” permit.

3.3.3 Earth Resources

3.3.3.1 Geology

According to the Jackson County Soil Survey, the surface rocks in the vicinity of Altus AFB belong to three geologic systems: the Recent and Quaternary deposits, and Hennessey shale. The Recent formations are the alluvium of floodplains along the major streams that are subject to overflow. The Quaternary deposits are composed of loamy and sandy materials. The Hennessey shale consists of red, silty shales and clays, with some siltstone. The uppermost 5 to 40 feet of the Hennessey formation consist primarily of yellowish-gray, buff, tan, orange, yellow, or greenish-gray shale (USAF 2002).

3.3.3.2 Topography

The topography in the vicinity of Altus AFB consists of flat to gently rolling terrain, interspersed with occasional hills and small mountains. Land features such as solution sinks, canyons, mesas and buttes, and badlands also occur. In general, the land increases in

elevation from east to west, and natural elevation ranges from about 1,300 feet to 2,900 feet mean sea level. The Wichita Mountains are located to the northeast, creating a backdrop to the base (USAF 2002).

3.3.3.3 Soils

Soils in the vicinity of Altus AFB are of two general groups: the Tillman-Hollister association and the Miles-Nobscot association. Within these two associations, the predominant soils in the areas surrounding the base include Tillman and Hollister clay loams (0 to 1 percent slopes), Miles fine sandy loams (0 to 3 percent slopes), Nobscot fine sand (0 to 5 percent slopes), and Altus fine sandy loam (0 to 1 percent slopes) (USAF 2002).

The major soil types found on the Altus AFB airfield are Miles fine sandy loam on the northern sections of the runways, Altus fine sandy loam around the center sections of the runways, and Tillman and Hollister clay loams on the southern sections of the runways. No areas composed of these soil types exceed a 3 percent slope. Miles fine sandy loam is susceptible to wind and water erosion. Tillman and Hollister clay loams are classified as having low erodibility where “erosion is not particularly a hazard.” During prolonged dry periods, however, the fine particles of clay and silt are detached from the soil mass and easily eroded. The county soil survey suggested the use of best management practices in areas possessing highly erodible soils that are farmed, including water-control devices, field terraces, diversion terraces, waterways, or farm ponds (USAF 2002).

3.3.4 Water Resources

3.3.4.1 Surface Water

Several streams are located on Altus AFB and in the surrounding areas. Stinking Creek flows from the northwest to the southeast, draining the northern and eastern portion of the base and flowing diagonally to the southeast corner of the base. Stinking Creek is a tributary to the North Fork of the Red River, joining the North Fork approximately 13 miles downstream of the base. The creek drains an approximate 27-square-mile area upstream of US Highway 62, which is adjacent to the southern base boundary. It is a perennial stream with a flow of less than 20 cubic feet per second, except during local rainfall. An unnamed tributary flows within and adjacent to the eastern property boundary of the base for a distance of approximately 5,000 feet (USAF 2002).

An agricultural irrigation canal, the Ozark Canal, enters base property at the northern end near the old Alert area, crossing the airfield below all three runways, and exiting at the easternmost base boundary. The canal’s diked banks preclude surface runoff from the base, and the base has no access to its water. The canal is used for agricultural irrigation and may be dry or ponded during the off season (USAF 2002).

Surface water quality of the streams in the vicinity of Altus AFB is characterized as being of poor quality, with total dissolved solids concentrations of 1,000 milligrams per liter (mg/L) and higher. Water containing 500 mg/L or less of dissolved solids is generally considered satisfactory for most domestic and industrial uses (USAF 2002).

3.3.4.2 Groundwater

The Hennessey Shale group is the only significant hydrologic unit at Altus AFB. The group is exposed at the surface, and includes all the base acreage and areas surrounding the base. Water in the Hennessey Shale is generally unconfined and shallow and is not a major source of water in the Altus AFB area. Yields are generally small, sufficient only for stock and domestic purposes.

Precipitation is the primary source of recharge to the shallow water table. Groundwater storage fluctuates significantly due to seasonal variations and periods of above-average rainfall. When water is available, some local recharge also occurs near an unlined irrigation canal north of the installation (USAF 2002).

Movement of shallow groundwater at Altus AFB is to the southeast, generally paralleling the surface topography. The surface change of altitude across the base from the northwest to southeast is about 35 to 45 feet. The elevation change varies from approximately 1,375 feet (northwest corner of the existing housing area) and 1,385 feet (northernmost section of the runway) to approximately 1,340 feet in the southeast section of the base. This slope is mirrored in the shallow water table, with water level elevations measured in base monitoring wells ranging from about 1,366 feet in the northwest part of the base to about 1,339 feet in the southeast. The hydraulic conductivity of the clay containing the shallow water table was determined to be 3.3×10^{-8} feet per second. Measurements at base monitoring wells show that the depth to water ranges from less than 2 feet to over 12 feet below land surface. No natural surface discharge points are known to occur on the base (USAF 2002).

3.3.5 Hazardous Materials and Wastes

3.3.5.1 Hazardous Materials

Hazardous materials are those substances defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act, and the Toxic Substances Control Act. In general, hazardous materials include substances that, because of their quantity, concentration, physical, chemical, or infectious characteristics, may present substantial danger to public health or welfare or to the environment when released or otherwise improperly managed.

Hazardous materials management at Air Force installations is established primarily by AFI 32-7080, *Pollution Prevention Program*, which incorporates the requirements of all federal regulations, AFIs, and DoD Directives (DoDDs), for the reduction of hazardous material uses and purchases. The primary hazardous materials addressed by AFI 32-7080 are ozone depleting chemicals and the 17 chemicals listed under the USEPA Industrial Toxics Program (EPA 17 chemicals). EO 12088, *Federal Compliance with Pollution Control Standards*, under the authority of the USEPA, ensures that necessary actions are taken for the prevention, management, and abatement of environmental pollution from hazardous materials or hazardous waste due to federal facility activities. Altus AFB developed a pollution prevention management plan which requires compliance by all Altus

AFB activities. The plan, *Pollution Prevention Management Plan, Altus Air Force Base, Volume I: Basic Plan*, and associated appendices were finalized in December 1993 (USAF 1993).

3.3.5.2 Hazardous Waste

Hazardous wastes are defined by the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act (RCRA), which was further amended by the Hazardous and Solid Waste Amendments. RCRA Subtitle C (40 CFR Parts 260 through 270) regulations are administered by the USEPA and are applicable to the management of hazardous waste. Regulatory authority is subsequently delegated by the USEPA to the State of Oklahoma. These regulations require that hazardous waste be handled, stored, transported, disposed, or recycled in compliance with applicable regulations.

Altus AFB does not currently maintain any active permitted hazardous waste storage facilities. Building 451 was used in the past for hazardous waste storage, but is in the process of closure and is no longer used. Altus AFB maintains several satellite accumulation points throughout the base in accordance with RCRA and Air Force regulations. Hazardous waste generated in the workplace is temporarily accumulated at a satellite accumulation point located in the vicinity of generation. Upon accumulation limits being reached (typically 55 gallons per hazardous waste stream, or 1 quart for acutely hazardous waste streams), the waste is taken to a “less than 90-day” accumulation site located at Building 502. Wastes may also be taken directly to the “less than 90-day” accumulation site as they are generated. Within 89 days of arrival at Building 502, the waste is transferred offbase to an authorized treatment, storage, or disposal facility under a contract managed by the Defense Reutilization and Marketing Office.

