



Final

ENVIRONMENTAL ASSESSMENT



**Addressing the Privatization of
Military Family Housing
at
Minot Air Force Base,
North Dakota**



May 2011

ACRONYMS AND ABBREVIATIONS

µg/m ³	micrograms per cubic meter	EIAP	Environmental Impact Analysis Process
5 BW	5th Bomb Wing	EIS	Environmental Impact Statement
91 MW	91st Missile Wing	EISA	Energy Independence and Security Act
ACM	asbestos-containing material	EO	Executive Order
ADC	Air Defense Command	ERP	Environmental Restoration Program
AFB	Air Force Base	ESA	Endangered Species Act
AFGSC	Air Force Global Strike Command	ESCP	erosion-and-sediment-control plan
AFI	Air Force Instruction	ESOHMIS	Environmental, Safety, and Occupational Health Management Information System
AFOSH	Air Force Occupational and Environmental Safety, Fire Protection, and Health	FAA	Federal Aviation Administration
AFPAM	Air Force Pamphlet	FEMA	Federal Emergency Management Agency
AFPD	Air Force Policy Directive	FICON	Federal Interagency Committee on Noise
AFS	Air Force Station	FONPA	Finding of No Practicable Alternative
AOC	Area of Concern	FONSI	Finding of No Significant Impact
APE	Area of Potential Effect	FPPA	Farmland Protection Policy Act
AQCR	Air Quality Control Region	ft ²	square feet
AST	aboveground storage tanks	ft ³	cubic feet
BAH	Basic Allowance for Housing	FY	Fiscal Year
BAT	Best Available Technology	GHG	greenhouse gas
BMP	best management practice	GOQ	General Officers Quarters
BTU	British Thermal Unit	GSF	gross square feet
CAA	Clean Air Act	HAP	hazardous air pollutant
CAP	Central Accumulation Point	HAZMART	hazardous materials pharmacy
CATM	Combat Arms, Training, and Maintenance	HMMP	hazardous material management program
CATV	cable television	HRMA	Housing Requirements and Marketing Analysis
CEQ	Council on Environmental Quality	HRO	Highest Ranked Officer
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	HSWA	Hazardous and Solid Waste Amendments
CES	Civil Engineering Squadron	HUD	U.S. Department of Housing and Urban Development
CFR	Code of Federal Regulations	HVAC	heating, ventilation, and air conditioning
CO	carbon monoxide	ICRMP	Integrated Cultural Resources Management Plan
CO ₂	carbon dioxide	IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
CSE	Comprehensive Site Evaluation	INRMP	Integrated Natural Resources Management Plan
CWA	Clean Water Act	IRT	Innovative Readiness Training
CZMA	Coastal Zone Management Act	JP-8	Jet Propellant-8
dBA	A-weighted decibel		
DNL	Day-Night Average A-Weighted Sound Level		
DOD	Department of Defense		
DRMS	Defense Reutilization and Marketing Service		
DWQ	Division of Water Quality		
EA	Environmental Assessment		
ED	endocrine disrupter		

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kg	kilograms	PCB	polychlorinated biphenyl
km	kilometers	pCi/L	picoCuries per liter
LBP	lead-based paint	P.L.	Public Law
LEED	Leadership in Energy and Environmental Design	PM _{2.5}	particulate matter equal to or less than 2.5 microns in diameter
LID	low-impact development	PM ₁₀	particulate matter equal to or less than 10 microns in diameter
LTM	Long-Term Monitoring	PO	Project Owner
MAF	Missile Alert Facility	POD	point of demarcation
MBTA	Migratory Bird Treaty Act	POL	petroleum, oils, and lubricants
MC	munitions constituents	ppm	parts per million
MEC	munitions and explosives of concern	PSD	Prevention of Significant Deterioration
MFH	military family housing	PVC	polyvinyl chloride
MGD	million gallons per day	QD	quantity-distance
mg/m ³	milligrams per cubic meter	RCRA	Resource Conservation and Recovery Act
MHPI	Military Housing Privatization Initiative	ROI	Region of Influence
mm	millimeter	SAC	Strategic Air Command
MMRP	Military Munitions Response Program	SAP	Satellite Accumulation Point
msl	mean sea level	SARA	Superfund Amendments and Reauthorization Act
MVA	megavolt-ampere	SDWA	Safe Drinking Water Act
NAAQS	National Ambient Air Quality Standards	SHPO	State Historic Preservation Office
NAGPRA	Native American Graves Protection and Repatriation Act	SIP	State Implementation Plan
NDAAQS	North Dakota Ambient Air Quality Standards	SLA	Sanitary Landfill Area
NDAC	North Dakota Administrative Code	SO ₂	sulfur dioxide
NDDH	North Dakota Department of Health	SOQ	Senior Officers Quarters
NDPDES	North Dakota Pollutant Discharge Elimination System	SPCC	Spill Prevention Control and Countermeasures
NEPA	National Environmental Policy Act	SQG	small-quantity generator
NFRAP	No Further Remedial Action Planned	SSPP	Strategic Sustainability Performance Plan
NHPA	National Historic Preservation Act	SWPPP	Storm Water Pollution Prevention Plan
NLR	Noise Level Reduction	TMDL	Total Maximum Daily Load
NO ₂	nitrogen dioxide	TNW	Traditional Navigable Water
NO _x	nitrogen oxide	tpy	tons per year
NPDES	National Pollutant Discharge Elimination System	TSDF	Treatment, Storage, and Disposal Facility
NRCS	Natural Resources Conservation Service	USACE	U.S. Army Corps of Engineers
NRHP	National Register of Historic Places	USAF	U.S. Air Force
ntu	nephelometric turbidity units	U.S.C.	United States Code
O ₃	ozone	USFWS	U.S. Fish and Wildlife Service
OSHA	Occupational Safety and Health Administration	USEPA	U.S. Environmental Protection Agency
OWS	Operation Walking Shield	UST	underground storage tank
Pb	lead	UTP	unshielded twisted pair
		VOC	volatile organic compound

COVER SHEET

FINAL ENVIRONMENTAL ASSESSMENT ADDRESSING THE PRIVATIZATION OF MILITARY FAMILY HOUSING AT MINOT AIR FORCE BASE, NORTH DAKOTA

Responsible Agencies: U.S. Air Force (USAF); Headquarters Air Force Global Strike Command (AFGSC); Barksdale Air Force Base (AFB), Louisiana; and Minot AFB, North Dakota.

Affected Location: Minot AFB, North Dakota.

Proposed Action: Privatization of Military Family Housing (MFH) at Minot AFB.

Report Designation: Final Environmental Assessment (EA).

Abstract: Consistent with the USAF Housing Privatization Program, AFGSC proposes to convey MFH units, grant leases of land, and transfer responsibility for providing MFH at Minot AFB to a private developer (the Project Owner [PO]). Currently, there are 1,746 MFH units at Minot AFB available for conveyance to the PO. The transition period would begin upon completion of contractual matters initiating the Proposed Action and would last for up to 6 years. During the 6-year transition period, the PO would demolish 140 older MFH units at Minot AFB. Sufficient numbers of MFH units for all eligible pay grades would be maintained during the transition period to the PO.

Specific transactions that would occur between Minot AFB and the PO as part of the Proposed Action are as follows:

- Minot AFB would convey 1,746 MFH units to the PO.
- Minot AFB would grant 50-year leases for a total of approximately 616.3 acres of land divided among the three neighborhoods (i.e., Prairie Rose Estates, Sunflower Haven, and North Point). In addition, the existing boundaries of the MFH neighborhoods would be modified as follows:
 - *Prairie Rose Estates.* The Dakota Elementary School, Memorial Middle School, and athletic fields adjacent to the schools would be excluded from the central and northwestern portions of the neighborhood boundary. The south-southeastern boundary would be modified by removing a small portion of the existing Prairie Rose Estates neighborhood and the existing boundary line would be slightly contracted north. The southwestern border would be expanded southwest to Missile Avenue.
 - *Sunflower Haven.* The north-northeastern boundary would be expanded north to Road G. The east-southeastern boundary would be expanded slightly south. The northwestern boundary would be expanded northwest.
 - *North Point.* The south-southeastern boundary would be expanded slightly east.
- The PO would demolish 140 of the existing MFH units in Prairie Rose Estates and continue use of 1,606 units in their present condition, which would include renovation, as needed.
- The USAF Housing Privatization Program has identified several desired features for new construction and renovation of MFH, its privatized communities, facilities maintenance, and property management for Minot AFB to include construction of two additional features: (1) a community storage unit complex, and (2) a community center with an indoor playground

and splash park. For purposes of this EA, it is assumed that construction of these two additional features would occur as part of the Proposed Action.

- Tot lots, playgrounds, bus stops, and common mailbox clusters would be conveyed to the PO. In addition, two box culverts in the middle drainage and the Dog Park would be conveyed to the PO.
- The PO would be responsible for ensuring that maintenance of conveyed areas complies with provisions in the installation's current Integrated Natural Resources Management Plan and Integrated Cultural Resources Management Plan. The Government retains the right to access and manage those natural and cultural resources covered by such plans.

The following would not be conveyed to the PO:

- Housing maintenance facility and office building
- Youth Center
- Three schools (i.e., Northern Plains Elementary School, Dakota Elementary School, and Memorial Middle School)
- Existing athletic fields adjacent to the schools
- Middle drainage separating the Prairie Rose Estates and Sunflower Haven neighborhoods
- Sluice gate in the middle drainage
- Northernmost box culvert under Rocket Road
- Three mass communication devices on Sherwood Circle, Mallard Trail, and next to Dakota Elementary in the yard behind Winding Way
- Static display missile west of Eagle Way.

This EA has been prepared to evaluate the Proposed Action and viable alternatives, including the No Action Alternative, and to aid in determining whether a Finding of No Significant Impact can be prepared or whether an Environmental Impact Statement is needed. Resource areas that are considered in the impact analysis include noise, air quality, land use, geological resources, water resources, biological resources, safety, utilities and infrastructure, hazardous materials and wastes, socioeconomic resources and environmental justice, and cultural resources.

Written comments and inquiries regarding this document should be directed to Ms. Janice Hoke, 5 CES/CEACH, 320 Peacekeeper Place, Minot AFB, North Dakota 58705-5006.

Final

**ENVIRONMENTAL ASSESSMENT
ADDRESSING THE PRIVATIZATION
OF MILITARY FAMILY HOUSING
AT
MINOT AIR FORCE BASE, NORTH DAKOTA**

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MAY 2011

Executive Summary

Introduction

The U.S. Air Force (USAF) operates and maintains approximately 104,000 military family housing (MFH) units at its installations throughout the United States. More than 38 percent of all units do not meet current modern standards and require either major improvement or replacement. At most installations, the demand for adequate on-installation housing exceeds supply. The lack of adequate MFH forces many military members and their families to live in on-installation housing that is in need of repair, renovation, or replacement; or requires them to live off-installation where the cost and quality of housing can vary considerably. Often, the cost to military members and their families to live off-installation is 15 to 20 percent greater than the cost to live on-installation. The USAF estimates that as much as \$7.6 billion would be needed to bring its on-installation housing up to current standards.

In recognition of these problems, Congress enacted Section 2801 of the National Defense Authorization Act for Fiscal Year (FY) 1996 (Public Law [P.L.] 104-106, codified at Title 10 of the United States Code [U.S.C.] Sections 2871–2885). Also known as the Military Housing Privatization Initiative (MHPI), this provision of law creates alternative authorities for improvement and construction of MFH. The MHPI was designed and developed to attract private sector financing, expertise, and innovation to provide necessary housing faster and more efficiently than traditional military construction processes would allow.

Consistent with the USAF Housing Privatization Program, Air Force Global Strike Command (AFGSC) proposes to convey MFH units, grant leases of land, and transfer responsibility for providing housing and ancillary supporting facilities at Minot Air Force Base (AFB), North Dakota, to a private developer (the Project Owner [PO]). The Proposed Action is part of the Northern Group MHPI, which includes Minot AFB, Cavalier Air Force Station (AFS), and Grand Forks AFB, North Dakota; Ellsworth AFB, South Dakota; Mountain Home AFB, Idaho; and Cannon AFB, New Mexico.

Purpose and Need for the Proposed Action

The purpose of the Proposed Action is to vest responsibility in a private developer for MFH at Minot AFB. The need for the Proposed Action is to provide a choice of affordable, quality housing and ancillary facilities to military members and their families through replacement and renovation of existing family housing units so that they meet current USAF standards.

The goal of the Northern Group MHPI is to provide uniformed services members and their families access to safe, secure, quality, affordable, well-maintained housing in a military community where they choose to live. MFH privatization would help accelerate housing improvements, alleviate housing shortages, and reduce waiting times for adequate housing, ultimately improving morale of USAF personnel and their families. Substantial portions of the MFH inventory at Minot AFB exhibit a principal concern facing MFH throughout the USAF: many MFH units are in poor condition. At Minot AFB, there are many MFH units that show signs of age and continuous use to such an extent that demolition is warranted. Many units are not energy-efficient and housing density is too high in some neighborhoods. Housing interiors are inadequate by modern standards in that bedroom closets, kitchen storage, and kitchen counter space are insufficient; and plumbing; electrical systems; and heating, ventilation, and air conditioning units are inefficient.

Description of the Proposed Action and No Action Alternative

Proposed Action. Consistent with the USAF Housing Privatization Program, Headquarters AFGSC proposes to convey 1,746 MFH units, tot lots, playgrounds, bus stops, common mailbox clusters, two box culverts in the middle drainage, and the Dog Park; lease approximately 616.3 acres of land divided among the three neighborhoods (i.e., Prairie Rose Estates, Sunflower Haven, and North Point); and transfer responsibility for providing housing and ancillary supporting facilities at Minot AFB to the PO.

Currently, there are 1,746 MFH units at Minot AFB available for conveyance to the PO. These MFH units at Minot AFB are organized within three neighborhoods. The neighborhoods (and the number of MFH units that are in each) are North Point (170 units), Prairie Rose Estates (1,079 units), and Sunflower Haven (497 units).

The transition period would begin upon completion of contractual matters initiating the Proposed Action and would last for up to 6 years. During the 6-year transition period, the PO would demolish 140 older MFH units in Prairie Rose Estates. Sufficient numbers of MFH units for all eligible pay grades would be maintained during the transition period to the PO.

Specific transactions that would occur between Minot AFB and the PO as part of the Proposed Action are as follows:

- Minot AFB would convey 1,746 MFH units to the PO.
- Minot AFB would grant 50-year leases for a total of approximately 616.3 acres of land divided among the three neighborhoods (i.e., Prairie Rose Estates, Sunflower Haven, and North Point). In addition, the existing boundaries of the MFH neighborhoods would be modified as follows:
 - *Prairie Rose Estates.* The Dakota Elementary School, Memorial Middle School, and athletic fields adjacent to the schools would be excluded from the central and northwestern portions of the neighborhood boundary. The south-southeastern boundary would be modified by removing a small portion of the existing Prairie Rose Estates neighborhood and the existing boundary line would be slightly contracted north. The southwestern border would be expanded southwest to Missile Avenue.
 - *Sunflower Haven.* The north-northeastern boundary would be expanded north to Road G. The east-southeastern boundary would be expanded slightly south. The northwestern boundary would be expanded northwest.
 - *North Point.* The south-southeastern boundary would be expanded slightly east.
- The PO would continue use of 1,606 units in their present condition, and renovate, as needed. The PO would demolish 140 of the existing MFH units in Prairie Rose Estates.
- The USAF Housing Privatization Program has identified several desired features for new construction and renovation of MFH, its privatized communities, facilities maintenance, and property management for Minot AFB to include construction of two additional features: (1) a community storage unit complex, and (2) a community center with an indoor playground and splash park. For the purposes of this EA, it is assumed that construction of these two additional features would occur as part of the Proposed Action.

- Tot lots, playgrounds, bus stops, and common mailbox clusters would be conveyed to the PO. In addition, two box culverts in the middle drainage and the Dog Park would be conveyed to the PO.
- The PO would be responsible for ensuring that maintenance of conveyed areas complies with provisions in the installation's current Integrated Natural Resources Management Plan (INRMP) and Integrated Cultural Resources Management Plan. The Government retains the right to access and manage those natural and cultural resources covered by such plans.

The following would not be conveyed to the PO (USAF 2010c):

- Housing maintenance facility and office building
- Youth Center
- Three schools (i.e., Northern Plains Elementary School, Dakota Elementary School, and Memorial Middle School)
- Existing athletic fields adjacent to the schools
- Middle drainage separating the Prairie Rose Estates and Sunflower Haven neighborhoods
- Sluice gate in the middle drainage
- Northernmost box culvert under Rocket Road
- Three mass communication devices on Sherwood Circle, Mallard Trail, and next to Dakota Elementary in the yard behind Winding Way
- Static display missile west of Eagle Way.

No Action Alternative. Under the No Action Alternative, Minot AFB would not implement the Proposed Action. Minot AFB would continue to provide for the housing needs of military personnel and family members. Minot AFB would have 1,478 MFH units that have been constructed within the past 10 years. These newly constructed MFH units would continue to provide adequate housing for many years into the future with only minor maintenance and repairs.

The remainder of the MFH units (268 units) would also continue to be used. These units are substantially older (11 to 40 years old) and would require more intensive maintenance and renovations to bring them up to current USAF housing standards. Under the No Action Alternative, these older MFH units would continue to be maintained and renovated, as needed. Based on historical trends, it is assumed that the amount of Congressional funding for MFH would not change and that the housing maintenance backlog would continue to increase. In their existing condition, these MFH units are inadequate facilities. In addition, the maintenance and renovation of these surplus units would be an unnecessary and costly burden to the USAF.

Under the No Action Alternative, Minot AFB would continue to maintain and upgrade infrastructure components, as required. Some of the utilities systems and pavements in the MFH parcels are old and require upgrades or replacements to improve overall levels of service and efficiency.

Considering that 268 of the existing MFH units are older and in need of upgrade, repair, or replacement, the No Action Alternative presumes that these units would require major renovation or demolition activities at some point in the future; and such actions could require additional National Environmental Policy Act (NEPA) analyses at that time.

Summary of Environmental Impacts

Noise. The noise from demolition and construction equipment would be localized, short-term, and intermittent during machinery operations. Heavy equipment would be used periodically during demolition and construction; therefore, noise levels from the equipment would fluctuate throughout the day. The Proposed Action would result in the demolition of 140 MFH units in the Prairie Rose Estates neighborhood which is bordered by Dakota Elementary, Memorial Middle School, athletic fields, and other MFH units. Noise levels would decrease as the distance between the demolition activities and the noise receptor increases; therefore, other MFH units and community uses in the Prairie Rose Estates neighborhood would experience lower noise levels. It is not anticipated that the short-term increase in noise levels from the Proposed Action would cause significant adverse impacts on the surrounding populations.

Air Quality. The Proposed Action would generate both temporary and long-term air pollutant emissions. Short-term emissions from combustion production from construction equipment would result from construction and demolition operations. Long-term, minor, adverse impacts would be expected from stationary sources such as boilers and heaters. Construction, demolition, and renovation activities associated with the Proposed Action would not have significant impacts on air quality at Minot AFB or on regional or local air quality. The Proposed Action would generate short-term emissions below *de minimis* levels and well below 10 percent of the emissions inventories for North Dakota Air Quality Control Region 172.

Land Use. The Proposed Action would not require changes to the current land use designations except if the community center and storage facility were constructed. Future land use within the MFH privatization area might require changing of land use classifications due to expansion of Unaccompanied Housing. Long-term, minor impacts on land use plans would be expected due to the need to change land use designations. Impacts on municipal land use plans or policies would not occur. Short-term, minor, adverse impacts on land use compatibility would be expected during the demolition of MFH units.

Geological Resources. Long-term, negligible, adverse impacts on the natural topography would be expected as a result of grading, excavating, and filling to accommodate demolition and construction activities. Negligible, long-term, adverse impacts on previously undisturbed geologic features would be expected from the Proposed Action. Short-term, adverse impacts would be expected during construction and demolition activities when vegetation is cleared and the earth is bare and soil erosion and sedimentation rates could increase. Increases to impervious surfaces as a result of the increase in square footage of MFH units would result in long-term, minor, adverse impacts on soils. Impacts would be reduced by implementing best management practices (BMPs).

Water Resources. No direct, adverse impacts on wetlands would be expected. However, short-term, negligible to minor, indirect, adverse impacts could be expected. If it is determined that discharge into navigable waters from facility construction or operations would occur, Minot AFB would be required to obtain Section 401 water quality certification from the North Dakota Department of Health/Division of Water Quality, Section 402 National Pollutant Discharge Elimination System (NPDES) permits, and applicable Section 404 permits for impacts on waters of the United States. Short- and long-term, negligible to minor, adverse, and long-term, beneficial impacts on groundwater and surface water could be expected. The potential for groundwater contamination would increase, as various underground utilities (e.g., electric, water) would either be installed or upgraded at the proposed project site. Surface water runoff occurring during demolition and construction activities could convey contaminants that would impact surface water quality in drainage channels and could also impact groundwater quality as a result of infiltration of contaminated runoff. Overall, construction and demolition activities would have the potential for short-term, adverse impacts on surface water quality and groundwater; however, the

development of a site-specific Storm Water Pollution Prevention Plan (SWPPP) as a component of the NPDES Permit for General Construction Activity would minimize the magnitude of potential adverse impacts. Implementation of BMPs provided in the Minot AFB SWPPP and INRMP would further reduce potential impacts on surface water resources.

It is anticipated that the demolition of 140 MFH units could either offset the long-term, adverse impacts associated with increased impervious surfaces resulting from the construction of the storage complex and community center; or result in long-term, beneficial impacts from an overall decrease in impervious surfaces. However, if the construction of the storage complex and community center resulted in an overall increase in impervious surfaces, even with the demolition of 140 MFH units, long-term, negligible to minor, adverse impacts on groundwater and surface water would be expected. No direct, adverse impacts on wetlands would be expected. However, short-term, negligible to minor, indirect, adverse impacts could be expected.

Biological Resources. The Proposed Action would be expected to result in short-term, negligible, adverse impacts on vegetation from temporary disturbances during demolition and construction activities (e.g., trampling and removal). Long-term, negligible to minor, adverse impacts on vegetation would be expected if the new community facilities are constructed in undeveloped (i.e., grass) sites due to direct removal of vegetation. The Proposed Action would have direct, short-term, minor, adverse impacts on wildlife due to disturbances (e.g., noise and motion) from demolition and construction activities and heavy equipment use. Long-term, minor, adverse impacts on wildlife would be expected if the community facilities are constructed in undeveloped sites due to direct removal of potential habitat. No federally listed threatened or endangered species are known to occur on Minot AFB; therefore, no impacts on federally listed species would be expected from the Proposed Action. Short-term, negligible to minor, adverse impacts on migratory birds would be expected from noise and motion disturbances during demolition and construction activities. These impacts would most likely be in the form of escape or avoidance behaviors, and would be expected to be temporary.

Safety. Short-term, negligible to minor, adverse, and long-term, beneficial impacts on health and safety would be expected. The short-term risk associated with construction contractors would slightly increase at Minot AFB during the normal workday, as construction activity levels would increase. In addition, short-term, minor, adverse, and long-term, beneficial impacts would be expected, as some of the older MFH units and associated infrastructure proposed for demolition or renovation likely contain asbestos-containing materials (ACM) and lead-based paint (LBP). These MFH units would need to be surveyed by a state-certified inspector prior to demolition or renovation activities. All ACM discovered would be removed by state-certified individuals prior to demolition and renovation and disposed of at a U.S. Environmental Protection Agency- (USEPA) approved landfill. Debris containing LBP would be characterized as demolition waste or LBP-contaminated demolition debris, which would be disposed of at a USEPA-approved landfill. The removal of ACM and LBP during demolition and renovation activities would result in long-term, beneficial impacts by reducing potential exposure to residents and maintenance personnel.

Infrastructure. Short-term, negligible to minor, adverse impacts on the Minot AFB transportation system would be expected. A slight increase in the amount of traffic at the installation from equipment being delivered, debris being removed, and contractors arriving to the work sites would be expected. In addition, short-term, minor, adverse impacts on electrical supply, natural gas supply, water supply, sanitary sewer and wastewater systems, storm water drainage, communications systems, and solid waste management would be expected. Temporary, minor service interruptions might be experienced when utility lines are disconnected from MFH units proposed for demolition and connected to the proposed community center and storage facility. Long-term, negligible, adverse impacts on the electrical, natural gas, water supply, sanitary sewer and wastewater systems, communications systems, and solid waste

management could be expected from the long-term increase in utility demand associated with the proposed community center and storage facility. However, the long-term increase in utility demand resulting from the proposed community center and storage facility could potentially be offset by cessation of utility use at the 140 older MFH units, once they were demolished. Long-term, negligible to minor, adverse impacts on the storm drainage system could be expected from an increase in impervious surfaces resulting from the construction of the proposed community center and storage facility. However, the increase in impervious surfaces associated with the construction of the proposed community center and storage facility could potentially be offset by the decrease in impervious surfaces resulting from demolition of the 140 older MFH units and associated driveways and pavements.

Hazardous Materials and Wastes. Short-term, minor, adverse impacts would be expected from the use of certain hazardous materials such as paints, welding gases, solvents, preservatives, and sealants. Short-term, minor, adverse impacts would be expected on hazardous wastes as a result of a minor increase in the quantity of hazardous wastes generated from proposed construction, demolition, and renovation activities. Short-term, negligible to minor, adverse impacts could be expected from Environmental Restoration Program site LF-02, Area of Concern-C, and Military Munitions Response Program site GR320, which are within 0.5 miles of the proposed project area. The potential for encountering contaminated groundwater or soil within the proposed project area during construction and demolition activities is low; however, if contaminated groundwater or soil is inadvertently discovered within the proposed project area during construction or demolition activities, the handling, storage, transportation, and disposal of hazardous substances would be conducted in accordance with applicable Federal, state, and local regulations; USAF regulations; and Minot AFB management procedures. Comprehensive Site Evaluation (CSE) Phase II efforts are planned for GR320 and should take place prior to commencement of construction and demolition activities. If results of the CSE Phase II indicate that the proposed project area could be impacted by munitions constituents, remediation efforts would also take place prior to construction and demolition activities.

Some of the older MFH units and associated infrastructure proposed for demolition or renovation likely contain ACM and LBP. These MFH units would need to be surveyed by a state-certified inspector prior to demolition or renovation activities. All ACM discovered would be removed by state-certified individuals prior to demolition and renovation and disposed of at a USEPA-approved landfill. Debris containing LBP would be characterized as demolition waste or LBP-contaminated demolition debris, which would be disposed of at a USEPA-approved landfill. The removal of ACM and LBP during demolition and renovation activities would result in long-term, beneficial impacts by reducing potential exposure to residents and maintenance personnel. Minot AFB is considered to be polychlorinated biphenyl- (PCB) free; however, light ballasts throughout the installation are assumed to be PCB-contaminated, unless they are labeled PCB-free. In MFH units, where previous radon test results exceeded the USEPA-recommended action level, there are passive radon elimination systems installed to mitigate radon.

Socioeconomic Resources and Environmental Justice. Short- and long-term, minor, beneficial impacts on socioeconomics would be expected. No impacts on environmental justice would be expected. There would be a minor, short-term increase in employment directly related to MFH demolition and renovation and new construction activities on the installation. The use of local labor would have a short-term, beneficial impact on the local economy, but would have negligible long-term impacts. As part of the Northern Group MHPI, the PO would seek to collaborate with the OWS Program to the maximum extent practicable. If it was determined that any of the 140 MFH units proposed for demolition were available for donation to OWS, the MFH units would be transported off-installation using OWS Program assets and beneficial impacts would be expected on American Indian reservations. Long-term, beneficial impacts on children's health and safety would be expected from the removal of ACM and LBP during demolition and

renovation activities, which would reduce potential exposure to residents, including children and maintenance personnel.

Cultural Resources. No impacts on archaeological resources; architectural resources; or resources of traditional, religious, or cultural significance to Native American tribes would be expected, as there are no known archaeological resources, National Register of Historic Places-eligible architectural resources, or known resources of significance to Native American tribes within the proposed project area. In the event of an inadvertent discovery of archaeological resources, all work in the immediate vicinity of the discovery would be halted until the materials were identified and documented and an appropriate treatment strategy was developed in consultation with the State Historic Preservation Office and other consulting parties.

Cumulative Effects

Cumulative effects on environmental resources result from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions. Cumulative effects would result from individually minor but collectively significant actions taking place over a period of time by various agencies (i.e., Federal, state, and local) or individuals. Informed decisionmaking is served by consideration of cumulative effects resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the reasonably foreseeable future.

Minor facility construction, renovation, and demolition projects and infrastructure upgrades are continuously occurring activities at Minot AFB. There are several facility construction and infrastructure upgrade projects that would also be occurring at Minot AFB concurrent with the Proposed Action, but these projects were not evaluated in detail because of their small scale and distance from the MFH areas. Anticipated cumulative adverse effects would be related to environmental impacts from demolition and construction activities (i.e., increased demand of infrastructure and utilities, ground disturbances and soil erosion, sedimentation, and increased pollution in waterways). Anticipated beneficial cumulative effects on socioeconomics in the surrounding area would be expected from economic expenditures associated with the installation development projects, MFH privatization, and mission relocation actions. No significant cumulative impacts on the environment would be anticipated from the Proposed Action in conjunction with other activities.

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AT MINOT AIR FORCE BASE, NORTH DAKOTA**

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1. Purpose of and Need for the Action

This Environmental Assessment (EA) addresses the Air Force Global Strike Command's (AFGSC) proposal to privatize military family housing (MFH) at Minot Air Force Base (AFB), North Dakota. This section presents background information, the purpose of and need for privatized MFH, the location and mission of Minot AFB, the scope of environmental review, and an introduction to the organization of this document.

1.1 Background

The U.S. Air Force (USAF) operates and maintains approximately 104,000 MFH units at its installations throughout the United States. More than 38 percent of all units do not meet current modern standards and require either major improvement or replacement. At most installations, the demand for adequate on-installation housing exceeds supply. The lack of adequate MFH forces many military members and their families to live in on-installation housing that is in need of repair, renovation, or replacement; or requires them to live off-installation where the cost and quality of housing can vary considerably. Often, the cost to military members and their families to live off-installation is 15 to 20 percent greater than the cost to live on-installation. The USAF estimates that as much as \$7.6 billion would be needed to bring its on-installation housing up to current standards (USAF 2007b).

In recognition of these problems, Congress enacted Section 2801 of the National Defense Authorization Act for Fiscal Year (FY) 1996 (Public Law [P.L.] 104-106, codified at Title 10 of the United States Code [U.S.C.] Sections 2871–2885). Also known as the Military Housing Privatization Initiative (MHPI), this provision of law creates alternative authorities for improvement and construction of MFH (see **Appendix A**). The MHPI was designed and developed to attract private sector financing, expertise, and innovation to provide necessary housing faster and more efficiently than traditional military construction processes would allow. By leveraging scarce public funding, the USAF can obtain private sector funds for construction, maintenance, management, renovation, replacement, rehabilitation, and development of USAF MFH and ancillary supporting facilities. The Department of Defense (DOD) has asked the USAF to upgrade all inadequate housing before FY 2010. Inadequate housing does not meet USAF housing standards as specified in Air Force Instruction (AFI) 32-6002, *Family Housing Planning, Programming, Design, and Construction* (January 15, 2008) and the Housing Requirements and Marketing Analysis (HRMA). Per Air Force Policy Directive (AFPD) 32-60, *Housing* (September 16, 2005), inadequate housing is defined as “any housing unit requiring whole-house improvement or replacement as identified by the services condition assessments, typically exceeding a per-unit cost of \$50,000 adjusted by the area cost factor. Services condition assessments use private sector housing industry construction codes and sizing standards as a basis for assessing inventory adequacy.”

1.2 Purpose of and Need for the Proposed Action

The USAF Housing Privatization Program incorporates the MHPI legislation enacted by Congress in 1996. Consistent with the USAF Housing Privatization Program, USAF Headquarters AFGSC proposes to convey MFH units, grant leases of land, and transfer responsibility for providing housing and ancillary supporting facilities at Minot AFB to a private developer (the Project Owner [PO]). The Proposed Action is part of the Northern Group MHPI, which includes Minot AFB, Cavalier Air Force Station (AFS), and Grand Forks AFB, North Dakota; Ellsworth AFB, South Dakota; Mountain Home AFB, Idaho; and Cannon AFB, New Mexico.

The purpose of the Proposed Action is to vest responsibility in a private developer for MFH at Minot AFB. The need for the Proposed Action is to provide a choice of affordable, quality housing and

ancillary facilities to military members and their families through replacement and renovation of existing family housing units so that they meet current USAF standards.

The goal of the Northern Group MHPI is to provide uniformed services members and their families access to safe, secure, quality, affordable, well-maintained housing in a military community where they choose to live. MFH privatization would help accelerate housing improvements, alleviate housing shortages, and reduce waiting times for adequate housing, ultimately improving morale of USAF personnel and their families. Substantial portions of the MFH inventory at Minot AFB exhibit a principal concern facing MFH throughout the USAF: many MFH units are in poor condition. At Minot AFB, there are many MFH units that show signs of age and continuous use to such an extent that demolition is warranted. Many units are not energy-efficient and housing density is too high in some neighborhoods. Housing interiors are inadequate by modern standards in that bedroom closets, kitchen storage, and kitchen counter space are insufficient; and plumbing; electrical systems; and heating, ventilation, and air conditioning (HVAC) units are inefficient.

1.3 Location and Mission

Minot AFB is home to two major USAF units under the AFGSC: (1) the 5th Bomb Wing (5 BW) and (2) the 91st Missile Wing (91 MW). The 5 BW, which serves as the host unit, maintains its mission as a dedicated team ready to deliver massive firepower worldwide, on time, on target, every time. The 5 BW manages the 5th Operations Group, 5th Maintenance Group, 5th Mission Support Group, and 5th Medical Group. In addition, the 5 BW controls the special staff functions of the inspector general, wing plans, the chaplain, staff judge advocate, arms control, command post, public affairs, history, and safety. The 91 MW includes the 91st Operations Group, the 91st Maintenance Group, the 91st Security Forces Group, several special staff functions (e.g., plans and inspections), financial management, and safety. The 91 MW includes a total force of approximately 1,600 airmen, including enlisted members, officers, and civilians (USAF 2009b, USAF 2010b).

Other tenants on Minot AFB include the Air Force Audit Agency; Air Force Office of Special Investigations; American Red Cross; Army and Air Force Exchange Service; Defense Commissary Agency; Defense Investigative Service; Defense Reutilization and Marketing Office; 372nd Training Squadron; U.S. Army Corps of Engineers; and Women, Infants, and Children (USAF 2008).

Minot AFB is in Ward County in the north-central section of North Dakota, approximately 10 miles north of the City of Minot, and 40 miles south of the United States-Canada border (see **Figure 1-1**). Highway 83 is adjacent to the eastern side of Minot AFB and runs parallel to the eastern boundary of the installation. **Figure 1-2** shows an overhead view of the installation and the location of the area proposed for privatization of MFH units.

1.4 Summary of Key Environmental Compliance Requirements

1.4.1 National Environmental Policy Act

The National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. Section 4321–4347) is a Federal statute requiring the identification and analysis of potential environmental impacts associated with proposed Federal actions before those actions are taken. The intent of NEPA is to help decisionmakers make well-informed decisions based on an understanding of the potential environmental consequences and to take actions to protect, restore, or enhance the environment. NEPA established the Council on Environmental Quality (CEQ) that was charged with the development of implementing regulations and ensuring Federal agency compliance with NEPA. The CEQ regulations mandate that all Federal agencies

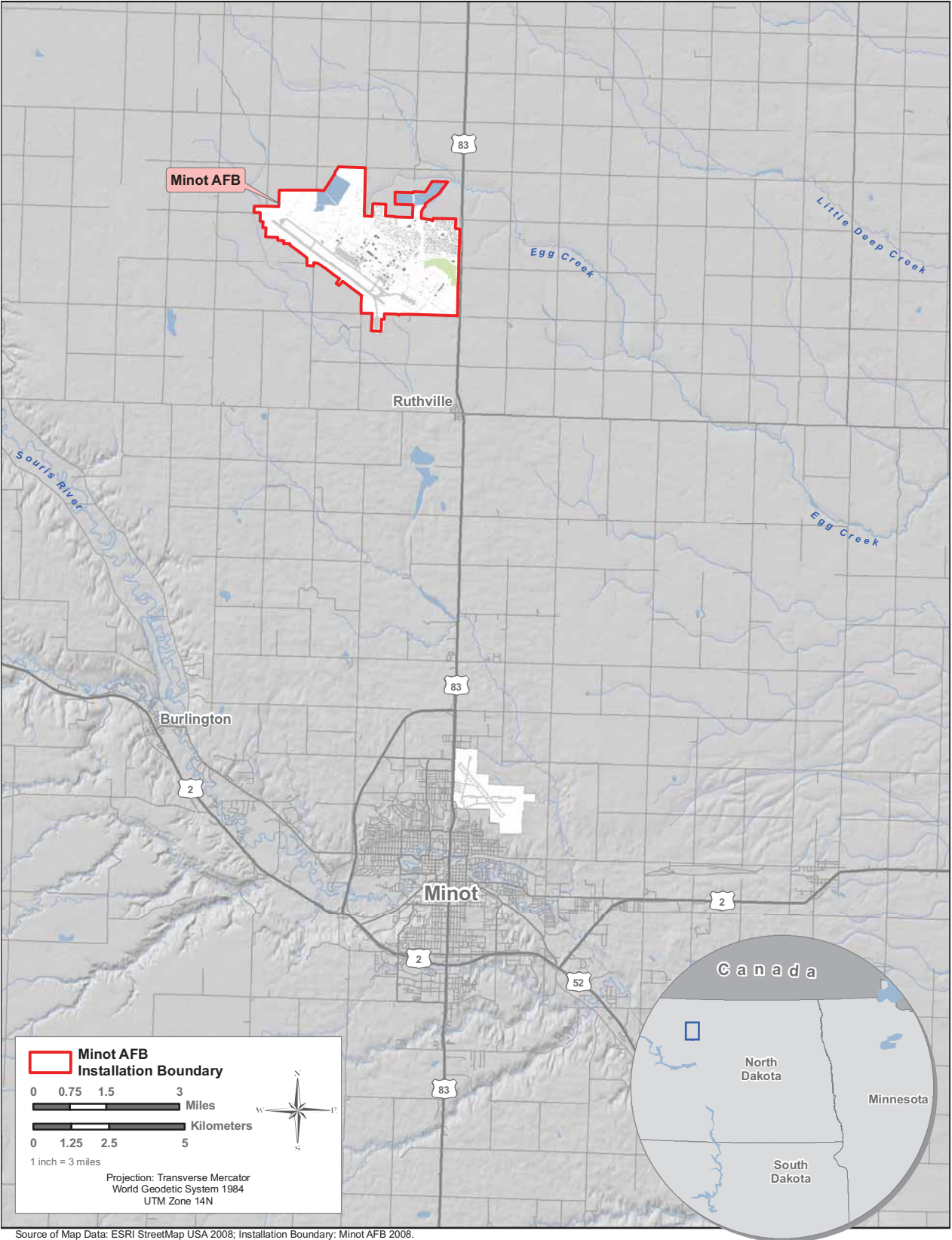
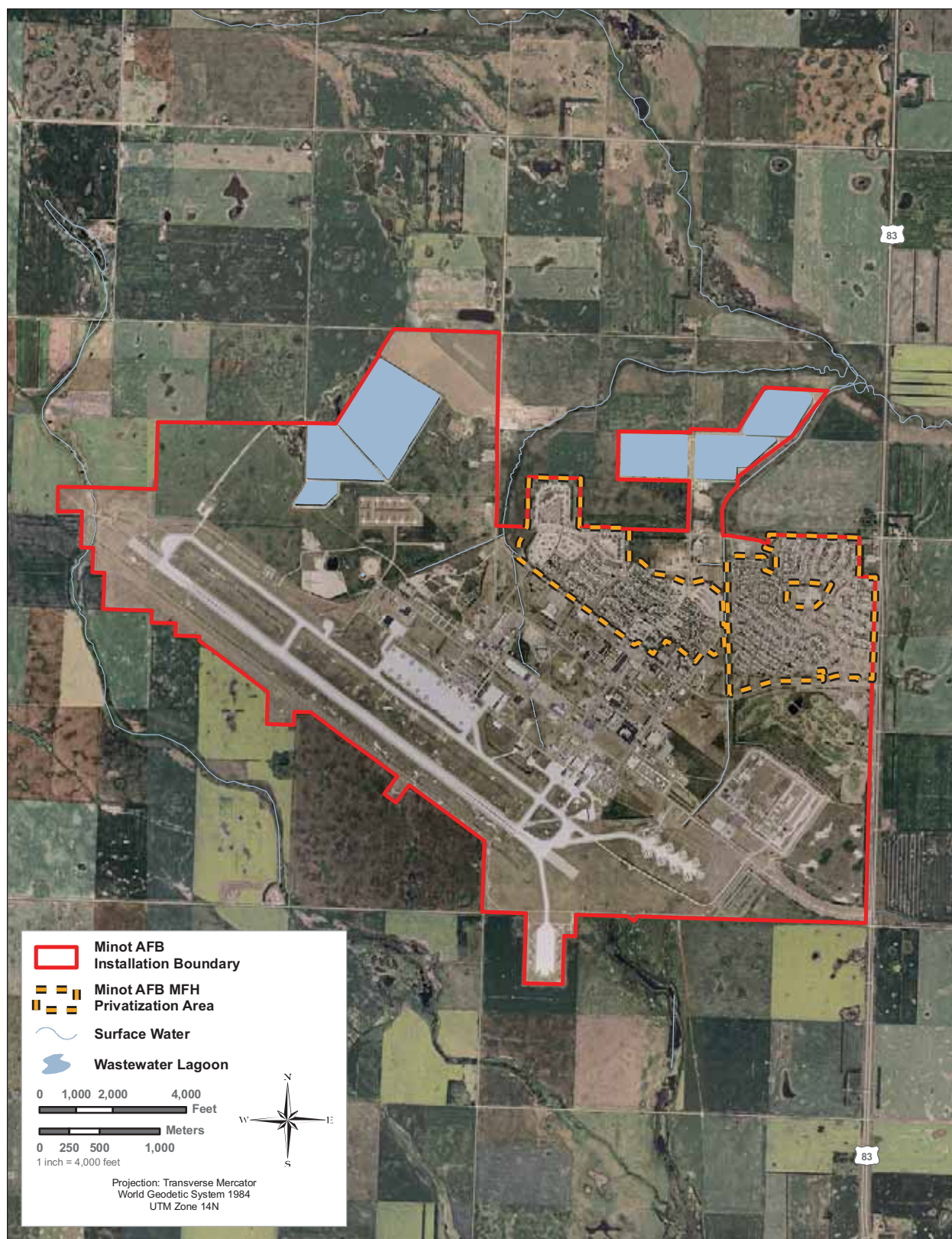


Figure 1-1. Minot AFB and Surrounding Area



Source of Aerial Photography: NAIP 2006; MFH Privatization Area: e*Map, Inc 2008; Installation Boundary: Minot AFB 2008.

Figure 1-2. Minot AFB and Proposed MFH Privatization Area

use a prescribed structured approach to environmental impact analysis. This approach also requires Federal agencies to use an interdisciplinary and systematic approach in their decisionmaking process. This process evaluates potential environmental consequences associated with a proposed action and considers alternative courses of action.

The process for implementing NEPA is codified in Title 40 of the Code of Federal Regulations (CFR), Parts 1500–1508, *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*. The CEQ was established under NEPA to implement and oversee Federal policy in this process. The CEQ regulations specify that an EA be prepared to provide evidence and analysis for determining whether to prepare a Finding of No Significant Impact (FONSI)/Finding of No Practicable Alternative (FONPA), where a FONPA is appropriate (see **Section 1.4.2**), or whether the preparation of an Environmental Impact Statement (EIS) is necessary. The EA can aid in an agency's compliance with NEPA when an EIS is unnecessary and facilitate preparation of an EIS when one is required.

