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Air Force Center for Engineering and the Environment

FINAL
Cannon AFB Housing Privatization Environmental Assessment

AFCEE Contract No.

FA8903-08-D-8773-0023

July 2009

Submitted by:

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14. ABSTRACT

Pursuant to the Military Housing Privatization Initiative, the U.S. Air Force proposes to convey its MFH units, grant leases of land, and transfer responsibility for providing housing to a private developer at Cannon AFB. Under the Proposed Action Cannon AFB would convey 953 existing MFH units to a private developer. During the initial development period of five years, the Air Force expects the private developer to demolish 341 existing units, perform major renovation of 250 units, repair 362 units and construct 422 new units, for a total end state of 1,034 housing units on Cannon AFB. The numbers related to renovation versus demolition and construction are preliminary and subject to change during the transaction process. This EA has been prepared to evaluate the potential effects of the Proposed Action and alternatives, including the No Action Alternative, and to aid in determining whether an Environmental Impact Statement is needed. Resource categories that are analyzed in detail in the EA are noise, transportation, utilities, water resources, hazardous materials and wastes, air quality, and socioeconomics and environmental justice. The Proposed Action would have no impact on land use, biological resources, cultural resources Environmental Restoration Program sites, and aesthetics. There would be minimal shortterm impacts related to demolition, construction and renovation on noise, transportation water resources, and hazardous waste generation. The same aspects of the Proposed Action would have adverse, but not significant impacts on solid waste generation and air quality. The socioeconomics of the Proposed Action would benefit the economy of the surrounding area. Based on the nature of activities associated with the privatization of the MFH units and the associated demolition, construction, and renovation activities, the Air Force has determined that the impacts of the Proposed Action would not be significant and no Environmental Impact Statement is needed.

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CDRL #	VERSION	DESCRIPTION OF DELIVERABLE
A001 A007	Final	Final Cannon AFB Housing Privatization Environmental Assessment

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REMARKS:

FINDING OF NO SIGNIFICANT IMPACT
PROPOSED PRIVATIZATION OF MILITARY FAMILY HOUSING AT CANNON AIR FORCE BASE, NEW MEXICO

Agency

U.S. Air Force, Special Operations Command, 27th Special Operations Wing

Background

The attached Environmental Assessment (EA) analyzes the potential impacts resulting from the privatization of military family housing (MFH) at Cannon Air Force Base (AFB), Curry County, New Mexico. The EA was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (Title 42 United States [U.S.] Code [U.S.C.] 4321, et seq.), the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA at Title 40 of the Code of Federal Regulations Sections 1500-1508 (40 CFR 1500-1508) and Air Force policy and procedures at 32 CFR Part 989.

Proposed Action and Alternatives

The Air Force intends to enter into a 50-year land-lease, real-estate agreement with a private developer (the Project Owner or PO) where the Government would convey all existing accompanied military housing and associated improvements to the PO. The PO would plan, design, develop, renovate, demolish, construct, own, operate, maintain, and manage all related assets. The PO would secure all necessary financing and provide required equity. In return, the PO would be entitled to collect rental income based on the military member's Basic Allowance for Housing (BAH).

Cannon AFB plans to convey 953 existing MFH units to a PO in this transaction. During the initial development period of five years, the Air Force expects the PO to demolish 341 existing units, perform major renovation of 250 units, repair 362 units and construct 422 new units, for a total end state of 1,034 housing units on Cannon AFB. This number is based on projections made in the 2008 Housing Requirements and Marketing Analysis. The numbers related to renovation versus demolition and construction are preliminary and subject to change during the transaction process. Three alternatives to the Proposed Action were analyzed early in the process: Private Sector Reliance, Partial Privatization and No Action; however, of these three alternatives, only the No Action Alternative was determined to be reasonable for detailed analysis.

Summary of Environmental Consequences

The EA focused on evaluating the potential environmental impacts to areas and resources within the region of influence of the Proposed Action. No potential impacts were identified for the following resource areas, which therefore were not evaluated in detail in the EA: land use, biological resources, cultural resources, Environmental Restoration Program sites, and aesthetics. A summary of impacts to potentially affected resources follows.

Noise: There would be short-term, minor impacts from construction activities within the project area (the MFH areas). New units constructed within the 65- to 70-decibel contour for aircraft noise require noise level reduction measures 5 to 15 decibels beyond standard construction.

Transportation: Short-term, minor impacts would occur to traffic entering and leaving the base from the transport of construction equipment, supplies and debris.

Utilities: There would be no effect on utilities because water and wastewater would still be provided by the base.

Solid Wastes: There would be a minor impact on solid waste disposal due to the amount of debris generated from demolition, renovation, and construction.

Water Resources: The impact on water resources would be negligible if best management practices are used at construction sites for preventing sediment-laden stormwater runoff from leaving the site.

Hazardous Materials and Hazardous Waste: A short-term, minor potential for adverse impacts would exist from handling hazardous materials and wastes during construction. Contractors would be required to follow proper storage and handling procedures for the chemicals used during construction.

Air Quality: The Air Quality Control District encompassing Curry County and Cannon AFB is in attainment for all criteria pollutants. Construction emissions would not cause the area to exceed National Ambient Air Quality Standards.

Socioeconomics and Environmental Justice: Neither Curry County, nor the census block groups including and surrounding Cannon AFB, have concentrated minority or poverty populations; therefore, environmental justice is not an issue. The $130 million estimated expenditure for the Proposed Action would increase sales volume in the region more than 10 percent in the short-term. The potential growth in school population would be within district size tolerations.

Public Notice

NEPA regulations at 40 CFR 1506.6 and 32 CFR 989.24 require that the public be informed of the availability of the EA before approval of the Finding of No Significant Impact (FONSI). A Notice of Availability was published in the *Clovis News Journal* and the *Portales News Tribune* on May 22 and 24, 2009. The public comment period ended on June 22, 2009.

Finding of No Significant Impact

Based on my review of the facts and analysis contained in this EA, which are incorporated herein, I conclude the implementation of the Proposed Action will not have a significant impact on the environment either by itself or considering cumulative impacts. Accordingly, the requirements of NEPA, regulations promulgated by the President's Council on Environmental Quality at 40 CFR 1500-1508, and the U.S. Air Force implementing regulation at 32 CFR 989 are fulfilled and an environmental impact statement is not required.

18 Sept 09

STEPHEN A. CLARK, Colonel, USAF
Commander, 27th Special Operations Wing

Date

COVER SHEET

ENVIRONMENTAL ASSESSMENT
OF THE PRIVATIZATION OF MILITARY FAMILY HOUSING
AT CANNON AIR FORCE BASE, NEW MEXICO

Responsible Agency: U.S. Air Force, Special Operations Command, 27th Special Operations Wing

Proposed Action: Privatization of Military Family Housing (MFH) at Cannon AFB, NM

Written Comments and Inquiries regarding this Document should be directed to:
Ms. Marianne Long, 27 SOCES/CEAC, 506 Ingram Blvd, Cannon AFB, NM 88103

Report Designation: Environmental Assessment (EA)

Abstract: Pursuant to the Military Housing Privatization Initiative, the U.S. Air Force proposes to convey its MFH units, grant leases of land, and transfer responsibility for providing housing to a private developer at Cannon AFB. Under the Proposed Action, Cannon AFB would convey 953 existing MFH units to a private developer. During the initial development period of five years, the Air Force expects the private developer to demolish 341 existing units, perform major renovation of 250 units, repair 362 units and construct 422 new units, for a total end state of 1,034 housing units on Cannon AFB. The numbers related to renovation versus demolition and construction are preliminary and subject to change during the transaction process.

This EA has been prepared to evaluate the potential effects of the Proposed Action and alternatives, including the No Action Alternative, and to aid in determining whether an Environmental Impact Statement is needed. Resource categories that are analyzed in detail in the EA are noise, transportation, utilities, water resources, hazardous materials and wastes, air quality, and socioeconomics and environmental justice. The Proposed Action would have no impact on land use, biological resources, cultural resources, Environmental Restoration Program sites, and aesthetics. There would be minimal short-term impacts related to demolition, construction and renovation on noise, transportation, water resources, and hazardous waste generation. The same aspects of the Proposed Action would have adverse, but not significant impacts on solid waste generation and air quality. The socioeconomics of the Proposed Action would benefit the economy of the surrounding area. Based on the nature of activities associated with the privatization of the MFH units and the associated demolition, construction, and renovation activities, the Air Force has determined that the impacts of the Proposed Action would not be significant and no Environmental Impact Statement is needed.

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LIST OF ACRONYMS AND ABBREVIATIONS

AAQS	Ambient Air Quality Standards
ACC	Air Combat Command
ACM	Asbestos-containing Material
AFB	Air Force Base
AFI	Air Force Instruction
AFSOC	Air Force Special Operations Command
AICUZ	Air Installation Compatible Use Zone
AOC	Area of Concern
BAH	Basic Allowance for Housing
BBER	Bureau of Business and Economic Research (University of New Mexico)
BEA	Bureau of Economic Analysis
BLS	Bureau of Labor Statistics
BMP	Best Management Practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CIP	Capital Improvement Plan
CWA	Clean Water Act
dB	Decibels
dBA	A-weighted Decibels
DNL	Day-Night Noise Levels
DOD	Department of Defense
EA	Environmental Assessment
EBS	Environmental Baseline Survey
EIAP	Environmental Impact Analysis Process
EIFS	Economic Impact Forecasting System
EIS	Environmental Impact Statement
EO	Executive Order
ERP	Environmental Restoration Program
FW	Fighter Wing
HAP	Hazardous Air Pollutant
HRMA	Housing Requirements and Marketing Analysis
IDP	Initial Development Period
LBP	Lead-based Paint
LOS	Level of Service
$\mu g/m^3$	Micrograms per Cubic Meter
MFH	Military Family Housing
MHPI	Military Housing Privatization Initiative
MILCON	Military Construction
MGD	Million Gallons per Day
mg/m^3	Milligrams per Cubic Meter
MVA	Millivolt-Ampere
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act

LIST OF ACRONYMS AND ABBREVIATIONS

NLR	Noise Level Reduction
NMAC	New Mexico Administrative Code
NMDOT	New Mexico Department of Transportation
NMED	New Mexico Environmental Department
NMPED	New Mexico Public Education Department
NPDES	National Pollutant Discharge Elimination System
PM_{10}	Particulate Matter, 10 Micrometers
$PM_{2.5}$	Particulate Matter, 2.5 Micrometers
PO	Project Owner
ppm	Parts per Million
PSD	Prevention of Significant Deterioration
PVC	Polyvinyl Chloride
RCRA	Resource Conservation and Recovery Act
ROI	Region of Influence
SH	State Highway
SIP	State Implementation Plan
TPY	Ton(s) per Year
U.S.	United States
USACE	United States Army Corps of Engineers
USAF	United States Air Force
U.S.C.	United States Code
USCB	United States Census Bureau
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VOC	Volatile Organic Compound
WWTP	Wastewater Treatment Plant

1.0 PURPOSE AND NEED FOR THE ACTION

1.1 INTRODUCTION

This environmental assessment (EA) evaluates the potential environmental impacts of activities associated with privatization of the military family housing (MFH) at Cannon Air Force Base (AFB), New Mexico. This document has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (Title 42 United States [U.S.] Code [U.S.C.] 4321, et seq.), the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA at Title 40 of the Code of Federal Regulations (CFR) Sections 1500-1508 (40 CFR 1500-1508) and Air Force policy and procedures (32 CFR Part 989).

1.2 PURPOSE AND NEED

Congress established the Military Housing Privatization Initiative (MHPI) in the National Defense Authorization Act for Fiscal Year 1996 (Public Law 104-106) as a tool to help the Department of Defense (DOD) improve the quality of life for its service members by improving the condition of their housing. Pursuant to the MHPI, the Air Force proposes to convey the MFH units at Cannon AFB, including infrastructure and utilities, to a private real estate developer along with the responsibility for providing housing and ancillary supporting facilities for military personnel at Cannon AFB. The purpose of the proposed action is to provide MFH at Cannon AFB that meets Air Force housing standards and the ongoing and projected housing requirements for the installation. The action is needed to provide modern and efficient housing for military personnel and their dependents stationed at Cannon AFB in accordance with Air Force guidelines for quality of life and floor space requirements. The existing housing, constructed in the 1950s through the early 1970s, is significantly below current standards.

1.3 LOCATION OF THE PROPOSED ACTION

Cannon AFB is located in rural Curry County, New Mexico, approximately 7 miles west of the city of Clovis and 12 miles north of the city of Portales (**Figure 1-1**). The base encompasses 3,789 acres in the high plains of eastern New Mexico and is easily accessible from U.S. Highway 60-84, which runs along the northern installation boundary.

The first housing units, known as Mercury, were constructed on Cannon AFB in 1956 with the exception of one single-family Mercury house which was built in 1994. The Gemini housing units were built in 1966. Only 294 Mercury and 48 Gemini will remain standing after a demolition project is completed in 2009. The Mercury and Gemini housing units are located in the recently named “Joe Cannon Estates” housing area. Joe Cannon Estates encompasses approximately 120 acres of base land designated for MFH. In 1971, the Air Force purchased 70 acres, and the City of Clovis donated 239 acres, of undeveloped agricultural land north of Highway 60-84, where the Air Force built 250 MFH units known as Chavez Manor. In 1994, the Air Force built 361 additional housing units on this property and called them Chavez Manor West (Air Combat Command [ACC] 2003).

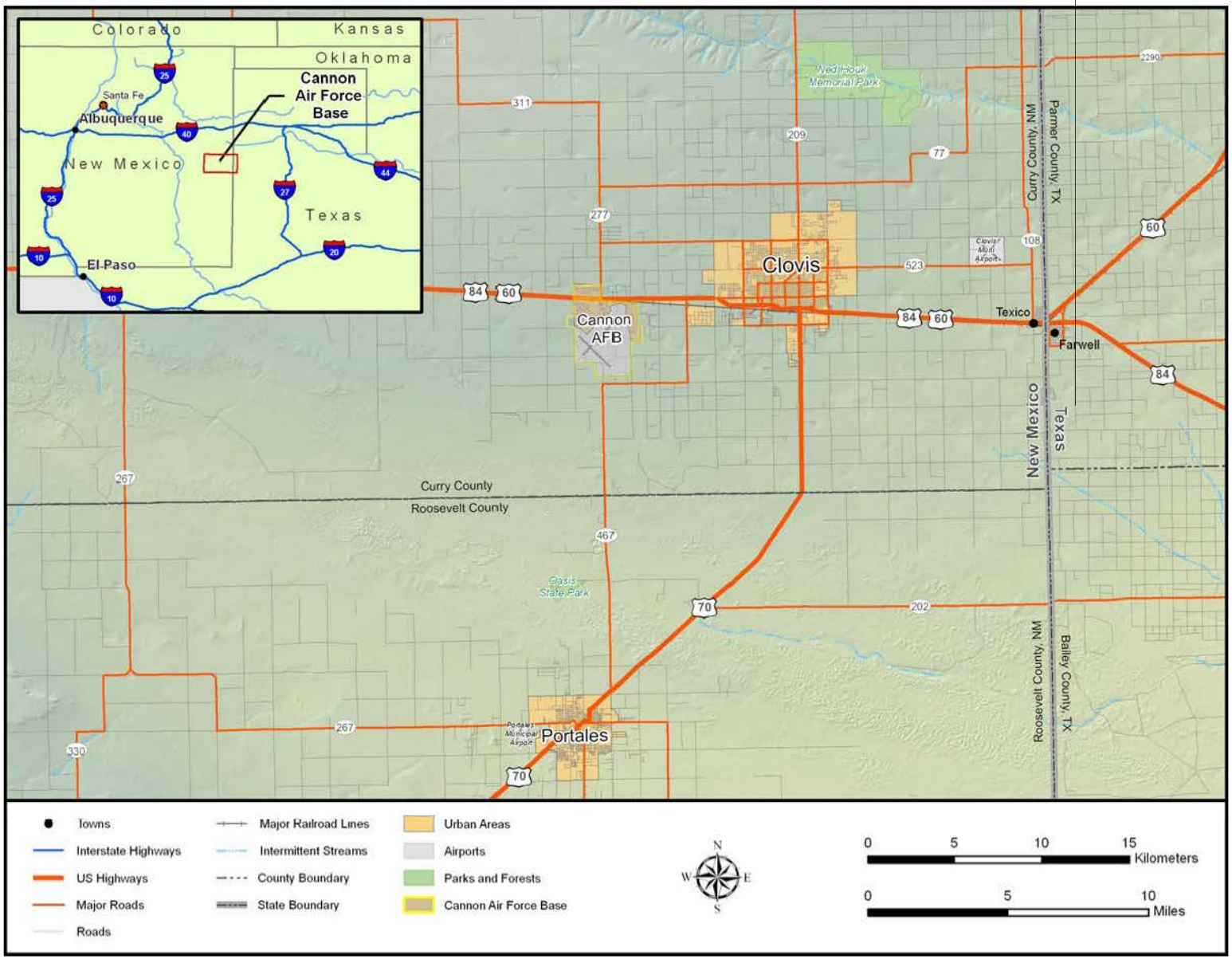

Figure 1-1. Cannon Air Force Base Location Map.