Approximately 70,500 pounds of hazardous waste was generated by Altus AFB in 1996. Hazardous waste was generated primarily from aircraft maintenance operations, spent hazardous materials, and spills. Air Force waste management operations at Altus AFB are registered with the USEPA under identification number OK9571824045 (USAF 2002).

3.3.5.3 Installation Restoration Program

The DoD implemented the Installation Restoration Program (IRP) to identify the locations and contents of past toxic and hazardous material disposal and spill sites and to eliminate the hazards to public health in an environmentally responsible manner. The objectives of the IRP are to identify and fully evaluate any areas suspected to be contaminated with hazardous materials caused by past Air Force operations, and to eliminate or control any hazards to the public health, welfare, or the environment. The IRP is the basis for response actions on Air Force installations under provisions of CERCLA, and the Superfund Amendments and Reauthorization Act of 1986, as clarified by EO 12580, *Superfund Implementation*.

A Phase I records search at Altus AFB identified 30 sites or areas of concern, 20 of which were determined to require no further action. The remaining 10 potential sites included four former fire training areas, three former landfills, two former wash rack ponds,

and a service station. Additional soil gas and geophysical studies were accomplished on the 10 sites to determine if contamination occurred in the shallow ground water, soils, surface drainages, and evaporation ponds on, or adjacent to, these sites. The results of these studies indicated that no further action, beyond long-term monitoring of shallow ground water, was required at five of the sites. The remaining five sites were recommended for further study under Phase II of the IRP process. On November 8, 1996, the USEPA issued a RCRA 3008 (h) order that directs the investigation and cleanup of several solid waste management units. The 3008 (h) order reopened all previously Air Force closed IRP sites at Altus AFB (USAF 2002).

3.3.5.4 Lead-based Paint and Asbestos

Lead-based paint management at Air Force installations is established in the Air Force policy and guidance on lead-based paint in facilities. The policy incorporates by reference the requirements of 29 CFR 1910.1025, 29 CFR 1926, 40 CFR 50.12, 40 CFR 240 through 280, the CAA, Public Law 102-550, and other applicable federal regulations. This policy requires each installation to develop and implement a facility management plan for identifying, evaluating, managing, and abating lead-based paint hazards.

Lead-based paint activities at Altus AFB are managed by the base Environmental Protection Committee's lead-based paint subcommittee, which has representatives from civil engineering, the medical group, and safety. Lead-based paint detection sampling is accomplished prior to renovation or demolition of a facility. Initial surveys of key and priority facilities have been completed and follow-up monitoring is ongoing at these facilities. Inspection and abatement activities for facilities range from incidental and routine maintenance to full scale abatement in preparation for demolition. If lead-based paint is detected in a building prior to an action and is determined to be a potential hazard or threat, the debris from the demolition or renovation is then disposed of in accordance with applicable federal, state, and local hazardous waste and lead abatement regulations. Lead-based paint is managed according to the base's lead-based paint management plan (USAF 1996).

Asbestos is regulated by the USEPA and OSHA. Emissions of asbestos to ambient air are controlled under Section 112 of the CAA. Identification of asbestos-containing material in base facilities is governed by OSHA under the authority of the Occupational Safety and Health Act, 29 USC §§ 669 et seq. The USEPA has a policy that addresses leaving asbestos in place if its disturbance or removal could pose a health threat.

Asbestos management at Air Force installations is established in AFI 32-1052, *Facility Asbestos Management*. AFI 32-1052 incorporates by reference applicable requirements of 29 CFR 669 et seq., 29 CFR 1910.1025, 29 CFR 1926.58, 40 CFR 61.140, Section 112 of the CAA, and other applicable AFIs and DoDDs. AFI 32-1052 requires installations to develop an asbestos management plan for the purposes of maintaining a permanent record of the current status and condition of all asbestos-containing material in the installation facility inventory and documenting all asbestos management efforts. In addition, the instruction

requires installations to develop an asbestos operations plan that details how the installation will conduct asbestos-related projects (USAF 2002).

Altus AFB bioenvironmental engineering staff conducts asbestos sampling prior to renovation or demolition of a facility. The samples are sent to a state- or USEPA-certified laboratory for analysis. Asbestos-containing material is disposed of in accordance with RCRA statutes and transported under applicable Department of Transportation regulations. Asbestos management and operations involving asbestos are conducted according to the base's *Asbestos Management Plan* and *Asbestos Operations Plan* (USAF 2002).

3.3.6 Biological Resources

3.3.6.1 Vegetation

The southwest corner of Oklahoma lies in the transition zone between the mixed grass prairie and short grass prairie. Warm season grasses dominate this area and species common to both regions are found within the area. Most of the grassland found on more productive soils has been converted to crop and pasture lands. Marginal or low quality soils have been left or allowed to revert to rangeland, primarily mesquite. Woodlands are very limited, existing mainly as tree-row windbreaks and along waterways (USAF 2002).

The area surrounding Altus AFB is located within the mixed-grass prairie of the Kansan biotic province. Grasses and shrubs cover the majority of the uncultivated and undeveloped land. Very few native species of trees exist in the area (trees generally only occur naturally here along streams or irrigated areas), and attempts to establish trees on base have been difficult because of extreme temperatures, lack of moisture, and clay soils with high salt content. Native grasses consist primarily of little bluestem, sand bluestem, and switchgrass. Yucca, mesquite, sagebrush, and other xerophytic shrubs are scattered among the native grasses. Much of the native vegetation in the general vicinity of Altus AFB has been replaced by introduced species. Most vegetated areas on and adjacent to the base are actively landscaped or maintained (mowed). In addition, much of the mixed prairie in the vicinity of Altus AFB has been converted to short-grass pasture for livestock grazing. Wheat, cotton, sorghum, and alfalfa are the major crops grown in the area's cultivated fields. A complete list of plant species and plant communities found in the vicinity of Altus AFB is included in the Oklahoma Biological Survey's endangered species survey for Altus AFB (USAF 2002).

3.3.6.2 Wildlife

Five small mammal (rodent) species are known to be found on Altus AFB. They are, in order of abundance, hispid cotton rat, white-footed mouse, house mouse, deer mouse, and fulvous harvest mouse. Many other wildlife species exist on and adjacent to Altus AFB. Some of the native mammals include fox squirrel, 13-lined ground squirrel, cottontail and jackrabbit, skunk, opossum, beaver, several species of mice, mule deer, coyote, and nine-banded armadillo. A total of 68 species of birds have been recorded on and adjacent to Altus AFB. The most common bird species on Altus AFB is the great-tailed grackle, with mourning doves the second most abundant. Other species observed frequently include

Mississippi kites, cliff swallows, house sparrows, and western meadowlarks. A complete bird list is included in the Oklahoma Biological Survey's endangered species survey for Altus AFB (USAF 2002).

Altus AFB is located in an ecosystem that was originally grasslands. Characteristic bird species of the grasslands include raptors such as northern harrier, red-tailed hawk, and Swainson's hawk (summer only); northern bobwhite; wild turkey; assorted dove species, including mourning dove and rock dove; roadrunner; screech owl; assorted flycatcher species such as eastern kingbird, western kingbird, and scissor-tailed flycatcher; northern mockingbird; and grasshopper sparrow. Bird species associated with a municipal habitat include rock dove, house sparrow, and European starling (USAF 2002).

Populations of the above-mentioned species fluctuate with the season. With the exception of the raptors, the remaining more common species are relatively small in size and typically fly near the ground surface. Populations of raptors overall tend to increase during the late fall and winter. This area of Oklahoma is not within a primary raptor migration route but is within the wintering range of many raptors. Although herons and egrets may occur, these species typically do not occur in great concentrations and only at specialized habitat near water. Available maps indicate that suitable habitat is limited for these species (USAF 2002).