AFPD 32-70, *Environmental Quality*, states that the USAF will comply with applicable Federal, state, and local environmental laws and regulations, including NEPA. The USAF's implementing regulation for NEPA is *Environmental Impact Analysis Process* (EIAP), 32 CFR Part 989, as amended.

1.4.2 Integration of Other Environmental Statutes and Regulations

To comply with NEPA, the planning and decisionmaking process for actions proposed by Federal agencies involves a study of other relevant environmental statutes and regulations. The NEPA process, however, does not replace procedural or substantive requirements of other environmental statutes and regulations. It addresses them collectively in the form of an EA or EIS, which enables the decisionmaker to have a comprehensive view of key environmental issues and requirements associated with the Proposed Action. According to CEQ regulations, the requirements of NEPA must be integrated “with other planning and environmental review procedures required by law or by agency so that all such procedures run concurrently rather than consecutively.”

This EA examines potential impacts of the Proposed Action and alternatives on 11 resource areas: noise, land use, air quality, safety, geological resources, water resources, biological resources, cultural resources, socioeconomic resources and environmental justice, infrastructure, and hazardous materials and wastes. These resources could potentially be affected by the Proposed Action and include applicable elements of the human environment that are prompted for review by Executive Order (EO), regulation, or policy.

EO 11988, *Floodplain Management*, states that if the head of an agency finds that the only practicable alternative is development within a floodplain, the agency shall design or modify its action to minimize potential harm to or within the floodplain, and prepare and circulate a notice explaining why the action is proposed within a floodplain. In accordance with EO 11988 and 32 CFR Part 989, a FONPA must accompany the FONSI stating why there are no practicable alternatives to development within the floodplain when such a situation occurs.

AFI 32-7063, *Air Installation Compatible Use Zone Program* (USAF 2009a) sets forth land use guidelines for recommended compatible land use classifications or coding for those areas impacted by aircraft noise and potential aircraft safety. Air Force Handbook 32-7084, *AICUZ Program Manager's Guide* (USAF 1999) identifies that although local conditions might require land in a particular area to be used for residential use, it is discouraged inside the 65 A-weighted decibel (dBA) Day-Night Average A-Weighted Sound Level (DNL) noise contour and strongly discouraged inside the 70 dBA DNL noise contour. The absence of viable alternative development options should be determined and an evaluation indicating that a demonstrated community need for residential use would not be met if development were

prohibited in these zones should be conducted prior to approvals. Where it is determined that residential uses must be allowed, measures to achieve outdoor-to-indoor Noise Level Reduction (NLR) for these noise zones should be incorporated into building codes and considered in individual approvals. NLR criteria will not eliminate outdoor noise problems. However, building location and site planning, and design and use of berms and barriers can help mitigate outdoor exposure, particularly from near ground-level sources. Measures that reduce outdoor noise should be used whenever practical in preference to measures which only protect interior spaces.

EO 13514, *Federal Leadership In Environmental, Energy, And Economic Performance* (October 5, 2009), directs Federal agencies to improve water use efficiency and management; implement high performance sustainable Federal building design, construction, operation, and management; and advance regional and local integrated planning by identifying and analyzing impacts from energy usage and alternative energy sources. EO 13514 also directs Federal agencies to prepare and implement a Strategic Sustainability Performance Plan to manage its greenhouse gas (GHG) emissions, water use, pollution prevention, regional development and transportation planning, and sustainable building design; and promote sustainability in its acquisition of goods and services. Section 2(g) requires new construction, major renovation, or repair and alteration of buildings to comply with the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings*. The CEQ regulations at 40 CFR 1502.16(e) direct agencies to consider the energy requirements and conservation potential of various alternatives and mitigation measures.

EO 13175, *Consultation and Coordination with Indian Tribal Governments* (November 6, 2000), directs Federal agencies to coordinate and consult with Indian tribal governments whose interests might be directly and substantially affected by activities on federally administered lands.

Appendix B contains examples of relevant laws, regulations, and other requirements that are often considered as part of the analysis. Where useful to better understanding, key provisions of the statutes and EOs described in **Appendix B** will be discussed in more detail in the text of this EA.

1.4.3 Interagency Coordination and Public Involvement

NEPA requirements help ensure that environmental information is made available to the public during the decisionmaking process and prior to actions being taken. The premise of NEPA is that the quality of Federal decisions will be enhanced if proponents provide information to the public and involve the public in the planning process. The Intergovernmental Coordination Act and EO 12372, *Intergovernmental Review of Federal Programs*, require Federal agencies to cooperate with and consider state and local views in implementing a Federal proposal. AFI 32-7060, *Interagency and Intergovernmental Coordination for Environmental Planning* (IICEP), requires the USAF to implement the IICEP process, which is used for the purpose of agency coordination and implements scoping requirements.

Through the IICEP process, Minot AFB notified relevant Federal, state, and local agencies of the Proposed Action and provided them sufficient time to make known their environmental concerns specific to the action. The IICEP process also provided Minot AFB with the opportunity to cooperate with and consider state and local views in implementing the Federal proposal. All IICEP materials related to this EA are included in **Appendix C**.

A Notice of Availability was published in the *Minot Daily News* on 4 April 2011, and the Draft EA and FONSI were made available to the public for a 30-day review period. Four agency comments were received during the 30-day review period from the North Dakota Game and Fish Department, North Dakota State Historic Preservation Office (SHPO), U.S. Fish and Wildlife Service (USFWS), and North

Dakota Department of Commerce. No public comments were received during the 30-day review period. All public review materials related to this EA are included in **Appendix C**.

1.4.4 Operation Walking Shield Requirements

Operation Walking Shield (OWS) is a unique civilian and military collaborative program that seeks integration of combined civilian and military activities through the DOD's Innovative Readiness Training (IRT) program. The IRT program uses United States military expertise to address the inadequate health care, infrastructure, and housing on American Indian reservations. Through IRT, OWS brings military reserve units to reservations to assist with health care and infrastructure support. IRT infrastructure projects have helped develop roads, water wells, sanitary sewers, and water utility lines to improve existing infrastructure conditions on American Indian reservations. The OWS Program helps support cost-efficient, quality, and safe housing options while greatly reducing the demolition and waste management burden for the United States military.

To address the chronic overcrowding and homelessness facing American Indian reservations, OWS has provided more than 1,000 housing units to more than 6,000 American Indians on numerous reservations in Montana, North Dakota, South Dakota, and Minnesota. This has been done in collaboration with the USAF. In the past, excess housing units from Grand Forks AFB, Minot AFB, and Malmstrom AFB have been donated to local American Indian reservations through OWS's Housing Relocation Program (OWS undated).

As part of the Northern Group MHPI, the USAF will seek to collaborate with the OWS Program to the maximum extent practicable by offering to donate MFH units proposed for demolition to the OWS program first in lieu of them being taken to a local landfill. If the OWS Program decides to accept any MFH units proposed for demolition, the OWS Program would remove and transport these MFH units to the appropriate American Indian Reservation at no cost to the USAF.

1.5 Organization of this Document

This EA is organized into six sections followed by seven appendices. **Section 1** provides the purpose of and need for the Proposed Action. **Section 2** contains a description of the Proposed Action, the No Action Alternative, and alternatives considered but eliminated from detailed analysis. **Section 3** contains a general description of the environmental and socioeconomic resources and baseline conditions that could potentially be affected by the Proposed Action and the No Action Alternative; and an analysis of the potential environmental and socioeconomic consequences of implementing the Proposed Action or the No Action Alternative. **Section 4** includes an analysis of the potential cumulative effects at Minot AFB. **Section 5** lists the preparers of the document. **Section 6** lists the references used in the preparation of the document. **Appendix A** contains the text of the MHPI as codified in 10 U.S.C. 2871–2885. **Appendix B** contains applicable laws, regulations, policies, and planning criteria potentially relevant to the NEPA analysis. **Appendix C** includes all IICEP and public review materials. **Appendix D** contains the desired features for Minot AFB privatized housing units. **Appendix E** provides representative photographs of MFH areas on Minot AFB. **Appendix F** contains the air emissions calculations for the Proposed Action.

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2. Description of the Proposed Action and Alternatives

This section presents information on the USAF's Housing Privatization Program and the Proposed Action under that initiative. **Section 2.1** describes how the Proposed Action would be implemented at Minot AFB and **Section 2.2** identifies alternatives to the Proposed Action, including the No Action Alternative. Implementation of the Proposed Action, as described in **Section 2.1**, is Minot AFB's Preferred Alternative.

2.1 Detailed Description of the Proposed Action

Consistent with the USAF Housing Privatization Program, Headquarters AFGSC proposes to convey 1,746 MFH units, tot lots, playgrounds, bus stops, common mailbox clusters, two box culverts in the middle drainage, and the Dog Park; lease approximately 616.3 acres of land divided among the three neighborhoods (i.e., Prairie Rose Estates, Sunflower Haven, and North Point); and transfer responsibility for providing housing and ancillary supporting facilities at Minot AFB to the PO.

Currently, there are 1,746 MFH units at Minot AFB available for conveyance to the PO. These MFH units at Minot AFB are organized within three neighborhoods. The neighborhoods (and the number of MFH units that are in each) are North Point (170 units), Prairie Rose Estates (1,079 units), and Sunflower Haven (497 units) (USAF 2011). **Figure 2-1** shows the locations of the three MFH neighborhoods. **Figures 2-2** and **2-3** show a more detailed close-up view of the eastern and western portions of the MFH area, respectively. **Appendix E** shows photos of representative MFH areas at Minot AFB. **Figure 2-4** shows the end-state MFH area upon completion of privatization.

The transition period would begin upon completion of contractual matters initiating the Proposed Action and would last for up to 6 years. During the 6-year transition period, the PO would demolish 140 older MFH units in Prairie Rose Estates. Sufficient numbers of MFH units for all eligible pay grades would be maintained during the transition period to the PO.

Under the Proposed Action, Minot AFB would execute agreements with the PO to convey real property, lease land, and have the PO assume responsibility to operate a rental housing development for the benefit of USAF and other personnel. Under agreements with Minot AFB, the PO would be responsible to plan, design, develop, renovate, demolish, construct, own, operate, maintain, and manage all necessary assets for MFH and selected ancillary supporting facilities. Additionally, the PO would be required to implement and follow appropriate environmental management laws, efforts, and plans regarding resources including land, soil, water, air, vegetation, hazardous materials and wastes, and cultural resources. The PO would be responsible for following the Integrated Natural Resources Management Plan (INRMP) while maintaining installation property under the lease. In addition the Ground Lease would: (a) restrict the PO from taking any action that would be inconsistent with the corresponding INRMP and Integrated Cultural Resources Management Plan (ICRMP); and (b) ensure that the Government retains the right to access and manage those natural and cultural resources covered by such plans, at the Government's expense, except when such Government action results from PO action or inaction. The PO would not take any action that interferes with the USAF's preservation efforts under the current INRMP. In exchange for providing housing, the PO would be entitled to rental income based on each occupant's Basic Allowance for Housing (BAH).

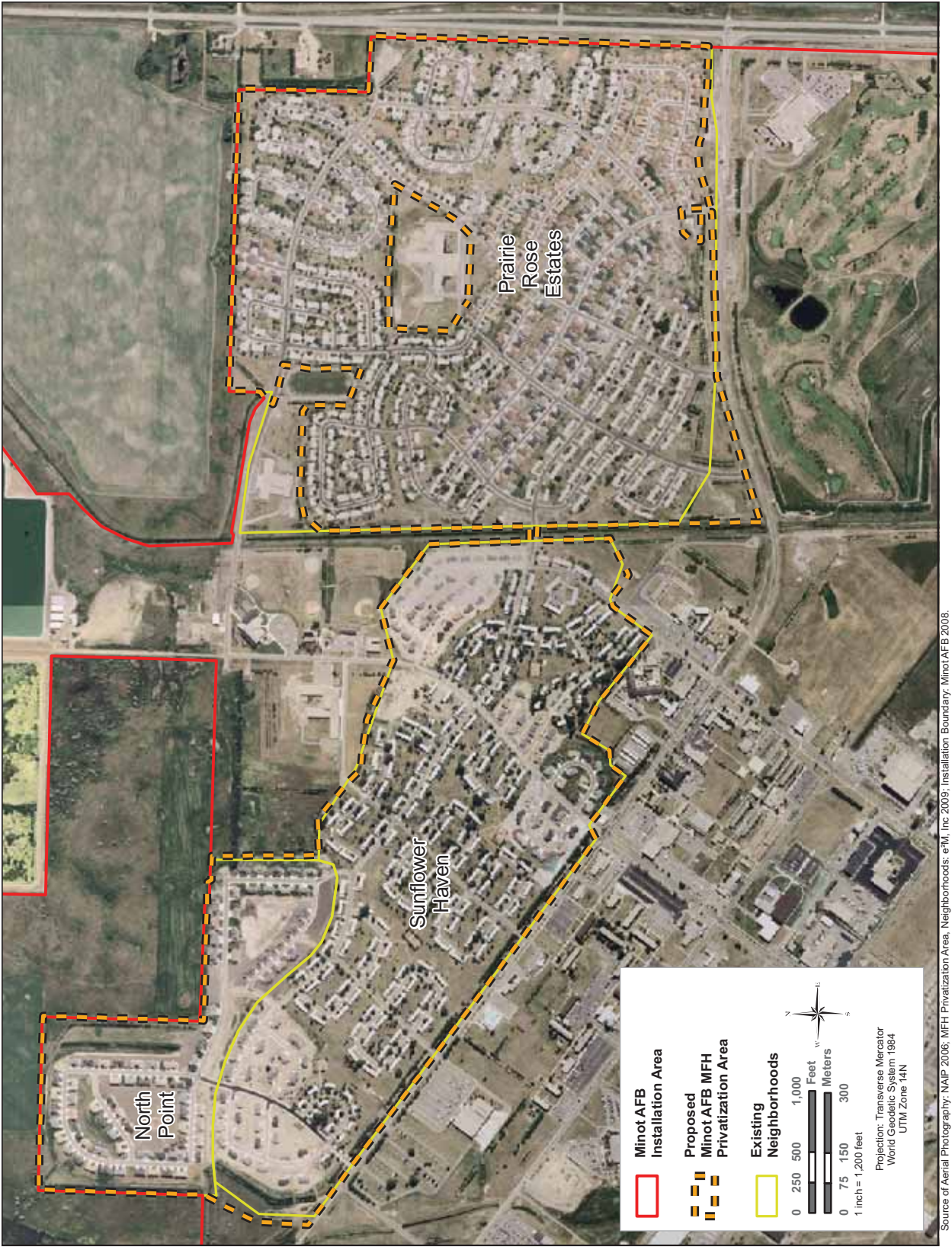


Figure 2-1. Existing MFH Area and Neighborhoods



Figure 2-2. Detailed View of Eastern Portion of MFH Areas

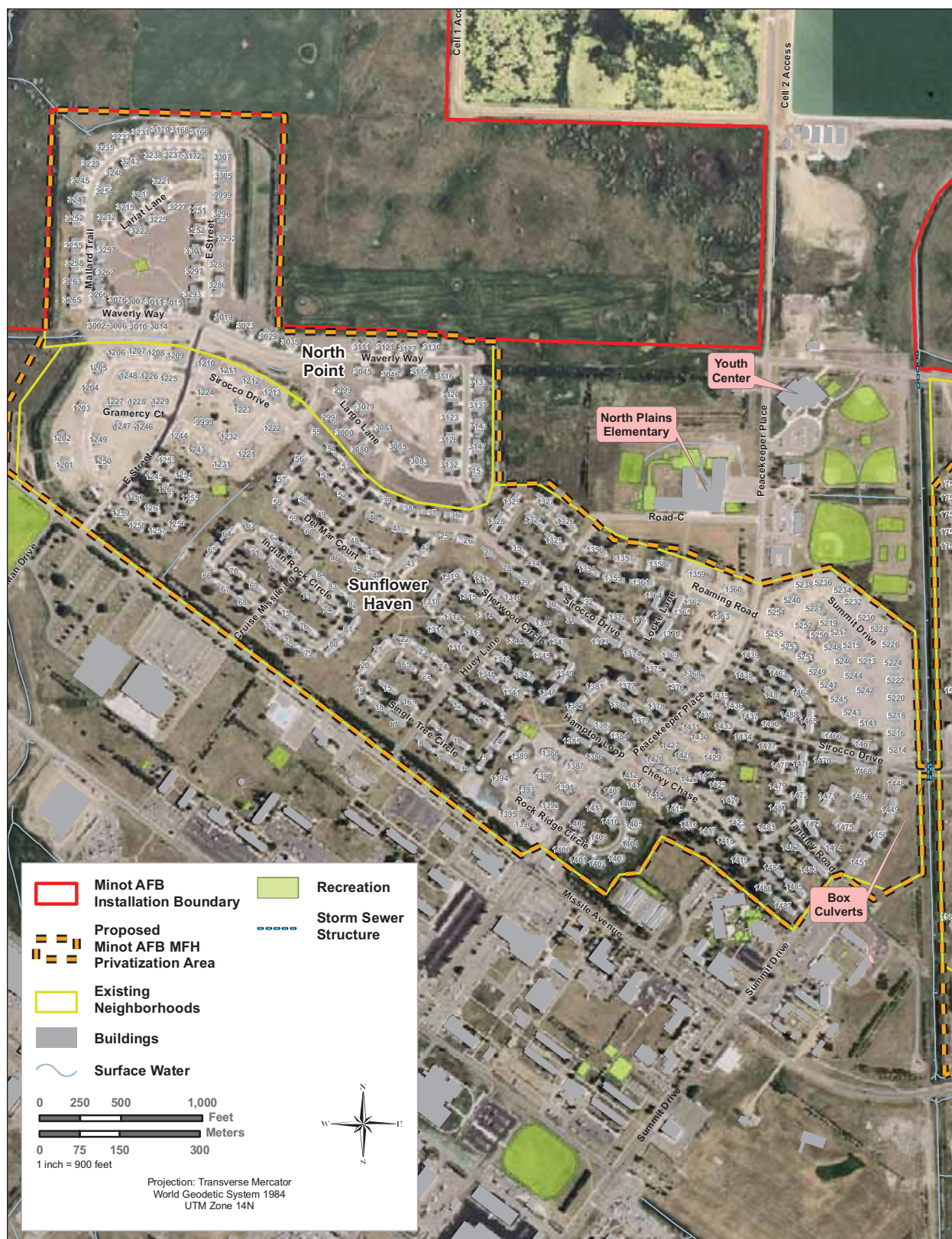


Figure 2-3. Detailed View of Western Portion of MFH Areas

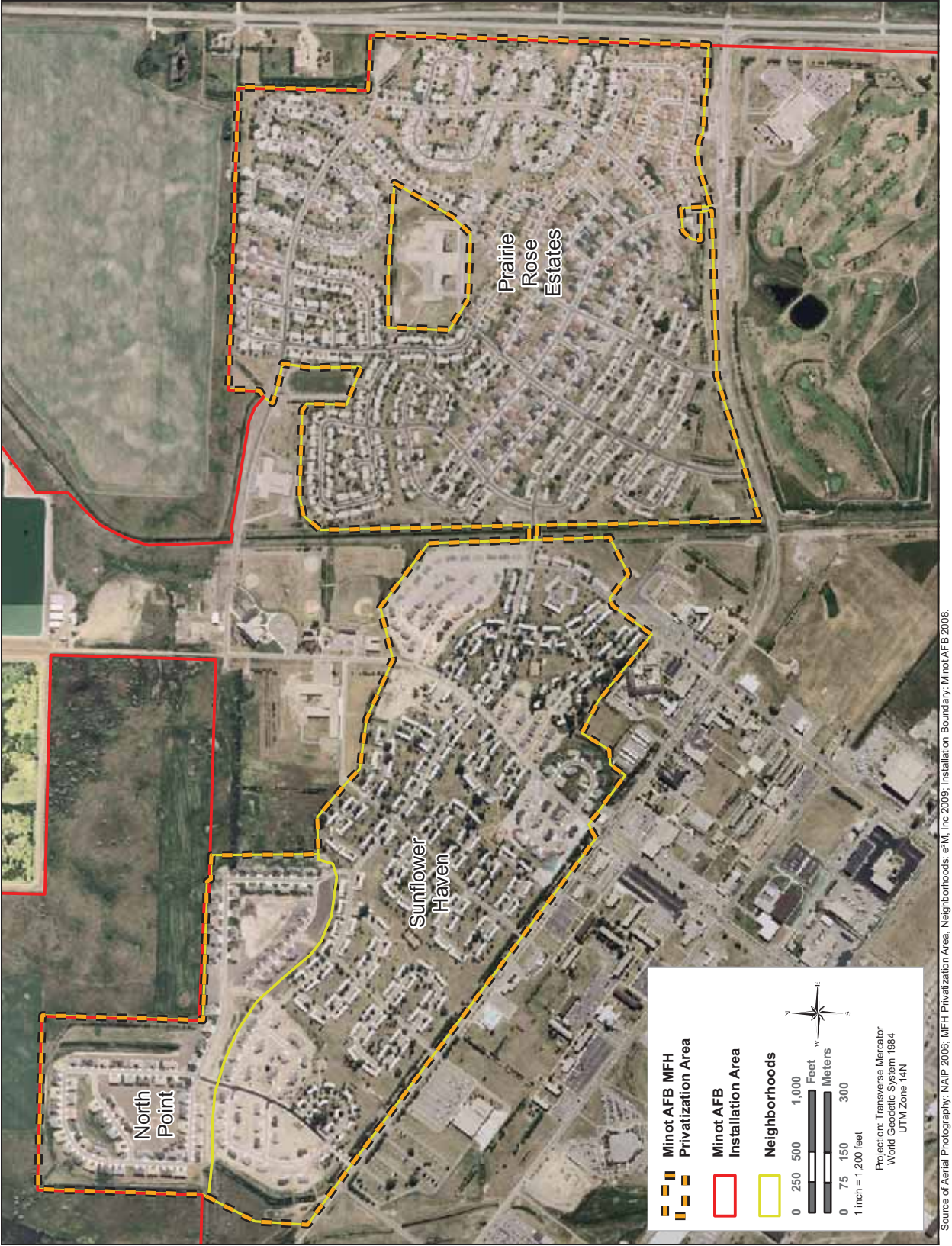


Figure 2-4. End-State MFH Area and Neighborhoods

Results of the HRMA¹, with a projection for FY 2012, identified the need for an end-state of 1,746 MFH units at Minot AFB. The *95% Housing Community Profile* has determined that 1,606 MFH units would be adequate by the time of closure or the end of the delayed conveyance (MAFB 2008a).

Specific transactions that would occur between Minot AFB and the PO as part of the Proposed Action are as follows:

- Minot AFB would convey 1,746 MFH units to the PO.
- Minot AFB would grant 50-year leases for a total of approximately 616.3 acres of land divided among the three neighborhoods (i.e., Prairie Rose Estates, Sunflower Haven, and North Point). In addition, the existing boundaries of the MFH neighborhoods would be modified as follows:
 - *Prairie Rose Estates.* The Dakota Elementary School, Memorial Middle School, and athletic fields adjacent to the schools would be excluded from the central and northwestern portions of the neighborhood boundary. The south-southeastern boundary would be modified by removing a small portion of the existing Prairie Rose Estates neighborhood and the existing boundary line would be slightly contracted north. The southwestern border would be expanded southwest to Missile Avenue.
 - *Sunflower Haven.* The north-northeastern boundary would be expanded north to Road G. The east-southeastern boundary would be expanded slightly south. The northwestern boundary would be expanded northwest.
 - *North Point.* The south-southeastern boundary would be expanded slightly east.
- The PO would demolish 140 of the existing MFH units in Prairie Rose Estates and continue use of 1,606 units in their present condition, which would include renovation, as needed.
- The USAF Housing Privatization Program has identified several desired features for new construction and renovation of MFH, its privatized communities, facilities maintenance, and property management for Minot AFB to include construction of two additional features: (1) a community storage unit complex, and (2) a community center with an indoor playground and splash park. For the purposes of this EA, it is assumed that construction of these two additional features would occur as part of the Proposed Action.
- Tot lots, playgrounds, bus stops, and common mailbox clusters would be conveyed to the PO. In addition, two box culverts in the middle drainage and the Dog Park would be conveyed to the PO.
- The PO would be responsible for ensuring that maintenance of conveyed areas complies with provisions in the installation's current INRMP and ICRMP. The Government retains the right to access and manage those natural and cultural resources covered by such plans.

The following would not be conveyed to the PO (USAF 2010c):

- Housing maintenance facility and office building
- Youth Center
- Three schools (i.e., Northern Plains Elementary School, Dakota Elementary School, and Memorial Middle School)
- Existing athletic fields adjacent to the schools

¹ DOD guidance states that the local community should be the first source for satisfying the demand for housing generated by military families. The HRMA identifies current and projected supply and demand for family housing and analyzes the local housing market to determine its ability to provide suitable housing for military personnel.

- Middle drainage separating the Prairie Rose Estates and Sunflower Haven neighborhoods
- Sluice gate in the middle drainage
- Northernmost box culvert under Rocket Road
- Three mass communication devices on Sherwood Circle, Mallard Trail, and next to Dakota Elementary in the yard behind Winding Way
- Static display missile west of Eagle Way.

Table 2-1 indicates the actions that would be taken with respect to the current MFH inventory. The actions presented in **Table 2-1** represent a combination of construction, demolition, and renovation that would produce the end-state inventory of 1,606 MFH units.

Table 2-1. Actions Taken and Proposed for MFH Units by Housing Area

Housing Area	Acreage	Number of Existing Units ^a	Years Constructed	Years Renovated	Proposed Action	Proposed Lease Term
North Point (Parcel A)	73.6	170	2005 to 2009	—	Remain “as is.”	50 years.
Prairie Rose Estates (Parcel B)	319.5	192	1963	1998	Remain “as is.”	50 years.
		747	1998 to 2011	—	Remain “as is.”	
		140	1963 to 1964	—	Demolish units.	
Sunflower Haven (Parcel C)	223.2	497	2005 to 2009	—	Remain “as is.”	50 years.
Total Existing	639	1,746	—	—	—	—
Total to Be Conveyed	616.3	1,746	—	—	—	—
Total End-State	616.3	1,606*	—	—	—	—

Sources: USAF 2010a, Hoke 2010, USAF 2010c, USAF 2011

Note: * During the 6-year transition period, the PO would demolish 140 older MFH units in Prairie Rose Estates and continue use of 1,606 MFH units in their present condition, which would include renovation, as needed.

After facilities deemed inadequate are demolished, the PO would grade the project area for proper drainage and seed all areas not proposed for future development. Some of the MFH units proposed for demolition might be desired by the OWS Program or other similar programs to be transferred to nearby localities. The responsibility for demolishing or removing the MFH units from Minot AFB would be the PO's, and any interface with the OWS Program would not affect the length of the initial development period. If the OWS Program requests any MFH units proposed for demolition, the units would be transported off the installation using OWS Program assets. However, the PO would be responsible for demolition of the foundation concrete slabs, utilities, and other items required to stabilize the project area.

The PO would remove all aboveground utilities within the leased MFH privatization area. Underground utility mains proposed for demolition could be capped at the main and abandoned in place; however, the PO would remove all laterals. In addition, the PO would remove all roadways and fences in areas proposed for demolition.

The PO would be responsible for maintaining the remaining or any new electrical, natural gas, water, and sewer utilities from each MFH unit to the point of demarcation (POD) as specified in the lease agreement. The USAF would retain ownership of the utility systems from the POD onto the rest of the installation outside the MFH areas, including overhead and underground distribution lines and primary and secondary lines. Telephone, network, and cable television distribution systems would not be conveyed to the PO.

Appendix A contains the MHPI on which the USAF Housing Privatization Program and the Proposed Action are based. Application of the provisions of the USAF Housing Privatization Program would be tailored to Minot AFB's specific circumstances and requirements.

The USAF Housing Privatization Program has identified several desired features for new construction and renovation of MFH, its privatized communities, facilities maintenance, and property management for the Northern Group installations (i.e., Cavalier AFS, North Dakota; Grand Forks AFB, North Dakota; Ellsworth AFB, South Dakota; Minot AFB, North Dakota; and Mountain Home AFB, Idaho). These desired features are intended to result in substantial improvements in the overall quality of housing for qualified personnel. Desired features for Minot AFB could include construction of a community storage unit complex and community center with an indoor playground and splash park. The required and desired features for MFH for new housing and renovations are provided in **Appendix D**.

2.1.1 Operational Provisions

The following paragraphs identify relevant matters pertaining to the proposed privatization of MFH.

Transition Plan. Implementation of the Proposed Action would include reliance on a transition plan prepared by the PO and approved by Minot AFB. The plan would include project development, phasing out of existing units, the means by which the PO would maintain availability of MFH units for qualifying personnel, and the methodology for providing utilities and services during and after the transition period. The transition period would begin upon completion of contractual matters initiating the Proposed Action and would last for up to 6 years. During the transition period, the PO would demolish 140 older MFH units and would continue use of 1,606 MFH units in their present condition, which would include renovation, as needed. At all times during the transition period, sufficient numbers of units for all eligible pay grades would be maintained.

Lease of Land. The USAF would grant the PO a lease of approximately 616.3 acres, as described in **Section 2.1**. Leasing of the housing area parcels would be subject to several conditions imposed by the USAF. The lease would be subject to all existing easements, or those subsequently granted, and established access routes for roadways and utilities located, or to be located, on the premises. The lease would do the following:

- Prohibit the PO from storing hazardous wastes (above those quantities generated in routine operations that are immediately disposed of) or taking any actions that would cause irreparable injury to the land. The PO would be required to comply with all Federal, state, interstate, or local applicable laws, regulations, conditions, or instructions affecting its activities. The USAF would include clauses in the lease permitting the USAF to conduct periodic inspection of the property to ensure its safe condition and its proper use in accordance with the terms of the lease.

- Prohibit operation by the PO of satellite hazardous waste accumulation sites on Minot AFB. The PO would be responsible for appropriate storage and disposal of hazardous waste and universal waste (e.g., fluorescent bulbs, batteries, thermostats). The PO would be responsible for any environmental fines or penalties arising from accidental, negligent, or intentional acts on the property. The PO would be responsible for the costs of disposing of solid waste generated as a result of the construction and demolition activities associated with the Proposed Action and subsequent housing use. Solid waste and recyclables (i.e., paper, cardboard, glass, and plastic) generated would be disposed of off-installation at the PO's expense.
- Prohibit the use of asbestos or asbestos-containing material (ACM) or lead-based paint (LBP) in the construction of new facilities.
- Prohibit discharge of waste or effluent from the premises in such a manner that the discharge would contaminate streams or other bodies of water or otherwise become a public nuisance.
- Prohibit removal or disturbance of, or causing or permitting such, any historical, archaeological, architectural, or cultural artifacts, relics, remains, or objects of antiquity. In the event such items should be discovered, the PO would be required to notify the installation commander or his designated representative and immediately protect the site and the material from further disturbance.
- Require maintenance of all soil, water, vegetation, and designated natural resources areas using appropriate measures to prevent or control soil erosion, spread of noxious weeds, and spread of infectious vegetation diseases such as Dutch elm disease and the emerald ash borer within the installation. These measures would be addressed in permits (e.g., Clean Water Act [CWA] Section 404 permit); P.L. 93-629, *Noxious Weed Control*; and the installation's INRMP, ICRMP, and *Storm Water Pollution Prevention Plan* (SWPPP). The PO would be required to comply with all applicable permits, including the storm water permit and accompanying SWPPP.
- Prohibit the cutting and sale of timber by the PO; prohibit mining operations; and prohibit the removal of sand, gravel, or like substances from the ground.

Federal laws, regulations, and EOs, such as the CWA; Endangered Species Act (ESA); Archaeological Resources Protection Act; EO 11988, *Floodplain Management*; and EO 11990, *Protection of Wetlands*, would continue to be applicable and enforced by the USAF on the leased property. Potentially applicable laws, regulations, and EOs are summarized in **Appendix B**.

Conveyances. A total of 1,746 MFH units, tot lots, playgrounds, bus stops, common mailbox clusters, two box culverts in the middle drainage, the Dog Park, and approximately 616.3 acres of land would be conveyed to the PO. During the 6-year transition period, 140 MFH units would be demolished, which would result in an end-state conveyance of 1,606 MFH units. The USAF would convey this property with encumbrances, notices, and requirements obligating the PO to certain actions. The USAF has completed an Environmental Baseline Survey (MAFB 2009a) to determine the location and extent of possible contamination from underground storage tanks (USTs) or other sources. The USAF would identify any easements and rights-of-way that might affect the PO's use of conveyed property.

Barrier-free Design. New MFH and ancillary supporting facilities must adhere to the *Uniform Federal Accessibility Standards* and the *Americans with Disabilities Act Accessibility Guidelines* promulgated by the Access Board (formerly known as the Architectural and Transportation Barriers Compliance Board) pursuant to the Architectural Barriers Act of 1968, Rehabilitation Act of 1973, and Americans with Disabilities Act of 1990. These standards require that at least 5 percent of new MFH units be designed and built to be accessible, or easily modifiable for access, by persons with physical disabilities.

Construction and Demolition Standards. Demolition, construction, and renovation standards reflect consideration of City of Minot, Ward County, and State of North Dakota building codes, standards, and regulations. New community features, new units, and renovations to existing units would be designed and constructed so they are capable of achieving “Leadership in Energy and Environmental Design (LEED) for New Construction” Silver certification (additional evaluation credit will be given to Offerors who propose building to LEED Gold or LEED Platinum standards). If units are constructed in the future, construction of MFH units would be based on sustainable design and development concepts and would seek to incorporate consideration of matters such as sustainable sites, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality. Design, materials, equipment, and construction methods would reduce energy and water consumption to current Energy Star ² criteria. Design features would include optimizing glass locations and areas; optimizing insulation in exterior walls, ceilings, and between adjoining units; weatherstripping throughout; and minimizing duct leakage. Attention to construction details, exterior fenestration materials, and passive solar energy systems would be employed whenever possible. The PO would ensure that materials, equipment, and finishes would be durable, low-maintenance, and functional. These measures would improve environmental and economic performance of facilities through the use of established and advanced industry principles, practices, materials, and standards. In accordance with EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, the PO would consider recycled products and environmentally preferable purchasing criteria developed by the U.S. Environmental Protection Agency (USEPA).

A Demolition Plan would be established and implemented as part of the overall Construction Management Plan. The Demolition Plan would provide a phased approach for demolition of existing units, appurtenances, and infrastructure. Underground utility mains proposed for demolition could be capped at the main and abandoned in place; however, the PO would remove all laterals. The contractor would be responsible for handling any ACM and LBP in accordance with applicable laws, including removal, disposal, and abatement. An asbestos disposal plan would identify the proposed disposal site for any ACM. After demolition is complete (including facilities, utilities, roads, and fences, as appropriate), the PO would grade the land for proper drainage and seed all areas where new construction is not planned. The PO would handle, maintain, and transport all debris to a Government-approved landfill in accordance with applicable Federal, state, and local regulations. Selling or recycling demolition debris would be pursued where possible.

The Demolition Plan should consider the removal of trees and other vegetation required during demolition. Landscaped trees and other vegetation should be replaced with similar species, as coordinated with the installation.

Operation and Maintenance. The PO would operate and maintain for 50 years all existing and new MFH units and ancillary supporting facilities, including associated parking lots and sidewalks, in accordance with the quality standards established in privatization program agreements.

Rental Rates and Payments. Unit rents would be fixed by unit type and shall not exceed the BAH “with dependent” rate of the military grade for which the particular unit was designated less a utility allowance. Rent will be paid on the first day of the month to which such rent applies.

Utilities. The PO would pay all utility costs until utility meters are installed on each housing unit. Until meters are installed on each unit, the military member would surrender his or her entire BAH for rent and utilities. No later than the end of the transition period (approximately 6 years), the PO must have

² The U.S. Environmental Protection Agency and U.S. Department of Energy promote the use of energy-efficient equipment by awarding the Energy Star label to products that save energy. The agencies set energy efficiency criteria for specific consumer and commercial products. Energy Star products include appliances (e.g., refrigerators, dishwashers, and room air conditioners) and residential HVAC equipment (e.g., programmable thermostats, boilers, furnaces, heat pumps, and central air conditioners).

individual meters installed on the end-state units. The PO would then establish a fixed rent for those units at an amount not to exceed the BAH rate minus an amount sufficient to cover 110 percent of estimated average reasonable utility (i.e., electricity and natural gas) charges at the dependent rate of the military grade that the unit is designated for, in accordance with the Project Development Demographics. The PO would pay for all water, sewer, and refuse collection services, including curbside recycling pickup, throughout the duration of the privatization agreement.

Occupancy Guarantee. Minot AFB would not guarantee the level of occupancy of MFH by military members. The Minot AFB Housing Office would provide “Referral Tenants.” All military personnel assigned to the local area would be required to process through the Minot AFB Housing Office upon arrival prior to signing a lease for housing. Freedom of housing choice would be preserved. The PO would compile and maintain a waiting list. After the transition period, if vacancy rates exceed 5 percent, the PO may immediately rent to other active-duty members of the uniformed services and their families. If vacancy rates exceed 5 percent for more than 30 consecutive days, the PO may rent to Federal civil service, retired military members, and retired Federal civil service and their families. If vacancy rates exceed 5 percent for more than 60 consecutive days, the PO may rent to DOD contractor permanent employees (United States citizens) and their families. If vacancy rates exceed 5 percent for more than 90 consecutive days, the PO may rent to the general public with a written notice to the Government. Should this type of situation arise, the PO would be allowed to fill only the number of rental units necessary to bring the vacancy rate to 5 percent. Offering of vacant units to other eligible tenants would be based on a priority list. Other eligible tenants would include the following (listed in descending order of priority):

- Other active-duty military members and families (including unaccompanied military members)
- Federal civil service employees
- Retired military members and families
- Guard and Reserve military members and families
- Retired Federal civil service employees
- DOD contractor or permanent employees (United States citizens)
- Members of the general public (with prior written notice to the Government).

Jurisdiction. The legislative jurisdiction of the MFH areas at Minot AFB could be either proprietary, exclusive Federal, or concurrent jurisdiction, as more specifically described herein: all parcels to be leased at Minot AFB are under proprietary jurisdiction. The Government would, however, reserve the right to change the jurisdiction of the leased parcels at any time. Such change would not be the basis for a claim by the PO for property taxes or other costs.

Municipal Services. Due to the distance between existing municipal services and MFH areas, Minot AFB would be the primary responder for firefighting services, law enforcement services, and other emergency services provided to the MFH area. The levels of service would include emergency response and force protection. The PO would reflect these costs in its operating budget and reimburse the installation’s service agency for all actual costs incurred for this level of service.

2.2 Alternatives to the Proposed Action

2.2.1 The No Action Alternative

CEQ regulations require inclusion of the No Action Alternative. The No Action Alternative serves as a baseline against which the impacts of the Proposed Action and considered alternatives can be evaluated.

Under the No Action Alternative, Minot AFB would not implement the Proposed Action. Minot AFB would continue to provide for the housing needs of military personnel and family members.

Minot AFB would have 1,478 MFH units that have been constructed within the past 10 years. These newly constructed MFH units would continue to provide adequate housing for many years into the future with only minor maintenance and repairs.

The remainder of the MFH units (268 units) would also continue to be used. These units are substantially older (11 to 40 years old) and would require more intensive maintenance and renovations to bring them up to current USAF housing standards. Under the No Action Alternative, these older MFH units would continue to be maintained and renovated, as needed. Based on historical trends, it is assumed that the amount of Congressional funding for MFH would not change and that the housing maintenance backlog would continue to increase. In their existing condition, these MFH units are inadequate facilities. In addition, the maintenance and renovation of these surplus units would be an unnecessary and costly burden to the USAF.

Under the No Action Alternative, Minot AFB would continue to maintain and upgrade infrastructure components, as required. Some of the utilities systems and pavements in the MFH parcels are old and require upgrades or replacements to improve overall levels of service and efficiency.

Considering that approximately 268 of the existing MFH units in the Prairie Rose Estates neighborhood are older and in need of upgrades, repairs, and replacement, the No Action Alternative presumes that these units would require major renovation or demolition activities at some point in the future; and such actions could require additional NEPA analyses at that time.

2.3 Alternatives Considered but Eliminated from Detailed Analysis

Under NEPA, consideration and analysis of reasonable alternatives to the Proposed Action are required in an EA. Considering alternatives helps to avoid unnecessary impacts and allows for an analysis of reasonable ways to achieve the stated purpose. To warrant detailed evaluation, an alternative must be reasonable. To be considered reasonable, an alternative must be suitable for decisionmaking (i.e., any necessary preceding events have taken place), capable of implementation, and satisfactory with respect to meeting the purpose of and need for the action. Based on these requirements, the following alternatives were considered but eliminated from further detailed analysis.

2.3.1 The Partial Privatization Alternative

Under this alternative, Minot AFB would privatize only a portion of the installation's MFH inventory. Family housing in good condition (not needing demolition or renovation) would remain subject to USAF management for maintenance and operational control.

Privatization of only a portion of Minot AFB's MFH inventory would have several substantial drawbacks. First, the condition of the MFH units retained by the USAF would change over time, resulting in a need for its renovation or replacement. Failure to include the entire inventory of housing in the privatization transaction would only delay action to provide adequate housing for airmen and their dependents. Second, having two management entities (the USAF and the PO) would not be as cost-effective as one. From a private developer's perspective, maximum potential cash flow is important to support development and operation of the ancillary supporting facilities desired by the installation, and such activities traditionally do not provide independent sources of revenue to sustain them. Together, these factors render consideration of partial privatization at Minot AFB not feasible and, therefore, this alternative will not be further evaluated in detail in this EA.

2.3.2 The Private Sector Reliance Alternative

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

The 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 has shown those military members and their families living off-installation must cover between 15 and 20 percent of their costs out of pocket. Moreover, living on-installation has several intangible benefits to military members and their families. These include 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 peace of mind in knowing that 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 Minot 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 because of 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 that the private sector could provide the requisite amount of affordable, quality housing units; or schools, shops, roads, and other support amenities, on short notice.

Termination of MFH programs would involve abandonment of the considerable investments in those facilities. The various consequences of reliance on the private sector and the management difficulties of effecting termination of USAF MFH would prove challenging. In light of the aggregate value of MFH units amenable to continued use with only minor renovations, termination of a family housing construction and maintenance program would gravely contravene the fiscal responsibilities that the U.S. Congress expects of the USAF. For these reasons, this alternative is not feasible and will not be further evaluated in detail in this EA.

2.3.3 The Leasing Alternative

Statutory authorities exist for Minot AFB to ensure availability of adequate, affordable housing through use of long-term leases of housing for military family use. Key aspects of the two laws providing these authorities are summarized below.

- ***Long-term leasing of military family housing to be constructed.*** Family housing obtained through use of this authority, which appears at 10 U.S.C. 2835, is most often referred to as “Section 801 housing.” Under this authority, the USAF may, through competitive contract procedures, have a developer build or renovate (to residential use) family housing units near an installation. Housing units under this authority must meet DOD specifications. The USAF may then lease the units for use as MFH for a period of not more than 20 years. At the end of the lease term, the USAF has the option to purchase the leased MFH units.
- ***Military housing rental guarantee program.*** Family housing obtained through use of this authority, which appears at 10 U.S.C. 2836, is most often referred to as “Section 802 housing.” Under this authority, the USAF may award a competitive contract to a private developer or a state or local housing authority to construct or rehabilitate housing on or near an installation having a shortage of housing for personnel with or without accompanying dependents. The USAF contractually guarantees the occupancy levels of the housing units, at rental rates comparable to

those for similar units in the same general market. Housing units under this authority must comply with DOD specifications or, at the discretion of the Service secretary, local building codes. A rental guarantee agreement may not exceed 25 years in duration; it may be renewed only for housing on government-owned land. The agreement may provide that utilities, trash collection, and entomological services be furnished by the USAF at no cost to the occupant to the same extent such services are provided to occupants of on-installation MFH.

