FINAL

ENVIRONMENTAL ASSESSMENT FOR PROPOSED COLORADO SPRINGS AIRPORT/ EL PASO COUNTY SCHOOL DISTRICT 11 PROPERTY ACQUISITION AND FUTURE DEVELOPMENT AT PETERSON AIR FORCE BASE, COLORADO

DEPARTMENT OF THE AIR FORCE

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FEBRUARY 2011

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 **FEB 2011**	2. REPORT TYPE	3. DATES COVERED **00-00-2011 to 00-00-2011**
4. TITLE AND SUBTITLE **Final Environmental Assessment for Proposed Colorado Springs Airport/El Paso County School District 11 Property Acquisition and Future Development at Peterson Air Foce Base, Colorado**		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) **AMEC Earth and Environmental, Inc,104 W Anapamu St Ste 204a,San Barbara,CA,93101**		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		
15. SUBJECT TERMS		

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT **unclassified**	b. ABSTRACT **unclassified**	c. THIS PAGE **unclassified**	**Same as Report (SAR)**	**156**	

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std Z39-18

ACRONYMS

°F	degrees Fahrenheit
21 SW	21st Space Wing
ACHP	Advisory Council on Historic Preservation
ADT	average daily traffic
AFB	Air Force Base
AFI	Air Force Instruction
AGE	aerospace ground equipment
AIRFA	American Indian Religious Freedom Act
APHIS	Animal and Plant Inspection Service
APZ	Accident Potential Zone
AST	aboveground storage tank
AT/FP	Antiterrorism/Force Protection
BASH	Bird-Aircraft Strike Hazard
BMP	Best Management Practice(s)
CAA	Clean Air Act
CDOW	Colorado Division of Wildlife
CDPHE	Colorado Department of Public Health and Environment
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CISF	Centralized Integrated Support Facility
CNHP	Colorado Natural Heritage Program
CO	carbon monoxide
COS	Colorado Springs Municipal Airport
COV	Commercially Owned Vehicle
CWA	Clean Water Act
CZ	Clear Zone
dB	decibel
dBA	A-weighted decibel
DNL	day-night average dBA
DoD	Department of Defense
DODI	Department of Defense Instruction
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EO	Executive Order
EPCDOT	El Paso County Department of Transportation
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
FY	Fiscal Year
HAP	hazardous air pollutant
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
LEED	Leadership in Energy and Environmental Design
LOS	level of service
MBTA	Migratory Bird Treaty Act
mph	miles per hour
msl	mean sea level
N/A	not applicable
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NOI	Notice of Intent
NO_x	nitrogen oxide
NPDES	National Pollution Discharge Elimination System
NRHP	National Register of Historic Places
NSR	New Source Review
NWI	National Wetland Inventory
O_3	ozone
ODS	Ozone-Depleting Substances
OEI	One-engine inoperative
OIS	Obstacle identification surface
Pb	lead
PM	particulate matter
PM_{10}	particulate matter equal or less than ten microns in diameter
$PM_{2.5}$	particulate matter equal or less than 2.5 microns in diameter
POV	privately owned vehicle
PSD	Prevention of Significant Deterioration
QD	quantity-distance
ROI	region of influence
RPZ	runway protection zone
sf	square foot/feet
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
SWPPP	Storm Water Pollution Prevention Plan
U.S.	United States
UFC	Unified Facilities Criteria
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USC	U.S. Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound
WRCC	Western Regional Climate Center

FINDING OF NO SIGNIFICANT IMPACT
PROPOSED LAND AQCUISITION AND FUTURE DEVELOPMENT
AT PETERSON AFB, COLORADO

Agency: US Air Force, 21st Space Wing

Background: The United States Air Force (USAF) prepared and published an *Environmental Assessment (EA) for Colorado Springs Airport/El Paso County School District 11 Property Acquisition and Future Development at Peterson Air Force Base (AFB), Colorado* to assess the potential environmental consequences of activities associated with proposed property acquisition and future development. The EA was prepared in accordance with requirements of the National Environmental Policy Act (NEPA) and the corresponding NEPA-implementing regulations established by the Council on Environmental Quality (40 Code of Federal Regulations [CFR] 1500) and USAF (32 CFR 989).

Proposed Action and Alternatives: The Proposed Action comprises the acquisition of approximately 345 acres of land adjacent to Peterson AFB via long-term lease; four parcels comprise the acreage and are currently owned by Colorado Springs Airport and El Paso County School District 11. In addition, the USAF proposes relocation of the existing East Gate and associated roadway, and eventual development of a parking lot on a portion of the land proposed for acquisition. Three alternatives were developed for implementation of the Proposed Action. Under both the Preferred Alternative (Alternative 1) and Alternative 2, the proposed land acquisition, construction of the Command Complex Shuttle Parking Lot to the east of the Command Complex Area, and relocation of the existing East Gate would be implemented; however, the location of the proposed new East Gate would vary under each alternative. Under the No Action Alternative, the Proposed Action would not be implemented.

Factors Considered in Determining That No Environmental Impact Statement is Required: The EA analyzed potential environmental impacts of implementing the Proposed Action by taking into account all relevant environmental resource areas and conditions. The following resources were analyzed in the EA: air quality, geological resources, biological resources, land use, water resources, cultural resources, noise, transportation and circulation, visual resources, and safety. USAF has examined these resource areas and found that implementation of the Proposed Action would not result in any significant impacts.

Public Notice: NEPA, 40 CFR §1500-1508, and 32 CFR §989 require that the public have an opportunity to review an EA before approval of Finding of No Significant Impact (FONSI) and implementation of the Proposed Action. A notice of availability for public review was published in the *Colorado Springs Gazette* on 5 December 2010 initiating a 30-day review period. A copy of the Draft EA was placed in the Ruth Holly Library to facilitate this opportunity for public review, and the review period concluded on 6 January 2011.

Finding of No Significant Impact: Based on the requirements of NEPA, 40 CFR §1500-1508, and 32 CFR §989, I conclude that the environmental effects of implementing the Proposed Action at Peterson AFB would not be significant and, therefore, an Environmental Impact Statement will not be prepared. The signing of this FONSI completes the USAF Environmental Impact Analysis Process.

11 Mar 11

STEPHEN N. WHITING
Colonel, USAF
Commander, 21st Space Wing

Date

ENVIRONMENTAL ASSESSMENT
PROPOSED COLORADO SPRINGS AIRPORT/
EL PASO COUNTY SCHOOL DISTRICT 11 PROPERTY ACQUISITION
AND FUTURE DEVELOPMENT
AT PETERSON AIR FORCE BASE, COLORADO

CONTENTS

SECTION TITLE PAGE

ACRONYMS ..... inside front cover

1 OVERVIEW 1-1
1.1 INTRODUCTION 1-1
1.2 LOCATION AND BACKGROUND 1-1
1.2.1 The 21st Space Wing 1-4
1.3 PURPOSE AND NEED FOR PROPOSED ACTION 1-4
1.4 SUMMARY OF ENVIRONMENTAL STUDY REQUIREMENTS 1-5
1.5 SCOPE OF THE ENVIRONMENTAL ASSESSMENT 1-7

2 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES 2-1
2.1 INTRODUCTION 2-1
2.2 PROPOSED ACTION 2-1
2.2.1 Proposed Property Acquisition 2-1
2.2.2 Proposed Relocation of the East Gate 2-3
2.2.3 Command Complex Shuttle Parking Lot 2-4
2.2.4 Design and Construction 2-4
2.2.5 Operation and Maintenance 2-6
2.3 ALTERNATIVE 1: THE PREFERRED ALTERNATIVE 2-6
2.4 ALTERNATIVE 2: RELOCATION NEAR EXISTING EAST GATE 2-7
2.5 ALTERNATIVE 3: NO-ACTION ALTERNATIVE 2-8
2.6 ALTERNATIVES ELIMINATED FROM CONSIDERATION 2-8

3 AFFECTED ENVIRONMENT 3-1
3.1 AIR QUALITY 3-1
3.1.1 Definition of Resource 3-1
3.1.1.1 Criteria Pollutants 3-1
3.1.2 Existing Conditions 3-2
3.1.2.1 Climate 3-2
3.1.2.2 Local Air Quality 3-2
3.1.2.3 Emissions at Peterson AFB 3-4
3.2 GEOLOGICAL RESOURCES 3-6
3.2.1 Definition of Resources 3-6

CONTENTS
(continued)

SECTION	TITLE	PAGE
3.2.2	Existing Conditions	3-6
3.2.2.1	Regional Setting	3-6
3.2.2.2	Peterson AFB	3-7
3.3	BIOLOGICAL RESOURCES	3-10
3.3.1	Definition of Resource	3-10
3.3.2	Existing Conditions	3-11
3.3.2.1	Vegetation	3-11
3.3.2.2	Wildlife	3-11
3.3.2.3	Sensitive Species	3-15
3.3.2.4	Wetlands	3-18
3.4	LAND USE	3-19
3.4.1	Definition of Resource	3-19
3.4.2	Existing Conditions	3-19
3.4.2.1	Regional Setting	3-19
3.4.2.2	Peterson AFB	3-20
3.5	WATER RESOURCES	3-23
3.5.1	Definition of Resource	3-23
3.5.2	Existing Conditions	3-23
3.5.2.1	Regional Setting	3-23
3.5.2.2	Peterson AFB	3-24
3.6	CULTURAL RESOURCES	3-27
3.6.1	Definition of Resource	3-27
3.6.2	Existing Conditions	3-27
3.6.2.1	Peterson AFB and Proposed Acquisition Parcels	3-28
3.7	NOISE	3-29
3.7.1	Definition of Resource	3-29
3.7.2	Existing Conditions	3-29
3.7.2.1	Peterson AFB and Vicinity	3-29
3.8	TRANSPORTATION AND CIRCULATION	3-32
3.8.1	Definition of Resource	3-32
3.8.2	Existing Conditions	3-32
3.8.2.1	Regional and Local Circulation	3-32
3.8.2.2	Peterson AFB	3-33
3.9	VISUAL RESOURCES	3-34
3.9.1	Definition of Resource	3-34
3.9.2	Existing Conditions	3-34
3.9.2.1	Regional Visual Character	3-34
3.9.2.2	Peterson AFB and Proposed Acquisition Parcels	3-34
3.10	SAFETY	3-36
3.10.1	Definition of Resource	3-36
3.10.2	Existing Conditions	3-36

CONTENTS
(continued)

SECTION	TITLE	PAGE
	3.10.2.1 Aircraft Mishaps and Bird-Aircraft Strike Hazard	3-37
	3.10.2.2 Runway Protection Zones	3-37
	3.10.2.3 Explosives Safety	3-40
4	**ENVIRONMENTAL CONSEQUENCES**	4-1
4.1	AIR QUALITY	4-2
	4.1.1 Approach to Analysis	4-2
	4.1.2 Impacts	4-3
	4.1.2.1 Preferred Alternative	4-3
	4.1.2.2 Alternative 2: Relocation Near Existing East Gate	4-6
	4.1.2.3 Alternative 3: No-Action Alternative	4-7
4.2	GEOLOGICAL RESOURCES	4-8
	4.2.1 Approach to Analysis	4-8
	4.2.2 Impacts	4-8
	4.2.2.1 Preferred Alternative	4-8
	4.2.2.2 Alternative 2: Relocation Near Existing East Gate	4-9
	4.2.2.3 Alternative 3: No-Action Alternative	4-10
4.3	BIOLOGICAL RESOURCES	4-11
	4.3.1 Approach to Analysis	4-11
	4.3.2 Impacts	4-11
	4.3.2.1 Preferred Alternative	4-11
	4.3.2.2 Alternative 2: Relocation Near Existing East Gate	4-14
	4.3.2.3 Alternative 3: No-Action Alternative	4-15
4.4	LAND USE	4-16
	4.4.1 Approach to Analysis	4-16
	4.4.2 Impacts	4-16
	4.4.2.1 Preferred Alternative	4-16
	4.4.2.2 Alternative 2: Relocation Near Existing East Gate	4-17
	4.4.2.3 Alternative 3: No-Action Alternative	4-17
4.5	WATER RESOURCES	4-18
	4.5.1 Approach to Analysis	4-18
	4.5.2 Impacts	4-18
	4.5.2.1 Preferred Alternative	4-18
	4.5.2.2 Alternative 2: Relocation Near Existing East Gate	4-20
	4.5.2.3 Alternative 3: No-Action Alternative	4-20
4.6	CULTURAL RESOURCES	4-21
	4.6.1 Preferred Alternative	4-22
	4.6.1.1 Alternative 2: Relocation Near Existing East Gate	4-22
	4.6.1.2 Alternative 3: No-Action Alternative	4-23
4.7	NOISE	4-24
	4.7.1 Approach to Analysis	4-24

CONTENTS
(continued)

SECTION	TITLE	PAGE
4.7.2	Impacts	4-24
4.7.2.1	Preferred Alternative	4-24
4.7.2.2	Alternative 2: Relocation Near Existing East Gate	4-25
4.7.2.3	Alternative 3: No-Action Alternative	4-25
4.8	TRANSPORTATION AND CIRCULATION	4-26
4.8.1	Approach to Analysis	4-26
4.8.2	Impacts	4-26
4.8.2.1	Preferred Alternative	4-26
4.8.2.2	Alternative 2: Relocation Near Existing East Gate	4-27
4.8.2.3	Alternative 3: No-Action Alternative	4-28
4.9	VISUAL RESOURCES	4-29
4.9.1	Approach to Analysis	4-29
4.9.2	Impacts	4-29
4.9.2.1	Preferred Alternative	4-29
4.9.2.2	Alternative 2: Relocation Near Existing East Gate	4-30
4.9.2.3	Alternative 3: No-Action Alternative	4-30
4.10	SAFETY	4-31
4.10.1	Approach to Analysis	4-31
4.10.2	Impacts	4-31
4.10.2.1	Preferred Alternative	4-31
4.10.2.2	Alternative 2: Relocation Near Existing East Gate	4-32
4.10.2.3	Alternative 3: No-Action Alternative	4-33
5	**CUMULATIVE IMPACTS**	5-1
5.1	OFF-BASE ACTIVITIES	5-1
5.2	ON-BASE ACTIVITIES	5-2
6	**SUMMARY OF FINDINGS**	6-1
7	**SPECIAL PROCEDURES**	7-1
8	**REFERENCES**	8-1
9	**LIST OF PREPARERS**	9-1

APPENDICES

A Summary of legislation pertaining to the preparation of this Environmental Assessment
B IICEP Correspondence
C Air Emission Factors and Assumptions

LIST OF FIGURES

NUMBER	TITLE	PAGE
1-1	Regional Map	1-2
1-2	Peterson AFB	1-3
2-1	Proposed Property Acquisition and Future Development at Peterson AFB	2-2
3-1	Colorado and National Ambient Air Quality Standards and Measured Emission Levels (2008), El Paso County, Colorado	3-3
3-2	Habitats at Peterson AFB and the Proposed Acquisition Parcels	3-8
3-3	Habitats at Peterson AFB and the Proposed Acquisition Parcels	3-14
3-4	Existing Land Use in the Vicinity of Peterson AFB	3-22
3-5	Surface Water Features in the Vicinity of Peterson AFB	3-26
3-6	DNL Noise Contours at Peterson AFB/Colorado Spring Airport	3-31
3-7	Runway Protection Zone, APZ I, and APZ II at Peterson AFB/Colorado Springs Airport	3-38

LIST OF TABLES

NUMBER	TITLE	PAGE
3-1	El Paso County Designation for Criteria Pollutants	3-4
3-2	Stationary and Mobile Source Emissions at Peterson AFB	3-5
3-3	Sensitive Species Potentially Occurring on Peterson AFB	3-15
3-4	Permitted Land Uses and Conditional Uses within Restrictive Zones within and Surrounding Peterson AFB and COS	3-39
4-1	Projected Combustion Emissions for Construction Activities	4-5
4-2	Projected Combustion Emissions for Construction and Operational Activities (total tons) Command Complex Shuttle Parking Lot-Phase II	4-5
5-1	Short-Range Projects Planned at Peterson AFB	5-4

SECTION 1
PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

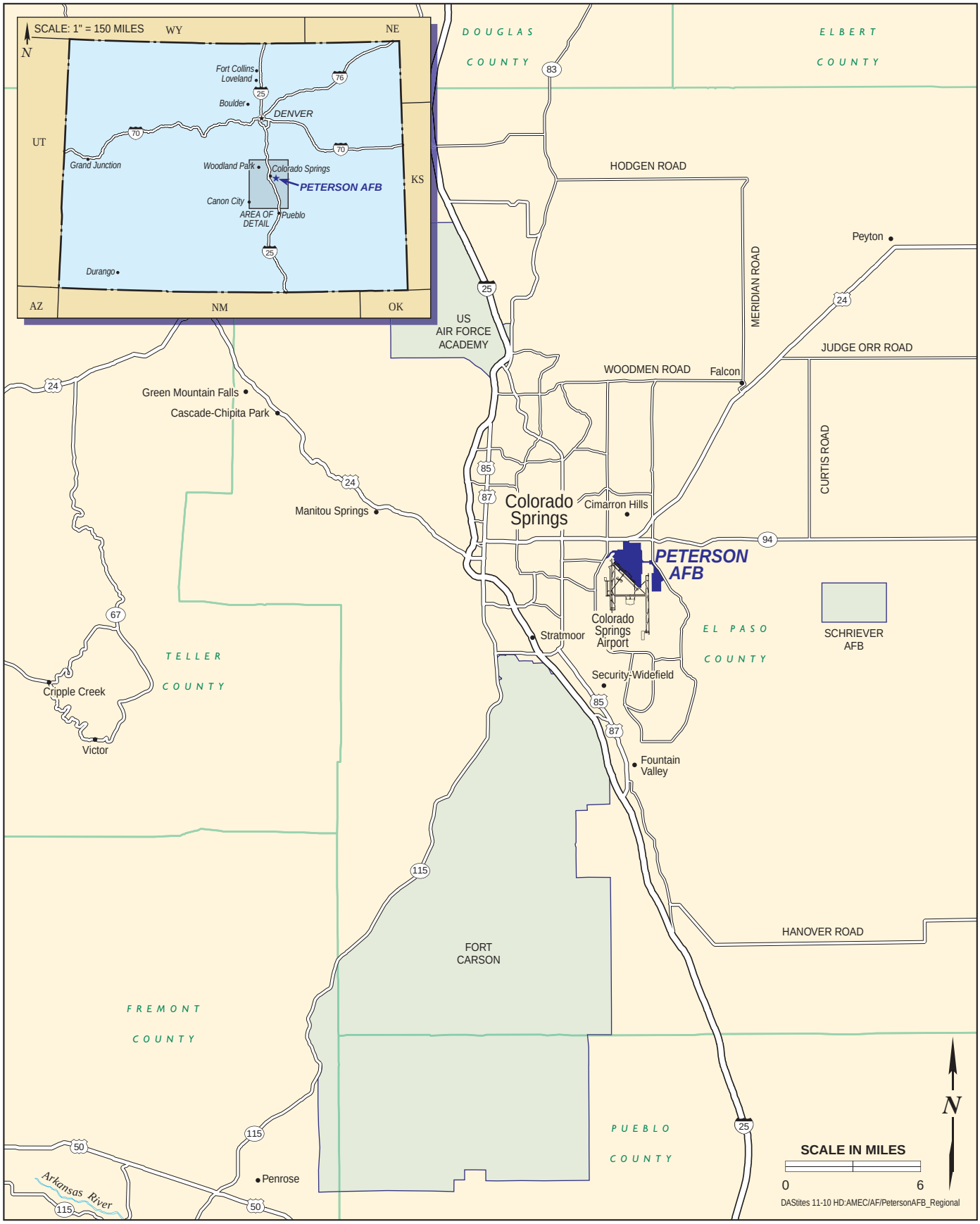
The U.S. Air Force (USAF) proposes to acquire approximately 345 acres of land via long-term lease adjacent to Peterson Air Force Base (AFB), Colorado, as well as the replacement of the base's East Gate and eventual development of a parking lot on a portion of the land proposed for acquisition.

This Environmental Assessment (EA) has been prepared in accordance with regulations issued by the Department of Defense (DoD), 32 Code of Federal Regulations (CFR) Part 989, *Environmental Impact Analysis Process* (EIAP). In accordance with Council on Environmental Quality (CEQ) *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (NEPA) (40 CFR Parts 1500-1508, Section 1502.13), this section specifies the *purpose* and *need* for Proposed Action at Peterson AFB.

1.2 LOCATION AND BACKGROUND

Peterson AFB is located in central Colorado on the southeast side of Colorado Springs, El Paso County (see Figure 1-1). The base is bordered by the Colorado Springs Municipal Airport (COS) on the south, Platte Avenue (U.S. Highway 24) on the north, Powers Boulevard on the west, and Marksheffel Road to the east (see Figure 1-2). The western portion of Peterson AFB (Peterson-Main) is accessible via U.S. Highway 24 and Stewart Avenue. The eastern portion of the base (Peterson-East) is accessible from Marksheffel Road. The base encompasses approximately 1,457 acres of land – 218 acres of fee-owned land and 1,209 acres leased from the City of Colorado Springs, and 30 acres in easement.

The USAF proposes to acquire four parcels adjacent to the base's existing boundary, totaling approximately 345 acres. These parcels comprise unimproved land dominated by short grass vegetation and devoid of trees. As part of the Proposed Action, the USAF also proposes the relocation of the East Gate and the eventual development of a parking lot to the east of Peterson-Main.



EA

Regional Location Map
Peterson AFB

FIGURE 1-1

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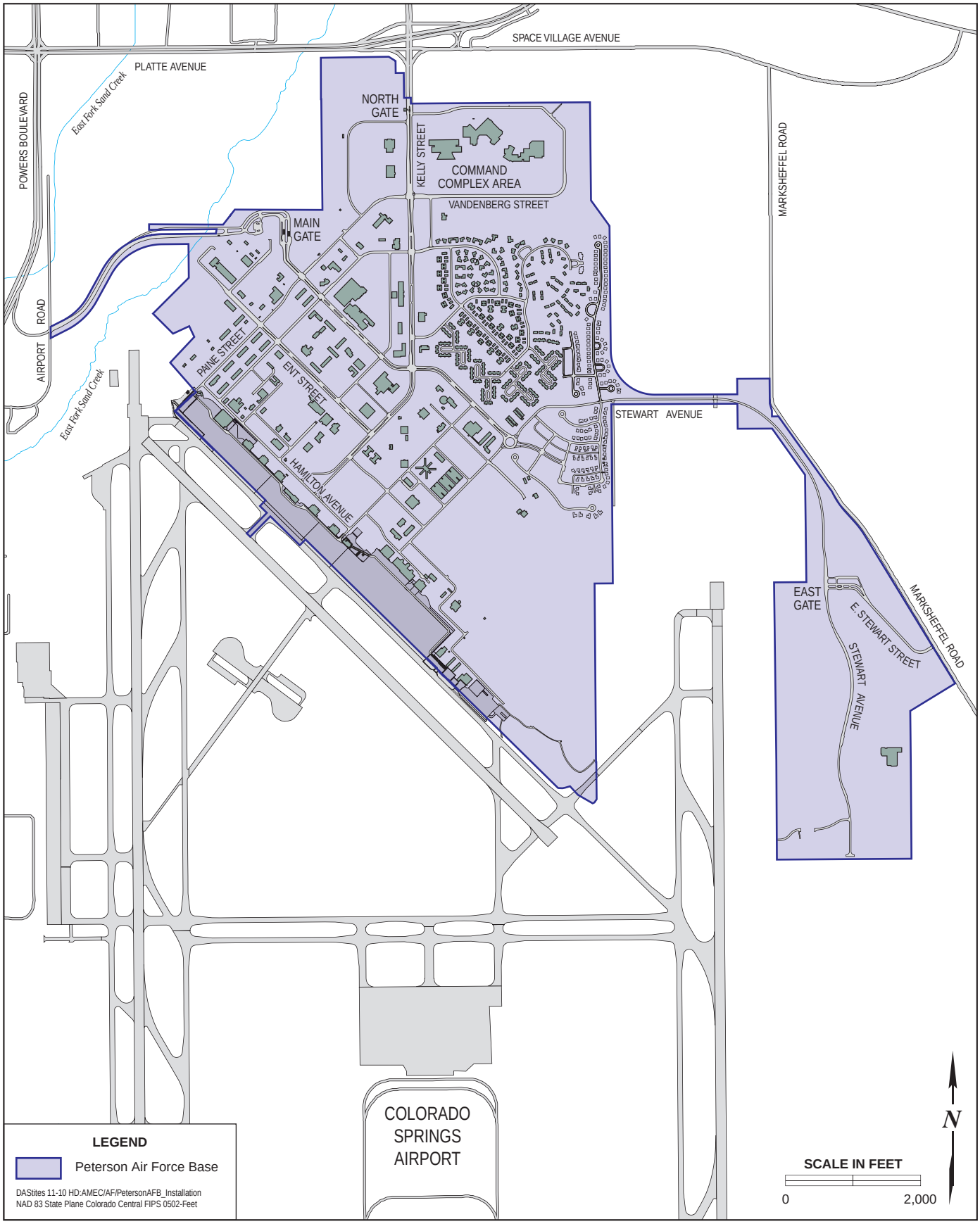

EA

Peterson AFB

FIGURE 1-2

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1.2.1 The 21st Space Wing

The 21st Space Wing (21 SW), Air Force Space Command, is headquartered at Peterson AFB and provides missile warning and space control to North American Aerospace Defense Command, U.S. Strategic Command, and Northern Command through a network of command and control units and ground-based sensors operated by geographically separated units around the world. The mission of the 21 SW is to conduct precise and disciplined missile warning, missile defense, and space control operations; professionally operate, support, and protect its installations while teaming with mission partners; and develop, deploy, and care for expeditionary warrior Airmen.

1.3 PURPOSE AND NEED FOR PROPOSED ACTION

Purpose. The *purpose* of the Proposed Action is three-fold: 1) to provide a buffer against future land-use encroachment threats posed by potential third-party development of land adjacent to Peterson AFB; 2) to bolster Antiterrorism/Force Protection (AT/FP) standards associated with the base's existing East Gate; and 3) to enable efficient future land use on base by reclaiming currently underutilized and underdeveloped land. The proposed property acquisition would ensure that future third-party development on the proposed parcels immediately adjacent to the base would not encroach upon the required AT/FP standoff distances associated with existing USAF facilities, specifically in the Command Complex Area. The relocation of the East Gate would provide a more secure entry control point with improved AT/FP features. The eventual development of a centralized parking facility would also allow for efficient future development and expansion of mission-critical facilities in the Command Complex Area that is currently utilized for parking.