There are several aquatic habitats in the Altus AFB area, including Stinking Creek, tributaries to Stinking Creek, irrigation canals, and upland drainage ditches. On the basis of the state of Oklahoma water classification system, Stinking Creek is considered a primary warm-water fishery. However, because of the small surface area of the creek near the base and the effects of agricultural disturbances, no significant game-fish populations are present (USAF 2002).

3.3.6.3 Threatened and Endangered Species

A listed species, provided protection under the Endangered Species Act, is so designated because of danger of its extinction as a consequence of economic growth and development without adequate concern and conservation. The USFWS denotes the status of a species for listing as threatened or endangered by category classification. A Category 1 candidate is a species where sufficient information exists to support a threatened or endangered listing, but the proposed rules for listing have not yet been issued. A Category 2 candidate is a species which is under consideration for listing as threatened or endangered, but not enough information is known to merit listing (USAF 2002).

There are no state or federal records indicating that threatened or endangered species occur on or near Altus AFB. Two federally listed endangered species are known to exist in Jackson County, the interior least tern (*Stern antillarum athalassos*) and the whooping crane (*Grus americana*). However, there are no records of either of these species occurring near or on the base. The interior least tern is known to nest in Oklahoma during summer months, using sandbars along major rivers and around reservoirs. The whooping crane is known to migrate through the state during spring and fall, using prairie wetland areas and major rivers

as stopover sites. Only one other southwestern Oklahoma species is listed as threatened: the bald eagle. Bald eagles have been recorded in this part of the state during the winter, although not in Jackson County or Washita County. No areas on Altus AFB are likely to attract this species. The 1997 Oklahoma Biological Survey found it highly improbable that federally listed species would be drawn to Altus AFB given the extent and type of habitats present there. In addition, there are no known rare species or communities, refuges, management areas, nature preserves, or registry natural areas within 1 mile of the base (USAF 2002).

3.3.6.4 Wetlands

Four federal agencies are responsible for identifying and regulating wetlands: the USACE, the EPA, the USFWS, and the Natural Resource Conservation Service. The USACE and EPA are primarily responsible for making jurisdictional determinations and regulating wetlands under Section 404 of the CWA. The USACE also makes jurisdictional determinations under Section 10 of the Rivers and Harbors Act of 1899. The Natural Resource Conservation Service has developed procedures for identifying wetlands for compliance with the Flood Security Act of 1985, and the USFWS has developed a classification system for identifying wetlands. The protection of wetlands is also mandated under Executive Order 11990.

The results of a 1994 USACE wetlands survey on Altus AFB indicated that four main areas within the base boundaries are jurisdictional wetlands. Several streambed and bank systems, which are jurisdictional as “other waters of the United States,” are also located on base (USAF 2002).

Four areas were identified on base that have small, isolated wetland islands. In these areas, the exposed bed supported wetland indicator plants, while the presence of hydric soils varied throughout the system. Within Altus AFB, these wetlands areas were observed within channelized portions of Stinking Creek and several unnamed tributaries that connect to the creek. The small, intermittent islands of emergent wetland indicator plants that occur within defined beds are regulated as wetlands. Two plant species common to these isolated wetlands were three-square bulrush (*Scirpus pungens*) and Small’s spikerush (*Eleocharis smallii*) (USAF 2002).

These areas are also subject to Section 404 regulatory review. Eight areas on base include drainages and swales that have been constructed within historical uplands to provide site drainage for internal base facilities. Although technically these systems may constitute waters of the United States, they are not considered jurisdictional for Section 404 review. Another eight areas serve as percolation ponds for treatment systems or were part of the water hazards for the base golf course. These excavated depressions are not regulated under Section 404 of the CWA. In 1998, near the northern portion of the airfield, small wet areas caused by construction activities were assessed, delineated, and filled in following USACE direction, after they were determined not to be jurisdictional wetlands (USAF 2002).

A formal survey of land outside the boundaries has not been performed. However, based on information provided on the National Wetlands Inventory map, several wetland areas are mapped downstream of existing base housing. One of these areas is adjacent to the base, just south of the main gate. Several areas are also located adjacent to the southwest base boundary. The area just south of the main gate does not meet the qualifications of a jurisdictional wetland, as no hydric soils were identified (USAF 2002).

3.3.6.5 Floodplains

EO 11988, *Floodplain Management*, May 24, 1977, states that federal agencies "... shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains." The EO requires that an agency shall avoid undertaking or providing assistance for new construction located in floodplains and that if the head of the agency finds that there is no practicable alternative to such construction, the proposed action must include all practicable measures to minimize harm to floodplains which may result from such use.

The National Flood Insurance Program (NFIP), administered by the Federal Emergency Management Agency, was created in 1968 to provide flood insurance to people who live in areas with the greatest risk of flooding, called special flood hazard areas (SFHAs). Generally, the SFHAs are those portions of participating communities within the 100-year floodplain. Figure 3-3 shows the boundaries of the 100-year floodplain on Altus AFB defined from the USACE survey conducted in 1994. The floodplain area located on the northeast portion of the base extends from the north end of the base, runs between the west runway and the Assault Landing Strip to the south, then crosses the east runway and finally exits the base. The 100-year floods are hydrological events of a magnitude expected to be equaled or exceeded once, on the average, during any 100-year period or commonly have a 1 percent chance of being equaled or exceeded during any year. Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The 100-year floodplain includes land that during such an event would be flooded. The NFIP is effective only for participating communities. The city of Altus is a participant, but Jackson County is not (USAF 2002).