USAF-wide, there has been only limited experience with the long-term leasing of MFH to be constructed and the military housing rental guarantee program previously mentioned. An important drawback of the Section 801 and Section 802 housing programs is related to what is known as budget “scoring,” the method of accounting for Federal government obligations as required by the Budget Enforcement Act of 1990. Scoring ensures that all government obligations are accounted for when long-term liability is incurred (during the first year of a project). Scoring guidelines issued by the Federal Office of Management and Budget require that a project be fully funded with sufficient budget authority in its first year to cover the government’s long-term commitment. In other words, all potential costs associated with long-term leasing or rental guarantee programs must be recognized in the first year, and they must be considered part of the USAF’s total obligation authority (the total monies appropriated by Congress for use by the USAF in a given year). For some privatization projects, such as military-leased housing, the USAF’s obligations for scoring purposes amount to the net present value of the total rent under the lease. These amounts can be nearly as great as the sums required under traditional military construction financing for USAF-initiated construction of similar facilities.

The Section 801 housing program and the Section 802 rental guarantee program only partially address the purpose of and need for the Proposed Action. Because of the scoring guidelines, the USAF would obtain very little or no leverage benefit.

The enactment of new authorities in the MHPI suggests Congress’s recognition that the drawbacks of Section 801 and Section 802 outweigh the potential benefits to the USAF. Although use of the authorities in either Section 801 or Section 802 or both would be possible, their use would not be reasonable when compared with the greater flexibility and economic advantages of the new authorities offered by the MHPI to the USAF and its members’ families. Accordingly, this alternative will not be further evaluated in detail in this EA.

3. Affected Environment and Environmental Consequences

All potentially relevant resource areas were initially considered for analysis in this EA. In compliance with NEPA, CEQ, and EIAP 32 CFR Part 989 guidelines, the following discussion of the affected environment and environmental consequences focuses only on those resource areas considered potentially subject to impacts and with potentially significant environmental issues. This section includes noise, air quality, land use, geological resources, water resources, biological resources, safety, utilities and infrastructure, hazardous materials and wastes, socioeconomic resources and environmental justice, and cultural resources. Some environmental resources that are often analyzed in an EA have been omitted from this analysis. The basis for such exclusions is as follows:

- **Coastal Zone Management.** Minot AFB is not within a coastal zone and, therefore, implementation of the Proposed Action would not alter coastal zone resources. Accordingly, the USAF has omitted detailed examination of coastal zone management.
- **Visual/Aesthetic Resources.** The Proposed Action does not involve any activities that would significantly alter the aesthetic qualities of the area or landscape. The Proposed Action would be consistent with the current characteristic features of the area and landscape. Accordingly, the USAF has omitted detailed examination of visual/aesthetic resources in this EA.
- **Airspace Management.** None of the activities associated with the Proposed Action are within designated airspace. The Proposed Action does not involve any activities that would impact designated airspace or military aircraft operations conducted within designated airspace. Accordingly, the USAF has omitted detailed examination of airspace management in this EA.

This section presents an analysis of the potential direct and indirect impacts that each alternative would have on the affected environment. Each alternative was evaluated for its potential to affect physical, biological, and socioeconomic resources in accordance with CEQ guidelines at 40 CFR 1508.8.

The following discussion elaborates on the nature of the characteristics that might relate to various impacts:

- **Short-term or long-term.** These characteristics are determined on a case-by-case basis and do not refer to any rigid time period. In general, short-term impacts are those that would occur only with respect to a particular activity or for a finite period or only during the time required for construction or installation activities. Long-term impacts are those that are more likely to be persistent and chronic.
- **Direct or indirect.** A direct impact is caused by and occurs contemporaneously at or near the location of the action. An indirect impact is caused by a proposed action and might occur later in time or be farther removed in distance but still be a reasonably foreseeable outcome of the action. For example, a direct effect of erosion on a stream might include sediment-laden waters in the vicinity of the action, whereas an indirect impact of the same erosion might lead to lack of spawning and result in lowered reproduction rates of indigenous fish downstream.
- **Negligible, minor, moderate, or major.** These relative terms are used to characterize the magnitude or intensity of an impact. Negligible impacts are generally those that might be perceptible but are at the lower level of detection. A minor impact is slight, but detectable. A moderate impact is readily apparent. A major impact is one that is severely adverse or exceptionally beneficial.
- **Adverse or beneficial.** An adverse impact is one having unfavorable or undesirable outcomes on the man-made or natural environment. A beneficial impact is one having positive outcomes on

the man-made or natural environment. A single act might result in adverse impacts on one environmental resource and beneficial impacts on another resource.

- **Context.** The context of an impact can be localized or more widespread (e.g., regional).
- **Intensity.** The intensity of an impact is determined through consideration of several factors, including whether an alternative might have an adverse impact on the unique characteristics of an area (e.g., historical resources, ecologically critical areas), public health or safety, or endangered or threatened species or designated critical habitat. Impacts are also considered in terms of their potential for violation of Federal, state, or local environmental laws; their controversial nature; the degree of uncertainty or unknown impacts, or unique or unknown risks; if there are precedent-setting impacts; and their cumulative impacts (see **Section 4**).

The impact analyses consider all alternatives discussed in **Section 2** that have been identified as reasonable for meeting the purpose of and need for action. These alternatives include the following:

- The Proposed Action (described in **Section 2.1**)
- The No Action Alternative (described in **Section 2.2.1**).

Sections 3.1 through 3.11 discuss potential environmental and socioeconomic impacts on the 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 a rooftop. Noise and sound share the same physical aspects, but noise is considered a disturbance while sound is defined as an auditory effect. 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 can 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 source and receptor, receptor sensitivity, and time of day. How an individual responds to the sound source will determine if the sound is viewed as music to one's ears or as annoying noise. Affected receptors are specific (e.g., schools, churches, or hospitals) or broad (e.g., nature preserves or designated districts) areas in which occasional or persistent sensitivity to noise above ambient levels exists.

Noise Metrics and Regulations. Although human response to noise varies, measurements can be calculated with instruments that record instantaneous sound levels in decibels. dBA are used to characterize sound levels (measured in dBA) that can be sensed by the human ear. "A-weighted" denotes the adjustment of the frequency range to what the average human ear can sense when experiencing an audible event. In clinical hearing assessments, it has been shown that the threshold of audibility falls within a range of 0 to 25 dBA for normal hearing. The threshold of pain occurs at the upper boundary of audibility, which is normally in the region of 135 dBA (USEPA 1981a). **Table 3-1** compares common sounds and shows how they rank in terms of the effects of hearing. As shown, a whisper is normally 30 dBA and considered to be very quiet while an air conditioning unit 20 feet away is considered an intrusive noise at 60 dBA. Noise levels can become annoying at 80 dBA and very annoying at 90 dBA. To the human ear, each 10 dBA increase seems twice as loud (USEPA 1981b).

Table 3-1. Sound Levels and Human Response

Noise Level (dBA)	Common Sounds	Effect
10	Just audible	Negligible
30	Soft whisper (15 feet)	Very quiet
50	Light auto traffic (100 feet)	Quiet
60	Air conditioning unit (20 feet)	Intrusive
70	Noisy restaurant or freeway traffic	Telephone use difficult
80	Alarm clock (2 feet)	Annoying
90	Heavy truck (50 feet) or city traffic	Hearing damage (8 hours)
100	Garbage truck	Very annoying
110	Pile drivers	Maximum vocal effort
120	Jet takeoff (200 feet) or auto horn (3 feet)	
140	Carrier deck jet operation	Painfully loud

Source: USEPA 1981b

Sound levels, resulting from multiple single events, are used to characterize community noise effects from aircraft or vehicle activity and are measured in DNL. The DNL noise metric incorporates a “penalty” for evening and nighttime noise events to account for increased annoyance. DNL is the energy-averaged sound level measured over a 24-hour period, with a 10-dBA penalty assigned to noise events occurring between 10:00 p.m. and 7:00 a.m. DNL values are obtained by averaging single event values for a given 24-hour period. DNL is the preferred sound level metric used to characterize noise impacts of the Federal Aviation Administration (FAA), U.S. Department of Housing and Urban Development (HUD), USEPA, and DOD for modeling airport environments.

DNL is the metric recognized by the United States Government for measuring noise and its impacts on humans. According to the USAF, the FAA, and the HUD criteria, residential units and other noise-sensitive land uses are “clearly unacceptable” in areas where the noise exposure exceeds 75 dBA DNL, “normally unacceptable” in regions exposed to noise between 65 dBA and 75 dBA DNL, and “normally acceptable” in areas exposed to 65 dBA DNL or under. The Federal Interagency Committee on Noise developed land use compatibility guidelines for noise in terms of DNL (FICON 1992). For outdoor activities, the USEPA recommends 55 dBA DNL as the level below which there is no reason to suspect that the general population would be at risk from any of the effects of noise (USEPA 1974).

Under the Noise Control Act of 1972, the Occupational Safety and Health Administration (OSHA) established workplace standards for noise. The minimum requirement states that constant noise exposure must not exceed 90 dBA over an 8-hour period. The highest allowable sound level to which workers can be constantly exposed is 115 dBA and exposure to this level must not exceed 15 minutes within an 8-hour period. The standards limit instantaneous exposure, such as impact noise, to 140 dBA. If noise levels exceed these standards, employers are required to provide hearing protection equipment that will reduce sound levels to acceptable limits (29 CFR Part 1910.95).

Demolition and Construction Sound Levels. Building demolition and construction work can cause an increase in sound that is well above the ambient level. A variety of sounds are emitted from loaders, trucks, saws, and other work equipment. **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.

Table 3-2. Predicted Noise Levels for Construction Equipment

Construction Category and Equipment	Predicted Noise Level at 50 feet (dBA)
Clearing and Grading	
Bulldozer	80
Grader	80–93
Truck	83–94
Roller	73–75
Excavation	
Backhoe	72–93
Jackhammer	81–98
Building Construction	
Concrete mixer	74–88
Welding generator	71–82
Pile driver	91–105
Crane	75–87
Paver	86–88

Source: USEPA 1971

3.1.2 Description of the Affected Environment

The ambient noise environment around Minot AFB is affected mainly by aircraft operations and automobile traffic. Minot AFB supports approximately 12,868 airfield operations per year and the noise generated by these operations is a dominant characteristic of the baseline noise environment at and in the vicinity of the installation (MAFB 2009d). Minot AFB is home to the 5 BW and the 91 MW; aircraft flown by these units include the B-52H Stratofortress aircraft and the UH-1N helicopter. The noise contours from aircraft operations at Minot AFB are shown in **Figure 3-1** extending roughly northwest and southeast along the runway. A majority of the land inside of the 65 to 69 dBA and 70 to 74 dBA DNL noise zones are outside of installation property (MAFB 2009d). The 65 to 80+ dBA DNL noise contours do not encompass the MFH Privatization Area involved in the Proposed Action.

Vehicles also contribute to the ambient noise environment at Minot AFB. Vehicle use for military operations and support functions consists of passenger vehicles, delivery and fuel trucks, and other military vehicles. Passenger vehicles likely compose most of the vehicles present at the MFH Privatization Area. Missile Avenue and Bomber Boulevard provide access to the installation through the northern and southern gates, respectively, from U.S. Highway 83. Primary roads within the MFH Privatization Area include Peacekeeper Place, Rocket Road, and Sirocco Drive.

Considering the military aircraft operations and vehicle traffic at and adjacent to Minot AFB, the ambient sound environment around the installation is likely to resemble an urban atmosphere.



Figure 3-1. Noise Contours at Minot AFB

3.1.3 Environmental Consequences

3.1.3.1 Evaluation Criteria

Noise impact analyses typically evaluate potential changes to the existing noise environment that would result from implementation of a proposed action. Potential changes in the acoustical environment can be beneficial (i.e., if they reduce the number of sensitive receptors exposed to unacceptable noise levels or reduce the ambient sound level), negligible (i.e., if the total number of sensitive receptors to unacceptable noise levels is essentially unchanged), or adverse (i.e., if they result in increased sound exposure to unacceptable noise levels or ultimately increase the ambient sound level). Projected noise impacts were evaluated qualitatively for the Proposed Action and No Action Alternative.

3.1.3.2 Proposed Action

The sources of noise that could impact populations include demolition and construction activities associated with the Proposed Action.

The components of the Proposed Action include the demolition of 140 MFH units, maintenance and upgrades to existing MFH units, and possible construction of desired features (i.e., community center and community storage unit complex) as discussed in **Section 2.1**. Noise from demolition and construction activities would vary depending on the type of equipment used, the area that the action would occur in, and the distance from the noise source. To predict how construction activities would impact adjacent populations, noise from the probable demolition and construction activities was estimated. For example, as shown in **Table 3-1**, demolition and construction usually involves several pieces of equipment (e.g., trucks and bulldozers) that can be used simultaneously. Under the Proposed Action, the total noise from the equipment, during the busiest day, and taking into account ambient noise levels, was estimated to determine the total impact of noise from demolition and construction activities at a given distance. Examples of expected total demolition and construction noise during daytime hours at specified distances are shown in **Table 3-3**. These sound levels were predicted at 20, 50, 100, 150, 200, 400, 800, and 1,200 feet from the source of the noise.

Table 3-3. Predicted Noise Levels from Demolition and Construction Activities

Distance from Noise Source	Predicted Noise Level
20 feet	98 dBA
50 feet	90 dBA
100 feet	84 dBA
150 feet	80 dBA
200 feet	78 dBA
400 feet	72 dBA
800 feet	66 dBA
1,200 feet	62 dBA

The noise from demolition and construction equipment would be localized, short-term, and intermittent during machinery operations. Heavy equipment would be used periodically during demolition and construction; therefore, noise levels from the equipment would fluctuate throughout the day. The proposed demolition and construction would be expected to result in noise levels comparable to those indicated in **Table 3-3**.

Under the Proposed Action, 140 MFH units in the Prairie Rose Estates neighborhood would be demolished during the 6-year transition period. Thirty units would be demolished along Coral Court in the northwestern portion of Prairie Rose Estates, and 110 units would be demolished along Winding Way and Spruce Street in the east-central portion of Prairie Rose Estates. Demolition would occur adjacent to several noise-sensitive receptors. The northwestern demolition area is bordered by Dakota Elementary to the north, an athletic field encircled by a running track to the east, other MFH units to the south, and several baseball/softball fields to the west. The east-central demolition area is bordered by other MFH units to the north, south, and west and U.S. Highway 83 to the east. This area would also be adjacent to two outdoor playgrounds (approximately 80 and 100 feet from the closest unit proposed for demolition), and Memorial Middle School is approximately 500 feet to the west, separated by a row of MFH units.

Within the Prairie Rose Estates neighborhood, some MFH units are 20 feet from adjacent MFH units. Assuming the demolition of a MFH unit would occur 20 feet from an occupied MFH unit, residents of the occupied unit could experience intermittent noise levels of approximately 98 dBA during demolition activities. At its closest point, the demolition activities within the northwestern portion of Prairie Rose Estates would be approximately 50 feet from the athletic field and running track, 140 feet from Memorial Middle School, and 325 feet from a baseball/softball field producing noise levels of 90 dBA, more than 80 dBA, and between 78 dBA and 72 dBA, respectively. Under ideal circumstances, the closest demolition activities within the east-central portion of Prairie Rose Estates would generate a noise level of less than 72 dBA at Dakota Elementary School. However, because the schools are enclosed structures, the noise levels observed by people when they are inside the buildings would likely be much less than indicated above, and the noise levels heard at Dakota Elementary School would be minimized further by intervening houses and trees. Users of the athletic fields and playgrounds could experience short-term noise levels of up to 74 dBA to 90 dBA, depending on the location of the recreational facility, while demolition is occurring nearby. Noise levels would decrease as the distance between the demolition activities and the noise receptor increases; therefore, other MFH units and community uses in the Prairie Rose Estates neighborhood would experience lower noise levels.

Noise generation would last only for the duration of demolition activities and would diminish as demolition activities moved farther away from the receptor. Noise generation could be minimized by restricting demolition to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.) and the use of measures such as equipment exhaust mufflers. It is not anticipated that the short-term increase in ambient noise levels from the Proposed Action would cause significant adverse impacts on the surrounding populations. Consequently, demolition activities under the Proposed Action would result in short-term, minor, adverse impacts on the noise environment in the vicinity of demolition activities.

Some of the 140 MFH units proposed for demolition would be offered as excess through the OWS program instead of being demolished. If any of the 140 MFH units were donated to OWS, short-term, minor, adverse impacts on the noise environment would be expected from removal of the units, transport of the units (e.g., on a flatbed truck), and associated demolition activities (e.g., the demolition of the foundation after the structure is removed).

The Proposed Action would also include continued maintenance and upgrades to MFH units and possible construction of desired features (i.e., community center and community storage unit complex). The locations of these MFH units and desired features to be constructed is not known; however, if these activities were to require the use of heavy equipment and occur near noise-sensitive receptors (e.g., occupied residences, schools, athletic fields, and other outdoor recreational facilities), short-term, minor, adverse impacts could be expected on the noise environment. However, the maintenance and construction activities would only be temporary during completion of the activity, and would occur during normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.).

Short-term, negligible to minor, adverse impacts on the ambient noise environment would be expected as a result of the increase in construction vehicle traffic under the Proposed Action. Construction traffic would use existing roadways to access the MFH areas. Consequently, the additional traffic resulting from construction vehicles would likely cause negligible to minor increases in noise levels on noise-sensitive populations adjacent to these roadways.

3.1.3.3 No Action Alternative

Under the No Action Alternative, Minot AFB would not implement the Proposed Action and would continue to provide for the housing needs of military personnel and family members. Existing conditions would remain the same, as described in **Section 3.1.2**; therefore, no impacts on the ambient noise environment would be expected.

3.2 Air Quality

3.2.1 Definition of the Resource

In accordance with Federal Clean Air Act (CAA) requirements, the air quality in a given region or area is measured by the concentration of various pollutants in the atmosphere. The measurements of these “criteria pollutants” in ambient air are expressed in units of parts per million (ppm), milligrams per cubic meter (mg/m^3), or micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). The air quality in a region is a result of not only the types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface topography, the size of the topological “air basin,” and the prevailing meteorological conditions.

The CAA directed the USEPA to develop, implement, and enforce strong environmental regulations that would ensure clean and healthy ambient air quality. To protect public health and welfare, USEPA developed numerical concentration-based standards, or National Ambient Air Quality Standards (NAAQS), for pollutants that have been determined to impact human health and the environment. USEPA established both primary and secondary NAAQS under the provisions of the CAA. NAAQS are currently established for six criteria air pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter (including particulate matter equal to or less than 10 microns in diameter [PM_{10}] and particulate matter equal to or less than 2.5 microns in diameter [$\text{PM}_{2.5}$]), and lead (Pb). The primary NAAQS represent maximum levels of background air pollution that are considered safe, with an adequate margin of safety to protect public health. Secondary NAAQS represent the maximum pollutant concentration necessary to protect vegetation, crops, and other public resources along with maintaining visibility standards. North Dakota has adopted a more stringent set of standards, termed the North Dakota Ambient Air Quality Standards (NDAAQS). **Table 3-4** presents the primary and secondary USEPA NAAQS and NDAAQS.

Although O_3 is considered a criteria air pollutant and is measurable in the atmosphere, it is not often considered a regulated air pollutant when calculating emissions because O_3 is typically not emitted directly from most emissions sources. Ozone is formed in the atmosphere by photochemical reactions involving sunlight and previously emitted pollutants or “ O_3 precursors.” These O_3 precursors consist primarily of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) that are directly emitted from a wide range of emissions sources. For this reason, regulatory agencies attempt to limit atmospheric O_3 concentrations by controlling VOC pollutants (also identified as reactive organic gases) and NO_2 .

Table 3-4. National and State Ambient Air Quality Standards

Pollutant	Averaging Time	Primary Standard		Secondary Standard
		Federal ^a	State	
CO	8-hour ^b	9 ppm (10 mg/m ³)	Same	None
	1-hour ^b	35 ppm (40 mg/m ³)	Same	None
Pb	Quarterly average	1.5 µg/m ³	Same	Same as Primary
	Rolling 3-Month Average	0.15 µg/m ³ ^c	--	Same as Primary
NO ₂	Annual Arithmetic Mean	53 ppb ^d	Same	Same as Primary
	1-hour	100 ppb ^e	--	None
PM ₁₀	Annual Arithmetic Mean	--	50 µg/m ³	Same as Primary
	24-hour ^f	150 µg/m ³	Same	Same as Primary
PM _{2.5}	Annual Arithmetic Mean ^g	15 µg/m ³	Same	Same as Primary
	24-hour ^h	35 µg/m ³	Same	Same as Primary
O ₃	8-hour ⁱ	0.075 ppm (2008 Standard)	Same	Same as Primary
	8-hour ^j	0.08 ppm (1997 Standard)	--	Same as Primary
	1-hour ^k	0.12 ppm	Same	Same as Primary
SO ₂	Annual Arithmetic Mean	0.03 ppm	0.023 ppm	0.5 ppm (3-hour) ^b
	24-hour ^b	0.14 ppm	0.099 ppm	0.5 ppm (3-hour) ^b
	1-hour	75 ppb ^l	0.273 ppm	None

Sources: USEPA 2010c, NDDH 1998

Notes:

- a. Parenthetical values are approximate equivalent concentrations.
- b. Not to be exceeded more than once per year.
- c. Final rule signed 15 October 2008.
- d. The official level of the annual NO₂ standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of cleaner comparison to the 1-hour standard.
- e. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective 22 January 2010).
- f. Not to be exceeded more than once per year on average over 3 years.
- g. 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/m³.
- h. To attain this standard, the 3-year average of the weighted annual of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m³ (effective 17 December 2006).
- i. 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 27 May 2008).
- j. 1. To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.
2. The 1997 standard – and the implementation rules for that standard – will remain in place for implementation purposes as USEPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.
3. USEPA is in the process of reconsidering these standards (set in March 2008).
- k. 1. USEPA revoked the 1-hour ozone standard in all areas, although some areas have continuing obligations under that standard (anti-backsliding).
2. The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤ 1.
- l. Final rule signed on 2 June 2010. To attain this standard, the 3-year average of the 99th percentile of daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

Key: ppm = parts per million; mg/m³ = milligrams per cubic meter; µg/m³ = micrograms per cubic meter

As authorized by the CAA, USEPA has delegated responsibility for ensuring compliance with NAAQS to the states and local agencies. As such, each state must develop air pollutant control programs and promulgate regulations and rules that focus on meeting NAAQS and maintaining healthy ambient air quality levels. These programs are detailed in State Implementation Plans (SIPs) that must be developed by each state or local regulatory agency and approved by USEPA. A SIP is a compilation of regulations, strategies, schedules, and enforcement actions designed to move the state into compliance with all NAAQS. Any changes to the compliance schedule or plan (e.g., new regulations, emissions budgets, controls) must be incorporated into the SIP and approved by the USEPA.

In 1997, the USEPA initiated work on new General Conformity rules and guidance to reflect the new 8-hour O₃, PM_{2.5}, and regional haze standards that were promulgated in that year. The 1-hour O₃ standard will no longer apply to an area 1 year after the effective date of the designation of that area for the 8-hour O₃ NAAQS. The effective designation date for most areas was June 15, 2004. USEPA designated PM_{2.5} nonattainment areas in December 2004, and finalized the PM_{2.5} implementation rule in January 2005. No county in the state of North Dakota was identified as being nonattainment for the PM_{2.5} standard.

On 22 September 2009, the USEPA issued a final rule for mandatory GHG reporting from large GHG emissions sources in the United States. The purpose of the rule is to collect comprehensive and accurate data on carbon dioxide (CO₂) and other GHG emissions that can be used to inform future policy decisions. In general, the threshold for reporting is 25,000 metric tons or more of CO₂ equivalent per year. The first emissions report is due in 2011 for 2010 emissions. Although GHGs are not currently regulated under the CAA, the USEPA has clearly indicated that GHG emissions and climate change are issues that need to be considered in future planning. GHGs are produced by the burning of fossil fuels and through industrial and biological processes.

EO 13514 *Federal Leadership in Environmental, Energy, and Economic Performance*, was signed in October 2009 and requires agencies to set goals for reducing GHG emissions. One requirement within EO 13514 is the development and implementation of an agency Strategic Sustainability Performance Plan (SSPP) that prioritizes agency actions based on lifecycle return on investment. Each SSPP is required to identify, among other things, “agency activities, policies, plans, procedures, and practices” and “specific agency goals, a schedule, milestones, and approaches for achieving results, and quantifiable metrics” relevant to the implementation of EO 13514. Detailed agency implementation plans for EO 13514 were due in June 2010, when each Federal agency was to deliver an SSPP to the CEQ and the Office of Management and Budget. These implementation plans describe the specific actions agencies will take to achieve their individual GHG reduction targets, reduce long-term costs, and meet the full range of goals of the EO. The DOD *Strategic Sustainability Performance Plan* was made public on 26 August 2010, and is available at <http://www.whitehouse.gov/administration/eop/ceq/sustainability/plans>. DOD guidance on analyzing and reporting GHGs has not yet been made public. The first air quality emissions report is due in 2011 for 2010 emissions. Title V of the CAA Amendments of 1990 requires states and local agencies to permit major stationary sources. A major stationary source is a facility (i.e., plant, installation, or activity) that has the potential to emit more than 100 tons per year (tpy) of any one criteria air pollutant, 10 tpy of a hazardous air pollutant (HAP), or 25 tpy of any combination of HAPs.

Federal Prevention of Significant Deterioration (PSD) regulations also define air pollutant emissions from proposed major stationary sources or modifications to be “significant” if (1) a proposed project is within 10 kilometers (km) of any Class I area, and (2) regulated pollutant emissions would cause an increase in the 24-hour average concentration of any regulated pollutant in the Class I area of 1 µg/m³ or more [40 CFR 52.21(b)(23)(iii)]. PSD regulations also define ambient air increments, limiting the allowable increases to any area’s baseline air contaminant concentrations, based on the area’s designation as Class I, II, or III [40 CFR 52.21(c)]. Because Minot AFB is not within 10 km of a Class I area and the majority of

emissions from the Proposed Action would not be stationary source emissions, PSD regulations do not apply and are not discussed further in this EA.

3.2.2 Description of the Affected Environment

Minot AFB is in Ward County, which is within North Dakota Air Quality Control Region (AQCR) 172. AQCR 172 consists of the all counties in North Dakota with the exception of Metropolitan Fargo, North Dakota. As defined in 40 CFR 81.335, Ward County is designated as attainment/unclassifiable for all criteria pollutants (USEPA 2002a).

The most recent emissions inventories for Ward County and AQCR 172 are shown in **Table 3-5**. Ward County is considered the local area of influence, and AQCR 172 is considered the regional area of influence for the air quality analysis.

Table 3-5. Local and Regional Air Emissions Inventory for the Proposed Action (2002)

	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO₂ (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)
Ward County, ND	2.14	1.20	8.54	0.28	7.44	1.18
AQCR 172	83.58	20.98	147.60	82.93	177.67	31.61

Source: USEPA 2002b

The U.S. Department of Energy, Energy Information Administration, estimates that gross CO₂ emissions in North Dakota were 52.5 million metric tons in 2007 (DOE/EIA 2010).

The North Dakota Department of Health (NDDH) regulates air quality for the State of North Dakota. Minot AFB is classified as a major source of emissions and has an Air Pollution Control Title V Permit to Operate (MAFB 2007a). The NDDH requires Minot AFB to calculate annual criteria pollutant emissions from stationary sources and provides this information to the NDDH. There are various sources on-installation that emit criteria pollutants and HAPs, including generators, boilers, fuel storage tanks, and miscellaneous chemical usage.

3.2.3 Environmental Consequences

3.2.3.1 Evaluation Criteria

The environmental consequences to local and regional air quality conditions near a proposed Federal action are determined based upon the increases in regulated pollutant emissions relative to existing conditions and ambient air quality. Specifically, the impact in NAAQS “attainment” areas would be considered significant if the net increases in pollutant emissions from the Federal action would result in any one of the following scenarios:

- Cause or contribute to a violation of any national or state ambient air quality standard
- Expose sensitive receptors to substantially increased pollutant concentrations
- Represent an increase of 10 percent or more in an affected AQCR emissions inventory
- Exceed any evaluation criteria established by an SIP or permit limitation.

3.2.3.2 Proposed Action

The Proposed Action would generate both temporary and long-term air pollutant emissions. The construction, demolition, and infrastructure projects associated with the Proposed Action would generate air pollutant emissions as a result of grading, filling, compacting, trenching, demolition, and construction operations; however, these emissions would be temporary and would not be expected to generate any offsite impacts. The Proposed Action would not result in a net increase in personnel or commuter vehicles. Therefore, the emissions from existing personnel and commuter vehicles would not result in adverse impacts on regional air quality.

Construction operations would result in short-term emissions of criteria pollutants as combustion products from construction equipment, as well as evaporative emissions from architectural coatings and asphalt paving operations. Emissions of all criteria pollutants would be expected from construction and demolition activities, including combustion of fuels from on-road haul trucks transporting materials and construction commuter emissions.

Construction, demolition, and renovation activities would generate particulate matter emissions as fugitive dust from ground-disturbing activities. Fugitive dust emissions would be greatest during initial site-preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity. Appropriate fugitive dust-control measures would be employed during construction and demolition activities to suppress emissions.

All emissions associated with construction and demolition activities would be temporary in nature. There would be negligible new operational emissions associated with the Proposed Action. These operational emissions would be from the combustion of natural gas in boilers or heaters used to heat the new Community Center Complex and Community Storage Facility. Per the North Dakota Air Pollution Control Regulations under North Dakota Administrative Code [NDAC 33-15-14-02.13.b], the air construction permit threshold for stationary fuel combustion sources is 10 million British Thermal Units (BTUs) per hour. Although the size of the new heaters/boilers is unknown, it is not anticipated they would be large enough to require an air construction permit. The new boilers/heaters would not require a modification of the installation's Title V air operating permit but would require inclusion in the annual inventory update of insignificant units required by the Title V Permit and possibly the annual emissions inventory (MAFB 2007a).

Although the Proposed Action would occur over the span of a 6-year period, the Proposed Action was analyzed as if it would occur in 1 calendar year. It is not expected that emissions from demolition and construction of the projects associated with the Proposed Action would contribute to or affect local or regional attainment status with the NAAQS or NDAAQS. Emissions from the Proposed Action are summarized in **Table 3-6**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix F**.

The Energy Information Administration estimates that in 2007, gross CO₂ emissions in North Dakota were 52.5 million metric tons (DOE/EIA 2010). Approximately 2,999 metric tons (3,306 tons) of CO₂ were estimated to be emitted by the Proposed Action, which is less than 0.006 percent of the North Dakota statewide CO₂ emissions. Therefore, the Proposed Action would have a negligible contribution towards the North Dakota statewide GHG inventory. CO₂ emission estimates are included in **Appendix F**.

Table 3-6. Estimated Air Emissions Resulting from Proposed Action

Activity	NO _x tpy	VOC tpy	CO tpy	SO ₂ tpy	PM ₁₀ tpy	PM _{2.5} tpy	CO ₂ tpy
Construction Combustion	19.750	1.498	8.030	0.676	1.249	1.212	2,286.753
Construction Fugitive Dust	—	—	—	—	29.916	1.811	—
Haul Truck On-Road	3.559	2.574	10.459	0.280	4.233	1.101	901.082
Construction Commuter	0.099	0.099	0.892	0.001	0.009	0.006	118.334
Total Proposed Action Emissions	23.409	4.171	19.381	0.958	35.407	4.129	3,306.169
Percent of AQCR 172 Inventory	0.014	0.010	0.007	0.001	0.010	0.007	0.006*

Note: * Percent of State of North Dakota CO₂ emissions.

Because Minot AFB is located in an area classified as an attainment/unclassifiable area for all criteria pollutants, General Conformity Rule requirements are not applicable. The Proposed Action would generate emissions below *de minimis* levels. In addition, the Proposed Action would generate emissions well below 10 percent of the emissions inventories for North Dakota AQCR 172 and the emissions would be short-term. Therefore, the construction, demolition, and renovation activities associated with the Proposed Action would not result in significant impacts on air quality at Minot AFB or on regional or local air quality. **Appendix F** includes the air emissions estimation spreadsheets and methodology.

3.2.3.3 No Action Alternative

Under the No Action Alternative, Minot AFB would not implement the Proposed Action and would continue to provide for the housing needs of military personnel and family members. No impacts on air quality would be expected. Minot AFB currently has 1,478 MFH units that are considered in excellent condition. It is anticipated that these 1,478 MFH units would continue to provide adequate housing for many years into the future with only minor maintenance and repairs. The substantially older 268 MFH units in the Prairie Rose Estates neighborhood would also continue to be used. These 268 MFH units would require more intensive maintenance and renovations to bring them up to current USAF housing standards.

3.3 Land Use

3.3.1 Definition of the Resource

The term “land use” refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. In many cases, land use descriptions are codified in local zoning laws. However, there is no nationally recognized convention or uniform terminology for describing land use categories. As a result, the meanings of various land use descriptions, “labels,” and definitions vary among jurisdictions. Natural conditions of property can be described or categorized as unimproved, undeveloped, conservation or preservation area, and natural or scenic area. There is a wide variety of land use categories resulting from human activity. Descriptive terms often used include residential, commercial, industrial, agricultural, institutional, and recreational. USAF installation land use planning commonly uses 12 general land use classifications: Airfield, Aircraft Operations and Maintenance, Industrial, Administrative, Community (Commercial), Community (Service), Medical, Housing (Accompanied), Housing (Unaccompanied), Outdoor Recreation, Open Space, and Water (USAF 1998).

Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. Compatibility among land uses fosters the societal interest of obtaining the highest and best uses of real property. Tools supporting land use planning within the civilian sector include written master plans/management plans, policies, and zoning regulations. According to Air Force Pamphlet (AFPAM) 32-1010, *Land Use Planning*, land use planning is the arrangement of compatible activities in the most functionally effective and efficient manner. The USAF comprehensive planning process also uses functional analysis, which determines the degree of connectivity among installation land uses and between installation and off-installation land uses, to determine future installation development and facilities planning (USAF 1998).

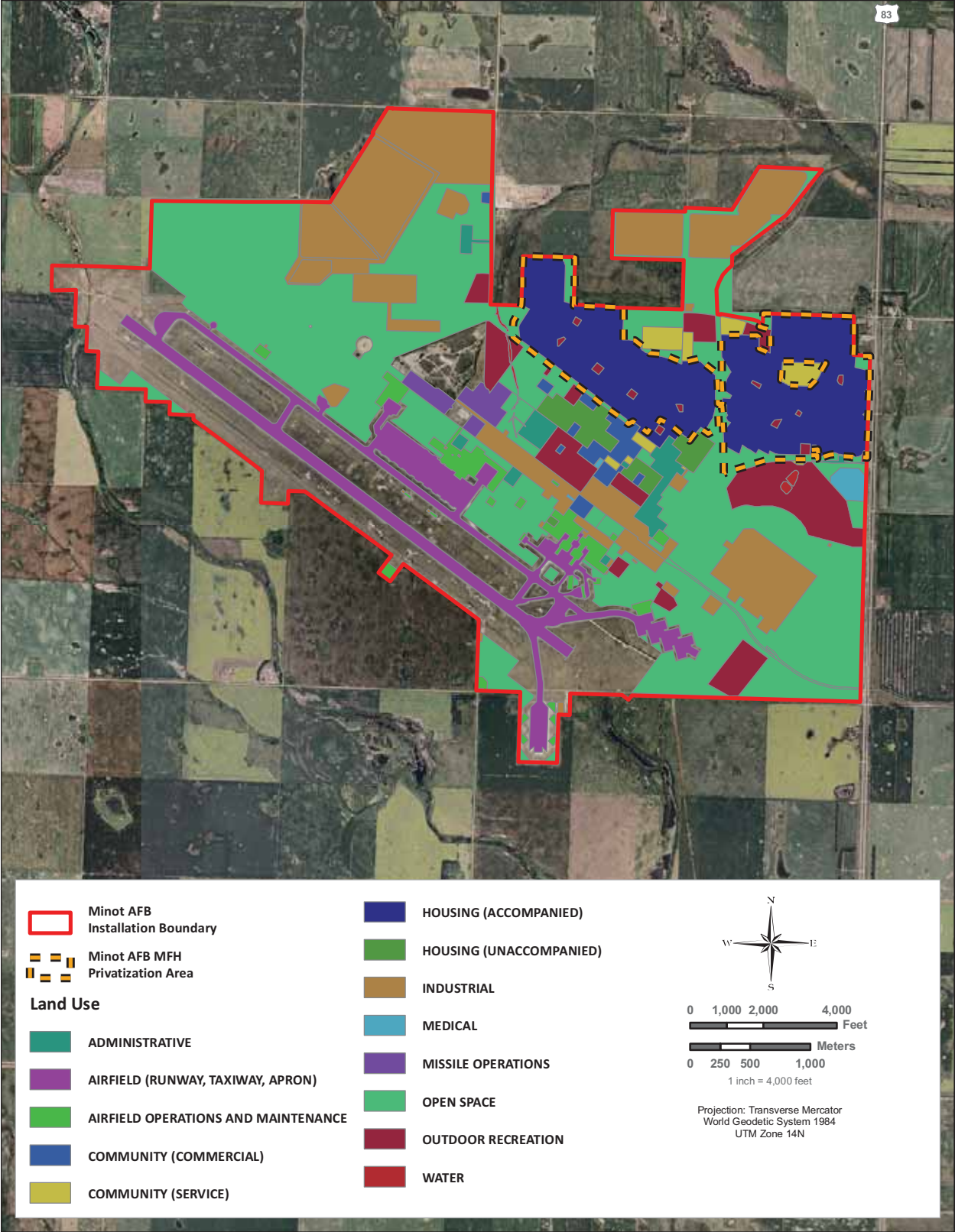
In appropriate cases, the location and extent of a proposed action needs to be evaluated for its potential impacts on a project site and adjacent land uses. The foremost factor affecting a proposed action in terms of land use is its compliance with any applicable land use or zoning regulations. Other relevant factors include matters such as existing land use at the project site, the types of land uses on adjacent properties and their proximity to a proposed action, the duration of a proposed activity, and its “permanence.”

3.3.2 Description of the Affected Environment

Surrounding Off-Installation Land Use. Minot AFB is in Waterford and Tatman townships in Ward County, North Dakota, which is in the north-central portion of the state approximately 40 miles south of the United States-Canada border (see **Figure 1-1**). It is approximately 2 miles north of Ruthville, an unincorporated community, and approximately 10 miles north of the City of Minot. Access to Minot AFB is provided by U.S. Highway 83, which forms the installation’s eastern boundary. The area surrounding the installation is rural, consisting primarily of agriculture and open space with low-density (scattered) residences. Ruthville is a small isolated community of residential (mobile homes) and commercial uses. Local zoning ordinances restrict all land uses, except for agricultural activity, adjacent to Minot AFB boundaries. Additionally, new construction is prohibited within a 3-mile radius of the installation boundary (USAF 2008).

On-Installation Land Use. Minot AFB consists of 5,090 acres and has an average daily population of 11,159 people consisting of 4,533 active-duty military personnel and 1,212 civilian employees (596 appropriated fund employees and 616 nonappropriated fund employees), and 5,414 dependents (USAF 2008). Minot AFB is home to two major USAF units (5 BW and 91 MW), and several major tenants.

The *Minot AFB General Plan* identifies 13 land use categories: Administrative, Aircraft Operations and Maintenance, Airfield and Airfield Pavements, Community (Commercial), Community (Services), Housing (Accompanied), Housing (Unaccompanied), Industrial, Medical, Missile Operations and Maintenance, Open Space, Outdoor Recreation, and Water (USAF 2008) (see **Figure 3-2**). The dominant land use at Minot AFB, representing 34 percent of the installation, is Open Space. Land designated as Open Space contains many constraints to development, such as areas restricted due to the presence of explosives (quantity-distance [QD] arcs) and aircraft approach and departure zones. The Airfield and Airfield Pavements land use represents the second largest use at Minot AFB (26 percent). The Airfield runs northwest-southeast and generally forms the southwestern boundary of the installation. Due to their interdependent natures, Aircraft Operations and Maintenance and Industrial uses are found in close proximity to the northeast of the Airfield. Northeast, away from these uses, are Administrative, Outdoor Recreation, Housing (Unaccompanied), and Housing (Accompanied). The main cantonment area is in the northeastern portion of the installation and includes Housing (Accompanied and Unaccompanied), Community (Commercial and Services), Medical, and Outdoor Recreation uses. A portion of the land designated as Community Services is leased to the City of Minot Public School District for the operation of two elementary schools and one middle school (USAF 2008).



Source of Aerial Photography: NAIP 2006; MFH Privatization Area: e*M, Inc 2008; Installation Boundary: Minot AFB 2008.

Figure 3-2. Minot AFB Existing Land Use Designations

In addition to the 13 designated land uses, hay cultivation and grazing is permitted in specific areas of Minot AFB through the agricultural outlease program. There are 12 hay leases consisting of 986 acres and 175 acres of grazing outleases. Hay cultivation primarily occurs in land designated as Open Space adjacent to the Airfield, Aircraft Operations and Maintenance, and Industrial facilities. Horse grazing occurs in pastures in the vicinity of the riding club stables in the northwestern portion of the installation (MAFB 1995a).

Future land use is presented in the General Plan, and accounts for the continued process of developing Minot AFB to better support current missions, provide flexibility to accept new missions and units, and improve the quality of life. The major difference between the current and future land use designations at Minot AFB is the reduction of Open Space uses by approximately 1,000 acres due to increases of Industrial, Aircraft Operations and Maintenance, and Airfield and Airfield Pavement uses (MAFB 1995a). **Table 3-7** presents existing and future land use areas and the percent in each category.

Table 3-7. Existing and Future Land Use at Minot AFB

Land Use Designation	Current Acres	Percent of Installation	Future Acres	Percent of Installation	Changes in Acres
Administrative	62	1	62	1	0
Aircraft Operations and Maintenance	89	2	264	5	+175
Airfield and Airfield Pavements	1,327	26	1,435	28	+108
Community (Commercial)	49	1	112	2	+63
Community (Services)	49	1	49	1	0
Housing (Accompanied)	563	11	651	13	+88
Housing (Unaccompanied)	69	1	80	2	+11
Industrial	823	16	1,421	28	+598
Medical	17	1	23	1	+6
Missile Operations and Maintenance	43	1	108	2	+65
Open Space	1,731	34	612	12	-1,073
Outdoor Recreation	259	5	241	5	-18
Water (includes wetlands)	9	1	32	1	+2

Source: USAF 2008

3.3.3 Environmental Consequences

3.3.3.1 Evaluation Criteria

The significance of potential land use impacts is based on the level of land use sensitivity in areas affected by a proposed action and compatibility of proposed actions with existing conditions. A proposed action could have a significant effect with respect to land use if any the following were to occur:

- Be inconsistent or in noncompliance with existing land use plans or policies
- Preclude the viability of existing land use

- Preclude continued use or occupation of an area
- Be incompatible with adjacent land use to the extent that public health or safety is threatened
- Conflict with planning criteria established to ensure the safety and protection of human life and property.

3.3.3.2 Proposed Action

The Proposed Action would be in compliance with Minot AFB's General Plan, including the goals and the existing installation land use designations. The Proposed Action would be consistent with the 5 BW's and the 91 MW's long-term goals related to improving living and working conditions and quality of life for Minot AFB personnel and their families. The Proposed Action would occur primarily within the Housing (Accompanied) land use designation, but would also encompass Outdoor Recreation and Open Space designations, and would not require changes to the existing land use designations, except if a community center is constructed in the Housing (Accompanied) or Open Space designations. Constructing a community center in these land use areas could require changing the land use designation to Outdoor Recreation. In addition, two areas within the MFH area that would be conveyed to the PO would not be consistent with the Minot AFB future land use plan. The first area consists of an athletic field encircled by a running track and a vacant field southeast of Memorial Middle School, within the northwestern portion of the Prairie Rose Estates neighborhood and is designated as Outdoor Recreation. The future land use plan designates this area as Community Services land use, likely related to the adjacent Memorial Middle School. The second area is a small portion of the land in the southeastern portion of the Sunflower Haven neighborhood that is currently designated Open Space, but would become Housing (Unaccompanied) in the future land use plan. There is an existing unaccompanied personnel dorm directly south of this area, and expansion of this facility is a possible reason for the future land use designation. Both the Community Services and Housing (Unaccompanied) land uses would not be able to exist within the MFH area; therefore, it is likely that the future land use designations of these areas would change to reflect the future use, as determined by the PO. Long-term, minor impacts on land use plans and policies would be expected due to the need to change land use designations.