Need. The *need* for the Proposed Action is driven by potential future off-base development in adjacent areas that could encroach upon current and future land use on-base and inhibit development of new facilities and/or expansion of mission-critical operations. Currently, Peterson AFB does not have enough developable space to accommodate anticipated future development to support the 21 SW's expanding responsibilities and various mission requirements

without having to further consolidate existing facilities and uses. This limitation would adversely affect the 21 SW's operational functionality. A new entry control point with enhanced AT/FP features would provide a more secure entry point and improve safety conditions for base access by visitors and commercial vehicles.

1.4 SUMMARY OF ENVIRONMENTAL STUDY REQUIREMENTS

The EIAP is the process by which Federal agencies facilitate consideration of environmental regulations and through which the public and agencies have an opportunity to make known their concerns about federally proposed or funded activities. The primary legislation affecting these agencies' decision-making process is NEPA. This act and other facets of the EIAP are briefly summarized below. Expanded summaries of the regulations pertaining to the EIAP are provided in Appendix A.

National Environmental Policy Act. The intent of NEPA is to protect, restore, or enhance the environment through well-informed Federal decisions. The CEQ was established under NEPA and subsequently issued *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR § 1500-1508, 32 CFR part 989).

Endangered Species Act of 1973. Established measures for the protection of plant and animal species that are federally listed as threatened and endangered, and for the conservation of habitats that are critical to the continued existence of those species.

Clean Air Act and Conformity Requirements. Provided the authority for the U.S. Environmental Protection Agency (USEPA) to establish nationwide air quality standards to protect public health and welfare (National Ambient Air Quality Standards [NAAQS]). The USEPA require the proponent of a proposed action to perform an analysis to determine if its implementation would conform to the State Implementation Plan (SIP).

Water Resources Regulatory Requirements. The Clean Water Act (CWA) of 1977 (33 U.S. Code [USC] §§ 1251 *et seq.*) regulates pollutant discharges that

could affect aquatic life forms or human health and safety. Section 404 of the CWA, and Executive Order (EO) 11990, *Protection of Wetlands*, regulate development activities in or near streams or wetlands. EO 11988, *Floodplain Management*, requires Federal agencies to take action to reduce the risk of flood damage. Federal agencies are directed to consider the proximity of their actions to or within floodplains.

Cultural Resources Regulatory Requirements. The National Historic Preservation Act of 1966 (NHPA) established the National Register of Historic Places (NRHP) and the Advisory Council on Historic Preservation (ACHP) which outlined procedures for the management of cultural resources on Federal property. EO 13007, *Indian Sacred Sites*, directs Federal agencies to accommodate access to, and ceremonial use of, Indian sacred. The American Indian Religious Freedom Act (AIRFA) established Federal policy to protect and preserve the rights of Native Americans to believe, express, and exercise their traditional religions, including providing access to sacred sites. The Native American Graves Protection and Repatriation Act (NAGPRA) requires consultation with Native American tribes prior to excavation or removal of human remains and certain objects of cultural importance.

Antiterrorism Force Protection. The DoD has developed AT/FP standards that are designed to reduce the likelihood of physical damage and mass casualties from potential terrorist attacks. Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Anti-terrorism Standards for Buildings,* outlines various planning, construction, and operational standards to address potential terrorist threats.

Sustainability and Greening. EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance,* strives to improve efficiency and environmental performance in Federal agencies by setting goals in the areas of energy efficiency, greenhouse gas emission mitigation, water conservation, waste management and recycling, green procurement, pollution prevention, and livable communities, among others.

Environmental Justice and Protection of Children. EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, ensures that citizens in either of these categories are not disproportionately

affected. Potential health and safety impacts that could disproportionately affect children are considered under the guidelines established by EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*.

Interagency and Intergovernmental Coordination for Environmental Planning (IICEP). IICEP is a federally mandated process for informing and coordinating with other governmental agencies regarding proposed actions. Through the IICEP process, the USAF will notify relevant Federal, state, and local agencies regarding the proposed action and incorporate comments in the EA (refer to Appendix B).

1.5 SCOPE OF THE ENVIRONMENTAL ASSESSMENT

This EA evaluates potential environmental impacts to the following resources that would likely be affected by implementation of the Proposed Action or its alternatives:

- Air Quality
- Geological Resources
- Biological Resources
- Land Use
- Water Resources
- Cultural Resources
- Noise
- Transportation and Circulation
- Visual Resources
- Safety

Per NEPA, those environmental resource areas that are anticipated to experience either no or negligible environmental impact under implementation of the Proposed Action or its alternatives are not examined in detail in this EA. These environmental resources include:

- Utilities
- Hazardous Materials and Wastes
- Socioeconomics
- Environmental Justice
- Airspace Management

A brief summary of the reasons for not undergoing detailed analyses of these resources is provided below.

Utilities. The Proposed Action would tie into existing utility services and construction activities would be subject to standard design review requirements in order to avoid inadvertent interruption of existing subsurface utilities on base. In addition, the proposed facilities are expected to result in only a negligible increase in utility demands over existing conditions.

Hazardous Materials and Wastes. Long-term operation of the proposed facilities would not result in the increased use of hazardous materials or generation of hazardous waste. Further, an Environmental Baseline Survey completed in March 2010 for the proposed property acquisition concluded that all four proposed parcels comprise areas where no release or disposal of hazardous or petroleum substances has occurred (including no migration of these substances from adjacent properties), and determined that the USAF may proceed with transfer of ownership with no reservations (Peterson AFB 2010a).

Socioeconomics. Implementation of the Proposed Action would provide short-term socioeconomic benefits to the local economy, including construction employment and materials purchases. However, such short-term beneficial impacts from temporary employment gains would be negligible on a regional scale and the Proposed Action would result in no long-term changes in employment levels or economic activity at Peterson AFB. The new East Gate would be staffed by personnel currently working at the existing East Gate and the new parking lot would be included in regular security patrol activities and would not require the staffing of any new personnel.

Environmental Justice. With regard to environmental justice issues, no major, adverse environmental impacts associated with the Proposed Action are anticipated to affect on- or off-base communities and any short-term impacts (e.g., with regard to noise) are expected to be minor. Therefore, no populations (minority, low-income, or otherwise) would be disproportionately adversely impacted and no adverse impact with regard to environmental justice would result. In general, implementation of the Proposed Action would not result in increased exposure of children to environmental health risks or safety risks such

as the generation, use, or storage of hazardous materials. Standard construction site safety precautions (e.g., fencing and other long-term security measures near well sites) would reduce potential risks to minimal levels and any potential impacts to children would be negligible and short-term.

Airspace Management. Implementation of the Proposed Action would not result in any changes to aircraft operations at COS or Peterson AFB and would have no impact on airspace management or aircraft operations.

SECTION 2
PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

This section describes details related to the Proposed Action and alternatives, including the No-Action Alternative. The Preferred Alternative (Alternative 1) and Alternative 2 (Relocation Near Existing East Gate) would both include implementation of the all elements of the Proposed Action; however, the location for the proposed new East Gate would vary (see Sections 2.3 and 2.4). Under the No-Action Alternative, the Proposed Action would not be implemented.

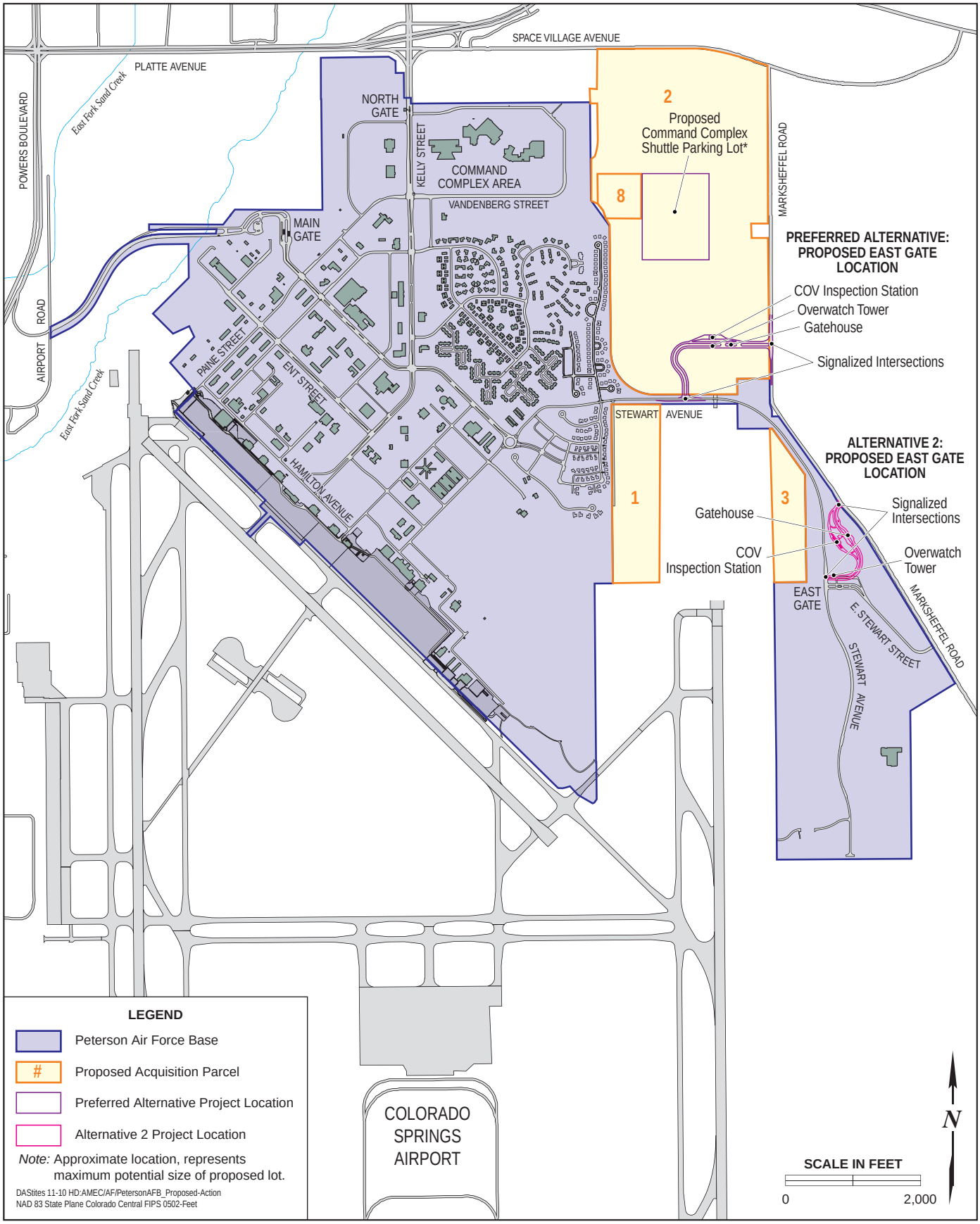
2.2 PROPOSED ACTION

The Proposed Action comprises three distinct components which are detailed further below: 1) the acquisition (long-term lease) of approximately 345 acres adjacent to the base's existing boundary; 2) replacement of the existing East Gate; and 3) the eventual development of a Command Complex Shuttle Parking Lot.

2.2.1 Proposed Property Acquisition

Under the Proposed Action, the U.S. Air Force (USAF) would acquire 4 parcels via long-term lease, totaling approximately 345 acres. These parcels are currently owned by the Colorado Springs Municipal Airport (COS) or El Paso County School District 11 (see Figure 2-1). These parcels have been identified in the Base General Plan as Parcels 1, 2, 3, and 8, and comprise unimproved land dominated by short grass vegetation and devoid of trees:

- Parcel 1: Approximately 42.33 acres adjacent to the southeast border of the western portion of Peterson-Main. It is fenced and gated, and is currently owned by the City of Colorado Springs.
- Parcel 2: Approximately 268 acres adjacent to the northeast border of the western portion of Peterson-Main. It is fenced and gated, and is currently owned by the City of Colorado Springs.
- Parcel 3: Approximately 25 acres adjacent to the northwest border of Peterson-East. It is fenced and gated, and is currently owned by the City of Colorado Springs.



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Proposed Action
Peterson AFB

FIGURE 2-1

No warranty is made by the USAF as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the GIS database.

- Parcel 8: This parcel – almost entirely contained within Parcel 2 – is a 10-acre square plot of land situated near the northeast border of Peterson-Main in the west central section of Parcel 2. It is owned by El Paso County School District 11 and is not delineated by a fence or any other demarcation.

2.2.2 Proposed Relocation of the East Gate

The USAF proposes to construct a new East Gate at Peterson Air Force Base (AFB) in order to bolster Antiterrorism/Force Protection (AT/FP) standards and provide a new 4,283-square foot (sf) entry control point that would include a Gatehouse, a Commercially Owned Vehicle (COV) Inspection Station, and an Overwatch Tower. The facility would be constructed to comply with all AT/FP requirements.

The Gatehouse would be a single-level facility with a covered canopy over the privately owned vehicle (POV) lanes used to check IDs prior to entry to the base. A pull-off lane with a second, smaller canopy would allow for vehicle inspection without delaying traffic flow during peak hours. The COV Inspection Station would be used for commercial vehicles only and would have enclosed bays with lighted below-grade pits for undercarriage inspection. The Gatehouse would function as the control center for the gate barriers in the incoming and outgoing lanes of traffic.

Proposed utility services (i.e., water distribution, sanitary sewer, natural gas, electrical, and communications) for the new East Gate would connect into existing utilities located within the Stewart Avenue and Marksheffel Road right of ways. Design of the stormwater drainage system under either alternative for the new East Gate would incorporate low-impact development measures wherever feasible and practical, which would maintain site runoff to pre-development conditions. These measures could include the installation of rain gardens along the inner medians between the new roadway alignments that incorporate curb-cuts at engineered intervals along the medians to allow inflow and detention. During construction, access from Marksheffel Road would continue to be provided by the existing East Gate which would remain in operation until completion of the new gate.

2.2.3 Command Complex Shuttle Parking Lot

Under the Proposed Action, the USAF proposes the eventual development of a Command Complex Shuttle Parking Lot that would be constructed to the east of the Command Complex Area (refer to Figure 2-1). A shuttle service would be provided to transport personnel from the new parking lot to the Command Complex. It is anticipated that the first phase of development would include the construction of an 820,000-sf lot including space for parking and internal circulation. Eventually, it is anticipated that the Command Complex Shuttle Parking Lot could be expanded by an additional 420,000 sf to meet the parking needs of any future facilities development or expansion within the Command Complex. The new parking lot would eventually replace existing parking spaces located in the Command Complex Area, allowing for a portion or all of the Command Complex's existing 829,000 sf parking lot to be reclaimed for future facility development within the area, which would enhance the efficiency of long-term/future land use on base.

The Command Complex Shuttle Parking Lot would be designed to meet AT/FP requirements, including standards for site fencing, lighting, and standoff distances to nearby structures. In addition, the parking lot would be patrolled during regular security patrol activities. Proposed electrical utilities to support lighting for the new parking lot would connect into an existing utility tie-in located within the Command Complex. Design of the stormwater drainage system at the new parking lot would also incorporate low-impact development measures wherever feasible and practical, which would maintain site runoff to pre-development conditions. These measures could include, but are not limited to, the use of permeable paving surfaces and the installation of rain gardens within the parking medians that incorporate curb-cuts at engineered intervals along the medians to allow inflow and detention.

2.2.4 Design and Construction

Design and construction of the new East Gate and Command Complex Shuttle Parking Lot would incorporate sustainable principles (per Executive Order [EO] 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, October 2009), and would be registered with the USGBC with the goal of

attaining a Silver Certification according to *Leadership in Energy and Environmental Design (LEED) Requirements for New Construction V3.0*. Sustainable design elements would be incorporated within:

- Required demolition
- Site preparation
- Reinforced concrete slab and foundation
- Steel structure
- Masonry and metal panel exterior
- Standing seam metal roof system
- Fire protection
- Heating, ventilation, and air conditioning (HVAC)
- Electrical and plumbing systems
- Utility connections

All construction would be consistent with the base's Architectural Guidelines; further, construction would comply with applicable codes and laws, and AT/FP requirements. In compliance with 14 CFR Part 77, information related to proposed vertical development, including the use of temporary construction equipment, will be submitted to the Federal Aviation Administration (FAA) for a formal airspace review and determination prior to the commencement of construction activities.

It is anticipated that construction of the new East Gate would span approximately 9 months. Upon completion of the new gate, the existing 790-sf gatehouse and approximately 80,000 sf of E. Stewart Street would be demolished. The disturbed area would be reseeded with native grasses to control site erosion and help prevent the spread of noxious weeds. The existing entrance at Marksheffel Road would be securely fenced and gated and an approximately 200-foot segment of E. Stewart Street spanning from its intersection with Marksheffel Road to the west would be maintained to provide access to electrical utilities located along E. Stewart Street.

Activities associated with the first construction phase of the Command Complex Shuttle Parking Lot would require approximately 6 months of work, resulting in the disturbance of up to 850,000 sf of land for site preparation, grading, and staging activities. After the completion of the first phase, the parking lot could

potentially be expanded to include additional parking and circulation space. It is anticipated that this second construction phase would also last approximately 6 months and would result in the disturbance of approximately 450,000 sf of land for site preparation, grading, and staging activities. Construction of the new East Gate and the two construction phases associated with the Command Complex Shuttle Parking Lot would not occur simultaneously and would be staggered over the next 5-7 years.

For all development components of the Proposed Action, construction equipment would be brought onsite and would remain onsite for the duration of their use. Best management practices (BMPs) to minimize environmental impacts (e.g., soil stockpiling, use of silt berms/fences, watering of exposed soils), preparation of management plans (e.g., Stormwater Pollution Prevention Plan, Erosion Control Plan, and Soils Management Plan), and worker training programs would be required and implemented during construction. Upon completion, all disturbed areas not supporting new facilities would be revegetated.

2.2.5 Operation and Maintenance

Long-term operation and maintenance of the new East Gate and parking lot are not expected to generate any substantial amounts of additional staffing needs or traffic issues. The new East Gate would be staffed by personnel currently working at the existing East Gate and the new parking lot would be included in regular security patrol activities and would not require the staffing of any new personnel. Although the new East Gate would experience an increase in COV traffic, these COVs currently use the base's Main Gate and would be better accommodated by the design of the new East Gate facilities. Further, implementation of both proposed development components would improve traffic conditions on base through the use of a shuttle system from the proposed parking lot and an increased capacity at the new East Gate to accommodate anticipated peak-hour traffic.

2.3 ALTERNATIVE 1: THE PREFERRED ALTERNATIVE

Under the Preferred Alternative, the proposed property acquisition and eventual development of the Command Complex Parking Lot would be implemented as described under the Proposed Action. The new proposed East Gate would be constructed just north of Peterson-East, in the southeast corner of Parcel 2 (refer to Figure 2-1). The proposed 4,283-sf entry control point, including the Gatehouse, COV Inspection Station, and Overwatch Tower would be constructed as described in Section 2.2 and would comply with AT/FP standards. The new gate would provide access from a new signalized intersection at Marksheffel Road via approximately 310,000 sf of new roadway alignment with secure divided lanes. It is anticipated that construction of the East Gate under the Preferred Alternative would result in the disturbance of up to 465,000 sf of land for site preparation, grading, and staging activities (approximately 1.5 times the total area proposed for development).

This alternative was selected as the Preferred Alternative as it would result in similar levels and types of disturbance during construction compared to other alternatives considered and would allow for further consolidation of facilities in Peterson-East by relocating the proposed East Gate to the southeast corner of the proposed property acquisition Parcel 2.

2.4 ALTERNATIVE 2: RELOCATION NEAR EXISTING EAST GATE

Under Alternative 1, the proposed property acquisition and eventual development of the Command Complex Parking Lot would be implemented as described under the Proposed Action. Under this alternative, the proposed East Gate would be constructed just north of its existing location in Peterson-East (refer to Figure 2-1). The proposed 4,283-sf entry control point, including the Gatehouse, COV Inspection Station, and Overwatch Tower would be constructed as described in Section 2.2 and would comply with AT/FP standards. The new gate would provide access from a new signalized intersection at Marksheffel Road via approximately 220,000 sf of new roadway alignment with secure divided lanes. Proposed utility services for the new East Gate would connect into existing utilities located within the Stewart Avenue and Marksheffel Road right of ways. It is anticipated that construction of the East Gate under

Alternative 2 would result in the disturbance of up to 330,000 sf of land for site preparation, grading, and staging activities (approximately 1.5 times the total area proposed for development).

In addition, future facilities development within Peterson-East would be hindered if the East Gate were constructed in this location as this portion of the base contains limited remaining developable space. Relative to the Preferred Alternative, this would result in inefficient future land use in Peterson-East and would affect the 21st Space Wing's (21 SW's) ability to support future mission requirements.

2.5 ALTERNATIVE 3: NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the USAF would not implement the Proposed Action. Although future development of Peterson AFB would be concentrated within the base's existing footprint, if the No-Action Alternative were selected, the 21 SW would be limited by space restrictions, inefficient land uses, and potential future encroachment issues. These deficiencies would greatly hinder the 21 SW's ability to support its current and future mission responsibilities.

2.6 ALTERNATIVES ELIMINATED FROM CONSIDERATION

In addition to the Preferred Alternative and Alternative 2, no other feasible alternatives were identified which would meet the *purpose* and *need* of the Proposed Action. No other potential acquisition properties exist to the east of the Command Complex which would provide a buffer against future land-use encroachment threats adjacent to Peterson AFB and no other alternative sites exist which would be suitable to support relocation of the East Gate while bolstering AT/FP standards.

SECTION 3
AFFECTED ENVIRONMENT

This section describes relevant existing environmental conditions for resources potentially affected by the Proposed Action and project alternatives. In compliance with guidelines contained in the National Environmental Policy Act, Council on Environmental Quality (CEQ) regulations, and 32 Code of Federal Regulations (CFR) § 989, the description of the affected environment focuses on only those resources potentially subject to impacts.

Resource descriptions focus on the following areas: air quality; geological resources; biological resources; land use; water resources; cultural resources; noise; transportation and circulation; visual resources; and safety.

3.1 AIR QUALITY

This section describes air quality considerations and conditions in the area around Peterson Air Force Base (AFB). The discussion addresses air quality standards and describes current air quality conditions in the region.

3.1.1 Definition of Resource

Air quality is affected by stationary sources (e.g., industrial development) and mobile sources (e.g., mobile motorized equipment). Air quality at a given location is a function of several factors including the quantity and type of pollutants emitted locally and regionally, and the dispersion rates of pollutants in the region. Primary factors affecting pollutant dispersion are wind speed and direction, atmospheric stability, temperature, the presence or absence of inversions, and topography.

3.1.1.1 Criteria Pollutants

Air quality in a given location is determined by the concentration of various pollutants in the atmosphere. National Ambient Air Quality Standards (NAAQS) are established by the U.S. Environmental Protection Agency (USEPA) for criteria pollutants, including: ozone (O_3), carbon monoxide (CO), nitrogen

dioxide (NO_2), sulfur dioxide (SO_2), particulate matter equal to or less than ten microns in diameter (PM_{10}) and 2.5 microns in diameter ($PM_{2.5}$), and lead (Pb). NAAQS represent maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect public health and welfare.

3.1.2 Existing Conditions

3.1.2.1 Climate

Average temperatures at Peterson AFB generally range from approximately 28 degrees Fahrenheit (^{o}F) in January to approximately 70 ^{o}F in July. Average annual rainfall at Peterson AFB is 15.94 inches. More rainfall occurs in the spring months, with a peak monthly average of 2.94 inches in August; the lowest monthly average rainfall of 0.30 inches occurs in January (Western Regional Climate Center [WRCC] 2010). Snow season begins in the fall and extends through spring; the average annual snowfall at the Colorado Springs Municipal Airport (COS) is 39.8 inches, with a peak monthly average of 8.6 inches in March (WRCC 2010).

Peterson AFB is located in a fairly breezy area. Prevailing winds are predominantly from the north throughout the year. Wind speeds usually range from seven to ten knots (eight to 12 miles per hour [mph]), with the highest speeds occurring in the spring and the lowest in late summer and early fall (Peterson AFB 2004).

3.1.2.2 Local Air Quality

Peterson AFB is located in El Paso County, Colorado. The region is currently in attainment for all criteria pollutants (USEPA 2010), but has only been in attainment for CO since 1999 (Figure 3-1). As part of the redesignation as an attainment area, the Colorado Springs area is under a maintenance plan until 2015 to demonstrate compliance with the CO standard. Under this maintenance plan, implemented under a State Implementation Plan (SIP) and approved by the USEPA, the Colorado Springs maintenance area has a mobile sources emissions budget of 531 tons per day from 2010 to 2015.

Pollutant	Averaging Time	Colorado Standards	Federal Standards		
		Concentration	Primary	Secondary	Method
Ozone (O_3)	1 Hour [a]	0.12 ppm (235 μg/m^3)	0.12 ppm (235 μg/m^3)	Same as Primary Standard	Ultraviolet Photometry
	8 Hour (2008) [b] 8 Hour (1997) [c]	0.075 ppm (147 μg/m^3) 0.080 ppm (157 μg/m^3)	0.075 ppm (147 μg/m^3) 0.080 ppm (157 μg/m^3)		
Respirable Particulate Matter (PM_{10})	24 Hour [d]	150 μg/m^3	150 μg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
Fine Particulate Matter ($PM_{2.5}$)	24 Hour [e]	35 μg/m^3	35 μg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual [f] Arithmetic Mean	15 μg/m^3	15 μg/m^3		
Carbon Monoxide (CO)	8 Hour [g]	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)
	1 Hour [g]	35 ppm (40 mg/m^3)	35 ppm (40 mg/m^3)		
Nitrogen Dioxide (NO_2)	Annual Average	53 ppb [h]	53 ppb [h]	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	100 ppb [i]	100 ppb [i]	None	
Sulfur Dioxide (SO_2)	Annual Average	0.030 ppm (80 μg/m^3)	0.030 ppm (80 μg/m^3)	—	Spectrophotometry (Pararosaniline Method)
	24 Hour [g]	0.14 ppm (365 μg/m^3)	0.14 ppm (365 μg/m^3)	—	
	1 Hour	75 ppb [j]	75 ppb [j]	—	
	3 Hour	700 μg/m^3	—	0.5 ppm (1300 μg/m^3)	
Lead	Calendar Quarter	1.5 μg/m^3	1.5 μg/m^3	Same as Primary Standard	High Volume Sampler and Atomic Absorption
	Rolling 3-Month Average	0.15 μg/m^3 [k]	0.15 μg/m^3 [k]	Same as Primary Standard	

a 1) EPA revoked the 1-hour ozone standard in all areas, although some areas having continuing obligations under that standard ("anti-backsliding").
2) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤1.

b To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm (effective May 27, 2008).

c 1) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.
2) The 1997 standard – and the implementation rules for that standard – will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.
3) EPA is in the process of reconsidering these standards (set in March 2008).

d Not to be exceeded more than once per year on average over 3 years.

e To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 μg/m^3 (effective December 17, 2006).

f To attain this standard, the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 μg/m^3.

g Not to be exceeded more than once per year.

h The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.