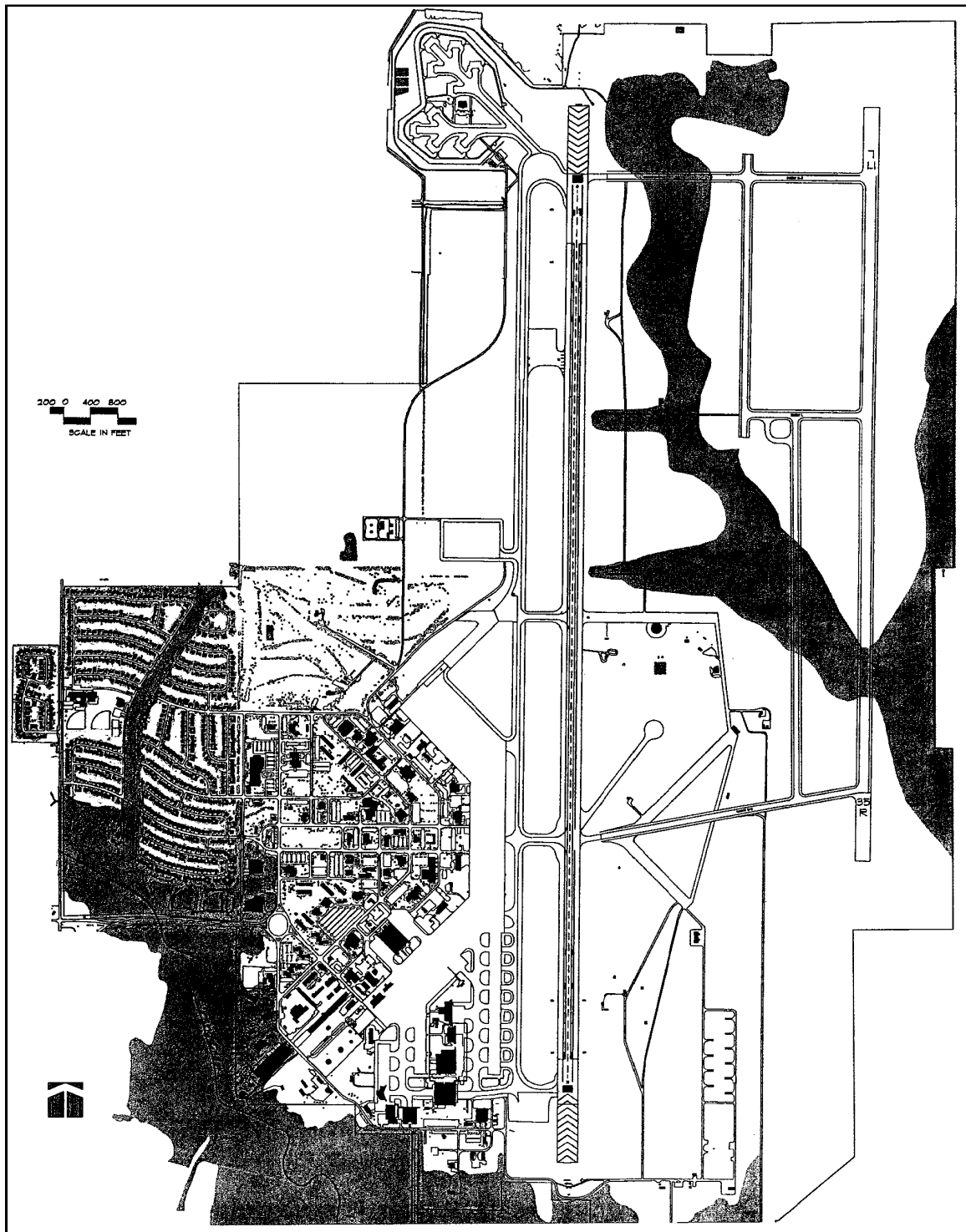


Figure 3-3 100-Year Floodplain, Altus Air Force Base

THIS PAGE INTENTIONALLY LEFT BLANK

3.3.7 Cultural Resources

Cultural resources are prehistoric and historic sites, structures, districts, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or any other reason. For ease of discussion, cultural resources have been divided into two categories: 1) archaeological resources (prehistoric, historic, and traditional) and 2) historical resources (historic buildings and structures). Numerous laws and regulations require that possible effects to cultural resources be considered during the planning and execution of federal undertakings. These laws and regulations stipulate a process of compliance, define the responsibilities of the federal agency proposing the action, and prescribe the relationship among other involved agencies [e.g., the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP)]. In addition to the NEPA, the primary laws that pertain to the treatment of cultural resources during environmental analysis are the National Historic Preservation Act (NHPA) (especially Sections 106 and 110), the Archaeological Resources Protection Act, the American Indian Religious Freedom Act, and the Native American Graves Protection and Repatriation Act (NAGPRA).

Only those cultural resources determined to be potentially significant under the given legislation are subject to protection from adverse impacts resulting from an undertaking. To be considered significant, cultural resources must meet one or more of the criteria established by the National Park Service that would make that resource eligible for inclusion in the National Register of Historic Places (NRHP). The term “eligible for inclusion in the National Register” includes both properties formally determined as such by the Secretary of the Interior and all other properties that meet National Register listing criteria, which are specified in Department of Interior regulations (36 CFR 60.4). Therefore, sites not yet evaluated may be considered potentially eligible to the NRHP and, as such, afforded the same regulatory consideration as nominated properties. Whether prehistoric, historic, or traditional, significant cultural resources are referred to as “historic properties.”

Cultural resources management at Air Force installations is established in AFI 32-7065, *Cultural Resources Management*. AFI 32-7065 details the compliance requirements for protecting cultural resources, including the preparation of a Cultural Resources Management Plan (CRMP). The CRMP must include an inventory and evaluation of all known cultural resources; identification of the likely presence of other significant cultural resources; description of installation strategies for maintaining cultural resources and complying with related resource statutes, regulations, policies, and procedures; standard operating procedures and action plans that include budget, staffing, and scheduling activities; clear identification and resolution of the mission impact on cultural resources; and conformance with local, state, and federal preservation programs.

Cultural resources are generally recognized in four categories: archeological, historical, paleontological, and Native American resources. These resources are those items, places, or events considered important to a culture or community for reasons of history, tradition, religion, or science.

3.3.7.1 Historic Resources

Information on cultural resources in the vicinity of Altus AFB was obtained from several sources, including the Oklahoma Historical Society, the Oklahoma SHPO, the Oklahoma Archeological Survey, and the National Park Service. A cultural resource assessment conducted by the National Park Service on the base in 1995 found that 38 buildings and structures date to World War II, the Korean Conflict, and the beginning of the Cold War, all meeting the criterion for consideration on the NRHP. These structures must be identified prior to renovation or demolition, and if determined to be potentially eligible, then an eligibility determination and possible Section 106 consultation would be conducted with the SHPO (USAF 2002). A recently completed survey of Cold War properties identified two structures on Altus AFB: Building 285 and the SAC Alert Apron (Bellon 2003).

The W.C. Austin Irrigation System, which passes through Altus AFB, is considered to be eligible for listing in the NRHP. The irrigation system was constructed by the Bureau of Reclamation between 1941 and 1949 to provide water for irrigation of privately owned land in southwestern Oklahoma. Primary features of the system include Altus Dam, earthen dikes, and canals. Ozark Canal has its headgates north of the city of Altus and travels southeasterly, after passing through Altus AFB, to irrigate lands to the southeast of Altus and to the east of Stinking Creek. No structures in the areas adjacent to the base are listed in the SHPO's national register handbook (USAF 2002).

3.3.7.2 Archaeological Resources

Numerous archeological surveys have been completed for Altus AFB, but no intact prehistoric or historic archeological sites have been found in the Altus AFB region. According to the 1995 cultural resource assessment carried out by the National Park Service at Altus AFB, the potential of there being intact archeological resources within the base boundaries and on adjoining properties is extremely low (USAF 2002).

3.3.8 Environmental Justice

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, issued February 11, 1994, and the accompanying Presidential Transmittal Memorandum stipulate that "Each Federal agency shall analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities, when such analysis is required by the NEPA 42 USC Section 4321, et. seq." Although an environmental justice analysis is not mandated by NEPA or by AFI 32-7061, the DoD has directed that NEPA will be used as the primary approach to implement the provisions of the EO.

The 2000 Census of Population and Housing reports numbers of both poverty level and minority residents. Low-income economic status is reported as the number of families with income below the poverty level (\$17,463 for a family of four in 2000). Minority populations included in the census are identified as Black, American Indian and Alaska Native, Asian, Native Hawaiian or other Pacific Islander, Other, or of Hispanic origin. According to Census

data, the Hispanic origin designation is separate from the ethnic (racial) designation, as Hispanic persons can be of any race (USCB 2002). In other words, a person is white (Caucasian) and Hispanic, or white and non-Hispanic, or black and Hispanic, or black and non-Hispanic, and so on. The Hispanic population is not broken out by race for this analysis. Within this document, to avoid confusion and eliminate double counting, the Hispanic population is differentiated from ethnic (racial) minority.

As shown in Table 3-3, the 2000 Census found that the population of Jackson County was 76.1 percent Caucasian, 8.0 percent African-American, 1.2 percent Asian, Hawaiian and Native American combined, and 9.3 percent categorized as Other Race. In Jackson County, 13.6 percent of the population is considered Hispanic; as explained above, Hispanic individuals can be of any race (USCB 2002).