The Proposed Action would not violate local zoning ordinances because municipal zoning regulations do not apply to Federal property. Therefore, the Proposed Action would not result in any impacts on municipal land use plans or policies.

The Proposed Action would be compatible with surrounding land uses and would not preclude the viability or continued use and occupation of existing land uses at Minot AFB. Under the Proposed Action, the MFH use would continue in all three neighborhoods that are currently designated as Housing (Accompanied). The continued maintenance and upgrades of the MFH units would make the MFH units more livable, thereby reinforcing the viability and continued use of the MFH units. The demolition of 140 MFH units in the Prairie Rose Estates neighborhood would remove inadequate facilities and create vacant land that could be developed with desired features such as a community center and a community storage unit complex. Enhancement of the MFH area would support the continued use of the adjacent Community Services and Outdoor Recreation land uses, which are both functionally important to MFH and the Housing (Accompanied) land use (USAF 1998). Maintenance activities, demolition of MFH units within Prairie Rose Estates, and activities associated with possible construction of desired features could also result in noise that could be heard at nearby occupied MFH units, the two schools within Prairie Rose Estates, and outdoor recreational facilities scattered throughout the neighborhoods, especially those near the MFH units that would be demolished. However, the noise produced would be short-term and would not be of a level that would make it incompatible with surrounding uses. Therefore, the Proposed Action would result in short-term, minor, adverse impacts on land use compatibility, and

long-term, beneficial impacts on the viability of existing land use and continued occupation at Minot AFB.

The Proposed Action would not result in any impacts on the compatibility of adjacent land uses with respect to public health and safety and would not conflict with health and safety planning criteria.

3.3.3.3 No Action Alternative

Under the No Action Alternative, Minot AFB would not implement the Proposed Action and would continue to provide for the housing needs of military personnel and family members. Existing land use conditions would remain the same, as described in **Section 3.3.2**. The No Action Alternative would be inconsistent with some of the long-term goals identified in the Minot AFB General Plan, including improving the quality of life for personnel living and working on the installation. Therefore, long-term, minor, adverse impacts on land use would be expected.

3.4 Geological Resources

3.4.1 Definition of the Resource

Geological resources consist of the Earth's surface and subsurface materials. Within a given physiographic province, these resources typically are described in terms of geology, topography and physiography, soils, and, where applicable, geologic hazards and paleontology.

Geology. Geology is the study of the Earth's composition and provides information on the structure and configuration of surface and subsurface features. Such information derives from field analysis based on observations of the surface and borings to identify subsurface composition.

Topography. Topography and physiography pertain to the general shape and arrangement of a land surface, including its height and the position of its natural and human-made features.

Soils. Soils are the unconsolidated materials overlying bedrock or other parent material. Soils typically are described in terms of their complex type, slope, and physical characteristics. Differences among soil types in terms of their structure, elasticity, strength, shrink-swell potential, and erosion potential affect their abilities to support certain applications or uses. In appropriate cases, soil properties must be examined for their compatibility with particular construction activities or types of land use.

Prime Farmland. Prime farmland is protected under the Farmland Protection Policy Act (FPPA) of 1981. Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. The soil qualities, growing season, and moisture supply are needed for a well-managed soil to produce a sustained high yield of crops in an economic manner. The land could be cropland, pasture, rangeland, or other land, but not urban built-up land or water. The intent of the FPPA is to minimize the extent that Federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses. The Act also ensures that Federal programs are administered in a manner that, to the extent practicable, will be compatible with private, state, and local government programs and policies to protect farmland.

The implementing procedures of the FPPA and Natural Resources Conservation Service (NRCS) require Federal agencies to evaluate the adverse impacts (direct and indirect) of their activities on prime and unique farmland, as well as farmland of statewide and local importance, and to consider alternative actions that could avoid adverse impacts. Determination of whether an area is considered prime or unique farmland and potential impacts associated with a proposed action is based on preparation of the farmland

conversion impact rating form AD-1006 for areas where prime farmland soils occur and by applying criteria established at Section 658.5 of the FPPA (7 CFR Part 658). The NRCS is responsible for overseeing compliance with the FPPA and has developed the rules and regulations for implementation of the Act (see 7 CFR Part 658, July 5, 1984).

3.4.2 Description of the Affected Environment

Geology. The geology underlying Minot AFB is characterized by nearly horizontal layers of silt, sand, clay, sandstone, and lignite of the Bullion Creek Formation, which was deposited during the Pleistocene Epoch (55 to 65 million years before present). The region surrounding Minot AFB was largely developed and shaped by glacial activity during the late Pleistocene Epoch, and glacial ice remained until 10,000 to 12,000 years before present (MAFB 1995a). This uplifted region is now being weathered and eroded, especially along its eastern margin, by eastward-flowing rivers that expose the older rocks beneath (MAFB 2009a).

Topography. Minot AFB lies within the Northern Great Plains Province, which is characterized as a vast plain tilting towards the east (MAFB 2009a). The area surrounding Minot AFB is relatively flat, with elevations ranging from approximately 1,590 feet above mean sea level (msl) in the northeastern corner of the installation to 1,680 feet above msl in the northwestern corner. Small, poorly drained depressions occur sporadically on the installation, primarily in the northwestern corner, in which water can collect and wetlands can form. The average slope is approximately 1 percent (MAFB 2009d).

Soils. Most of the surface soils within the proposed project area belong to the Barnes-Svea Association. They are well-drained and moderately well-drained, nearly-level, black loamy soils which have formed from glacial till (NRCS 2010, MAFB 1995a). Soils mapped within the proposed project area and soil limitations are shown in **Table 3-8**. Soil limitations to construction were determined based on data available in the NRCS web soil survey (NRCS 2010). Most of the soils that were rated for construction limitations are considered to be somewhat limited for building construction due to depth to saturation. The Parnell silty loam and Tonka silt loam, mapped in the MFH areas, is rated as very limited for building construction due to ponding, depth to saturation, and presence of shrink-swell soil. All soils mapped are rated as having a moderate to high frost action potential.

Prime Farmland. All of the soil units mapped within proposed project area would be considered prime farmland soils, except for the Parnell silty loam and the Tonka silt loam. The Parnell silty loam is not a prime farmland soil, and the Tonka silt loam is a prime farmland soil if drained. However, none of the soils mapped as prime farmland soils would be available for agricultural use because this land is currently developed or considered to be urban or built-up land, which by definition cannot be prime farmland. According to the U.S. Department of Agriculture, urban or built-up land consists of land cover or land uses including residential, public administrative sites, and small parks (less than 10 acres) within urban and built-up areas (USDA/NRCS 1999). Therefore, the areas where prime farmland soils are mapped at the proposed project site would not be considered prime farmland.

Geologic Hazards. Radon gas is a geologic hazard that could potentially be present at Minot AFB because radon gas is naturally high in North Dakota. Radon surveys were conducted from 1988 to 1993 by the NDDH and Consolidated Laboratories, who partnered with the USEPA. The USEPA has established a guidance radon level of 4 picoCuries per liter (pCi/L) in indoor air for residences. Radon gas accumulations greater than 4 pCi/L are considered to represent a health risk to occupants. In 2006, radon tests were administered at the proposed project area and approximately 33 percent of the results were above the USEPA-recommended action level. Ventilation systems to dissipate radon were installed in MFH units that contained radon above the recommended action level. All newly constructed MFH units have the capability to have a fan installed to mitigate radon, should it become necessary (MAFB 2009a).

Table 3-8. Properties of Soils Mapped Within the Proposed Project Area

Mapping Unit	Texture	Housing Area	Farmland Classification	Construction Limitations
Barnes	loam (3 to 6 percent slopes)	Sunflower Haven, North Point	Prime farmland soil	Somewhat limited for building construction due to depth to saturation. Moderate frost action potential.
Barnes-Buse	loam (3 to 6 percent slopes)	Sunflower Haven, North Point	Prime farmland soil	Somewhat limited for building construction due to depth to saturation. Moderate frost action potential.
Barnes-Hamerly	loams (3 to 6 percent)	Prairie Rose Estates	Prime farmland soil	Somewhat limited for building construction due to depth to saturation. Moderate frost action potential.
Barnes-Svea	loam (0 to 3 percent slopes)	Sunflower Haven, North Point, Prairie Rose Estates	Prime farmland soil	Somewhat limited for building construction due to depth to saturation. Moderate frost action potential.
Hamerly	loam (0 to 3 percent slopes)	Sunflower Haven, Prairie Rose Estates	Prime farmland soil	Somewhat limited for building construction due to depth to saturation. High frost action potential.
Parnell	silty loam (0 to 1 percent slopes)	Sunflower Haven, North Point, Prairie Rose Estates	Not prime farmland soil	Very limited for building construction due to ponding. High frost action potential.
Tonka	silt loam (0 to 1 percent slopes)	Sunflower Haven, Prairie Rose Estates	Prime farmland soil if drained	Very limited for building construction due to depth to saturation and shrink-swell soil. High frost action potential.

3.4.3 Environmental Consequences

3.4.3.1 Evaluation Criteria

Protection of unique geological features, minimization of soil/sediment erosion, and the siting of facilities in relation to potential geologic hazards are considered when evaluating potential impacts of a proposed action on geological resources. Generally, adverse impacts can be avoided or minimized if proper construction techniques, erosion-control measures, and structural engineering design are incorporated into project development.

Impacts on geological resources were assessed by evaluating the following:

- Potential to destroy unique geological features
- Potential for soil erosion

- Proximity to or impact on geologic hazards (such as locating a proposed action in a seismic zone)
- Potential to affect soil or geological structures that control groundwater quality or groundwater availability
- Alteration of soil structure or function.

3.4.3.2 Proposed Action

Topography. Long-term, negligible, adverse impacts would be expected on the natural topography as a result of projects associated with the Proposed Action. Modification of existing microtopography would be expected as a result of grading, excavation, and filling to accommodate demolition and construction activities. Impacts would be expected to be negligible because the natural microtopography has been previously disturbed by past development activities.

Geology. Long-term, negligible, adverse impacts on geological resources would be expected. The surficial geology at the proposed project site has been altered previously through grading and recontouring activities and, therefore, impacts on previously undisturbed geologic features would be anticipated to be negligible.

Soils. Short- and long-term, minor, adverse impacts on soils would be expected. The primary short-term impacts would occur during construction and demolition activities when vegetation is cleared and the earth is bare. Additional ground-disturbing activities could occur in association with renovation of existing MFH units and any construction activities. However, soils have been previously disturbed during initial construction of MFH units, so impacts would be expected to be minor.

Long-term, minor, adverse impacts on soils would be expected upon completion of the Proposed Action. Impervious surfaces could increase as a result of renovations that increase square footage of MFH units, and by constructing group-desired features (i.e., community storage unit complex and a community center with indoor playground and a splash park). Impacts would be anticipated to be minor and adverse, as the soils within the footprint of the proposed project area have been previously disturbed. Increased impervious surfaces could increase storm water runoff velocity and volume. BMPs would be implemented during and after construction and demolition activities, and approved erosion-and-sediment-control plans (ESCPs) and SWPPPs would be followed to reduce impacts resulting from increased impervious surfaces. Erosion- and sediment-control techniques could include soil erosion-control mats, silt fences, straw bales, diversion ditches, riprap channels, water bars, water spreaders, and sediment basins, and would be used as appropriate. Section 438 of the Energy Independence and Security Act (EISA) would be adhered to so that pre- and post-development hydrology would be equal.

Demolition activities would result in potential short-term decreases in impervious surfaces. Overall, the total number of MFH units would be reduced from 1,746 units to 1,606 units. Although it is likely that constructing the two desired features associated with the Proposed Action would increase impervious surfaces, it is possible that not all actions would be implemented or that the demolition square footage would be greater than the construction square footage. Depending on the square footage of the potential structures anticipated for construction, impervious surfaces could decrease. A decrease in impervious surfaces would result in long-term, beneficial impacts on soils if vegetation is reestablished. Additional vegetation would be beneficial to soils, as vegetation reduces soil erosion and subsequent sedimentation. A long-term decrease in impervious surfaces associated with removal of structures would be expected to reduce volume and velocity of storm water runoff and associated potential erosion and offsite transport of sediments. Please see **Section 3.5** for a discussion on water resources.

All soils mapped within the proposed project area are rated as limited for construction activities, primarily due to depth to saturation. The Parnell silty loam and Tonka silt loam are rated as very limited and are mapped in all three MFH areas; therefore, site-specific soil surveys should be conducted prior to commencement of any construction or outdoor renovation activities to determine the breadth and severity of any engineering limitations and requirements, and to determine appropriate BMPs or mitigation techniques.

ESCPs would be developed and implemented both during and following site development to contain soil and storm water runoff onsite, and would reduce the potential for adverse impacts associated with erosion and sedimentation and transport of sediments in runoff. Management of storm water runoff would be in compliance with Section 438 of the EISA and the CWA Final Rule regarding non-numeric effluent limitations (see **Section 3.5**). Short-term, adverse impacts would be minimized with implementation of BMPs, including wetting of soils. Wetting of soils would occur on a daily basis as needed to prevent erosion and generation of dust.

Construction, demolition, or outdoor renovation activities that disturb 20 or more acres, as of August 1, 2011, would need to comply with the maximum daily turbidity limitation of 280 nephelometric turbidity units (ntu) as outlined in the CWA Final Rule. Construction, demolition, or outdoor renovation activities that disturb 10 or more acres of land, as of February 2, 2014, would need to monitor discharges to ensure compliance with effluent limitations as specified by the permitting authority. Turbidity limitations and monitoring requirements could be avoided if construction, demolition, or outdoor renovation activities were phased to reduce acreages disturbed simultaneously to less than 20 and 10 acres, respectively.

Prime Farmland. No impacts would be expected, as the areas where prime farmland soils are mapped at the proposed project site would not be considered prime farmland.

Geologic Hazards. Short-term, negligible, adverse impacts could be expected. In MFH units, where previous radon test results exceeded the USEPA-recommended action level, there are passive radon elimination systems installed to mitigate radon. In addition, all recently constructed MFH units have the capability to have a fan installed to mitigate radon, should it become necessary.

3.4.3.3 No Action Alternative

Under the No Action Alternative, Minot AFB would not implement the Proposed Action and would continue to provide for the housing needs of military personnel and family members. Existing conditions would remain the same, as described in **Section 3.4.2**; therefore, no impacts on geological resources and soils would be expected.

3.5 Water Resources

3.5.1 Definition of the Resource

Water resources are natural and man-made sources of water that are available for use by and for the benefit of humans and the environment. Water resources relevant to Minot AFB's location in North Dakota include groundwater, surface water, floodplains, and wetlands. Evaluation of water resources examines the quantity and quality of the resource and its demand for various purposes. Hydrology concerns the distribution of water to water resources through the processes of evapotranspiration, atmospheric transport, precipitation, surface runoff and flow, and subsurface flow. Hydrology results primarily from temperature and total precipitation that determine evapotranspiration rates, topography that determines rate and direction of surface flow, and soil and geologic properties that determine rate of subsurface flow and recharge to the groundwater reservoir.

Groundwater. Groundwater is water that exists in the saturated zone beneath the Earth's surface, and includes underground streams and aquifers. It is an essential resource that functions to recharge surface water and can be used for drinking, irrigation, and industrial processes. Groundwater typically can be described in terms of depth from the surface, aquifer or well capacity, water quality, recharge rate, and surrounding geologic formations.

Groundwater quality and quantity are regulated under several programs. The Federal Underground Injection Control regulations, authorized under the Safe Drinking Water Act (SDWA), require a permit for the discharge or disposal of fluids into a well. The Federal Sole Source Aquifer regulations, also authorized under the SDWA, protect aquifers that are critical to water supply.

Surface Water. Surface water resources generally consist of wetlands, lakes, rivers, and streams. Surface water is important for its contribution to the economic, ecological, recreational, and human health of a community or locale. Waters of the United States are defined within the CWA, as amended, and jurisdiction is addressed by the USEPA and the U.S. Army Corps of Engineers (USACE). In 2006, the Supreme Court addressed the jurisdictional scope of Section 404 of the CWA, specifically the term "the waters of the United States," in *Rapanos v. United States* and in *Carabell v. United States* (referred to as *Rapanos*). As a result, the agencies now assert jurisdiction over the following categories of water bodies: Traditional Navigable Waters (TNWs), all wetlands adjacent to TNWs, non-navigable tributaries of TNWs that are relatively permanent (i.e., tributaries that typically flow year-round or have continuous flow at least seasonally), and wetlands that directly abut such tributaries. In addition, the agencies assert jurisdiction over every water body that is not a Relatively Permanent Water if that water body is determined (on the basis of a fact-specific analysis) to have a significant nexus with a TNW. The classes of water bodies that are subject to CWA jurisdiction only if such a significant nexus is demonstrated are non-navigable tributaries that do not typically flow year-round or have continuous flow at least seasonally; wetlands adjacent to such tributaries; and wetlands adjacent to but that do not directly abut a relatively permanent, non-navigable tributary. A significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or an insubstantial effect on the chemical, physical, or biological integrity of a TNW. Principal considerations when evaluating significant nexus include the volume, duration, and frequency of the flow of water in the tributary; the proximity of the tributary to a TNW; and the hydrologic, ecologic, and other functions performed by the tributary and all of its adjacent wetlands.

Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredge or fill into waters of the United States including wetlands. Encroachment into waters of the United States and wetlands requires a permit from the state and the Federal government. Wetland hydrology is discussed within this section. **Section 3.6** provides a discussion of wetland habitat occurring within the action areas and adjacent wetlands that might be affected by the actions being considered. A water body can be deemed impaired if water quality analyses conclude that exceedances of the water quality standards established by the CWA occur. The CWA requires that states establish a Section 303(d) list to identify impaired waters and establish Total Maximum Daily Loads (TMDLs) for the source(s) causing the impairment. A TMDL is the maximum amount of a substance that can be assimilated by a water body without causing impairment. The CWA also mandated the National Pollutant Discharge Elimination System (NPDES) program, which regulates the discharge of point (end of pipe) and nonpoint (storm water) sources of water pollution and requires a permit under Section 402 for any discharge of pollutants into waters of the United States.

Storm water is an important component of surface water systems because of its potential to introduce sediments and other contaminants that could degrade surface waters. Proper management of storm water flows, which can be intensified by high proportions of impervious surfaces associated with buildings, roads, and parking lots, is important to the management of surface water quality and natural flow characteristics. Prolonged increases in storm water volume and velocity associated with development and

increased impervious surfaces has potential to impact adjacent streams as a result of stream bank erosion and channel widening or down cutting associated with the adjustment of the stream to the change in flow characteristics. Storm water management systems are typically designed to contain runoff onsite during construction, and to maintain predevelopment storm water flow characteristics following development through either the application of infiltration or retention practices. Failure to size storm water systems appropriately to hold or delay conveyance of the largest predicted precipitation event often leads to downstream flooding and the environmental and economic damages associated with flooding.

Construction activities, such as clearing, grading, trenching, and excavating, disturb soils and sediment. If not managed properly, disturbed soils and sediments can easily be washed into nearby water bodies during storm events, where water quality is reduced. Section 438 of the EISA (42 U.S.C. Section 17094) establishes into law new storm water design requirements for Federal construction projects that disturb a footprint of greater than 5,000 square feet (ft²) of land. EISA Section 438 requirements are independent of storm water requirements under the CWA. The project footprint consists of all horizontal hard surface and disturbed areas associated with project development. Under these requirements, predevelopment site hydrology must be maintained or restored to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow. Predevelopment hydrology shall be modeled or calculated using recognized tools and must include site-specific factors such as soil type, ground cover, and ground slope. Site design shall incorporate storm water retention and reuse technologies such as bioretention areas, permeable pavements, cisterns/recycling, and green roofs to the maximum extent technically feasible. Post-construction analyses shall be conducted to evaluate the effectiveness of the as-built storm water reduction features (DOD 2010a). These regulations have been incorporated into applicable DOD United Facilities Criteria in April 2010, which states that low-impact development (LID) features would need to be incorporated into new construction activities to comply with the restrictions on storm water management promulgated by EISA Section 438. LID is a storm water management strategy designed to maintain site hydrology and mitigate the adverse impacts of storm water runoff and nonpoint source pollution. LID can manage the increase in runoff between pre- and post-development conditions on the project site through interception, infiltration, storage, or evapotranspiration processes before the runoff is conveyed to receiving waters. Examples of the methods include bioretention, permeable pavements, cisterns/recycling, and green roofs (DOD 2010b). Additional guidance is provided in the USEPA's *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act* (USEPA 2009a).

Floodplains. Floodplains are areas of low-level ground present along rivers, stream channels, or coastal waters. The living and nonliving parts of natural floodplains interact with each other to create dynamic systems in which each component helps to maintain the characteristics of the environment that supports it. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, nutrient cycling, water quality maintenance, and diversification of plants and animals. Floodplains provide a broad area to spread out and temporarily store floodwaters. This reduces flood peaks and velocities and the potential for erosion. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body (FEMA 1986).

Floodplains are 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, the size of the watershed above the floodplain, and upstream development. Flood potential is evaluated by the Federal Emergency Management Agency (FEMA), which defines the 100-year floodplain as an area within which there is a 1 percent chance of inundation by a flood event in a given year. Certain facilities inherently pose too great a risk to be in either the 100- or 500-year floodplain, such as hospitals, schools, or storage buildings for irreplaceable records. 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.

EO 11988, *Floodplain Management*, requires Federal agencies to determine whether a proposed action would occur within a floodplain. This determination typically involves consultation of FEMA Flood Insurance Rate Maps, which contain enough general information to determine the relationship of the project area to nearby floodplains. EO 11988 directs Federal agencies to avoid floodplains to the maximum extent possible wherever there is a practicable alternative. In accomplishing this objective, “each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by flood plains in carrying out its responsibilities” for the following actions:

- Acquiring, managing, and disposing of Federal lands and facilities
- Providing federally undertaken, financed, or assisted construction and improvements
- Conducting Federal activities and programs affecting land use, including water and related land resources planning, regulation, and licensing activities.

Wetlands. Wetlands perform several hydrologic functions, including water quality improvement, groundwater recharge and discharge, pollution mitigation, nutrient cycling, storm water attenuation and storage, sediment detention, and erosion protection. Wetlands are protected as a subset of the waters of the United States under Section 404 of the CWA. The term “waters of the United States” has a broad meaning under the CWA and incorporates deepwater aquatic habitats and special aquatic habitats (including wetlands). The USACE defines wetlands as “those areas that are inundated or saturated with ground or surface water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” (33 CFR Part 329).

Jurisdictional waters of the United States are areas that convey water, exhibit an “ordinary high water mark,” and do not meet the three parameter criteria for wetlands. An ordinary high water mark is defined as the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, or the presence of litter and debris (33 CFR 328.3). The USACE recognizes three distinct types of drainage features: ephemeral drainages, intermittent drainages, and perennial drainages. Ephemeral drainages are fed primarily by storm water. They convey flows during and immediately after storm events; however, they might stop flowing or begin to dry if the interval between storms is sufficiently long. Under recent United States Supreme Court rulings, an ephemeral drainage must also show a significant nexus to navigable waters for it to be considered jurisdictional. Intermittent drainages are fed primarily by groundwater and supplemented by storm water and flow for extended periods, but cease to flow occasionally or seasonally as a result of groundwater drawdown, seepage, or evapotranspiration. Perennial streams flow continuously except during periods of extended drought.

Per Section 401 of the CWA, any applicant for a Federal license or permit to conduct any activity including the construction or operation of facilities, which could result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the state in which the discharge originates or will originate. North Dakota relies on Section 401 water quality certification as its primary form of state-level wetlands regulation. The Section 401 program is administered by the NDDH/Division of Water Quality (DWQ). In making certification decisions, the NDDH/DWQ is primarily concerned with the construction and environmental disturbance requirements pertaining to soils, surface waters, and fill materials. A nonregulatory agency policy document requires that “fragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land resources will be protected against compaction, vegetation loss, and unnecessary damage.” If a project does not meet this and other

minimum requirements of the NDDH/DWQ, the permit is denied, and necessary conditions are communicated before re-application (ELI 2008).

3.5.2 Description of the Affected Environment

Groundwater. The flow direction of shallow groundwater at Minot AFB is likely influenced by nearby bodies of water and the general surface topography. Therefore, it can be assumed that the direction of groundwater flow on most areas of Minot AFB is to the north-northeast, toward Egg Creek. The direction of groundwater flow on the southern and western ends of the installation is to the south, toward Livingston Creek (MAFB 1995a). At Minot AFB, major sources of groundwater include the Sundre aquifer and Minot aquifer. The Sundre aquifer runs under the City of Minot, stretches to the north, and moves southeast to the Ward County line. The Minot aquifer follows the course of the Souris River. Recharge of both aquifers is derived largely from stream infiltration and precipitation.

Surface Water. Minot AFB is within the Souris River Basin. Surface water in and surrounding Minot AFB includes rivers, streams, numerous wetlands, and six sewage lagoons (see **Figure 3-3**). Despite the Souris and the Des Lacs rivers being the only perennial streams in Ward County, neither river flows closer than 6 miles of Minot AFB. Surface water runoff from the installation is not impounded. It is not used for any purpose other than natural contribution to surface water and overland flow within the Souris River Basin and groundwater recharge. Storm water runoff from open spaces, landscaped areas, runways, hardstands, streets, yards, and developed areas is managed at Minot AFB by a system or network of catch basins, swales, gutters, ditches, inlets, culverts, underground drains, and channels (MAFB 1995a).

Intermittent streams in the vicinity of Minot AFB include Little Deep Creek, Livingston Creek, and an unnamed tributary to Livingston Creek that runs through the western edge of Minot AFB. Surface water throughout Minot AFB ultimately flows into Egg Creek (a tributary of the Souris River), north of Minot AFB. Egg Creek ultimately flows into Buffalo Lodge Lake, which is 35 miles east-southeast of Minot AFB (MAFB 1995a).

Two storm water outfalls drain surface water at Minot AFB. These two permitted outfalls serve areas that contain industrial activities as defined by the Federal and State of North Dakota storm water regulations.

There are two primary drainage ditches that run through and adjacent to the proposed project area. The drainage ditch that runs through the proposed project area is a north-south directional drainage ditch that contains two box culverts, which would be conveyed to the PO as part of the Proposed Action. The Sunflower Haven and Prairie Rose Estates neighborhoods are separated by this drainage ditch. A sluice gate in this drainage ditch would not be conveyed, and therefore, will not be discussed further in this analysis. Both drainage ditches are approximately 15 feet deep with water generally rising 6 to 7 feet above ground surface during the spring. Surface water within the proposed project area generally flows into these drainage ditches, which ultimately flow into Egg Creek.

Floodplains. There are no designated 100-year floodplains contained within the boundaries of Minot AFB or in the surrounding area (MAFB 1995a, FEMA 2010).

Wetlands. Wetlands at Minot AFB are classified as prairie potholes, which were originally formed from glacial activity. Prairie potholes maintain wetland hydrology through inflow from surface water runoff, direct precipitation, and groundwater inflow entering the wetland (Stewart and Kantrud 1972). Prairie potholes experience extreme yearly and seasonal fluctuations in water depth and often result in corresponding changes in salinity.

A 1994 installation-wide wetlands survey identified approximately 97 acres of jurisdictional wetlands, as delineated in accordance with the USACE *Wetlands Delineation Manual*, which are both natural and



Figure 3-3. Surface Water Resources at Minot AFB

man-made (MAFB 1995a, MAFB 1994). The sewage lagoons, which encompass a total of 312 acres, are not classified as wetlands; however, seepage from the lagoons has created, and is still creating, wetlands in adjacent low-lying areas (USAF 2008).

Two drainage ditches run adjacent to the proposed project area. These drainages are considered jurisdictional waters of the United States. Because these drainage ditches would not be included in MFH privatization, they are not considered part of the proposed project site (MAFB 2009a).

Most of the wetlands at Minot AFB occur on the northern portions of the installation. Prairie potholes are north of the Sunflower Haven neighborhood; the closest being less than 100 feet (FEMA 2010). Another exists immediately south of the Prairie Rose Estates neighborhood, with numerous prairie potholes to the east of this neighborhood.

A formal wetland delineation of the proposed project area has not been conducted, and a jurisdictional determination has not been obtained; however, wetlands are not expected to occur based on site observations. If it is determined that wetlands or other waters of the United States might be affected as a result of the Proposed Action, then the area would be delineated, a jurisdictional determination would be obtained, and impacts would be avoided and minimized to the maximum extent practicable. All required permitting would be obtained prior to implementation of the Proposed Action. This would minimize potential for adverse impacts on wetlands or other waters of the United States associated with the Proposed Action.

3.5.3 Environmental Consequences

3.5.3.1 Evaluation Criteria

Evaluation criteria for impacts on water resources are based on water availability, quality, and use; existence of floodplains; and associated regulations. A proposed action could have significant effect with respect to water resources if any of the following were to occur:

- Substantially reduce water availability or supply to existing users
- Overdraft groundwater basins
- Exceed safe annual yield of water supply sources
- Substantially affect water quality adversely
- Endanger public health by creating or worsening health hazard conditions
- Threaten or damage unique hydrologic characteristics
- Violate established laws or regulations adopted to protect water resources.

The potential effect of flood hazards on a proposed action is important if such an action occurs in an area with a high probability of flooding.

Determination of the significance of wetland impacts is based on (1) loss of wetland acreage, (2) the function and value of the wetland, (3) the proportion of the wetland that would be affected relative to the occurrence of similar wetlands in the region, (4) the sensitivity of the wetland to proposed activities, and (5) the duration of ecological ramifications. Impacts on wetland resources are considered significant if high value wetlands would be adversely affected or if wetland acreage is lost.

3.5.3.2 Proposed Action

Groundwater. Short- and long-term, negligible to minor, adverse, and long-term, beneficial impacts on groundwater could be expected. The potential for groundwater contamination would increase, as various

underground utilities (e.g., electric, water) would either be installed or upgraded at the proposed project site. Implementation of appropriate BMPs during demolition activities would further minimize potential adverse impacts. In the event of a spill or leak of fuel or other construction-related products, there could be adverse impacts on groundwater. All fuels and other potentially hazardous materials would be contained and stored appropriately. In the event of a spill, procedures outlined in the *Installation Pollution Prevention Program Guide* (MAFB 1996) would be followed (see **Section 3.10** for a discussion on hazardous materials and wastes).

It is anticipated that the demolition of 140 MFH units could either offset the long-term, adverse impacts associated with increased impervious surfaces resulting from the construction of the storage complex and community center; or result in long-term, beneficial impacts from an overall decrease in impervious surfaces. However, if the construction of the storage complex and community center resulted in an overall increase in impervious surfaces, even with the demolition of 140 MFH units, long-term, negligible to minor, adverse impacts on groundwater would be expected.

Surface Water. Short- and long-term, negligible to minor, adverse, and long-term, beneficial impacts on surface water would be expected. Short-term, negligible to minor, adverse impacts on surface water would be expected from the use of heavy equipment, which could compact soils and could result in a decrease in soil permeability and water infiltration rates resulting in potential subsequent alteration of drainage patterns. Disturbance of soil and removal of vegetation associated with development could result in erosion of disturbed soils and transport of sediment and other pollutants into nearby water bodies during storm water flow events. However, adverse impacts associated with increased runoff would be minimized by implementing ESCPs and storm water management practices.

Short-term, minor, adverse impacts from construction and demolition activities could result due to increased transport of contaminants via storm water runoff to surface water bodies. Surface water runoff occurring during demolition and construction activities could convey contaminants that could impact surface water quality in drainage channels and could also impact groundwater quality as a result of infiltration of contaminated runoff. The level of impact would be related to the type of contaminant that entered the water system. Increased sediment runoff from construction and demolition activities would increase surface water turbidity in receiving waters, which could raise water temperature and impede photosynthetic processes. Sediment runoff into surface water would also increase the potential for contaminants (e.g., heavy metals, excess nutrient concentrations) depositing on the substrate of receiving water bodies. In the event of a spill or leak of fuel or other construction-related products, there could be adverse impacts on surface water quality. All fuels and other potentially hazardous materials would be contained and stored appropriately. In the event of a spill, procedures outlined in the *Installation Pollution Prevention Program Guide* (MAFB 1996) would be followed to quickly contain and clean up a spill.

Overall, construction and demolition activities would have the potential for short-term, adverse impacts on surface water quality; however, the development of a site-specific SWPPP as a component of the NPDES Permit for General Construction Activity would minimize the magnitude of potential adverse impacts. Implementation of BMPs provided in the Minot AFB SWPPP and INRMP would further reduce potential impacts on surface water resources.

Impervious surfaces are constructed of impenetrable materials (e.g., stone, asphalt, concrete) that repel water and prevent rainfall or snowmelt from infiltrating soils. Therefore, during rainfall or snowfall events, impervious surfaces increase the volume and accelerate the speed at which surface water is directed into receiving surface water bodies. The potential for storm water to carry contaminants directly into surface water bodies is lessened with decreased impervious surfaces. It is anticipated that the demolition of 140 MFH units could either offset the long-term, adverse impacts associated with increased

impervious surfaces resulting from the construction of the storage complex and community center; or result in long-term, beneficial impacts from an overall decrease in impervious surfaces. However, if the construction of the storage complex and community center resulted in an overall increase in impervious surfaces, even with the demolition of 140 MFH units, long-term, negligible to minor, adverse impacts on surface water would be expected. Any adverse impacts would be minimized by implementing BMPs and following an approved ESCP. Under the CWA Final Rule, projects that would disturb more than 1 acre of land would be required to use BMPs to ensure that soil disturbed during construction activities would not pollute nearby water bodies.

Floodplains. No direct or indirect impacts would be expected, as there are no floodplains at or within the vicinity of the proposed project site.

Wetlands. No direct, adverse impacts on wetlands would be expected. However, short-term, negligible to minor, indirect, adverse impacts could be expected. Numerous prairie potholes exist in the immediate areas surrounding the proposed project area, and there is an installation drainage ditch that separates the Sunflower Haven and Prairie Rose neighborhoods. During construction and demolition activities, indirect, adverse impacts could be expected on these wetlands due to increased erosion, sedimentation, and pollutants entering these wetlands. Adherence to an ESCP and SWPPP would prevent potential degradation of wetlands. Implementation of appropriate ESCPs and BMPs would minimize potential adverse impacts on receiving wetlands. In the event of a spill or leak of fuel or other construction-related products, there could be adverse impacts on wetland water quality. All fuels and other potentially hazardous materials would be contained and stored appropriately. If it is determined that discharge into navigable waters from facility construction or operations would occur, Minot AFB would be required to obtain Section 401 water quality certification from the NDDH/DWQ, Section 402 NPDES permits, and applicable Section 404 permits for impacts on waters of the United States.

3.5.3.3 No Action Alternative

Under the No Action Alternative, Minot AFB would not implement the Proposed Action and would continue to provide for the housing needs of military personnel and family members. Existing conditions would remain the same, as described in **Section 3.5.2**; therefore, no impacts on water resources would be expected.

3.6 Biological Resources

3.6.1 Definition of the Resource

Biological resources include native or naturalized plants and animals and the habitats (e.g., grasslands, forests, and wetlands) in which they exist. Protected and sensitive biological resources include listed (threatened or endangered), proposed, and candidate species under the ESA (16 U.S.C. 1536) as designated by the USFWS; state-listed threatened or endangered species; and migratory birds. Sensitive habitats include those areas designated by the USFWS as critical habitat protected by the ESA and sensitive ecological areas as designated by state or Federal rulings. Sensitive habitats also include wetlands, plant communities that are unusual or of limited distribution, and important seasonal use areas for wildlife (e.g., migration routes, breeding areas, crucial summer and winter habitats).

Under ESA, an “endangered species” is defined as any species in danger of extinction throughout all or a significant portion of its range. A “threatened species” is defined as any species likely to become an endangered species in the foreseeable future. The USFWS also maintains a list of species considered to be candidates for possible listing under the ESA. Although candidate species receive no statutory

protection under the ESA, the USFWS has attempted to advise government agencies, industry, and the public that these species are at risk and might warrant protection under the ESA.

The Migratory Bird Treaty Act of 1918 (16 U.S.C. 703–712) as amended, and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, require Federal agencies to minimize or avoid impacts on migratory birds listed in 50 CFR 10.13. If design and implementation of a Federal action cannot avoid measurable negative impact on migratory birds, EO 13186 directs the responsible agency to develop and implement, within 2 years, a Memorandum of Understanding with the USFWS that shall promote the conservation of migratory bird populations.

3.6.2 Description of the Affected Environment

Vegetation. Most of the remnant northern mixed-grass prairie on Minot AFB has been disturbed by agricultural practices and land development. Only a 20-acre tract of remnant northern mixed-grass prairie currently exists on Minot AFB, in the southeastern corner of the installation. The other vegetation types on Minot AFB include urban, disturbed, wetlands, hayland, groomed (in the vicinity of the runway), and shelterbelts. Most of the land within Minot AFB, including the project area, has been developed for installation facilities, housing, and recreation areas. Plantings of sod-forming Kentucky bluegrass (*Poa pratensis*) and rough fescue (*Festuca scabrella*) for lawns and recreation areas occupy about 1,800 acres of land on Minot AFB.

Minot AFB has planted a large number of trees, mostly in the form of linear shelterbelts that vary from single to multiple rows. The most common shelterbelt shrub and tree species that have been planted include Russian olive (*Elaeagnus angustifolia*), plains cottonwood (*Populus deltoides*), honey locust (*Gleditsia triacanthos*), Chinese elm (*Ulmus pumila*), caragana (*Caragana aborescens*), and blue spruce (*Picea pugnans*) (MAFB 1995a).

Construction and demolition activities create disturbances that can increase the spread of noxious weeds. P.L. 93-629, *Federal Noxious Weed Act*, mandates control of noxious weeds by limiting possible weed seed transport from infested areas to noninfested sites. The spread of noxious weeds is controlled by avoiding activities in or adjacent to heavily infested areas, removing seed sources and propagules from the site prior to conducting activities, limiting operations to non-seed-producing seasons, and covering exposed areas with weed seed-free mulch or seeding the areas with native species. Covering the soil reduces the germination of weed seeds, maintains soil moisture, and minimizes erosion. Noxious weeds on Minot AFB include absinth wormwood (*Artemisia absinthium*) around the stables and grazing land, Canada thistle (*Cirsium arvense*) associated with the wetlands, field bindweed (*Convolvulus arvensis*) in maintained lawns and grassy areas, leafy spurge (*Euphorbia esula*) in two areas along the runway, and perennial sowthistle (*Sonchus arvensis*) associated with the wetlands (MAFB 1995a). Field bindweed is abundant and infests most of the maintained lawns and grassy areas on Minot AFB, including the MFH area (MAFB 1995a).

Wildlife. Wildlife species found at Minot AFB are those associated with Northern Great Plains as habitat or species adapted to urban environments, such as the urban habitats found throughout much of Minot AFB. Mammals on Minot AFB include white-tailed deer (*Odocoileus virginianus*), badger (*Taxidea taxus*), red fox (*Vulpes vulpes*), coyote (*Canis latrans*), long-tailed weasel (*Mustela frenata*), deer mouse (*Peromyscus maniculatus*), voles (*Microtus* spp.), fox squirrel (*Sciurus niger*), thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*), and white-tailed jackrabbit (*Lepus townsendii*). The fox squirrel and nonnative house mouse (*Mus musculus*) are most common within the urbanized areas (e.g., MFH area) (MAFB 1995a).

Bird species on Minot AFB include raptors, waterbirds, upland gamebirds, and songbirds. The Swainson's hawk (*Buteo swainsoni*) is the only raptor that has been documented on Minot AFB. Waterbirds documented on the installation include the mallard (*Anas platyrhynchos*), redhead (*Aythya americana*), ruddy duck (*Oxyura jamaicensis*), northern shoveler (*Anas clypeata*), pectoral sandpiper (*Calidris melanotos*), American avocet (*Recurvirostra americana*), spotted sandpiper (*Actitis macularia*), and willet (*Catoptrophorus semipalmatus*). Waterbirds primarily occur within wetlands and near areas of open water, such as the sewage lagoons in the northern portion of Minot AFB. Upland gamebirds, typically occurring in haylands and disturbed habitats on the installation, include the gray partridge (*Perdix perdix*), mourning dove (*Zenaida macroura*), and ring-necked pheasant (*Phasianus colchicus*). Songbirds documented on Minot AFB found in pastures, haylands, and disturbed areas include the lark bunting (*Calamospiza melanocorys*), western meadowlark (*Sturnella neglecta*), western kingbird (*Tyrannus verticalis*), and loggerhead shrike (*Lanius ludovicianus*). Songbird species occurring near buildings and within urban and housing areas include the barn swallow (*Hirundo rustica*), cliff swallow (*Petrochelidon pyrrhonota*), and American robin (*Turdus migratorius*). Songbird species associated with the wetland habitat on Minot AFB include the red-winged blackbird (*Agelaius phoeniceus*) and yellow-headed blackbird (*Xanthocephalus xanthocephalus*) (MAFB 1995a).

Reptiles and amphibians known to occur or potentially occur on the installation include the plains garter snake (*Thamnophis sirtalis*), painted turtle (*Chrysemys picta*), leopard frog (*Rana pipens*), Great Plains toad (*Bufo cognatus*), and tiger salamander (*Ambystoma tigrinum*). The turtle, toad, and salamander occur within the wetlands (MAFB 1995a).

Protected and Sensitive Species. Six federally listed threatened or endangered animal species are listed as occurring in North Dakota (see **Table 3-9**). The USFWS has indicated that all of these species might occur, or have historically occurred, in Ward County; however, none are known to exist on Minot AFB (MAFB 1995a). There are no critical habitats on Minot AFB (USAF 2008).

Table 3-9. Federally Listed Species Potentially Occurring in Ward County, North Dakota

Common Name	Scientific Name	Federal Status
Mammals		
Black-footed ferret	<i>Mustela nigripes</i>	Endangered
Gray wolf	<i>Canis lupus</i>	Endangered
Birds		
Least tern	<i>Sterna antillarum</i>	Endangered
Piping plover	<i>Charadrius melodus</i>	Threatened
Whooping crane	<i>Grus americana</i>	Endangered
Fish		
Pallid sturgeon	<i>Scaphirhynchus albus</i>	Endangered

Source: USFWS 2010, MAFB 1995a

North Dakota does not have an official list of state threatened and endangered species. The North Dakota Game and Fish Department has identified 100 species as Species of Conservation Priority as part of its *Comprehensive Wildlife Conservation Strategy* (Hagen et al. 2005). There are six bird species that have been documented on Minot AFB that are included in this priority list. Level I species include the Swainson's hawk, willet, and lark bunting; and Level II species include the redhead, American avocet, and loggerhead shrike. Level I species are those having a high level of conservation priority because of

declining status in North Dakota or across their range; or that might have a high rate of occurrence in North Dakota but might be at risk rangewide. Level II species are those having a moderate level of conservation priority.

Migratory birds, as listed in 50 CFR 10.13, are protected under the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703–712), as amended, and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*. The vast majority of birds occurring on Minot AFB are migratory birds. Two major bird migration routes, the Mississippi Flyway and Central Flyway, cross North Dakota. Large spring and fall waterfowl migrations occur in the vicinity. The presence of water on Minot AFB (i.e., wetlands and sewage lagoons) and the Upper Souris Wildlife Refuge, which is approximately 7 miles west of the installation (USAF 2008), attracts migratory waterfowl and other bird species to the vicinity.

3.6.3 Environmental Consequences

3.6.3.1 Evaluation Criteria

The level of impact on biological resources is based on (1) the importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource, (2) the proportion of the resource that would be affected relative to its occurrence in the region, (3) the sensitivity of the resource to the proposed activities, and (4) the duration of ecological ramifications. An impact on a biological resource would be considered significant if it was to cause a violation of the laws and regulations pertaining to biological resources as discussed in **Appendix B**, if species or habitats of high concern are adversely affected over relatively large areas, or if disturbances cause reductions in population size or distribution of a species of special concern. A habitat perspective is used to provide a framework for analysis of general classes of impacts (e.g., removal of critical habitat, noise, human disturbance).