1.4 REGULATORY COMPLIANCE

NEPA requires federal agencies to consider environmental consequences in their decision-making process. CEQ regulations mandate that all federal agencies use a systematic interdisciplinary approach to environmental planning and the evaluation of actions that might affect the environment. The Air Force Environmental Impact Analysis Process (EIAP) is accomplished through adherence to CEQ regulations and 32 CFR 989. These federal regulations establish both the administrative process and substantive scope of the environmental impact evaluation designed to ensure that deciding authorities have a proper understanding of the potential environmental consequences of a contemplated course of action.

In addition to NEPA and the CEQ and EIAP regulations, this EA considers all applicable laws, regulations, and Executive Orders (EO) including but not limited to, the following:

- Clean Air Act (CAA)
- Clean Water Act (CWA)
- EO 11988, *Floodplain Management*
- EO 11990, *Protection of Wetlands*
- Endangered Species Act
- Migratory Bird Treaty Act
- Resource Conservation and Recovery Act
- Comprehensive Environmental Response, Compensation, and Liability Act
- Toxic Substances Control Act
- EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*
- EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*
- National Historic Preservation Act

1.5 PUBLIC AND AGENCY INVOLVEMENT

To facilitate public involvement in this project, the Air Force prepared and issued a Notice of Availability for the draft version of the EA (**Appendix A**). Copies of the Draft EA were placed in the Clovis and Portales Public Libraries for public review. A public notice was published in the Portales News Tribune and Clovis News Journal on May 22 and May 24, 2009, to disclose the completion of the Draft EA. The notice served to invite public comments during a 30-day public review period that ended June 22, 2009. No public or outside agency comments were received.

1.6 SCOPE OF THE ENVIRONMENTAL REVIEW

This EA identifies, describes, and evaluates the potential environmental impacts that are associated with MFH privatization such as the conveyance of 953 existing MFH units and the demolition, renovation, repair, and construction needed to provide an end-state of 1,034 units that would meet the need to provide modern and efficient housing for military personnel and their dependents stationed at Cannon AFB. The potential environmental effects of taking no action are also described. As appropriate, the affected environment and environmental consequences of the action may be described in terms of a regional overview or a site-specific description.

Resources that have a potential for impact were considered in detail in order to provide the Air Force decision makers with sufficient evidence and analysis to determine whether or not additional analysis is required pursuant to 40 CFR Part 1508.9. The resources analyzed in more detail are noise, transportation, utilities, solid wastes, water resources, hazardous materials or hazardous waste management, air quality, and socioeconomics and environmental justice. The affected environment and the potential environmental consequences relative to these resources are described in **Sections 3.0** and **4.0**, respectively.

Initial analysis indicates that the Proposed Action and Alternatives would not result in short- or long-term impacts to land use, biological resources, cultural resources, Environmental Restoration Program (ERP) sites, and aesthetics. The reasons for not addressing these resources are briefly discussed in the following paragraphs.

Land Use—The land that will be included in the proposed action is currently designated for use as housing, outdoor recreation or open space. The recreational areas and open spaces are adjacent to existing housing areas and could be used for additional housing by a developer; therefore, there would be no land use conflicts resulting from the Proposed Action or Alternatives.

Biological Resources—Resident threatened or endangered species were not found on Cannon AFB during 2008 surveys (Essex 2009). The northwest section of Cannon AFB, which includes MFH, is the most developed area of the base. The vegetation in the MFH areas consists predominantly of cultivated landscape plants. There are some areas of semi-improved/mowed habitat generally consisting of lawn grasses and weeds, which are kept mowed to facilitate base training and enhance base aesthetics. Although some migratory threatened or endangered species have been spotted on base, it is unlikely they would find the housing privatization parcels suitable habitat. Due to the history of land use, dominance of exotic plant species, and the isolation and small size of remaining habitat patches, habitat quality at Cannon AFB is considered low (Air Force Special Operations Command [AFSOC] 2007).

Cultural Resources—There are no cultural or historic resources within the MFH areas. Only one feature on Cannon AFB, the Flagpole at Building 1, has been identified as potentially eligible for listing on the National Register of Historic Places; however, this structure would not be affected by the Proposed Action (AFSOC 2008).

Environmental Restoration Program (ERP)—There are no ERP sites in the MFH areas. During site inspections initiated in 1998, two areas of concern (AOCs) were identified in Joe Cannon Estates from aerial photographs taken during the 1950s. These photos showed disturbance in these areas, possibly associated with landfilling activities. Subsequent investigations and risk assessments determined that there are no health risks associated with these sites. In February 2006, Cannon AFB received from the New Mexico Environment Department (NMED) a Class 3 Permit Modification for No Further Action Status for 32 Solid Waste Management Units or AOCs, including the two AOCs in the MFH area (Pelfrey 2008).

Aesthetics—The Air Force goal of the MHPI is to "provide military families access to safe, quality, affordable and well-maintained housing in a military community where they will *choose* to live;" therefore, the potential effects on aesthetics would be beneficial.

1.7 ORGANIZATION OF THIS DOCUMENT

The EA is organized into seven chapters. **Chapter 1** provides the purpose of and need for the Proposed Action. **Chapter 2** contains a description of the Proposed Action and Alternatives. **Chapter 3** contains a general description of the biophysical resources and baseline conditions that could potentially be affected by the Proposed Action or Alternatives. **Chapter 4** presents an analysis of the potential environmental consequences of implementing the Proposed Action or Alternatives. **Chapter 5** includes an analysis of the potential cumulative impacts at Cannon AFB. **Chapter 6** identifies the agency personnel contacted for the preparation of this EA. **Chapter 7** lists the preparers of the document. **Chapter 8** lists the references used in the preparation of the document. **Appendix A** contains the Notice of Availability. **Appendix B** presents the Air Emissions Calculations.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 ALTERNATIVE SELECTION CRITERIA

The Air Force goal of the Military Housing Privatization Initiative (MHPI) is to "provide military families access to safe, quality, affordable and well-maintained housing in a military community where they will *choose* to live." Due to the current conditions of the housing at Cannon Air Force Base (AFB), meeting this goal would involve the renovation and replacement of existing military family housing (MFH). The alternatives developed to address this goal must also satisfy additional criteria:

- Comply with the intent of MHPI congressional legislation.
- Meet the housing requirement identified in the 2008 Housing Requirements and Market Analysis (HRMA) (as amended; 1,034 units).
- Comply with the Department of Defense (DOD) guidance to revitalize, divest through privatization, or demolish inadequate housing.
- Provide for the effective management and operation of existing, renovated, and new MFH units and ancillary supporting facilities on a long-term basis.
- Provide the highest economic benefit, cost savings, and efficiency.

2.2 PROPOSED ACTION

Under the Proposed Action, the Air Force and a private developer (the Project Owner or PO) enter into a 50-year land-lease, real-estate agreement where the Government conveys all existing housing and associated improvements to the PO, and the PO plans, designs, develops, renovates, demolishes, constructs, owns, operates, maintains, and manages all related assets. The PO is required to secure all necessary financing and provide required equity. In return, the PO is entitled to collect rental income based on the military member's Basic Allowance for Housing (BAH).

Cannon AFB plans to convey 953 existing MFH units to a PO in this transaction. During the initial development period of five years, the Air Force expects the PO to demolish 341 existing units, perform major renovation of 250 units, repair 362 units, and construct 422 new units for a total end state of 1,034 housing units on Cannon AFB. This number is based on projections made in the 2008 HRMA for Cannon AFB. Two of the assumptions in the HRMA published on October 3, 2008 were amended on October 6, 2008, and the numbers in this environmental assessment (EA) reflect those changes.

The numbers related to renovation versus demolition and construction are preliminary and subject to change during the transaction process. Specific designs for renovated or replaced housing and layout plans for the MFH areas have not been finalized. Under the MHPI, housing units must conform to similar housing units in the local community, allowing DOD to use commercial specifications, standards and construction practices rather than the traditional rigid

requirements in military construction (MILCON) projects. The hope is this flexibility will streamline the process making houses available faster than traditional methods.

In addition to the housing units, the PO would also be required to provide ancillary support facilities, such as a community center, outdoor recreational areas, a housing maintenance facility and a housing management office, if required. Infrastructure such as roads, parking areas, sidewalks, street lighting, utilities, and storm water drainage systems within the MFH areas would be the responsibility of the PO. The PO may decide to modify some of the existing road layouts within the MFH areas; however, due to the existing infrastructure such as water and gas lines, it is unlikely that large-scale modifications would be made. The PO would need to install roads and other infrastructure in Parcel F, an open field with no current housing on it.

New MFH and ancillary supporting facilities would need to adhere to the *Uniform Federal Accessibility Standards* and the *Americans with Disabilities Act Accessibility Guidelines* pursuant to the Architectural Barriers Act of 1968, Rehabilitation Act of 1973, and Americans with Disabilities Act of 1990. These standards require at least five percent of new MFH units be designed and built to be accessible, or easily modifiable for access, by persons with physical disabilities.

The land to be leased to the PO has been divided into seven parcels for purposes of the privatization project. These parcels are shown on **Figure 2-1** and include:

- **Parcel A** (Joe Cannon Estates North) consists of approximately 17 acres bounded to the southeast by Hiroshima Street, to the southwest by Quadrant Avenue, to the northeast by Arcadia Avenue, to the west by the Cannon AFB property line on County Road R and by a parcel boundary line to the north extending from County Road R to the intersection of Anzio Court and Arcadia Avenue.
- **Parcel B** (Joe Cannon Estates South) consists of approximately 82 acres bounded to the west by the Cannon AFB property line on County Road R; to the north by Parcel A and Hiroshima Street; to the northeast and east by Arcadia Avenue; to the south and southeast by a parcel boundary located south and southeast of existing units on Kasserine Street, Point Blank Street, and Pantelleria Street; and to the southwest by a parcel boundary located behind all units on loop streets located off of Quadrant Avenue.
- **Parcel C** (Joe Cannon Estates East) consists of approximately 21 acres bounded to the west by Arcadia Avenue, to the north by Hiroshima Avenue, to the east by a parcel boundary line located approximately midway between Arcadia Avenue and Casablanca Avenue, and to the south by a parcel boundary line located approximately 40 feet north of Olympic Boulevard.
- **Parcel D** (Chavez Manor West) consists of approximately 161 acres bounded to the west by the Cannon AFB property line along County Road R, but excludes the existing cemetery area on County Road R; to the south by the Cannon AFB property line along Highway 60-84; to the north by the Cannon AFB property line; and to the east by a parcel boundary line west of Doc Stewart Park, east of the ballparks, and behind the units located on Alaska Court.

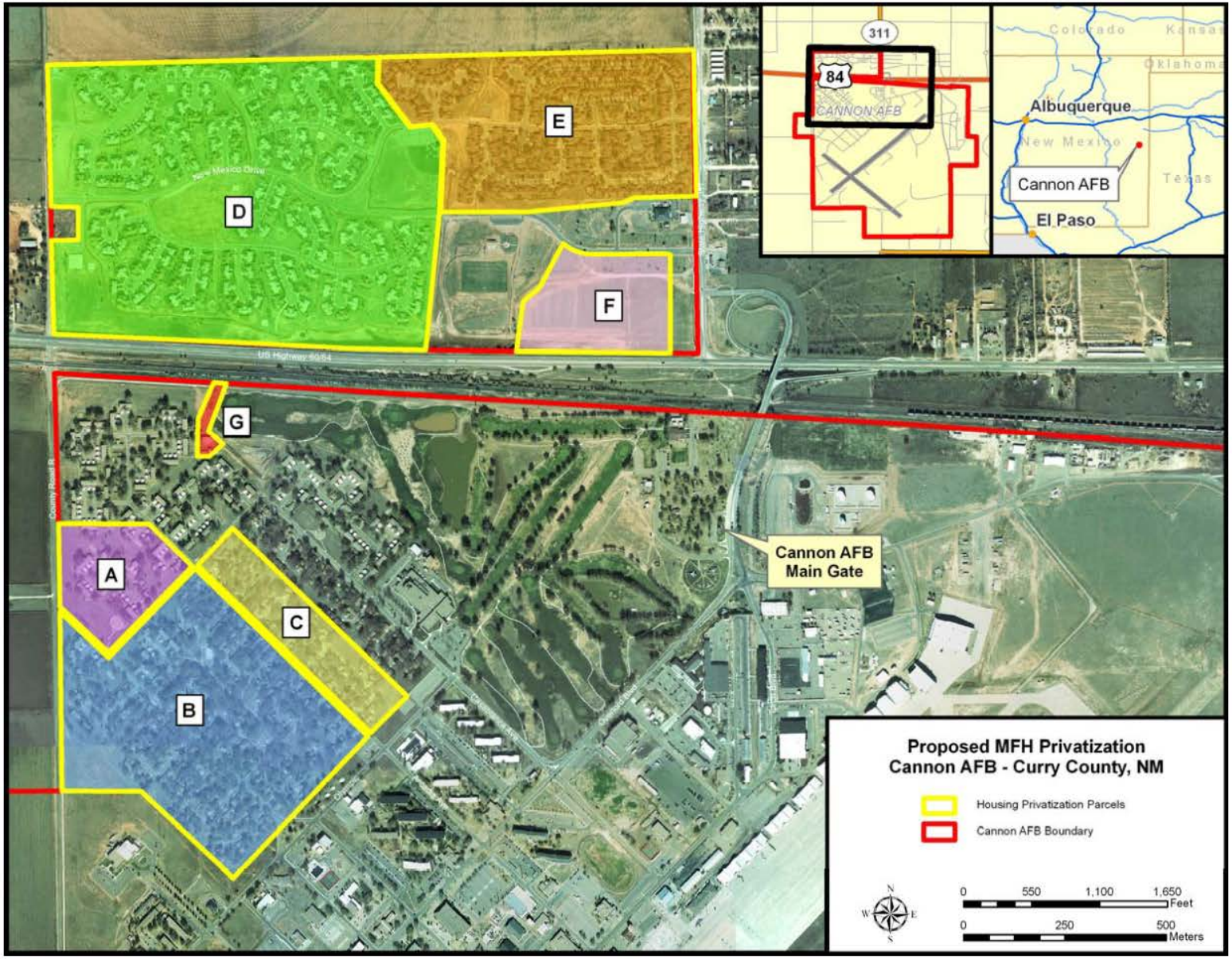

Figure 2-1. Proposed Housing Privatization Parcels.