Table 3-3 Racial, Hispanic, and Poverty Characteristics, 2000

Area	Percent of Total Population						Percent Hispanic Origin (can be any race)	Percent below Poverty
	White	Black	American Indian/ Alaska Native	Asian	Native Hawaiian or other Pacific Islander	Other Race		
Jackson County	76.1	8.0	1.7	1.2	0.2	9.3	15.6	13.6
State of Oklahoma	76.6	7.9	10.9	1.6	0.14	2.86	4.9	14.7
United States	75.1	12.3	0.9	3.6	0.1	5.5	12.5	13.3

Source: USCB 2002

By comparison, the population of Oklahoma is nearly 77 percent Caucasian, 8 percent African American, less than 1.6 percent Asian, Hawaiian or Native American, and about 3 percent Other Race, with 5 percent of the population being Hispanic origin. The United States as a whole is approximately 75 percent Caucasian and 12 percent African-American. Persons of Hispanic origin make up nearly 13 percent of the US total population (USCB 2002).

Nearly 14 percent of Jackson County's population falls below the poverty level, while approximately 15 percent of the state's population and 13 percent of the US population are in this category (USCB 2002).

THIS PAGE INTENTIONALLY LEFT BLANK

CHAPTER 4

ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This chapter describes potential impacts that could occur if the proposed action is implemented at Altus AFB. Additionally, potential impacts are addressed for the no-action alternative and cumulative impacts are analyzed for the additional actions proposed at Altus AFB. Any resultant irreversible or irretrievable resource commitments are noted. Significance criteria used to evaluate potential impacts are discussed at the beginning of each resource area. Increased aircraft operations and personnel authorizations are not a part of the proposed or alternative actions.

4.2 CHANGE IN CURRENT MISSION

The primary missions of Altus AFB would continue. However, the construction of the proposed projects would allow Altus AFB to more effectively meet mission requirements.

4.3 DESCRIPTION OF THE EFFECTS OF ALL ALTERNATIVES ON THE AFFECTED ENVIRONMENT

4.3.1 Noise

In evaluating noise impacts, several items were examined, including: 1) the degree to which noise levels generated by construction and demolition activities were higher than the ambient noise levels; 2) the degree to which there is annoyance and/or activity interference; and 3) the proximity of noise-sensitive receptors to the noise source.

The primary means of assessing environmental noise is through computer simulations since direct measurement of noise levels is often impractical, expensive, and inconclusive. Unlike a topographic contour, noise contours are not intended to be precise representations of the noise zones. Geographic features, meteorology, the receiver's perception of the source, etc., can influence the impact of noise. Noise contours do not clearly divide noise zones with one side of the line compatible and the other side incompatible. However, the use of noise contour maps has proven to be a reliable planning tool in noise affected areas.

4.3.1.1 Proposed Action

The primary noise from the proposed construction of the Base CE Complex would be generated by vehicles and equipment involved in demolition, facility construction, and finishing work. Typical noise levels generated by these activities range from 75 to 89 dBA at 50 feet from the source. Assuming that noise from the heavy equipment radiates equally

in all directions, the sound intensity diminishes inversely as the square of the distance from the source. Therefore, in a free field (no reflections of sound), the L_p decreases 6 dB with each doubling of the distance from the source. Under most conditions, reflected sound will reduce the attenuation due to distance. Therefore, doubling the distance may only result in a decrease of 4 to 5 dB (AIHA 1986). Table 4-1 shows the anticipated sound pressure levels at a distance of 50 feet for miscellaneous heavy equipment. Construction noise would be intermittent and short-term in duration. The distances to sensitive receptors in the vicinity of the short-term construction activities and predicted noise levels anticipated on, or in the vicinity of the proposed Base CE Complex, are presented in Table 4-2.

Table 4-1 Heavy Equipment Noise Levels at 50 Feet

Equipment Type ^a	Number Used ^a	Generated Noise Levels, L_p (dBA) ^b
Bulldozer	1	88
Backhoe (rubber tire)	1	80
Front Loader (rubber tire)	1	80
Dump Truck	1	75
Concrete Truck	1	75
Concrete Finisher	1	80
Crane	1	75
Flat-bed Truck (18 Wheel)	1	75
Scraper	1	89
Trenching Machine	1	85

^a Estimated

^b Source: CERL 1978

Table 4-2 Distance to Sensitive Receptors and Predicted Sound Levels, Proposed Action

Sensitive Receptor	Distance (feet)	Predicted L_p (dBA)
Bicentennial Housing Area	5,280	48.5
Capehart Housing Area	1,830	57.7
Private Residences	6,295	47.0
Base Clinic	2,640	54.5
L Mendel Rivers Elementary School	6,905	46.2

Note: All distances are approximate, measured from point of project area closest to the receptor.

Assuming a maximum noise level of 89 dBA measured 50 feet from the source, the distances from each of the project areas to sensitive receptors located on, or adjacent to, the proposed Base CE Complex would be sufficient to allow noise levels to naturally attenuate to levels within existing conditions at the installation. For example, the Capeheart Housing Area located approximately 1,830 feet northwest of the proposed Base CE Complex area would experience estimated noise levels of 57.75 dBA, the approximate sound level experienced inside a large business office (See Figure 3-1).

An example calculation for the predicted noise level measured at the Capehart Housing Area is presented as follows:

$$A = 20 \log_{10} \left(\frac{d_1}{d_2} \right) = 20 \log_{10} \left(\frac{50}{1,830} \right) = 31.3 \text{ dBA}$$

$$\text{Predicted Noise Level} = L_{\max} - A = 89.0 - 31.3 = 57.7 \text{ dBA}$$

where:

A - attenuation (measured in dBA)

d_1 - distance to noise source measurement (measured in feet)

d_2 - distance to sensitive receptor (measured in feet)

L_{\max} - maximum sound level (measured in dBA)

Construction activities would be expected to occur between 7:30 a.m. and 4:30 p.m. As calculated above, noise levels at residences in the vicinity of the construction activities would be less than 58 dBA. Minor annoyances to sensitive receptors in the vicinity of the Base CE Complex from the demolition and construction activities associated with exposures to noise exceeding 65 dBA would be of short duration. No changes in aircraft operations are anticipated from implementation of the proposed action. In addition, existing noise levels from existing aircraft operations in the vicinity of the proposed Base CE Complex (see Figure 3-2) would mask most noise generated from demolition and construction activities. Long-term noise impacts would not be anticipated.

4.3.1.2 No-Action Alternative

Under the no-action alternative, there would be no change from the baseline conditions described in Section 3.3.1.

4.3.1.3 Cumulative Impacts

The beddown of additional C-17 aircraft at Altus AFB would result in additional aircraft operations in the vicinity of Altus AFB. The analysis of the proposed beddown is currently underway and a decision is anticipated in late 2003. No cumulative impacts are anticipated from the MFH privatization project or the proposed construction and operation of a DASR facility at Altus AFB. Operating procedures which may further decrease noise impacts are detailed in Section 4.3.1.5.

4.3.1.4 Mitigative Actions

Existing baseline noise levels at Altus AFB would not be increased from the implementation of the proposed action. Noise levels would be temporarily increased from the demolition and construction projects. However, mitigation measures would not be required for the proposed action.

In addition, noise generating construction equipment at the project site should be equipped with the manufacturer's standard noise control devices (i.e., mufflers, baffling, and/or engine enclosures). All equipment should be properly maintained to assure that no additional noise from worn or improperly maintained equipment parts is generated. Occupational exposure to noise from construction equipment could be reduced by requiring construction workers to wear appropriate hearing protection, and hearing protective devices such as ear plugs or ear muffs should be worn at all locations where workers may be exposed to high noise levels.