Ground disturbance and noise associated with construction or demolition activities might directly or indirectly cause potential impacts on biological resources. Direct impacts from ground disturbance were evaluated by identifying the types and locations of potential ground-disturbing activities in correlation to important biological resources. Mortality of individuals, habitat removal, and damage or degradation of habitats are impacts that might be associated with ground-disturbing activities. Noise associated with a proposed action might be of sufficient magnitude to result in the direct loss of individuals and reduce reproductive output within certain ecological settings. Ultimately, extreme cases of such stresses could have the potential to lead to population declines or local or regional extinction. To evaluate impacts, considerations were given to the number of individuals or critical species involved, amount of habitat affected, relationship of the area of potential effect to total available habitat within the region, type of stressors involved, and magnitude of the impacts.

3.6.3.2 Proposed Action

Vegetation. Short-term, negligible, adverse impacts on vegetation would be expected. The majority of vegetation within the MFH area is modified, landscaped, and mowed regularly. Vegetation that could be disturbed within the MFH privatization area includes landscaping (i.e., trees, shrubs, and turf lawns). Short-term, negligible, adverse impacts on vegetation would be expected from temporary disturbances during demolition and construction activities (e.g., trampling and removal). This vegetation would be expected to regenerate or be replanted once demolition activities ceased. The Demolition Plan should include guidelines associated with replacing trees for trees that are removed during demolition activities. After facilities deemed inadequate were demolished, the PO would grade the project area for proper drainage and seed all areas not scheduled for future developments. All impacts on vegetation from demolition and construction disturbances would be negligible, as there have been no observations made of any unique native vegetative species occurring within the MFH privatization area.

If the new community storage unit complex and community center were constructed in undeveloped (i.e., grass) sites within the MFH area, long-term, negligible to minor, adverse impacts on vegetation would be expected due to direct removal of vegetation. However, if these facilities were constructed in place of the demolished MFH units, these impacts would likely be offset.

During and immediately following demolition and construction activities that result in ground disturbances, soils would be exposed and vegetation would be sparse in some areas, thus allowing opportunities for noxious weeds to establish in those areas. However, once demolition ceased, the disturbed areas would be seeded or replanted in sod. Therefore, noxious weeds would not be expected to become permanently established in disturbed areas and no long-term, adverse impacts from noxious weeds would be expected.

Wildlife. The Proposed Action would have short-term, minor, direct, adverse impacts on wildlife due to disturbances (e.g., noise and motion) from demolition and construction activities and heavy equipment use. High noise events could cause wildlife to engage in escape or avoidance behaviors, resulting in short-term, minor, adverse impacts. The areas of disturbance would be relatively small in size and generally within a developed area where disturbances are common (e.g., mowing and landscaping, foot and vehicle traffic, aircraft overflights). Most wildlife species in the MFH privatization area would be expected to quickly recover once the demolition or construction disturbances ceased for the day, or habituate to the disturbances altogether; therefore, no long-term, adverse impacts on wildlife would be expected as a result of temporary demolition disturbances.

If the new community storage unit complex and community center were constructed in undeveloped sites within the MFH area, long-term, minor, adverse impacts on wildlife would be expected due to direct removal of potential habitat. However, if these facilities were constructed in place of the demolished MFH units, these impacts would likely be offset.

Protected and Sensitive Species. No federally listed threatened or endangered species are known to occur on Minot AFB; therefore, no impacts on federally listed species would be expected. Habitats on the installation do support use by species of conservation priority, as defined in North Dakota's *Comprehensive Wildlife Conservation Strategy*. Most of these are migratory bird species that use a variety of habitats on Minot AFB, such as pastures, haylands, wetlands, and open water. There is no critical or significant habitat present on Minot AFB. Short-term, negligible to minor, adverse impacts on species of conservation priority, similar to those discussed for wildlife, would be expected as a result of disturbances from demolition and construction activities.

The Migratory Bird Treaty Act, as amended, and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, require Federal agencies to minimize or avoid impacts on migratory birds listed in 50 CFR 10.13. Demolition and construction associated with the Proposed Action would be conducted in a manner to avoid adverse impacts on migratory birds to the extent practicable and it is not anticipated that the Proposed Action would have any measureable negative impacts on migratory birds (e.g., direct mortality, decrease in population size, decrease in fitness, repetitive nest failure). However, short-term, negligible to minor, adverse impacts on migratory birds would be expected from noise and motion disturbances during demolition and construction activities. These impacts would most likely be in the form of escape or avoidance behaviors and are anticipated to be temporary.

The most common migratory bird species likely to occur within the MFH area are the barn swallow, cliff swallow, and American robin. Barn and cliff swallows place nests on the walls of buildings, and therefore, could potentially use the MFH units proposed for demolition for nesting. American robins mostly nest in trees, but will also nest in gutters, eaves, on outdoor light fixtures, and other structures; therefore, potential exists for American robin nests to be present on MFH units proposed for demolition.

or within the yards of those MFH units. Several other songbird species are also anticipated to use the MFH area for nesting. The following BMPs are recommended for reduction or avoidance of impacts on migratory birds that could occur within the project area:

- Any ground-breaking demolition and construction activities should be performed before migratory birds return to Minot AFB or after all young have fledged to avoid incidental take.
- If demolition or construction is scheduled to start during the period in which migratory bird species are present, steps should be taken to prevent migratory birds from establishing nests in the potential impact area. These steps could include covering equipment and structures and use of various excluders (e.g., noise). Birds can be harassed to prevent them from nesting within the project area. Once a nest is established, they should not be harassed until all young have fledged and are capable of leaving the nest site.
- If construction is scheduled to start during the period when migratory birds are present, a site-specific survey for nesting migratory birds should be performed starting at least 2 weeks prior to site clearing.

If nesting birds are found during the survey, buffer areas should be established around nests. Demolition or construction should be deferred in buffer areas until birds have left the nest. Confirmation that all young have fledged should be made by a qualified biologist.

3.6.3.3 No Action Alternative

Under the No Action Alternative, Minot AFB would not implement the Proposed Action and would continue to provide for the housing needs of military personnel and family members. Some of the older MFH units would continue to require maintenance and renovation. Therefore, intermittent, short-term, negligible, adverse impacts on wildlife and protected and sensitive species could be expected due to disturbances (e.g., noise, motion) during renovation activities.

3.7 Safety

3.7.1 Definition of the Resource

A safe environment is one in which there is no, or an optimally reduced, potential for death, serious bodily injury or illness, or property damage. Human health and safety addresses workers' health and safety during demolition activities and facilities construction, and public safety during demolition and construction activities and during subsequent operations of those facilities.

Construction Safety. Construction site safety requires adherence to regulatory requirements imposed for the benefit of employees. It includes implementation of engineering and administrative practices that aim to reduce risks of illness, injury, death, and property damage. The health and safety of onsite military and civilian workers are safeguarded by numerous DOD and USAF regulations designed to ensure compliance with standards issued by the Federal OSHA, USEPA, and state occupational safety and health agencies. These standards specify health and safety requirements, the amount and type of training required for industrial workers, the use of personal protective equipment, administrative controls, engineering controls, and permissible exposure limits for workplace stressors.

Various stressors in the environment can adversely affect human health and safety. Identification and control or elimination of these stressors can reduce risks to health and safety to acceptable levels.

Health and safety hazards can often be identified and reduced or eliminated. Necessary elements for an accident-prone situation or environment include the presence of the hazard itself with the exposed (and possibly susceptible) population. The degree of exposure depends primarily on the proximity of the hazard to the population. Hazards include transportation, maintenance and repair activities, and the creation of noisy environments or a potential fire hazard. The proper operation, maintenance, and repair of vehicles and equipment carry important safety implications. Any facility or human-use area with potential explosive or other rapid oxidation process creates unsafe environments due to noise or fire hazards for nearby populations. Noisy environments can also mask verbal or mechanical warning signals such as sirens, bells, or horns.

Physical stressors. Physical hazards in the environment can cause injury, temporary or permanent disability, disease, or death. These stressors encompass a wide range of factors, such as dust, humidity, temperature, noise, and radiation.

Behavioral stressors. Behavioral stressors include the impacts of military activities on (1) psychological characteristics such as emotion, motivation, the learning process, and general behavior; and (2) psychological needs such as freedom, space, privacy, and societal acceptance. Behavioral stressors can cause mental impacts ranging from direct physical damage to the brain tissue to temporary irritability.

Psychological stressors. Some chemical and physical elements and situations can cause mental tension and strain. These psychological stressors are closely related to behavioral stressors. Psychological stressors can be physical in nature, such as traffic congestion, excessive noise, air pollution, or inadequate working and living facilities, or they can be emotional in nature, such as the impacts of discrimination or sexual harassment.

Chemical stressors. Several chemical substances have the potential to produce undesired or toxic health impacts. Some chemicals act locally and some act systemically (requiring absorption into the blood stream). Chemical stressors can also be transmitted by air; by ground water or surface water used for drinking, irrigation, or recreation; or by direct contact.

Endocrine disrupters. A relatively new but increasingly important health concern is “endocrine disrupters” (EDs). EDs are generally caused by synthetic chemicals (e.g., pesticides), which, when absorbed into the body, can cause hormonal disruption.

Explosives and Munitions Safety. Explosive safety clearance zones must be established around facilities used for storage, handling, or maintenance of munitions. Air Force Manual 91-201 establishes the size of the clearance zone based upon QD criteria or the category and weight of the explosives contained within the facility.

AFI 91-301, *Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program*, implements AFD 91-3, *Occupational Safety and Health*, by outlining the AFOSH Program. The purpose of the AFOSH Program is to minimize loss of USAF resources and to protect USAF personnel from occupational deaths, injuries, or illnesses by managing risks. In conjunction with the USAF Mishap Prevention Program, these standards ensure all USAF workplaces meet Federal safety and health requirements. This instruction applies to all USAF activities.

3.7.2 Description of the Affected Environment

Minot AFB is a secure USAF military installation. Access is limited to military personnel, civilian employees, and military families. Minot AFB provides emergency services including fire, law

enforcement, and other emergency response services and force protection. Therefore, emergency situations are responded to within a quick timeframe.

Construction Safety. All contractors performing construction activities are responsible for following ground safety regulations and workers compensation programs and are required to conduct construction activities in a manner that does not pose any risk to workers or personnel. Industrial hygiene programs address exposure to hazardous materials, use of personal protective equipment, and availability of Material Safety Data Sheets. Industrial hygiene is the responsibility of contractors, as applicable. Contractor responsibilities are to review potentially hazardous workplace operations; to monitor exposure to workplace chemicals (e.g., asbestos, lead, hazardous materials), physical hazards (e.g., noise propagation), and biological agents (e.g., infectious waste); to recommend and evaluate controls (e.g., ventilation, respirators) to ensure personnel are properly protected or unexposed; and to ensure a medical surveillance program is in place to perform occupational health physicals for those workers subject to any accidental chemical exposures.

In 1994, an ACM survey was conducted at Minot AFB that included a visual inspection of identified areas to locate friable ACM and random sampling for asbestos analysis. Comprehensive physical sampling was not conducted during the survey (MAFB 2004). Results from the survey indicated that most of the ACM was identified in the industrial portions of Minot AFB. There is little to no friable ACM within the proposed project area; however, there might be ACM associated with the high-temperature water lines and in central heating units in older MFH units (MAFB 2009a).

In 1994, a LBP survey was conducted at Minot AFB that included 197 MFH units, some of which were licensed family daycares; the Community Center; and the old Youth Annex. In addition, visual inspections were conducted in more than 2,000 MFH units. Results from the samples taken during the survey and visual inspections indicated that LBP was detected in 98 percent of the MFH units and in the Community Center and old Youth Annex (MAFB 2004, MAFB 2009b).

Explosives and Munitions Safety. Minot AFB has several activities that require QD explosive safety clearance zones that are established around facilities used for the storage, handling, or maintenance of munitions. QD arcs on Minot AFB are primarily in the southern and western portions of the installation. The Weapons Storage Area, Munitions Storage Area, Hot Cargo Pad, Explosive Ordnance Disposal Area, Mass Parking Apron, Alternate Parking Apron, Overflow Parking Apron, and Missile Handling Facility all generate significant QD arcs at Minot AFB (USAF 2008).

No portions of the proposed project area are within QD explosive safety zones (USAF 2008). QD arcs are approximately 0.20 miles south of the southernmost portion of the Prairie Rose neighborhood and 0.25 miles west of the westernmost portion of the Sunflower Haven neighborhood.

3.7.3 Environmental Consequences

3.7.3.1 Evaluation Criteria

Any increase in safety risks would be considered an adverse effect on safety. A proposed action could have a significant effect with respect to health and safety if the following were to occur:

- Substantially increase risks associated with the safety of construction personnel, contractors, or the local community
- Substantially hinder the ability to respond to an emergency

- Introduce a new health or safety risk for which the installation is not prepared or does not have adequate management and response plans in place.

3.7.3.2 Proposed Action

Short-term, negligible to minor, adverse, and long-term, beneficial impacts on safety would be expected from implementing the Proposed Action.

Construction Safety. Short-term, minor, direct, adverse impacts would be expected. The short-term risk associated with construction contractors would slightly increase at Minot AFB during the normal workday (i.e., 8 a.m. to 5 p.m.), as construction activity levels would increase. However, all construction contractors would be required to follow and implement OSHA standards to establish and maintain safety procedures. Demolition of MFH units and the construction of desired community features associated with the Proposed Action would not pose new or unacceptable safety risks to installation personnel or activities at the installation. Following completion of construction, no long-term, adverse impacts on safety would be expected.

Short-term, minor, adverse, and long-term, beneficial impacts would be expected. Some of the older MFH units proposed for demolition or renovation likely contain ACM and LBP. These MFH units would need to be surveyed by a state-certified inspector prior to demolition or renovation activities. There is also the potential for uncovering ACM in the high-temperature water lines and central heating units in the older MFH units during demolition or renovation. All ACM discovered would be removed by state-certified individuals prior to demolition and renovation and disposed of at a USEPA-approved landfill. Debris containing LBP would be characterized as demolition waste or LBP-contaminated demolition debris, which would be disposed of at a USEPA-approved landfill. Contractors would be required to adhere to all Federal, state, and local regulations in addition to Minot AFB management plans. The removal of ACM and LBP during demolition and renovation activities would result in long-term, beneficial impacts by reducing potential exposure to residents and maintenance personnel.

Explosives and Munitions Safety. No impacts would be expected. There are no munitions stored or handled in the immediate vicinity of the proposed project area and no portions of the proposed project area are within QD explosive safety zones. Further, munitions transport would not occur within the proposed project area during demolition or construction activities to minimize contractors' exposure to hazards associated with explosives.

3.7.3.3 No Action Alternative

Under the No Action Alternative, Minot AFB would not implement the Proposed Action and would continue to provide for the housing needs of military personnel and family members. Existing conditions would remain the same, as described in **Section 3.7.2**. Long-term, negligible, adverse impacts on safety could be expected from the continued use of some of the existing MFH units, which likely contain ACM and LBP. In addition, some of the high-temperature water lines and central heating units in the older MFH likely contain asbestos. Therefore, residents and maintenance personnel would potentially be at risk from potential exposure to, and release of, asbestos.

3.8 Utilities and Infrastructure

3.8.1 Definition of the Resource

Infrastructure consists of the systems and physical structures that enable a population in a specified area to function. Infrastructure is wholly human-made, with a high correlation between the type and extent of

infrastructure and the degree to which an area is characterized as “urban” or developed. The availability of infrastructure and its capacity to support growth are generally regarded as essential to the economic growth of an area. The utilities and infrastructure components discussed in this section include transportation, electrical supply, natural gas supply, water supply, the sanitary sewer and wastewater systems, the storm water drainage system, the communications system, and solid waste management. Transportation includes major and minor roadways that feed into the installation and the security gates, roadways, and parking areas on the installation. Public transit, rail, and pedestrian networks are also elements of transportation.

3.8.2 Description of the Affected Environment

Transportation. U.S. Highway 83 (US 83) serves as the primary access route to Minot AFB. There are three entrances to the installation, two of which are from US 83 and one is from 72nd Street NW (County Road 6) to 30th Street NW. The primary entrance is through the Magic City (Main) Gate, which accesses Missile Avenue in the northeastern portion of the installation. The Minot (South) Gate is a secondary entrance that accesses Bomber Boulevard in the southeastern corner of the installation (USAF 2008). The third entrance is through the North Gate, which accesses Firing Lane in the north-northwestern portion of the installation.

The primary vehicular routes on the installation include Missile Avenue, Minuteman Drive, Bomber Boulevard, and segments of Peacekeeper Place and Summit Drive. Most of the roadways are oriented in a northeast-southwest rectangular grid pattern; however, the roadways within the MFH areas vary in layout. Minot AFB has sufficient parking for all vehicles. The streets within the MFH neighborhoods are wide enough to provide on-street parallel parking for residents. The installation does not experience traffic congestion during periods of peak travel (USAF 2008).

Electrical Supply. Electrical power is supplied to Minot AFB by Verendrye Electric Cooperative. Three 41.6-kilovolt electrical feeders deliver electrical power to the installation’s two electrical substations (North Substation and South Substation). The larger of the two substations is the South Substation, which is a 30 megavolt-ampere (MVA) transformer that receives electrical power from two of the electrical feeders. The smaller substation is the North Substation, which is a 15-MVA transformer that receives electrical power from the remaining electrical feeder. Ten electrical circuits, including three circuits that are dedicated to the MFH areas, extend from the two substations to the facilities on the installation. Electrical demand at Minot AFB averages approximately 15 MVA and is within the capacity of the installation’s electrical system (USAF 2008).

Approximately 70 percent of the installation’s electrical system consists of underground lines. Most electrical lines are in good condition; however, some older electrical lines are nearing their life expectancy and have already deteriorated to the point that occasional electrical outages have occurred. Emergency electrical power is supplied to critical facilities on the installation by emergency backup generators (USAF 2008). All electrical and street lighting cables in MFH areas are buried and meet USAF standards (USAF 2010a). The overall Minot AFB electrical system was evaluated as in adequate condition during a 2004 system evaluation (USAF 2008).

Natural Gas Supply. Natural gas is supplied to Minot AFB by Montana-Dakota Utilities. The installation is serviced by a 6-inch diameter, steel main that delivers natural gas to the master regulator and meter house. Approximately 41 miles of 2- to 6-inch diameter pipelines extend from the master regulator to the various buildings at Minot AFB. Natural gas is used to power the installation’s central heating system and to heat all MFH units. A propane-air mixture system has been installed to serve as a natural gas backup or to augment supply during infrequent periods when demand exceeds supply. The

overall Minot AFB natural gas system was evaluated as in adequate condition during a 2004 system evaluation (USAF 2008).

Water Supply. Water is delivered to Minot AFB through a 14-inch cast iron and polyvinyl chloride (PVC) main from the City of Minot. This water main is capable of delivering a maximum of 3.2 million gallons per day (MGD); however, the installation is contractually limited to 2.5 MGD. In 2009, Minot AFB used an average of approximately 717,000 gallons of water per day. The all-time peak water demand was recorded at approximately 1.6 MGD. Minot AFB stores water in several underground and aboveground reservoirs. Total water storage capacity at the installation is approximately 3.3 million gallons, and includes a 250,000-gallon water storage tank (Facility No. 4046) that stores water for the MFH areas (USAF 2008, MAFB 2009c).

There are approximately 65 miles of 3- to 14-inch-diameter water supply lines at the installation. Approximately 70 percent of the water supply lines are composed of asbestos cement pipe, while cast iron (20 percent) and PVC (10 percent) piping compose the remainder of the system (USAF 2008). Water supply lines in all MFH neighborhoods were last renovated or replaced when the neighborhood was constructed to its current form. Water flow and pressure levels are sufficient for fire protection needs (USAF 2010a). The overall Minot AFB water supply system was evaluated as in adequate condition during a 2008 system evaluation (USAF 2008).

Sanitary Sewer and Wastewater Systems. Minot AFB maintains its own sanitary sewer system and wastewater treatment center. All domestic and industrial wastewater generated at Minot AFB is collected by a network of approximately 273,364 linear feet of piping. The collection system consists of collection mains, precast manholes, and sewage lift stations. The collection mains range in size from 1.5 to 24 inches in diameter and are buried at an average depth of approximately 12 feet (USAF 2010c). Most gravity mains are composed of vitrified clay, while most force mains are composed of asbestos cement. The force mains are powered by numerous pumping stations and lift stations. The wastewater treatment center consists of six treatment lagoons that have total capacity for 345 million gallons of wastewater. Treatment of wastewater is accomplished by biological destruction of organics. Treated effluent is discharged from the lagoons into Egg Creek (USAF 2008).

Wastewater lines in all MFH neighborhoods were last renovated or replaced when the neighborhood was constructed to its current form (USAF 2010a). The overall Minot AFB wastewater system was evaluated as in adequate condition during a 2008 system evaluation (USAF 2008).

Minot AFB is authorized to discharge wastewater from its treatment lagoons to surface waters under North Dakota Pollutant Discharge Elimination System (NDPDES) permit number ND-0020486. Effluent limitations for the lagoon discharge are established in the NDPDES permit. The NDPDES permit also requires the establishment of an Industrial Waste Management program which addresses BMPs to reduce and prevent the discharge of pollutants (NDDH 2010).

Storm Water Drainage System. Minot AFB's storm water drainage system consists of catch basins, inlets, pipes, box culverts, and surface ditches. Storm water collected by the installation's storm water drainage system discharges into either the main, excavated, drainage ditch (Channel A) or into a natural glacial melt-water ditch (Channel B). Both drainage ditches discharge into Egg Creek, immediately north of the installation. Localized flooding periodically occurs at several places on the installation including near the airfield control tower, tactical air navigation antenna, and Dakota Elementary School, which is within the MFH area. Flooding is usually minor and is most common during the spring snow melt (USAF 2008). The storm water drainage system at all MFH neighborhoods was last renovated or replaced when the neighborhood was constructed to its current form (USAF 2010a).

Section 402(p) of the CWA states that storm water discharges associated with industrial activity to waters of the United States must be authorized by an NPDES permit. Minot AFB currently operates under an NPDES Industrial Storm Water Permit (permit number NDR05-0315) (USAF 2010c). The permit authorizes the discharge of storm water associated with industrial activity to surface waters, in accordance with effluent limitations, monitoring requirements, and other conditions (MAFB 2005b).

Communications Systems. Minot AFB uses fiber optic and copper cables to support the installation's communications system. Telephone service is provided to the installation by SRT Communications (USAF 2010a). The installation's telephone switching system has capacity for 29,000 lines, of which 6,800 are currently in service. The installation's computer data transmission system was recently upgraded to a 10-gigabit Ethernet system (USAF 2008). All MFH units at Minot AFB are provided with cable television and telephone service. Secure-line government telephone service is provided to MFH units for senior officers (USAF 2010a).

Solid Waste Management. There are no active landfills on Minot AFB. Solid waste generated at the installation is collected by contractors and transported to landfills in or near the City of Minot. The City of Minot landfill has approximately 10 to 15 years of permitted capacity remaining and has recently taken steps to secure additional capacity; therefore, future disposal availability is not expected to be a concern (USAF 2008). In 2008, Minot AFB generated and disposed of approximately 3,771 tons of solid waste in landfills (MAFB 2008g).

Minot AFB manages a recycling program to reduce the amount of solid waste transported off-installation to landfills. Mandatory recycling has been instituted in all work areas, and curbside recycling pickup is available in the MFH areas (USAF 2008). In 2008, Minot AFB recycled approximately 1,387 tons of recyclable materials (MAFB 2008g). Additional recycling efforts are oftentimes included in specific construction and demolition projects.

3.8.3 Environmental Consequences

3.8.3.1 Evaluation Criteria

Impacts on infrastructure are evaluated for their potential to disrupt or improve existing levels of service and create additional needs for airfield and transportation resources, energy (i.e., electric, natural gas, liquid fuels, and central heating and cooling), water, sanitary sewer and wastewater service, storm water drainage, communications, and solid waste management. For example, impacts might arise from physical changes to traffic circulation or energy needs created by either direct or indirect workforce and population changes related to installation activities. An impact could be considered significant if the Proposed Action resulted in any of the following:

- Exceeded capacity of a utility
- A long-term interruption of the utility
- A violation of a permit condition
- A violation of an approved plan for that utility.

3.8.3.2 Proposed Action

Transportation. Short-term, negligible to minor, adverse impacts on transportation system would be expected. The demolition of 140 existing MFH units, the renovation of other existing MFH units, and the construction of a community center and storage facility would result in a slight increase in the amount of traffic at the installation from equipment being delivered, debris being removed, and contractors arriving at the work sites. However, demolition, renovation, and construction traffic would compose a small

percentage of the total existing traffic on the installation. Many of the heavy demolition, renovation, and construction vehicles would be driven at the work sites and kept on site for the duration of work activities, resulting in relatively few additional trips. It is assumed that the proposed demolition, renovation, and construction activities would be spread over a period of 6 years at various locations in the MFH area of Minot AFB. This would further reduce impacts on installation traffic. Any potential increases in traffic volume associated with the proposed demolition, renovation, and construction activities would be temporary.

No long-term, adverse impacts on transportation would be expected. Although the Proposed Action would reduce the number of MFH units at Minot AFB by 140 units, most MFH units proposed for demolition are currently vacant (surplus). As such, the removal of these structures would not reduce the number of personnel at the installation and, in turn, would not reduce the amount of traffic on installation roadways. All roadways servicing MFH unit neighborhoods proposed for demolition would be removed as part of demolition activities. Because these roadways would no longer be needed once the MFH units were demolished, no long-term impacts would be expected.

Electrical Supply. Short- and long-term, negligible to minor, adverse, and long-term, beneficial impacts on electrical supply would be expected. Temporary, minor electrical service interruptions might be experienced when electrical service is disconnected from the 140 MFH units proposed for demolition and connected to the proposed community center and storage facility, as appropriate. Electrical service lines to the MFH units proposed for demolition would be disconnected prior to commencement of demolition activities. Any underground electric utilities mains proposed for demolition would be capped at the main and abandoned in place; however, all laterals would be removed. The demolition, renovation, and construction processes could result in a slight increase in the demand for electricity. It is assumed that demolition, renovation, and construction activities would be staggered over a 6-year period; therefore, any potential increases in electricity demand would be short-term, spread out, and minimal. Long-term, negligible, adverse impacts could be expected from the long-term increase in electricity demand associated with the proposed community center and storage facility. However, the long-term increase in electricity demand resulting from the proposed community center and storage facility could potentially be offset by cessation of electricity use at the 140 older MFH units, once they were demolished.

The Proposed Action would include the conveyance of all electrical supply infrastructure between a predetermined POD and the MFH units to the PO. The POD for electrical systems is anticipated to be at the electrical meter for each MFH unit or just outside of each MFH unit if no meter currently exists (USAF 2010a). Therefore, the PO would be responsible for all long-term electrical system maintenance between the POD and the MFH units and within the MFH units, while the USAF would continue long-term electrical system maintenance up to the POD of each MFH unit.

Natural Gas Supply. Short- and long-term, negligible to minor, adverse impacts on natural gas supply would be expected. Temporary, minor interruptions in natural gas service might be experienced when natural gas service is disconnected from the 140 MFH units proposed for demolition and connected to the proposed community center and storage facility, as appropriate. Natural gas service lines to the MFH units proposed for demolition would be disconnected prior to commencement of demolition activities. Any natural gas mains proposed for demolition would be capped at the main and abandoned in place; however, all laterals would be removed. Long-term, negligible, adverse impacts could be expected from the long-term increase in natural gas demand associated with the proposed community center and storage facility. However, the long-term increase in natural gas resulting from the proposed community center and storage facility could potentially be offset by the cessation of natural gas use at the 140 older MFH units, once they are demolished.

The Proposed Action would include conveyance of all natural gas supply infrastructure between a predetermined POD and the MFH units to the PO. The POD for natural gas systems is anticipated to be at the gas meter of each MFH unit or at the shutoff valve should no meter currently exist (USAF 2010a). Therefore, the PO would be responsible for all long-term natural gas system maintenance from the POD to the MFH units and within the MFH units, while the USAF would continue long-term natural gas system maintenance up to the POD of each MFH unit.

Water Supply. Short- and long-term, negligible to minor, adverse impacts on water supply would be expected. Temporary, minor water service interruptions might be experienced when water service is disconnected from the 140 MFH units proposed for demolition and connected to the proposed community center and storage facility, as appropriate. Water supply lines to the MFH units proposed for demolition would be disconnected prior to commencement of demolition activities. Any water supply mains proposed for demolition would be capped at the main and abandoned in place; however, all laterals would be removed. Demolition, renovation, and construction activities would require minimal amounts of water, primarily for dust-suppression purposes. This water would be obtained from the Minot AFB water supply system. It is assumed that demolition, renovation, and construction activities would be staggered over a 6-year period; therefore, any potential increases in water demand would be short-term, spread out, and minimal. Long-term, negligible to minor, adverse impacts could be expected from the long-term increase in water demand associated with the proposed community center. However, the long-term increase in water demand resulting from the proposed community center could potentially be offset by cessation of water use at the 140 older MFH units, once they are demolished.

The Proposed Action would convey all water supply infrastructure between a predetermined POD and the MFH units to the PO. The POD for water systems is anticipated to be along the water supply lateral to each MFH unit; however, the exact location would vary depending on whether the MFH unit has a water meter, shutoff valve, or neither. Water meters and shutoff valves would serve as the POD for MFH units with these features. The POD for MFH units without water meters or shutoff valves would be at the beginning of the lateral, where it connects to the distribution main (USAF 2010a). The PO would be responsible for all long-term water system maintenance from the POD to the MFH units and within the MFH units, while the USAF would continue long-term water system maintenance up to the POD.

Sanitary Sewer and Wastewater Systems. Short- and long-term, negligible to minor, adverse impacts on the sanitary sewer and wastewater systems would be expected. Temporary, minor sanitary sewer service interruptions might be experienced when wastewater piping is disconnected from the 140 MFH units proposed for demolition and connected to the proposed community center and storage facility, as appropriate. Sanitary sewer and wastewater lines connected to the MFH units proposed for demolition would be disconnected prior to commencement of demolition activities. Any sanitary sewer mains proposed for demolition would be capped at the main and abandoned in place; however, all laterals would be removed. Long-term, negligible to minor, adverse impacts could be expected from the long-term increase in wastewater generated by the proposed community center. However, the long-term increase in wastewater resulting from the proposed community center could potentially be offset by cessation of wastewater generation at the 140 older MFH units, once they are demolished.

The Proposed Action would include the conveyance of all sanitary sewer and wastewater infrastructure between a predetermined POD and the MFH units to the PO. The POD for wastewater systems is anticipated to be at the cleanout for each unit or at the beginning of the lateral, where it connects to the sewer collection main, if no cleanout currently exists (USAF 2010a). Therefore, the PO would be responsible for all long-term wastewater system maintenance from the POD to the MFH units and within the MFH units, while the USAF would continue long-term wastewater system maintenance up to the POD.

Storm Water Systems. Short- and long-term, negligible to minor, adverse impacts on storm water drainage would be expected. The proposed demolition of the 140 MFH units and the proposed construction of a community center and storage facility would require ground disturbance, as heavy equipment would rework and contour land surfaces. These activities would temporarily disrupt man-made storm water drainage systems and, consequently, increase the potential for storm water runoff to erode soil during demolition and construction activities. Demolition and construction BMPs that would minimize ground surface disturbance and attempt to provide adequate temporary storm water management techniques would be implemented to minimize adverse impacts on storm water drainage during construction and demolition activities. Because demolition and construction activities would be staggered over a 6-year period, the disruption to storm water systems would be short-term, spread out, and minimal. Long-term, negligible to minor, adverse impacts could be expected from an increase in impervious surfaces resulting from the construction of the proposed community center and storage facility. However, the increase in impervious surfaces associated with the construction of the proposed community center and storage facility could potentially be offset by the decrease in impervious surfaces resulting from demolition of the 140 older MFH units and associated driveways and pavements.

The Proposed Action would include the conveyance of portions of the storm water drainage system, including two box culverts, to the PO.

Communications Systems. Short-term, negligible to minor, adverse impacts on communications systems would be expected. Temporary, minor communications service interruptions might be experienced when communications lines are disconnected from the 140 MFH units proposed for demolition and connected to the community center and storage facility, as appropriate. Communications lines to the MFH units proposed for demolition would be disconnected prior to commencement of demolition activities. Any underground communications lines proposed for demolition would be capped at the main and abandoned in place; however, all laterals would be removed.

The Proposed Action would not include the conveyance of any communications infrastructure to the PO; therefore, installation personnel and the local communications service provider would remain responsible for long-term communications system maintenance within the MFH areas.

Solid Waste Management. Short-term, minor, adverse impacts on solid waste management would be expected. The 140 MFH units proposed for demolition under the Proposed Action would be offered for donation through the OWS Housing Relocation Program. If the 140 MFH units could not be reused through OWS, they would be demolished under the Proposed Action and the demolition of the units would generate approximately 20,763 tons of demolition waste (USEPA 2009b). Additional quantities of solid waste would also be generated from the demolition of driveways, sidewalks, curbs, and utility mains; the renovation of existing MFH units; and the construction of a community center and storage facility. The total quantity of solid waste anticipated to be generated from the Proposed Action would be expected to be at least 23,873 tons (USEPA 2009b, SI Metric 2009). **Table 3-10** summarizes the amounts of solid waste anticipated to be generated from the various aspects of the Proposed Action.

The solid wastes generated from the Proposed Action would consist mainly of building materials such as concrete, metals (i.e., conduit, piping, and wiring) and lumber; soil piles; and yard debris, such as trees and shrubs.

Contractors would be required to recycle demolition debris to the maximum extent practicable, thereby diverting it from landfills. Scrap metals, wiring, clean ductwork, and structural steel generated during the Proposed Action would be separated and recycled off site. Vegetation debris would be converted to mulch or recycled to the maximum extent practicable. Clean fill material, ground-up asphalt, and

Table 3-10. Quantities of Construction and Demolition Debris Generated from the Proposed Action

Project	Total Square Footage	Multiplier (pounds/ft ²)	Debris Generated	
			(pounds)	(tons)
Demolition of 140 MFH Units	326,973	127	41,525,571	20,763
Demolition of Driveways and Pavements ^a	84,000	69.9 ^b	5,871,600	2,936
Construction of Storage Facility	50,000	4.34	217,000	109
Construction of Community Center	30,000	4.34	130,200	65
TOTAL			47,744,371	23,873

Sources: USEPA 2009b, SI Metric 2009

Notes:

- Because the number and sizes of the existing MFH units proposed for renovation have not yet been determined, these calculations do not include any solid wastes to be generated from the MFH unit renovations.
- Calculated assuming concrete asphalt density of 139.8 pounds/cubic foot and pavement thickness of 6 inches.

broken-up cement would be diverted from landfills and reused whenever possible. All excess soils generated would be reused to the greatest extent possible for grading and contouring.

3.8.3.3 No Action Alternative

Under the No Action Alternative, Minot AFB would not implement the Proposed Action and would continue to provide for the housing needs of military personnel and family members. Existing conditions would remain the same, as described in **Section 3.8.2**; therefore, no impacts on utilities, infrastructure, or transportation would be expected.

3.9 Hazardous Materials and Wastes

3.9.1 Definition of the Resource

A hazardous substance, pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. Section 9601(14)), is defined as: “(A) any substance designated pursuant to section 1321(b)(2)(A) of Title 33; (B) any element, compound, mixture, solution, or substance designated pursuant to section 9602 of this title; (C) any hazardous waste having the characteristics identified under or listed pursuant to section 3001 of the Resource Conservation and Recovery Act (RCRA) of 1976, as amended, (42 U.S.C. Section 6921); (D) any toxic pollutant listed under section 1317(a) of Title 33; (E) any HAP listed under section 112 of the CAA (42 U.S.C. Section 7412); and (F) any imminently hazardous chemical substance or mixture with respect to which the Administrator of the USEPA has taken action pursuant to section 2606 of Title 15. The term does not include petroleum, including crude oil or any fraction thereof, which is not otherwise specifically listed or designated as a hazardous substance, and the term does not include natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas).”

Hazardous materials are defined by 49 CFR 171.8 as “hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR 172.101), and materials that meet the defining criteria for hazard classes and divisions” in 49 CFR Part 173. Transportation of hazardous materials is regulated by the U.S. Department of Transportation regulations within 49 CFR Parts 105–180.

RCRA defines a hazardous waste in 42 U.S.C. Section 6903, as “a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.”

3.9.2 Description of the Affected Environment

Hazardous Materials. AFI 32-7086, *Hazardous Materials Management*, establishes procedures and standards governing procurement, issuance, use, or disposal of hazardous materials and tracking and record-keeping for public safety and for compliance with all laws and regulations. Under AFI 32-7086, the USAF has established roles, responsibilities, and requirements for a hazardous material management program (HMMP). The purpose of the HMMP is to control the procurement and use of hazardous material to support USAF missions, ensure the safety and health of personnel and surrounding communities, and minimize USAF dependence on hazardous materials. The HMMP includes the activities and infrastructure required for ongoing identification, management, tracking, and minimization of hazardous materials. AFI 32-7080, *Pollution Prevention Program*, incorporates the requirements of all Federal regulations, AFIs, and DOD Directives for the reduction of hazardous material uses and purchases. The primary hazardous materials addressed by AFI 32-7080 are ozone-depleting substances and the 17 chemicals listed under the USEPA Industrial Toxics Program. EO 12088, *Federal Compliance with Pollution Control Standards*, ensures that necessary actions are taken for the prevention, management, and abatement of environmental pollution from hazardous materials or hazardous waste due to Federal facility activities.

The Base Civil Engineer, 5th Civil Engineering Squadron/Combat Command is designated as the Office of Primary Responsibility for the management of hazardous materials at Minot AFB in accordance with AFI 32-7086; Air Force Manual 32-4013, *Hazardous Material Emergency Planning and Response Guide*; and AFI 10-2501, *Air Force Emergency Management Program Planning and Operations* (MAFB 2008b). The management of petroleum, oils, and lubricants (POL) is addressed in the Minot AFB *Spill Prevention Control and Countermeasures (SPCC) Plan*, prepared in accordance with 40 CFR Part 112, *Oil Pollution Prevention*. The SPCC Plan details inspection, integrity testing, security, personnel training, spill prevention, and documentation requirements for affected oil storage facilities on Minot AFB. The Minot AFB *Comprehensive Emergency Management Plan* addresses emergency response related to accidental or unauthorized releases of hazardous materials. Minot AFB also maintains a *Storm Water Pollution Prevention Plan* for the control of hazardous materials and petroleum products (MAFB 2008b).

Minot AFB Supply operates a hazardous materials pharmacy (HAZMART) operation in Building 525, which strictly controls, issues, and tracks hazardous materials from “cradle to grave” using a bar code inventory control system. Hazardous materials are issued to authorized users in required quantities. Unused hazardous materials are returned to the HAZMART for reissue to other work centers, or for disposal in accordance with the Minot AFB *Hazardous Waste Management Plan*. The HAZMART also maintains the Authorized User’s List which shows all installation-level work areas authorized to use hazardous materials (USAF 2008). Hazardous materials are stored and used at approximately 58 locations throughout the installation (MAFB 2005a).

There are no hazardous materials operations or storage units within the proposed project area. Small quantities of hazardous materials such as cleaners, solvents, antifreeze, gasoline, motor oil, and pesticides might be stored in small quantities inside and outside the MFH units for domestic use.

Hazardous Wastes. AFI 32-7042, *Solid and Hazardous Waste Compliance*, directs roles and responsibilities with waste stream management including planning, training, emergency response, and pollution prevention. The management of hazardous waste is governed by the RCRA Subtitle C (40 CFR Parts 260 through 270) regulations, which are administered by the USEPA. Minot AFB maintains a *Hazardous Waste Management Plan*, as directed by AFI 32-7042. This plan establishes the policies and procedures for compliance with applicable Federal, state, and local standards for solid waste and hazardous waste management, including RCRA, as implemented by 40 CFR 260 through 299; North Dakota Century Code, Chapter 23-20.3; North Dakota Administrative Code, Article 33-24; the Hazardous Material Transportation Act, as implemented by 49 CFR 171 through 179; OSHA Rules, as implemented by 29 CFR 1910; the Toxic Substances Control Act, as implemented by 40 CFR 745, 761, and 763; CERCLA, as implemented by 40 CFR 300 through 399; the Superfund Amendments and Reauthorization Act (SARA), as implemented by 40 CFR 300 through 399; AFI 32-7042; Air Force Pamphlet 32-7043, *Hazardous Waste Management Guide*; and the Defense Reutilization and Marketing Manual, DOD 4160.21-M (MAFB 2007b).

Minot AFB is considered a small-quantity generator (SQG) of hazardous wastes (Handler Identification ND4571924758) (USAF 2008). An SQG of hazardous waste generates more than 100 kilograms (kg), but less than 1,000 kg, of hazardous waste per month. An SQG can accumulate hazardous waste for 180 days without a permit. However, because Minot AFB ships hazardous waste generated on the installation to a Treatment, Storage, and Disposal Facility (TSDF) that is more than 200 miles away, Minot AFB can accumulate hazardous waste for 270 days, but the quantity of hazardous waste must never exceed 6,000 kg (USEPA 2010b). The primary functions generating hazardous wastes at Minot AFB are aircraft, missile, and vehicle maintenance; medical operations; munitions operations; civil engineering; communications; security forces; and supply organizations. Hazardous wastes generated include adhesives, sealants, greases, waste paint and thinners, solvents, unserviceable munitions, and corrosive cleaning compounds (USAF 2008).

Minot AFB has one Central Accumulation Point (CAP) at Building 525, more than 0.5 miles southwest of the proposed project area. The CAP is operated and wastes are staged for shipment for Environmental Management Flight by a CAP contractor. Minot AFB has 77 Satellite Accumulation Points (SAPs). A SAP is an area at or near the point of waste generation where the user accumulates small quantities of “total regulated hazardous waste” up to 55 gallons or up to 1 quart of “acutely hazardous waste.” When volume exceeds these limits, the user must place the volume in excess of the limit in another container and transfer the full container to the CAP within 72 hours. Minot AFB has a 180-day CAP, which accumulates the hazardous waste until it is disposed of through the Defense Reutilization and Marketing Service (DRMS) in Fort Riley, Kansas. The DRMS (Fort Riley office) arranges pick up for hazardous waste approximately every 10 weeks and transports it, via a hazardous waste transporter, to a USEPA-permitted TSDF for final disposition (USAF 2008).

An SAP can also accumulate nonhazardous waste and universal wastes. Regulatory accumulation limits are not imposed on nonhazardous wastes; however, there are accumulation time limits for universal waste. Universal waste generators are allowed to accumulate universal waste at their location for no more than 9 months from the accumulation start date. Once the 9-month time limit has been reached, the universal waste must be moved to its designated waste accumulation site. In North Dakota, universal wastes include the following (NDDH 2009b):

- Batteries, including nickel-cadmium, lithium- or mercury-containing batteries, and lead-acid batteries
- Pesticides, including those that have been recalled or banned from use, obsolete pesticides, damaged pesticides, and those that are no longer needed

- Mercury-containing devices, including thermostats, switches, and other items where mercury is contained in a capsule or other container and the mercury is used to transmit pressure, temperature, or electricity
- Lamps, including fluorescent tubes, and high-intensity discharge, neon mercury vapor, high-pressure sodium, and metal halide lamps.

No hazardous or petroleum wastes are known to have been generated, stored, or disposed of within the proposed project area.

Environmental Restoration Program. The DOD's Environmental Restoration Program (ERP) requires each installation to identify, investigate, and clean up hazardous waste disposal or release sites. The objectives of the ERP are to identify and fully evaluate any areas suspected to be contaminated with hazardous materials caused by past USAF operations and to eliminate or control any hazards to the public health or welfare, or the environment. The Military Munitions Response Program (MMRP) addresses nonoperational military ranges and other sites that are suspected or known to contain unexploded ordnance, discarded military munitions, or munitions constituents. The ERP and MMRP are subcomponents of the Defense Environmental Restoration Program that became law under SARA.