- **Parcel E** (Chavez Manor) consists of approximately 63 acres bounded to the south by parcel boundary line north of James Boatwright Drive and the Community Development Center, to the east by the Cannon AFB property line along Ranchvale Road (New Mexico State Road 311) to the north by the Cannon AFB property line, and to the west by Parcel D.
- **Parcel F** (Chavez Manor South) consists of about 21 acres bounded to the south by the Cannon AFB property line along Highway 60-84, to the west by Doc Stewart Park, to the north by James Boatwright Drive, and to the east by the parcel boundary located approximately 220 linear feet west of the Cannon AFB property line along Ranchvale Road.
- **Parcel G** (Housing Maintenance and Storage Facilities) consists of roughly 1.5 acre bounded to the north, south, east, and west by a parcel boundary located around the perimeter of the two facilities located within this parcel.

The leasing of the MFH parcels would be subject to several conditions imposed by the Air Force, including all existing easements or those subsequently granted, as well as established access routes for roadways and utilities located, or to be located, on the premises. The lease would also specify activities restricted from occurring on the property such as collecting, storing, or disposing of hazardous waste; making any discharges or releases that would violate any environmental regulations or permits.

Under the 50-year lease agreement, the PO would operate and maintain for 50 years all existing and new MFH units and ancillary supporting facilities in accordance with the quality standards established. Infrastructure such as roads, parking areas, sidewalks, street lighting, utilities, and storm water drainage systems within the MFH areas would be conveyed to the contractor who would be responsible for their operation and maintenance. The PO would also be responsible for the upkeep and future renovations of the MFH areas to ensure the units remain desirable for military families and meet Air Force standards.

Eligible service members who choose to live in privatized housing would rent directly from the PO. The Air Force would continue to categorize MFH by grade group. Unit rents would be fixed by type of unit. Military families would pay the developer rent based on the BAH minus a set amount sufficient to cover utilities for the unit. The PO will install utility meters at each of the units so the individual military family would pay for its utilities out of the BAH provided.

2.3 NO ACTION ALTERNATIVE

Council of Environmental Quality (CEQ) regulations require evaluation of the No Action Alternative under the National Environmental Policy Act (NEPA). The No Action Alternative serves as a baseline for evaluating the impacts of the Proposed Action and Alternatives.

Under the No Action Alternative, the Air Force would not implement the Proposed Action, but would continue to use traditional military maintenance and repair procedures to try to keep up with the deterioration of older housing units. No major overhaul of the existing housing would be included under the No Action Alternative, and the housing units would continue to be substandard. As a result, Cannon AFB would not be able to provide modern and efficient

housing for military personnel and their dependents in accordance with Air Force guidelines for quality of life and floor space requirements. Any major changes to existing housing or construction of new housing would require appropriate NEPA analysis before implementation of such actions.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS

Although the Proposed Action provides estimates for the number of units requiring minor renovation, major renovation or demolition and construction, the PO could propose variations to this project concept as long as its proposal fits the end-state requirements as described under the Proposed Action; therefore, it is unnecessary to evaluate different combinations of units being renovated versus demolished and replaced.

Several other alternatives to the Proposed Action were identified and evaluated in the early stages of proposal development. None of these alternatives were suitable for further consideration and analysis due to the reasons discussed below.

2.4.1 The Private Sector Reliance Alternative

Under this alternative, the Air Force would rely solely on the private sector to meet the housing needs of personnel assigned to Cannon AFB. The Air Force would terminate its MFH programs at Cannon AFB, dispose of existing MFH units, and convert the land now supporting housing areas to other uses at Cannon AFB.

This alternative is premised, in part, on the view that competitive marketplace forces would lead to the creation of sufficient affordable, quality MFH. Data vary but, in general, experience shows that military members and their families living off-installation pay between 15 and 20 percent more for their housing than the BAH. Moreover, living on-installation has several intangible benefits to military members and their families, such as camaraderie and esprit de corps among the military personnel, a sense of "family" among dependents (especially during military deployments), proximity to the workplace (thereby avoiding lengthy commutes), and each military member's comfort level in knowing his or her dependents are residing in a safe community while they are deployed or serving on temporary duty at a distant location.

As a practical matter, termination of Cannon AFB MFH would prove difficult. If MFH were to be terminated over a period of years, without maintenance funding, the existing housing would become unsuitable due to age or necessity of repairs. Residents could then find themselves living in blighted and partially abandoned neighborhoods. If MFH were to be terminated at once, it is unlikely the private sector could provide the requisite amount of affordable, quality housing units on short notice.

Termination of MFH programs would involve abandonment of immense investments in those facilities. The various consequences of reliance on the private sector and the management difficulties of effecting termination of Air Force MFH would prove challenging. This alternative does not meet criteria identified in **Section 2.1**; therefore, this alternative is not reasonable and will not be evaluated in detail in the EA.

2.4.2 Partial Privatization

The Air Force considered additional alternatives for meeting the goals of the proposed action including privatizing some of the parcels but not the others. Specifically considered was whether or not the privatization of the parcels north of Highway 60-84 only would have any benefit over privatization of all of the housing parcels. No benefit to partial privatization could be indentified while several disadvantages could be identified. The inefficiency of having two housing management operations, as well as duplicative planning for demolition or reconstruction, means this alternative does not meet criteria identified in **Section 2.1**; therefore, this alternative will not be evaluated in detail in the EA.

2.5 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Table 2-1 presents a summary of the potential environmental consequences associated with the Proposed Action, the No Action Alternative and the cumulative environment. The impacts of the Proposed Action and No Action Alternative are discussed in detail in **Chapter 4**. The cumulative environment and its potential impacts are discussed in **Chapter 5**.

Table 2-1. Summary of Environmental Consequences.

Resource	Proposed Action	No Action Alternative	Cumulative Impacts
Noise	Construction: Short-term, minor impacts within the project area (the military family housing [MFH] areas). Aircraft: New units within the 65- to 70-decibel contour for aircraft noise require noise level reduction measures 5 to 15 decibels beyond standard construction. No significant impacts.	No construction noise, but housing would still be present within the 65- to 70-decibel contour for aircraft noise.	Other construction on base would contribute to noise environment. Construction noise quickly drops off away from source; therefore, construction noise from elsewhere on the base would not likely add to the noise levels in the MFH areas.
Transportation	Construction: Short-term, minor impact from the transport of construction equipment, supplies and debris. Overall negligible impact on transportation system because the proposed end-state (1,034 units) is less than the maximum number of units located on base in the past (1,644 units). No significant impacts.	No impact.	Other construction on base would bring additional construction traffic; however, it would be on different parts of the base, so would not likely create a cumulative significant adverse impact.
Utilities	No impact on utility systems because the proposed end-state is less than the maximum number of units located on base in the past. No significant impacts.	No impact.	The additional contributions to the water and wastewater systems were accounted for in the AFSOC Asset Beddown EIS (AFSOC 2007) along with a higher number of housing units that the Proposed Action would create; therefore, no cumulative adverse effect.
Solid Waste	Minor impact on solid waste disposal due to the amount of debris generated due to demolition, renovation, and construction.	No impact.	Construction and demolition debris would not be more than the waste management systems could handle; therefore, the cumulative impacts would not be significant.

Table 2-1. Summary of Environmental Consequences (continued).

Resource	Proposed Action	No Action Alternative	Cumulative Impacts
Water Resources	The use of best management practices (BMPs) for stormwater control from construction sites would prevent adverse impacts to the golf course pond. No long-term effects on water resources and no effects on groundwater. No significant impacts.	No impact.	All construction on base would be required to prevent sediment runoff from construction sites; therefore, no cumulative impacts.
Hazardous Waste	Short-term, minor potential for adverse impacts from hazardous materials and wastes handling during construction if contractor follows proper storage and handling procedures for the chemicals used during construction. No significant impacts.	No impact.	Additional potential for impacts from hazardous materials and wastes handling during construction would still be a short-term, minor impact.
Air Quality	Curry County is in attainment for all criteria pollutants; therefore, no General Conformity analysis is required. Emissions from construction equipment and fugitive dust would not cause the area to exceed NAAQSs.	No impact.	When the construction emissions calculated for the AFSOC assets Beddown are added to those estimated for the Proposed Action, they are still well below significance criteria.
Socioeconomics and Environmental Justice	Neither Curry County, nor the census block groups including and surrounding Cannon AFB have concentrated minority or poverty populations. $130 million estimated expenditure would increase sales volume more than 10 percent in the short-term. Potential growth in school population would be within district size tolerations.	No impact.	Additional construction expenditures would add to the economic benefit of the surrounding area. The other projects would not increase the number of families on base to add to the school population.

Key:
Short-term = within the 5-year initial development period
Long-term = over a 30 to 35-year period (estimated timeframe for MILCON process)
NAAQS = National Ambient Air Quality Standards

3.0 AFFECTED ENVIRONMENT

3.1 NOISE

3.1.1 Definition of the Resource

Sound is defined as a particular auditory effect produced by a given source, for example the sound of rain on the roof. Sound is measured with instruments that record instantaneous sound levels in decibels (dB). A-weighted sound level measurements (dBA) are used to characterize sound levels that can be sensed by the human ear. "A-weighted" denotes the adjustment of the frequency content of a sound producing event to represent the way in which the average human ear responds to the audible event.

Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Noise can be intermittent or continuous, steady or impulsive, and might involve any number of sources and frequencies. It can be readily identifiable or generally nondescript. Human response to increased sound levels varies according to the source type, characteristics of the sound source, distance between the source and receptor, receptor sensitivity, and time of day. One of the most common ways to describe ambient noise exposure over an extended period of time is as a day-night average sound level (DNL) measured in dBA. DNL refers to the average sound level exposure, measured in decibels, over a 24-hour period. A 10-dBA penalty is added to sound levels for operations occurring during the hours of 10 PM to 7 AM. This penalty is applied due to the increased annoyance created by noise events which occur during this time. DNL is a quantity that can be calculated directly at a specific location (United States [U.S.] Air Force [USAF] 1999).

3.1.1.1 Ambient Sound Levels

Most people are exposed to sound levels of 50 to 55 dBA or higher on a daily basis. Noise levels in residential areas vary depending on the housing density and location. As shown on **Table 3-1**, noise in a normal suburban residential area is about 55 dBA, which increases to 80 dBA in the downtown section of a large city (U.S. Environmental Protection Agency [USEPA] 1974).

Interior noise levels are typically lower than exterior levels due to the attenuation of the sound energy by the structure, with the amount of noise level reduction (NLR) provided by a building being dependent on the type of construction and the number of openings such as doors, windows, chimneys, and plumbing vents. The approximate reduction in interior noise is 15 dBA when windows are open and 25 dBA for closed windows (USEPA 1974).

Table 3-1. Typical Outdoor Noise Levels.

Description	Typical Range in dBA	Average in dBA
Quiet Suburban Residential	48-52	50
Normal Suburban Residential	53-57	55
Urban Residential	58-62	60
Noisy Urban Residential	63-67	65
Very Noisy Urban Residential	68-72	70

Source: USEPA 1974

3.1.1.2 Construction Sound Levels

Building construction, modification, and demolition work can cause an increase in sound that is well above the ambient level. A variety of sounds come from graders, pavers, trucks, welders, and other work processes. **Table 3-2** lists noise levels associated with common types of construction equipment. Construction equipment usually exceeds the ambient sound levels by 20 to 25 dBA in an urban environment and up to 30 to 35 dBA in a quiet suburban area (Reagan and Grant 1977).

Table 3-2. Noise Level of Heavy Equipment from a Distance of 50 Feet.

Equipment	Noise Generated*
Bulldozer	95 dBA
Scraper	94 dBA
Front Loader	94 dBA
Backhoe	92 dBA
Grader	91 dBA
Crane	86 dBA

* Noise from a single source
Source: Reagan and Grant 1977

3.1.1.3 Air Installation Compatible Use Zones (AICUZs)

The Air Force AICUZ program assesses and discloses noise created by operations on an installation with an airfield with the goal of preventing the encroachment of incompatible uses on the surrounding areas in a way that ultimately compromises the viability of the installation. Land-use guidelines identified by Federal Interagency Committee on Urban Noise (1980) are used to determine compatible levels of noise exposure for various types of land use surrounding airports; DNL 65 dBA noise contours are frequently used to help determine compatibly of aircraft operations with local land use. The Air Force AICUZ program predicts noise exposure by modeling aircraft operations and employing four bands of noise exposure:

- **DNL below 65 dBA**—typically acceptable for residential use.
- **DNL 65 to 69 dBA**—generally compatible with residential use and related structures; however, measures to achieve NLR of 25 dBA need to be incorporated into the design and construction of structures.
- **DNL 70 to 74 dBA**—residential use and related structures are generally incompatible; however, measures to achieve NLR of 30 dBA can be incorporated into the design and construction of structures.
- **DNL 75 to 79 dBA**—residential use is not compatible and should be prohibited (USAF 1999).

3.1.2 Existing Conditions

At Cannon Air Force Base (AFB), the noise environment is primarily influenced by aircraft operations. Noise from these operations typically occurs beneath the main approach and departure corridors and in areas immediately adjacent to parking ramps and aircraft staging areas. As aircraft take off and gain altitude, their contribution to the noise environment drops to levels indistinguishable from the background.

The noise analysis in the Air Force Special Operations Command (AFSOC) Assets Beddown Environmental Impact Statement (EIS) evaluated "baseline conditions" as Cannon AFB being the home of the 27th Fighter Wing flying F-16 fighters; whereas the "proposed conditions" followed the transition to AFSOC, with a different mix of aircraft (mostly C-130 transports) and flight operations (more night flying). In general, the noise modeling showed a substantial decrease in the noise levels around the airfield, explained in large part by the difference in the noise levels of the F-16 and C-130 aircraft. Under both the baseline and proposed conditions, a number of on-base residences are exposed to noise levels greater than 65 dB DNL from the flight line (AFSOC 2007; Long 2009). **Figure 3-1** shows the 65- and 70-dB contours for the proposed conditions, which are the conditions that the Military Housing Privatization Initiative (MHPI) Proposed Action would experience. The 65-dB contour passes through Parcels B and C in the Joe Cannon Estates MFH area (AFSOC 2007).

3.2 TRANSPORTATION

3.2.1 Definition of Resource

Transportation refers to the movement of vehicles and humans throughout a road or highway network. Primary roads are principal arterials, such as major highways, designed to move traffic, but not necessarily provide access to all adjacent areas. Secondary roads are arterials, such as rural routes and major surface streets that provide access to most, if not all, areas.

3.2.2 Affected Environment

The local road network near Cannon AFB consists of U.S. Highway 60-84, U.S. Highway 70, and State Highways (SH) 311 and 467 (**Figure 1-1**). Highway 60-84 is a four-lane divided highway and the major east-west road in this portion of New Mexico. The major access point for base traffic is Highway 60-84 at SH 311 via an overpass. The overpass at SH 311 also connects the main base with the Chavez Manor military family housing (MFH) areas on the north side of Highway 60-84. SH 467 connects the city of Portales with Clovis and skirts the east side of Cannon AFB. County Road R is directly adjacent to the west side of the base and the housing area north of Highway 60-84.

Cannon AFB has two gates—the Main Gate, which exits onto Highway 60-84, and the Portales Gate, which exits to SH 467 on the south side of the base. Access to the Joe Cannon Estates must be through one of these two gates. The Portales Gate is the designated commercial gate as well as handling base personnel who reside in Portales. Recent gate counts indicate that approximately 96 percent of the base traffic exits through the Main Gate (AFSOC 2007). On the north side of Highway 60-84, the Chavez Manor MFH areas can be accessed from SH 311 on the east and County Road R on the west. There are no gates or security checks into these MFH areas.