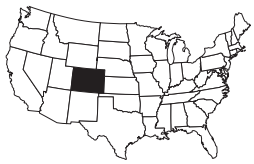
i To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-houraverage at each monitor within an area must not exceed 100 ppb (effective January 22, 2010.

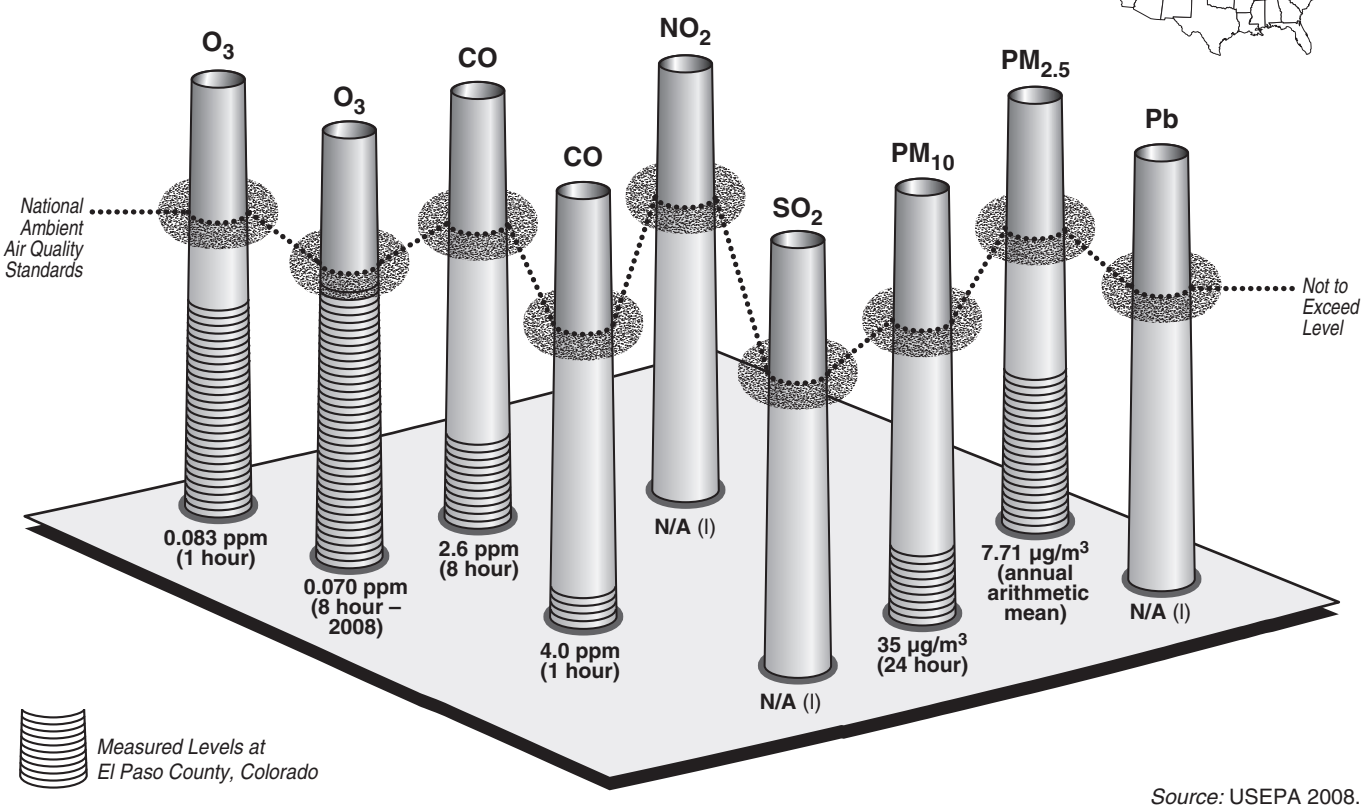
j Final rule signed June 2, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

k Final rule signed October 15, 2008.

l Not monitored in El Paso County.

ppm – parts per million by volume (micromoles of pollutant per mole of gas)
μg/m^3 – micrograms per cubic meter
mg/m^3 – milligrams per cubic meter
(ppm*molecular weight)/0.0224 = μg/m^3





Source: USEPA 2008.

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Colorado and National Ambient Air Quality Standards and Measured Emission Levels (2008)
El Paso County, Colorado

3-1

The emission budget for construction non-road sources is 2.82 tons per day in 2010 (Colorado Department of Public Health and Environment [CDPHE] 2003). The emission budget for point sources (emissions from vents and smokestacks, including natural gas combustion), is 3.84 tons per day in 2010 (CDPHE 2008). A geographic area with air quality that is cleaner than the primary standard is called an "attainment" area; areas that do not meet the primary standard are called "nonattainment" areas. Table 3-1 summarizes the attainment status for El Paso County.

Table 3-1. El Paso County Designation for Criteria Pollutants

National Ambient Air Quality Standard Criteria Pollutant	Designation
Carbon monoxide (CO)	Attainment/Maintenance
Nitrogen dioxide (NO_2)	Attainment
8-hour ozone (O_3) (as measured by precursors nitrogen oxides (NO_x) and volatile organic compounds (VOC)	Attainment
Particulate matter with aerodynamic diameter of 10 micrometers or less (PM_{10})	Attainment
Particulate matter with aerodynamic diameter of 2.5 micrometers or less ($PM_{2.5}$)	Attainment
Sulfur (measured as sulfur dioxide, SO_2)	Attainment
Lead (Pb)	Attainment

Source: USEPA 2010.

3.1.2.3 Emissions at Peterson AFB

Peterson AFB operates under *Title V Operating Permit 95OPEP147* that regulates air emissions from stationary sources. The *Title V Permit* was issued 3 March 1998 and renewed 1 January 2009 (Peterson AFB 2009). Peterson AFB is a major source of criteria pollutants under the *Title V* program because it has the potential to emit more than 100 tons of the criteria pollutants volatile organic compounds (VOCs), and PM_{10} and nitrogen oxides (NO_x). Peterson AFB is not subject to Prevention of Significant Deterioration (PSD) review requirements because the actual or potential emissions of any criteria pollutant does not exceed 250 tons per year (Peterson AFB 2010f).

Mobile sources are not regulated under the Clean Air Act, *Title V* operating permit, or the Colorado operating permit program, but are considerable components of total base air emissions. These emissions, therefore, are periodically inventoried as part of Peterson AFB's air quality management program. Emissions from mobile sources include CO, NO_x, Pb, sulfur oxides (SO_x), PM_{10}, and VOCs.

Peterson AFB currently emits hazardous air pollutants (HAP) during the course of base activities such as storing fuel, using paints, and running generators. However, Peterson AFB is not a major source of HAP. These emissions are estimated annually in the Peterson AFB Air Emission Inventory. The air emissions summary for mobile and stationary sources at Peterson AFB is presented in Table 3-2.

Table 3-2. Stationary and Mobile Source Emissions at Peterson AFB

Category	Annual Emissions (tons per year)					
	CO	NO_x	PM_{10}	SO_x	VOCs	HAPs
2009 Emissions at Peterson AFB	12.54	20.10	5.96	0.25	42.04	6.4

Notes: VOCs and NO_X contribute to the formation of ground-level O_3. Mobile sources include mobile generators and aerospace ground equipment (AGE).
Source: Peterson AFB 2010f.

Peterson AFB releases of Ozone-Depleting Substances (ODS) were approximately 851 pounds (0.43 tons) of Class II ODSs and no (zero) pounds of Class I ODSs. Class I ODS are currently used for fire suppression. Class II ODS are used as a refrigerant in air conditioners. The current policy at Peterson AFB is to prohibit the use of Class I or Class II ODS for new construction projects (Peterson AFB 2010f).

3.2 GEOLOGICAL RESOURCES

3.2.1 Definition of Resources

Geological resources analyzed in this study include *topography*, *geology*, and *soils*. Topography is the general shape and arrangement of a land surface, including its height and the position of its natural and human-created features. Geology describes the structure and configuration of the earth's surface and subsurface materials and their inherent properties. Soils are the unconsolidated surface materials overlying bedrock or other subsurface material, and they are typically described in terms of their composition materials, elasticity, slope, permeability, water-holding capacity, and erosion potential.

3.2.2 Existing Conditions

The region of influence (ROI) for geological resources is limited to eastern Peterson AFB and the proposed acquisition parcels.

3.2.2.1 Regional Setting

Peterson AFB is located on geologic formations predominantly comprised of Cretaceous and Tertiary rocks. These include Pierre Shale, Fox Hills Sandstone, the Laramie Formation, and the Dawson Arkose. These formations range from 125 to 211 million years old with a thickness between 610 feet and 4,000 feet. The Pierre Shale is present as bedrock beneath Peterson AFB and, based on extrapolation from regional outcrops, the Fox Hills Sandstone and the Laramie Formation are likely to at least subcrop beneath the northern portion of the base. These geologic formations are covered by Quaternary alluvium that ranges from about 50 to 100 feet deep at the installation.

The soils of El Paso County change from west to east as the rock changes from older igneous granite varieties to younger sedimentary rocks and recent deposits of unconsolidated, alluvial stream channels and colluvial slopes. The igneous rocks in the far west are large-scale and homogenous. Moving eastward, many sedimentary rocks have been known to contain paleontological features (El Paso County 2009). Farther east the more level area of Peterson AFB is dominated by

gravels and alluviums of the Pinedale and Bull Lake Age, specifically including Broadway and Louviers Alluvium.

Various mineral deposits on Peterson AFB include sandstone and shale. The exposed Laramie Formation consists of soft shale deposits to hard white sandstone, and is perhaps the most significant layer of rock on and in the vicinity of the installation. A layer of sub-bituminous coal lies 0-200 feet below the surface of this formation. To the east lies the relatively level Great Plains (Peterson AFB 2010a).

3.2.2.2 Peterson AFB

Topography

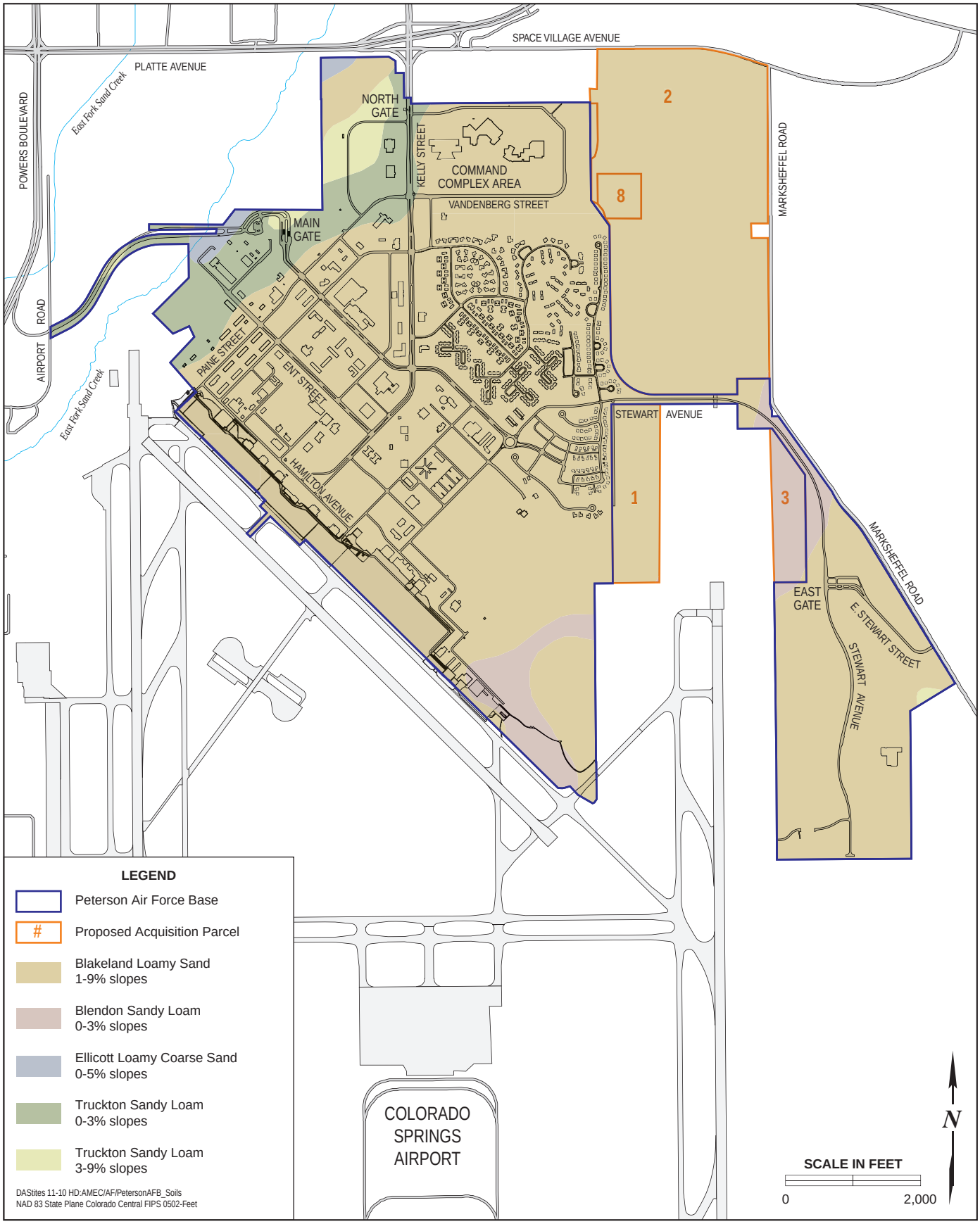
The topography of Peterson AFB is comprised of relatively flat land, sloping gently to the south and southwest at a gradient of one to two percent, with localized areas of steeper slopes near East Fork Sand Creek. Elevations range from approximately 6,276 feet above mean sea level (msl) in the northeastern corner of the base to approximately 6,135 feet above msl in the southeastern corner of the base (Peterson AFB 2006).

Geology

Peterson AFB and the propose acquisition parcels are located in the Colorado Piedmont section of the Great Plains Physiographic Province. The Southern Rocky Mountain Physiographic Province is located about 10 miles to the west. The Colorado Piedmont is a mature elevated plain, dissected by numerous streams. In the local area, this includes Fountain and Sand Creeks (Peterson AFB 2006).

Soils

U.S. Department of Agriculture (USDA) *Natural Resources Conservation Service* maps identify one soil association on the proposed parcels adjacent to Peterson AFB: all of parcels 1, 2, and 8, are underlain entirely by *Blakeland loamy sand* on 1 to 9 percent slopes, and parcel 3 is underlain mostly by *Blakeland loamy sand* on 0 to 3 percent slopes (Figure 3-2) (USDA 1981).



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Surface Soils at Peterson AFB and the Proposed Acquisition Parcels

FIGURE 3-2

No warranty is made by the USAF as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the GIS database.

Blakeland soil tends to be deep and somewhat excessively drained. Permeability of the Blakeland soil is rapid. The effective rooting depth is more than 60 inches. The available water capacity is moderate to low. Surface runoff is slow, and the hazard of erosion is moderate (USDA 1981).

3.3 BIOLOGICAL RESOURCES

3.3.1 Definition of Resource

Biological resources include native or naturalized plants and animals and the habitats in which they occur. Sensitive biological resources are defined as those plant and animal species listed as threatened or endangered, or proposed as such, by the U.S. Fish and Wildlife Service (USFWS), Colorado Division of Wildlife (CDOW) or Colorado Natural Heritage Program (CNHP). The Federal Endangered Species Act (ESA) of 1973 and the Colorado ESA protect listed species against killing, harming, harassment, or any action that may damage their habitat. Species of concern are not protected by law, but could become listed and protected at any time.

Sensitive habitats include those areas designated by the USFWS as critical habitat protected by the ESA and sensitive ecological areas as designated by state or federal rulings. Sensitive habitats also include wetlands, plant communities that are unusual or of limited distribution, and important seasonal use areas for wildlife (e.g., migration routes, breeding areas, crucial summer/winter habitats).

Migratory birds, as listed in 50 CFR § 10.13, are ecologically and economically important to the U.S., and recreational activities such as bird watching, studying, and feeding are practiced by many Americans. The *Migratory Bird Treaty Act* (MBTA), as amended, was enacted to protect migratory birds from capture, pursuit, hunting, or removal from natural habitat. Over 800 species are currently protected under the MBTA. In 2001, Executive Order (EO) 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, was issued to ensure that Federal agencies consider environmental effects on migratory bird species and, where feasible, implement policies and programs which support the conservation and protection of migratory birds.

Jurisdictional wetlands are those subject to regulatory authority under Section 404 of the Clean Water Act (CWA) and EO 11990, *Protection of Wetlands*. Wetlands are defined by the U.S. Army Corps of Engineers (USACE) and the USEPA as, "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under

normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR § 328.3[b]). Wetlands are protected as a subset of the *Waters of the U.S.* under Section 404 of the CWA; the USACE requires a permit for any activities crossing wetlands or other Waters of the U.S.

3.3.2 Existing Conditions

3.3.2.1 Vegetation

Vegetative cover on the base has been drastically altered over the years; however large portions of Peterson-East and adjacent parcels, including the proposed acquisition parcels, remain largely undeveloped grasslands. According to the CDOW, the region in which Peterson AFB is located formerly consisted of mid-grass, tallgrass, or mixed grass prairie (CDOW 1996). The prairie composition of the proposed acquisition parcels is unknown; however, data indicate that the area would be composed primarily of short-grass prairie, with interspersed tallgrass prairie species (CDOW 1996; Peterson AFB 2010h). Historically, tallgrass prairie occupied approximately 150 million acres, but less than two percent of that remains. Very few large patches of tallgrass prairie remain in Colorado (Peterson AFB 2006).

A small area of the northern sandhill prairie natural community association of big bluestem (*Andropogon gerardii*) and prairie sandreed (*Calimovilfa longifolia*) was discovered on Peterson-East. This rare natural community is similar in composition to other tallgrass prairie remnant populations found closer to the foothills along the Front Range and near the Air Force Academy (CNHP 2004). Previous land uses that affected the natural processes of this original ecosystem include wildlife abatement, cattle grazing, agriculture, human settlement, and progressive urban and institutional development.

3.3.2.2 Wildlife

The open grasslands at the proposed acquisition parcels provide habitat for a variety of wildlife species. Eight species of reptiles and amphibians were identified on or near Peterson AFB during a survey conducted by the Colorado Natural Heritage Program (CNHP) survey. None of the reptiles or amphibians

are considered rare, threatened, or endangered by state and Federal agencies. Three of the species identified were snakes, three species were lizards, and two were toads. Additional reptiles and amphibians that have the potential to occur on the parcels include the western hognose snake (*Heterodon nasicus*), western rattlesnake (*Crotalus viridis*), many-lined skink (*Eumeces multivirgatus*), and plains spadefoot (*Spea bombifrons*).

Twenty-nine species of birds were identified on Peterson AFB in a CNHP survey that occurred in 2004 (CNHP 2004). Common prairie-based migratory birds are found at and in the vicinity of Peterson AFB include the horned lark (*Eremophila alpestris*), western meadowlark (*Sturnella neglecta*), house finch (*Carpodacus mexicanus*), black-billed magpie (*Pica pica*), American robin (*Turdus migratorius*), and lark bunting (*Calamospiza melanocorys*). Birds of prey present at the base include the red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*Buteo swainsoni*), and American kestrel (*Falco sparverius*). None of the birds identified were considered rare, threatened or endangered by state or federal agencies. The birds of most conservation concern and potential to occur on Peterson AFB are the grasshopper sparrow (*Ammodramus savannarum*), the golden eagle (*Aquila chrysaetos*), the burrowing owl (*Athene cunicularia*), and the ferruginous hawk (*Buteo regalis*). The mountain plover (*Charadrius montanus*) is found in nearby southern and eastern El Paso County, but is not likely to inhabit Peterson AFB because of the lack of bare ground and height of grasses (CNHP 2004).

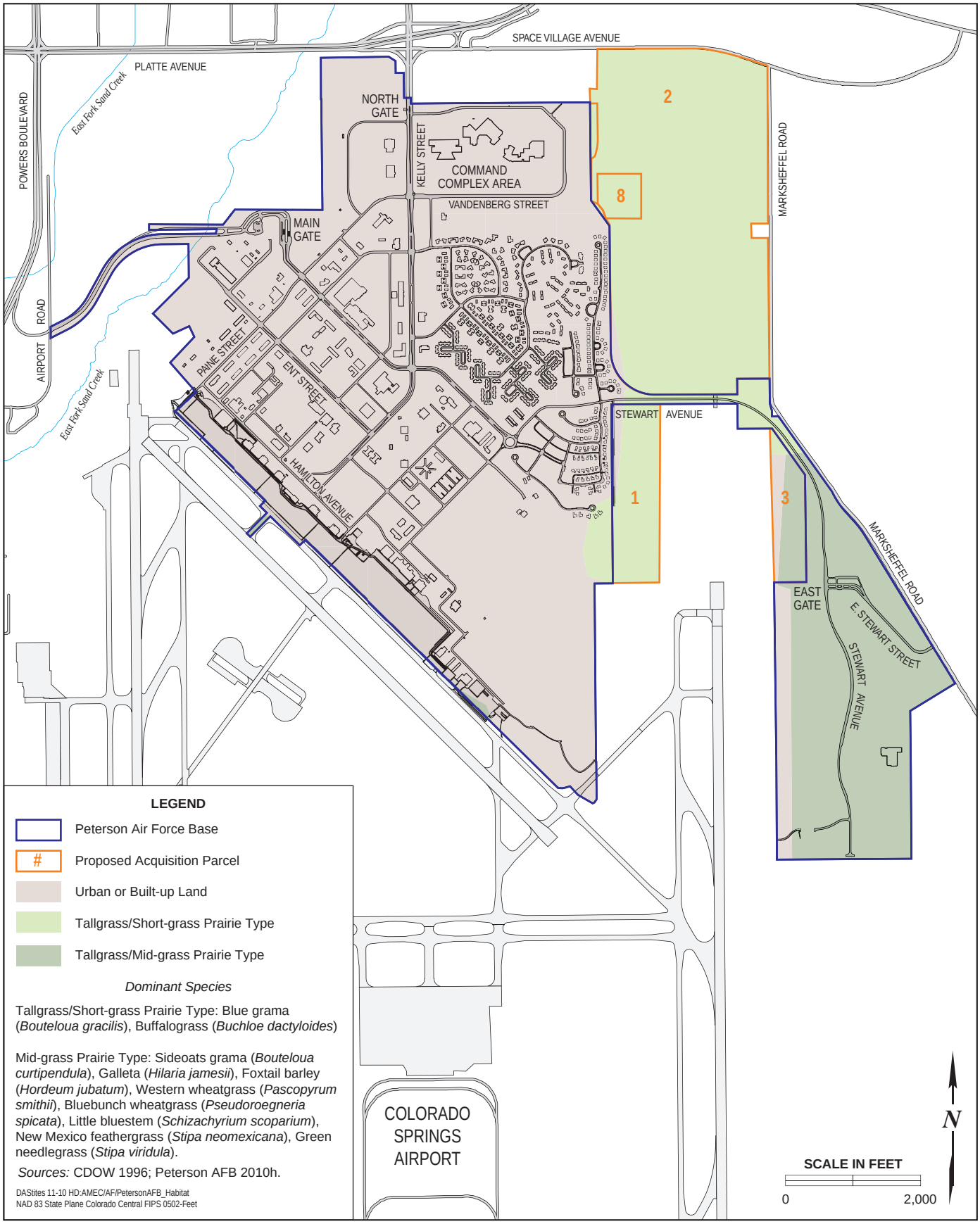
The mallard (*Anas platyrhynchos*), Canada goose (*Branta canadensis*), northern shoveler (*Anas clypeata*), great blue heron (*Ardea herodias*), brewer's blackbird (*Euphagus cyanocephalus*), and killdeer (*Charadrius vociferus*) are bird species associated with the surface water resources of Peterson AFB; however no surface water bodies are present within or adjacent to the project area. These birds, their eggs, and nests are protected by the MBTA (Peterson AFB 2004).

The grassland complex at Peterson AFB supports a variety of small mammals. Rodents include the thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*), black-tailed prairie dog (*Cynomys ludovicianus),* eastern fox squirrel (*Sciurus niger*), and western harvest mouse (*Reithrodontomys megalotis*). The olive-backed pocket mouse (*Perognathus fasciatus*), black tailed jackrabbits (*Lepus californicus*) and desert cottontails (*Sylvilagus audubonii*) also utilize these

grasslands. Preble's meadow jumping mouse (*Zapus hudsonius preblei*) may occur onsite, although none have been observed in recent surveys (CNHP 2004). Large herbivores on base are generally absent due to conflicts with aircraft on the runways but an occasional mule deer (*Odocoileus hemionus*), antelope (*Antilocapra americana*), or white-tailed deer (*Odocoileus virginianus*) may be found. Predators include the red fox (*Vulpes vulpes*), the swift fox (*Vulpes velox*), and coyote (*Canis latrans*) (CNHP 2004; Peterson AFB 2006).

Although neither extensive nor pristine, northern sandhill prairie communities on Peterson-East, and potentially within the proposed acquisition parcels, retain intrinsic biological value. Any remaining habitat would continue to serve as critical habitat for any existing Arogos skipper (*Atrytone arogos*) or Ottoe skipper (*Hesperia ottoe*) butterflies, rare species dependent upon big bluestem as a host plant. More generally, native plants serve as habitat for a host of more common organisms and contribute genetic diversity to native populations in the vicinity (CNHP 2004).

Due to the proximity of the proposed acquisition parcels to Runway 17L-35R, the grasslands are regularly mowed to reduce attractiveness to wildlife that could result in bird-aircraft strike hazards (BASH). This disturbance and habitat modification would limit the value of these grasslands for wildlife and native vegetation. Additionally, to support airport safety, a wildlife biologist from the U.S. Department of Agriculture's Animal and Plant Inspection Service (APHIS) conducts wildlife surveys near the airfield about three or four times per month (Peterson AFB 2010a). Although Parcels 2 or 8 are not routinely surveyed, Parcels 1 and 3 have been part of the APHIS survey area. Previously, the airport had a problem with prairie dogs, the burrowing owls that use the prairie dog burrows for nesting, and the bird aircraft strike hazard that this condition creates. A few years ago, APHIS waited until the owls' nesting season had ended and they had left the area before chemically treating parcels around the airfield to eradicate the prairie dogs. This treatment included Parcels 1 and 3, but not Parcels 2 and 8 (Peterson AFB 2010a).



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Habitats at Peterson AFB and the Proposed Acquisition Parcels

FIGURE 3-3

No warranty is made by the USAF as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the GIS database.

3.3.2.3 Sensitive Species

According to information from the USFWS, CDOW, and Peterson AFB, a total of 13 special-status species could potentially occur on base (Table 3-3).