The ERP at Minot AFB began in 1984 with an installation-wide records search that identified three ERP sites for further investigation. Supplemental investigations in the late 1980s and early 1990s brought the total number of ERP sites to 11. In addition, five Areas of Concern (AOCs) were identified. The ERP sites and AOCs include oil/water separators, landfills, disposal areas, storage tanks and areas, a fire training area, parking areas, and a hazardous waste accumulation point. Nine of the ERP sites (FF-01, OT-13, ST-04, ST-05, ST-06, LF-07, LF-08, ST-10, and ST-11) have a No Further Remedial Action Planned (NFRAP) status and two ERP sites (LF-02 and SS-09) are in the Long-Term Monitoring (LTM) program. All five AOCs at Minot AFB are being investigated and cleaned up under the ERP and RCRA. Decision Documents, which identify the selected remediation action, have been submitted for four of the five AOCs, and the fifth AOC was issued an NFRAP status. Minot AFB has four MMRP sites (GR320, Camp Laird Grenade Range, Trap and Skeet Range, and XU317). In support of the MMRP, which was initiated at Minot AFB in 2003, a Comprehensive Site Evaluation (CSE) Phase I was completed in August 2007. All four MMRP sites were recommended to progress to a CSE Phase II. The CSE Phase II is analogous to the CERCLA Site Inspection and includes surface geophysical investigations and sampling to further characterize MMRP sites (USAF 2007a). One ERP site, two AOCs, and one MMRP site are within 0.5 miles of the proposed project area. ERP site LF-02 is 2,180 feet northwest of the proposed project area, AOC-15 is 2,380 feet west of the proposed project area, AOC-C is 2,430 feet west-southwest of the proposed project area, and MMRP site GR320 is 2,140 feet northwest of the proposed project area (see **Figure 3-4**).

The Sanitary Landfill Area (SLA) (LF-02) is in the northernmost portion of Minot AFB and is approximately 120 acres. From 1957 to 1982, a variety of materials, including domestic and industrial wastes and POL, were dumped at the SLA. Two pits within the SLA were used from 1977 to 1980 for disposal of sludge from tank cleanings. In addition, a hazardous waste storage area was within the landfill from 1980 to 1982. From 1982 to 1992 the SLA was used for the disposal of construction and demolition rubble. All disposal activities ceased in 1992 and the landfill was capped.

Contaminants of concern identified in the SLA include arsenic, cadmium, and toluene. Remedial action was initiated in October 1992 and included regrading the area and installing a 2-foot clay cover with a concrete ditch to collect storm water runoff and channel it to Egg Creek. The remedial action was completed in September 1994. LF-02 is currently under LTM, with biennial sampling; however, no contaminants of concern have been detected during LTM (USAF 2007a).

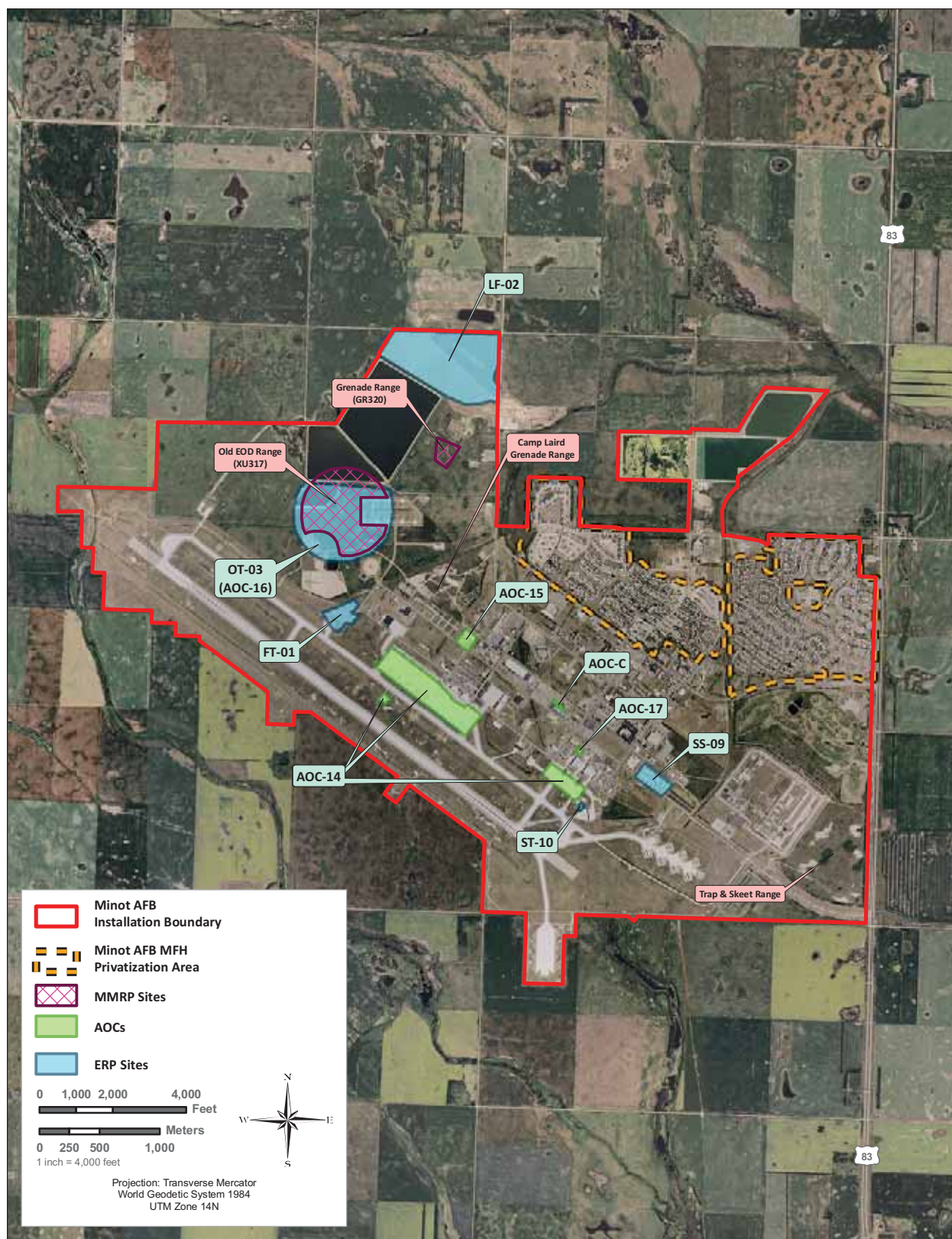


Figure 3-4. ERP Sites, AOCs, and MMRP Sites at Minot AFB

AOC-15 is the Site Activation Task Force parking lot north of Building 995 at Minot AFB. The NDDH approved the Phase II RCRA Facility Investigations recommendation of No Further Action for AOC-15 (USAF 2007a).

AOC-C (Building 510/511) is in the central portion of Minot AFB. Building 510/511 previously served as an aerospace ground equipment facility, administration office, and outdoor recycling center (MAFB 2007c). AOC-C was identified in December 2001 and was defined as an AOC by the NDDH in November 2002 (USAF 2007a). There were two 1,000-gallon USTs at this facility that were previously used to store heating oil; however, the USTs were removed in 1987 (USAF 2007a, MAFB 2007c). During a RCRA Facility Investigation, petroleum and jet fuel contamination was discovered in the soil at AOC-C. Remediation procedures began in December 2002 and in 2005, 10,500 cubic yards of Jet Propellant-8 (JP-8) contaminated soil was excavated and removed from beneath Building 510/511. All of the contaminated soil that was technically feasible and practical to remove has been excavated; however, there is some contaminated soil remaining at AOC-C (MAFB 2007c). In October 2008, the USACE conducted a field study of AOC-C using laser-induced fluorescence. A final report from the field study is pending. AOC-C is currently included in the USAF Compliance Restoration Program, and a site investigation is planned for 2011 (Lowe 2010).

The Grenade Range (GR320) is composed of approximately 8.4 acres in the northwestern portion of Minot AFB, adjacent to the south of the Combat Arms, Training, and Maintenance (CATM) facility. The range was used beginning in the 1960s and operated until about 1998, when 40-millimeter (mm) grenade target practice activities were moved to the area of the former landfill, north of the CATM facility. Hundreds of fired M781 40-mm projectiles were observed on the surface of GR320. No unfired cartridges or expended shell casings were identified. No physical evidence of the M382 or M407 practice grenade was found; however, such occurrences would still be suspected based on the range's operation period. Munitions and explosives of concern (MEC) potentially present at the Grenade Range include 40-mm, M382, M385, M407, and M781 grenades. Munitions constituents (MC) associated with GR320 projectiles include metals (i.e., aluminum, antimony, iron, copper, lead, potassium, and zinc) and explosives (i.e., rapid detonating explosive, pentaerythritol tetranitrate, and tetryl). There have been two excavation events at GR320, one in approximately 1978 to 1980 during construction of the two outer CATM ranges, and one in approximately 1989 during a CATM berm-improvement project that removed soil from GR320. CSE Phase II efforts are planned for GR320 and will include surface and subsurface soil sampling, near-surface groundwater sampling, surface water sampling, and sediment sampling to assess if MC has been released to the environment (USAF 2007a).

Aboveground and Underground Storage Tanks. AFI 32-7044, *Storage Tank Compliance*, implements AFD 32-70. It identifies compliance requirements for USTs, aboveground storage tanks (ASTs), and associated piping that store petroleum products and hazardous substances. USTs are subject to regulation under RCRA, 42 U.S.C. 6901, and 40 CFR 280.

The majority of the petroleum handled at Minot AFB is JP-8, which is stored at the POL Bulk Storage Area (Building 407), Building 689, Refueling Maintenance (Building 761), Pump Station (Building 769), Vehicle Support (Building 869), Aerospace Ground Equipment Dispatch (Building 995), and Hush House (Building 2038). Other ASTs and USTs at the installation contain gasoline, diesel fuel, used oil, anti-freeze, Aqueous Film Forming Foam, cleaner/degreaser, and propylene glycol (MAFB 2005a). Motor gasoline storage is at the Base Exchange, military gas stations, the Tank Farm, and at the Missile Alert Facilities (MAFs). Diesel Fuel is stored at several locations, including the Tank Farm, military gas stations, Pride Building (Building 475), and MAFs (USAF 2008).

The 5th Bomb Wing Environmental Flight at Minot AFB has an aggressive fuel storage tank management program for its on-installation USTs and ASTs and off-installation missile complex to ensure compliance

with all applicable laws. The Minot AFB strategy is to remove USTs and replace them with ASTs where mission and security considerations permit (USAF 2008).

There are no ASTs or USTs at or adjacent to the proposed project area (MAFB 2009a).

Asbestos-Containing Materials. AFI 32-1052, *Facilities Asbestos Management*, provides the direction for asbestos management at USAF installations. This instruction incorporates by reference applicable requirements of 29 CFR Part 669 et seq., 29 CFR 1910.1025, 29 CFR 1926.58, 40 CFR 61.3.80, Section 112 of the CAA, and other applicable AFIs and DOD Directives. AFI 32-1052 requires installations to develop an asbestos management plan for the purpose of maintaining a permanent record of the status and condition of ACM in installation facilities, and documenting asbestos management efforts. In addition, the instruction requires installations to develop an asbestos operating plan detailing how the installation accomplishes asbestos-related projects.

Asbestos is regulated by USEPA under the CAA; Toxic Substances Control Act; CERCLA; North Dakota Administrative Code 33-15-13, *Emission Standards for Hazardous Air Pollutants*; and Century Code 23, *Health and Safety Chapter 25 Air Pollution Control*, with the authority promulgated under OSHA. Identification of ACM in installation facilities is governed by OSHA under the authority of the *Occupational Safety and Health Act*, 29 U.S.C. Section 669 et seq. Section 112 of the CAA regulates emissions of asbestos fibers to ambient air. Building materials in older buildings are assumed to contain asbestos. It exists in a variety of forms and can be found in floor tiles, floor tile mastic, roofing materials, joint compound used between two pieces of wallboard, some wallboard thermal system insulation, and boiler gaskets. If asbestos is disturbed, fibers can become friable. Common sense measures, such as avoiding damage to walls and pipe insulation, will help keep the fibers from becoming airborne. Friable ACM is any material containing more than 1 percent asbestos, and that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. Nonfriable ACM is any ACM that does not meet the criteria for friable ACM. North Dakota has its own program and guidelines to manage ACM. The NDDH is responsible for overseeing compliance with the requirements of the ACM program. Minot AFB maintains an *Asbestos Operations and Management Plan* that establishes operations and management organizational responsibilities and procedures for ensuring that personnel in USAF facilities are not exposed to excessive levels of airborne asbestos fibers. The plan provides the foundation for maintaining a permanent record on the current status and condition of ACM on Minot AFB and provides guidelines for dealing with ACM removal and control operations (MAFB 2008c).

In 1994, an ACM survey was conducted at Minot AFB that included a visual inspection of identified areas to locate friable ACM and random sampling for asbestos analysis. Comprehensive physical sampling was not conducted during the survey (MAFB 2004). Results from the survey indicated that most of the ACM was identified in the industrial portions of Minot AFB. There is little to no friable ACM within the proposed project area; however, there might be ACM associated with the high-temperature water lines and in central heating units in older MFH units (MAFB 2009a).

Lead-Based Paint. Lead is a heavy, ductile metal commonly found simply as metallic lead or in association with organic compounds, oxides, and salts. It was commonly used in house paint until the Federal government banned the use of most LBP in 1978. Therefore, it is assumed that all structures constructed prior to 1978 could contain LBP. Paint chips that fall from the exterior of buildings can potentially contaminate the soil if the paint contains lead. The USEPA has established recommendations for maximum lead soil contamination levels. No action is required if the lead concentration is less than 400 ppm in areas expected to be used by children, or less than 2,000 ppm in areas where contact by children is less likely. Soil abatement and public notice are recommended when lead levels exceed 5,000 ppm.

USAF policy and guidance establishes LBP management at USAF facilities. The policy incorporates by reference the requirements of 29 CFR 1910.120, 29 CFR Part 1926, 40 CFR 50.12, 40 CFR Parts 240 through 280, the CAA, and other applicable Federal regulations. In addition, the policy requires each installation to develop and implement a facility management plan for identifying, evaluating, managing, and abating LBP hazards. The Residential Lead-Based Paint Hazard Reduction Act of 1992, Subtitle B, Section 408 (commonly called Title X) regulates the use and disposal of LBP on Federal facilities. Federal agencies are required to comply with applicable Federal, state, and local laws relating to LBP activities and hazards. The State of North Dakota regulates LBP under State Rule 33-15-24, *Standards for Lead-Based Paint Activities*. The NDDH is responsible for overseeing compliance with the requirements of the LBP program. Minot AFB maintains a *Lead-Based Paint Operations and Management Plan* that details the policies and procedures that are implemented at Minot AFB to ensure lead-containing materials are managed in accordance with applicable Federal, state, and local regulations and the DOD and USAF directives and policies (MAFB 2009b).

In 1994, a LBP survey was conducted at Minot AFB that included 197 MFH units, some of which were licensed family daycares, the Community Center, and the old Youth Annex. In addition, visual inspections were conducted in more than 2,000 MFH units. Results from the samples taken during the survey and visual inspections indicated that LBP was detected in 98 percent of the MFH units and in the Community Center and old Youth Annex (MAFB 2004, MAFB 2009b).

Polychlorinated Biphenyls. Polychlorinated biphenyls (PCBs) are a group of chemical mixtures used as insulators in electrical equipment such as transformers and fluorescent light ballasts. Federal regulations govern items containing 50 to 499 ppm PCBs. Chemicals classified as PCBs were widely manufactured and used in the United States throughout the 1950s and 1960s. PCB-containing oil is typically found in older electrical transformers and light fixtures (ballasts). Transformers containing greater than 500 ppm PCBs, between 50 and 500 ppm PCBs, and less than 50 ppm PCBs are considered PCB, PCB-contaminated, and non-PCB, respectively. USAF policy required all installations to be PCB-free as of December 31, 1998. For an installation to be considered PCB-free under the policy, PCB-containing transformers and large capacitors must be either removed from service, reclassified to non-PCB status (less than 50 ppm PCBs) in accordance with procedures in 40 CFR Part 761.30, placed in storage for disposal, or disposed of in accordance with applicable hazardous waste regulations. PCB items that are weapon system components or organizational equipment (e.g., fluorescent light ballasts) are excluded when determining an installation's PCB-free status (MAFB 2008d).

Minot AFB maintains a *PCB Management Plan* that establishes operations and management organizational responsibilities and procedures for ensuring that personnel in USAF facilities are not exposed to excessive levels of PCBs. In addition, the plan assigns specific roles and responsibilities relating to PCB management, tracking, disposal, documentation, and notification requirements. Minot AFB is considered to be PCB-free; however, some facilities and older MFH units could have light ballasts containing PCBs. Minot AFB treats all ballasts and transformers that are not labeled PCB-free as PCB-containing (MAFB 2008d).

Radon. Minot AFB is in Federal USEPA Radon Zone 1, or the highest priority zone, where the predicted average indoor radon screening level is more than 4 pCi/L (USEPA 2010a). In 2006, MFH units at Minot AFB were tested for radon. Approximately 33 percent (60 tests) of the radon test results were between 4.1 to 17.0 pCi/L, which is above the USEPA-recommended action level. In 2007, similar follow-on tests were administered in the MFH units and five tests exceeded the USEPA-recommended action level and ranged from 4.6 to 5.7 pCi/L. However, a radon test in 2008 had no test results above the USEPA-recommended action level. In MFH units where radon test results exceed the USEPA-recommended action level, passive radon elimination systems (i.e., sump enclosures) were installed

(MAFB 2008e). All newly constructed MFH units have the capability to have a fan installed to mitigate radon, should it become necessary (USAF 2008).

Pesticides. Minot AFB maintains a *Pest Management Plan* in accordance with AFI 32-1053, *Pest Management Program* and DOD Directive 4150.7, *DOD Pest Management Program*. The plan presents a variety of pest-control techniques aimed at controlling pests while limiting the quantity of pesticides used at the installation. The primary goal of the pest management program is to protect the health and morale of all residents and employees of Minot AFB. In addition, actions are taken to protect property, ensure safety and security requirements are met, and to reduce labor requirements for other shops (MAFB 2008f).

The 5th Civil Engineering Squadron (CES) Pest Management Shop conducts most pest management activities at Minot AFB. The grounds superintendent at the golf course is responsible for weed and plant disease control at that facility, and assists pest management personnel in controlling insects and vertebrate pests. The Self-Help Store provides supplies to MFH residents for minor pest problems in MFH units. The 5th Medical Group Public Health Office surveys for mosquitoes, other disease vectors, and stored product pests. The Veterinary Clinic assists with pest control through parasite control and preventive vaccinations for animals. The grounds maintenance contractor applies Roundup to crack grass, around trees, and other areas. Structures and housing maintenance personnel provide assistance in pest exclusion. The 5th CES maintains a daily record of pest survey and control measures, which are entered in the computer using the Integrated Pest Management Information System Program. Other than unrestricted pesticides, insecticides, and herbicides used for domestic purposes, there are no bulk quantities of pesticides, insecticides, or herbicides stored at the proposed project site (MAFB 2008f). Additionally, there is no history of soil contamination from the pesticide chlordane on Minot AFB (MAFB 2008a).

3.9.3 Environmental Consequences

3.9.3.1 Evaluation Criteria

Impacts on hazardous materials or hazardous waste would be considered significant if a proposed action resulted in noncompliance with applicable Federal or state regulations, or increased the amounts generated or procured beyond current Minot AFB waste management procedures and capacities. Impacts on the ERP would be considered significant if a proposed action disturbed or created contaminated sites resulting in negative effects on human health or the environment, or if a proposed action made it more difficult or costly to remediate existing contaminated sites.

3.9.3.2 Proposed Action

Hazardous Materials. Short term, minor, adverse impacts would be expected. Construction, demolition, and renovation activities would require the use of certain hazardous materials such as paints, welding gases, solvents, preservatives, and sealants. It is anticipated that the quantity of products containing hazardous materials used during the Proposed Action would be minimal and their use would be of short duration. Contractors would be responsible for the management of hazardous materials and petroleum products, which would be handled in accordance with Federal, state, and USAF regulations and AFGSC/A7AN management procedures. Hazardous materials used would be tracked in the Environmental, Safety, and Occupational Health Management Information System (ESOHMIS). No long-term, direct or indirect, adverse impacts would be expected.

Hazardous Wastes. Short-term, minor, adverse impacts would be expected. The quantity of hazardous wastes generated from proposed construction, demolition, and renovation activities would be minor and

would not be expected to exceed the capacities of existing hazardous waste disposal facilities. Hazardous wastes would be handled under the existing DOD RCRA-compliant waste management programs and, therefore, would not be expected to increase the risks of exposure to workers and installation personnel. Prior to commencement of demolition and renovation activities, the contractor would be required to obtain the necessary permits. Some of the MFH units could have mercury-containing thermostats, ionization smoke detectors that contain Americium-241, or heat pumps that contain ozone-depleting substances. Mercury-containing thermostats are treated as universal waste in the State of North Dakota; therefore, if they are encountered during demolition or renovation, they would be removed and disposed of as universal waste in accordance with Federal, state, and local regulations. If ionization smoke detectors that contain Americium-241 or heat pumps that contain ozone-depleting substances are encountered during demolition or renovation, they would be removed and disposed of as hazardous waste in accordance with Federal, state, and local regulations and the *Hazardous Waste Management Plan*. The contractor would be required to coordinate with 5 CES prior to commencement of construction, demolition, and renovation activities to determine the hazardous waste requirements during construction and maintenance activities. No long-term, direct or indirect, adverse impacts would be expected.

Environmental Restoration Program. Short-term, negligible to minor, adverse impacts could be expected. ERP site LF-02, AOC-C, and MMRP site GR320 are within 0.5 miles of the proposed project area. ERP site LF-02 is under LTM, with biennial sampling; however, no contaminants of concern have been detected during LTM. Therefore, the potential for encountering contaminated groundwater or soil from LF-02 within the proposed project area during construction and demolition activities is low. AOC-C is currently included in the USAF Compliance Restoration Program, and a site investigation is planned for 2011 to address the remaining contaminated soil. Because all of the contaminated soil that was technically feasible and practical to remove has been excavated at AOC-C, the potential for encountering contaminated soil within the proposed project area from AOC-C is low. If contaminated groundwater or soil is inadvertently discovered at the proposed project area during construction or demolition activities, the handling, storage, transportation, and disposal of hazardous substances would be conducted in accordance with applicable Federal, state, and local regulations; USAF regulations; and Minot AFB management procedures. Project planning would include avoiding disruption of clean-up activities and minimizing potential impacts on ERP infrastructure.

MMRP site GR320 potentially contains MEC and MC. CSE Phase II efforts are planned for GR320, which will include surface and subsurface soil sampling, near-surface groundwater sampling, surface water sampling, and sediment sampling to assess if MC has been released to the environment. CSE Phase II efforts should take place prior to commencement of construction and demolition activities. If results of the CSE Phase II indicate that the proposed project area could be impacted by MC identified in GR320, remediation efforts would also take place prior to construction and demolition activities at the proposed project site.

No long-term, direct, or indirect, adverse impacts would be expected on the ERP, AOCs, or the MMRP.

Aboveground and Underground Storage Tanks. No impacts would be expected, as there are no ASTs or USTs at or adjacent to the proposed project area. However, if ASTs or USTs are inadvertently discovered at the proposed project area during construction or demolition activities, the contractor would be required to coordinate with 5 CES for their removal and disposal.

Asbestos-Containing Material. Short-term, minor, adverse, and long-term, beneficial impacts would be expected. Some of the older MFH units proposed for demolition or renovation likely contain ACM and, therefore, would need to be surveyed for asbestos by a state-certified inspector prior to commencement of demolition or renovation activities. There is also the potential for uncovering ACM in the high-temperature water lines and central heating units in the older MFH units during demolition or

renovation. Demolition and renovation plans would be reviewed by Minot AFB civil engineering personnel to ensure appropriate measures were taken to reduce potential exposure to, and release of, asbestos. All ACM discovered would be removed by state-certified individuals prior to demolition and renovation and disposed of at a USEPA-approved landfill. Contractors would be required to adhere to all Federal, state, and local regulations and the *Asbestos Operations and Management Plan*. A Notification of Demolition and Renovation form would be submitted to the NDDH 10 days prior to the commencement of demolition and renovation if more than 160 ft² of ACM or more than 260 linear feet of asbestos-containing thermal system insulation would be disturbed (NDDH 2009a). The removal of ACM during demolition and renovation activities would result in long-term, beneficial impacts by reducing potential exposure to personnel.

USAF regulations restrict the use of ACM for new construction. AFI 32-1023 requires that a substitution study be conducted whenever the use of an ACM in construction, maintenance, or repair is considered. If it is determined that the ACM is superior in cost and performance characteristics, and has minimal actual or potential health hazards, then the ACM can be used. In all other cases non-ACM should be used.

Lead-Based Paint. Short-term, minor, adverse, and long-term, beneficial impacts would be expected. Most of the MFH units that contained LBP have been demolished; however, some of the older MFH units proposed for demolition or renovation could contain LBP. These MFH units would need to be surveyed by a state-certified inspector prior to demolition or renovation activities. The contractor would be required to coordinate with 5 CES for the removal of LBP. Debris containing LBP would be characterized as demolition waste or LBP-contaminated demolition debris, which would be disposed of at a USEPA-approved landfill. Demolition and renovation plans would be reviewed by Minot AFB civil engineering personnel to ensure appropriate measures were taken to reduce potential exposure to, and release of, lead from LBP. Contractors would be required to adhere to all Federal, state, and local regulations in addition to Minot AFB management plans. The removal of LBP during demolition activities would result in long-term, beneficial impacts by reducing potential exposure to personnel.

Polychlorinated Biphenyls. Short-term, negligible, adverse impacts could be expected. Minot AFB is considered to be PCB-free; however, some of the MFH units proposed for demolition or renovation could contain fluorescent light ballasts. Light ballasts throughout the installation are assumed to contain PCBs, unless they are labeled as being PCB-free. The contractor would be required to coordinate with 5 CES for the removal of light ballasts containing PCBs. If light ballasts that do not have a PCB-free label are encountered during demolition or renovation, the ballasts would be removed and handled in accordance with Federal and DOD regulations and the *Hazardous Waste Management Plan*. No long-term, direct or indirect, adverse impacts would be expected.

Radon. Short-term, negligible, adverse impacts could be expected. In MFH units, where previous radon test results exceeded the USEPA-recommended action level, there are passive radon elimination systems installed to mitigate radon. In addition, all recently constructed MFH units have the capability to have a fan installed to mitigate radon, should it become necessary.

Pesticides. No impacts would be expected. The Proposed Action would not require any change in the quantities of pesticides or herbicides used or significantly alter pesticide or herbicide application areas. In accordance with the *Pest Management Plan*, the least toxic method for controlling pests encountered within the proposed project area would be used. In addition, future pesticide and herbicide applications within the proposed project area would be conducted according to Federal, state, and local regulations and the *Pest Management Plan*. All pesticides use would be tracked in ESOHMIS.

3.9.3.3 No Action Alternative

Under the No Action Alternative, Minot AFB would not implement the Proposed Action and would continue to provide for the housing needs of military personnel and family members. No demolition or renovation of MFH units would occur as planned under the Proposed Action. There would be no change in hazardous materials, hazardous wastes, the ERP, ASTs, USTs, PCBs, radon, and pesticides. Impacts from other hazardous materials and waste categories are identified below.

Asbestos-Containing Material. Long-term, negligible, adverse impacts could be expected from the continued use of some of the existing MFH units. Some of the existing MFH units likely contain ACM. In addition, some of the high-temperature water lines and central heating units in the older MFH likely contain asbestos. Therefore, residents and maintenance personnel would potentially be at risk from potential exposure to, and release of, asbestos.

Lead-Based Paint. Long-term, negligible, adverse impacts could be expected from the continued use of some of the MFH units. Most of the MFH units that contained LBP have been demolished; however, some of the older MFH units proposed for demolition or renovation could contain LBP. Therefore, residents and maintenance personnel would potentially be at risk from exposure to, and release of, lead from LBP.

3.10 Socioeconomic Resources and Environmental Justice

3.10.1 Definition of the Resource

Socioeconomics. Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly population and economic activity. Population levels are subject to fluctuations from regional birth and death rates and immigration and emigration of people. Economic activity typically encompasses employment, personal income, and industrial or commercial growth. Changes in these two fundamental socioeconomic indicators are typically accompanied by changes in other components, such as housing availability and the provision of public services.

Socioeconomic data at county, state, and national levels permit a characterization of baseline conditions in the context of regional, state, and national trends. For the purpose of the Proposed Action, this section focuses primarily on the construction industry and the real estate market. Socioeconomic data analyzed in this section represent the Region of Influence (ROI) relative to its surrounding metropolitan city, county, and state levels to characterize baseline socioeconomic conditions relative to regional and state trends.

Demographics identify the population levels and changes to population levels of a region. Demographics data might also be obtained to identify, as appropriate to evaluation of a proposed action, a region's characteristics in terms of race, ethnicity, poverty status, educational attainment level, and other broad indicators.

The demographics of a geographic region can describe the socioeconomic environment, which represents a composite of several interrelated and nonrelated factors. There are several factors that can be used as indicators of socioeconomic conditions for a geographic area, such as average educational attainment, personal income, percentage of residents living below the poverty level, employment/unemployment rates, employment by business sector, and cost of housing. These characteristics cumulatively measure the community quality of life. Data on employment can identify gross numbers of employees, employment by industry or trade and unemployment trends. Data on personal income in a region can be used to compare the before and after effects of any jobs created or lost as a result of a proposed action. Data on industrial, commercial, and other sectors of the economy provide baseline information about the economic health of a region.

Environmental Justice. Environmental Justice is defined by EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, issued on February 11, 1994, by President Clinton. EO 12898 pertains to environmental justice issues and relates to various socioeconomic groups and the health effects that could be imposed on them. This EO requires that Federal agencies' actions substantially affecting human health or the environment do not exclude persons, deny persons benefits, or subject persons to discrimination because of their race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, tribal, and local programs and policies. Consideration of environmental justice concerns includes race, ethnicity, and the poverty status of populations in the vicinity of a proposed action. Such information aids in evaluating whether a proposed action would render vulnerable any of the groups targeted for protection in the EO.

Children's Environmental Health and Safety Risks. EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, states that each Federal agency "(a) shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and (b) shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks."

3.10.2 Description of the Affected Environment

Minot AFB is a USAF installation in Ward County, North Dakota, 13 miles north of the City of Minot. For the purpose of this EA, four spatial areas are used to present baseline conditions: (1) the ROI, (2) the City of Minot, (3) Ward County, and (4) the State of North Dakota. The ROI is defined by the 2000 U.S. Census tracts 108 and 109 of Ward County. The ROI is included to illustrate economic impacts from the Proposed Action that could occur in the immediate area around Minot AFB. The City of Minot is the nearest metropolitan city to Minot AFB and is the fourth largest city in the state and county seat for Ward County. The State of North Dakota serves as a comparable baseline for socioeconomic and environmental justice analysis.

Demographics. Minot AFB's total population in 2009 was 11,878 people, which makes up 32.4 percent of the City of Minot's population of 36,567, 12.9 percent of Ward County's population of 58,795, and 1.1 percent of North Dakota's population of 642,200. The ROI population has steadily declined from 1990 figures of 12,065 people to 10,836 people in 2000, which is a 10.2 percent decrease in population from 1990 (MAFB 2009f, USCB 2000c, USCB 2000d, USCB 1990a, USCB 1990b).

Regional Employment. Table 3-11 presents employment data by industry for the three spatial areas. In general, the top three industries for employment for the City of Minot, Ward County, and North Dakota are (1) Educational, health, and social services; (2) Retail trade; and (3) Arts, entertainment, recreation, accommodation, and food services.

Unemployment rates in January 2010 for the City of Minot was 4.7 percent, for Ward County unemployment was 4.9 percent, and for North Dakota unemployment was 4.2 percent. These unemployment levels are drastically less than the unemployment levels in the entire United States which reached 9.7 percent in January 2010 (BLS 2009).

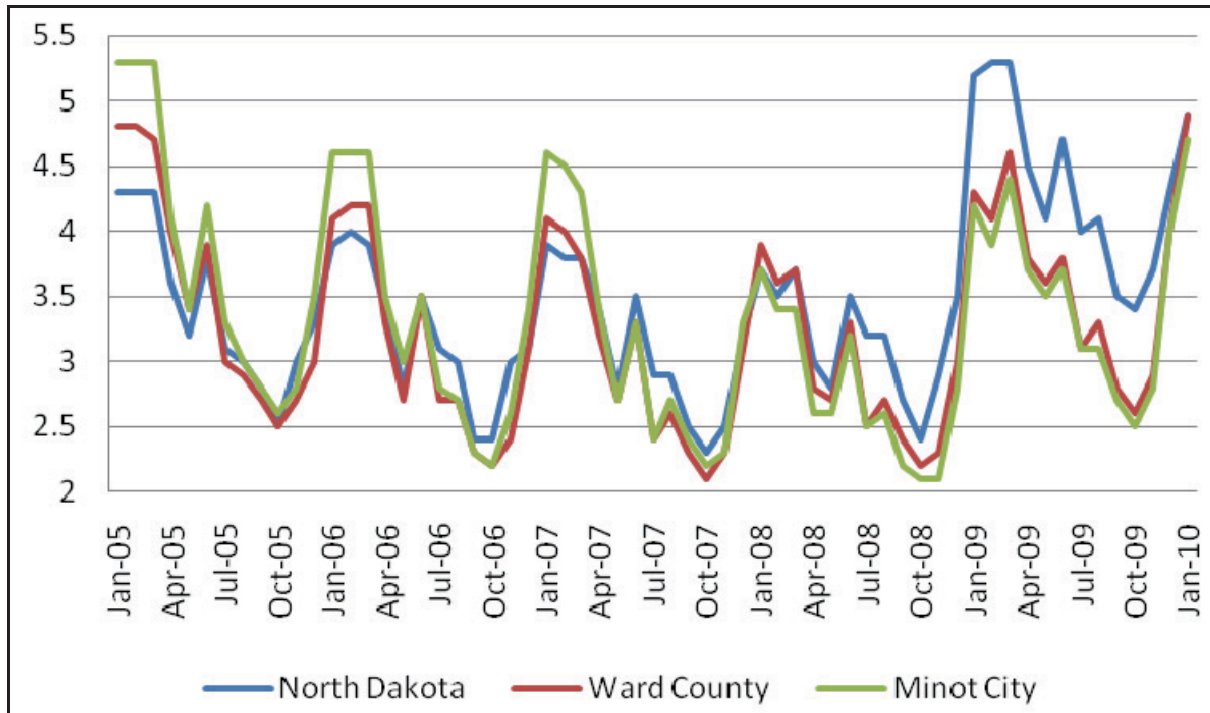
Table 3-11. Employment by Industry 2000

Industry	City of Minot	Ward County	North Dakota
Population 16 Years and Over in the Labor Force	19,450	31,374	502,306
Percentage of Employed Persons in Armed Forces	4.0%	8.9%	1.4%
Agriculture, forestry, fishing and hunting, and mining	1.7%	4.4%	8.2%
Construction	5.1%	5.5%	6.2%
Manufacturing	2.5%	2.8%	7.1%
Wholesale trade	4.1%	4.2%	3.7%
Retail trade	14.9%	15.1%	12.7%
Transportation and warehousing, and utilities	5.6%	5.6%	5.7%
Information	2.3%	2.3%	2.3%
Finance, insurance, real estate, and rental and leasing	7.0%	6.1%	5.9%
Professional, scientific, management, administrative, and waste management services	8.7%	8.2%	6.0%
Educational, health, and social services	27.3%	25.7%	24.2%
Arts, entertainment, recreation, accommodation, and food services	10.3%	9.8%	8.2%
Other services (except public administration)	5.6%	5.5%	4.9%
Public administration	4.8%	4.9%	4.8%

Sources: USCB 2000a, USCB 2000b, USCB 2000e

Figure 3-5 presents the monthly unemployment data from January 2005 to January 2010. There are annual seasonal fluctuations in unemployment, but principally the City of Minot, Ward County, and North Dakota unemployment trends happened at the same time. Unemployment data are not available for the ROI as the Bureau of Labor and Statistics does not report data for areas with populations less than 25,000.

Minot AFB Employment. There are 5,745 direct jobs on Minot AFB, 4,521 of which are staffed by active-duty personnel, 12 are reserve, and 1,212 are civilian, according to the 2009 Minot AFB Economic Impact Analysis. There are 1,384 indirect jobs on Minot AFB, 1,311 of which are staffed by active-duty personnel, 2 are reserve, and 521 are civilian. There are 4,533 active-duty and Air Force reserve personnel (MAFB 2009f). Direct payroll expenditures from Minot AFB total \$274 million annually. When non-payroll expenditures associated with Minot AFB are included, expenditures total \$408 million. Non-payroll expenditures include commissary, health care services, education, temporary duty personnel, materials, and supplies. The numbers of indirect jobs that are created as a result of Minot AFB are estimated at 2,013, totaling a dollar value of \$64,975,614 (MAFB 2009f). In addition to an increase to the total economic impact from previous years, 1,300 retirees are expected on Minot AFB.



Source: BLS 2009

Figure 3-5. Monthly Unemployment Data from January 2005 to January 2010

Housing Characteristics. The ROI contains approximately 3,650 units (as reported during the 2000 U.S. Census). In the City of Minot, Ward County, and North Dakota, the percentage of renter-occupied units ranges from 33 to 37 percent. Vacancies range throughout all four spatial levels from 5.8 percent in the City of Minot to 11.0 percent in the ROI. Complete data are listed in **Table 3-12**.

Table 3-12. Housing Characteristics, 2000

Housing Characteristics	Total Number of Units	Occupied Units		Vacant Units	Percent Vacant
		Owner Occupied	Renter Occupied		
ROI	3,650	1,047	2,204	399	11.0
City of Minot	16,475	9,684	5,836	955	5.8
Ward County	25,097	14,434	8,607	2,056	8.2
North Dakota	289,677	171,299	85,853	32,525	11.2

Sources: USCB 2000a, USCB 2000b, USCB 2000c, USCB 2000d, USCB 2000e

Environmental Justice and Children's Environmental Health and Safety Risks. The minority population within the ROI is significantly higher for African Americans (10.2 percent) and Hispanic or Latino (6.2 percent) races compared to the City of Minot, Ward County, and North Dakota, as shown in **Table 3-13**. The percent of individuals living in poverty is less for the ROI when compared with the three other areas, but the per capita income and the median household income for the ROI are less than or similar to the other three spatial levels. Within the ROI there is an elevated number of individuals under 5 years of age (13.6 percent) compared to the City of Minot (6.6 percent), Ward County (7.4 percent), and North Dakota (6.1 percent).

Table 3-13. Minority and Population Levels for 2000

Demographics	ROI	City of Minot	Ward County	North Dakota
Total Population	10,836	36,567	58,795	642,200
Percent Male	53.3	48.2	49.8	49.9
Percent Female	46.7	51.8	50.2	50.1
Percent Under 5 Years	9.7	6.6	7.4	6.1
Percent Over 65 Years	4.35	15.4	12.5	14.7
Percent White	88.0	93.2	92.4	92.4
Percent Black or African American	5.2	1.3	2.2	0.6
Percent American Indian, Alaska Native	1.0	2.8	2.1	4.9
Percent Asian	1.6	0.6	0.8	0.6
Percent Native Hawaiian and Other Pacific Islander	0.0	0.1	0.1	0.0
Percent Some Other Race	1.5	0.5	0.7	0.4
Percent Reporting 2 or more races	2.35	1.5	1.7	1.2
Percent Hispanic or Latino*	3.6	1.5	1.9	1.2

Sources: USCB 2000a, USCB 2000b, USCB 2000c, USCB 2000d, USCB 2000e

Note: * Hispanic of any race.

3.10.3 Environmental Consequences

3.10.3.1 Evaluation Criteria

The significance of socioeconomic impacts is assessed in terms of direct impacts on the local economy and related impacts on other socioeconomic resources (e.g., income, housing, employment). The magnitude of potential impacts can vary greatly, depending on the location of a proposed action. For example, implementation of an action that creates ten employment positions might be unnoticed in an urban area, but could have significant impacts in a rural community. If potential socioeconomic changes were to result in substantial shifts in population trends or in adverse impacts on regional spending and earning patterns, they would be considered significant. This section also evaluates impacts on schools and environmental justice concerns to include disproportionate impacts on low-income or minority populations as well as children's environmental health and safety risks.

3.10.3.2 Proposed Action

Short- and long-term, minor, beneficial impacts on socioeconomics would be expected. No impacts on environmental justice would be expected.

Socioeconomics. Short- and long-term, minor, beneficial impacts would be expected on employment levels, household income, demographics, and housing. There would be a minor, short-term increase in employment directly related to MFH demolition and renovation and new construction activities on the installation. Local labor and supplies would be needed to complete demolition of MFH units and construction of the community desired features, generating revenue for the local economy. Purchase of construction materials and related supplies and services from local suppliers would generate additional

income within the local economy. The impact on real estate values would not be significant as all the MFH units are on-installation. Demand for off-installation housing would not increase as a result of the Proposed Action as sufficient MFH would be available during the 6-year transition period. Household income and poverty levels would not be affected by the Proposed Action.

No impacts on education would be expected as a result of the Proposed Action. The existing students would continue to attend their current schools, although transportation routes between school and home could be slightly altered during the MFH demolition and renovation activities. If it were determined that any of the 140 MFH units proposed for demolition were available for donation to the OWS Program, the MFH units would be transported off-installation using OWS Program assets and beneficial impacts would be expected on American Indian reservations.

Environmental Justice and Children's Environmental Health and Safety Risks. No impacts would be expected on environmental justice. The Proposed Action would not adversely or disproportionately affect minority or low-income populations, because demolition, construction, and renovation would occur only on Minot AFB. Off-installation minority and low-income populations, limited in size and proximity to the installation, would not be adversely or disproportionately affected by the Proposed Action.

Long-term, beneficial impacts on children's health and safety would be expected. Demolition and construction activities associated with the Proposed Action would be carried out in accordance with OSHA regulations, ensuring that the safety of children would not be impacted. Prior to commencement of demolition and renovation, all older MFH units suspected to contain ACM and LBP would be surveyed by a state-certified inspector. All ACM discovered would be removed by state-certified individuals prior to demolition and renovation and disposed of at a USEPA-approved landfill. Debris containing LBP would be characterized as demolition waste or LBP-contaminated demolition debris, which would be disposed of at a USEPA-approved landfill. The removal of ACM and LBP during demolition and renovation activities would result in long-term, beneficial impacts by reducing potential exposure to residents, including children and maintenance personnel.

3.10.3.3 No Action Alternative

Under the No Action Alternative, Minot AFB would not implement the Proposed Action and would continue to provide for the housing needs of military personnel and family members, which would include providing minor maintenance and repairs of on-installation MFH units, as needed. The existing MFH units are considered inadequate housing facilities and would in turn be a costly maintenance burden to the USAF. Short-term, minor beneficial impacts on socioeconomic resources such as employment could be expected due to these continuing activities. No impacts on environmental justice would be expected.

3.11 Cultural Resources

3.11.1 Definition of the Resource

Cultural resources is an umbrella term for many heritage-related resources, including prehistoric and historic sites, buildings, structures, districts, or any other physical evidence of human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or any other reason. Depending on the condition and historic use, such resources might provide insight into the cultural practices of previous civilizations or they might retain cultural and religious significance to modern groups.

Several Federal laws and regulations govern protection of cultural resources, including the National Historic Preservation Act (NHPA) (1966), the Archaeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (1978), the Archaeological Resources Protection Act (1979), and the Native American Graves Protection and Repatriation Act (NAGPRA) (1990).

Typically, cultural resources are subdivided into archaeological resources (i.e., prehistoric or historic sites, where human activity has left physical evidence of that activity but no structures remain standing); architectural resources (i.e., buildings or other structures or groups of structures, or designed landscapes that are of historic or aesthetic significance); or resources of traditional, religious, or cultural significance to Native American tribes.

Archaeological Resources. Archaeological resources comprise areas where human activity has measurably altered the earth, or deposits of physical remains are found (e.g., projectile points, bottles).