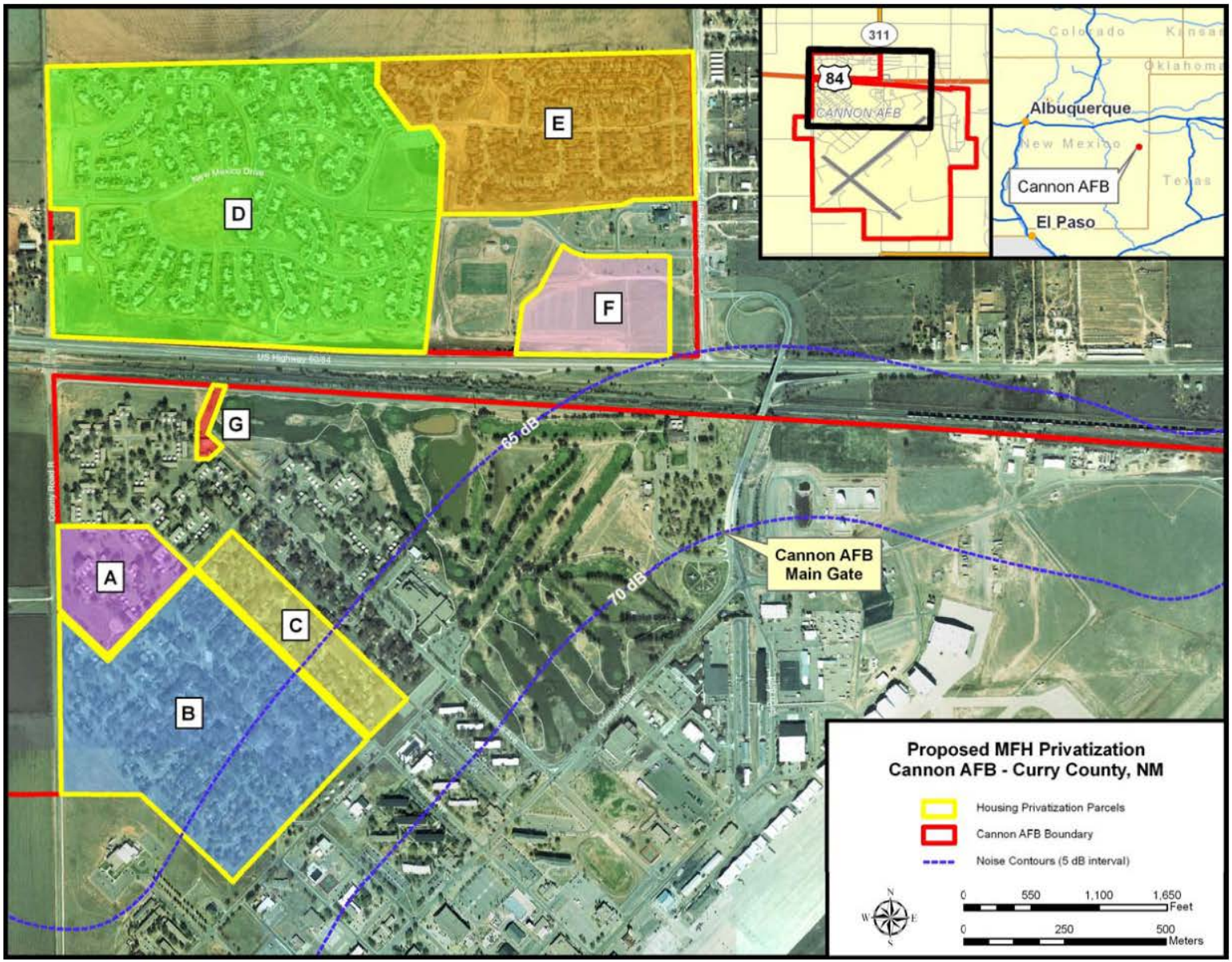

Figure 3-1. Airfield Noise Contours Projected onto Cannon AFB Housing Areas (AFSOC 2007).

The transportation network and level of service (LOS) for the base were discussed in the 2007 EIS for the Beddown of AFSOC Assets (AFSOC 2007). The EIS evaluated the effects that the proposed addition of 1,213 military and civilian personnel permanently stationed at the base would have on peak-hour trip generation, gate access, traffic volumes and LOS on Highway 60-84, SH 467, and the roadway network on base. These proposed conditions would be the baseline for existing conditions for the housing privatization Proposed Action. Based on the analysis in the EIS, the four-lane Highway 60-84 will remain at LOS A[1] following the AFSOC asset beddown. SH 467, a two-lane highway, would stay at LOS B[2].

3.3 UTILITIES

3.3.1 Definition of Resource

The utilities described and analyzed for potential impact resulting from the implementation of the Proposed Action or Alternatives include potable water, wastewater, electricity, natural gas, and communications. The description of each utility focuses on existing infrastructure (e.g., wells, water systems, and wastewater treatment plants), current utility use, and any predefined capacity or limitations as set forth in permits or regulations.

3.3.2 Affected Environment

3.3.2.1 Water Supply

The Cannon AFB water supply system is completely independent from outside systems. Potable water is drawn from the Ogallala Aquifer using six on-base wells and then disinfected with chlorine before entering the distribution system.

Based on a 16-hour pumping day, the six potable wells can produce 3.5 million gallons of water per day (MGD). With all wells operating at full capacity (24-hour pumping day), the maximum production of potable water supply is about 5.25 MGD. Treated water is pumped into a 272,000-gallon aboveground storage tank at Treatment Plant 1 and into three large elevated storage tanks, one 250,000- and two 150,000-gallon tanks, at Treatment Plant 2. There is also a 50,000-gallon ground-level storage tank at Treatment Plant 2 and a 170,000-gallon aboveground storage tank in the northwest corner of the Chavez Manor West housing area (Parcel D).

The wells draw water from a regionally significant aquifer, the Ogallala Aquifer, which extends across the Great Plains into portions of New Mexico, Texas, Oklahoma, Kansas, Colorado, Nebraska, and South Dakota. The amount of surface recharge to the aquifer is low due to limited precipitation, high evapotranspiration, and the presence of impervious caliche in the upper geologic zone (U.S. Geological Survey [USGS] 2006). Groundwater withdrawal rates in the region greatly exceed aquifer recharge rates and regional groundwater levels are declining. A long-term project to bring surface water via pipeline from the Ute Reservoir to Curry County is under consideration for funding by the State of New Mexico (AFSOC 2008).

[1] LOS A for a multi-lane highway consists of free-flowing traffic at average travel speeds, a density of less than 11 passenger cars per mile per lane and vehicles are relatively unimpeded in their ability to maneuver within the traffic stream.

[2] LOS B for a two-lane highway consists of conditions where drivers have some restrictions on their speed of travel and ability to change lanes to pass, but it still represents comfortable and relatively low stress driving conditions. The percent of time following another vehicle is between 40 and 55 percent.

The base has proactively worked to reduce water consumption. The golf course, golf course driving range, and Doc Stewart Park are currently irrigated with treated effluent and non-potable water from Well 4A, and watering restrictions have been implemented in the housing areas.

3.3.2.2 Wastewater

The Cannon AFB sanitary sewer system consists of a gravity- and forced-main collection system connected to a wastewater treatment plant (WWTP) constructed in 1998 that has a design capacity of 1.13 MGD. For the years 2005 and 2006, average daily flows equaled 0.47 MGD; however, this was less than what it would be normally because the base population was low due to the changing mission (AFSOC 2007). The collection system consists of sewer mains and secondary lines. Lines include a combination of concrete or asbestos cement, vitrified clay, polyvinyl chloride (PVC), high-density polyethylene, and cast or ductile iron piping. There are seven lift stations in the system, six on the base proper and one in the adjacent Chavez MFH Area (Parcel E). The WWTP is a sequencing batch reactor treatment facility that includes a bar screen, sequencing batch reactors, aerobic digester, chlorine contact chamber, sludge drying beds, sludge storage area, and related facilities (27th Fight Wing [FW] 2003a). The plant was modified in early 2007 to include a grit and grease collection system (AFSOC 2007). Discharge from the WWTP is into the North Playa Lake and the golf course pond. Discharges are regulated by the National Pollutant Discharge Elimination System (NPDES); however, in 2006 Cannon AFB determined that none of the water bodies on base are waters of the U.S. and informed the USEPA that they would not be renewing either their wastewater or storm water discharge permits (Poore 2006).

Much of the base's sanitary sewer system has been in service since World War II; whereas the housing systems were constructed later and have been upgraded in areas. An infiltration and inflow study was completed in 1997, and corrective actions were taken. Vitrified-clay sewer main lines in the older Chavez Manor and Joe Cannon Estates North MFH areas (Parcels E and A) have been replaced with PVC pipe; sewer lines in the rest of Joe Cannon Estates (Parcels B and C) were slip-lined (Carr 2008).

In addition to the sewer system, the MFH areas have two septic systems in a park south of the Chavez Manor housing area (west of Parcel F). There is one system at the Doc Stewart Pavilion, which was installed in 2000, and a stand-alone restroom elsewhere in the park that was installed in 2007. These are the only septic systems within the MFH areas at Cannon AFB (Rebman 2008).

3.3.2.3 Electricity

Electrical power at Cannon AFB is provided by XCel Energy via a 115-kilovolt transmission line from the Wheaton Road Substation to the east and the Black Water Draw to the west. The current system is looped, providing a redundancy that did not exist when the electrical connection ended on the base. A single substation located near the Base Support Center is the hub of the base's power distribution system. The substation, constructed in 1975, has been upgraded to 25 megavolt-amperes (MVA) and could further be upgraded to 30 MVA, if required. To support future installation growth, XCel intends to install a new substation near the gate at the southern end of the base. The projected completion date is December 2010. The primary on-base distribution system consists of both underground and aboveground lines; however, all of the lines

in the MFH areas are underground (AFSOC 2008). Although the base has numerous emergency power generators for major facilities including the medical clinic and avionics, none of the MFH units have individual back-up generators.

3.3.2.4 Natural Gas

Natural gas is purchased on the open market and distributed to the base through the New Mexico Gas Company pipeline system (New Mexico Gas Company bought the natural gas distribution system from Public Service New Mexico in January 2009). The main distribution line enters the base from the north near the Chavez Housing area. To support future growth on Cannon AFB, a new gas line is being installed, entering the base on the east side. Cannon AFB owns the on-base gas distribution system. The distribution system services most of the base, except for the more remote parts where propane is used for heating. The 6-inch main lines are polyethylene piping. Natural gas enters Cannon AFB at approximately 55 to 60 pounds per square inch. For most systems it is reduced to 7 to 14 ounces, depending upon the needs of the user. Essentially, there is no limit to the amount of natural gas service that can be supplied through contractual arrangements. Billing records indicate that the greatest period of consumption occurs during the winter heating months from November through April (AFSOC 2008).

3.3.2.5 Communications

Qwest Communications currently owns and operates the local area network long distance and local phone lines in the MFH areas. They can also provide internet, cable television, and wireless service if purchased by the occupant; however, occupants can choose from several companies in the area providing these additional services. The base Communications Office also provides some support lines to the commander's homes, which will stay under the base's control (Long 2009).

3.4 SOLID WASTE

3.4.1 Definition of Resource

Municipal solid waste management and compliance at Air Force installations are established in Air Force Instruction (AFI) 32-7042, Solid and Hazardous Waste Compliance. AFI 32-7042 incorporates by reference the requirements of Resource Conservation and Recovery Act (RCRA) Subtitle D, 40 Code of Federal Regulations (CFR) 240 through 244, 257, and 258, and all other applicable federal regulations, AFIs, and Department of Defense (DOD) Directives. In general, AFI 32-7042 establishes the requirement for installations to have a solid waste management program that incorporates the following: a solid waste management plan; procedures for handling, storage, collection, and disposal of solid waste; record keeping and reporting; and recycling of solid waste, as addressed in AFI 32-7080, Pollution Prevention Program.

3.4.2 Affected Environment

Cannon AFB uses a private contractor to collect all solid waste generated on the base. Residential wastes collected from curbside containers in MFH are disposed of at the Clovis Regional Landfill located approximately 15 miles east of the base. Solid waste generated in MFH consists of food and yard wastes, paper, aluminum and tin cans, plastic food and beverage containers, cardboard and glass food and beverage containers. Each resident is issued an 85-gallon garbage container, which is emptied once a week by the refuse contractor. Residents are

also issued 21-gallon containers for collection of commingled recyclables. The contractor collects solid waste and recyclables on the same day. In addition, housing residents have access to two 33-cubic yard dumpsters located behind the family housing area for large or bulky items requiring disposal (AFSOC 2005).

The residential solid waste stream is affected by a number of factors. The primary factor is the regular duty transfers associated with military reassignment, which causes a high turnover rate in the housing areas. This results in an unusually large quantity of cardboard, packing waste, and general rubbish as families frequently move in and out of base housing facilities. New housing occupants receive a briefing conducted by the Housing Management Flight on their responsibilities regarding solid waste disposal. This briefing is accompanied by a pamphlet detailing proper procedures for recycling (AFSOC 2005).

Base operations generate more than 5,000 tons of solid waste annually. A concerted effort has been made in recent years to divert from land disposal those items that are eligible for recycling, reuse, composting, or energy recovery. The recycling effort accounts for approximately 900 tons of solid waste diverted from land disposal annually.

3.5 WATER RESOURCES

3.5.1 Definition of Resource

3.5.1.1 Groundwater

Groundwater is the subsurface water that fully saturates pores or cracks in soils and rock. It replenishes streams, rivers, and habitats and provides freshwater for irrigation, industry, and potable water consumption. Groundwater occurs in some proportion at nearly all depths in porous soil and rock, but when it is available for human consumption, it is called an aquifer.

3.5.1.2 Surface Water

Surface water resources consist of lakes, rivers, and streams. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale. Stormwater is an important component of surface water systems because of its potential to introduce sediments and other contaminants that could degrade lakes, rivers, and streams. Stormwater systems, including drainage ditches, culverts, and underground pipes, convey precipitation away from developed sites to receiving surface waters. These systems can be overloaded by increased proportions of impervious surfaces associated with buildings, roads, and parking lots.

3.5.1.3 Floodplains

Floodplains are areas of low-level ground present along rivers, stream channels, or coastal waters. Such lands might be subject to periodic or infrequent inundation due to rain or melting snow. Risk of flooding typically hinges on local topography, the frequency of precipitation events, and the size of the watershed above the floodplain. Flood potential is evaluated by the Federal Emergency Management Agency, which defines the 100-year floodplain. The 100-year floodplain is the area that has a one-percent chance of inundation by a flood event in a given year. Certain facilities inherently pose too great a risk to be located in either the 100- or 500-year floodplain, such as hospitals and schools. Federal, state, and local regulations often limit

floodplain development to passive uses, such as recreational and preservation activities, to reduce the risks to human health and safety.

Executive Order (EO) 11988, Floodplain Management, requires federal agencies to avoid, to the extent possible, adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development.

3.5.1.4 Wetlands

The USEPA defines wetlands (in Title 40 Code of Federal Regulations [CFR] 230.3(t)) 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. Wetlands generally include swamps, marshes, bogs and similar areas." Wetlands provide rich habitat for a diverse range of plant and animal species, protection from flooding and erosion, and are also important to the nutrient cycle.

EO 11990, Protection of Wetlands, requires federal agencies to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. It also requires that agencies avoid construction or providing assistance for new construction located in wetlands, to the extent practicable.

3.5.2 Existing Conditions

3.5.2.1 Groundwater

The Ogallala Aquifer is the principal aquifer system underlying the region and provides the primary source of domestic water. It occurs chiefly in the Ogallala Formation, a thick geologic formation composed of clay, silt, sand, and gravel layers, sometimes cemented by calcium carbonate and silica with caliche at the top. Recharge is derived from infiltration of precipitation or seepage from intermittent surface flow in streams. The rate of precipitation over the southern portion of the aquifer is much lower than the rate of evaporation, so most precipitation is lost to evaporation from the soil or is transpired by vegetation before it can percolate to the water table and recharge the aquifer. The development of irrigation in the High Plains region overlying the Ogallala has created conditions where the annual withdrawal exceeds the annual natural recharge. Long-term withdrawal from an aquifer that exceeds recharge will cause a long-term decline in water levels and a decrease in saturated thickness (Robson and Banta 1995). Regional groundwater levels have declined for the past 65 years with an average annual decline of slightly more than 2 feet (USGS 2006). The depth to groundwater in the vicinity of Cannon AFB is between 250 and 300 feet below ground surface (ACC 2003).