Table 3-3. Sensitive Species Potentially Occurring on Peterson AFB

Common Name	Scientific Name	Status
Birds		
Ferruginous hawk	*Buteo regalis*	SSC
Mountain Plover	*Charadrius montanus*	SSC
Whooping crane	*Grus americana*	FE, SE
Western burrowing owl	*Athene cunicularia*	ST
Mammals		
Black-tailed prairie dog	*Cynomys ludovicianus*	SSC
Black-footed ferret	*Mustele nigripes*	FE, SE
Preble's Meadow jumping mouse	*Zapus hudsonius preblei*	FT, ST
Swift fox	*Vulpes velox*	SSC

FC - Federal candidate
FT - Federally threatened
FE - Federally endangered
SSC - State special concern
ST - State threatened
SE - State endangered

Note: Table 3-3 includes only the state and federally listed species which either occur or potentially occur at Peterson AFB.

Sources: Peterson AFB 2006, CNHP 2004, CDOW 2010a, 2010b; USFWS 2010b.

Ferruginous Hawk. Ferruginous hawks are known to occur as a resident at and adjacent to Peterson AFB (CNHP 2004; Peterson AFB 2006, 2010a). This species forages for small mammals including black-tailed prairie dogs in open vegetation areas. Due to the extensive habitat for small rodents and other prey species found on the proposed acquisition parcels, these hawks can be found on base as a transient or while foraging.

Mountain Plover. The mountain plover is listed as a State special concern species. This species prefers shortgrass prairies dominated by buffalograss and blue grama with areas of bare ground. They also inhabit prairie dog towns. Mountain plovers require much more bare ground that what is found at and near Peterson AFB. The mountain plover is only likely to be found on base as a rare migratory transient (CNHP 2004).

Whooping Crane. The whooping crane is a federally and State endangered species that has been recorded in mudflats around reservoirs and in agricultural areas. In Colorado, it is uncommon in spring and fall and a rare migrant in the western valleys. Whooping cranes are mostly recorded in Mesa, Delta, and Gunnison counties and are casual migrants on the eastern plains. In 1990, as part of the airport expansion environmental impact statement, the USFWS surveyed areas of the airport near proposed acquisition parcels 1 and 3 for the presence of potential habitat for federally threatened or endangered species. USFWS did not find any permanent habitat for the whooping crane and determined that the species would only migrate through the area (Peterson AFB 2010a).

Western Burrowing Owl. The State threatened western burrowing owl is a migratory resident on base and occurs there from March through October. They inhabit the grassland community and use abandoned prairie dog burrows or other excavated sites as nesting locations. The 2004 CNHP survey reported no sighting of the owl on-base. Burrowing owls were tentatively identified during the CNHP survey on the Colorado Springs Airport and land to the east of the base (Peterson AFB 2010b).

Black-Tailed Prairie Dog. The black-tailed prairie dog, a state special concern species, is known to inhabit the proposed acquisition parcels (Peterson AFB 2010i), and is on record to occur south of Peterson AFB. It inhabits short and mid-grass prairies where it forms colonies known as towns. Because prairie dogs create towns that are vital grassland habitat components for a host of species, they can indicate the health of grassland systems. Peterson AFB is surrounded by considerable acreage of mid-grass prairie, likely including the proposed acquisition parcels, which provide appropriate habitat for prairie dogs. Prairie dogs are managed with the overall mission of Peterson AFB as an Air Force Base, considering that prairie dogs provide a food source for raptor species, including some of the sensitive species mentioned in this section, which may contribute to BASH (Peterson AFB 2010a). A few years ago, APHIS chemically treated parcels around the airfield to eradicate the prairie dogs. This treatment included Parcels 1 and 3, but not Parcels 2 and 8 (Peterson AFB 2010b).

Black-Footed Ferret. The black-footed ferret is a federally and State endangered species. It is closely associated with prairie dog habitat, as it depends upon

prairie dogs for food and uses prairie dog burrows for nesting. While black-footed ferrets have historically occupied areas ranging from the shortgrass and mid-grass prairie to semidesert shrublands, they are presently known to exist only in a remnant restored population in the Shirley Basin of Wyoming and in captive breeding populations across the country. Although no live ferrets have been found in Colorado, evidence suggests they inhabit Colorado. No evidence of ferrets has been found at Peterson AFB.

Preble's Meadow Jumping Mouse. The Preble's Meadow jumping mouse is a state- and federally threatened species. Meadow jumping mice have very long tails and very large feet. Their habitat consists of grassy or weedy fields, preferring the mesic shrublands along the banks of streams and river systems, where they use runways made by other rodents. Although Peterson AFB contains habitat suitable for the Preble's Meadow jumping mouse, the Preble's mouse has never been captured as far south and east, and surveys occurring in 1997 and 2004 did not result in any occurrences (CNHP 2004). The proposed acquisition parcels do not contain riparian habitats preferred by Preble's Meadow jumping mice and potential for occurrence is considered low (CNHP 2004; Peterson AFB 2006).

Swift Fox. The swift fox, a State special concern species, is found across the eastern plains of Colorado. Typical habitat includes short and mid-grass prairies with relatively flat or gently rolling topography. This species preys largely on rabbits and hares but also takes smaller rodents such as black-tailed prairie dogs. This species has the potential to occur at the proposed acquisition parcels (CNHP 2004); however, it may go unnoticed due to its nocturnal behavior and would only be a transitory resident.

No other species on the CDOW list of threatened and endangered species and species of concern is likely to inhabit the four parcels; however, the rare Ottoe skipper and the Arogos skipper, mid-grass and tallgrass prairie dependent butterfly species, could potentially occur onsite. These species are considered high priority, S2 species, which indicates that the species are imperiled within Colorado because of rarity (6 to 20 occurrences), or because other factors demonstrably makes them very vulnerable to extinction within their range

(CDOW 2006). No Arogos skippers or Ottoe skippers were identified in the 2004 survey of Peterson AFB (CNHP 2004).

3.3.2.4 Wetlands

National Wetland Inventory (NWI) maps indicate that no wetlands are present on the proposed acquisition parcels (USFWS 2010a). Field surveys for a base-wide jurisdictional wetlands determination by the USACE was completed for Peterson AFB in 1995 and 2001 (Peterson AFB 2006). The USACE determined that there are no legally defined wetlands (under the jurisdiction of the USACE) on Peterson AFB. Golf Course Ponds No's 1, 2, and 3, were listed on the 1975 *NWI* Map; however, they are not considered wetlands because they were created on existing dryland with no naturally occurring wetland vegetation or hydric soils, and they are rubber-lined (Peterson AFB 2006).

3.4 LAND USE

3.4.1 Definition of Resource

Land use comprises the natural conditions or human-modified activities occurring at a particular location. Human-modified land use categories may include residential, commercial, industrial, transportation, communications and utilities, agricultural, institutional, recreational, and other developed uses. Management plans and zoning regulations determine the type and extent of land use allowable in specific areas and are often intended to protect specially designated or environmentally sensitive areas.

3.4.2 Existing Conditions

The ROI for land use is limited to Peterson AFB and the adjacent proposed acquisition parcels and, where applicable, land use policies pertaining to the City of Colorado Springs.

3.4.2.1 Regional Setting

Peterson AFB is located along the eastern fringe of the City of Colorado Springs. The area north of the base is currently zoned for residential and commercial uses and, for the most part, has been developed with the exception of the parcel directly north of the Command Complex along Space Village Ave. The land adjacent to the Main Gate is currently master planned and zoned for commercial and light industry by Colorado Springs Airport and is sparsely developed. The City of Colorado Springs has influenced land uses in the vicinity of the Colorado Springs Airport through the adoption of a Commercial Airport Overlay District (AO-CAD) ordinance that is compromised of Airport Noise, Aircraft Navigation, Accident Potential, and Runway Protection Sub-Zones. The Airport also assisted El Paso County with the preparation and presentation of a similar Overlay District, which has been adopted by the County Board of Commissioners. Land areas adjacent to the southwest, south, and southeast boundaries of Peterson Main are designated for airport planned commercial and business development. The land adjacent to the installation's eastern boundary, including the proposed

acquisition parcels, is currently master planned for growth in the long term with a timeframe of approximately thirty years (Peterson AFB 2009).

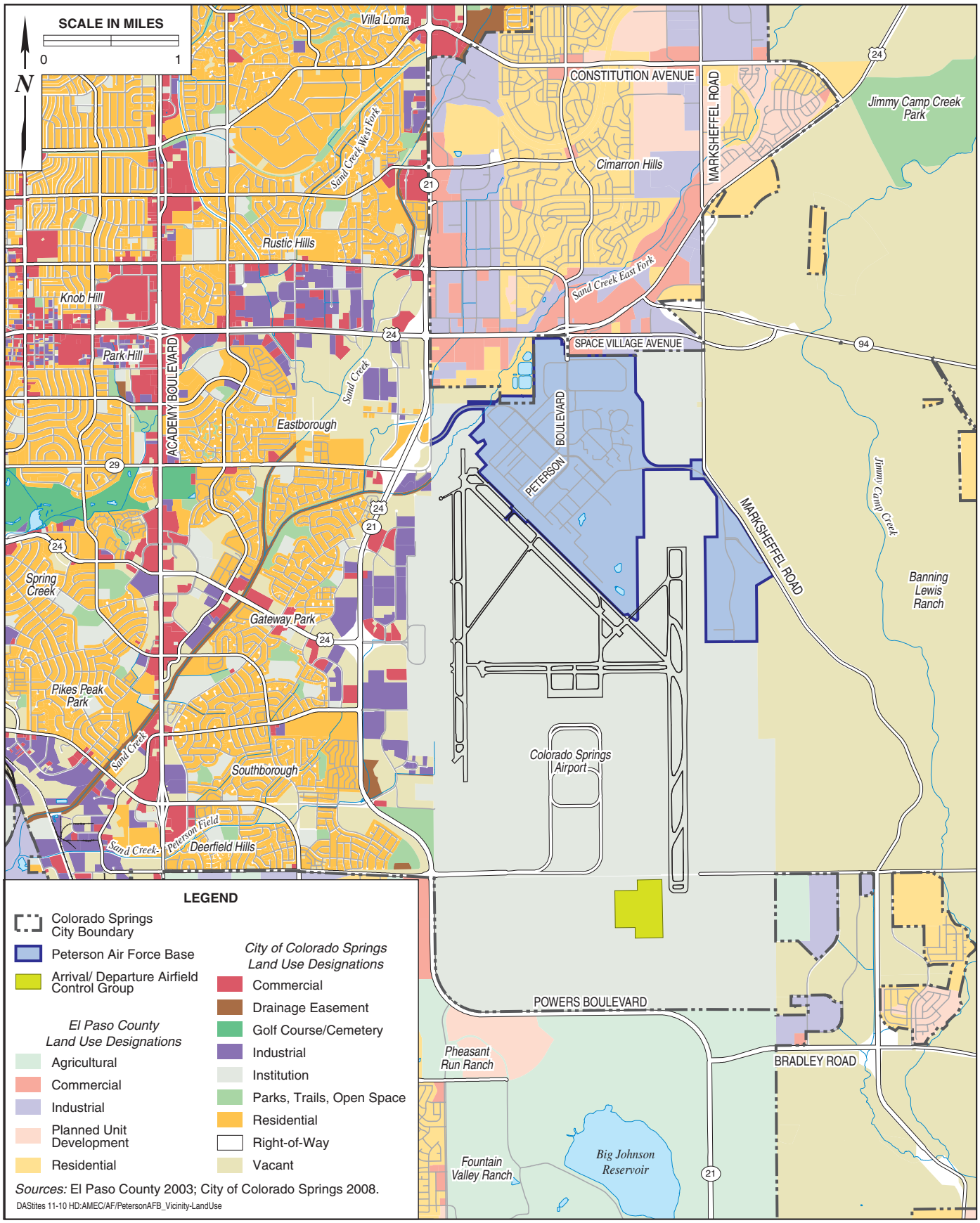
Noise and airfield safety contours have been delineated around Peterson AFB and adjacent areas to restrict building heights, as well as the establishment of noise-sensitive receptors (e.g., schools, hospitals, etc.) and otherwise incompatible uses (City of Colorado Springs 2001). Refer to Section 3.10, *Safety*, for a discussion of airfield safety contours around Peterson AFB and to Section 3.7, *Noise*, for a discussion of noise contours around the base.

3.4.2.2 Peterson AFB

Peterson AFB is situated on 1,457 acres of land adjacent to the north and east boundary of the Colorado Springs Municipal Airport. Of this land, only 218 acres are Air Force owned; the remaining acreage is leased from the City of Colorado Springs (Peterson AFB 2009). Land use within Peterson AFB has been classified into 13 categories based on the types of activities and associated uses that occur. The *Airfield* and associated *Airfield Operations and Maintenance* categories are the predominant land uses in the central part of the base. The *Airfield* category includes only taxiways and aprons. Peterson AFB currently enjoys a joint use agreement with the Municipal Airport runways which are owned and maintained by COS (Peterson AFB 2009).

Administrative and *Industrial* uses are dispersed throughout Peterson AFB and are compatible with surrounding land uses. Peterson AFB also has a zoned *Special Space Mission* area, occupied by activities performing intelligence, research and development, and other functions in direct support of the space mission. *Special Space Missions* land use is found at three locations on Peterson AFB: The two Space Warning Systems Centers, located in buildings 1840 and 1844 situated west of Peterson Boulevard near the North Gate; The Combined Intelligence Center facility, near the Base Museum, occupies a smaller area and is compatible with the surrounding existing land uses; and, the largest area is the Centralized Integrated Support Facility (CISF) located at Peterson-East. Although assigned as an Air Force Material Command asset, CISF has proven to be a dominant use at Peterson-East (Peterson AFB 2009).

Various uses are located in the north-central part of the base, including *Community (Commercial)*, *Community (Services)*, *Housing–Accompanied*, *Housing–Unaccompanied*, and *Medical*. Undeveloped areas along the perimeter of Peterson AFB have been classified as *Open Space*. *Outdoor Recreation* areas are the Silver Spruce Golf Course located in the southeast corner of the base, the two youth ball fields adjacent to the Main Gate, the south-centrally located eagle park, the running track/par course trail located adjacent the base Fitness Centers and Freedom Fields (four softball fields and a playground) located on the north side of the base (Peterson AFB 2009).



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Existing Land Use in the Vicinity of Peterson AFB

FIGURE 3-4

No warranty is made by the USAF as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the GIS database.

3.5 WATER RESOURCES

3.5.1 Definition of Resource

Water resources analyzed in this study include *surface water*, *groundwater*, and *water management*. Surface water resources include lakes, rivers, and streams that collect and distribute water from precipitation and natural or human-created water collection systems. Groundwater comprises subsurface water resources that are interlaid in layers of rock and soil and recharged by surface water seepage. Water management—including the management of storm water and other runoff—is pertinent to the quality and availability of surface water and groundwater resources. Other issues relevant to water resources include watershed areas affected by existing and potential hazards related to *floodplains*.

3.5.2 Existing Conditions

The ROI for water resources includes surface waters on Peterson AFB, the proposed acquisition parcels, and associated drainage basins, as well as groundwater underlying the base and surrounding areas. Discussions of water management and floodplains are generally limited to the proposed acquisition parcel.

3.5.2.1 Regional Setting

Colorado Springs lies on the southern edge of the Denver basin Aquifer System. The aquifer system underlies an area of about 7,000 square miles that extends from Greeley south to near Colorado Springs and from the Front Range east to near Limon. This system is comprised of four aquifers (Dawson, Denver, Arapahoe, and Laramie-Fox Hills) in five geologic formations and is up to 3,000 feet thick.

3.5.2.2 Peterson AFB

Surface Water

The Peterson AFB lies within the Fountain Creek Watershed, which drains into the Arkansas River, located about 35 miles to the south of the project area. Most of Peterson AFB drains to the East Fork Sand Creek. The eastern segment of the East Fork Sand Creek flows through the northwest corner of Peterson AFB, near the Main Gate. The East Fork Sand Creek meets all water quality standards. Most of Peterson East drains to the Jimmy Camp Creek, located to the southeast of the proposed acquisition parcels. Jimmy Camp Creek meets all water quality standards (Peterson AFB 2006).

There are no major water bodies at Peterson AFB. Three small ponds are located on the golf course in the southeast corner of the main base. There are no impervious surfaces on the proposed acquisition parcels and therefore no runoff control or management (Peterson AFB 2006).

Groundwater

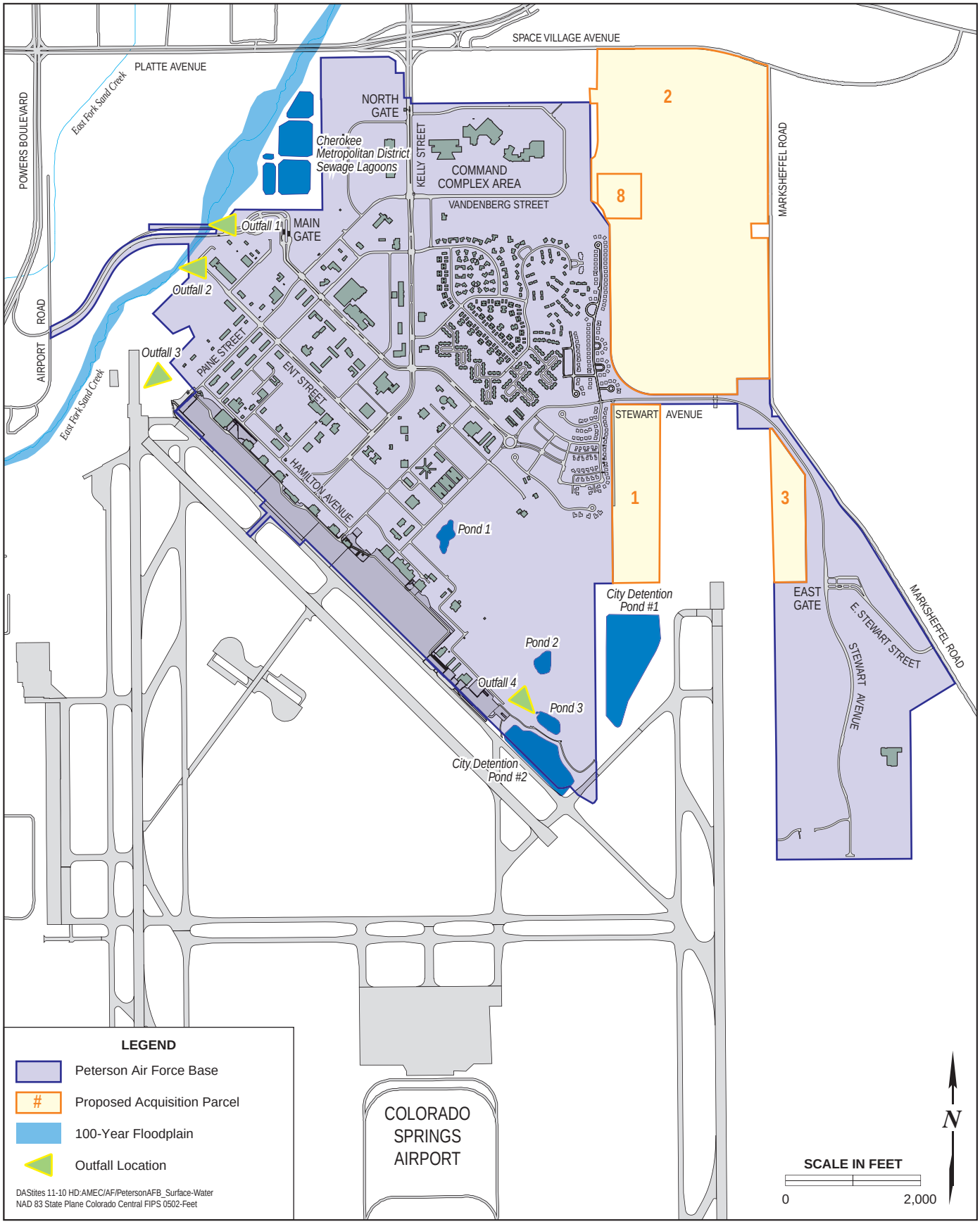
The Colorado Springs Region is underlain by one principal bedrock aquifers: the Fountain Creek Valley aquifer. This shallow aquifer ranges in depth from 0.8 feet to more than 100 feet in the Colorado Springs area. This aquifer underlies the western half of Peterson AFB and a small area of the northern part of Peterson East. There is not a perennially saturated alluvial aquifer under the remainder of Peterson AFB. The depth to groundwater is about 12 feet near the East Fork Sand Creek, and about 30 feet under most of the base.

The Laramie-Fox Hills Aquifer underlies most of the main base (all but majority of the Headquarters area and the golf course and the flightline area south of the golf course). The southern boundary of the Arapahoe Aquifer is about 1,800 feet north of the base. The Denver Aquifer is about 2.5 miles north of the base and the Dawson Aquifer is about 6.5 miles to the north. The Denver Basin Aquifer system is hydraulically isolated from the overlying alluvial aquifer by layers of shale in the Laramie Formation. The Laramie-Fox Hills Aquifer is not used as a source of drinking water in the vicinity of Peterson AFB due to low water yields

and poor water quality (due to oxygen deficient conditions which give rise to hydrogen sulfide and methane gases).

Floodplains

Designated 100-year floodplains associated with eastern segment of East Fork Sand Creek cross the northeast corner of the base (Peterson AFB 2006) (refer to Figure 3-5). None of the proposed acquisition parcels are located within a designated floodplain (Federal Emergency Management Agency [FEMA] 2009).



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Surface Water Features in the Vicinity of Peterson AFB

FIGURE 3-5

No warranty is made by the USAF as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the GIS database.

3.6 CULTURAL RESOURCES

3.6.1 Definition of Resource

Several Federal laws and regulations have been established to manage cultural resources, including the National Historic Preservation Act (1966), the Archaeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (AIRFA) (1978), the Archaeological Resource Protection Act (1979), and the Native American Graves Protection and Repatriation Act (NAGPRA) (1990). In addition, Department of Defense Instruction (DODI) 4710.02, *Department of Defense Interactions with Federally-Recognized Tribes* (2006) governs DoD interactions with Federally-recognized tribes within which DODI 4710.02 is a component. In order for a cultural resource to be considered significant, it must meet one or more of the following criteria for inclusion on the National Register of Historic Places (NRHP):

> "The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and: 1) that are associated with events that have made a significant contribution to the broad patterns of our history; or 2) that are associated with the lives or persons significant in our past; or 3) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or 4) that have yielded, or may be likely to yield, information important in prehistory or history" (36 CFR § 60:4).

3.6.2 Existing Conditions

The ROI for cultural resources is limited to Peterson AFB and the proposed acquisition parcels.

3.6.2.1 Peterson AFB and Proposed Acquisition Parcels

Cultural Resources at Peterson AFB and Proposed Acquisition Parcels

Six cultural resource surveys have taken place within Peterson AFB, in addition to five cultural resource surveys conducted within a 1-mile radius of the installation. Six isolated prehistoric artifacts have been found by the various surveys conducted on Peterson AFB. No significant prehistoric or historic archaeological sites have been recorded on Peterson AFB (Peterson AFB 2010c).

In October 2009 a cultural resources survey was conducted for the proposed acquisition parcels. During the course of the investigation, three new archaeological loci were recorded; however due to proximity and similar nature of artifacts discovered, they have been designated as only one site. The three loci are very likely part of a potential farmstead that appears on a 1947 aerial photograph of the area. The historic site recorded as part of this survey likely represents either a farmstead or the outlying facilities of a farmstead with headquarters elsewhere. Locus 1 exhibits a combination of domestic debris and architectural elements which suggest that a farm house may have been present. Loci 2 and 3 likely represent satellite activity areas or merely refuse disposal areas. All three loci suffer from erosion, grazing, and other modern disturbances that in turn impact the contextual integrity of each locus. Nevertheless, the true nature of these loci or their functional relationship is not clear on the basis of the presently available information. It was recommended that the identified site is of unknown eligibility for inclusion in the NRHP. Additional archival research and limited archaeological investigations should be conducted to determine the functional context of the site, its association with particular persons, and its potential to contribute to our understanding of local history (Peterson AFB 2010c).

3.7 NOISE

3.7.1 Definition of Resource

Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or otherwise results in an adverse human response. Actual response to noise can vary according to the type and characteristics of the noise source, distance between the noise source and receptor, sensitivity of the receptor, and time of day. Sensitive noise receptors are identified facilities or land uses that would be most sensitive to the effects of noise, such as residences, schools, patient care facilities, and child care centers.

The unit used to measure the loudness of noise is the *decibel* (dB). Most community noise standards utilize *A-weighted decibels* (dBA) as the measure of noise, as it provides a high degree of correlation with human annoyance and health effects. A-weighting de-emphasizes the very low and very high frequencies of sound in a manner similar to functioning of the human ear.

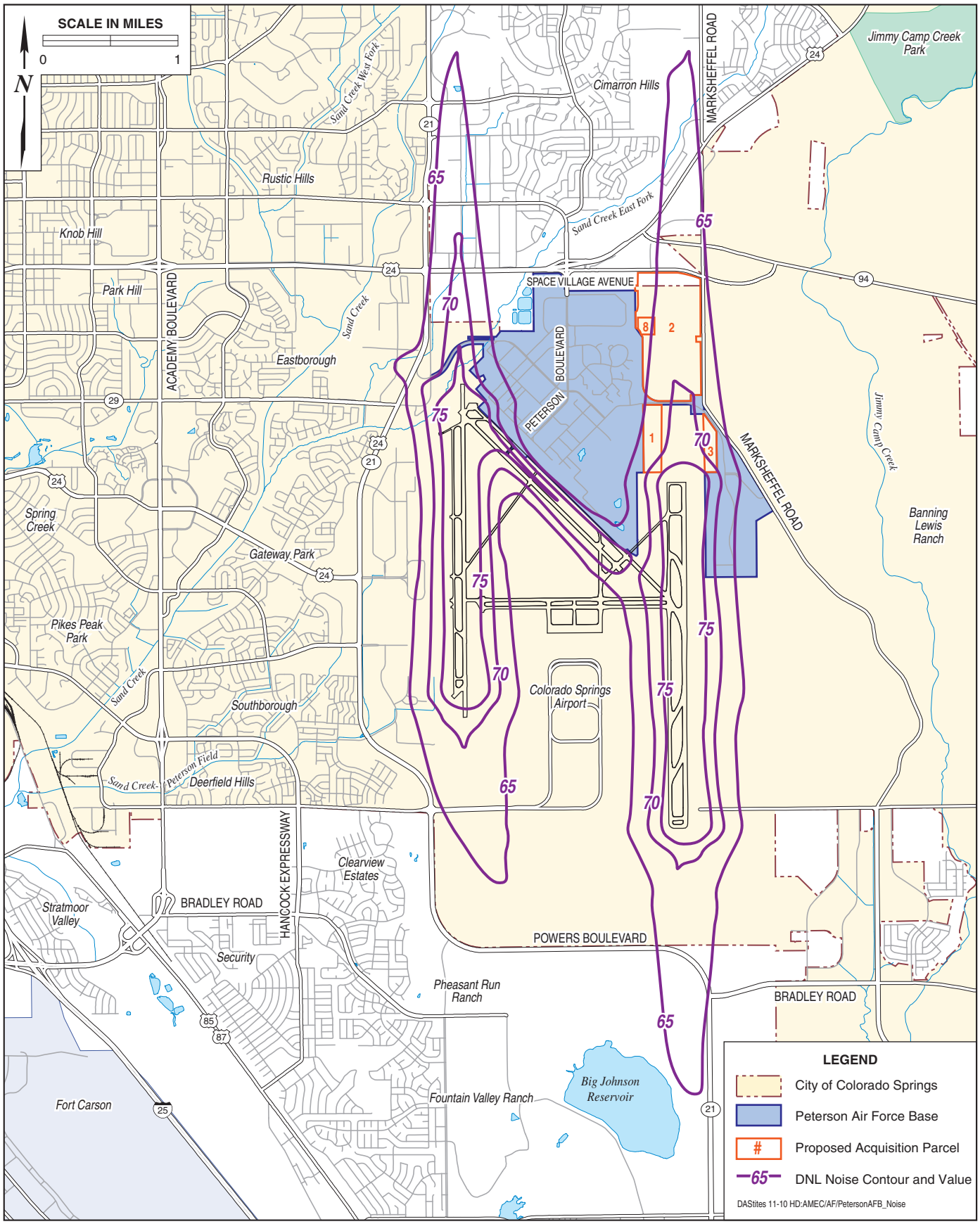
The *Air Installation Compatible Use Zone* (AICUZ) program was established by the DoD in response to the Noise Control Act of 1972 to promote an environment free from noise that jeopardizes public health or welfare. Peterson AFB does not have an AICUZ program; however, designated noise zones, Accident Potential Zones (APZs), and Runway Protection Zones (RPZs) have been delineated for the COS air installation through the adoption of Commercial Airport Overlay District ordinances by both the City of Colorado Springs and El Paso County. These delineations also serve to protect COS airfield facilities from encroachment and incompatible land development.