Architectural Resources. Architectural resources include standing buildings, bridges, dams, and other structures of historic or aesthetic significance. Generally, architectural resources must be more than 50 years old to be considered eligible for the National Register of Historic Places (NRHP). More recent structures, such as Cold War-era resources, might warrant protection if they are of exceptional importance or if they have the potential to gain significance in the future.

Resources of Traditional, Religious, or Cultural Significance to Native American Tribes. Resources of traditional, religious, or cultural significance to Native American tribes can include archaeological resources, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals that Native Americans or other groups consider essential for the preservation of traditional culture.

The EA process and the consultation process prescribed in Section 106 of the NHPA require an assessment of the potential impact of an undertaking on historic properties that are within the proposed project's Area of Potential Effect (APE), which is defined as the geographic area(s) "within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." Under Section 110 of the NHPA, Federal agencies are required to inventory resources under their purview to the NRHP. In accordance with the NHPA, determinations regarding the potential impacts of an undertaking on historic properties are presented to the SHPO. Federally recognized Native American tribes would be consulted with in accordance with NHPA and EO 13175, *Consultation and Coordination With Indian Tribal Governments*.

3.11.2 Description of the Affected Environment

The proposed project area is composed of 616.3 acres, which is divided among the Prairie Rose Estates, Sunflower Haven, and North Point neighborhoods. The three neighborhoods contain modern one- and two-story, single-family MFH units, each with attached garages. Of the 1,746 MFH units that would be conveyed to the PO, 1,478 were constructed within the past 10 years. The remaining 268 MFH units are substantially older (11 to 40 years old). Older MFH units in the Prairie Rose Estates area were constructed in 1963 and 1964 (Hoke 2010).

Archaeological Resources. Minot AFB has been subject to two archaeological surveys. Neither of the surveys identified any archaeological sites. The first survey was conducted in 1988 in preparation for the construction of the Peacekeeper Rail Garrison program, which was ultimately canceled. It covered 397 acres, the majority of which was just outside the installation boundary on the northwestern portion of the installation. The survey within the installation boundaries covered approximately 44 acres in a corridor for the extension of a rail line. In 1994, a second survey was conducted to locate all historic or

prehistoric archaeological resources within the Minot AFB boundary. This second survey covered approximately 787 acres of previously unsurveyed acreage. The two surveys together covered a total of 831 acres of the installation. Much of the remaining unsurveyed area of Minot AFB is occupied by runways, taxiways, facilities, and MFH neighborhoods (MAFB 2009d, MAFB 1995b).

The MFH area has been extensively disturbed by the construction of the existing MFH. Based on the results of the above surveys, the potential for archaeological sites in undisturbed areas is low. Any potential archaeological resources that might have been located in those areas would have been destroyed by grading and construction of MFH units (MAFB 2009d, MAFB 1995b).

Architectural Resources. Minot AFB was established as one of several AFBs under the command of Air Defense Command (ADC) in the northern Plains during the 1950s. The land occupied by Minot AFB was used for agricultural purposes prior to the arrival of the military. Construction was underway in 1956, and the installation was partially operational in fall 1957. The Strategic Air Command (SAC) established a major presence in 1958, and assumed full command in 1962 until the 1980s.

Surveys of Cold War-era architectural resources at Minot AFB were conducted in 1994 and 2009. The June 2009 survey reassessed the earlier survey and concluded that 13 buildings and structures associated with the ADC and SAC missions were NRHP-eligible. These include direct mission-related facilities such as launch trainers, shops, multi-cubicle warhead magazines associated with the Minuteman programs, and a SAC satellite-alert compound (Buildings 690, 879, 1040, 1043, 1044, 1046, 1047, 1119, 1120, 1124, 1126, 1160, and 1175) (Eisenzimmer 2010). No NRHP-eligible or -listed buildings or structures are within the proposed project area (MAFB 2009e).

The existing 1,478 MFH units that were constructed within the past 10 years are too recently constructed to be considered for NRHP eligibility. The MFH units constructed in 1963 and 1964 were not identified in the Cold War studies as being of any significance (Eisenzimmer 2010). If they were evaluated individually under NRHP Evaluation Criteria A through D and Criterion Consideration G, they would not be eligible for the NRHP.

Resources of Traditional, Religious, or Cultural Significance to Native American Tribes. Native American tribes who might be affiliated with Minot AFB include the Assiniboine, Crow, Devils Lake Sioux, Standing Rock Sioux, Three Affiliated Tribes (i.e., Mandan, Hidatsa, and Arikara), and Turtle Mountain Band of Chippewa and Cree tribes. No known Traditional Cultural Properties have been identified at Minot AFB (MAFB 2009d, MAFB 2009e).

3.11.3 Environmental Consequences

3.11.3.1 Evaluation Criteria

The following criteria are used to evaluate the level of impact on cultural resources at Minot AFB:

- *Negligible.* Impacts are at the lowest level of detection (i.e., barely perceptible and not measurable).
- *Minor.* Impacts are measurable or perceptible, but slight and localized within a relatively small area of a site or group of sites. Impacts do not affect the character-defining features of an NRHP-eligible or -listed site.
- *Moderate.* Impacts are measurable, perceptible, and change one or more character-defining features, but do not diminish the integrity of the site to the extent that its NRHP eligibility is jeopardized.

- *Major.* Impacts are substantial, noticeable, and permanent. The impact is severe or of exceptional benefit. For NRHP-eligible or -listed sites, the impact changes one or more character-defining features, diminishing the integrity of the resource to the extent that it is no longer eligible for listing on the NRHP.

3.11.3.2 Proposed Action

Archaeological Resources. No impacts on archaeological resources would be expected, as there are no known archaeological resources within the proposed project area. In the event of an inadvertent discovery of archaeological resources, all work in the immediate vicinity of the discovery would be halted until the materials were identified and documented and an appropriate treatment strategy was developed in consultation with the SHPO and other consulting parties. In compliance with NAGPRA, tribal representatives would be notified and consulted regarding the treatment of human remains and funerary and sacred objects, should these be discovered during implementation of the Proposed Action.

Architectural Resources. No impacts on NRHP-eligible architectural resources would be expected, as there are no NRHP-eligible architectural resources within the proposed project area.

Resources of Traditional, Religious, or Cultural Significance to Native American Tribes. No impacts on resources of traditional, religious, or cultural significance to Native American tribes would be expected, as there are no known resources of significance to Native American tribes at Minot AFB.

3.11.3.3 No Action Alternative

Under the No Action Alternative, Minot AFB would not implement the Proposed Action and would continue to provide for the housing needs of military personnel and family members. Baseline conditions would remain the same as described in **Section 3.11.2**. Therefore, no impacts on archaeological resources, architectural resources, or resources of significance to Native American tribes would be expected.

4. Cumulative and Other Effects

4.1 Definition of Cumulative Effects

CEQ regulations stipulate that the cumulative effects analysis in an EA should consider the potential environmental effects resulting from “the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions” (40 CFR 1508.7). CEQ guidance in considering cumulative effects affirms this requirement, stating that the first steps in assessing cumulative effects involve defining the scope of the other actions and their interrelationship with a proposed action. The scope must consider other projects that coincide with the location and timetable of a proposed action and other actions. Cumulative effects analyses must also evaluate the nature of interactions among these actions (CEQ 1997).

To identify cumulative effects, the analysis needs to address two fundamental questions:

1. Does a relationship exist such that affected resource areas of the Proposed Action or alternatives might interact with the affected resource areas of past, present, or reasonably foreseeable actions?
2. If such a relationship exists, then does an EA or EIS reveal any potentially significant effects not identified when the Proposed Action is considered alone?

The scope of the cumulative effects analysis involves both timeframe and geographic extent in which effects could be expected to occur, and a description of what resources could be cumulatively affected. For the purposes of this analysis, the temporal span of the Proposed Action is considered the transition period (i.e., 6 years). For most resources, the spatial area for consideration of cumulative effects is within the boundary of Minot AFB, and more specifically, the northeastern portion of Minot AFB, near the MFH project area.

4.2 Projects Considered Potential Cumulative Effects

Minor facility construction, renovation, and demolition projects and infrastructure upgrades are continuously occurring activities at Minot AFB. There are several facility construction and infrastructure upgrade projects that would also be occurring at Minot AFB concurrent with the Proposed Action, but these projects were not evaluated in detail because of their small scale and distance from the MFH area. The following projects are large enough or close enough to the proposed project area to have the potential for cumulative effects and are included in the analysis:

- **Ongoing MFH Construction Activities.** There are no ongoing MFH construction activities at Minot AFB.
- **Dormitories.** Six phases of dormitory construction are planned at Minot AFB. Construction activities are anticipated to last through 2012 (USAF 2008, MAFB 2009d).
- **B-52H Squadron Beddown.** In 2009, the USAF prepared an EA addressing the stand-up of a new B-52H squadron with beddown at Minot AFB (MAFB 2009d). Under this project, Minot AFB will receive 10 additional B-52H aircraft, 591 personnel, and the construction or renovation of 323,110 ft² of facility space.

4.2.1 Cumulative Effects Analysis

No significant adverse cumulative effects were identified in the cumulative effects analysis.

Noise. The noise environment on Minot AFB would continue to be dominated mainly by aircraft operations and automobile traffic. Short-term, minor, adverse, cumulative effects could occur during construction activities, particularly when construction activities are occurring at the same time and in proximity to each other. Aircraft operations associated with the new B-52H squadron are not expected to result in noise levels that are incompatible with residential land uses. No significant adverse cumulative effects would be expected.

Air Quality. Air emissions associated with the Proposed Action and other installation development would not be expected to result in violations of NAAQS or noticeably degrade ambient air quality. No significant adverse cumulative effects would be expected.

Land Use. Land uses surrounding the project area would be compatible with existing and foreseeable future land uses. No significant adverse cumulative effects would be expected.

Geological Resources. Soils on Minot AFB have been modified by previous development activities. Short-term, minor, adverse, cumulative effects on soil could be expected during construction activities, particularly when construction activities are occurring at the same time and in proximity to each other. However, BMPs would be used to control erosion and sedimentation, minimizing the potential for adverse cumulative effects. No significant adverse cumulative effects would be expected.

Water Resources. Short-term, minor, adverse, cumulative effects on water resources could be expected during construction activities, particularly when construction activities are occurring at the same time and in proximity to each other. However, BMPs would be used to prevent sediment-laden storm water leaving the construction site and entering surface water bodies. No significant adverse, cumulative effects would be expected.

Dormitory and B-52H beddown construction activities will result in increased impervious surfaces. If the Proposed Action resulted in a net increase in impervious surfaces (i.e., if the total square footage of the new community center and storage facility is greater than the total square footage of the MFH units proposed for demolition), then long-term, minor, adverse cumulative effects on water resources would be expected from the slight increase in impervious surfaces. If the Proposed Action resulted in a net loss in impervious surfaces (i.e., if the total square footage of the MFH units proposed for demolition is greater than the total square footage of the new community center and storage facility), then long-term, minor, beneficial cumulative effects on water resources would be expected from the slight decrease in impervious surfaces.

Biological Resources. Long-term, negligible, adverse, cumulative effects on vegetation would be expected. The Proposed Action and other installation development projects would occur in previously developed areas, so disturbed vegetation would be primarily grass and ornamental landscaping. Short-term, negligible to minor, adverse, cumulative effects on wildlife could be expected during construction activities, particularly when construction activities are occurring at the same time and in proximity to each other. No cumulative effects on threatened and endangered species would be expected, because none of these species are known to occur within project areas. No significant adverse cumulative effects would be expected.

Safety. Continued adherence to health and safety standards set forth by USEPA, OSHA, and USAF would minimize the potential for adverse, cumulative effects on humans. No significant adverse cumulative effects would be expected.

Utilities and Infrastructure. Localized service disruptions could result in short-term, minor, adverse, cumulative effects on all utility and infrastructure systems, particularly when construction activities are

occurring at the same time and in proximity to each other. Long-term, minor, beneficial, cumulative effects would be expected as utility and infrastructure systems are upgraded with each project. No significant adverse cumulative effects would be expected.

Hazardous Materials and Wastes. Short-term, negligible, adverse cumulative effects could be expected during construction activities. Any hazardous materials, hazardous wastes, ACM, LBP, PBCs, and soil or groundwater contamination encountered would be handled, transported, and disposed of in accordance with existing Minot AFB management plans and Federal, state, and local regulations. Long-term, minor, beneficial, cumulative effects would be expected following the removal and disposal of ACM and LBP in buildings or the cleanup of soil or groundwater by removing these sources of contamination from Minot AFB. No significant adverse cumulative effects would be expected.

Socioeconomic Resources and Environmental Justice. Short-term economic expenditures associated with the Proposed Action and other installation development projects would cumulatively have beneficial socioeconomic effects in the City of Minot and Ward County. No significant adverse cumulative effects would be expected.

Cultural Resources. No effects on cultural resources were identified for the Proposed Action, ongoing MFH construction activities, the B-52H beddown, or dormitory construction projects. Therefore, no cumulative effects would be expected.

4.3 Unavoidable Adverse Effects

Unavoidable adverse effects would result from implementation of the Proposed Action. None of these effects would be significant.

Geological Resources. Under the Proposed Action, construction and demolition activities, such as grading, excavating, and trenching of the ground, would result in some minor soil disturbance. Implementation of BMPs during construction would limit environmental consequences resulting from construction and demolition activities. Standard erosion-control means would also reduce environmental consequences related to these characteristics. Although unavoidable, effects on soils at the installation would not be considered significant.

Infrastructure. Solid waste would be generated as a result of construction and demolition activities. This would be an unavoidable, but minor, adverse effect that could be mitigated to a certain extent by possible recycling opportunities.

Hazardous Wastes and Materials. Products containing hazardous materials would be procured and used during the Proposed Action. It is anticipated that the quantity of products containing hazardous materials used during the construction, demolition, and renovation activities would be minimal and their use would be of short duration. Contractors would be responsible for the management of hazardous materials, which would be handled in accordance with Federal and state regulations. It is anticipated that the quantity of hazardous wastes generated from the Proposed Action would be negligible. Contractors would be responsible for the disposal of hazardous wastes in accordance with Federal and state laws and regulations, as well as the *Hazardous Waste Management Plan*. The potential for construction accidents or spills during fuel handling would be unavoidable risks associated with the Proposed Action.

Energy Resources. The Proposed Action would require the use of fossil fuels, which are nonrenewable natural resources. The use of nonrenewable resources during the Proposed Action would be unavoidable. Relatively small amounts of energy resources would be committed to the Proposed Action and would not be considered significant.

4.4 Compatibility of Proposed Action and Alternatives with the Objectives of Federal, Regional, State, and Local Land Use Plans, Policies, and Controls

Impacts on the ground surface as a result of the Proposed Action would occur entirely within the boundaries of Minot AFB. Construction activities would not result in any significant or incompatible land use changes on- or off-installation. The projects under the Proposed Action would be at locations consistent with current and future land use zones. Consequently, construction activities would not be in conflict with future installation land use policies or objectives. The Proposed Action would not conflict with any applicable off-installation land use ordinances or designated clear zones.

4.5 Relationship Between Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Short-term uses of the biophysical components of the human environment include direct effects, usually related to construction activities, which occur over a period of less than 5 years. Long-term uses of the human environment include those effects that occur over a period of more than 5 years, including permanent resource loss.

Several kinds of activities could result in short-term resource uses that would compromise long-term productivity. Loss of especially important habitats and consumptive use of high-quality water at nonrenewable rates are examples of actions that would affect long-term productivity.

The Proposed Action would not result in an intensification of land use at Minot AFB or in the surrounding area. Development of the Proposed Action would not represent a significant loss of open space. Therefore, it is anticipated that the Proposed Action would not result in any cumulative effects on land use or aesthetics. Long-term productivity of these sites would be increased by the implementation of the Proposed Action.

4.6 Irreversible and Irretrievable Commitment of Resources

An irreversible or irretrievable commitment of resources refers to effects on or losses to resources that cannot be reversed or recovered, even after an activity has ended and facilities have been decommissioned. A commitment of resources is related to use or destruction of nonrenewable resources, and effects that such a loss will have on future generations. For example, if prime farmland is developed there would be a permanent loss of agricultural productivity. The Proposed Action would involve the irreversible and irretrievable commitment of material resources and energy, land resources, landfill space, and human resources. The effects on these resources would be permanent.

Material Resources. Material resources that would be irretrievably used for the Proposed Action include steel, concrete, and other building materials. Such materials are not in short supply and would not be expected to limit other unrelated construction activities. The irretrievable use of material resources would not be considered significant.

Energy Resources. Energy resources used for the Proposed Action would be irretrievably lost. These would include petroleum-based products (e.g., gasoline, diesel) and electricity. During construction and demolition, gasoline and diesel fuel would be used for the operation of construction vehicles. Consumption of these energy resources would not place a significant demand on their availability in the region. Therefore, no significant effects would be expected.

Landfill Space. The generation of construction and demolition debris and subsequent disposal of that debris in a landfill would be an irretrievable adverse effect. Construction contractors would be expected to recycle at least 40 percent of the debris generated. If a greater percentage were recycled, then irretrievable effects on landfills would be reduced. There are numerous rubble landfills and construction and demolition processing facilities that could handle the waste generated. However, any waste that would be generated by the Proposed Action would be disposed of in a Government-approved landfill off-installation and would be considered an irretrievable loss of that landfill space.

Human Resources. The use of human resources for construction is considered an irretrievable loss only in that it would preclude such personnel from engaging in other work activities. However, the use of human resources for the Proposed Action would represent employment opportunities, and would be considered beneficial.

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APPENDIX A

MILITARY HOUSING PRIVATIZATION INITIATIVE

Military Housing Privatization Initiative

Title 10 **Armed Forces**

Subtitle A **General Military Law**

Part IV **Service, Supply, and Procurement**

Chapter 169 **Military Construction and Military Family Housing**

Subchapter IV **Alternative Authority for Acquisition and Improvement of Military Housing**

Title 10 of the US Code as currently published by the US Government reflects the laws passed by Congress as of January 5, 2009.

Sec. 2871. Definitions

In this subchapter:

1. The term “ancillary supporting facilities” means facilities related to military housing units, including facilities to provide or support elementary or secondary education, child care centers, day care centers, child development centers, tot lots, community centers, housing offices, dining facilities, unit offices, and other similar facilities for the support of military housing.
2. The term “child development center” includes a facility, and the utilities to support such facility, the function of which is to support the daily care of children aged six weeks old through five years old for full-day, part-day, and hourly service.
3. The term “construction” means the construction of military housing units and ancillary supporting facilities or the improvement or rehabilitation of existing units or ancillary supporting facilities.
4. The term “contract” includes any contract, lease, or other agreement entered into under the authority of this subchapter.
5. The term “eligible entity” means any private person, corporation, firm, partnership, company, State or local government, or housing authority of a State or local government that is prepared to enter into a contract as a partner with the Secretary concerned for the construction of military housing units and ancillary supporting facilities.
6. The term “Fund” means the Department of Defense Family Housing Improvement Fund or the Department of Defense Military Unaccompanied Housing Improvement Fund established under section 2883 (a) of this title.
7. The term “military unaccompanied housing” means military housing intended to be occupied by members of the armed forces serving a tour of duty unaccompanied by dependents and transient housing intended to be occupied by members of the armed forces on temporary duty.
8. The term “United States” includes the Commonwealth of Puerto Rico.

Sec. 2872. General authority

In addition to any other authority provided under this chapter for the acquisition or construction of military family housing or military unaccompanied housing, the Secretary concerned may exercise any authority or any combination of authorities provided under this subchapter in order to provide for the acquisition or construction by eligible entities of the following:

1. Family housing units on or near military installations within the United States and its territories and possessions.
2. Military unaccompanied housing units on or near such military installations.

Sec. 2872a. Utilities and services

- (a) **Authority To Furnish.**— The Secretary concerned may furnish utilities and services referred to in subsection (b) in connection with any military housing acquired or constructed pursuant to the exercise of any authority or combination of authorities under this subchapter if the military housing is located on a military installation.
- (b) **Covered Utilities and Services.**— The utilities and services that may be furnished under subsection (a) are the following:
- (1) Electric power.
 - (2) Steam.
 - (3) Compressed air.
 - (4) Water.
 - (5) Sewage and garbage disposal.
 - (6) Natural gas.
 - (7) Pest control.
 - (8) Snow and ice removal.
 - (9) Mechanical refrigeration.
 - (10) Telecommunications service.
 - (11) Firefighting and fire protection services.
 - (12) Police protection services.
- (c) **Reimbursement.**
- (1) The Secretary concerned shall be reimbursed for any utilities or services furnished under subsection (a).
 - (2) The amount of any cash payment received under paragraph (1) shall be credited to the appropriation or working capital account from which the cost of furnishing the utilities or services concerned was paid. Amounts so credited to an appropriation or account shall be merged with funds in such appropriation or account, and shall be available to the same extent, and subject to the same terms and conditions, as such funds.

Sec. 2873. Direct loans and loan guarantees

- (a) **Direct Loans.**
- (1) Subject to subsection (c), the Secretary concerned may make direct loans to an eligible entity in order to provide funds to the eligible entity for the acquisition or construction of housing units that the Secretary determines are suitable for use as military family housing or as military unaccompanied housing.
 - (2) The Secretary concerned shall establish such terms and conditions with respect to loans made under this subsection, as the Secretary considers appropriate to protect the interests of the United

States, including the period and frequency for repayment of such loans and the obligations of the obligors on such loans upon default.

(b) Loan Guarantees.

- (1) Subject to subsection (c), the Secretary concerned may guarantee a loan made to an eligible entity if the proceeds of the loan are to be used by the eligible entity to acquire, or construct housing units that the Secretary determines are suitable for use as military family housing or as military unaccompanied housing.
 - (2) The amount of a guarantee on a loan that may be provided under paragraph (1) may not exceed the amount equal to the lesser of—
 - (A) the amount equal to 80 percent of the value of the project; or
 - (B) the amount of the outstanding principal of the loan.
 - (3) The Secretary concerned shall establish such terms and conditions with respect to guarantees of loans under this subsection, as the Secretary considers appropriate to protect the interests of the United States, including the rights and obligations of obligors of such loans and the rights and obligations of the United States with respect to such guarantees.
- (c) Limitation on Direct Loan and Guarantee Authority.— Direct loans and loan guarantees may be made under this section only to the extent that appropriations of budget authority to cover their cost (as defined in section 502(5) of the Federal Credit Reform Act of 1990 (2 U.S.C. 661a (5))) are made in advance, or authority is otherwise provided in appropriation Acts. If such appropriation or other authority is provided, there may be established a financing account (as defined in section 502(7) of such Act (2 U.S.C. 661a (7))), which shall be available for the disbursement of direct loans or payment of claims for payment on loan guarantees under this section and for all other cash flows to and from the Government as a result of direct loans and guarantees made under this section.

Sec. 2874. Leasing of housing

- (a) Lease Authorized.— The Secretary concerned may enter into contracts for the lease of housing units that the Secretary determines are suitable for use as military family housing or military unaccompanied housing.
- (b) Use of Leased Units.— The Secretary concerned shall use housing units leased under this section as military family housing or military unaccompanied housing, as appropriate.
- (c) Lease Terms.— A contract under this section may be for any period that the Secretary concerned determines appropriate and may provide for the owner of the leased property to operate and maintain the property.

Sec. 2875. Investments

- (a) Investments Authorized.— The Secretary concerned may make investments in an eligible entity carrying out projects for the acquisition or construction of housing units suitable for use as military family housing or as military unaccompanied housing.
- (b) Forms of Investment.— An investment under this section may take the form of an acquisition of a limited partnership interest by the United States, a purchase of stock or other equity instruments by the United States, a purchase of bonds or other debt instruments by the United States, or any combination of such forms of investment.
- (c) Limitation on Value of Investment.

- (1) The cash amount of an investment under this section in an eligible entity may not exceed an amount equal to 33 1/3 percent of the capital cost (as determined by the Secretary concerned) of the project or projects that the eligible entity proposes to carry out under this section with the investment.
 - (2) If the Secretary concerned conveys land or facilities to an eligible entity as all or part of an investment in the eligible entity under this section, the total value of the investment by the Secretary under this section may not exceed an amount equal to 45 percent of the capital cost (as determined by the Secretary) of the project or projects that the eligible entity proposes to carry out under this section with the investment.
 - (3) In this subsection, the term “capital cost”, with respect to a project for the acquisition or construction of housing, means the total amount of the costs included in the basis of the housing for Federal income tax purposes.
- (d) Collateral Incentive Agreements.— The Secretary concerned shall enter into collateral incentive agreements with eligible entities in which the Secretary makes an investment under this section to ensure that a suitable preference will be afforded members of the armed forces and their dependents in the lease or purchase, as the case may be, of a reasonable number of the housing units covered by the investment.
- (e) Congressional Notification Required.— Amounts in the Department of Defense Family Housing Improvement Fund or the Department of Defense Military Unaccompanied Housing Improvement Fund may be used to make a cash investment under this section in an eligible entity only after the end of the 30-day period beginning on the date the Secretary of Defense submits written notice of, and justification for, the investment to the appropriate committees of Congress or, if earlier, the end of the 14-day period beginning on the date on which a copy of the notice and justification is provided in an electronic medium pursuant to section 480 of this title.

Sec. 2876. Rental guarantees

The Secretary concerned may enter into agreements with eligible entities that acquire or construct military family housing units or military unaccompanied housing units under this subchapter in order to assure –

- (1) the occupancy of such units at levels specified in the agreements; or
- (2) rental income derived from rental of such units at levels specified in the agreements.

Sec. 2877. Differential lease payments

Pursuant to an agreement entered into by the Secretary concerned and a lessor of military family housing or military unaccompanied housing to members of the armed forces, the Secretary may pay the lessor an amount in addition to the rental payments for the housing made by the members as the Secretary determines appropriate to encourage the lessor to make the housing available to members of the armed forces as military family housing or as military unaccompanied housing.

Sec. 2878. Conveyance or lease of existing property and facilities

- (a) Conveyance or Lease Authorized.— The Secretary concerned may convey or lease property or facilities (including ancillary supporting facilities) to eligible entities for purposes of using the proceeds of such conveyance or lease to carry out activities under this subchapter.
- (b) Inapplicability to Property at Installation Approved for Closure.— The authority of this section does not apply to property or facilities located on or near a military installation approved for closure under a base closure law.

- (c) **Competitive Process.**— The Secretary concerned shall ensure that the time, method, and terms and conditions of the reconveyance or lease of property or facilities under this section from the eligible entity permit full and free competition consistent with the value and nature of the property or facilities involved.
- (d) **Terms and Conditions.**
 - (1) The conveyance or lease of property or facilities under this section shall be for such consideration and upon such terms and conditions as the Secretary concerned considers appropriate for the purposes of this subchapter and to protect the interests of the United States.
 - (2) As part or all of the consideration for a conveyance or lease under this section, the purchaser or lessor (as the case may be) shall enter into an agreement with the Secretary to ensure that a suitable preference will be afforded members of the armed forces and their dependents in the lease or sublease of a reasonable number of the housing units covered by the conveyance or lease, as the case may be, or in the lease of other suitable housing units made available by the purchaser or lessee.
- (e) **Inapplicability of Certain Property Management Laws.**— The conveyance or lease of property or facilities under this section shall not be subject to the following provisions of law:
 - (1) Section 2667 of this title.
 - (2) Subtitle I of title 40 and title III of the Federal Property and Administrative Services Act of 1949 (41 U.S.C. 251 et seq.).
 - (3) Section 1302 of title 40.
 - (4) Section 501 of the McKinney-Vento Homeless Assistance Act (42 U.S.C. 11411).

Sec. 2879.

(Repealed. Public Law 107-314, div. B, title XXVIII, Sec. 2802(c)(1), Dec. 2, 2002, 116 Stat. 2703)

Sec. 2880. Unit size and type

- (a) **Conformity With Similar Housing Units in Locale.**— The Secretary concerned shall ensure that the room patterns and floor areas of military family housing units and military unaccompanied housing units acquired or constructed under this subchapter are generally comparable to the room patterns and floor areas of similar housing units in the locality concerned.
- (b) **Inapplicability of Limitations on Space by Pay Grade.**— Sections 2826 and 2856 of this title shall not apply to military family housing or military unaccompanied housing units acquired or constructed under this subchapter.

Sec. 2881. Ancillary supporting facilities

- (a) **Authority To Acquire or Construct.**— Any project for the acquisition or construction of military family housing units or military unaccompanied housing units under this subchapter may include the acquisition or construction of ancillary supporting facilities for the housing units concerned.
- (b) **Restriction.**— A project referred to in subsection (a) may not include the acquisition or construction of an ancillary supporting facility (other than a child development center) if, as determined by the Secretary concerned, the facility is to be used for providing merchandise or services in direct competition with –
 - (1) the Army and Air Force Exchange Service;
 - (2) the Navy Exchange Service Command;

- (3) a Marine Corps exchange;
- (4) the Defense Commissary Agency; or
- (5) any nonappropriated fund activity of the Department of Defense for the morale, welfare, and recreation of members of the armed forces.

Sec. 2881a. Pilot projects for acquisition or construction of military unaccompanied housing

- (a) Pilot Projects Authorized.— The Secretary of the Navy may carry out not more than three pilot projects under the authority of this section or another provision of this subchapter to use the private sector for the acquisition or construction of military unaccompanied housing in the United States, including any territory or possession of the United States.
- (b) Treatment of Housing; Assignment of Members.— The Secretary of the Navy may assign members of the armed forces without dependents to housing units acquired or constructed under the pilot projects, and such housing units shall be considered as quarters of the United States or a housing facility under the jurisdiction of the Secretary for purposes of section 403 of title 37.
- (c) Basic Allowance for Housing.
 - (1) The Secretary of Defense may prescribe and, under section 403(n) of title 37, pay for members of the armed forces without dependents in privatized housing acquired or constructed under the pilot projects higher rates of partial basic allowance for housing than the rates authorized under paragraph (2) of such section.
 - (2) The partial basic allowance for housing paid for a member at a higher rate under this subsection may be paid directly to the private sector source of the housing to whom the member is obligated to pay rent or other charge for residing in such housing if the private sector source credits the amount so paid against the amount owed by the member for the rent or other charge.
- (d) Funding.
 - (1) The Secretary of the Navy shall use the Department of Defense Military Unaccompanied Housing Improvement Fund to carry out activities under the pilot projects.
 - (2) Subject to 30 days prior notification to the appropriate committees of Congress, such additional amounts as the Secretary of Defense considers necessary may be transferred to the Department of Defense Military Unaccompanied Housing Improvement Fund from amounts appropriated for construction of military unaccompanied housing in military construction accounts. The amounts so transferred shall be merged with and be available for the same purposes and for the same period of time as amounts appropriated directly to the Fund.
- (e) Reports.
 - (1) The Secretary of the Navy shall transmit to the appropriate committees of Congress a report describing –
 - (A) each contract for the acquisition of military unaccompanied housing that the Secretary proposes to solicit under the pilot projects;
 - (B) each conveyance or lease proposed under section 2878 of this title in furtherance of the pilot projects; and
 - (C) the proposed partial basic allowance for housing rates for each contract as they vary by grade of the member and how they compare to basic allowance for housing rates for other contracts written under the authority of the pilot programs.

- (2) The report shall describe the proposed contract, conveyance, or lease and the intended method of participation of the United States in the contract, conveyance, or lease and provide a justification of such method of participation. The report shall be submitted not later than 30 days before the date on which the Secretary issues the contract solicitation or offers the conveyance or lease.
- (f) Expiration.— The authority of the Secretary of the Navy to enter into a contract under the pilot programs shall expire September 30, 2009.

Sec. 2882. Effect of assignment of members to housing units acquired or constructed under alternative authority

- (a) Treatment as Quarters of the United States.— Except as provided in subsection (b), housing units acquired or constructed under this subchapter shall be considered as quarters of the United States or a housing facility under the jurisdiction of a uniformed service for purposes of section 403 of title 37.
- (b) Availability of Basic Allowance for Housing.— A member of the armed forces who is assigned to a housing unit acquired or constructed under this subchapter that is not owned or leased by the United States shall be entitled to a basic allowance for housing under section 403 of title 37.
- (c) Lease Payments Through Pay Allotments.— The Secretary concerned may require members of the armed forces who lease housing in housing units acquired or constructed under this subchapter to make lease payments for such housing pursuant to allotments of the pay of such members under section 701 of title 37.

Sec. 2883. Department of Defense Housing Funds

- (a) Establishment.— There are hereby established on the books of the Treasury the following accounts:
 - (1) The Department of Defense Family Housing Improvement Fund.
 - (2) The Department of Defense Military Unaccompanied Housing Improvement Fund.
- (b) Commingling of Funds Prohibited.
 - (1) The Secretary of Defense shall administer each Fund separately.
 - (2) Amounts in the Department of Defense Family Housing Improvement Fund may be used only to carry out activities under this subchapter with respect to military family housing.
 - (3) Amounts in the Department of Defense Military Unaccompanied Housing Improvement Fund may be used only to carry out activities under this subchapter with respect to military unaccompanied housing.
- (c) Credits to Funds.
 - (1) There shall be credited to the Department of Defense Family Housing Improvement Fund the following:
 - (A) Amounts authorized for and appropriated to that Fund.
 - (B) Subject to subsection (f), any amounts that the Secretary of Defense transfers, in such amounts as provided in appropriation Acts, to that Fund from amounts authorized and appropriated to the Department of Defense for the acquisition, improvement, or construction of military family housing.
 - (C) Proceeds from the conveyance or lease of property or facilities under section 2878 of this title for the purpose of carrying out activities under this subchapter with respect to military family housing.

- (D) Income derived from any activities under this subchapter with respect to military family housing, including interest on loans made under section 2873 of this title, income and gains realized from investments under section 2875 of this title, and any return of capital invested as part of such investments.
 - (E) Any amounts that the Secretary of the Navy transfers to that Fund pursuant to section 2814(i)(3) of this title, subject to the restrictions on the use of the transferred amounts specified in that section.
 - (F) Any amounts that the Secretary concerned transfers to that Fund pursuant to section 2869 of this title.
 - (G) Subject to subsection (f), any amounts that the Secretary of Defense transfers to that Fund from amounts in the Department of Defense Base Closure Account 2005.
- (d) Use of Amounts in Funds.
- (1) In such amounts as provided in appropriation Acts and except as provided in subsection (e), the Secretary of Defense may use amounts in the Department of Defense Family Housing Improvement Fund to carry out activities under this subchapter with respect to military family housing, including activities required in connection with the planning, execution, and administration of contracts entered into under the authority of this subchapter. The Secretary may also use for expenses of activities required in connection with the planning, execution, and administration of such contracts funds that are otherwise available to the Department of Defense for such types of expenses.
 - (2) In such amounts as provided in appropriation Acts and except as provided in subsection (e), the Secretary of Defense may use amounts in the Department of Defense Military Unaccompanied Housing Improvement Fund to carry out activities under this subchapter with respect to military unaccompanied housing, including activities required in connection with the planning, execution, and administration of contracts entered into under the authority of this subchapter. The Secretary may also use for expenses of activities required in connection with the planning, execution, and administration of such contracts funds that are otherwise available to the Department of Defense for such types of expenses.
 - (3) Amounts made available under this subsection shall remain available until expended. The Secretary of Defense may transfer amounts made available under this subsection to the Secretaries of the military departments to permit such Secretaries to carry out the activities for which such amounts may be used.
- (e) Limitation on Obligations.
- (1) The Secretary may not incur an obligation under a contract or other agreement entered into under this subchapter in excess of the unobligated balance, at the time the contract is entered into, of the Fund required to be used to satisfy the obligation.
 - (2) The Funds established under subsection (a) shall be the sole source of funds for activities carried out under this subchapter.
- (f) Notification Required for Transfers.— A transfer of appropriated amounts to a Fund under subparagraph (B) or (G) of paragraph (1) or subparagraph (B) or (G) of paragraph (2) of subsection (c) may be made only after the end of the 30-day period beginning on the date the Secretary of Defense submits written notice of, and justification for, the transfer to the appropriate committees of Congress or, if earlier, the end of the 14-day period beginning on the date on which a copy of the notice and justification is provided in an electronic medium pursuant to section 480 of this title. In addition, the notice required in connection with a transfer under subparagraph (G) of

paragraph (1) or subparagraph (G) of paragraph (2) shall include a certification that the amounts to be transferred from the Department of Defense Base Closure Account 2005 were specified in the conference report to accompany the most recent Military Construction Authorization Act.

Sec. 2883a. Funds for housing allowances of members of the armed forces assigned to certain military family housing units

- (a) **Authority to Transfer Funds To Cover Housing Allowances.**— During the fiscal year in which a contract is awarded for the acquisition or construction of military family housing units under this subchapter that are not to be owned by the United States, the Secretary of Defense may transfer the amount determined under subsection (b) with respect to such housing from appropriations available for support of military housing for the armed force concerned for that fiscal year to appropriations available for pay and allowances of military personnel of that same armed force for that same fiscal year.
- (b) **Amount Transferred.**— The total amount authorized to be transferred under subsection (a) in connection with a contract under this subchapter may not exceed an amount equal to any additional amounts payable during the fiscal year in which the contract is awarded to members of the armed forces assigned to the acquired or constructed housing units as basic allowance for housing under section 403 of title 37 that would not otherwise have been payable to such members if not for assignment to such housing units.
- (c) **Transfers Subject to Appropriations.**— The transfer of funds under the authority of subsection (a) is limited to such amounts as may be provided in advance in appropriations Acts.

Sec. 2884. Reports

- (a) **Project Reports.**
 - (1) The Secretary of Defense shall transmit to the appropriate committees of Congress a report describing—
 - (A) each contract for the acquisition or construction of family housing units or unaccompanied housing units that the Secretary proposes to solicit under this subchapter; and
 - (B) each conveyance or lease proposed under section 2878 of this title.
 - (2) For each proposed contract, conveyance, or lease described in paragraph (1), the report required by such paragraph shall include the following:
 - (A) A description of the contract, conveyance, or lease, including a summary of the terms of the contract, conveyance, or lease.
 - (B) A description of the authorities to be used in entering into the contract, conveyance, or lease and the intended method of participation of the United States in the contract, conveyance, or lease, including a justification of the intended method of participation.
 - (C) A statement of the scored cost of the contract, conveyance, or lease, as determined by the Office of Management and Budget.
 - (D) A statement of the United States funds required for the contract, conveyance, or lease and a description of the source of such funds, including a description of the specific construction, acquisition, or improvement projects from which funds were transferred to the Funds established under section 2883 of this title in order to finance the contract, conveyance, or lease.
 - (E) An economic assessment of the life cycle costs of the contract, conveyance, or lease, including an estimate of the amount of United States funds that would be paid over the life

of the contract, conveyance, or lease from amounts derived from payments of government allowances, including the basic allowance for housing under section 403 of title 37, if the housing affected by the project were fully occupied by military personnel over the life of the contract, conveyance, or lease.

(3)

(A) In the case of a contract described in paragraph (1) proposed to be entered into with a private party, the report shall specify whether the contract will or may include a guarantee (including the making of mortgage or rental payments) by the Secretary to the private party in the event of—

- (i) the closure or realignment of the installation for which housing will be provided under the contract;
- (ii) a reduction in force of units stationed at such installation; or
- (iii) the extended deployment of units stationed at such installation.

(B) If the contract will or may include such a guarantee, the report shall also—

- (i) describe the nature of the guarantee; and
- (ii) assess the extent and likelihood, if any, of the liability of the United States with respect to the guarantee.

(4) The report shall be submitted not later than 30 days before the date on which the Secretary issues the contract solicitation or offers the conveyance or lease.

(b) Annual Reports.— The Secretary of Defense shall include each year in the materials that the Secretary submits to Congress in support of the budget submitted by the President pursuant to section 1105 of title 31 the following:

- (1) A separate report on the expenditures and receipts during the preceding fiscal year covering each of the Funds established under section 2883 of this title, including a description of the specific construction, acquisition, or improvement projects from which funds were transferred and the privatization projects or contracts to which those funds were transferred. Each report shall also include, for each military department or defense agency, a description of all funds to be transferred to such Funds for the current fiscal year and the next fiscal year.
- (2) A methodology for evaluating the extent and effectiveness of the use of the authorities under this subchapter during such preceding fiscal year, and such recommendations as the Secretary considers necessary for improving the extent and effectiveness of the use of such authorities in the future.
- (3) A review of activities of the Secretary under this subchapter during such preceding fiscal year, shown for military family housing, military unaccompanied housing, dual military family housing and military unaccompanied housing, and ancillary supporting facilities.
- (4) If a contract for the acquisition or construction of military family housing, military unaccompanied housing, or dual military family housing and military unaccompanied housing entered into during the preceding fiscal year did not include the acquisition or construction of the types of ancillary supporting facilities specifically referred to in section 2871 (1) of this title, a explanation of the reasons why such ancillary supporting facilities were not included.
- (5) A report setting forth, by armed force—
 - (A) an estimate of the amounts of basic allowance for housing under section 403 of title 37 that will be paid, during the current fiscal year and the fiscal year for which the budget is submitted, to members of the armed forces living in housing provided under the authorities in this subchapter; and

- (B) the number of units of military family housing and military unaccompanied housing upon which the estimate under subparagraph (A) for the current fiscal year and the next fiscal year is based.
- (6) A description of the Secretary's plans for housing privatization activities under this subchapter:
 - (A) during the fiscal year for which the budget is submitted; and
 - (B) during the period covered by the then-current future-years defense plan under section 221 of this title.
- (7) A report on best practices for the execution of housing privatization initiatives, including—
 - (A) effective means to track and verify proper performance, schedule, and cash flow;
 - (B) means of overseeing the actions of bondholders to properly monitor construction progress and construction draws;
 - (C) effective structuring of transactions to ensure the United States Government has adequate abilities to oversee project owner performance;
 - (D) ensuring that notices to proceed on new work are not issued until proper bonding is in place; and
 - (E) such other topics that are identified as pertinent by the Department of Defense.
- (8) A report identifying each family housing unit acquired or constructed under this subchapter that is used, or intended to be used, as quarters for a general officer or flag officer and for which the total operation, maintenance, and repair costs for the unit exceeded \$50,000. For each housing unit so identified, the report shall also include the total of such operation, maintenance, and repair costs.

Sec. 2885. Oversight and accountability for privatization projects

- (a) Oversight and Accountability Measures.— Each Secretary concerned shall prescribe regulations to effectively oversee and manage military housing privatization projects carried out under this subchapter. The regulations shall include the following requirements for each privatization project:
 - (1) The installation asset manager shall conduct monthly site visits and provide quarterly reports on the progress of the construction or renovation of the housing units. The reports shall be submitted quarterly to the assistant secretary for installations and environment of the respective military department.
 - (2) The installation asset manager, and, as applicable, the resident construction manager, privatization asset manager, bondholder representative, project owner, developer, general contractor, and construction consultant for the project shall conduct meetings to ensure that the construction or renovation of the units meets performance and schedule requirements and that appropriate operating and ground lease agreements are in place and adhered to.
 - (3) If a project is 90 days or more behind schedule or otherwise appears to be substantially failing to adhere to the obligations or milestones under the contract, the assistant secretary for installations and environment of the respective military department shall submit a notice of deficiency to the Deputy Under Secretary of Defense (Installations and Environment), the Secretary concerned, the managing member, and the trustee for the project.
 - (4)
 - (A) Not later than 15 days after the submittal of a notice of deficiency under paragraph (3), the Secretary concerned or designated representative shall submit to the project owner,

developer, or general contractor responsible for the project a summary of deficiencies related to the project.

- (B) If the project owner, developer, or general contractor responsible for the privatization project is unable, within 60 days after receiving a notice of deficiency under subparagraph (A), to make progress on the issues outlined in such notice, the Secretary concerned shall notify the congressional defense committees of the status of the project, and shall provide a recommended course of action to correct the problems.
- (b) Required Qualifications.— The Secretary concerned or designated representative shall ensure that the project owner, developer, or general contractor that is selected for each military housing privatization initiative project has construction experience commensurate with that required to complete the project.
- (c) Bonding Levels.— The Secretary concerned shall ensure that the project owner, developer, or general contractor responsible for a military housing privatization initiative project has sufficient payment and performance bonds or suitable instruments in place for each phase of a construction or renovation portion of the project to ensure successful completion of the work in amounts as agreed to in the project's legal documents, but in no case less than 50 percent of the total value of the active phases of the project, prior to the commencement of work for that phase.
- (d) Reporting of Efforts To Select Successor in Event of Default.— In the event a military housing privatization initiative project enters into default, the assistant secretary for installations and environment of the respective military department shall submit a report to the congressional defense committees every 90 days detailing the status of negotiations to award the project to a new project owner, developer, or general contractor.
- (e) Effect of Notices of Deficiency on Contractors and Affiliated Entities.
 - (1) The Secretary concerned shall keep a record of all plans of action or notices of deficiency issued to a project owner, developer, or general contractor under subsection (a)(4), including the identity of each parent, subsidiary, affiliate, or other controlling entity of such owner, developer, or contractor.
 - (2) Each military department shall consult all records maintained under paragraph (1) when reviewing the past performance of owners, developers, and contractors in the bidding process for a contract or other agreement for a military housing privatization initiative project.