3.5.2.2 Surface Water

There are no major drainage ways or perennial streams on Cannon AFB. No 100-year floodplains have been delineated on Cannon AFB. Surface water runoff on Cannon AFB is managed through a stormwater system consisting of a combination of swales, inlets, culverts, and pipes currently having adequate capacity to handle flows. The watershed in which Cannon AFB is located drains towards the Brazos River in Texas; however, little or no surface water reaches receiving waters from the High Plains in eastern New Mexico due to the low annual precipitation and high evaporation rates (AFSOC 2007).

Water bodies and drainages within Cannon AFB are isolated and not subject to regulation under the Clean Water Act (CWA). In 2006, the U.S. Army Corps of Engineers (USACE) concurred with a 2005 delineation report that determined none of the water bodies on Cannon AFB are waters of the U.S. They questioned the status of the North Playa Lake due to NPDES permits issued to Cannon AFB by the USEPA for wastewater and storm water discharges to the lake; however, it is the base's contention that the permits are no longer warranted and will not be renewed when they expire (Estok 2006; Poore 2006).

3.5.2.3 Floodplains

There are no major drainage ways, perennial streams, or 100-year floodplains at Cannon AFB (AFSOC 2008).

3.5.2.4 Wetlands

As mentioned in **Section 3.4.2.2**, seasonally inundated playas, ponds, basins, and drainages occur on Cannon AFB; however, they are isolated from jurisdictional waters of the U.S. There are some non-jurisdictional wetlands that are likely protected under EO 11990 around the golf course and at North and South Playa lakes. There are no wetlands within the MFH areas and no construction will take place in wetland areas.

3.6 HAZARDOUS MATERIALS AND WASTE

3.6.1 Definition of Resource

Hazardous materials and hazardous waste management activities at Cannon AFB are governed by specific environmental regulations. For the purposes of analysis, the term “hazardous materials” will refer to those substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S. Code [U.S.C.] Section 9601, et seq., as amended and the Solid Waste Disposal Act, as amended by the RCRA, 42 U.S.C. Sections 6901-6992, as amended. In general, these substances include those that, because of their quantity, concentration, or physical and/or chemical characteristics, may present substantial danger to public health, welfare, or the environment when released into the environment.

3.6.2 Existing Conditions

Cannon AFB is a large-quantity generator of hazardous waste under RCRA. Aircraft flight operations and maintenance, as well as installation maintenance, require the storage and use of many types of hazardous materials. These materials include flammable and combustibles liquids, acids, corrosives, caustics, glycols, compressed gases, aerosols, batteries, hydraulic fluids, solvents, paints, pesticides, herbicides, lubricants, fire retardants, photographic chemicals, alcohols, and sealants. (AFSOC 2008)

An Environmental Baseline Survey (EBS) was conducted in conjunction with this project to inventory potential hazardous materials associated with the MFH areas. The EBS found no evidence of contamination in the MFH areas. There are no Environmental Restoration Program sites located in these areas.

Housing in Parcels A, B, or C in Joe Cannon Estates have old built-up flat roofs, even though some of the units have had sloping shingled roofs added on top of the original flat roofs. Some of

the materials used on the built-up roofs have been found to contain asbestos. Some of the units in Parcel B have also been found to contain vermiculite (an asbestos-containing material [ACM]) between exterior block walls. Lead-based paint (LBP) was used in these older units, although in most locations it has been painted over with paint that does not contain lead.

The housing in Parcel A will be demolished prior to transaction closure, via a contract external to the Proposed Action; therefore, any of the ACM or LBP used in these older units would already have been removed. The housing in Parcels B and C will need asbestos and/or LBP abatement prior to renovation or demolition.

The homes in Parcel D (Chavez Manor West) were built in 1994 and are, therefore free of ACM and LBP. The units located in Parcel E (Chavez Manor) were constructed in 1974 and are undergoing LBP and ACM abatement via contract external to the Proposed Action. They will be turned over to the PO "gutted" (floor coverings stripped to bare concrete; wall coverings, wiring, and insulation, etc stripped out to bare studs; and ceiling stripped of sheetrock, wiring, and insulation, etc.) and ready for whole house renovation or demolition. Parcel F does not have any structures on it; therefore, there should not be any ACM or LBP issues with the three Chavez Manor parcels.

The base does not have any evidence of ACM or LBP used on the Housing Maintenance and Storage Facilities in Parcel G. Bldg 1404 was constructed in 1975 and Bldg 1406 was completed in 1995; therefore, the PO should confirm the presence or lack of ACM or LBP prior to demolishing these two facilities at the end of the short term lease.

Routine household hazardous wastes are generated in MFH areas, while used oil may be generated as part of "do-it-yourself" vehicle maintenance activities. Residents are responsible for disposing of their household hazardous waste and used oil. Used oil can be taken to the Auto Skills Center for recycling or can be disposed of at the Clovis landfill. An information pamphlet provided by the base housing office to new residents presents instructions for proper disposal of used oil, batteries, tires, and fluorescent light bulbs.

3.7 AIR QUALITY

3.7.1 Definition of Resource

Air quality is determined by the type and concentration of pollutants in the atmosphere, the size and topography of the air basin, and local and regional meteorological influences. The significance of local pollutant concentrations is determined by comparing them to national and/or state ambient air quality standards. Under authority of the Clean Air Act (CAA), the USEPA has established nationwide air quality standards, more commonly known as the National Ambient Air Quality Standards (NAAQS). These standards represent maximum allowable atmospheric concentrations for seven “criteria” pollutants: carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter less than or equal to 10 micrometers in diameter (PM_{10}), particulate matter less than or equal to 2.5 micrometers in diameter ($PM_{2.5}$), ozone, and lead. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings. NAAQS are defined in terms of concentration determined over time. Short-term standards (1-

hour, 8-hour, or 24-hour periods) have been established for acute health affects and may be exceeded only once per year for an area to be considered "in attainment". Long-term standards for chronic health effects may never be exceeded. Based on measured ambient air criteria pollutants, the USEPA designates areas of the U.S. as having air quality equal to or better than the NAAQS (attainment) or worse than the NAAQS (non-attainment).

States may establish their own standards as long as they are at least as stringent as the national requirements. A State Implementation Plan (SIP) is a detailed description of the program that the State proposes to use to enforce the CAA regulations. The CAA requires USEPA to review and approve each SIP. New Mexico established Ambient Air Quality Standards (AAQSs) at Title 20 New Mexico Administrative Code (NMAC) Section 2.3.109; they are included with the NAAQSs in **Table 3-3**.

Table 3-3. National Ambient Air Quality Standards.

Pollutant	Primary Standards		Secondary Standards		New Mexico AAQS
	Averaging Time	Level	Level		Level
Carbon Monoxide	8-hour (1)	9 ppm (10 mg/m^3)	none		8.7 ppm
	1-hour (1)	35 ppm (40 mg/m^3)	none		13.1 ppm
Lead	Rolling 3-Month Average	0.15 µg/m^3 (2)	Same as Primary		none
	Quarterly Average	1.5 µg/m^3	Same as Primary		none
Nitrogen Dioxide	Annual (3)	0.053 ppm (100 µg/m^3)	Same as Primary		0.05 ppm
	24-hour	none	none		0.10 ppm
Particulate Matter (PM_{10})	24-hour (4)	150 µg/m^3	Same as Primary		150 µg/m^3 (5)
Particulate Matter ($PM_{2.5}$)	Annual (6)	15.0 µg/m^3	Same as Primary		none
	24-hour (7)	35 µg/m^3	Same as Primary		none
Ozone	8-hour (8)	0.075 ppm (2008 std)	Same as Primary		none
	8-hour (8)	0.08 ppm (1997 std)	Same as Primary		---
Sulfur Dioxide	Annual	0.03 ppm	0.5 ppm (1300 µg/m^3)	3-hour (1)	0.02 ppm
	24-hour (1)	0.14 ppm			0.10 ppm

ppm = parts per million by volume, mg/m^3 = milligrams per cubic meter of air, µg/m^3 = micrograms per cubic meter of air

(1) Not to be exceeded more than once per year.

(2) Final rule signed October 15, 2008.

(3) Annual standards are arithmetic means.

(4) Not to be exceeded more than once per year on average over 3 years.

(5) The New Mexico particulate standard is for total suspended particulates, not just PM_{10} (20 NMAC 2.3.109)
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.

(6) 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).

(7) 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)

(8) (a) 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.
(b) The 1997 standard—and the implementation rules for that standard—will remain in place for implementation purposes as USEPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.

Source: USEPA 2009. 20 NMAC 2.3.109

Section 176(c) of the CAA is known as the General Conformity Rule and is codified as 40 CFR 51, Subpart W. Under the General Conformity Rule, no Federal agency can approve any activity that does not conform to an applicable SIP. Specific conformity criteria are listed in 40 CFR 51.858. The General Conformity Rule only applies in areas that are in non-attainment or maintenance (40 CFR 51.853 [k]).

Title V of the CAA Amendments of 1990 requires states to issue Field Operating Permits for major stationary sources of air emissions. A major stationary source would include an AFB that emits more than 100 tons per year (TPY) of any one criteria air pollutant, 10 TPY of a hazardous air pollutant, or 25 TPY of any combination of hazardous air pollutants. The Prevention of Significant Deterioration (PSD) requirements of the CAA affect construction of new major stationary emission sources in areas that attain the NAAQS and serves as a pre-construction permitting system.

3.7.2 Affected Environment

Cannon AFB is located in the eastern part of New Mexico in Curry County. The general climate is arid to semi-arid, with light precipitation, abundant sunshine, low relative humidity, and a large diurnal temperature range. All months maintain a general wind speed between 11 and 15 miles per hour (WRCC 2006). Curry County is currently in attainment for all NAAQSs, which is probably due to the rural nature of the surroundings and the lack of substantial emission sources (NMED 2009).

Cannon AFB has both stationary and mobile air emission sources. Stationary sources include heating units, generators, aviation engine testing, fuel storage and transfer, paint and chemical usage, degreasers, woodworking, welding, fuel cell maintenance, abrasive blasting, pesticide application, small arms firing, open detonation of energetic materials, and equipment leaks. Mobile sources include on-road and off-road vehicle use, aerospace ground equipment, aircraft trim and power checks, and aircraft flying operations, such as landings, take-offs, and low approaches. According to the EIS prepared for AFSOC Assets Beddown, Cannon AFB is considered a minor source under the CAA Amendments, due to the fact that the potential emissions from stationary sources are below Title V thresholds (100 TPY for any one criteria air pollutant) for major sources (AFSOC 2007). The baseline conditions for the EIS were annual emissions from 2004. The projected operating emissions for stationary sources following the beddown were also below the 100 TPY threshold; the highest was carbon monoxide estimated to be 61.96 TPY following conversion to the AFSOC mission (AFSOC 2007).

3.8 SOCIOECONOMICS

3.8.1 Definition of the Resource

Socioeconomic analyses generally include detailed investigations of the prevailing population, income, employment, and housing conditions of a community or area of interest. The socioeconomic conditions of a region of influence (ROI) could be affected by changes in the rate of population growth, changes in the demographic characteristics of a ROI, or changes in employment within the ROI caused by the implementation of the proposed action.

In addition to these characteristics, populations of special concern, as addressed by Executive Order (EO) 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, February 1994), are identified and analyzed for environmental justice impacts.

EO 12898 requires a federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high human health or environmental effects of its programs, policies, and activities on minority populations and low income populations." A message from the President concerning EO 12898 stated that federal agencies should collect and analyze information concerning a project's effects on minorities or low-income groups, when required by the National Environmental Policy Act (NEPA). If such investigations find that minority or low-income groups experience a disproportionate adverse effect, then avoidance or mitigation measures are to be taken.

According to the Council on Environmental Quality (CEQ; 1997), a minority population can be described as being composed of the following population groups: American Indian or Alaskan Native, Asian or Pacific Islander, Black, not of Hispanic origin, or Hispanic, and exceeding 50 percent of the population in an area or the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population. Race and ethnicity are two separate categories of minority populations. A minority population can be defined by race, by ethnicity, or by a combination of the two distinct classifications.

Race as defined by the U.S. Census Bureau (USCB 2001) includes:

- **White** – A person having origins in any of the original peoples of Europe, the Middle East, or North Africa;
- **Black or African American** – A person having origins in any of the Black racial groups of Africa;
- **American Indian or Alaska Native** – A person having origins in any of the original peoples of North and South America (including Central America) and who maintain tribal affiliation or community attachment;
- **Asian** – A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, or the Philippine Islands; and
- **Native Hawaiian and Other Pacific Islanders** – A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

The USCB defines ethnicity as either being of Hispanic origin or not being of Hispanic origin. Hispanic origin is defined as "a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race" (USCB 2001).

Each year the USCB defines the national poverty thresholds, which are measured in terms of household income dependent upon the number of persons within the household. Individuals falling below the poverty threshold ($17,603 for a household of four in 2000) are considered low-income individuals. USCB census tracts where at least 20 percent of the residents are considered poor are known as *poverty areas* (USCB 1995). When the percentage of residents considered poor is greater than 40 percent, the census tract becomes an *extreme poverty area*.

3.8.2 Existing Conditions

The socioeconomic assessment for Cannon AFB includes a ROI containing Curry County, New Mexico (including Cannon AFB) and those counties within commuting distance (approximately 60 miles): Roosevelt County, New Mexico, and Parmer and Bailey counties, Texas. More specifically, data for the USCB block groups[3] used in the 2000 census characterize the population immediately surrounding the project area. In this case, the block groups of interest within Curry County include Block Group 9 (Cannon AFB and associated adjacent MFH) and Block Group 4, the area immediately surrounding Cannon AFB. The ROI and block group locations are shown on **Figure 3-2**.

3.8.2.1 Population and Racial/Ethnic Profile

The population within the ROI in 2000 was approximately 79,672 with 42.4 percent of the population comprised of minorities (**Figure 3-3**; USCB 2000). In 2000, the population for Cannon AFB, according to the USCB, was 4,555 with 35.2 percent of the population comprised of minorities (USCB 2000).

In 2000, Curry County had a population of approximately 45,044 persons (USCB 2000), which increased to 45,602 persons by 2007 (USCB 2008), a 1.2 percent increase in the total population during this period. Approximately 34,320 persons (75.3 percent) of the total population of Curry County reside in the city of Clovis. The demographic profile of the county indicates a minority population of approximately 47.3 percent; the Hispanic population of Curry County accounted for 34.4 percent of the total population (USCB 2008).

3.8.2.2 Income, Unemployment, and Poverty Status

Data compiled from the Bureau of Labor Statistics (BLS) and the Bureau of Economic Advisors (BEA) are compiled to provide a profile of the total population, labor force, and unemployment rates for Curry County, the ROI, and the state of New Mexico (**Figure 3-4**; BLS 2008, BEA 2008). This data indicates generally lower unemployment for both Curry County and the ROI than the state of New Mexico; however, per capita personal income is slightly higher for New Mexico than either smaller geographic area. In 2000, approximately 19.4 percent of the population within the ROI fell below the 1999 poverty threshold (USCB 2000). This percentage was slightly higher than Curry County (19.0 percent) and much higher than either Cannon AFB (8.4 percent) or the combined block groups (12.1 percent) (USCB 2000). Overall, none of the geographic areas would be considered areas of concentrated minority or low income populations.

3.8.2.3 Educational Attainment

The American Community Survey 2005-2007 (USCB 2008) found that 31,781 persons in Curry County were 18 or older (69.7 percent of the total population). Data from the survey that indicates the highest level of educational attainment for both sexes, 18 years and older, is presented in **Table 3-4**. Local higher education sources include Clovis Community College (local), Texas Tech University (Lubbock, Texas) approximately 100 miles southeast, or Eastern New Mexico University at Portales, approximately 12 miles south of Cannon AFB. There are also numerous on-line accredited institutions that can provide higher educational attainment (e.g., American Intercontinental, University of Phoenix).