4.3.2 Air Quality

As defined in 40 CFR 52.21, the proposed action or alternative action would be considered a major source of emissions if total emissions of any pollutant subject to regulation under the CAA are greater than the major source threshold of 250 tpy for attainment and unclassified areas. Sources emitting less than the major source threshold for attainment and unclassified areas would not be considered major and would generally be considered regionally insignificant.

4.3.2.1 Proposed Action

The projects under the proposed action would generate primarily heavy equipment emissions and fugitive dust emissions from demolition and construction activities. The following paragraphs detail the assumptions used in calculating emissions and describe the impacts of the emissions.

Fugitive dust emissions for the proposed demolition activities would be generated primarily from building dismemberment, debris loading, and debris hauling. An emission factor of 0.0073 lbs of PM₁₀ per square foot of demolished floor area was developed based on USEPA-approved methodologies for demolition of structures constructed primarily of wood (USEPA 1988 and Murphy and Chatterjee 1976). This factor was used to calculate annual fugitive dust emissions for the demolition projects given the total area of the buildings. Calculation of fugitive dust emissions for the proposed action is presented in Appendix B.

Exhaust emissions would be generated by equipment during construction of proposed projects. Specific information describing the length of operation, daily mileage, or specific usage of heavy construction equipment varies from project to project. Based on the type of equipment and duration of use, the USEPA has established factors for the emission of criteria air pollutants by heavy equipment used for construction activities (USEPA 1985). The type of equipment and hours of operation for the proposed construction activities were estimated based on anticipated project requirements and established usage factors for construction equipment (Means 1997a and Means 1997b). Calculation of heavy equipment emissions for the proposed action is presented in Appendix B.

**Table 4-3 Estimated Increase in Pollutant Emissions within
AQCR 189, Proposed Action**

Emissions Source	Pollutant Emissions (tons)					
	CO	VOCs	NO _x	SO _x	PM ₁₀	Pb
Heavy Equipment Emissions	3.22	0.69	8.02	0.86	0.54	--
Fugitive Dust Emissions (Demolition)	--	--	--	--	0.30	--
Fugitive Dust Emissions (Construction)	--	--	--	--	0.17	--
Total Estimated Emissions^a	3.22	0.69	8.02	0.86	1.01	0.00
AQCR 189 Baseline Emissions ^b	2,662.8	2,401.1	10,615.2	1,330.0	530.3	NR
Increase from Baseline (%)^c	0.12	0.03	0.08	0.06	0.19	0.00

a Emissions from each proposed project would be one-time emissions which may or may not occur simultaneously with emissions from other proposed projects depending on the scheduling of the projects. Totals represent the total one-time emissions from all construction projects.

b Source: USAF 2002

c Percent increase assumes emissions from all projects would occur simultaneously.

Note: NR = not reported

Table 4-3 summarizes the estimated pollutant emissions associated with the proposed action. Each project under the proposed action would generate one-time emissions which may or may not occur simultaneously with emissions from other proposed action projects depending on the scheduling of the projects. Totals presented in Table 4-3 represent the total one-time emissions over the entire course of the proposed projects. Recurring (long-term) emissions are not anticipated as a result of the implementation of the proposed action.

To assess maximum potential impact from the projects, the estimated percent increases from baseline emissions assume that emissions from the projects would occur simultaneously. As shown, the maximum increase in emissions for any pollutant as compared to the AQCR 189 baseline emissions would be an increase of less than 0.2 percent for PM₁₀. Emissions of all pollutants under the proposed action would be less than 250 tpy; therefore, the proposed action would not be considered regionally significant. All projects under the proposed action are considered temporary activities and would not be expected to cause long-term impacts to local or regional baseline air quality. The primary short-term air quality impacts resulting from these projects at Altus AFB would be a temporary increase of air pollutants within Jackson County and AQCR 189, which would cease as soon as the projects were completed. Fugitive dust emissions from ground disturbing activities would be minimized and kept under proper control. Control measures are further discussed in Section 4.3.2.4. The use of dust control measures, the most common being wet suppression with potable water, as part of best management practices at the construction sites would be expected to reduce PM₁₀ emissions from the levels presented in Table 4-3 and control visible particulate emissions at the sites. Actual reduction quantities would vary depending on a variety of factors including frequency of water application, site traffic levels, wind speed and direction, and soil type, among others.

All 12 counties within AQCR 189, including Jackson County, are classified by the USEPA as attainment or unclassified for all criteria pollutants. Therefore, the proposed action is not subject to the de minimis and conformity determination requirements of the USEPA Final Conformity Rule as defined in 40 CFR 93.153. Additionally, the proposed construction projects as described above would be in compliance with the Oklahoma State Implementation Plan.

4.3.2.2 No-Action Alternative

Under the no-action alternative, the proposed projects would not occur. As a result, emissions would not occur and the AQCR 189 baseline emissions inventory would not be affected.

4.3.2.3 Cumulative Impacts

The beddown of additional C-17 aircraft at Altus AFB could potentially result in additional aircraft operations in the vicinity of Altus AFB. The analysis of the proposed beddown is currently underway and a decision is anticipated in late 2003. In addition, no cumulative impacts are anticipated from the MFH privatization project or the proposed construction and operation of a DASR facility at Altus AFB. Operating procedures which may further decrease air impacts are detailed in Section 4.3.2.4.

4.3.2.4 Mitigative Actions

Potential, short-term impacts from site clearing activities and corresponding emissions of PM₁₀ would be minimized and kept under control in accordance with federal, state, and local guidelines (where applicable) for reduction of fugitive dust emissions. These control measures may include, but are not limited to: periodic watering of construction sites and disturbed areas, reduction of vehicle speeds, covering of dirt and aggregate trucks and/or piles, prevention of dirt carryover to paved roads, and construction of erosion barriers and wind breaks.

4.3.3 Earth Resources

In evaluating impacts on earth resources, several items were examined, including: 1) the degree to which the proposed action and alternatives could potentially disrupt the ground surface and destroy the soil profile through excavation and removal of rock and soil in the construction of facilities; and 2) the degree to which the proposed action and alternatives could potentially increase erosion caused by the disturbance of the ground surface during the construction and demolition of facilities.

4.3.3.1 Proposed Action

The proposed demolition and construction projects at Altus AFB would require soil disturbances, typical of these activities. Construction projects on Altus AFB would be located in previously disturbed areas. Impacts to earth resources would be minimized by use of standard engineering practices (e.g., application of water for dust control) that reduce wind erosion or silt fences that reduce runoff erosion.

4.3.3.2 No-Action Alternative

Under the no-action alternative, soil disturbances would not occur. Therefore, there would be no change from the baseline conditions described in Section 3.3.3.

4.3.3.3 Cumulative Impacts

Demolition and construction of facilities anticipated under the proposed actions would not involve extensive modification of surface features. Potential cumulative impacts to soils would include increased soil erosion during the construction periods. However, these cumulative impacts would be minimized by use of standard engineering practices (e.g., application of water for dust control) that reduce wind erosion or silt fences that reduce runoff erosion..

4.3.3.4 Mitigative Actions

Only minor soil erosion from wind and storm water runoff would be expected during construction activities. Accepted containment procedures, including adequate watering, would be implemented during the construction phases to minimize sediment runoff from the disturbed area. Therefore, given the current conditions and the proposed plans and actions, no mitigation measures are required.