3.7.2 Existing Conditions

The ROI for noise is limited to Peterson AFB, the proposed acquisition parcels and adjacent areas.

3.7.2.1 Peterson AFB and Vicinity

Ambient noise levels in and around Peterson AFB are predominantly generated by civilian and military aircraft operations at COS. The base shares the runways with the airport, which supports approximately 150,000 flights a year. Aircraft operations at COS typically generate noise ranging from 60 to 75 day-night average dBA (DNL) within Peterson AFB (COS 2006). The aircraft noises fall within a broad range of "transient" noises, which come and go in a finite period of time. Other sources of noise in the vicinity of Peterson AFB include vehicular traffic, construction, and equipment operation. Except for aircraft operations that cause noise levels in excess of 75 DNL, other noise levels on Peterson AFB generally range less than 65 DNL. The military family housing and community buildings (such as child care and chapel) are all located in areas with 65 to 70 DNL under the centerline, but are accustomed to noise from aircraft operations (Peterson AFB 2006). The proposed acquisition parcels are located in the flightline of Runway 17L-35R and generally experience noise levels of 60 to 65 DNL (refer to Figure 3-6).



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DNL Noise Contours at Peterson AFB/Colorado Springs Airport

FIGURE 3-6

No warranty is made by the USAF as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the GIS database.

3.8 TRANSPORTATION AND CIRCULATION

3.8.1 Definition of Resource

Transportation and circulation refers to the movement of vehicles throughout a road and highway network. *Primary* roads include major interstates and other principal arterials designed to move traffic but not necessarily to provide access to all adjacent areas. *Secondary* roads include rural routes and major surface streets that provide access to residential and commercial areas, hospitals, and schools. The capacity of transportation networks and quality of circulation may be described in *average daily traffic* (ADT) volumes or *level of service*.

3.8.2 Existing Conditions

The ROI for transportation and circulation includes Peterson AFB's circulation network and roads surrounding the base, which could be affected by base traffic.

3.8.2.1 Regional and Local Circulation

El Paso County's 2004 Major Transportation Corridors Plan reported that U.S. Highway 24 near Peterson AFB is considered a congested road and all other roads near Peterson AFB are considered uncongested (El Paso County Department of Transportation [EPCDOT] 2004). The same study predicts that, between 2000 and 2030, construction of new dwelling units would primarily be near Marksheffel Road. The County's plan calls for widening area roads to four-lane or six-lane roads in the base's vicinity.

In 2007, annual ADT volumes on Marksheffel Road/State Highway 94 near the Peterson AFB were 3,164 northbound and 2,911 southbound (EPCDOT 2009). Data from traffic counts at the intersection of Marksheffel Road and the existing East Gate entrance showed weekday peak hour traffic to be 626 northbound, with 189 of those trips entering or exiting Peterson AFB at the East Gate, and 938 southbound, with 422 of those trips entering or exiting the East Gate (Peterson AFB 2010d). No other internal traffic data were available for Peterson AFB.

3.8.2.2 Peterson AFB

Local access to Peterson AFB is provided by: U.S. Highway 24, a four-lane divided highway (urban freeway) with on and off ramps north of the North Gate; Space Village Road, a two-lane minor collector from Highway 94 east of Marksheffel Road to Peterson Boulevard; Peterson Boulevard, a four-lane arterial connecting the North Gate with the central portion of the base; and, Stewart Avenue, an arterial connecting the Main Gate to Airport Road and North Powers Boulevard. Stewart Avenue is four lanes coming into the base and four lane east of Main Gate to its intersection with Mitchell Avenue. Marksheffel Road is a two-lane principal arterial that runs from Colorado Highway 94 to county road 217 and 477, about seven miles south of Peterson AFB.

Access to Peterson AFB is available via three primary gates: the North Gate, located at the northern perimeter of the base via Peterson Road; the Main Gate, located at the western perimeter of the base is accessed by Stewart Avenue; and the East Gate, at the southeast perimeter of the base is accessible from Marksheffel Road. The main thoroughfares on Peterson AFB are busy through most of the day. Congestion occurs at the North and Main Gates, especially during morning and evening rush hours. Traffic at the East Gate is generally light (Peterson AFB 2004). The CDOT is undertaking construction to replace the congested at-grade signalized intersection at the Powers Boulevard and Airport Road interchange.

3.9 VISUAL RESOURCES

3.9.1 Definition of Resource

Visual resources are defined as the natural and manufactured features that comprise the aesthetic qualities of an area. These features form the overall impressions that an observer receives of an area or its landscape character. Landforms, water surfaces, vegetation, and manufactured features are considered characteristic of an area if they are inherent to the structure and function of a landscape.

3.9.2 Existing Conditions

The ROI for visual resources is limited to the proposed acquisition parcels and Peterson AFB facilities and open space.

3.9.2.1 Regional Visual Character

Topography surrounding Peterson AFB is generally level to gently rolling and is dominated by suburban development to the southwest and northwest. Development in the vicinity of Peterson AFB consists of commercial, industrial, and recreational structures and land uses. Areas south and east of the base are mostly undeveloped; however, planned future development east of the base would change the region's visual character. There are no wild and scenic rivers, designated scenic roads or vistas, or other sensitive visual resources near Peterson AFB.

3.9.2.2 Peterson AFB and Proposed Acquisition Parcels

Peterson AFB is located on the eastern side of the City of Colorado Springs with a visual environment characteristic of an airport and military facility. Most structures are one story and have been constructed with a variety of materials and in a variety of styles.

The proposed acquisition parcels are undeveloped and consist of native short-grass prairie, with interspersed areas of tallgrass and mid-grass prairie, devoid of

trees or large shrubs. The parcels are made up of prairie grasses and wild plants that provide aesthetically pleasing, peaceful views. Peterson-East contains areas of undeveloped prairie; however much of the former open space at Peterson-East has been developed in recent years and most remaining open space has been committed to future projects.

3.10 SAFETY

3.10.1 Definition of Resource

The primary safety concern at facilities with aircraft operations is the potential for aircraft mishaps (i.e., crashes), which may be caused by mid-air collisions with other aircraft or objects, weather difficulties, or bird-aircraft strikes. BASH is defined as the threat of aircraft collision with birds and other wildlife during aircraft operations. Most birds fly close to ground level; correspondingly, more than 90 percent of all reported BASH incidents occur below 3,000 feet above ground level and/or in the immediate vicinity of the airfield (Federal Aviation Administration 2007).

Accident Potential Zones (APZs)—rectangular zones extending outward from the ends of active runways at military bases—delineate those areas recognized as having the greatest risk of aircraft mishaps, most of which occur during takeoff or landing. Runway Protection Zones (RPZs) are the areas closest to the end of the runway, which is considered the most hazardous area. APZs and noise zones together can result in areas that are not suited for some types of development.

Air Force Manual 91-201, *Explosives Safety Standards*, requires that defined quantity-distance (QD) arcs be maintained between explosive materials storage (e.g., munitions) and handling facilities and a variety of other types of facilities. QD arcs are determined by the type and quantity of explosive materials stored; within QD arcs, development is either restricted or altogether prohibited in order to maintain personnel safety and minimize the potential for damage in the event of an accident.

3.10.2 Existing Conditions

The ROI for safety is limited to Peterson AFB, and adjacent areas located within the base's designated airfield safety zones, including the proposed acquisition parcels.

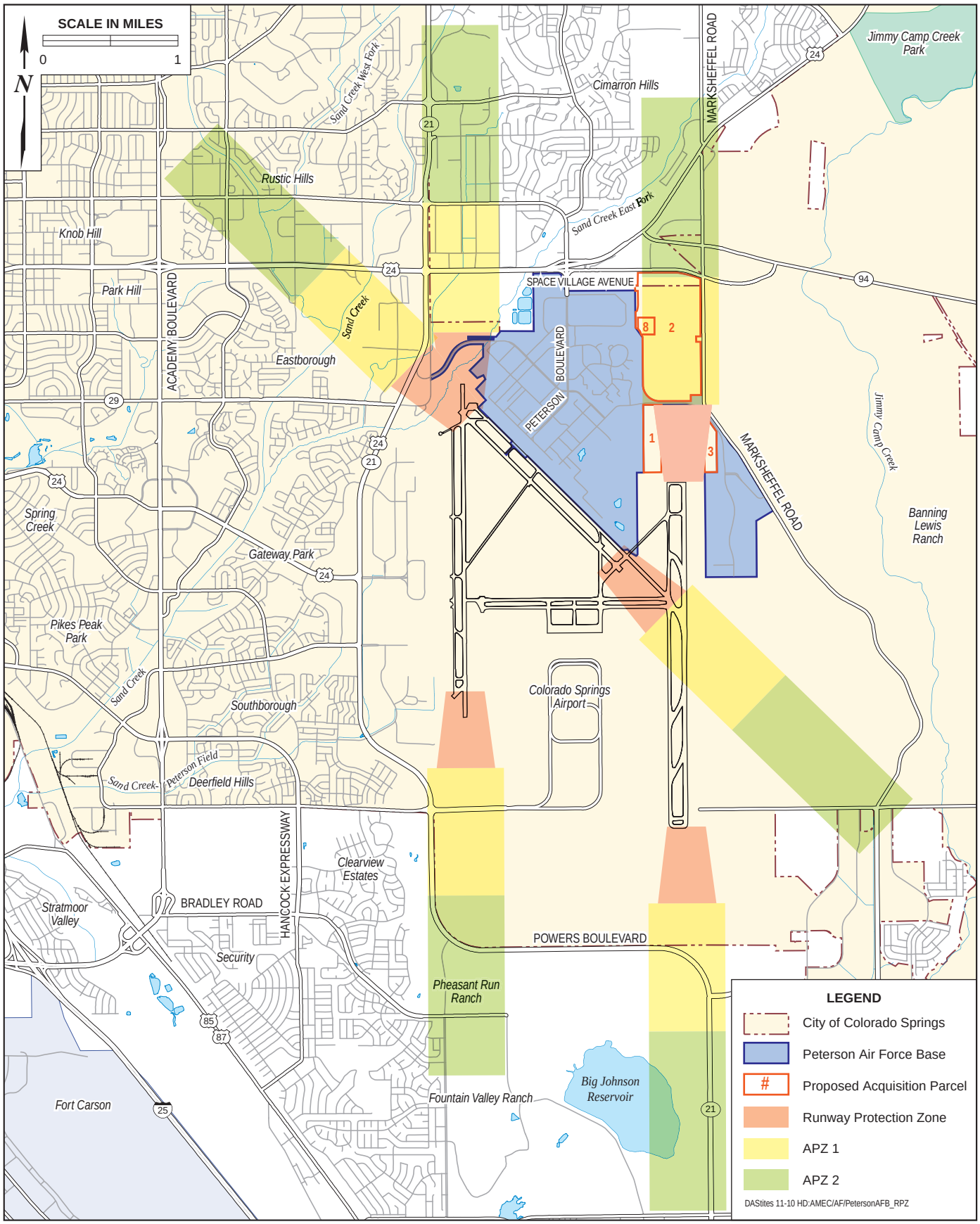
3.10.2.1 Aircraft Mishaps and Bird-Aircraft Strike Hazard

Peterson AFB has a BASH program (21st Space Wing BASH 91-212 Plan, April 2006), although very few bird strike problems are encountered. On an annual basis, fewer than ten BASH incidents are recorded where one to two individual birds (horned larks, especially, but also sparrows, mourning doves, and other species, including a great horned owl) are hit by aircraft. The primary threat occurs during the migrating season when flocks of Canada geese pass through the area. The movement of waterfowl between the ponds on the golf course and the small detention basin on Peterson-East also poses a BASH threat because the birds cross runway 17L/35R on their route.

USDA, Wildlife Services, is under contract with the City of Colorado Springs Municipal Airport for the control and management of wildlife strike hazards, although these are infrequent (COS 2005). Peterson AFB is cooperating with this initiative and sits on the Bird Hazard Working Group. Wildlife strike hazard control methods currently employed include vegetation management on and around the airfield, maintenance of an 8-foot wildlife fence around the airfield, coordinated use of propane canons, and other direct and indirect measures. This includes mowing prairie vegetation, including the proposed acquisition parcels, to diminish its overall attractiveness to birds (COS 2005). When a strike incident does occur, it is reported to the Federal Aviation Administration. As part of the BASH program, a Bird Watch system has been implemented on base. Accordingly, bird watch conditions are classified as severe, moderate, or low indicating the potential for strikes (Peterson AFB 2010a).

3.10.2.2 Runway Protection Zones

At Peterson AFB, RPZs extend 15,000 feet from both ends of each runway (refer to Figure 3-7). All RPZs are within COS and Peterson AFB boundaries with the exception of the extreme northeast corner of Runway 17L, but the majority of the APZs fall outside of the base (COS 2006). The proposed acquisition parcels fall within the RPZ and APZ-1 located at the north end of Runway 17L-35R. Present land use to the north of Runway 17L-35R the base is comprised by a mix of undeveloped space (including the proposed acquisition parcels 2 and 8), industrial, and low-density residential areas, while undeveloped



EA

Runway Protection Zone, APZ I, and APZ II at Peterson AFB/Colorado Springs Airport

FIGURE 3-7

No warranty is made by the USAF as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the GIS database.

and opens space uses predominate south of Peterson AFB. Refer to Section 3.4, *Land Use*, for a detailed discussion of present land use around the base. Permitted land uses and conditional uses within the RPZ and APZs are provided in Table 3-4.

Table 3-4. Permitted Land Uses and Conditional Uses within Restrictive Zones within and Surrounding Peterson AFB and COS

Use	RPZ	APZ-1	APZ-2
Mobile homes	-	-	-
Single-family residential	-	-	-
Multiple-family residences; human service establishments; residential hotels; convalescent hospitals	-	-	-
Hotel and motels	-	-	-
Schools; churches; hospitals	-	-	-
Playgrounds; parks; arenas	-	C	P
Golf courses; cemetery; stables	-	C	P
Offices	-	P[2]	P
Commercial retail and wholesale	-	P[2]	P
Warehouse; light manufacturing; laboratories	P[1]	P	P
Uses not listed above, but permitted by the underlying zone district	-	P	P

[1] Warehouse and outdoor storage only, with no permanent occupancy
[2] Retail and office square footage to be determined through development plan review
- : Use not permitted
C: Conditional uses
P: Permitted uses
Sources: City of Colorado Springs 2001; 2006; El Paso County 2005.

APZ I is less restrictive than the RPZ, but still possesses a significant risk factor. This 3,000 by 5,000 foot area has land use compatibility guidelines that are sufficiently flexible to allow reasonable economic use of the land, such as industrial/manufacturing, transportation, communication/utilities, wholesale trade, open space, recreation, and agriculture. However, uses that concentrate people in small areas are not acceptable. High density functions such as multistory buildings, places of assembly (e.g., theaters, churches, schools, restaurants, etc.), and high density office uses are not considered appropriate.

Additionally, the FAA recently instituted the one-engine inoperative (OEI) obstacle identification surface (OIS), a new standard intended to protect lives and property in the event that an aircraft loses power in one engine during takeoff. Effective 1 January 2011, this standard limits the heights of structures acceptable within 50,000 feet from ends of runways. The OEI OIS slopes outward and upward at a rate of 62.5:1 from the departure end of the runway. No new structures should penetrate this airspace surface.

3.10.2.3 Explosives Safety

The proposed acquisition parcels and footprints of the Proposed Action components and project alternatives would be located outside of all established QD arcs at Peterson AFB (Peterson AFB 2010e). Accordingly, explosives safety would not be impacted by the Proposed Action or project alternatives, and an analysis of potential impacts related to explosives safety has been eliminated from Section 4, *Environmental Consequences*.

SECTION 4
ENVIRONMENTAL CONSEQUENCES

Environmental impacts which would result from implementation of the Proposed Action at Peterson Air Force Base (AFB) by the U.S. Air Force (USAF) are evaluated in this section. Analyses are presented by resource area, as described in Section 3, *Affected Environment*. Examination of potential environmental impacts is intended to reduce redundancy where similar impacts are expected for each alternative to the Proposed Action. In instances where the alternative actions carried forward in this document would have identical or substantially similar environmental consequences (e.g., transportation and circulation, visual resources, etc.), the alternatives are analyzed together.

The definitions for impact intensity thresholds used in this document are as follows:

- ***Negligible***. Impacts on the resource, although anticipated, would be difficult to observe and are not measurable.
- ***Minor***. Impacts on the resources would be detectible upon close scrutiny or would result in small but measurable changes to the resource.
- ***Moderate***. Impacts on the resource would be easily observed and measurable, but would be localized or short-term (equal to or less than two years).
- ***Major***. Impacts on the resource would be easily observed and measurable, widespread, and long-term (more than two years).

4.1 AIR QUALITY

4.1.1 Approach to Analysis

Air Force Instruction (AFI) 32-7040, *Air Quality Compliance and Resource Management*, provides a framework for ensuring that USAF actions conform to appropriate implementation plans. Section 2.4 of AFI 32-7040, *Conformity Planning*, ensures that such actions would conform to the applicable implementation plan through the U.S. Environmental Protection Agency (USEPA) General Conformity Rule. In the case of the Proposed Action, conformity with the Colorado State Implementation Plan (SIP) would be required. Section 2.5, *National Environmental Policy Act (NEPA) and Environmental Impact Analysis Process Planning*, outlines requirements under NEPA for analysis of potential air quality impacts with respect to the Prevention of Significant Deterioration (PSD)/New Source Review (NSR) (40 Code of Federal Regulations [CFR] Part 51), hazardous air pollutants (HAP) emissions, and emissions of any other regulated pollutants under the Clean Air Act such as Ozone-Depleting Substances (ODS) that would result from implementation of the Proposed Action. Direct and indirect emissions of criteria pollutants or their precursors associated with the Proposed Action must be calculated for all non-exempt emission sources, including mobile and stationary, as well as construction-phase emissions.

With respect to the General Conformity Rule, effects on air quality would be considered "major" if implementation of the Proposed Action would result in an increase of the El Paso County's emissions inventory by 10 percent or more, or if such emissions exceed *de minimis* threshold levels established in 40 CFR 93.153(b) for maintenance pollutants (i.e., carbon monoxide [CO]).

4.1.2 Impacts

4.1.2.1 Preferred Alternative

Fugitive Dust Emissions

Under the Preferred Alternative, fugitive dust would be generated during ground-clearing and grading activities, as well as combustion emissions from construction-related vehicles and equipment. Dust emissions generated by such activity can vary substantially depending on levels of activity, specific operations, and prevailing meteorological conditions. Using conservatively high estimates (based on moderate activity levels, moderate silt content in affected soils, and a temperate climate), the standard dust emission factor for construction activity is estimated at 1.2 tons of dust generated per acre per month of activity (USEPA 1995). This factor is referenced to total suspended particulates, instead of specifically PM_{10} (particulate matter equal to or less than 10 microns in diameter) or $PM_{2.5}$ (particulate matter equal to or less than 2.5 microns in diameter), and consequently results in conservatively high estimates. Based on the conservatively high estimate that all of the Phase I project acreage would be disturbed at one time (approximately 32 acres), a projected total of about 38.4 tons per month of dust would be generated during implementation of Phase I. Phase II would involve construction of an additional 420,000-square feet (sf) (10.33 acres) of parking adjacent to the south of Phase I of the Command Complex Shuttle Parking Lot, which, if developed all at one time, would generate a projected 12.4 tons of dust per month (refer to Appendix C).

Increased fugitive dust (i.e., PM_{10} emissions) resulting from activities under the Preferred Alternative would involve short-term adverse impacts that could be reduced through standard dust minimization practices (e.g., regularly watering exposed soils, soil stockpiling, and soil stabilization). These standard dust minimization measures can reduce dust generation by 75 percent, thereby reducing dust emissions for Phase I of construction to approximately 9.6 tons per month and approximately 3.1 tons per month during Phase II (USEPA 1995). Although any substantial increase in PM_{10} emissions is inherently adverse, implementation of these dust minimization measures would limit the total quantity generated during project implementation. Increased PM_{10} emissions

associated with the Proposed Action would be short-term and temporary, and would be minimized using dust suppression techniques; therefore, impacts to air quality would be negligible.

Combustion Emissions

Combustion emissions associated with construction-related vehicles and equipment under the Preferred Alternative would be minimal because most vehicles would be driven to and kept at work sites for the duration of construction activities. Further, as is the case with PM_{10} emissions associated with trenching and site preparation activities, emissions generated by construction equipment would be temporary and short-term; therefore, no major impact to air quality would occur as a result of use and maintenance of construction-related vehicles or equipment.

Projected combustion emissions under implementation of the Proposed Action are listed in Table 4-1; they are based on the scenario of 10-hour workdays, five days per week, for simultaneous construction activity over the course of 6 months (24 weeks). Since a specific equipment list and horsepower rating for the equipment is not yet determined, emission factors were representative of a fleet-wide average, and a standard equipment list for construction was used. See *Appendix C* for a full list of assumptions and emission factors used in this analysis.

Operational Emissions

Potential emissions from operation of facilities under the Proposed Action would be associated with electrical and natural gas power and heating for the proposed Gatehouse, Commercially Owned Vehicle (COV) Inspection Station, and Overwatch Tower. However, operational emissions related to these facilities would be negligible on a base-wide level and overall existing stationary emission sources at Peterson AFB would not measurably increase. Further, long-term operation and maintenance of facilities associated with the Proposed Action are expected to generate negligible additional vehicle traffic and related operational emissions. Therefore, operational emissions associated with the Proposed Action under either action alternative are expected to be negligible.

Table 4-1. Projected Combustion Emissions for Construction Activities

Equipment	Emissions				
	CO	NO_x	PM_{10}	SO_x	VOCs
Grader	0.8505	2.4345	0.1260	0.4140	0.2220
Loader	0.636	1.2870	0.1290	0.1725	0.1980
Bobcat	0.402	0.7620	0.0810	0.0	0.1350
Dozer	1.8135	4.5555	0.1845	0.6795	0.3480
Paving equipment	0.6285	1.4415	0.1035	0.2160	0.1755
Paver	0.2694	1.3410	0.1005	0.2475	0.1800
Excavator	0.6735	6.9	0.48	1.11	0.5100
Total Combustion Emissions	**5.27**	**18.72**	**1.20**	**2.84**	**1.77**
de minimis threshold value	100	100	100	N/A	100
10 percent of El Paso County Emissions	12,847	2,487	1,271	2,774	3,631

Note: See Appendix C for a full list of assumptions and emission factors used in this analysis.
Sources: USEPA 2008 and CDPHE 2008.

Table 4-2. Projected Combustion Emissions for Construction and Operational Activities (total tons) Command Complex Shuttle Parking Lot-Phase II

Equipment	Emissions				
	CO	NO_x	PM_{10}	SO_x	VOCs
Grader	0.3402	0.9738	0.0504	0.0462	0.1656
Loader	0.2544	0.5148	0.0516	0.0474	0.069
Bobcat	0.1608	0.3048	0.0324	0.03	0
Dozer	0.7254	1.8222	0.0738	0.0678	0.2718
Paving equipment	0.2514	0.5766	0.0414	0.0378	0.0864
Paver	0.2694	0.5364	0.0402	0.0372	0.099
Excavator	0.78	2.76	0.192	0.186	0.444
Total Combustion Emissions	**2.78**	**7.49**	**0.48**	**0.45**	**1.14**
de minimis threshold value	100	100	100	N/A	100
10 percent of El Paso County Emissions	12,847	2,487	1,271	2,774	3,631

Note: See Appendix C for a full list of assumptions and emission factors used in this analysis.
Sources: USEPA 2008 and CDPHE 2008.

An increase in personnel at the Peterson AFB/21st Space Wing (21 SW) installation would not occur under the Proposed Action, and traffic within the Peterson AFB is not expected to increase upon completion of the proposed facilities and parking area. Therefore, vehicular emissions would not increase due to the Preferred Alternative, and air quality impacts would not be significant.

General Conformity

Emissions from construction and operational related activities associated with the Preferred Alternative would be well below *de minimis* thresholds values for CO (i.e., the criteria pollutant for which El Paso County is currently in attainment/maintenance for); therefore a General Conformity determination would not be required (refer to Table 4-1 and Table 4-2). In addition, criteria pollutant emissions resulting from the Proposed Action would not exceed 10 percent of the regional emissions inventories. Therefore, implementation of the Preferred Alternative would result in minor impacts.