[3] Census block groups are subdivisions of census tracts, usually containing between 600 and 3,000 people. It is one of the smallest geographic entities for which the decennial census tabulates and publishes sample data.

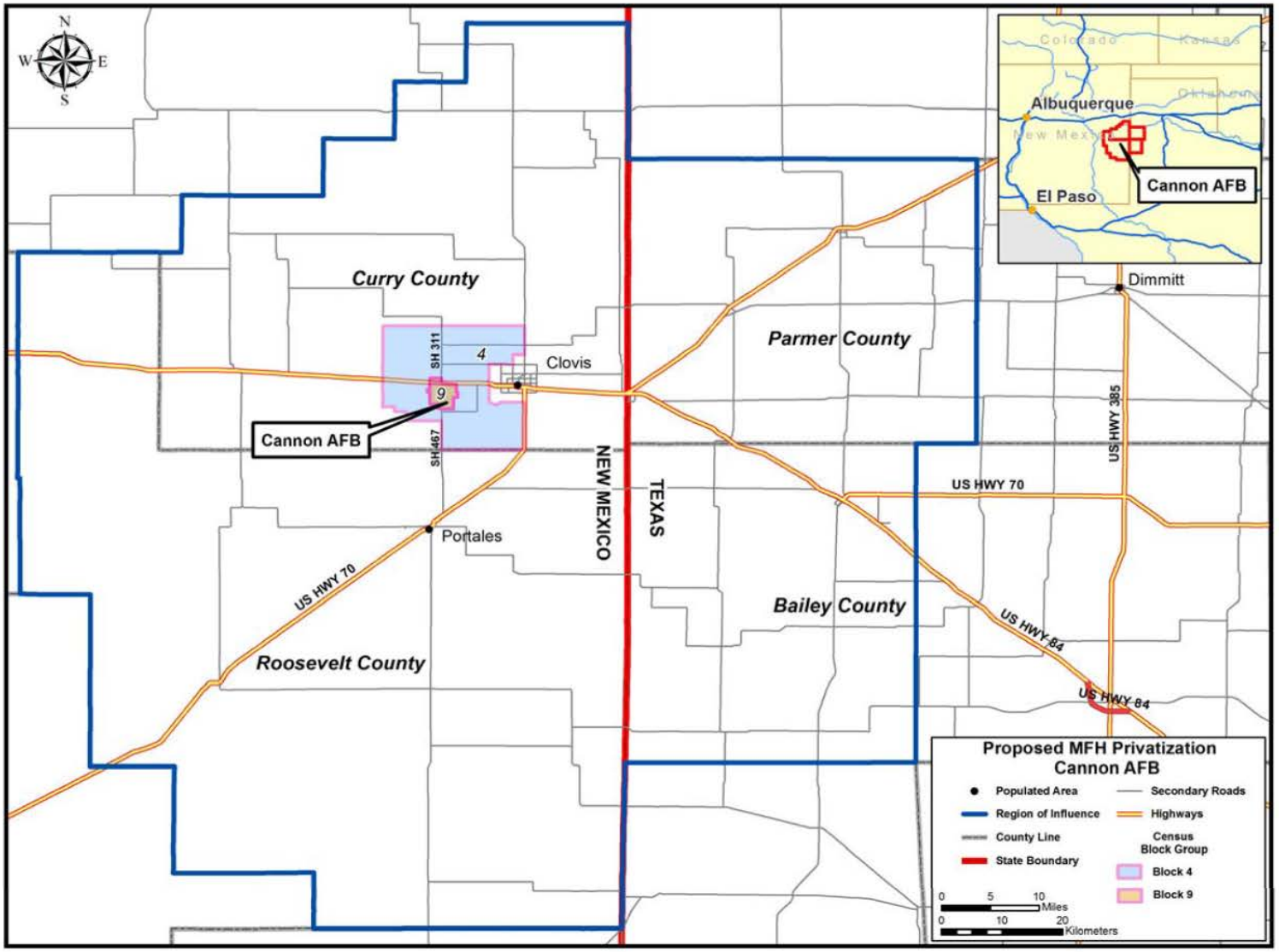

Figure 3-2. Socioeconomic Region of Influence.

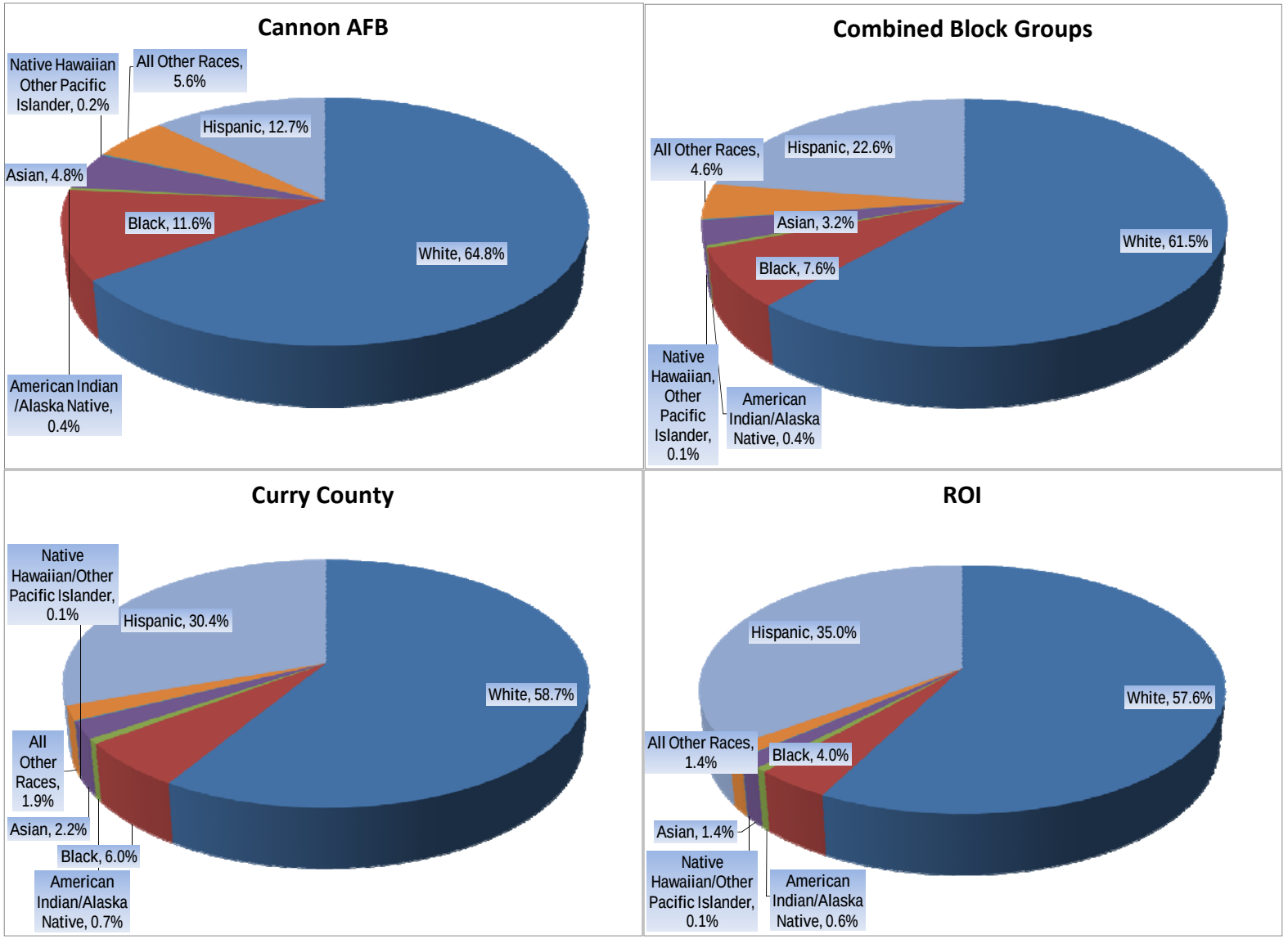

Figure 3-3. Racial and Ethnic Profile of Cannon AFB and Vicinity (USCB 2000).

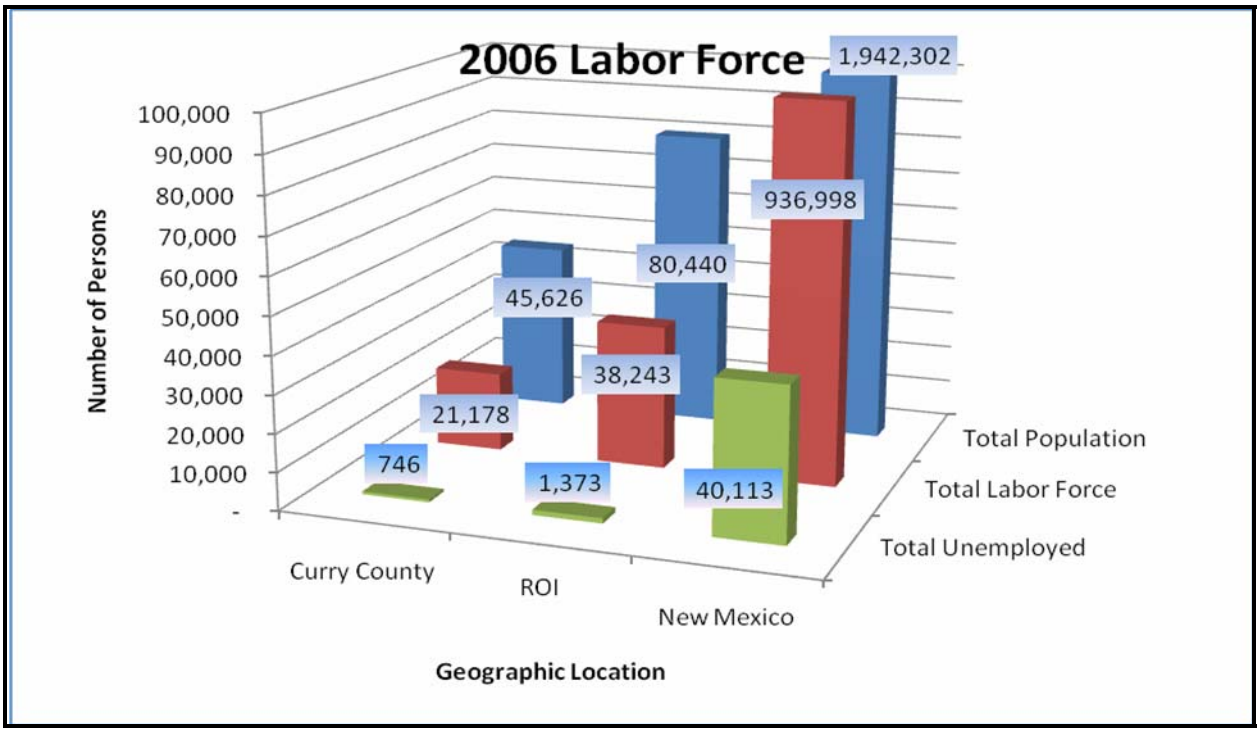

Figure 3-4. Income, Unemployment, and Poverty Status around Cannon AFB (BLS 2008, BEA 2008).

Table 3-4. Highest Level of Educational Attainment.

Highest Level of Educational Attainment	Male	Female	Sum	Percent
Less than high school graduate	2,430	2,980	5,410	17.0
High school graduate	5,631	4,785	10,416	32.8
Some college or associate's degree	5,223	5,550	10,773	33.9
Bachelor's degree or higher	2,074	3,108	5,182	16.3

Source: USCB 2008

Approximately 30.3 percent of the population within Curry County is under the age of 18 (USCB 2008). Of the population between ages 3 to 17 (11,508 persons), approximately 91.7 percent were enrolled in some type of schooling (preschool to Grade 12; USCB 2008). There are four public school districts within Curry County; Clovis, Grady, Melrose, and Texico. Children living within the MFH at Cannon AFB are slated to attend Clovis Municipal Schools or Clovis Christian Academy (private non-denominational school).

Information from the New Mexico Public Education Department (NMPED) indicates that the enrollment within Clovis Municipal Schools for school year 2008-2009 is 8,258 students. The MFHs at Cannon AFB feed Ranchvale Elementary School (Joe Cannon Estates units), Barry Elementary School (Chavez Manor units), Marshall Middle School, W.D. Gattis Freshman Campus, and Clovis High School (NMPED 2008).

4.0 ENVIRONMENTAL CONSEQUENCES

This section presents an evaluation of the environmental effects that might result from implementing the Proposed Action or the No Action Alternative. Both direct and indirect environmental effects are discussed. Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and are later in time or farther removed in distance but still reasonably foreseeable. The specific criteria for evaluating effects and assumptions for the analyses are presented under each resource area. Evaluation criteria for most potential effects were obtained from standard criteria; federal, state, or local agency guidelines and requirement; and legislative criteria. These criteria are used to assess whether the potential impact would be adverse, but not significant; significant; or beneficial. The significance of these effects is generally based on intensity (negligible, minor, moderate, or significant) and duration (short-term or long-term).

4.1 NOISE

Noise impact analysis evaluates potential changes to the existing noise environment that would result from implementation of the Proposed Action and No Action Alternative. For this assessment, the location of the military family housing (MFH) area relative to the noise contours from air operations is also addressed for land use compatibility. The significance of noise effects depends on the degree to which noise levels generated by construction, demolition, and renovation activities are higher than the ambient noise levels; the degree to which there is hearing loss and/or annoyance; and the proximity of noise-sensitive receptors (e.g., residences) to noise sources. An action would have a significant effect if it produced noise levels high enough to cause residents or construction workers to suffer permanent hearing loss, would create an unacceptable living condition for residents, or would place residential receptors within the 65 daily day-night average noise levels (DNL) contours on the base.

4.1.1 Proposed Action

4.1.1.1 Construction Noise

Short-term minor adverse effects would be expected from the Proposed Action as a result of the noise from construction activities. Once the housing units are conveyed to a private developer under the Proposed Action, temporary impacts from construction noise would occur during demolition, renovation and construction within the MFH areas. Noise generated by construction equipment could produce localized noise events of 90 decibels (dB) or higher within 50 feet of the construction site, with noise levels decreasing with distance from the site (**Table 3-2**). Interior noise levels are typically lower than exterior levels due to the attenuation of the sound energy by the structure, with an approximate reduction in interior noise by 15 dB when windows are open and 25 dB for closed windows (USEPA 1974).

Enforcement of Occupational Safety and Health Administration guidelines for hearing protection for workers on the construction site would be the responsibility of the construction contractor. While noise may be a temporary source of annoyance for residents in the MFH areas, it would not be at levels that would require hearing protection measures to prevent hearing loss. Construction activities would be restricted to the daylight hours, typically between 7 AM and 5

PM; therefore, it would not likely create a sleep disturbance. Construction noise would be intermittent and would only remain in a particular area for a limited period of time. Once construction activities are completed, no additional noise would be generated by the Proposed Action. Construction noise from the Proposed Action would, therefore, not be a significant impact.

4.1.1.2 Ambient Aircraft Noise

In **Section 3.1**, aircraft noise was discussed in terms of an average sound level that evaluates the daily DNLs. Construction noise is discussed in terms of the noise level of the equipment while in operation or the activity at a certain distance. As these noises are temporary, and only affect areas close to the construction area, they are not averaged as part of the DNL.

Significant adverse effects could occur in areas of Parcels B and C that lie within the 65- to 70-dB contour. Air Force guidance states that when residential uses must be allowed in areas with DNLs of 65 dB or greater, measures to achieve an outdoor to indoor noise level reduction (NLR) of at least 25 to 30 dB should be incorporated into building codes and considered in individual approvals (USAF 1999). Normal residential construction can provide a NLR of 15 to 25 dB; therefore, the reduction requirements are often stated as 5, 10, or 15 dB over standard construction.