4.3.4 Water Resources

In evaluating impacts on water resources considered several items, including: 1) the degree to which the proposed action and alternatives change impermeable surface areas; 2) the degree to which the proposed action and alternatives degrade surface water quality; and 3) the degree to which the potential decline in groundwater levels results in a substantial depletion of water resources.

4.3.4.1 Surface Water

4.3.4.1.1 Proposed Action

As detailed in Table 4-4, 0.91 acres of impervious (impenetrable) cover would be added for the proposed projects. Compared to the approximately 713 acres of impervious cover on Altus AFB, this will increase the total amount of impervious cover (0.12 percent) and result in a minimal impact on the total volume of storm water runoff.

Table 4-4 Summary of Impervious Cover Impacts, Proposed Action

Project	Surface Cover (acres)
Facility Demolition	(1.86)
Base CE Complex	2.77
TOTAL:	0.91

Source: Calculated from project descriptions.

The incorporation of best management practices for sediment control during construction would minimize potential water quality problems. Since construction and demolition activities would require the disturbance of more than one acre, a Notice of

Intent (NOI) under the general Oklahoma storm water discharge permit for construction activities shall be filed with USEPA prior to construction. Additionally, the construction contractor shall be required to develop a storm water pollution prevention plan for the project prior to submittal of the NOI. After completion of the project, a Notice of Termination under the general permit shall be filed with USEPA.

4.3.4.1.2 No-Action Alternative

Under the no-action alternative, there would be no change from the baseline conditions described in Section 3.3.4.1.

4.3.4.1.3 Cumulative Impacts

The construction and addition projects at Altus AFB are expected to cumulatively increase impervious surface cover. The net cumulative effect on storm water at Altus AFB due to the proposed activities would be minimal when compared to the whole installation.

4.3.4.1.4 Mitigative Actions

Mitigation measures to protect human health and welfare would not be required for the proposed action. Impacts on water resources from the proposed action are minimal when compared to the whole installation.

4.3.4.2 Groundwater

4.3.4.2.1 Proposed Action

There would be no effect on groundwater from implementation of the proposed action.

4.3.4.2.2 No-Action Alternative

Under the no-action alternative, there would be no change from the baseline conditions described in Section 3.3.4.2.

4.3.4.2.3 Cumulative Impacts

Since there would be no effect on groundwater associated with the proposed actions at Altus AFB, there would be no cumulative impacts.

4.3.4.2.4 Mitigative Actions

Mitigation measures to protect health and welfare would not be required for the proposed action.

4.3.5 Hazardous Materials

The evaluation of impacts on hazardous materials included the assessment of the degree to which proposed construction activities could effect the existing environment.

4.3.5.1 Proposed Action

Hazardous materials used for the proposed action would be limited to those typical to a construction environment (e.g., fluids and fuels for construction equipment, asphalt ingredients, paints, etc.). The typical use of these materials in accordance with instructions and applicable regulations is not likely to create environmental release. Hazardous materials used during the project would be managed by the agency or contractor performing the construction.

Hazardous wastes are not expected to be generated as a result of the construction projects. The hazardous materials described above are typically consumed in process and would therefore not create waste as an end product. If generated, hazardous wastes from the construction activities would be managed in accordance with applicable regulations by the agency or contractor generating the waste.

Once operational, the proposed Base CE Complex would replace existing facilities that use and store hazardous materials. The new facilities would be constructed to meet current building codes and would provide for safer hazardous material storage and safer working environments for the craftsmen using the materials.

IRP sites would not be impacted by the proposed demolition and construction projects. In addition, lead-based paint detection sampling and asbestos sampling would be accomplished prior to demolition of a facility. If identified, these materials would be managed in accordance with existing plans and procedures established by Altus AFB. Demolition of substandard facilities containing lead-based paint and asbestos would decrease the potential of exposure to lead-based paint and asbestos.

4.3.5.2 No-Action Alternative

Under the no-action alternative, there would be no change in the management of hazardous wastes as described in Section 3.3.6.1.

4.3.5.3 Cumulative Impacts

The proposed action would contribute to a potential short-term increase in hazardous materials usage to support other construction actions. The contribution of the proposed actions to hazardous materials use would cease upon completion of the construction activities. Hazardous materials would continue to be used to support other activities at Altus AFB.

Hazardous wastes are not expected to be generated as a result of the proposed action. Therefore, the proposed action would not be expected to contribute cumulatively to hazardous waste generated from other actions at Altus AFB. No cumulative impacts to IRP sites or asbestos or lead-based paint waste management activities would be expected from the proposed actions at Altus AFB.

4.3.5.4 Mitigative Actions

Spills of liquid products such as fuels, oils, and cleaning solvents should be managed according to the existing installation spill response plans. These documents implement applicable state and federal laws for management of these substances.

4.3.6 Biological Resources

Potential impacts to biological resources are determined by analyzing the proposed action and alternatives within the context of existing conditions for regional biota and ecosystems. An impact to biological resources would be considered if the proposed action would have an adverse impact on threatened or endangered species, substantially diminish habitat for a plant or animal species, substantially diminish a regionally or locally important plant or animal species, interfere substantially with wildlife movement or reproductive behavior, or result in a substantial infusion of exotic plant or animal species.

4.3.6.1 Proposed Action

4.3.6.1.1 Vegetation and Wildlife

The proposed demolition and construction activities would occur within previously disturbed portions of Altus AFB. There would be no impacts to vegetation outside the proposed project areas and best management practices during demolition and construction would minimize impacts to vegetation at and near the construction sites. New trees, shrubs, and other landscaping would provide additional urban habitat for birds and other wildlife. The construction activities associated with the proposed action would not impact wildlife reproduction, movement, or habitat.

4.3.6.1.2 Threatened and Endangered Species

No threatened and endangered species are known on Altus AFB; therefore, there would be no impact from the proposed action. In addition, the proposed action would have no impact on the continued existence of the federal and state listed endangered and threatened species that occur in Jackson County.

4.3.6.1.3 Wetlands

The proposed demolition and construction activities associated with the proposed action would not occur in wetland areas.

4.3.6.1.4 Floodplains

The proposed action would not be located within areas designated as the 100-year floodplain. The proposed Base CE Complex would not impact the 100-year floodplain.

4.3.6.2 No-Action Alternative

The construction of the Base CE Complex would not take place. Therefore, no impacts to biological resources on Altus AFB would occur under the no-action alternative.

4.3.6.3 Cumulative Impacts

Cumulative impacts to biological resources would not occur under the ongoing actions on, or in the vicinity of, Altus AFB.

4.3.6.4 Mitigative Actions

As no construction or demolition of facilities would occur outside the previously disturbed developed area, impact to biological resources inclusive of endangered and threatened species would not occur. Therefore, no mitigation measures beyond best management construction practices are required.

4.3.7 Cultural Resources

Potential impacts were assessed by: 1) identifying types and possible locations of construction activities that could directly or indirectly affect cultural resources, and 2) identifying the nature and potential significance of cultural resources in the potentially affected areas.

Historic properties, under 36 CFR 800, are defined as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion, in the NRHP.” This term includes, for the purposes of these regulations, artifacts, records, and remains that are related to and located within such properties. The term “eligible for inclusion in the National Register” includes both properties formally determined as such by the Secretary of the Interior and all other properties that meet National Register listing criteria. Therefore, sites not yet evaluated are considered potentially eligible to the NRHP and are afforded the same regulatory consideration as nominated properties.

As a federal agency, the Air Force is responsible for identifying any historic properties at Altus AFB. This identification process includes not only field surveys and recording of cultural resources, but also evaluations to develop determinations of significance in terms of NRHP criteria. Completion of this process results in a listing of historic or prehistoric properties subject to federal regulations regarding the treatment of cultural resources.