4.1.2.2 Alternative 2: Relocation Near Existing East Gate

Under Alternative 2, potential short- and long-term impacts to air quality would be similar to those described under the Preferred Alternative. Combustion and operational emissions and under Alternative 2 would be identical to those described for the Preferred Alternative. However, under Alternative 2, the proposed gatehouse roadway alignment would be slightly shorter than under the Preferred Alternative, resulting in a reduced amount of land would be disturbed during site preparation, grading and staging activities. In total, approximately 28.9 acres of land would be disturbed during Phase I, resulting in an estimated 34.7 tons per month of fugitive dust during construction (based on 1.2 tons of dust generated per acre per month of activity). As with the Preferred Alternative, standard dust minimization measures could reduce dust generation by 75 percent, thereby reducing dust emissions for Phase I of construction to approximately 7.2 tons per month under this alternative. In addition, fugitive dust emission during construction Phase II would be identical for those described under the Preferred Alternative. Therefore, total emissions under

Alternative 2 would be well below *de minimis* thresholds values for CO and a General Conformity determination would not be required. Overall air quality impacts under this alternative would remain less than significant.

4.1.2.3 Alternative 3: No-Action Alternative

If the No-Action Alternative were selected, short-term temporary air quality impacts anticipated to occur during implementation of the Proposed Action would not occur and air quality conditions and emissions associated with ongoing operations at Peterson AFB would remain as described in Section 3.1, *Air Quality*.

4.2 GEOLOGICAL RESOURCES

4.2.1 Approach to Analysis

An impact to geological resources would be significant if implementation of the Proposed Action or a project alternative would: 1) increase potential occurrences of erosion, siltation, or geological hazards (e.g., landslides, etc.); 2) incorporate engineering or construction techniques that do not adequately address potential geologic hazards; or 3) expose people or structures to major geological hazards. Generally, impacts with regard to geological resources can be avoided or minimized if proper construction techniques, erosion and siltation control measures, and structural engineering designs are incorporated into project development.

4.2.2 Impacts

4.2.2.1 Preferred Alternative

Implementation of the Preferred Alternative would include excavation and grading activities associated with the development of the proposed Gatehouse, COV Inspection Station, and Overwatch Tower, road development, and the Command Complex Shuttle Parking Lot. The majority of excavation and grading activities would take place in areas identified as containing *Blakeland Loamy Sand* soils (refer to Figure 3-2). These soils are formed in alluvial and *eolian* (i.e., wind-blown) material that can become compacted by heavy equipment during construction. *Blakeland Loamy Sand* soils are also moderately susceptible water erosion and highly susceptible to wind erosion when exposed (U.S. Department of Agriculture [USDA] 1981).

In order to minimize potential erosion, siltation, and soil compaction during excavation, trenching, and other construction activities, Best Management Practices (BMPs) would be incorporated as part of the Proposed Action, including:

- Incorporating erosion and siltation prevention measures (e.g., watering for dust suppression, use of netting and silt fencing, etc.);

- Covering stockpiled soils and excavated areas during rains; and,
- Limit the use of heavy equipment to the maximum extent practicable.

With implementation of the BMPs described above, construction-related impacts to soils would be minimal and localized to the project footprint. In addition, because cumulative soil disturbance associated with the Preferred Alternative would be greater than 1 acre, a *Notice of Intent* (NOI) for construction activities would be filed with the U.S. Environmental Protection Agency (USEPA), and a construction Storm Water Pollution Prevention Plan (SWPPP) containing further measures to prevent soil erosion and siltation would be developed and implemented (refer to Section 4.5, *Water Resources*, for additional information on the SWPPP). Therefore, implementation of the Preferred Alternative would result in minor, site-specific impacts to soils over the short term.

Once the proposed facilities are operational, potential impacts to soils would be minimal, and any potential excavation or other soil disturbance due to future construction or other maintenance activities would also incorporate applicable BMPs listed above. Further, all project components would be engineered so that potential impacts from erosion, siltation, and geological hazards (e.g., landslides, etc.) would be minimized. Therefore, implementation of the Preferred Alternative would result in negligible long-term impacts to geological resources.

Project construction activities proposed would occur on lightly disturbed land (i.e., vegetation is regularly mowed, as required by the Colorado Springs Municipal Airport (COS) Wildlife Hazard Management Plan [COS 2005]), which is capable of supporting such development. Topography within the proposed construction areas is generally level and does not pose an erosion hazard under the Preferred Alternative. Therefore, impacts to topography resulting from implementation of the Preferred Alternative would be negligible.

4.2.2.2 Alternative 2: Relocation Near Existing East Gate

Under Alternative 2, potential short- and long-term impacts to soils and other geological resources would be similar to those described under the Preferred Alternative. A slightly decreased amount of road construction would be necessary to replace the East Gate under this alternative, resulting in slightly

lower acreages of overall surface and soil disturbance. Additionally, this alternative would incorporate the same BMPs to minimize potential erosion, siltation, and soil compaction as the Preferred Alternative, and implementation of this alternative would result in minor, site-specific impacts to soils over the short term. In addition, all construction activities implemented under this alternative would occur on land that is capable of supporting such development. Topography within the alternative construction areas is relatively level and does not pose an erosion hazard under this alternative. Therefore, implementation of Alternative 2 would result in negligible long-term impacts to geological resources.

4.2.2.3 Alternative 3: No-Action Alternative

Under the No-Action Alternative, the proposed East Gate would not be relocated and the Command Complex Shuttle Parking Lot would not be constructed and geological conditions would remain as described in Section 4.2. Therefore, no impacts to geological resources or soils would be anticipated under the No-Action Alternative.

4.3 BIOLOGICAL RESOURCES

4.3.1 Approach to Analysis

Determining the magnitude of potential impacts to biological resources is based on 1) the importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource; 2) the proportion of the resource affected relative to its occurrence in the region; 3) the sensitivity of the resource to proposed activities; and 4) the duration of ecological ramifications. Impacts to biological resources are significant if species or habitats of concern are adversely affected over relatively large areas or disturbance causes reductions in population size or distribution.

When necessary, representatives of the U.S. Fish and Wildlife Service (USFWS), Colorado Division of Wildlife (CDOW), and Colorado Natural Heritage Program (CNHP) are contacted to determine the presence or potential occurrence of sensitive species and habitats in the study area. Potential physical impacts such as habitat loss, noise, and impacts to surface water were evaluated to assess potential impacts to biological resources resulting from implementation of the Proposed Action and identified alternatives.

4.3.2 Impacts

4.3.2.1 Preferred Alternative

<u>Vegetation</u>

Implementation of the Preferred Alternative would require construction activity that would result in vegetation and soil disturbance in previously undeveloped prairie communities. Phase I of the Proposed Action, which includes relocation of the East Gate and construction of the initial portion of the Command Complex Shuttle Parking Lot, would disturb approximately 32 acres of prairie, while Phase II would develop approximately 10 additional acres. Direct impacts to vegetation would include clearing, grading, and paving of existing grasslands for construction of the proposed East Gate and new roadway alignment, Command Complex Shuttle Parking, and construction staging areas. In addition to direct

habitat conversion, disturbance during construction would increase the potential for introduction or spread of noxious weeds. Invasive seeds or plant materials may be carried by vehicles into the project area.

The anticipated long-term habitat loss under the Preferred Alternative would total approximately 36 acres, which would be associated with the footprint of the proposed Command Complex Shuttle Parking Lot (Phases I and II), and the new East Gatehouse and associated structures and roadway. Permanent development would constitute a reduction of approximately eight percent of habitats found on the proposed acquisition parcels. This would be considered negligible due to the abundance of similar habitat present to the east and south of Peterson AFB. Additionally, the proposed acquisition parcels are currently disturbed with regular vegetation mowing and other wildlife management activities to reduce habitat viability for prey species of foraging birds that can create Bird-Aircraft Strike Hazards (BASH). Therefore, long-term impacts to vegetation are expected to be negligible.

Wildlife

Implementation of the Preferred Alternative could impact wildlife through permanent habitat alteration and temporary disturbance due to increased noise and human presence. Construction activities could temporarily displace wildlife from otherwise suitable habitat in the immediate vicinity of the project area; however, any wildlife disturbed by construction activities or displaced by habitat loss could temporarily or permanently relocate to similar habitats nearby. Further, the airport utilizes vegetation and rodent management and scare tactics to prevent birds from gathering on the airfield; therefore, wildlife is discouraged from remaining in the area. However, in areas where sensitive species such as the burrowing owl exist or are nesting, construction activities may need to be delayed during nesting season until surveys are conducted (see discussion below). Once constructed, approximately 36 acres of prairie habitat would be developed; however, operation and maintenance of the proposed project components would pose a negligible threat to wildlife at Peterson AFB assuming that appropriate precautions and avoidance measures for burrowing owls are implemented during any required maintenance that would involve earth-moving

activity. Therefore, implementation of the Preferred Alternative would constitute a minor impact to wildlife over the short and long term.

Sensitive Species

Three sensitive bird species have the potential to occur at Peterson AFB and the proposed acquisition parcels; mountain plover, ferruginous hawk, and burrowing owl. Both the burrowing owl and ferruginous hawk forage in the vicinity of Peterson AFB. While the ferruginous hawk would likely only use the proposed acquisition parcels for forage areas, the burrowing owl could potentially nest onsite. No burrowing owls have been recorded at Peterson AFB or the proposed property acquisition parcels; however, during a recent site visit, an extensive prairie dog community was observed in parcels 2 and 8 (Peterson AFB 2010i), which could potentially provide burrowing owl habitat if not properly managed. The CDOW recommends a 150-foot buffer around burrowing owl sites during the nesting season (March 1 through October 31). If construction activities must occur between March 1 and October 31, surveys would first be conducted for burrowing owls within 150 feet of the proposed development and demolition sites. If a burrowing owl is located within the buffer zone, construction activities in that area would be delayed until the owl migrated out of the area (November 1 through February 28). If construction could not be delayed, Peterson AFB personnel would consult with the CDOW and USFWS prior to conducting any earth-moving activities. According to the CDOW, another option is to encourage the owl out of the area, once fledged. Care should be taken to observe the owls to be sure they have relocated away from the proposed construction site (CDOW 2010a). Therefore, with implementation of appropriate avoidance and management procedures, the Preferred Alternative would have minor impacts on burrowing owls.

Black-tailed prairie dogs do not currently exist at Peterson AFB but are present on the proposed acquisition parcels, 2 and 8 (Peterson AFB 2010i). It is likely that the proposed Command Complex Shuttle Parking Lot and East Gate would either transect or occur on existing prairie dog towns. Some disturbance to these towns is unavoidable and limited mortality or displacement of prairie dogs is expected. However, due to BASH concerns, reduction in black-tailed prairie dog populations in proximity to active runways is consistent with the COS/Peterson

AFB Wildlife Hazard Management Plan. Therefore, impacts to black-tailed prairie dogs at Peterson AFB are expected to be less than significant.

The habitats that would be developed potentially include mid-grass prairie and tallgrass prairie, which CNHP considers ecologically critical areas for several rare species of skipper butterflies. The tallgrass plant community is generally rare along Colorado's Front Range and in the Great Plains; however, any existing tallgrass prairie would be of moderate habitat value due to mowing and other wildlife abatement practices currently taking place on the proposed acquisition parcels. No critical habitat for species federally listed as Threatened or Endangered would be impacted.

The mountain plover and swift fox have the potential for occurring on base as rare transients; however, impacts to these species are not expected, because more suitable habitat is located outside of the areas affected by the Preferred Alternative. Therefore, implementation of the Preferred Alternative would result in less than significant impacts to sensitive species.

Wetlands

There are no wetlands associated with the proposed acquisition parcels. Further, no construction equipment or supplies would be staged within a wetland. Implementation of the Preferred Alternative is not anticipated to impact wetland resources.

4.3.2.2 Alternative 2: Relocation Near Existing East Gate

Under Alternative 2, potential short- and long-term impacts to biological resources would be similar to those described under the Preferred Alternative. Under this alternative, a slightly decreased amount of road construction would need to be constructed as the East Gate would be realigned and renovated, resulting in slightly lower acreages of overall habitat disturbance. Therefore, impacts to biological resources under Alternative 1 are expected to less than significant, similar to the Preferred Alternative.

4.3.2.3 Alternative 3: No-Action Alternative

Implementation of the No-Action Alternative would result in no changes to the existing vegetation, wildlife, wetlands, or sensitive species occurring at Peterson AFB. Conditions would remain as described in Section 3.3, *Biological Resources*.

4.4 LAND USE

4.4.1 Approach to Analysis

The severity of potential land use impacts is based on the level of land use sensitivity in areas affected by a Proposed Action. In general, the Proposed Action would result in major land use impacts if it would: 1) be inconsistent or in noncompliance with applicable land use plans or policies; 2) preclude the viability of existing land use; 3) preclude continued use or occupation of an area; 4) be incompatible with adjacent or vicinity land use to the extent that public health or safety is threatened; or 5) conflict with airfield planning criteria established to ensure the safety and protection of human life and property.

4.4.2 Impacts

4.4.2.1 Preferred Alternative

Implementation of the Preferred Alternative would result in beneficial impacts to land use at Peterson AFB. Acquisition of the proposed parcels would provide a buffer against future land-use encroachment threats posed by potential third-party development of land adjacent to Peterson AFB, such as required Antiterrorism/Force Protection (AT/FP) standoff distances associated with USAF facilities. Additionally, the relocation of the East Gate and the development of the Command Complex Shuttle Parking Lot would also create a centralized parking facility that would allow the 21 SW to reclaim land in the Headquarters Area that is currently utilized for parking for the efficient future development and expansion of mission-critical facilities. No changes in zoning would be required to implement the Preferred Alternative. Further, the Preferred Alternative as a whole would be consistent with the base's *General Plan* (Peterson AFB 2009). Finally, the Preferred Alternative would be compatible with the designated airfield Accident Potential Zones (APZs) and Runway Protection Zones (RPZs), and would not conflict with airfield planning criteria. Therefore, impacts to land use would be considered minor over the long term.

4.4.2.2 Alternative 2: Relocation Near Existing East Gate

Under Alternative 2, the proposed property acquisition and eventual development of the Command Complex Parking Lot would be implemented; however, the new East Gate would be constructed at a location different than under the Preferred Alternative; near the existing East Gate (refer to Figure 2-1). Replacement of the East Gate in this location would potentially limit future facilities development at Peterson-East due to a lack of developable space. This would result in inefficient future land use in Peterson-East and would affect the 21 SW's ability to support future mission requirements. However, Alternative 2 would be consistent with the base's *General Plan* and would not encroach upon established APZs and RPZs or conflict with airfield planning criteria. Consequently, impacts to land use would be considered minor under Alternative 2.

4.4.2.3 Alternative 3: No-Action Alternative

Under this alternative, no changes to land use at Peterson AFB or its vicinity would occur. The potential for future off-base development in adjacent areas that could encroach upon current and future land use on-base and inhibit development of new facilities and/or expansion of mission-critical operations would not be addressed under the *No-Action Alternative*. Additionally, Peterson AFB does not have enough developable space to accommodate anticipated future development to support the 21 SW's expanding responsibilities and various mission requirements without having to consolidate existing facilities and uses, which would not be able to occur under the *No-Action Alternative*. This limitation would adversely affect the 21 SW's operational functionality. Consequently, although land use would remain unchanged from current conditions as described in *Section 3.4,* impacts to land use would be adverse under implementation of this alternative.

4.5 WATER RESOURCES

4.5.1 Approach to Analysis

An impact to water resources would be significant if implementation of the Proposed Action or a project alternative would: 1) reduce water availability to or interfere with the supply of existing users; 2) create or contribute to the overdraft of groundwater basins or exceed decreed annual yields of water supply sources; 3) adversely affect surface or groundwater quality; 4) threaten or damage unique hydrologic characteristics; or, 5) violate established laws or regulations that have been adopted to protect or manage water resources, including management plans adopted by Peterson AFB. Since the footprints of the Proposed Action and project alternatives would be located outside of any designated floodplains (refer to Figure 3-5 in Section 3.5, *Water Resources*), further analysis of floodplains has been eliminated.

4.5.2 Impacts

4.5.2.1 Preferred Alternative

<u>Surface Water</u>

Ground-disturbing activities associated with the Preferred Alternative would include demolition and modification of an existing roadway, in addition to new construction. Site preparation activities (e.g., grading) and construction would result in temporary exposure and compaction of soils, affecting surface water drainage flow patterns and percolation rates. Increases in surface water runoff would result in increased sediment loading to nearby drainage channels during periods of precipitation. During construction phases, applying BMPs such as silt fencing, revegetation, and suspension of construction during rainy periods would mitigation the effects of increased surface water runoff and sedimentation.

With regard to surface water, implementation of the Preferred Alternative over the long term (including eventual expansion of the parking lot under Phase II) would increase impermeable surfaces by approximately 1,550,000-sf (36 acres)

and could therefore have a localized effect on hydrology. Design of the stormwater drainage system at the Command Complex Shuttle Parking Lot and new East Gate would incorporate low-impact development measures wherever feasible and practical, which would maintain site runoff to pre-development conditions. These measures could include the installation of rain gardens along the inner medians that incorporate curb-cuts at engineered intervals to allow inflow and detention. There would also be potential for ponding to occur in areas surrounding the proposed parking apron and road due to a large increase in runoff.

The 21 SW would notify the El Paso County Department of Transportation (EPCDOT) Engineering Division and the Colorado Department of Public Health and Environment (CDPHE) of the increase in the amount of impervious surface created as a result of the project, and modifications would be made to the installation's existing National Pollution Discharge Elimination System (NPDES) permit. The establishment of additional impermeable surface areas would also reduce regional groundwater recharge capabilities but not at a significant level (refer to G*roundwater* discussion below). Finally, erosion minimization practices (e.g., sediment and silt fences) would be used during construction of the new East Gate roadway alignment and Command Complex Shuttle Parking Lot to reduce or eliminate water quality and ponding impacts in the vicinity of the Preferred Alternative.

Regional water supply is abundant and has sufficient capacity to meet current and anticipated demands at Peterson AFB. None of the proposed facilities comprise a significant water user or wastewater generator. No waterways, wetlands, or tributaries are located within or adjacent to the Preferred Alternative area. Sediments potentially carried from the proposed project area during rainfall events would settle prior to reaching any surface waters; therefore, no impacts to local or regional surface water quality are anticipated.

Groundwater

Over the long term, implementation of the Preferred Alternative would include the establishment of approximately 1,550,000 sf (36 acres) of additional impermeable surface areas, which would reduce local groundwater recharge

capabilities. Although this would result in permanent impacts to hydrology, the predominantly undeveloped character of surrounding land at Peterson-East, the remaining portions of the proposed acquisition parcels, and open space to the east of Peterson AFB, would render this change negligible on a regional scale. Phase I of the Preferred Alternative would result in a net reduction in permeable surface area of approximately 8.6 percent of the proposed acquisition parcels. None of the proposed improvements comprise a significant water user or wastewater generator. Therefore, the Preferred Alternative would have a less than significant impact on groundwater resources.

4.5.2.2 Alternative 2: Relocation Near Existing East Gate

Under Alternative 2, potential short- and long-term impacts to surface water and groundwater would be similar to those described under the Preferred Alternative. Under this alternative, the relocation of the East Gate near its existing location would not result in substantially different impacts to water resources than those described for the Preferred Alternative. Therefore, impacts to water resources under Alternative 1 would be minor over the short and long term.

4.5.2.3 Alternative 3: No-Action Alternative

Under the No-Action Alternative, surface water, groundwater, and water management would remain unchanged from baseline conditions as described in Section 3.5, *Water Resources*, and no impacts would occur.

4.6 CULTURAL RESOURCES

Cultural resources are subject to review under both Federal and state laws and regulations. Section 106 of the *National Historic Preservation Act (NHPA)* of 1966 empowers the Advisory Council on Historic Preservation (ACHP) to comment on Federally-initiated, licensed, or permitted projects affecting cultural sites listed or eligible for inclusion on the NRHP.

Once cultural resources have been identified, significance evaluation is the process by which resources are assessed relative to significance criteria for scientific or historic research, for the general public, and for traditional cultural groups. Only cultural resources determined to be significant (i.e., eligible for the NRHP) are protected under the NHPA.

Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may occur by 1) physically altering, damaging, or destroying all or part of a resource; 2) altering the characteristics of the surrounding environment that contribute to resource significance; 3) introducing visual, audible, or atmospheric elements that are out of character with the property or alter its setting; or 4) neglecting the resource to the extent that it is deteriorated or destroyed.

Direct impacts can be assessed by identifying the type and location of a Proposed Action or project alternative and determining the exact locations of cultural resources that could be affected. Indirect impacts primarily result from the effects of project-induced population increases and the resultant need to develop new housing areas, utilities services, and other support functions necessary to accommodate population growth. These activities and facilities' subsequent use can disturb or destroy cultural resources.

Discussions of potential impacts associated with the Proposed Action and project alternatives focus on the proposed acquisition parcels, as described in Section 3.6, *Cultural Resources*.

4.6.1 Preferred Alternative

One archaeological site with three loci was discovered during an intensive cultural resources survey conducted within the proposed acquisition parcels (Peterson AFB 2010c). The site is interpreted as the remains of a farmstead or outlying facilities related to a farmstead or ranch headquarters located elsewhere. The site has been recommended for unknown eligibility for inclusion in the National Register of Historic Places (NRHP). The site is located north of the proposed Command Complex Shuttle Parking Lot and would not be directly impacted by construction of any components of the Preferred Alternative. Additionally, although the proposed acquisition parcels are generally level, the archaeological site is located at a slightly higher elevation than the proposed parking lot; therefore, any potential silt runoff during parking lot construction would not likely impact the identified site.

As part of the Section 106 process, the 21 SW consulted with the Colorado State Historic Preservation Office (SHPO) regarding the Preferred Alternative. In a letter dated 16 February 2011, Colorado SHPO concurred with the 21 SW's finding of *no historic properties affected* (Appendix B). Therefore, implementation of the Preferred Alternative would not significantly impact known archaeological, architectural, Native American, or historic cultural resources.

If potentially significant resources were to be uncovered during ground-disturbing activities at any of the proposed project locations, project activity would be suspended until a qualified archaeologist could determine the significance of the resource(s).

4.6.1.1 Alternative 2: Relocation Near Existing East Gate

Under Alternative 2, potential impacts to cultural resources would be similar to those described under the Preferred Alternative. Under this alternative, the relocation of the East Gate near its existing location would not result in disturbance to any known cultural resources. Therefore, impacts to cultural resources under Alternative 2 would be less than significant.

4.6.1.2 Alternative 3: No-Action Alternative

If the No-Action Alternative were selected, baseline conditions would remain as described in Section 3.6, *Cultural Resources*.

4.7 NOISE

4.7.1 Approach to Analysis

Noise impact analyses typically evaluate potential changes to existing noise environments that would result from implementation of a Proposed Action. Potential changes in the noise environment can be beneficial (i.e., if they reduce the number of sensitive receptors exposed to unacceptable noise levels), negligible (i.e., if the total area exposed to unacceptable noise levels is essentially unchanged), or adverse (i.e., if they result in increased exposure to unacceptable noise levels). An increase in noise levels due to introduction of a new noise source can create an impact on the surrounding environment.

4.7.2 Impacts

4.7.2.1 Preferred Alternative

Construction-Related Impacts

Implementation of the Preferred Alternative would have only minor, temporary impacts on the noise environment in the vicinity of proposed construction and demolition sites. Use of heavy equipment for site preparation and development (e.g., vegetation removal, grading, and back fill) would generate noise exposure above typical ambient levels at eastern portions of the installation. However, noise generation would be typical of construction activities, would be confined to normal working hours and would be short-term in nature, and could be reduced through the use of equipment sound mufflers.

Operations-Related Impacts

The proposed Gatehouse, COV Inspection Station, and Overwatch Tower, road, and the Command Complex Shuttle Parking Lot would not comprise a substantial source of new noise. The improvement of the East Gate would likely increase traffic along the eastern portion of Peterson AFB, however this would result in negligible localized noise impacts as the road, and gate facilities would be sited in an area where ambient noise levels are dominated by aircraft activity.

In addition, all noise-generating project components are located at a substantial distance from sensitive receptors. Although the Preferred Alternative would be constructed within an area that typically experiences noise levels of 65-70 day-night average sound level (DNL), no components of the Preferred Alternative would be considered sensitive receptors. Therefore, once operational, the Preferred Alternative would result in negligible impacts to noise resources over the long term.

4.7.2.2 Alternative 2: Relocation Near Existing East Gate

Impacts to noise resources under Alternative 2 would remain similar to those described under the Preferred Alternative. Construction activities would create a temporary, negligible increase in noise levels at the base. Additionally, these activities would be confined to normal working hours and would be short-term in nature, resulting in minor and short-term impacts to noise resources under this alternative. Once operational, project components would generate negligible impacts to noise levels from the use of shuttles, and potentially increased traffic at the East Gate. However, similar to the Preferred Alternative, all components would be sited in areas currently dominated by noise related to aircraft activity. Therefore, implementation of Alternative 2 would result in negligible impacts to noise resources over the long term.

4.7.2.3 Alternative 3: No-Action Alternative

If the No-Action Alternative were selected, noise impacts anticipated to occur during implementation of the Proposed Action would not occur and noise levels associated with ongoing operations at Peterson AFB and the proposed acquisition parcels would remain as described in Section 3.7, *Noise*.

4.8 TRANSPORTATION AND CIRCULATION

4.8.1 Approach to Analysis

Potential impacts to transportation and circulation are assessed with respect to anticipated disruption or improvement of current transportation patterns and systems; deterioration or improvement of existing levels of service (LOS); and changes to existing levels of transportation safety. Impacts may arise from physical changes to circulation (e.g., closing, rerouting, or creating roads), construction activity, introduction of construction-related traffic on local roads, or changes in daily or peak-hour traffic volumes created by base workforce and population changes. Impacts on roadway capacities would be significant if roads with no history of exceeding capacity were forced to operate at or above their full design capacity or if already substandard conditions were worsened.

4.8.2 Impacts

4.8.2.1 Preferred Alternative

Implementation of the Preferred Alternative would require the delivery of equipment and materials to construction sites; however, construction traffic would comprise only a small portion of total existing regional traffic. Further, the increase in traffic volumes associated with construction activity would be temporary and negligible and implementation of standard BMPs would also require that construction vehicles and equipment would remain on site during construction activities whenever feasible to further minimize impacts to traffic volumes on regional roadways. During construction, access from Marksheffel Road would continue to be provided by the existing East Gate which would remain in operation until completion of the new gate to the north.

Once operational, the new East Gate would be staffed by personnel currently working at the existing East Gate and the new parking lot would be included in regular security patrol activities and would not require the staffing of any new personnel and would therefore not result in increased regional traffic generation. Although the new East Gate would experience an increase in COV traffic, these COVs currently use the base's Main Gate and would be better accommodated by

the design of the new East Gate facilities. The Gatehouse would be used to check IDs of privately owned vehicle (POV) traffic prior to entry to the base. A pull-off lane with a second, smaller canopy would allow for vehicle inspection without delaying traffic flow during peak hours. Supplemental ID Check Stations would be utilized during peak traffic hours to process vehicles more quickly and efficiently and have redundant controls of the gate barriers. Further, implementation of proposed Command Complex Shuttle Parking Lot would improve traffic conditions on base through the use of a shuttle system from the proposed parking lot and an increased capacity at the new East Gate to accommodate anticipated peak-hour traffic.