The NLR of any given room or house depends significantly on the characteristics of the room and on the construction of the house. The more windows and doors there are in a room, and the larger these openings are, the more noise will enter. In general, brick is a better sound insulator than siding; small windows allow less noise transmission than large ones of the same construction; solid core or heavy doors protect better than hollow, lightweight doors; and there is a benefit from reducing the number of openings such as through-wall ventilators, mail slots, and chimneys. Cathedral or vaulted ceilings allow more noise in than do ceilings with attic spaces above; basements and crawlspaces allow noise to pass through where a slab foundation would have blocked it (Wyle 2005). The MFH units within the 65- to 70-dB contour (Mercury houses in Parcels B and C) are proposed for demolition. The Project Owner (PO) would be required to mitigate the significant noise impact by implementing NLR measures into the design features for the houses constructed in this area.

NLR criteria will not eliminate outdoor noise problems; however, building location, site planning and design, and use of berms and barriers can help mitigate outdoor noise exposure particularly from ground level sources (Wyle 2005). This can also help reduce noise levels inside the units; however, outdoor NLRs are not required (USAF 1999).

4.1.2 No Action Alternative

Under the No Action Alternative, there would be no construction noise effects. The residences currently within the 65- to 70-dB noise contour would remain in a noise zone not recommended for residences.

4.2 TRANSPORTATION

Transportation impacts are assessed by comparing the projected transportation conditions with the baseline or no action conditions. The assessment analyzes whether transportation changes

resulting from the Proposed Action or No Action Alternative would have significant adverse impacts on the transportation services within the vicinity of Cannon Air Force Base (AFB). Significant impacts are those that would create major traffic hazards or increase traffic in critical areas beyond what can be accommodated with minor adjustments (e.g., additional lanes at base gates).

4.2.1 Proposed Action

The Proposed Action does not affect the base mission or number of military personnel available or assigned to the mission. The Proposed Action would increase the current number of MFH units by 81 to an end state of 1,034. In previous years, Cannon AFB has had at least 1,294 MFH units (AFSOC 2008); therefore, the transportation network would be able to handle the traffic at the end state without a decrease in level of service.

The demolition and construction activities would require transportation of demolition debris off base, delivery of construction materials onto base, transportation and use of heavy equipment, and transportation on and off base of the construction/demolition workers. Transportation of heavy equipment, materials, and roll-off dumpsters to and from the MFH areas would add additional short-term traffic. While there may be intermittent traffic stoppages in the housing areas associated with movement of construction equipment, there should be no significant impacts to the level of service of roadways in the area. Construction traffic would enter the base from the Portales Gate on the south end of Cannon AFB, and take the South Perimeter Road west and north to the MFH areas. Construction traffic to the MFH areas north of US 60-84 would not need to enter the base.

At this time it is not known whether the PO would realign any of the roads within the existing MFH areas; however, streets will need to be added in Parcel F, the open field south of Chavez Manor. During the transaction process, base personnel would ensure that proposed street patterns and traffic flow conform to the base's long-term plans.

4.2.2 No Action Alternative

There would be no change in the transportation network affecting the MFH areas under the No Action Alternative.

4.3 UTILITIES

The analysis of the Proposed Action and No Action Alternative's effects on utilities focuses on the degree to which the change in MFH would impact the utility system's capacity. The impacts would be significant if they substantially increased the demands on the utility systems, resulting in the need for additional capacity or new facilities.

4.3.1 Proposed Action

There are 953 existing MFH units that would be conveyed to a PO in this transaction. After renovation, demolition, and construction, the end state would consist of 1,034 housing units, an increase of 81 units. Although this represents an 8.5 percent increase over current housing, in 2002, there were 1,644 MFH units, at 97 percent occupancy (Long 2009). This number is 59 percent greater than the end state in the Proposed Action; therefore, the utilities servicing the

MFH areas would be able to handle the increase to 1,034 without additional capacity. It is also likely that water and energy savings devises currently installed in new housing units would decrease the demand on utilities even with the slight increase in the number of units; therefore, the effects of the Proposed Action on utilities would not be significant.

Under the Proposed Action, Cannon AFB would continue to provide potable water for the MFH as part of the Basic Allowance for Housing (BAH) for military personnel. The PO would be responsible for the maintenance of the water distribution system within the MFH areas and for ensuring the quality of the water delivered meets federal and state drinking water standards. Cannon AFB would be responsible for the quality of water delivered to the delivery network within the MFH areas; however, the PO would be required to conduct sampling and analysis of water provided to MFH residents (Rebman 2008).

Due to the distance from the City of Clovis wastewater collection system, the MFH areas would remain connected to the base's wastewater treatment system. The PO would be responsible for the wastewater collection system within the MFH areas and for making sure that nothing released into the sanitary sewer system adversely affects Cannon AFB's wastewater treatment plant.

For natural gas and electricity, the PO would contract separately with utility providers and receive the utility portion of the BAH, or would install meters at the individual units and let the residents pay for their own utilities. The details would be worked out during the transaction process. Long-term natural gas and electricity usage would likely decline, even with a slight increase in the number of units, due to increased energy efficiency of the newly constructed homes. Executive Order (EO) 13123, Greening the Government through Efficient Energy Management, requires that by 2010, federal agencies improve the efficiency of their facilities by 35 percent over 1985 usage. Some measures have been made in the MFH units since the EO was signed in 1999, such as replacing old appliances with more energy efficient ones as they needed to be replaced. It is easier and more cost-effective to install energy-savings measures as new homes are constructed; therefore, the newer units would be more energy efficient than the older units.

4.3.2 No Action Alternative

Under the No Action Alternative, there would be no changes to the baseline levels of water consumption, wastewater generation, or energy consumption from the MFH.

4.4 SOLID WASTES

The analysis of the Proposed Action and No Action Alternative's effects on solid wastes focuses on the degree to which the change in MFH would impact the solid waste management program. The impacts would be significant if they substantially increased the demands on the area landfill or the solid waste management system, resulting in the need for additional capacity or new facilities.

4.4.1 Proposed Action

Solid waste generated from the proposed construction and demolition would consist of building materials such as concrete, metals (conduit, piping, and wiring), brick, drywall, glass, roofing, paint, carpets, and wood. The PO may decide to realign some of the streets within the MFH parcels, which would generate additional solid waste from the pavement removal. The amount of realignment is not expected to be significant because the utilities follow the existing street pattern and they would also need to be moved if the streets are realigned. A factor of 5 percent was added to the quantity of demolition debris to be generated to account for pavement removal. Contractors are expected to recycle as much solid wastes, trash, rubbish, debris (including construction and demolition debris), and garbage as is practicable. The remaining solid waste would be disposed of at the Clovis Landfill by the construction contractor.

As shown in **Table 4-1,** approximately 34,912 tons of demolition and construction debris would be generated as a result of the Proposed Action. The debris quantities are based on standard debris generation rates with an estimate of the square footage of the existing and future MFH units based on Air Force minimum requirements by pay grade and number of bedrooms (USEPA 1998, USAF 2004, USAF Housing 2008).

The City of Clovis Landfill handles an estimated 72,172 tons per year of municipal solid waste, roughly 40 percent of which is construction and demolition debris. The 34,912 tons generated by the Proposed Action would be spread out over an estimated five years, providing an annual increase of approximately 9.7 percent, assuming no recycling of the project debris (NMED 2008). An increase of debris to the landfill of less than 10 percent is minor and would only occur for about five years; therefore, this increase would not be significant. Most of the debris would be taken to the landfill by the construction contractor, so it would not require an increased level of municipal solid waste pickup.

Table 4-1. Estimated Quantity of Debris Generated from the Proposed Action.

Project	Floor Area (feet^2)	Multiplier (pounds/feet^2)	Debris Generated	
			Pounds	Tons
Building Construction	707,188	4.38	3,097,487	1,549
Building Renovation	333,820	18	6,008,762	3,004
Building Demolition	455,331	127	57,827,991	28,914
Pavement Demolition	d		2,891,400	1,446
Total			**69,824,640**	**34,912**[e]

[a] Construction includes 422 units with an average floor area of approximately 1,676 ft^2
[b] Renovation includes 250 units with an average floor area of approximately 1,335 ft^2
[c] Demolition includes 341 units with an average floor area of approximately 1,335 ft^2
[d] Pavement demolition debris estimated at 5 percent of building demolition debris.
[e] Numbers do not add up due to rounding.

Following renovation, demolition, and construction activities, long-term effects on solid waste management would be negligible. Although the Proposed Action would increase the number of MFH units by 81, the population assigned to the base is not projected to grow as a result of the Proposed Action. The amount of solid waste generated in the area contributing to the Clovis Landfill would not be changing. All solid waste generated at the MFH units would be managed by the PO in accordance with the operational provisions of the MFH agreements.

4.4.2 No Action Alternative

Under the No Action Alternative, there would be no changes to the generation of construction and demolition debris nor to the overall solid waste management at the MFH areas.

4.5 WATER RESOURCES

The analysis of water resources assesses the potential for the Proposed Action and No Action Alternative to affect water availability, quality, and use, as well as their potential to affect floodplains and wetlands. A significant impact would occur if the Proposed Action would cause substantial flooding, erosion, or siltation, would substantially degrade water quality, or would substantially degrade or deplete ground water resources.

4.5.1 Proposed Action

There are no surface water bodies, floodplains, or wetlands within the MFH areas. The closest water bodies are the man-made ponds within the nearby golf course. Although there are no jurisdictional waters of the U.S. at Cannon AFB, the quality of water in the golf course ponds and the wetlands along the edge of the ponds could be adversely affected by sediment in runoff from construction sites. During construction or demolition activities within Parcels A, B, and C, best management practices (BMPs), such as silt fencing and hay bales, would be employed between the project footprint and the golf course to prevent soil from the project site from migrating to the ponds. Although there may be runoff, it would not have a significant impact; BMPs will reduce the chances of any potential non-significant impact.

No impacts to groundwater quality are likely to occur under the Proposed Action. Activities related to the Proposed Action will be limited to a few feet of the ground surface; whereas, the water table at Cannon AFB is roughly 300 feet below the ground surface. Although the Proposed Action increases the number of MFH units by 81 over the current number, Cannon AFB has supplied water for at least 1,294 units in the past, so the system is capable of producing enough water for the additional units.

4.5.2 No Action Alternative

The No-Action Alternative would not have an effect on water resources in the area.

4.6 HAZARDOUS MATERIALS AND WASTE

Impacts to hazardous materials and waste management would be significant if the Proposed Action resulted in noncompliance with applicable federal and state regulations or caused waste generation that could not be accommodated by current Cannon AFB waste management procedures.

4.6.1 Proposed Action

During demolition, construction, and renovation activities, small amounts of hazardous materials are expected to be used by the PO requiring appropriate storage and potential spill cleanup. The hazardous materials likely to be used during project activities include adhesives, motor fuels, paints, thinners, solvents, and petroleum, oil, and lubricants. Storage, handling, and transportation of hazardous materials would be conducted in accordance with applicable regulations and established procedures. Any spills or releases of hazardous materials would be the responsibility of the PO.

The housing in Parcels A, B, and C Joe Cannon Estates likely contain asbestos-containing material (ACM) in roofs and/or walls and lead-based paint (LBP) on surfaces that may have been painted over. The housing in Parcel A will be demolished prior to transaction closure, via a contract external to the Proposed Action; therefore, any of the ACM or LBP used in these older units would already have been removed. The housing in Parcels B and C will need asbestos and/or LBP abatement prior to renovation or demolition. The PO or his contractor would be required to follow all requirements for worker safety and hazardous waste containment and disposal when working on the houses in these areas. Proper handling and disposal of hazardous materials or hazardous wastes would make these impacts less than significant.

4.6.2 No Action Alternative

Under the No Action Alternative, there would be no change in hazardous materials usage within the MFH areas. ACM and LBP would still be present in some of the older existing housing under the No Action Alternative; however, they do not pose a risk to the inhabitants.

4.7 AIR QUALITY

Impacts to air quality would be significant if the Proposed Action resulted in a violation of a National Ambient Air Quality Standard (NAAQS), contributed to an existing or projected air quality violation, or represented an increase of 10 percent or more in local pollutant emissions.

4.7.1 Proposed Action

Fugitive dust from ground disturbing activities and combustive emissions from construction equipment would be generated during the construction and demolition of the some of the housing during the Proposed Action. Asphalt paving for streets within Parcel F would generate volatile organic compounds (VOCs) and Hazardous Air Pollutant (HAP) emissions. Fugitive dust would be generated from activities associated with site clearing, grading, cut and fill operations, and from vehicular traffic moving over the disturbed site. These emissions would be greatest during the initial site preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions.

The methods selected to analyze air quality effects depend on the type of emission source being examined. Since construction phase emissions are generally considered temporary, analysis is limited to estimating the amount of uncontrolled fugitive dust and the amount of combustive emissions that may be emitted from construction equipment during construction and demolition of housing units and ground disturbing activities (e.g., land clearing and grading).

Section 176(c) of the Clean Air Act (CAA) is known as the General Conformity Rule and is codified as 40 Code of Federal Regulations (CFR) 51, Subpart W. The provisions of this rule apply to state review of all federal general conformity determinations submitted to the state pursuant to 40 CFR 51, Subpart W, and incorporated by reference at Title 20, Chapter 2, Part 98, of the New Mexico Administrative Code. The Conformity Rule only affects federal actions occurring in nonattainment and maintenance areas. Since Cannon AFB is located in an attainment area, there is no need to prepare a conformity determination for the Proposed Action or Alternatives.

In a NAAQS attainment area, the environmental consequences on local and regional air quality conditions are determined based on the increases in regulated pollutant emissions relative to existing conditions and ambient air quality. The impacts would be significant if the net increases in pollutant emissions would result in any one of the following:

- Cause or contribute to a violation of any national or state ambient air quality standard, or
- Represent an increase of 10 percent or more in an affected area's emissions inventory.

Under the Proposed Action, 341 housing units would be demolished, 422 new units would be built, and 250 units would be renovated**.** The repair of 362 units would not likely require much in the line of heavy equipment, so is not included in emission calculations. **Table 4-2** summarizes the estimated total emissions for the housing project. The calculations and assumptions for combustive and fugitive dust emissions are presented in **Appendix B.** The VOC emissions from paving new roads in Parcel F were also calculated; however, they were assumed to occur within one year, since the construction of roads in Parcel F would likely be done all at once, rather than spread over 5 years. The total VOCs from Parcel F road construction added to the VOCs per year for the rest of the project was too small to change the value when rounded to hundredths of a ton per year. Any paving required in the other parcels would be equally insignificant.

Table 4-2. Emissions for the Proposed Action (Tons/Year) Relative to Curry County Total Emissions.

Emission Source	CO	NO_2	PM_{10}	$PM_{2.5}$	SO_2	VOCs
Housing Demolition and Construction	1.53	1.08	17.13	---(1)	0.03	0.63
Curry County Total (2)	10,174	4,088	19,345	2,338	295	1,667
Percent	**0.02**	**0.03**	**0.09**	**--**	**0.01**	**0.03**

(1) Not calculated. Most common emission factor references do not include factors for $PM_{2.5}$. $PM_{2.5}$ emissions are not expected to exceed, or even approach, 10 percent of the County $PM_{2.5}$ emissions because of the quantity of other emissions relative to County totals.
(2) USEPA 2002.

As can be seen from the information presented, increased annual emissions are small when compared to the annual Curry County emissions inventory and are well below the 10 percent significance criteria. A conservative value for fugitive dust emissions was used and the value does not include any effort to reduce fugitive dust with site watering. Any construction-related emission effects would be temporary and would fall off rapidly with distance from the construction site. Due to the short-term effect of construction-related fugitive dust and

combustive emissions and the relative small area affected, there would be no decrease in air quality associated with the Proposed Action, no violation of any national or state ambient air quality standard, and therefore, no significant impacts.

4.7.2 No Action Alternative

Under the No Action Alternative, no fugitive dust or combustive emissions would result from construction activities; therefore, there would be no decrease in air quality associated with the No Action Alternative.