4.3.7.1 Historic Resources

4.3.7.1.1 Proposed Action

Under the proposed action, the facilities scheduled for demolition have not been identified as listed or eligible historic resources. In addition, these facilities have not been identified as Cold War properties. Therefore, the proposed action would have no adverse effect on known historic properties.

4.3.7.1.2 No-Action Alternative

Under the no-action alternative, there would be no demolition or construction projects; therefore, there would be no effect on historic resources as described in Section 3.3.7.1.

4.3.7.1.3 Cumulative Impacts

Historical resources are generally distinct, and the effects of the proposed actions would not be additive. Therefore, there would be no cumulative effects.

4.3.7.1.4 Mitigative Actions

Mitigation measures for historical resources would not be required for the proposed action at Altus AFB.

4.3.7.2 Archaeological Resources

4.3.7.2.1 Proposed Action

There are no known, intact prehistoric or historic archaeological sites located in the areas of proposed demolition or construction activities. Therefore, the proposed action would not result in an adverse effect and there would be no impacts to archaeological resources. Consultation with the Oklahoma Archeological Survey would be conducted prior to disturbance of any potential archaeological resources.

4.3.7.2.2 No-Action Alternative

Under the no-action alternative, there would be no demolition or construction projects. Therefore, there would be no effect on archaeological resources as described in Section 3.3.7.2.

4.3.7.2.3 Cumulative Impacts

Cultural resources are generally distinct, and the effects of the proposed actions would not be additive. Therefore, there would be no cumulative effects.

4.3.7.2.3 Mitigative Actions

If unknown and unexpected archaeological resources are encountered during construction, construction would be halted and specific mitigation would be defined in consultation with the Oklahoma Archeological Survey and the ACHP, and would be detailed in a Memorandum of Agreement, if applicable, initiated by the Air Force.

In accordance with NHPA, if during the course of program activities, cultural/historical materials (particularly human remains) are unexpectedly discovered, work in the immediate vicinity of the cultural materials shall be halted and the Oklahoma SHPO consulted through the Altus AFB Environmental Office. Subsequent actions would follow guidance provided in 36 CFR 800.11 and in the NAGPRA.

4.3.8 Environmental Justice

An analysis was conducted to determine whether there would be disproportionately high and adverse impacts on minority populations or low-income populations as a result of the proposed action or alternatives.

4.3.8.1 Proposed Action

Based on the analysis conducted for this EA, earth resources, water resources, hazardous materials, biological resources, and cultural resources impacts resulting from the proposed action and alternatives would not occur. Activities that would impact air quality would disperse over the entire area and would not disproportionately affect minority or low-income populations. Therefore, an environmental justice analysis was not conducted.

Based on the analysis presented in Section 4.3.1.1, sensitive receptors are not present in the vicinity of the proposed expansion area. Noise generated from the short-term construction activities would not impact sensitive receptors in the vicinity of the proposed demolition and construction activities. Therefore, there would be no disproportionate or adverse effects on minority or low income populations.

4.3.8.2 No-Action Alternative

Under the no-action alternative, there would be no change from baseline conditions as described in Section 3.3.8.

4.3.8.3 Cumulative Impacts

The proposed action and all other announced actions for Altus AFB would take place on, or in the vicinity of, Altus AFB. As described in Sections 4.3.1.1 and 4.3.2.1, noise and emissions would be consistent with existing conditions around Altus AFB. Therefore, no cumulative effects are anticipated.

4.3.8.4 Mitigative Actions

Mitigation measures for environmental justice would not be required for the proposed action at Altus AFB.

THIS PAGE INTENTIONALLY LEFT BLANK

CHAPTER 5

LIST OF PREPARERS

Name/Organization	Degree	Professional Discipline	Years of Experience
Gary Baumgartel, P.E. SAIC	B.S., Civil Engineering M.S., Facilities Management	Civil Engineer	29
Robin Divine SAIC	B.A, Geography and Environmental Management M.A.G., Geography and Environmental Management	Environmental Scientist	14
Carol Johnson SAIC	B.S., Education	Senior Technical Editor	9
Kent R. Wells SAIC	B.S., Geology M.S., Industrial Hygiene	Environmental Scientist	17
William Wuest SAIC	M.P.A, Political Science B.S., Political Science	Noise Specialist	32

THIS PAGE INTENTIONALLY LEFT BLANK

CHAPTER 6

PERSONS AND AGENCIES CONSULTED

The following individuals were consulted during the preparation of this EA:

6.1 FEDERAL AGENCIES

Altus Air Force Base

Bellon, James (97 CES/CEVN)
Golovach, Joseph Capt (97 OSS/OSK)
Hird, Andrew Maj (97 OSS/ADO)
Simons, Heath (97 CES/CECB)

Headquarters Air Education and Training Command

Riley, Wick (HQ AETC/DOFM)
Voorhees, Ron (HQ AETC/CEVN)

6.2 STATE AGENCIES

Oklahoma Department of Environmental Quality

Graham, Margaret

THIS PAGE INTENTIONALLY LEFT BLANK

CHAPTER 7

REFERENCES

- AIHA 1986. American Industrial Hygiene Association, *Noise and Hearing Conservation Manual*, Fourth Edition, 1986.
- ANSI 1983. American National Standards Institute, *American National Standard Specification for Sound Level Meters*, April 1983.
- Bellon 2003. Telephone conversation with James Bellon regarding Cold War properties, 97 CES/CEV, May 15, 2003.
- Bies and Hansen 1988. *Engineering Noise Control: Theory and Practice*, London: Unwin Hyman, pp. 36-37, 1988.
- CERL 1978. United States Army, Construction and Engineering Research Laboratory, *MicroBNOISE, A Users Manual*, Technical Report N-86/12, June 1978.
- Means 1997a. R.S. Means Company, *Site Work and Landscape Cost Data*, 16th Edition, Kingston, 1997.
- Means 1997b. R.S. Means Company, *Building Construction Cost Data*, 55th Edition, Kingston, 1997.
- Murphy and Chatterjee 1976. Murphy, K.S., and S. Chatterjee, *Development of Predictive Criteria for Demolition and Construction Solid Waste Management*, Construction Engineering Research Laboratory, Champaign, October 1976.
- Parsons Engineering Science, Inc. 1997. Parsons Engineering Science, Inc., figure presenting typical sound levels from indoor and outdoor noise sources, 1997.
- USAF 1993. United States Air Force, *Pollution Prevention Management Plan, Altus Air Force Base*, December 1993.
- USAF 1996. United States Air Force, *Lead-Based Paint Management Plan, Altus Air Force Base, Oklahoma*, April 1996.
- USAF 1997. United States Air Force, *Land Acquisition and Construction Projects, Altus Air Force Base, Oklahoma*, August 1997.
- USAF 2002. United States Air Force, *Environmental Impact Statement for Proposed Airfield Repairs, Improvements, and Adjustments to Aircrew Training for Altus AFB*, May 2002.

References

- USCB 2002. Population Change and Distribution, Census 2000 Brief.
<http://www.census.gov/prod/2001pubs/c2kbr01-2.pdf>. (23 October 2002).
- USEPA 1985. United States Environmental Protection Agency, *Compilation of Air Pollutant Emission Factors, Volume 2: Mobile Sources (AP-42)*, 4th Edition, Ann Arbor, September 1985.
- USEPA 1988. United States Environmental Protection Agency, *Gap Filling PM₁₀ Emission Factors for Selected Open Dust Sources*, February, 1988.