Standard construction BMPs related to transportation and circulation would also include the development of a Transportation Management Plan to address construction traffic hazards, delays, detours, and general safety precautions. Potential adverse impacts to transportation and circulation would be minimized to negligible levels upon implementation of a Transportation Management Plan and implementation of standard construction BMPs. Therefore, impacts to traffic and circulation would be considered minor over the short term and beneficial over the long term as a result of the Preferred Alternative.

4.8.2.2 Alternative 2: Relocation Near Existing East Gate

Under Alternative 2, the Command Complex Shuttle Parking Lot would be constructed as described under the Preferred Alternative; however, the East Gate would be replaced near its current location on Peterson-East. Construction- and maintenance-related impacts to transportation and circulation would occur as described under the Preferred Alternative; however, temporary disruption and temporary closure of the East Gate may be required during portions of the construction period under implementation of Alternative 2. Inclusion of standard construction BMPs, including staging of construction vehicles on-site and development of a Transportation Management Plan, would minimize potential impacts to transportation and circulation. Therefore, impacts under either alternative would be considered minor over the short term and negligible over the long term.

4.8.2.3 Alternative 3: No-Action Alternative

Under the No-Action Alternative, transportation conditions and circulation patterns would remain as they currently exist on base without any short-term disruptions due to construction activity. Implementation of this alternative would not affect regional transportation and circulation. Therefore, no impacts are anticipated under this alternative.

4.9 VISUAL RESOURCES

4.9.1 Approach to Analysis

Determination of the severity of impacts to visual resources is based on the level of visual sensitivity in the area. Visual sensitivity is defined as the degree of public interest in a visual resource and concern over adverse changes in the quality of that resource. In general, an impact to a visual resource is considered major if implementation of the Proposed Action would result in substantial alteration to an existing sensitive visual setting.

4.9.2 Impacts

4.9.2.1 Preferred Alternative

Implementation of the Preferred Alternative would require the construction of the proposed Gatehouse, COV Inspection Station, and Overwatch Tower, road, and the Command Complex Shuttle Parking Lot. All of these elements would impact the visual resources of Peterson AFB as the areas proposed for development are currently open grasslands; however, visual resources in the vicinity of the Preferred Alternative are not considered sensitive. Although the proposed project would comprise new development in a previously undeveloped area, the Preferred Alternative would be consistent with institutional and airport uses that typify surrounding land uses to the west, north, and south. Additionally, since the Preferred Alternative is removed from any residential or recreational areas there is little public interest in visual resources at these particular locations. In addition, the demolition of portions of Stewart Avenue would not pose any long-term impacts to visual resources as alignments would be graded and re-seeded and would not be visible after revegetation. Therefore, construction and demolition associated with the Preferred Alternative would comprise a minor impact to visual resources over the short term during construction activities and a negligible impact over the long term.

4.9.2.2 Alternative 2: Relocation Near Existing East Gate

Under Alternative 2, the proposed property acquisition and eventual development of the Command Complex Parking Lot would be implemented; however, the East Gate would be relocated near its existing location. Construction associated with the new East Gate under this alternative would result in minimal impacts to visual resources in its vicinity and would not result in any new structures viewable to the public from surrounding roadways. Therefore, implementation of this alternative would comprise a minor impact to visual resources over the short term during construction activities and a negligible impact over the long term.

4.9.2.3 Alternative 3: No-Action Alternative

No changes to existing visual resources, as described in Section 3.9, *Visual Resources*, would occur under implementation of the No-Action Alternative. Therefore, selection of this alternative would have no foreseeable impacts to visual resources in the vicinity of Peterson AFB.

4.10 SAFETY

4.10.1 Approach to Analysis

If implementation of the Proposed Action would substantially increase risks associated with aircraft mishap potential or flight safety relevant to the public or the environment, it would represent a major impact. For example, if an action involved an increase in aircraft operations such that mishap potential would increase substantially, air safety would be compromised.

Further, if implementation of the Proposed Action would result in incompatible land use with regard to safety criteria such as APZs, RPZs or quantity-distance (QD) arcs, impacts would be considered major.

4.10.2 Impacts

4.10.2.1 Preferred Alternative

<u>Mishap Potential and Bird-Aircraft Strike Hazard</u>

Implementation of the Preferred Alternative would not result in changes to the frequency or type of aircraft operations performed at Peterson AFB. The Preferred Alternative is ground-based and would require only short-term construction activity for development. No long term construction activities, other than standard maintenance, would occur under project implementation. Further, implementation of the Preferred Alternative would potentially result in a slight decrease to BASH at Peterson AFB due to the development of tallgrass prairie. Prairie habitats provide forage habitat for raptors and a reduction of this habitat would likely decrease the presence of raptors, which would result in decreased BASH risks. Therefore, with regard to aircraft mishaps and BASH, no short- or long-term adverse impact would result from implementation of the Preferred Alternative.

Runway Protection Zones and Accident Potential Zones

Construction activity would be short-term and the presence of construction equipment and personnel would not impede flight operations. The proposed Command Complex Shuttle Parking Lot and East Gate are located within the flight line and RPZs of Runway 17L-35R. Personnel involved with airfield activities would be notified of these activities, and construction equipment would not be stored within restricted areas unless otherwise approved. All construction and maintenance activities would be coordinated with Air Traffic Control staff to ensure that no disruption to aircraft operations would occur. Further, in compliance with 14 CFR Part 77, information related to proposed vertical development, including the use of temporary construction equipment, will be submitted to the FAA for a formal airspace review and determination prior to the commencement of construction activities.

The Preferred Alternative would not result in a change in shape or shift in location of established APZs and no habitable structures are proposed for development in the RPZs associated with the airfield. The proposed East Gate and COV inspection facility would be staffed and would be located within APZ I; however, this would constitute a permitted use. Additionally, construction of the proposed East Gate, COV, and Overwatch Tower would involve the excavation of approximately 25 feet of a moderately steep hillside, located within the project area, in order to ensure compliance with one-engine inoperative (OEI) obstacle identification surface (OIS) standards. Therefore, with regard to airfield safety, the Preferred Alternative would result in negligible short- and long-term impacts.

4.10.2.2 Alternative 2: Relocation Near Existing East Gate

Implementation of Alternative 2 would result in similar impacts as described under the Preferred Alternative. However, under Alternative 2 the proposed East Gate and COV inspection facility would be located outside of designated RPZs or APZs. Further, no structures would impede the airfield's vertical safety constraints (e.g., imaginary surfaces). Coordination with Air Traffic Control and the FAA would occur before construction or maintenance activities were

conducted in any RPZ or APZ area. Therefore, no impacts with regard to aircraft mishap, BASH, or airfield safety are anticipated.

4.10.2.3 Alternative 3: No-Action Alternative

If the No-Action Alternative were selected, Peterson AFB would not implement proposed property acquisition or future development. Current safety conditions, as described in Section 3.10, would remain unchanged.

SECTION 5
CUMULATIVE IMPACTS

Cumulative impacts on environmental resources result from incremental impacts of the Proposed Action which, when combined with other past, present, and reasonably foreseeable future projects in an affected area, may collectively cause more substantial adverse impacts. Cumulative impacts can result from minor but collectively substantial actions undertaken over a period of time by various agencies (Federal, state, or local) or persons. In accordance with the National Environmental Policy Act (NEPA), a discussion of cumulative impacts resulting from projects which are proposed, under construction, recently completed, or anticipated to be implemented in the near future is required.

The cumulative projects list included in this analysis includes both on- and off-base projects that have been identified through a review of public documents and information provided by Peterson Air Force Base (AFB) (Peterson AFB 2009).

5.1 OFF-BASE ACTIVITIES

Peterson AFB is located in the southeast part of the City of Colorado Springs, along the eastern edge of the city's developed core. The area north of the base is currently zoned for residential and commercial uses and, for the most part, has been developed with the exception of the parcel directly north of the Command Complex along Space Village Avenue. The land adjacent to the Main Gate is currently master planned and zoned for commercial and light industrial use by Colorado Springs Airport and is sparsely developed. Land areas adjacent to the southwest, south, and southeast boundaries of Peterson Main are designated for airport planned commercial and business development. The open spaces to the south and east of Peterson AFB and the Colorado Springs Municipal Airport (COS) are largely undeveloped; however, a review of regional and City planning documents indicate that the much of the area surrounding the Airport is slated to be developed within the next 10 to 20 years, although development would be dependent upon economic and real estate factors. The two major planning areas in the vicinity of Peterson AFB are the Airport Business Park and the Banning Lewis Ranch, each containing its own planned development pattern.

Colorado Springs Airport Business Park—In addition to the existing 200,000 square feet of Class A office space located within the Airport Business Park, future development is proposed on approximately 1,400 acres of vacant land, presently consisting of mid-grass and tallgrass prairie, in the southern portion of COS property. The currently identified project includes approximately 454 acres of commercial and light industrial business park; an 18-hole golf course; approximately 200 acres of open space; and roadway, stormwater, and utilities infrastructure (COS 2005b). However, development of any portion of the components currently identified for the Airport Business Park are speculative at this time due to current economic and real estate factors.

Banning Lewis Ranch—Banning Lewis Ranch, located immediately east of Peterson AFB, was annexed by the City of Colorado Springs in 1988 and limited development, consisting primarily of residential and institutional uses, has occurred since then; however, the majority of the approximately 24,600 acres remains primarily old homesteads, prairies, and old rail beds. The currently proposed master plan for Banning Lewis Ranch indicates that buildout would consist of approximately 76,000 residential units supporting an approximate population of 180,000 people, and approximately 79 million square feet of commercial, office, and industrial floor area at full development (City of Colorado Springs 2007). The property is located east of Marksheffel Road, adjacent to Peterson AFB. A 700-unit housing development is currently being constructed on East Stewart Avenue north of the current East Gate Entrance that will likely be completed by the end of 2011 (Peterson AFB 2010d). However, development of Banning Lewis Ranch is speculative at this time due to current economic and real estate factors.

5.2 ON-BASE ACTIVITIES

Peterson AFB has implemented a General Plan to guide current and future development at the base. The General Plan establishes short range and long-range development plans and land use planning goals, including defining the most appropriate layout of land uses and transportation corridors to support functional effectiveness, efficiency, and compatibility at the base. Both on- and off-base factors are considered. The current Short Range Development Plan is consistent with future land use and other component plans. The coordinating

agency for all project definition and processing is the 21st Space Wing (21 SW) Civil Engineer Squadron. The General Plan is intended to guide infill development on currently vacant land, as well as functional consolidation and redesignation of land uses to accommodate the anticipated doubling of the base's current staffing levels (Peterson AFB 2009).

Peterson-East is the only existing parcel that has substantial growth potential. Most of the vacant land located on Peterson-East has been identified for specific future projects. Areas remaining available for development are located on Peterson-Main, and development in these areas would involve replacement of older facilities, expansion of existing facilities, or construction of new facilities on very limited available vacant land (Peterson AFB 2009). Peterson AFB is currently in the process of purchasing adjacent vacant land in order to provide expansion capabilities in strategic growth areas, including the proposed acquisition parcels that are part of this Proposed Action. The proposed sites of planned or potentially required facilities are listed in the Short-Range Plan (6 year) and Long-Range Plan (20 year) shown in Table 5-1.

There are a number of recently completed, in progress, and planned *Capital Improvement Projects* to support Peterson AFB's mission and to facilitate future growth at the base. As the prioritization, initiation, and completion of projects is dynamic, Table 5-1 represents the current schedule of construction and demolition projects available at the time of this EA. The scope, priority, and schedule of individual projects could potentially change. The information in Table 5-1 is provided as a reference to compare the Proposed Action in the context of other planned projects at the base.

For the purposes of this EA, recently completed, in progress, and planned cumulative construction and demolition projects at Peterson AFB have been included for analysis of potential cumulative impacts. Proposed projects include administrative buildings, infrastructure upgrades, and training and support facilities (Peterson AFB 2009).

Table 5-1. Short-Range Projects Planned at Peterson AFB

Project Title	Status
Short Range Construction Projects	
Explosive Ordinance Disposal Facility	FY 2013+
Base Exchange/Commissary	Completed
Space University (National Security Space Institute)	FY 2010
Main Gate Force Fitness Center Annex	FY 2013+
76th Space Control Facility	Completed
Command Complex Force Protection 24 Acres	FY 2010
302nd Mobility Support Warehouse	FY N/A
Widen Paine Street	FY 2010
Long Range Construction Projects	
Add/Alter Communication Facility	FY 2015+
Visitor Quarters	FY 2015+
Mobility Deployment Center	FY 2015+
Security Forces Facility	FY 2015+
North Duty Gate and Road	FY 2015+
Global Vigilance Planning Center	FY 2015+
Realign Stewart at Temporary Lodging Facilities	FY 2015+
Upgrade Stewart Avenue	FY 2015+
Upgrade Utilities at Peterson-East	FY 2015+
Realign North Gate	FY 2015+

N/A - Not available
FY – Fiscal year
Source: Peterson AFB 2009, 2010j.

Air Quality

Although the scope, priority, and schedule of individual projects could potentially change, the potential exists for cumulative impacts to occur with regard to air quality as future growth at Peterson AFB and the City of Colorado Springs is anticipated to result in increased traffic and construction emissions. Cumulative air quality impacts are expected to result in moderate adverse impacts related to construction activities and increased use- and personnel-related emissions. The Proposed Action would constitute a minor contribution to these cumulative impacts given the scale of the project. Additionally, the Proposed Action and all individual projects would be required to implement best

management practices (BMPs) to reduce fugitive dust and combustion emissions during construction activities to acceptable levels.

Geological Resources

With regard to geological resources, on-base cumulative project development would locally impact soils at Peterson AFB and the proposed acquisition parcels. Soils at Peterson AFB have been largely modified by past developments; however, areas that are currently undeveloped are capable of supporting development. In addition, individual projects would require implementation of BMPs to limit any impacts to soils which may result from construction activities including watering and/or soil stockpiling, thereby reducing the amount of exposed soil to negligible levels. Consequently, cumulative impacts to geological resources are expected to be minor and the Proposed Action's contribution to cumulative impacts would be negligible.

Biological Resources

With regard to biological resources, cumulative impacts are expected to be minor but adverse. Future developments may include the disruption and/or removal of native vegetation communities and wildlife habitat, and the alteration of surface water flows. Tallgrass prairie habitat, which is found on Peterson AFB and adjacent areas off-base, has already been reduced by 98 percent from its historic land coverage. Continued development of this habitat would further reduce this rare community, which is considered critical for several species of butterflies and is an important habitat to a variety of other species. The Proposed Action's contribution to these cumulative impacts would be minor, since much of the proposed construction would occur on areas that are already substantially disturbed through wildlife abatement measures and proximity to installation development and roadways.

Land Use

With regard to land use, the potential exists for moderate cumulative adverse impacts to occur, since long-term shifts in land use may occur resulting from residential and business development at Peterson AFB, and urban development

off-base. However, the Proposed Action would constitute a negligible contribution to these cumulative impacts, since no changes to existing land use patterns in the vicinity of the base would result from implementation of the Proposed Action.

Water Resources

With regard to water resources, the potential exists for moderate cumulative adverse impacts to occur, since a long-term increase in impermeable surfaces would likely occur as on-base development continues. Additionally, short-term construction-related water resources impacts would occur. However, all projects planned at Peterson AFB would be required to develop and implement project-specific plans (e.g., Storm Water Pollution Prevention Plan) and adhere to all applicable permitting regulations and BMPs to minimize potential impacts to water resources. Therefore, the Proposed Action would constitute a minor contribution to this potentially moderate cumulative impact.

Cultural Resources

With regard to cultural resources, the potential exists for moderate cumulative adverse impacts to occur as planned on- and off-base projects are implemented. However, the Proposed Action would constitute a negligible contribution to these cumulative impacts, since it would not include removal or alteration of any buildings. Development would occur at Peterson AFB in compliance with the Integrated Cultural Resources Management Plan (Peterson AFB 2010g) and in consultation with the State Historical Preservation Office (SHPO) to ensure that development does not adversely impact sensitive cultural resources. Therefore, projects at Peterson AFB would be unlikely impact any resources.

Noise

With regard to noise, cumulative impacts are expected to be moderate and adverse, since future growth would include new noise-sensitive development including residential additions off-base. The Proposed Action's contribution to cumulative noise impacts would be negligible as the operation of proposed

facilities would not constitute a substantial noise source and noise impacts related to construction would be limited to short-term activities.

Transportation and Circulation

With regard to transportation and circulation, the potential exists for moderate cumulative adverse impacts to occur, since a long-term increase in on-base traffic volume would likely occur as development of additional facilities occurs. Additionally, short-term construction-related traffic increases, as well as potential road and lane closures would occur during the construction phases of these projects. The Proposed Action would constitute a minor contribution to these cumulative impacts given the small scale of the project.

Visual Resources

With regard to visual resources, cumulative impacts are expected to be moderate and adverse as future growth would substantially change the open prairie environment that characterizes much of the eastern portions of Peterson AFB and land uses to the north and east. Increased levels of residential, industrial, and residential development on-base, and residential and commercial development off-base would permanently alter the open, peaceful views currently obtained in the area. The Proposed Action's contribution to cumulative visual resource impacts would be negligible due to the small scale of the project and the fact that visual resources in the vicinity of the Proposed Action are not considered sensitive.

Safety

Cumulative impacts to safety would include moderate long-term beneficial effects as new development would comply with and improve Antiterrorism/Force Protection standards at the East Gate. These impacts would be localized to Peterson AFB only and anticipated off-base projects would not impact safety conditions on-base. Furthermore, cumulative impacts with regard to occupational health would be minor and adverse due to short-term risks associated with construction activity; however, all individual projects would be required to adhere with appropriate regulations and BMPs to minimize these

risks and the Proposed Action's contribution to this cumulative impact would be negligible.

SECTION 6
SUMMARY OF FINDINGS

Summaries of environmental impacts anticipated to result from implementation of the Proposed Action at Peterson Air Force Base (AFB) are provided in this section for the following resources:

Air Quality. Under implementation of the Proposed Action, fugitive dust would be generated during construction activities, including excavation, grading, and other ground-disturbing activities. Implementation of standard best management practices (BMPs) for dust control (e.g., regularly watering exposed soils, soil stockpiling, soil stabilization, etc.) would reduce potential impacts to negligible levels. Combustion emissions resulting from construction activities would be below *de minimis* thresholds for a General Conformity determination, and would not exceed 10 percent of the regional emissions inventory. Therefore, implementation of the Proposed Action would result in minor air quality impacts and does not require a conformity analysis.

Geological Resources. Potential impacts to geological resources associated with implementation of the Proposed Action would be limited to ground-disturbing activities (e.g., excavation, grading) during construction or operational maintenance activities. BMPs would be implemented to minimize potential erosion, siltation, and soil compaction, and any impacts would be minor and would last only for the duration of ground-disturbing activities. No additional impacts to geological resources are anticipated to result from the Proposed Action.

Biological Resources. Construction activities would result in localized impacts to vegetation and wildlife due to excavation, grading, site preparation activities, and permanent habitat conversion to human uses. Once constructed, approximately 36 acres of prairie habitat would be developed; however, operation and maintenance of proposed project components would pose a negligible threat to wildlife at Peterson AFB with implementation of appropriate precautions and avoidance measures for burrowing owls. The Proposed Action is expected to have negligible impacts on special-status species, and BMPs and appropriate avoidance and management procedures (e.g., conducting species

surveys, scheduling construction outside of migratory bird nesting season) would be incorporated as applicable and where recommended by applicable agencies (e.g., U.S. Fish and Wildlife Service, Colorado Division of Wildlife). All construction activities and installed project components would be located outside any adjacent wetland areas, and BMPs to minimize erosion, runoff, and sedimentation would be implemented. Accordingly, no adverse impacts to wetlands would result.

Land Use. Construction and operation of the Proposed Action would be consistent with established land use policies and designations, and would not change existing land use patterns or require any changes in zoning. Therefore, only minor impacts to land use would result.

Water Resources. Construction activities under the Proposed Action would incorporate BMPs to minimize erosion, runoff, and sedimentation, and a Storm Water Pollution Prevention Plan (SWPPP) containing additional procedures would be implemented to prevent adverse impacts to surface water. Although development would result in permanent impacts to hydrology, the predominantly undeveloped character of surrounding land at Peterson-East, the remaining portions of the proposed acquisition parcels, and open space to the east of Peterson AFB, would render this change negligible on a regional scale. Operation of the Proposed Action would have no foreseeable impacts on surface water, and would comply with all applicable regulatory and permit requirements, and applicable measures in Peterson AFB's operational SWPPP. Further, the Proposed Action would not affect the water quality of any surface water receiving bodies, create an overdraft of available groundwater, or exceed any decreed groundwater rights.

Cultural Resources. No impact to cultural resources is anticipated as the Proposed Action would not involve the removal or alteration of any buildings and a previously conducted Phase III cultural resources survey indicated that no significant archaeological resources are located within areas potentially affected by the Proposed Action.

Noise. Under the Proposed Action, construction activities would generate temporary, localized minor noise increases in the vicinity of the project footprint.

Once operational, any noise increases would be negligible and would be limited to a slight increase in traffic in the eastern portion of the base. All noise-generating activities would occur in an environment dominated heavily by aircraft noise.

Transportation and Circulation. Construction activities under the Proposed Action would result in negligible increases in traffic. Additionally, any increases would be short-term and would cease upon the completion of construction activities. Construction and operational maintenance activities would occur on active roadways and would result in localized, minor impacts over the short term and negligible impacts over the long term due to road closures and other circulation disruptions; however, any impacts would be localized and would follow procedures established in a Transportation Management Plan.

Visual Resources. Although the proposed project would comprise new development in a previously undeveloped area, the Proposed Action would visually be consistent with institutional and airport uses that typify surrounding land uses to the west, north, and south. Additionally, since the Preferred Alternative is removed from any residential or recreational areas, there is little public interest in visual resources at these particular locations; therefore, negligible impacts to visual resources would result.

Safety. Implementation of the Proposed Action would not impact aircraft mishap potential or increase the likelihood of bird-aircraft strikes. Construction activities taking place in the Accident Potential Zones (APZs) associated with the Peterson AFB airfield would be coordinated with Air Traffic Control to ensure no disruption to aircraft operations would occur, and no equipment would be stored within established APZs. Also, in compliance with 14 CFR Part 77, information related to proposed vertical development, including the use of temporary construction equipment, will be submitted to the FAA for a formal airspace review and determination prior to the commencement of construction activities. No project components would encroach upon the airfield's imaginary surfaces. Further, the Proposed Action would improve Anti-Terrorism/Force Protection compliance at the East Gate. Therefore, negligible impacts to safety would result.

SECTION 7
SPECIAL PROCEDURES

Impact evaluations conducted during preparation of this Environmental Assessment have determined that no major environmental impacts would result from implementation of the Proposed Action at Peterson Air Force Base. This determination is based on a thorough review and analysis of existing resource information, the application of accepted modeling methodologies, and coordination with knowledgeable, responsible personnel from the U.S. Air Force and relevant local, state, and Federal agencies.

Special procedures required prior to implementation of the Proposed Action regarding the sensitive burrowing owl species include mandatory buffers around known owl sites, required surveys if earth moving activities occur during the nesting season, and the delay of construction activities if nesting owls would be impacted or proper consultations with the Colorado Department of Wildlife and U.S. Fish and Wildlife Service prior to earth-moving activities if delays are not feasible. The implementation of all appropriate avoidance and management procedures to reduce impacts on burrowing owls, especially during nesting season, would be required prior to executing the Proposed Action.

Other standard best management practices would include implementation of control measures for reducing fugitive dust emissions; silt fencing and suspension of construction during rainy periods; soil stockpiling and replacement during excavation activities; use of appropriate avoidance and management procedures regarding burrowing owls; and conforming to all Federal, state, and local requirements related to storm water pollution prevention during construction activities, including development of a Notice of Intent and Storm Water Pollution Prevention Plan under the General Permit for Storm Water Discharges from Construction Activities Program. No other special procedures would be required prior to implementation of the Proposed Action.

SECTION 8
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SECTION 9
LIST OF PREPARERS

This report was prepared for, and under the direction of, the U.S. Air Force by AMEC Earth & Environmental, Inc. Members of the professional staff are listed below:

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APPENDIX A

SUMMARY OF LEGISLATION PERTAINING TO THE PREPARATION OF THIS ENVIRONMENTAL ASSESSMENT

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SUMMARY OF LEGISLATION PERTAINING TO THE PREPARATION OF THIS ENVIRONMENTAL ASSESSMENT

NATIONAL ENVIRONMENTAL POLICY ACT

In accordance with NEPA, Federal agencies are required to integrate environmental values into their decision-making process by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions. The intent of NEPA is to protect, restore, or enhance the environment through well-informed Federal decisions. The CEQ was established under NEPA to implement and oversee Federal policy in this process. The CEQ subsequently issued *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR § 1500-1508, 32 CFR part 989). These regulations specify that an EA be prepared to:

- briefly provide sufficient analysis and evidence for determining whether to prepare and Environmental Impact Statement (EIS) or a finding of no significant impact (FONSI);
- aid in an agency's compliance with NEPA when no EIS is necessary; and
- facilitate preparation of an EIS when one is necessary.

To comply with NEPA and other pertinent environmental requirements, such as the Endangered Species Act and Clean Air Act, and to assess impacts on the environment, the decision-making process includes a study of environmental issues related to the proposed property acquisition and future development at Cavalier AFS.

ENDANGERED SPECIES ACT

The ESA of 1973 (16 United States Code [USC] §§ 1531–1544, as amended) established measures for the protection of plant and animal species that are federally listed as threatened and endangered, and for the conservation of habitats that are critical to the continued existence of those species. Federal agencies must evaluate the effects of their proposed actions through a set of defined procedures, which can include the preparation of a Biological

Assessment and can require formal consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Act

CLEAN AIR ACT AND CONFORMITY REQUIREMENTS

The Clean Air Act (CAA) (42 USC §§ 7401–7671, as amended) provided the authority for the U.S. Environmental Protection Agency (USEPA) to establish nationwide air quality standards to protect public health and welfare. The National Ambient Air Quality Standards (NAAQS) were developed for six criteria pollutants: ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter, and lead (Pb). The Act also requires that each state prepare a State Implementation Plan (SIP) for maintaining and improving air quality and eliminating violations of the NAAQS. Under the CAA Amendments of 1990, Federal agencies are required to determine whether their undertakings are in conformance with the applicable SIP and demonstrate that their actions will not cause or contribute to a new violation of the NAAQS; increase the frequency or severity of any existing violation; or delay timely attainment of any standard, emission reduction, or milestone contained in the SIP. The USEPA has set forth regulations in 40 CFR 51, Subpart W, which require the proponent of a proposed action to perform an analysis to determine if its implementation would conform to the SIP.