4.8 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

In order to determine the potential effects from implementing the proposed action or selecting the no action alternative, a methodology following the United States (U.S.) Army Corps of Engineers (USACE) Economic Impact Forecasting System (EIFS) was utilized. The EIFS model has been used by the U.S. Army and other Department of Defense (DOD) agencies to provide analysis of the potential economic effects that DOD activities would have on the local communities. According to the USACE,

> "EIFS is an economic modeling and information system that supports regional economic impact analyses by military planners and analysts. The model provides a mechanism to ascertain the significance of projected impacts, using the Rational Threshold Value and Finding of Significant Impact techniques. This determination allows the documentation and completion of the analyses, if significance thresholds are not exceeded."

4.8.1 Proposed Action

Implementing the proposed action would create minor, short-term socioeconomic benefits associated with demolition and construction activities. The benefits would only last for the timeframe of active construction operations that employ personnel and support ancillary service sectors (i.e., local suppliers, local support services). It has been estimated by the Air Force that the activities associated with the proposed action would generate spending of approximately $130.0 million into the local economy from the construction activities, with no changes to population or income. The region of influence (ROI) follows the four-county area as described previously.

Based on $130.0 million of expenditures, a change in regional sales volume of approximately 10.1 percent over the time period of construction activities would be anticipated. Total income within the ROI would be expected to increase approximately 1.8 percent, while total employment would be expected to increase approximately 2.1 percent. Overall, these beneficial impacts would be minor and temporary, as they would occur over a period of several years with the largest effects to occur during the periods with the highest spending for construction activities. Using the initial development period of five years to measure the annual average changes the sales volume would likely increase at an annual average rate of approximately 2.0 percent per year (assuming constant spending across five years), and personal income and employment would each increase approximately 0.4 percent per year.

Under the Proposed Action, 81 new homes would be constructed over the current inventory. These new homes would create opportunity for additional school-aged children to enter the Clovis public school system. Between school years 2002/2003 and 2008/2009, there has been a decrease in public school enrollment in the Clovis Municipal Schools by approximately 3.0 percent. The district's highest recent enrollment was in the 2004/2005 school year. The current year's school enrollment is approximately 4.7 percent lower than the 2004/2005 year (a difference of 392 students; NMPED 2008). Occupancy of the MFH at Cannon AFB is currently estimated to be approximately 65 percent, with peak occupancy having occurred in 2002 (approximately 97 percent; Long 2009). Given that the peak occupancy and the peak enrollment did not occur simultaneously, it is unlikely that increasing the occupancy of the MFH units would push enrollment up to or beyond past peak enrollment levels. With overall declining school enrollment and only marginal population growth in Clovis, New Mexico, it is unlikely that the addition of 81 new units of MFH at Cannon AFB would result in an additional 392 students entering the Clovis public school system. This would require approximately five children from each unit entering the public schools, which is well above the average number of children based on demographic trends. As such, the effect of implementing the proposed action on the public school system would not be significant, given the current declining school enrollment over past years and the school system's past enrollment levels.

Implementing the proposed action would not result in disproportionate impacts to minority and/or low-income populations within the ROI or the more immediate geographic area of the project area. As described previously, none of the geographic areas would be considered concentrated minority or low-income areas. Since the proposed action would create minor or negligible effects, there would not be any anticipated environmental justice impacts.

4.8.2 No Action Alternative

The No Action Alternative would not create the increases in personal income or employment that the demolition and construction actions of the Proposed Action would generate. There would be no effect on the Clovis public school system.

4.9 MITIGATION MEASURES

Council on Environmental Quality (CEQ) regulations (at 40 CFR § 1508.20) define mitigation in the following five ways, in order of preference:

a) **Avoiding** the impact altogether by not taking a certain action or parts of an action.

b) **Minimizing** impacts by limiting the degree or magnitude of the action and its implementation.

c) **Rectifying** the impact by repairing, rehabilitating, or restoring the affected environment.

d) **Reducing or eliminating** the impact over time by preservation and maintenance operations during the life of the action.

e) **Compensating** for the impact by replacing or providing substitute resources or environments.

These measures were discussed in the resource section where they are proposed for implementation, but are listed here to identify specific actions that the Air Force plans to take to further minimize non-significant impacts. In the absence of these measures, there will still be no significant impact

During the development of the Proposed Action, measures were included to mitigate potential adverse impacts that may result if the Proposed Action is implemented. These measures were discussed in the resource section where they are proposed for implementation. One measure is listed here to identify a specific action the Air Force needs to take to ensure that none of the impacts discussed in this environmental assessment (EA) are significant. The following mitigation measure would be incorporated into the Proposed Action:

- Incorporation of measures to achieve a 25 to 30 dB outdoor-to-indoor noise reduction in housing constructed within the 65- to 70-dB sound level within Parcels B and C. If additional noise studies are conducted that show that the DNL in these housing areas are in fact not subjected to 65- to 70-dB sound levels, this mitigation would no longer be required.

The following measures were identified in the resource sections as specific actions the Air Force plans to take to further minimize non-significant impacts. In the absence of these measures, there would still be no significant impact.

- Use of the Portales Gate for construction traffic onto the main base to avoid increasing traffic at the Main Gate.
- Recycle as much of the demolition and construction debris as possible to reduce the amount of solid waste disposed of at the Clovis Landfill.
- Use of best management practices (BMPs) for runoff control to minimize the sediment being carried off site into the golf course ponds.

5.0 CUMULATIVE IMPACTS

5.1 CUMULATIVE ENVIRONMENT

The Council on Environmental Quality (CEQ) defines cumulative effects as the "impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (Title 40 Code of Federal Regulations, Section 1508.7 [40 CFR 1508.7]). Although individual impacts of various actions might be minor, taken together their effects could be significant.

Impacts subject to cumulative effects analysis are identified by reference to the temporal span and spatial area in which the Proposed Action could cause effects. The initial development period (IDP) for the Proposed Action is five years; therefore, the construction and demolition of military family housing (MFH) would occur over a five-year period and the temporal span for the cumulative effects analysis includes projects reasonably foreseeable during the five-year construction and demolition period. For most resources, the spatial area for consideration of cumulative effects is Cannon Air Force Base (AFB); however, air and socioeconomic resources over a larger region of influence (ROI) could be affected by the Proposed Action; therefore, the cumulative effects could span over a larger ROI.

Between 2000 and 2007, the population of Curry County grew by 1.2 percent. Population growth results in residential, commercial, and industrial construction in the county, particularly in the Clovis region. The University of New Mexico's Bureau of Business and Economic Research (BBER) predicts slowing growth rates in Curry County over the next five to ten years (BBER 2008). New Mexico's Department of Transportation (NMDOT) has no proposed road improvement projects for U.S. Highway 60-84 over the next five years (NMDOT 2009).

Various military construction (MILCON) projects resulting from the transfer of Air Force Special Operations Command (AFSOC) forces would also occur at Cannon AFB. Multiple new structures and renovation projects are planned for construction between 2010 and 2014. Currently, a Capital Improvement Plan (CIP) is being developed for the base's transition from an Air Combat Command facility to an AFSOC base. A separate environmental assessment will be prepared for the CIP, which will include the housing privatization Proposed Action under its evaluation of cumulative impacts. Impacts from other development projects and population growth in the region in conjunction with the impacts from the Proposed Action present the potential for cumulative impacts.

5.2 CUMULATIVE IMPACTS

5.2.1 Noise

During the next five years, there will be multiple construction projects at Cannon AFB as part of the base's mission change. Noise generated during construction may be loud, but falls off rapidly in distance from the source. Temporal and spatial distances between the projects would keep them from becoming cumulatively significant.

5.2.2 Transportation

Additional construction projects at Cannon AFB would produce additional construction traffic through the Portales Gate, where all commercial traffic is directed to enter the base. During the early morning hours and at the end of the work day, this traffic could produce additional congestion on the roads leading to and from the base; however, the additional traffic would be sporadic and unlikely to cause a significant reduction in level of service.

5.2.3 Utilities

The Proposed Action does not result in an increase in utility demand on Cannon AFB; therefore, there would be no cumulative impact.

5.2.4 Solid Wastes

The Proposed Action would create construction and demolition debris; however, it is not more than the waste management system at the base can handle, therefore, the cumulative impact would not be significant.

5.2.5 Water Resources

All construction on Cannon AFB would be required to use best management practices (BMPs) to prevent sediment runoff from construction sites; therefore, there would be no cumulative impacts on water resources.

5.2.6 Hazardous Waste

The potential for impacts from hazardous materials and waste handling would also exist with the other on-base construction projects. These are potential impacts that would only occur if hazardous materials and waste were accidentally released; therefore, the potential for adverse cumulative impacts would not be significant.

5.2.7 Air Quality

The construction emissions calculated for the AFSOC Assets Beddown Environmental Impact Statement were added to the emissions calculated for this proposed action and were still less than significant. Changes in the proposed projects and scope of the AFSOC assets beddown would not likely increase air emissions to significance.

5.2.8 Socioeconomics and Environmental Justice

The impacts on socioeconomic resources from the Proposed Action would be beneficial from the addition of money into the local economy. The additional construction projects on base would be spread out over several years so they would not likely be sufficient to burden the local construction industry; therefore, the cumulative socioeconomic impacts would still be beneficial. None of the geographic areas are considered concentrated minority or low-income areas; therefore, there would be no cumulative environmental justice concerns.

5.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

NEPA CEQ regulations require environmental analyses to identify "...any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented" (40 CFR Section 1502.16). Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) which cannot be replaced within a reasonable time frame. Building construction materials, labor and fuel usage for construction equipment would constitute the consumption of non-renewable resources. These resources are currently plentiful in New Mexico and the Proposed Action would not significantly affect environmental resources.

6.0 PERSONS CONTACTED

Name	Organization	Title
Marianne Long	Booz Allen/CEAC	Cannon AFB HP Project Manager
Rick Chandler	27 SOCES/CEAN	Natural and Cultural Resources Specialist
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7.0 LIST OF PREPARERS

Name and Title	Organization	Years of Experience	Responsibility
Sloane Wendell, PE *Environmental Engineer*	Jacobs Engineering Inc.	13	Project management, quality assurance
Karen Johnson, MS *Environmental Specialist*	Geo-Marine, Inc.	21	Project management, principal author, DOPAA, utilities
Marlin Sawyer, MS *Environmental Scientist*	Geo-Marine, Inc.	30	Air quality and transportation
LeeAnn Kelly, BS *Environmental Scientist*	Geo-Marine, Inc.	10	Water resources, hazardous materials, and cumulative impacts
Kurt Hellauer, BA *Senior Air Space and Noise Analyst*	Geo-Marine, Inc.	21	Noise
Rae Lynn Schneider,	Integrated Environmental Solutions, LLC	8	Socioeconomics and environmental justice
Casey Gomez, BS *GIS Analyst*	Geo-Marine, Inc.	5	GIS/maps
Anna Perry, MS *Senior Administrative Assistant*	Geo-Marine, Inc.	4	Report production
Suzanne Bates, MS *Lead Environmental Specialist*	Geo-Marine, Inc.	12	Quality assurance

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APPENDIX A

NOTICE OF AVAILABILITY

NOTICE OF AVAILABILITY

Draft Environmental Assessment and Draft Finding of No Significant Impact Military Family Housing Privatization at Cannon Air Force Base, NM

The U.S. Air Force announces the availability of a Draft Environmental Assessment (DEA) for the proposed privatization of Military Family Housing (MFH) at Cannon Air Force Base. Under the Proposed Action, the Air Force would convey 953 MFH units, grant leases of land, and transfer responsibility for providing housing to a private developer at Cannon AFB. The Project Owner (PO) would repair, renovate, demolish, and construct the housing units to bring them up to Air Force guidelines for quality of life.

As part of the Air Force Environmental Impact Analysis Process, the Air Force has prepared a DEA for this action. The DEA considers in detail the potential effects of the Proposed Action and alternatives, including the No Action Alternative, on noise, transportation, utilities, water resources, hazardous materials and wastes, air quality, and socioeconomics and environmental justice. The results, as found in the DEA, show that the Proposed Action would not have a significant adverse impact on the environment, and that a Finding of No Significant Impact (FONSI) is warranted.

Copies of the DEA and Draft FONSI are available for review at: the Clovis Public Library, 702 N. Main St., Clovis, N.M.; and the Portales Public Library at 218 S. Avenue B, Portales, N.M. Public comments on the DEA and Draft FONSI will be accepted until June 12, 2009. Comments should be sent to Ms. Marianne Long, 27 SOCES/CEAC, Cannon AFB Housing Office, 311 S. Olympic Blvd., Cannon AFB, N.M. 88103, or emailed to marianne.long@cannon.af.mil.

APPENDIX B

AIR EMISSIONS CALCULATIONS

Combustive Emissions

	Sq ft	Acres	Days
Area of demolition calculated for debris generation	455,331	10.45	50
Area of construction	707,188	16.23	77
Area of renovation	333,820	7.66	36

Equipment	No. Reqd per 10 acres	NOx (lb/day)	VOC (lb/day)	CO (lb/day)	SO_2 (lb/day)	PM_{10} (lb/day)
Demolition						
Bulldozer	1	29.40	3.66	25.09	0.59	1.17
Loader	1	7.86	1.35	11.52	0.16	0.22
Haul truck	1	20.89	3.60	30.62	0.42	0.58
Total per 10 acres		58.15	8.61	67.23	1.17	1.97
Construction						
Generator	1	9.10	1.47	12.13	0.24	0.28
Industrial saw	1	6.65	1.08	8.86	0.34	0.20
Welder	1	3.50	0.56	4.60	0.09	0.10
Truck	1	20.89	3.60	30.62	0.42	0.58
Forklift	1	4.57	0.79	6.70	0.18	0.13
Crane	1	8.37	1.44	12.27	0.33	0.23
Paver	1	7.93	1.37	11.62	0.16	0.22
Roller	1	5.01	0.86	7.34	0.10	0.14
Air compressor	1	5.25	0.85	7.00	0.14	0.16
Architectural coating			23.5			
Total per 10 acres		71.27	35.52	101.14	2.00	2.04
Renovation						
Air compressor	1	5.25	0.85	7.00	0.14	0.16
Architectural Coating			23.5			
Industrial saw	1	6.65	1.08	8.86	0.34	0.20
Total per 10 acres		11.90	25.43	15.86	0.48	0.36
Project totals	**(lb/day)**					
Demolition	1	58.15	8.61	67.23	1.17	1.97
Construction	2	142.54	71.04	202.28	4	4.08
Renovation	1	11.90	25.43	15.86	0.48	0.36
	(lb)					
Demolition		2,907.50	430.50	3,361.50	58.50	98.50
Construction		10,975.58	5,470.08	15,575.56	308.00	314.16
Renovation		428.40	915.48	570.96	17.28	12.96
Total Combustive emission rates						
	Pounds	**14,311.48**	**6,816.06**	**19,508.02**	**383.78**	**425.62**
	Tons	**7.16**	**3.41**	**9.75**	**0.19**	**0.21**
	Tons/Year	1.43	0.68	1.95	0.04	0.04
Curry County	Tons/year	4088	1667	10174	295	19345
Percentage		0.035009	0.040888	0.0191744	0.013009	0.0886149

PM_{10} percent includes both combustive and fugitive PM_{10} values.

Fugitive Dust Emissions

Parcels D and E were not used in fugitive dust calculations because the housing slabs are expected to remain in place (renovation or repair, not C&D)

Parcel	Acreage
A	17
B	82
C	21
F	21
G	1.5
total	142.5
per year	28.5

Assumptions:

Fugitive dust generated at 1.2 tons per acre (USEPA 1985)

Roughly half of the dust is less than 10 microns in diameter therefore,

PM_{10} = 17.1 tons/yr

Paving Emissions (for Parcel F only)

VOC(tons/year)=2.62 lb/acre X (Acres paved/year)/2000
estimate that 10% of area is paved.
and all are paved in one year

VOC(tons/year)=2.62 lb/acre X (2.1 acres)/2000
0.002751 tons
5.50 pounds
Adding the full 0.002751 tons of VOCs to one year of combustive VOCs,.
does not change the value to two significant figures