WATER RESOURCES REGULATORY REQUIREMENTS

The Clean Water Act (CWA) of 1977 (33 USC §§ 1251 *et seq.*) regulates pollutant discharges that could affect aquatic life forms or human health and safety, such as those potentially released during temporary construction procedures or well development activities. Section 404 of the CWA, and Executive Order (EO) 11990, *Protection of Wetlands*, regulate development activities in or near streams or wetlands. Section 404 also regulates development in streams and wetlands and requires a permit from the U.S. Army Corps of Engineers (USACE) for dredging and filling in wetlands. EO 11988, *Floodplain Management*, requires Federal agencies to take action to reduce the risk of flood damage; minimize the impacts of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial values served by floodplains. Federal agencies are directed to consider the proximity of their actions to or within

floodplains. Additionally, the National Pollutant Discharge Elimination System (NPDES) requires that regulated federal entities must implement stormwater pollution prevention plans (SWPPPs) or stormwater management programs (both using best management practices [BMPs]) that effectively reduce or prevent the discharge of pollutants into receiving waters.

The Safe Drinking Water Act (SDWA) of 1974 intends to protect public health by regulating the nation's public drinking water supply. Most recently amended in 1996, the act requires several actions to protect drinking water and its sources, which include rivers, lakes, reservoirs, springs, and ground-water wells. The SDWA applies to every public water system in the U.S. and recognizes source water protection, operator training, funding for water system improvements, and public information as important components of safe drinking water in addition to focusing on water treatment as the means of providing safe drinking water to the public.

CULTURAL RESOURCES REGULATORY REQUIREMENTS

The NHPA of 1966 (16 USC § 470) established the National Register of Historic Places (NRHP) and the Advisory Council on Historic Preservation (ACHP) which outlined procedures for the management of cultural resources on Federal property. Cultural resources can include archaeological remains, architectural structures, and traditional cultural properties such as ancestral settlements, historic trails, and places where significant historic events occurred. The NHPA requires Federal agencies to consider potential impacts to cultural resources that are listed, nominated to, or eligible for listing on the NRHP; designated a National Historic Landmark; or valued by modern Native Americans for maintaining their traditional culture. Section 106 of NHPA requires Federal agencies to consult with the appropriate State Historic Preservation Office (SHPO) if their undertaking might affect such resources. *Protection of Historic and Cultural Properties* (36 CFR 800 [1986]) provides an explicit set of procedures for Federal agencies to meet their obligations under the NHPA, which includes inventorying of resources and consultation with SHPO.

EO 13007, *Indian Sacred Sites*, directs Federal land (any land or interests in land owned by the United States, including leasehold interests held by the United

States, except Indian trust lands) managing agencies to accommodate access to, and ceremonial use of, Indian sacred sites (any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe [an Indian or Alaska Native tribe, band, nation, Pueblo, village, or community that the Secretary of the Interior acknowledges to exist as an Indian tribe pursuant to Public Law No. 103-454, 108 Stat. 4791, an "Indian" refers to a member of such an Indian tribe] or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion) provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site.

The American Indian Religious Freedom Act (AIRFA) (42 USC § 1996) established Federal policy to protect and preserve the rights of Native Americans to believe, express, and exercise their traditional religions, including providing access to sacred sites. The Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC §§ 3001–3013) requires consultation with Native American tribes prior to excavation or removal of human remains and certain objects of cultural importance.

ANTITERRORISM FORCE PROTECTION

The Department of Defense (DoD) has developed AT/FP standards that are designed to reduce the likelihood of physical damage and mass casualties from potential terrorist attacks. Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Anti-terrorism Standards for Buildings,* outlines various planning, construction, and operational standards to address potential terrorist threats. A key element of AT/FP standards is the establishment of minimum setbacks and other security standoffs between mass gathering facilities and potentially non-secure adjacent uses (e.g., parking lots, off-installation property). AT/FP setbacks typically extend outward from the sides and corners of facilities for a prescribed distance (e.g., 45 meters); development is either limited or altogether prohibited in such setback areas. Additional AT/FP standards address other facility design and operational considerations, including internal building layout, facility access and security, site circulation, and emergency mass notification.

SUSTAINABILITY AND GREENING

EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance,* strives to improve efficiency and environmental performance in Federal agencies by setting goals in the areas of energy efficiency, greenhouse gas emission mitigation, water conservation, waste management and recycling, green procurement, pollution prevention, and livable communities, among others. The EO specifies that every Federal organization and agency must make the reduction of greenhouse gas emissions a priority and establishes specific goal-setting, inventorying, and reporting requirements for Federal agencies. This includes an order for each agency to develop, implement, and update a Strategic Sustainability Performance Plan, which should work toward continual improvement of sustainable practices associated with Federal actions.

Sustainable green building and development practices can be recognized through sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality. The U.S. Green Building Council (USGBC)'s Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ is a third-party certification program and the nationally accepted benchmark for the design, construction, and operation of high-performance green buildings (USGBC 2008). LEED rating systems are based on a set number of prerequisites and credits in six major categories: (1) sustainable sites; (2) water efficiency; (3) energy and atmosphere; (4) materials and resources; (5) indoor environmental quality; and (6) innovation and design process (USGBC 2005). In the most recent LEED rating system (version 2.2), buildings can qualify for four levels of certification, in order from highest to lowest: platinum, gold, silver, and certified. Benefits of constructing LEED-certified facilities include lower operating costs and increased asset value, reduced waste sent to landfills, conservation of energy and water, healthier and safer facilities for occupants, reduction of harmful greenhouse gas emissions that incrementally contribute to global climate change, and the demonstration of an owner's commitment to environmental stewardship and social responsibility.

OTHER EXECUTIVE ORDERS

Additional regulatory legislation that potentially applies to the implementation of this proposal includes guidelines promulgated by EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, to ensure that citizens in either of these categories are not disproportionately affected. Potential health and safety impacts that could disproportionately affect children are considered under the guidelines established by EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, acts as additional protection for migratory birds.

INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR ENVIRONMENTAL PLANNING (IICEP)

Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) is a federally mandated process for informing and coordinating with other governmental agencies regarding proposed actions. As detailed in 40 CFR § 1501.4(b), CEQ regulations require intergovernmental notifications prior to making any detailed statement of environmental impacts. Through the IICEP process, the USAF will notify relevant Federal, state, and local agencies and allow them sufficient time to make known their environmental concerns specific to a proposed action. Comments and concerns submitted by these agencies during the IICEP process are subsequently incorporated into the analysis of potential environmental impacts conducted as part of the EA.

APPENDIX B

IICEP CORRESPONDENCE

APPENDIX B
IICEP DISTRIBUTION LIST

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SAMPLE

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Dear Mr. Beley,

On behalf of the US Air Force (USAF), AMEC Earth & Environmental, Inc. (AMEC) has prepared a Draft Environmental Assessment (EA) for land acquisition and construction activities at Peterson Air Force Base (AFB), Colorado. Under the Proposed Action, the USAF proposes the acquisition of approximately 345 acres of land via long-term lease adjacent to Peterson AFB, which include four parcels of land owned by Colorado Springs Airport and El Paso County School District 11. In addition, the USAF proposes relocation of the existing East Gate and associated roadway and eventual development of a parking lot on a portion of the land proposed for acquisition.

In accordance with Executive Order 12372, Intergovernmental Review of Federal Programs, we request your assistance in reviewing the enclosed EA and providing comments. We also request your assistance in advising appropriate agencies of this Proposed Action and soliciting their comments concerning potential environmental impacts. Agencies and individuals listed in Appendix B of the EA have already received this package; if there are additional agencies you feel should review and comment on the proposal, please include them in your distribution of these materials.

Please review this information and respond any written comments by Tuesday, 06 January 2011 to Mr. Keith Gramprie, 21 CES/CEAOP, 580 Goodfellow Street, Peterson AFB, CO 80914-2370.

If you have any questions please feel free to contact Keith Gramprie at 719-556-4136, or via e-mail: keith.gramprie@peterson.af.mil. The document will also be accessible on Peterson AFB's website (http://www.peterson.af.mil/library/publicnotices/index.asp).

Respectfully,

Aaron Goldschmidt, VP
Conservation/Environmental Planning/Natural Resources

Enclosures:
Draft EA

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Notice of Availability
Draft Environmental Assessment for Proposed Property Acquisition and Future Development at Peterson Air Force Base

Interested parties are hereby notified that the US Air Force (USAF) has prepared a Draft Environmental Assessment (EA) for proposed property acquisition (long-term lease) of and future development at Peterson Air Force Base (AFB).

Statutory Authority. This notice is being issued to interested parties in accordance with the National Environmental Policy Act (Public Law [PL] 91-190, 42 US Code 4321 et seq.) as amended in 1975 by PL 94-52 and PL 94-83.

Purpose. The purpose of and need of the Proposed Action is to secure additional real estate assets to provide a buffer against future third-party development encroachment, bolster security conditions by replacing the existing East Gate, and allow for continued efficient land-use and future development at Peterson AFB.

Proposed Action. The USAF proposes to acquire approximately 345 acres of land via long-term lease adjacent to Peterson AFB which include four parcels of land owned by Colorado Springs Airport and El Paso County School District 11. In addition, the Air Force proposes relocation of the existing East Gate and associated roadway and eventual development of a parking lot on a portion of the land proposed for acquisition.

Alternatives. There are three alternatives for the Proposed Action at Peterson AFB; the Preferred Alternative, Alternative 2, and the No-Action Alternative. Under both action alternatives, the USAF would acquire the proposed parcels and eventually develop a new parking lot on a portion of them. Under the Preferred Alternative, the new East Gate and roadway would be constructed on a portion of the property proposed for acquisition, while under Alternative 2, the new East Gate and roadway would be constructed just slightly north of its existing location. Under the No-Action Alternative, the Proposed Action would not be implemented at Peterson AFB.

Comments. Comments on the Draft EA should be directed to Mr. Keith Gramprie, 21 CES/CEAO, 580 Goodfellow Street, Peterson AFB, CO 80914-2370. Electronic copies of the Draft EA are available on Peterson AFB's website (http://www.peterson.af.mil/library/publicnotices/index.asp). Copies of the Draft EA will also be available for review beginning Wednesday, 7 December 2010 at the Ruth Holly Library, 685 North Murray Blvd., Colorado Springs, CO 80915. The comment period is open for 30 days and will end on 6 January 2011. Copies can also be obtained by writing to Peterson AFB at the address above.

Published in The Gazette on December 5, 2010.

STATE OF COLORADO

Bill Ritter, Jr., Governor
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE
AN EQUAL OPPORTUNITY EMPLOYER

Thomas E. Remington, Director
6060 Broadway
Denver, Colorado 80216
Telephone: (303) 297-1192
wildlife.state.co.us

For Wildlife-
For People

December 27, 2010

21 CES/CEAOP
580 Goodfellow Street
Peterson AFB, CO 80914-2370
Attention: Mr. Keith Gramprie

Subject: Draft EA for proposed Colorado Springs Airport, El Paso County School District 11 Property Acquisition & Future Development at Peterson AFB, Colorado

Dear Mr. Gramprie:

The Colorado Division of Wildlife is in receipt of the above referenced Draft EA and is familiar with the site. Based on the location and type of action being proposed the Division agrees with the findings in this Draft EA, and believes impacts to the wildlife resource to be minimal. We appreciate being given the opportunity to comment. Please feel free to contact District Wildlife Manager Aaron Flohrs at 719-227-5282 or via email at aaron.flohrs@state.co.us should you have any questions or require additional information.

Sincerely,

Cory Chick
Area Wildlife Manager

XC: File
SE Regional Office
Aaron Flohrs

DEPARTMENT OF NATURAL RESOURCES, Mike King, Executive Director
WILDLIFE COMMISSION, Tim Glenn, Chair • Robert Streeter, Vice Chair • Mark Smith, Secretary
Members, David R. Brougham • Dennis Buechler • Dorothea Farris • Allan Jones • John Singletary • Dean Wingfield
Ex Officio Members, Mike King and John Stulp

Colorado Springs Airport Comments
PAFB Draft EA for Proposed Property Acquisition and Future Development

Page	Reviewer	Comment
Page 1-9, lines 5-7	N. Ralston	Confirm that all development associated with implementing the Proposed Action or its alternatives will remain clear of protected airspace surfaces associated with runways at COS.
Page 2-1, line 18		"or" instead of "and"?
Page 2-1, line 24		Replace COS with City of Colorado Springs
Page 2-1, line 27		Replace COS with City of Colorado Springs
Page 2-1, line 29		Replace COS with City of Colorado Springs
Page 2-5, line 16		In compliance with 14 CFR Part 77, information related to proposed vertical development, including the use of temporary construction equipment, will be submitted to the Federal Aviation Administration (FAA) for a formal airspace review and determination prior to the commencement of construction activities.
Page 3-19, line 25		The City of Colorado Springs has influenced land uses in the vicinity of the Colorado Springs Airport through the adoption of a Commercial Airport Overlay District (AO-CAD) ordinance that is comprised of Airport Noise, Aircraft Navigation, Accident Potential, and Runway Protection Sub-Zones. The Airport also assisted El Paso County with the preparation and presentation of a similar Overlay District, which has been adopted by the County Board of Commissioners.
Page 3-20, line 4		… north “and east” boundary?
Figure 3-4		Depict A/DACG facility?
Page 3-29, line 21		…“Colorado Springs Airport” air installation.
Page 3-29, lines 21-22		through the adoption of Commercial Airport Overly District ordinances by both the City of Colorado Springs and El Paso County.
Page 3-29, line 27		is "dominated" the right word here? Would "influenced" be better?
Page 3-29, line 27		….”both civilian and military aircraft”
Page 3-30, line 1		150,000 aircraft operations (takeoffs and landings) is a more accurate estimate
Page 3-30, line 11		under the centerline
Page 3-30, line 12		65 to 70 DNL per Figure 3-6?

Page	Reviewer	Comment
Page 3-33, line 19		Mention upcoming CDOT project to construct an interchange at Powers Blvd. and Airport Road to replace the existing congested at-grade signalized intersection?
Page 3-37, line 24		Runway Protection and Accident Potential Zones should probably note difference between definition of RPZ in City/County ordinance vs. official FAA definition
Page 3-37, line 25		combined Runway Protection and Accident Potential Zones ends of “each” runway
Page 3-37, line 26		with exception of extreme NE corner of RPZ for Runway 17L
Page 3-39, line 1		May want to reference information about the Airport Business Park presented in Section 5
Page 3-39, line 12		Verify source is City AO-CAD Commercial Airport Overlay District, Ordinance 06-89. Also note that County's Commercial Airport Overlay District Land Use table (Table 4-7) is similar but slightly different.
Page 3-39, line 13		Replace “critical” with “restrictive”?
Page 3-40, line 6		Once effective, no new structures should penetrate this airspace surface.
Page 3-40, line 7		“Peterson AFB is currently in compliance with OEI OIS standards.” suggest removing this sentence
Page 4-16, line 25		Replace “not conflict” with “be compatible with”
Page 4-32, line 5		Suggest providing definition of "Clear Zone"
Page 4-32, line 10		Also, in compliance with 14 CFR Part 77, information related to proposed vertical development, including the use of temporary construction equipment, will be submitted to the Federal Aviation Administration (FAA) for a formal airspace review and determination prior to the commencement of construction activities.
Page 4-32, line 26		Suggest defining "imaginary surfaces"
Page 4-32, line 28		Also, in compliance with 14 CFR Part 77, information related to proposed vertical development, including the use of temporary construction equipment, will be submitted to the Federal Aviation Administration (FAA) for a formal airspace review and determination prior to the

Page	Reviewer	Comment
		commencement of construction activities.
Page 4-33, lines 2-3	K. Andrews	It appears this text is leftover from a previous EA.
Page 5-1, line 16		"northeast" should say "southeast"
Page 5-1, lines 20-22	N. Ralston	"The land adjacent to the Main Gate is currently master planned and zoned for commercial and light industrial use by Colorado Springs Airport and is sparsely developed." confirm this is correct?
Page 5-2, line 2		1,400 acres
Page 5-2, line 4		property
Page 5-2, line 5		500 acres
Page 5-2, line 9		Update; the A/DACG facility has been constructed and is operational.
Page 5-2, line 10		The Airport Business Park already has approximately 200,000 sf of Class A office space occupied by anchor tenants Aerospace Corporation and Northrop Grumman.
Page 6-3, line 25		Also, in compliance with 14 CFR Part 77, information related to proposed vertical development, including the use of temporary construction equipment, will be submitted to the Federal Aviation Administration (FAA) for a formal airspace review and determination prior to the commencement of construction activities.
Page 8-1		City of Colorado Springs. 2001 – Outdated - Please reference the current Commercial Airport Overlay District ordinance (below)
Page 8-2		Also reference El Paso County Commercial Airport Overlay District (Section 4.3.1 of Land Development Code)

HISTORY Colorado

December 16, 2010

Mr. Keith Gramprie
21 CES/CEAOP
580 Goodfellow Street
Peterson AFB CO 80914-2370

Re: Proposed Property Acquisition and Future Development at Peterson Air Force Base, CO (CHS #58560)

Dear Mr. Gramprie:

Thank you for your correspondence dated December 6, 2010 and received by our office on December 7, 2010 regarding the review of the above-mentioned project under Section 106 of the National Historic Preservation Act (Section 106).

After review of the provided information, we are unable to fully comment under Section 106. In order to better consult under Section 106, we recommend providing information in regards to the Area of Potential Effects (APE), as stipulated in 36 CFR 800.4(a)(1). Also we recommend consulting with our office in identifying other consulting parties, as stipulated in 36 CFR 800.3(f). We also recommend that correspondence be sent to our office directly from Peterson AFB.

We request being involved in the consultation process with the local government, which as stipulated in 36 CFR 800.3 is required to be notified of the undertaking, and with other consulting parties. Additional information provided by the local government or consulting parties might cause our office to re-evaluate our eligibility and potential effect findings.

Please note that our compliance letter does not end the 30-day review period provided to other consulting parties. If we may be of further assistance, please contact Amy Pallante, our Section 106 Compliance Manager, at (303) 866-4678.

Sincerely,

Edward C. Nichols
State Historic Preservation Officer

cc: Wanda Burns/Peterson AFB

DEPARTMENT OF THE AIR FORCE
21ST SPACE WING (AFSPC)

28 January 2011

Mr. Ed Nichols
State Historic Preservation Officer
Colorado History Museum
1300 Broadway
Denver, Colorado 80203-2137

Subject: Proposed Property Acquisition and Future Development at Peterson Air Force Base, Colorado (CHS #58560)

Dear Mr. Nichols,

In response to your letter dated 16 December 2010, Peterson Air Force Base (AFB) is pleased to provide the requested additional information for further review of the above-mentioned project under Section 106 of the National Historic Preservation Act (NHPA). Two maps have been developed to accompany this letter which depict identified cultural resources, the Area of Potential Affect (APE), and the Proposed Action.

Under the Proposed Action, the US Air Force (USAF) proposes the acquisition of approximately 345 acres of land adjacent to Peterson AFB via long-term lease, which include four parcels of land owned by Colorado Springs Airport and El Paso County School District 11. For this project, the APE includes these four parcels totaling approximately 345 acres. In addition, the USAF proposes relocation of the existing East Gate and associated roadway, and eventual development of a parking lot on a portion of the land proposed for acquisition. The Proposed Action is needed to secure additional real estate assets to provide a buffer against encroachment, bolster security conditions by replacing the existing East Gate, and allow for continued efficient land-use and future development at Peterson AFB.

In July 2010, Peterson AFB prepared a Class III cultural resources survey for the proposed land acquisition parcels. One archaeological site with three loci was discovered during investigations (Site 5EP6394; see Figure 1). The site is interpreted in the survey as the remains of a farmstead or outlying facilities related to a farmstead or ranch headquarters located elsewhere dating to the mid-twentieth century. The survey recommends that the site is of unknown eligibility for inclusion in the National Register of Historic Places (NRHP). However, regardless of its ultimate eligibility determination, Site 5EP6394 is

located approximately 0.25 miles northeast of the location and construction staging area for the proposed Command Complex Shuttle Parking Lot and would not be impacted by proposed construction (see Figure 2). In addition, Site 5EP6394 is located at a slightly higher elevation than the proposed parking lot and all other Proposed Action components; therefore, any potential runoff occurring during implementation if the Proposed Action would not impact the identified site. Further, the site is located in a portion of the proposed land acquisition parcel that would remain undeveloped to provide a buffer against future encroachment from off-base development. As such, the Proposed Action is expected to have no effect on historic properties.

In the unlikely event that cultural resources are encountered within the project area during ground-disturbing activities, all work in the area would stop until a qualified archaeologist had documented and evaluated the resource for eligibility for the NRHP, in compliance with Section 106 of the NHPA.

Based on this analysis, the USAF seeks your concurrence with a finding of "No Historic Properties Affected" (36 CFR §800.4) by the proposed undertaking. Please review this information and respond with written comments by Friday, 18 February 2011. If you have any questions please feel free to contact me at 719-556-4136, or via e-mail: keith.gramprie@peterson.af.mil.

Respectfully,

Keith Gramprie
21 CES/CEAOP
580 Goodfellow Street
Peterson AFB, Colorado 80914-2370
719-556-4136

Enclosures:
Figure 1. Location of Site
Figure 2. Area of Potential Effect

HISTORY Colorado

February 16, 2011

Mr. Keith Gramprie
21 CES/CEAOP
580 Goodfellow Street
Peterson AFB CO 80914-2370

Re: Proposed Property Acquisition and Future Development at Peterson Air Force Base, CO (CHS #58560)

Dear Mr. Gramprie:

Thank you for your additional correspondence dated January 28, 2011and received by our office on February 7, 2011 regarding the review of the above-mentioned project under Section 106 of the National Historic Preservation Act (Section 106).

After review of the provided information, we do not object to the Area of Potential Effects (APE) as described in your letter. We also concur with the recommended finding of *no historic properties affected* [36 CFR 800.4(d)(1)] under Section 106 for the proposed project.

If unidentified archaeological resources are discovered during construction, work must be interrupted until the resources have been evaluated in terms of the National Register criteria, 36 CRF 60.4, in consultation with this office.

We request being involved in the consultation process with the local government, which as stipulated in 36 CFR 800.3 is required to be notified of the undertaking, and with other consulting parties. Additional information provided by the local government or consulting parties might cause our office to re-evaluate our eligibility and potential effect findings.

Please note that our compliance letter does not end the 30-day review period provided to other consulting parties. If we may be of further assistance, please contact Amy Pallante, our Section 106 Compliance Manager, at (303) 866-4678.

Sincerely,

FILE COPY

Edward C. Nichols
State Historic Preservation Officer

APPENDIX C

AIR EMISSION FACTORS AND ASSUMPTIONS

APPENDIX C
AIR EMISSION FACTORS AND ASSUMPTIONS

C.1 FUGITIVE DUST EMISSIONS ASSOCIATED WITH CONSTRUCTION ACTIVITIES

Table C-1. Disturbed Land Area from Initial Phase of Construction-Related Activities

Construction Operation	Proposed Action (Alternative 1)	Alternative 2
	Area	Area
Grading/Leveling/ Staging		
East Gate	465,000 sf	330,000 sf
Parking Lot- Phase I	850,000 sf	850,000 sf
Demolition		
Gate House	790 sf	790 sf
E. Stewart Street	80,000 sf	80,000 sf
Total area	**1,395,790 sf**	**1,260,790 sf**
Total area	**32 acres**	**28.9 acres**

Table C-2. Disturbed Land Area from Construction-Related Activities Associated with Phase II of the Command Complex Parking Lot

Construction Operation	Proposed Action (Alternative 1)	Alternative 2
	Area	Area
Grading/Leveling/ Staging		
Parking Lot- Phase II	450,000 sf	450,000 sf
Total area	**450,000 sf**	**450,000 sf**
Total area	**10.330 acres**	**10.330 acres**

C.2 COMBUSTION EMISSIONS ASSOCIATED WITH CONSTRUCTION ACTIVITIES

Table C-3. Construction-Related Combustion Emission Factors Associated with Construction of the New East Gate and Demolition of the Existing Gatehouse and E. Stewart Street- Phase I

Equipment	Days	Hours of Operation	Emission Factors (lbs/hr)					
			CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	ROG
grader	180	1,800	0.567	1.623	0.084	0.077	0.276	0.148
loader	180	1,800	0.424	0.858	0.086	0.079	0.115	0.132
bobcat	180	1,800	0.268	0.508	0.054	0.050	0.0	0.09
dozer	180	1,800	1.209	3.037	0.123	0.113	0.453	0.232
paving equipment	180	1,800	0.419	0.961	0.069	0.063	0.144	0.117
paver	180	1,800	0.449	0.894	0.067	0.062	0.165	0.12
excavator	180	1,800	1.300	4.600	0.320	0.310	0.740	0.340

ROG = reactive organic gasses
Source: USEPA 1995

Construction Assumptions: 9 month construction period, 4 weeks/month, 5 work days per week, 10 hours per work day; 1,800 hours of operation total.

Table C-4. Construction-Related Combustion Emission Factors Associated with the Command Complex Shuttle Parking Lot- Phase I

Equipment	Days	Hours of Operation	Emission Factors (lbs/hr)					
			CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	ROG
grader	120	1,200	0.567	1.623	0.084	0.077	0.276	0.148
loader	120	1,200	0.424	0.858	0.086	0.079	0.115	0.132
bobcat	120	1,200	0.268	0.508	0.054	0.050	0.0	0.09
dozer	120	1,200	1.209	3.037	0.123	0.113	0.453	0.232
paving equipment	120	1,200	0.419	0.961	0.069	0.063	0.144	0.117
paver	120	1,200	0.449	0.894	0.067	0.062	0.165	0.12
excavator	120	1,200	1.300	4.600	0.320	0.310	0.740	0.340

ROG = reactive organic gasses
Source: USEPA 1995

Construction Assumptions: 6 month construction period, 4 weeks/month, 5 work days per week, 10 hours per work day; 1,200 hours of operation total.

Table C-5. Construction-Related Combustion Emission Factors Associated with the Command Complex Shuttle Parking Lot- Phase II

Equipment	Days	Hours of Operation	Emission Factors (lbs/hr)					
			CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	ROG
grader	120	1,200	0.567	1.623	0.084	0.077	0.276	0.148
loader	120	1,200	0.424	0.858	0.086	0.079	0.115	0.132
bobcat	120	1,200	0.268	0.508	0.054	0.050	0.0	0.09
dozer	120	1,200	1.209	3.037	0.123	0.113	0.453	0.232
paving equipment	120	1,200	0.419	0.961	0.069	0.063	0.144	0.117
paver	120	1,200	0.449	0.894	0.067	0.062	0.165	0.12
excavator	120	1,200	1.300	4.600	0.320	0.310	0.740	0.340

ROG = reactive organic gasses
Source: USEPA 1995

Construction Assumptions: 6 month construction period, 4 weeks/month, 5 work days per week, 10 hours per work day; 1,200 hours of operation total.