APPENDIX B

APPLICABLE LAWS, REGULATIONS, POLICIES, AND PLANNING CRITERIA

Applicable Laws, Regulations, Policies, and Planning Criteria

When considering the affected environment, the various physical, biological, economic, and social environmental factors must be considered. In addition to the National Environmental Policy Act (NEPA), there are other environmental laws and Executive Orders (EOs) to be considered when preparing environmental analyses. These laws are summarized below.

NOTE: This is not a complete list of all applicable laws, regulations, policies, and planning criteria potentially applicable to documents, however, it does provide a general summary for use as a reference.

Airspace Management

Airspace management procedures assist in preventing potential conflicts or accidents associated with aircraft using designated airspace in the United States, including restricted military airspace. Airspace management involves the coordination, integration, and regulation of the use of airspace. The Federal Aviation Administration (FAA) has overall responsibility for managing airspace through a system of flight rules and regulations, airspace management actions, and air traffic control procedures. All military and civilian aircraft are subject to Federal Aviation Regulations. The FAA's *Aeronautical Information Manual* defines the operational requirements for each of the various types or classes of military and civilian airspace.

Some military services have specific guidance for airspace management. For example, airspace management in the U.S. Air Force (USAF) is guided by Air Force Instruction (AFI) 13-201, *Air Force Airspace Management*. This AFI provides guidance and procedures for developing and processing special use airspace. It covers aeronautical matters governing the efficient planning, acquisition, use, and management of airspace required to support USAF flight operations. It applies to activities that have operational or administrative responsibility for using airspace, establishes practices to decrease disturbances from flight operations that might cause adverse public reaction, and provides flying unit commanders with general guidance for dealing with local problems.

Noise

Federal, state, and local governments have established noise guidelines and regulations for the purpose of protecting citizens from potential hearing damage and from various other adverse physiological, psychological, and social effects associated with noise. The Noise Control Act of 1972, as amended by the Quiet Communities Act of 1978, requires compliance with state and local noise laws and ordinances.

The U.S. Department of Housing and Urban Development (HUD), in coordination with the Department of Defense (DOD) and the FAA, has established criteria for acceptable noise levels for aircraft operations relative to various types of land use.

The USAF's Air Installation Compatible Use Zone (AICUZ) Program, (AFI 32-7063), provides guidance to air bases and local communities in planning land uses compatible with airfield operations. The AICUZ program describes existing aircraft noise and flight safety zones on and near USAF installations.

Land Use

The term "land use" refers to real property classifications that indicate either natural conditions or the types of human activities occurring on a defined parcel of land. In many cases, land use descriptions are

codified in local zoning laws. However, there is no nationally recognized convention or uniform terminology for describing land use categories.

Land use planning in the USAF is guided by *Land Use Planning Bulletin, Base Comprehensive Planning* (HQ USAF/LEEVX, August 1, 1986). This document provides for the use of 12 basic land use types found on a USAF installation. In addition, land use guidelines established by the HUD and based on findings of the Federal Interagency Committee on Noise are used to recommend acceptable levels of noise exposure for land use.

Air Quality

The Clean Air Act (CAA) of 1970, and Amendments of 1977 and 1990, recognizes that increases in air pollution result in danger to public health and welfare. To protect and enhance the quality of the Nation's air resources, the CAA authorizes the U.S. Environmental Protection Agency (USEPA) to set six National Ambient Air Quality Standards (NAAQS) which regulate carbon monoxide, lead, nitrogen dioxide, ozone, sulfur dioxide, and particulate matter pollution emissions. The CAA seeks to reduce or eliminate the creation of pollutants at their source, and designates this responsibility to state and local governments. States are directed to utilize financial and technical assistance and leadership from the Federal government to develop implementation plans to achieve NAAQS. Geographic areas are officially designated by the USEPA as being in attainment or nonattainment for pollutants in relation to their compliance with NAAQS. Geographic regions established for air quality planning purposes are designated as Air Quality Control Regions (AQCRs). Pollutant concentration levels are measured at designated monitoring stations within the AQCR. An area with insufficient monitoring data is designated as unclassified. Section 309 of the CAA authorizes USEPA to review and comment on impact statements prepared by other agencies.

An agency should consider what effect an action might have on NAAQS due to short-term increases in air pollution during construction and long-term increases resulting from changes in traffic patterns. For actions in attainment areas, a Federal agency could also be subject to USEPA's Prevention of Significant Deterioration (PSD) regulations. These regulations apply to new major stationary sources and modifications to such sources. Although few agency facilities will actually emit pollutants, increases in pollution can result from a change in traffic patterns or volume. Section 118 of the CAA waives Federal immunity from complying with the CAA and states all Federal agencies will comply with all Federal- and state-approved requirements.

The General Conformity Rule requires that any Federal action meet the requirements of a State Implementation Plan or Federal Implementation Plan. More specifically, CAA conformity is ensured when a Federal action does not cause a new violation of the NAAQS; contribute to an increase in the frequency or severity of violations of NAAQS; or delay the timely attainment of any NAAQS, interim progress milestones, or other milestones toward achieving compliance with the NAAQS.

The General Conformity Rule applies only to actions in nonattainment or maintenance areas and considers both direct and indirect emissions. The rule applies only to Federal actions that are considered "regionally significant" or where the total emissions from the action meet or exceed the *de minimis* thresholds presented in 40 Code of Federal Regulations (CFR) 93.153. An action is regionally significant when the total nonattainment pollutant emissions exceed 10 percent of the AQCR's total emissions inventory for that nonattainment pollutant. If a Federal action does not meet or exceed the *de minimis* thresholds and is not considered regionally significant, then a full Conformity Determination is not required.

On May 13, 2010, the USEPA issued the Greenhouse Gas (GHG) Tailoring Rule that sets thresholds for GHG emissions from large stationary sources. The new GHG emissions thresholds for large stationary sources define when permits under the New Source Review Prevention of PSD and Title V Operating Permit programs are required for new and existing industrial facilities. Beginning January 2, 2011, large industrial facilities that have CAA permits for non-GHG emissions must also include GHGs in these permits. Beginning July 1, 2011, all new construction or renovations that increase GHG emissions by 75,000 tons of carbon dioxide or equivalent per year or more will be required to obtain construction permits for GHG emissions. Operating permits will be needed by all sources that emit GHGs above 75,000 tons of carbon dioxide or equivalent per year beginning in July 2011.

Health and Safety

Human health and safety relates to workers' health and safety during demolition or construction of facilities, or applies to work conditions during operations of a facility that could expose workers to conditions that pose a health or safety risk. The Federal Occupational Safety and Health Administration (OSHA) issues standards to protect persons from such risks, and the DOD and state and local jurisdictions issue guidance to comply with these OSHA standards. Safety also can refer to safe operations of aircraft or other equipment.

AFI 91-301, *Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program*, implements Air Force Policy Directive (AFPD) 91-3, *Occupational Safety and Health*, by outlining the AFOSH Program. The purpose of the AFOSH Program is to minimize loss of USAF resources and to protect USAF personnel from occupational deaths, injuries, or illnesses by managing risks. In conjunction with the USAF Mishap Prevention Program, these standards ensure all USAF workplaces meet Federal safety and health requirements.

AFI 91-202, *USAF Mishap Prevention Program*, implements AFPD 91-2, *Safety Programs*. It establishes mishap prevention program requirements (including the Bird/Wildlife Aircraft Strike Hazard Program), assigns responsibilities for program elements, and contains program management information.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (April 23, 1997), directs Federal agencies to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children. Federal agencies must also ensure that their policies, programs, activities, and standards address disproportionate risks to children that result from environmental health or safety risks.

Geology and Soil Resources

Recognizing that millions of acres per year of prime farmland are lost to development, Congress passed the Farmland Protection Policy Act (FPPA) to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland (7 CFR Part 658). Prime farmland is described as soils that have a combination of soil and landscape properties that make them highly suitable for cropland, such as high inherent fertility, good water-holding capacity, and deep or thick effective rooting zones, and that are not subject to periodic flooding. Under the FPPA, agencies are encouraged to conserve prime or unique farmlands when alternatives are practicable. Some activities that are not subject to the FPPA include Federal permitting and licensing, projects on land already in urban development or used for water storage, construction for national defense purposes, or construction of new minor secondary structures such as a garage or storage shed.

Water Resources

The Clean Water Act (CWA) of 1977 is an amendment to the Federal Water Pollution Control Act of 1972, is administered by USEPA, and sets the basic structure for regulating discharges of pollutants into waters of the United States. The CWA requires USEPA to establish water quality standards for specified contaminants in surface waters and forbids the discharge of pollutants from a point source into navigable waters without a National Pollutant Discharge Elimination System (NPDES) permit. NPDES permits are issued by USEPA or the appropriate state if it has assumed responsibility. Section 404 of the CWA establishes a Federal program to regulate the discharge of dredge and fill material into waters of the United States. Section 404 permits are issued by the U.S. Army Corps of Engineers (USACE). Waters of the United States include interstate and intrastate lakes, rivers, streams, and wetlands that are used for commerce, recreation, industry, sources of fish, and other purposes. The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Each agency should consider the impact on water quality from actions such as the discharge of dredge or fill material into waters of the United States from construction, or the discharge of pollutants as a result of facility occupation.

Section 303(d) of the CWA requires states and the USEPA to identify waters not meeting state water quality standards and to develop Total Maximum Daily Loads (TMDLs). A TMDL is the maximum amount of a pollutant that a waterbody can receive and still be in compliance with state water quality standards. After determining TMDLs for impaired waters, states are required to identify all point and nonpoint sources of pollution in a watershed that are contributing to the impairment and to develop an implementation plan that will allocate reductions to each source to meet the state standards. The TMDL program is currently the Nation's most comprehensive attempt to restore and improve water quality. The TMDL program does not explicitly require the protection of riparian areas. However, implementation of the TMDL plans typically calls for restoration of riparian areas as one of the required management measures for achieving reductions in nonpoint source pollutant loadings.

The Safe Drinking Water Act (SDWA) of 1974 establishes a Federal program to monitor and increase the safety of all commercially and publicly supplied drinking water. Congress amended the SDWA in 1986, mandating dramatic changes in nationwide safeguards for drinking water and establishing new Federal enforcement responsibility on the part of USEPA. The 1986 amendments to the SDWA require USEPA to establish Maximum Contaminant Levels (MCLs), Maximum Contaminant Level Goals (MCLGs), and Best Available Technology (BAT) treatment techniques for organic, inorganic, radioactive, and microbial contaminants; and turbidity. MCLGs are maximum concentrations below which no negative human health effects are known to exist. The 1996 amendments set current Federal MCLs, MCLGs, and BATs for organic, inorganic, microbiological, and radiological contaminants in public drinking water supplies.

The Wild and Scenic Rivers Act of 1968 provides for a wild and scenic river system by recognizing the remarkable values of specific rivers of the Nation. These selected rivers and their immediate environment are preserved in a free-flowing condition, without dams or other construction. The policy not only protects the water quality of the selected rivers but also provides for the enjoyment of present and future generations. Any river in a free-flowing condition is eligible for inclusion, and can be authorized as such by an Act of Congress, an act of state legislature, or by the Secretary of the Interior upon the recommendation of the governor of the state(s) through which the river flows.

EO 11988, *Floodplain Management* (May 24, 1977), directs agencies to consider alternatives to avoid adverse effects and incompatible development in floodplains. An agency may locate a facility in a floodplain if the head of the agency finds there is no practicable alternative. If it is found there is no practicable alternative, the agency must minimize potential harm to the floodplain, and circulate a notice explaining why the action is to be located in the floodplain prior to taking action. Finally, new

construction in a floodplain must apply accepted floodproofing and flood protection to include elevating structures above the base flood level rather than filling in land.

EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (October 5, 2009), directed the USEPA to issue guidance on Section 438 of the Energy Independence and Security Act (EISA). The EISA establishes into law new storm water design requirements for Federal construction projects that disturb a footprint of greater than 5,000 square feet of land. Under these requirements, predevelopment site hydrology must be maintained or restored to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow. Predevelopment hydrology would be calculated and site design would incorporate storm water retention and reuse technologies to the maximum extent technically feasible. Post-construction analyses will be conducted to evaluate the effectiveness of the as-built storm water reduction features. These regulations are applicable to DOD Unified Facilities Criteria. Additional guidance is provided in the USEPA's *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act*.

EO 13514 also requires Federal agencies to improve water efficiency and management by reducing potable water consumption intensity by 2 percent annually, or by 26 percent, by Fiscal Year (FY) 2020, relative to a FY 2007 baseline. Furthermore, Federal agencies must also reduce agency industrial, landscaping, and agricultural water consumption by 2 percent annually, or 20 percent, by FY 2020, relative to a FY 2010 baseline.

EO 13547, *Stewardship of the Ocean, Our Coasts, and the Great Lakes* (July 19, 2010), establishes a national policy to ensure the protection, maintenance, and restoration of the health of ocean, coastal, and Great Lakes ecosystems and resources; enhance the sustainability of ocean and coastal economies; preserve our maritime heritage; support sustainable uses and access; provide for adaptive management to enhance our understanding of and capacity to respond to climate change and ocean acidification; and coordinate with our national security and foreign policy interests.

Biological Resources

The Endangered Species Act (ESA) of 1973 establishes a Federal program to conserve, protect, and restore threatened and endangered plants and animals and their habitats. The ESA specifically charges Federal agencies with the responsibility of using their authority to conserve threatened and endangered species. All Federal agencies must ensure any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction of critical habitat for these species, unless the agency has been granted an exemption. The Secretary of the Interior, using the best available scientific data, determines which species are officially endangered or threatened, and the U.S. Fish and Wildlife Service (USFWS) maintains the list. A list of Federal endangered species can be obtained from the Endangered Species Division, USFWS (703-358-2171). States might also have their own lists of threatened and endangered species which can be obtained by calling the appropriate State Fish and Wildlife office. Some species also have laws specifically for their protection (e.g., Bald Eagle Protection Act).

The Migratory Bird Treaty Act (MBTA) of 1918, as amended, implements treaties and conventions between the United States, Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Unless otherwise permitted by regulations, the MBTA makes it unlawful to pursue, hunt, take, capture, or kill; attempt to take, capture, or kill; possess; offer to or sell, barter, purchase, or deliver; or cause to be shipped, exported, imported, transported, carried, or received any migratory bird, part, nest, egg, or product, manufactured or not. The MBTA also makes it unlawful to ship, transport, or carry from one state, territory, or district to another; or through a foreign country, any bird, part, nest, or

egg that was captured, killed, taken, shipped, transported, or carried contrary to the laws from where it was obtained; and import from Canada any bird, part, nest, or egg obtained contrary to the laws of the province from which it was obtained. The U.S. Department of the Interior has authority to arrest, with or without a warrant, a person violating the MBTA.

The Sikes Act (16 United States Code [U.S.C.] 670a-670o, 74 Stat. 1052), as amended, Public Law (P.L.) 86-797, approved September 15, 1960, provides for cooperation by the Departments of the Interior and Defense with state agencies in planning, development, and maintenance of fish and wildlife resources on military reservations throughout the United States. In November 1997, the Sikes Act was amended via the Sikes Act Improvement Amendment (P.L. 105-85, Division B, Title XXIX) to require the Secretary of Defense to carry out a program to provide for the conservation and rehabilitation of natural resources on military installations. To facilitate this program, the amendments require the Secretaries of the military departments to prepare and implement Integrated Natural Resources Management Plans (INRMPs) for each military installation in the United States unless the absence of significant natural resources on a particular installation makes preparation of a plan for the installation inappropriate. INRMPs must be reviewed by the USFWS and applicable states every 5 years. The National Defense Authorization Act of 2004 modified Section 4(a) (3) of the ESA to preclude the designation of critical habitat on DOD lands that are subject to an INRMP, if the Secretary of the Interior determines in writing that such a plan provides a benefit to the species for which critical habitat is proposed for designation.

EO 11514, *Protection and Enhancement of Environmental Quality* (March 5, 1970), states that the President, with assistance from the Council on Environmental Quality (CEQ), will lead a national effort to provide leadership in protecting and enhancing the environment for the purpose of sustaining and enriching human life. Federal agencies are directed to meet national environmental goals through their policies, programs, and plans. Agencies should also continually monitor and evaluate their activities to protect and enhance the quality of the environment. Consistent with NEPA, agencies are directed to share information about existing or potential environmental problems with all interested parties, including the public, in order to obtain their views.

EO 11990, *Protection of Wetlands* (May 24, 1977), directs agencies to consider alternatives to avoid adverse effects and incompatible development in wetlands. Federal agencies are to avoid new construction in wetlands, unless the agency finds there is no practicable alternative to construction in the wetland, and the proposed construction incorporates all possible measures to limit harm to the wetland. Agencies should use economic and environmental data, agency mission statements, and any other pertinent information when deciding whether or not to build in wetlands. EO 11990 directs each agency to provide for early public review of plans for construction in wetlands.

EO 13186, *Conservation of Migratory Birds* (January 10, 2001), creates a more comprehensive strategy for the conservation of migratory birds by the Federal government. EO 13186 provides a specific framework for the Federal government's compliance with its treaty obligations to Canada, Mexico, Russia, and Japan. EO 13186 provides broad guidelines on conservation responsibilities and requires the development of more detailed guidance in a Memorandum of Understanding (MOU). EO 13186 will be coordinated and implemented by the USFWS. The MOU will outline how Federal agencies will promote conservation of migratory birds. EO 13186 requires the support of various conservation planning efforts already in progress; incorporation of bird conservation considerations into agency planning, including NEPA analyses; and reporting annually on the level of take of migratory birds.

Cultural Resources

The American Indian Religious Freedom Act of 1978 and Amendments of 1994 recognize that freedom of religion for all people is an inherent right, and traditional American Indian religions are an

indispensable and irreplaceable part of American Indian life. It also recognized the lack of Federal policy on this issue and made it the policy of the United States to protect and preserve the inherent right of religious freedom for Native Americans. The 1994 Amendments provide clear legal protection for the religious use of peyote cactus as a religious sacrament. Federal agencies are responsible for evaluating their actions and policies to determine if changes should be made to protect and preserve the religious cultural rights and practices of Native Americans. These evaluations must be made in consultation with native traditional religious leaders.

The Archaeological Resource Protection Act (ARPA) of 1979 protects archaeological resources on public and American Indian lands. It provides felony-level penalties for the unauthorized excavation, removal, damage, alteration, or defacement of any archaeological resource, defined as material remains of past human life or activities which are at least 100 years old. Before archaeological resources are excavated or removed from public lands, the Federal land manager must issue a permit detailing the time, scope, location, and specific purpose of the proposed work. ARPA also fosters the exchange of information about archaeological resources between governmental agencies, the professional archaeological community, and private individuals. ARPA is implemented by regulations found in 43 CFR Part 7.

The National Historic Preservation Act (NHPA) of 1966 sets forth national policy to identify and preserve properties of state, local, and national significance. The NHPA establishes the Advisory Council on Historic Preservation (ACHP), State Historic Preservation Officers (SHPOs), and the National Register of Historic Places (NRHP). The ACHP advises the President, Congress, and Federal agencies on historic preservation issues. Section 106 of the NHPA directs Federal agencies to take into account effects of their undertakings (actions and authorizations) on properties included in or eligible for the NRHP. Section 110 sets inventory, nomination, protection, and preservation responsibilities for federally owned cultural properties. Section 106 of the act is implemented by regulations of the ACHP, 36 CFR Part 800. Agencies should coordinate studies and documents prepared under Section 106 with NEPA where appropriate. However, NEPA and NHPA are separate statutes and compliance with one does not constitute compliance with the other. For example, actions which qualify for a categorical exclusion under NEPA might still require Section 106 review under NHPA. It is the responsibility of the agency official to identify properties in the area of potential effects, and whether they are included or eligible for inclusion in the NRHP. Section 110 of the NHPA requires Federal agencies to identify, evaluate, and nominate historic property under agency control to the NRHP.

The Native American Graves Protection and Repatriation Act of 1990 establishes rights of American Indian tribes to claim ownership of certain “cultural items,” defined as Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony, held or controlled by Federal agencies. Cultural items discovered on Federal or tribal lands are, in order of primacy, the property of lineal descendants, if these can be determined, and then the tribe owning the land where the items were discovered or the tribe with the closest cultural affiliation with the items. Discoveries of cultural items on Federal or tribal land must be reported to the appropriate American Indian tribe and the Federal agency with jurisdiction over the land. If the discovery is made as a result of a land use, activity in the area must stop and the items must be protected pending the outcome of consultation with the affiliated tribe.

EO 11593, *Protection and Enhancement of the Cultural Environment* (May 13, 1971), directs the Federal government to provide leadership in the preservation, restoration, and maintenance of the historic and cultural environment. Federal agencies are required to locate and evaluate all Federal sites under their jurisdiction or control which might qualify for listing on the NRHP. Agencies must allow the ACHP to comment on the alteration, demolition, sale, or transfer of property which is likely to meet the criteria for listing as determined by the Secretary of the Interior in consultation with the SHPO. Agencies must also initiate procedures to maintain federally owned sites listed on the NRHP.

EO 13007, *Indian Sacred Sites* (May 24, 1996), provides that agencies managing Federal lands, to the extent practicable, permitted by law, and not inconsistent with agency functions, shall accommodate American Indian religious practitioners' access to and ceremonial use of American Indian sacred sites, shall avoid adversely affecting the physical integrity of such sites, and shall maintain the confidentiality of such sites. Federal agencies are responsible for informing tribes of proposed actions that could restrict future access to or ceremonial use of, or adversely affect the physical integrity of, sacred sites.

EO 13175, *Consultation and Coordination with Indian Tribal Governments* (November 6, 2000), was issued to provide for regular and meaningful consultation and collaboration with Native American tribal officials in the development of Federal policies that have tribal implications, and to strengthen the United States government-to-government relationships with Native American tribes. EO 13175 recognizes the following fundamental principles: Native American tribes exercise inherent sovereignty over their lands and members, the United States government has a unique trust relationship with Native American tribes and deals with them on a government-to-government basis, and Native American tribes have the right to self-government and self-determination.

EO 13287, *Preserve America* (March 3, 2003), orders Federal agencies to take a leadership role in protection, enhancement, and contemporary use of historic properties owned by the Federal government, and promote intergovernmental cooperation and partnerships for preservation and use of historic properties. EO 13287 established new accountability for agencies with respect to inventories and stewardship.

Socioeconomics and Environmental Justice

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994), directs Federal agencies to make achieving environmental justice part of their mission. Agencies must identify and address the adverse human health or environmental effects that its activities have on minority and low-income populations, and develop agencywide environmental justice strategies. The strategy must list "programs, policies, planning and public participation processes, enforcement, and/or rulemakings related to human health or the environment that should be revised to promote enforcement of all health and environmental statutes in areas with minority populations and low-income populations, ensure greater public participation, improve research and data collection relating to the health of and environment of minority populations and low-income populations, and identify differential patterns of consumption of natural resources among minority populations and low-income populations." A copy of the strategy and progress reports must be provided to the Federal Working Group on Environmental Justice. Responsibility for compliance with EO 12898 is with each Federal agency.

Hazardous Materials and Waste

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 authorizes USEPA to respond to spills and other releases of hazardous substances to the environment, and authorizes the National Oil and Hazardous Substances Pollution Contingency Plan. CERCLA also provides a Federal "Superfund" to respond to emergencies immediately. Although the "Superfund" provides funds for cleanup of sites where potentially responsible parties cannot be identified, USEPA is authorized to recover funds through damages collected from responsible parties. This funding process places the economic burden for cleanup on polluters. Section 120(h) of CERCLA requires Federal agencies to notify prospective buyers of contaminated Federal properties about the type, quantity, and location of hazardous substances that would be present.

The Pollution Prevention Act of 1990 encourages manufacturers to avoid the generation of pollution by modifying equipment and processes; redesigning products; substituting raw materials; and making improvements in management techniques, training, and inventory control. Consistent with pollution prevention principles, EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* (January 24, 2007 [revoking EO 13148]), sets a goal for all Federal agencies to promote environmental practices, including acquisition of biobased, environmentally preferable, energy-efficient, water-efficient, and recycled-content products; and use of paper of at least 30 percent post-consumer fiber content. In addition, EO 13423 sets a goal that requires Federal agencies to ensure that they reduce the quantity of toxic and hazardous chemicals and materials acquired, used, or disposed of; increase diversion of solid waste, as appropriate; and maintain cost-effective waste prevention and recycling programs at their facilities. Additionally, in *Federal Register* Volume 58 Number 18 (January 29, 1993), CEQ provides guidance to Federal agencies on how to “incorporate pollution prevention principles, techniques, and mechanisms into their planning and decisionmaking processes and to evaluate and report those efforts, as appropriate, in documents pursuant to NEPA.”

The Resource Conservation and Recovery Act (RCRA) of 1976 is an amendment to the Solid Waste Disposal Act. RCRA authorizes USEPA to provide for “cradle-to-grave” management of hazardous waste and sets a framework for the management of nonhazardous municipal solid waste. Under RCRA, hazardous waste is controlled from generation to disposal through tracking and permitting systems, and restrictions and controls on the placement of waste on or into the land. Under RCRA, a waste is defined as hazardous if it is ignitable, corrosive, reactive, toxic, or listed by USEPA as being hazardous. With the Hazardous and Solid Waste Amendments (HSWA) of 1984, Congress targeted stricter standards for waste disposal and encouraged pollution prevention by prohibiting the land disposal of particular wastes. The HSWA strengthens control of both hazardous and nonhazardous waste and emphasizes the prevention of pollution of groundwater.

The Superfund Amendments and Reauthorization Act (SARA) of 1986 mandates strong clean-up standards and authorizes USEPA to use a variety of incentives to encourage settlements. Title III of SARA authorizes the Emergency Planning and Community Right to Know Act (EPCRA), which requires facility operators with “hazardous substances” or “extremely hazardous substances” to prepare comprehensive emergency plans and to report accidental releases. If a Federal agency acquires a contaminated site, it can be held liable for cleanup as the property owner/operator. A Federal agency can also incur liability if it leases a property, as the courts have found lessees liable as “owners.” However, if the agency exercises due diligence by conducting a Phase I Environmental Site Assessment, it can claim the “innocent purchaser” defense under CERCLA. According to Title 42 U.S.C. 9601(35), the current owner/operator must show it undertook “all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice” before buying the property to use this defense.

The Toxic Substance Control Act (TSCA) of 1976 consists of four titles. Title I established requirements and authorities to identify and control toxic chemical hazards to human health and the environment. TSCA authorized USEPA to gather information on chemical risks, require companies to test chemicals for toxic effects, and regulate chemicals with unreasonable risk. TSCA also singled out polychlorinated biphenyls (PCBs) for regulation, and, as a result, PCBs are being phased out. PCBs are persistent when released into the environment and accumulate in the tissues of living organisms. They have been shown to cause adverse health effects on laboratory animals and could cause adverse health effects in humans. TSCA and its regulations govern the manufacture, processing, distribution, use, marking, storage, disposal, clean-up, and release reporting requirements for numerous chemicals like PCBs. TSCA Title II provides statutory framework for “Asbestos Hazard Emergency Response,” which applies only to schools. TSCA Title III, “Indoor Radon Abatement,” states indoor air in buildings of the United States should be as free of radon as the outside ambient air. Federal agencies are required to conduct studies on

the extent of radon contamination in buildings they own. TSCA Title IV, “Lead Exposure Reduction,” directs Federal agencies to “conduct a comprehensive program to promote safe, effective, and affordable monitoring, detection, and abatement of lead-based paint and other lead exposure hazards.” Further, any Federal agency having jurisdiction over a property or facility must comply with all Federal, state, interstate, and local requirements concerning lead-based paint.

Energy

The Energy Policy Act (EPA) of 2005, P.L. 109-58, amended portions of the National Energy Conservation Policy Act and established energy management goals for Federal facilities and fleets. Section 109 of EPA directs that new Federal buildings (commercial or residential) be designed 30 percent below American Society of Heating, Refrigerating, and Air-Conditioning Engineers standards or the International Energy Code. Section 109 also includes the application of sustainable design principles for new buildings and requires Federal agencies to identify new buildings in their budget requests that meet or exceed the standards. Section 203 of EPA requires that all Federal agencies’ renewable electricity consumption meet or exceed 3 percent from FY 2007 through FY 2009, with increases to at least 5 percent in FY 2010 through FY 2012 and 7.5 percent in FY 2013 and thereafter. Section 203 also establishes a double credit bonus for Federal agencies if renewable electricity is produced onsite at a Federal facility, on Federal lands, or on Native American lands. Section 204 of EPA establishes a photovoltaic energy commercialization program for Federal buildings.

EO 13514, *Federal Leadership In Environmental, Energy, And Economic Performance* (dated October 5, 2009), directs Federal agencies to improve water use efficiency and management; implement high performance sustainable Federal building design, construction, operation and management; and advance regional and local integrated planning by identifying and analyzing impacts from energy usage and alternative energy sources. EO 13514 also directs Federal agencies to prepare and implement a Strategic Sustainability Performance Plan to manage its greenhouse gas emissions, water use, pollution prevention, regional development and transportation planning, sustainable building design and promote sustainability in its acquisition of goods and services. Section 2(g) requires new construction, major renovation, or repair and alteration of buildings to comply with the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings. The CEQ regulations at 40 CFR 1502.16(e) directs agencies to consider the energy requirements and conservation potential of various alternatives and mitigation measures.

Section 503(b) of EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, instructs Federal agencies to conduct their environmental, transportation, and energy-related activities under the law in support of their respective missions in an environmentally, economically, and fiscally sound, integrated, continuously improving, efficient, and sustainable manner. EO 13423 sets goals in energy efficiency, acquisition, renewable energy, toxic chemical reduction, recycling, sustainable buildings, electronics stewardship, fleets, and water conservation. Sustainable design measures such as the use of “green” technology (e.g., photovoltaic panels, solar collection, heat recovery systems, wind turbines, green roofs, and habitat-oriented storm water management) would be incorporated where practicable.

APPENDIX C

**INTERAGENCY AND INTERGOVERNMENTAL COORDINATION
FOR ENVIRONMENTAL PLANNING CORRESPONDENCE (IICEP) AND PUBLIC
REVIEW MATERIALS**

IICEP Distribution List

The Draft Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) were made available to the agencies listed below during the 30-day review period. A copy of the IICEP letter and comments received are included in this appendix.

Mr. Dale Frink, P.E., State Engineer
North Dakota State Water Commission
900 East Boulevard Avenue, Dept 770
Bismarck, ND 58505-0850

Mr. Jeff Towner
U.S. Fish and Wildlife Service
North Dakota Field Office
3425 Miriam Avenue
Bismarck, ND 58501-7926

Terry Steinwand, Commissioner
North Dakota Game and Fish
100 North Bismarck Expressway
Bismarck, ND 58505-5095

Mr. Merlan E. Paaverud, Jr.
State Historic Preservation Officer
State Historical Society of North Dakota
612 East Boulevard Avenue
Bismarck, ND 58505-0830

Dr. Terry Dwelle, State Health Officer
North Dakota Department of Health
600 East Boulevard Avenue
Department 301
Bismarck, ND 58505-0200

Senator Kent Conrad
530 Hart Senate Office Building
United States Senate
Washington, DC 20510-3403

Senator John Hoeven
G11 Dirksen Senate Office Building
Washington DC, 20510

Congressman Rick Berg
323 Cannon HOB
Washington, DC 20515

USEPA Region 8
1595 Wynkoop St
Denver CO 80202-1129

Dept of Energy
Western Area Power Administration
ND Maintenance Office
PO Box 1173
Bismarck ND 58502-1173

Division of Community Services
ND Dept. of Commerce
1600 E Century Ave., Suite 2
PO Box 2057
Bismarck, ND 58502-2057

Tribal Historic Preservation Officer
Indian Affairs Commission
600 East Boulevard Avenue #316
Bismarck, ND 58505-0300

Bismarck Regulatory Office
U.S. Army Corps of Engineers
1513 South 12th Street
Bismarck, ND 58504

Minot Public Library
516 2nd Avenue SW
Minot, ND 58701

The Base Library
210 Missile Avenue
Building 156, Suite 1
Minot AFB, ND 58705

IICEP Distribution Letter



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 5TH MISSION SUPPORT GROUP (AFGSC)
MINOT AIR FORCE BASE NORTH DAKOTA

22 March 2011

MEMORANDUM FOR SEE IICEP DISTRIBUTION

FROM: 5 CES/CEAN
320 Peacekeeper Place
Minot AFB ND 58705-5001

SUBJECT: Environmental Assessment Addressing the Privatization of Military Family Housing at Minot Air Force Base, North Dakota

1. The Air Force Global Strike Command (AFGSC) has prepared a *Draft Environmental Assessment (EA) Addressing the Privatization of Military Family Housing at Minot Air Force Base (AFB), North Dakota*. The Proposed Action is to convey military family housing units, grant leases of land, and transfer responsibility for providing housing at Minot AFB to a private developer so that, through construction, demolition, and renovation, the end-state total would be 1,606 housing units. The Draft EA is included with this correspondence as Attachment 1.

2. The environmental impact analysis process for the Proposed Action and the No Action Alternative is being conducted by the AFGSC in accordance with the Council on Environmental Quality guidelines pursuant to the requirements of the National Environmental Policy Act of 1969. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation by reviewing the attached Draft EA and solicit your comments concerning the proposal and any potential environmental consequences. Please provide written comments or information regarding the Proposed Action at your earliest convenience but no later than 30 days from the receipt of this letter. Also enclosed is the distribution list of those Federal, state, and local agencies that have been contacted. If there are any additional agencies that you feel should review and comment on the proposed activities, please include them in your distribution of this letter and the attached materials.

3. Please provide any comments or questions directly to Ms. Janice Hoke by mail: 5 CES/CEACH, 164 Summit Drive, Minot AFB, North Dakota 58705-5006; by telephone: 701-723-7679; or by email; Janice.Hoke@minot.af.mil within 30 days of the date of this correspondence.


RENETTA J. PEARSON, GS-14, DAF
Deputy Base Civil Engineer

Attachments:

1. Draft EA
2. IICEP Distribution List

Agency Comment: North Dakota Game and Fish Department

Hoke, Janice G CTR USAF AFGSC 5 CES/CEACH

From: Schumacher, John D. [jdschumacher@nd.gov]
Sent: Tuesday, April 05, 2011 5:01 PM
To: Hoke, Janice G CTR USAF AFGSC 5 CES/CEACH
Subject: Privatization of Military Family Housing @ Minot AFB

Ms. Hoke,

The North Dakota Game and Fish Department has reviewed this document for wildlife concerns. We do not believe this project will have any significant adverse effects on wildlife or wildlife habitat, including endangered species, based on the information provided.

JOHN SCHUMACHER

RESOURCE BIOLOGIST

ND GAME AND FISH DEPT

701.328.6321

Agency Comment: North Dakota State Historic Preservation Office



STATE
HISTORICAL
SOCIETY
OF NORTH DAKOTA

Jack Dalrymple
Governor of North Dakota

North Dakota
State Historical Board

Chester E. Nelson, Jr.
Bismarck - President

Gerald Gerntholtz
Valley City - Vice President

Richard Kloubec
Fargo - Secretary

Albert I. Berger
Grand Forks

Calvin Ginnell
New Town

Diane K. Larson
Bismarck

A. Rufe Todd III
Jamestown

Sara Otis Coleman
Dissanor
Tourism Division

Kelly Schmidt
State Treasurer

Alvin A. Jaeger
Secretary of State

Mark A. Zimmerman
Director
Parks and Recreation Department

Francis Ziegler
Director
Department of Transportation

Merlan E. Paaverud, Jr.
Director

Accredited by the
American Association
of Museums since 1986

April 7, 2011

Ms. Janice Hoke
5 CES/CEACH
164 Summit Drive
Minot AFB, North Dakota 58705-5006

ND SHPO 11-1030: Draft EA Addressing the Privatization of Military Family
Housing at Minot Air Force Base, North Dakota

Dear Ms. Hoke,

We reviewed ND SHPO 11-1030: Draft EA Addressing the Privatization of Military
Family Housing at Minot Air Force Base, North Dakota, and concur with a "No
Historic Properties Affected" determination, provided the project remains as described
in the Draft EA document of the same name.

Thank you for the opportunity to review this project. If you have any questions please
contact Susan Quinnell, at (701) 328-3576 or squinnell@nd.gov. Thank you for the
excellent documentation package, and the opportunity to review.

Sincerely,

Merlan E. Paaverud, Jr.
State Historic Preservation Officer (North Dakota)

Agency Comment: U.S. Fish and Wildlife Service



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 6TH MISSION SUPPORT GROUP (AFGSC)
MINOT AIR FORCE BASE NORTH DAKOTA

22 March 2011

MEMORANDUM FOR SEE IICEP DISTRIBUTION

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3. Please provide any comments or questions directly to Ms. Janice Hoke by mail: 5 CES/CEACH, 164 Summit Drive, Minot AFB, North Dakota 58705-5006; by telephone: 701-723-7679; or by email; Janice.Hoke@minot.af.mil within 30 days of the date of this correspondence.

Attachments:

1. Draft EA
2. IICEP Distribution List

U.S. FISH AND WILDLIFE SERVICE	
ECOLOGICAL SERVICES	
ND FIELD OFFICE	
Project as described will have no significant impact on fish and wildlife resources. No endangered or threatened species are known to occupy the project area. IF PROJECT DESIGN CHANGES ARE MADE, PLEASE SUBMIT PLANS FOR REVIEW.	
4/7/11	Jeffrey K. Towner
Date	Jeffrey K. Towner Field Supervisor

Agency Comment: North Dakota Department of Commerce



Community Services Economic Development & Finance Tourism Workforce Development

April 4, 2011

Janice Hoke
Dept. of the Air Force
5 CES/CEACH
164 Summit Drive
Minot AFB, ND 58795-5006

"Letter of Clearance" In Conformance with the North Dakota Federal Program Review System -
State Application Identifier No.: ND110404-0094

Dear Ms. Hoke:

SUBJECT: Draft Environmental Assessment Addressing the Privatization of Military Family
Housing at Minot AFB

The above referenced Draft EA has been reviewed through the North Dakota Federal Program Review Process. As a result of the review, clearance is given to the project only with respect to this consultation process.

If the proposed project changes in duration, scope, description, budget, location or area of impact, from the project description submitted for review, then it is necessary to submit a copy of the completed application to this office for further review.

We also request the opportunity for complete review of applications for renewal or continuation grants within one year after the date of this letter.

Please use the above SAL number for reference to the above project with this office. Your continued cooperation in the review process is much appreciated.

Sincerely,

A handwritten signature in blue ink that reads "James R. Boyd".

James R. Boyd
Manager of Governmental Services
Division of Community Services

bb

"We lead North Dakota's efforts to attract, retain and expand wealth."

1600 E. Century Avenue, Suite 2 • P.O. Box 2057 • Bismarck, ND 58502-2057
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Relay North Dakota: 1-800-366-6888 TTY • 1-800-366-6889 Voice

Notice of Availability (NOA) Publication

The Draft EA and FONSI were made available to the general public during the 30-day review period. The NOA was published in the *Minot Daily News* on 4 April 2011. The Draft EA and FONSI were also made available to the general public at two local libraries (Minot Public Library and The Base Library). Copies of the NOA and library notification letters are included in this appendix. No comments were received from the general public during the 30-day review period.

PUBLIC NOTICE
United States Air Force

Notice of Availability
Draft Environmental Assessment Addressing the
Privatization of Military Family Housing at
Minot Air Force Base, North Dakota

Headquarters Air Force Global Strike Command, in conjunction with Minot Air Force Base (AFB), has completed a Draft Environmental Assessment (EA) that evaluates the potential effects of conveying military family housing (MFH) units, granting leases of land, and transferring responsibility for providing housing at Minot AFB to a private developer (the Project Owner). The transition period would begin upon completion of contractual matters initiating the Proposed Action and would last for up to 6 years. During the transition period, the number of available MFH units would be gradually reduced from 1,746 to 1,606 units, but at no time would there be fewer than 1,606 units available. At all times during the transition period, sufficient numbers of MFH units for all eligible pay grades would be maintained.

The analysis considered in detail potential environmental effects of the Proposed Action and the No Action Alternative. The results, as found in the EA, show that the Proposed Action would not have a significant adverse impact on the environment, indicating that a Finding of No Significant Impact would be appropriate. An Environmental Impact Statement would not be necessary to implement the Proposed Action.

Copies of the Draft EA showing the analysis are available for review at the following libraries:

Minot Public Library
516 2nd Avenue SW
Minot, ND
58701
Phone: 701-852-1045

The Base Library
210 Missile Avenue
Building 156, Suite 1
Minot AFB, ND 58705
Phone: 701-723-3344

Written comments on the Draft EA are invited and will be received for 30 days from the publication of this notice. Comments on this document should be provided in writing to:

Ms. Janice Hoke
Attn: MFH Draft EA Comments
5th Civil Engineering Squadron
320 Peacekeeper Place, Building 445
Minot AFB, North Dakota 58705-5006
Email: janice.hoke@minot.af.mil
Telephone: 701-723-7052

30-Day Review Period Library Notification Letters



30 March 2011

Minot Public Library
516 2nd Avenue SW
Minot, ND 58701

Dear Sir or Madam:

The public notice shown below was published in the *Minot Daily News* on **4 April 2011**. Included with this letter is a copy of the Draft Environmental Assessment and Finding of No Significant Impact statement. Please place a copy of this document either on reserve or in the reference section of your library. Members of the public have been invited to review the document at your library until **4 May 2011**. The document should not leave the library.

PUBLIC NOTICE

Notice of Availability

ENVIRONMENTAL ASSESSMENT ADDRESSING THE PRIVATIZATION OF MILITARY FAMILY HOUSING AT MINOT AIR FORCE BASE, NORTH DAKOTA

Headquarters Air Force Global Strike Command, in conjunction with Minot Air Force Base (AFB), has completed a Draft Environmental Assessment (EA) that evaluates the potential effects of conveying military family housing (MFH) units, granting leases of land, and transferring responsibility for providing housing at Minot AFB to a private developer (the Project Owner). The transition period would begin upon completion of contractual matters initiating the Proposed Action and would last for up to 6 years. During the transition period, the number of available MFH units would be gradually reduced from 1,746 to 1,606 units, but at no time would there be fewer than 1,606 units available. At all times during the transition period, sufficient numbers of MFH units for all eligible pay grades would be maintained.

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Copies of the Draft EA showing the analysis are available for review at the following libraries: the Minot Public Library, 516 2nd Avenue SW, Minot, North Dakota 58701; and the Base Library, 210 Missile Avenue, Building 156, Suite 1, Minot AFB, North Dakota 58705. The document is also available on the internet at: <http://www.minot.af.mil/library>.

Written comments on the Draft EA are invited and will be received for 30 days from the publication of this notice. Comments on this document should be provided in writing to Ms. Janice Hoke, Attn: MFH Draft EA Comments, 5th Civil Engineering Squadron, 320 Peacekeeper Place, Building 445, Minot AFB, North Dakota 58705-5006; email: janice.hoke@minot.af.mil; telephone: (701) 723-7052.

If you have any questions, please contact Ms. Elizabeth Vashro at (703) 752-7755, Ext. 139. Thank you.

Sincerely,

A handwritten signature in black ink, appearing to read 'Elizabeth Vashro', is written over a horizontal line.

Elizabeth Vashro
Project Manager
HDR

2751 Prosperity Avenue, Suite 200, Fairfax, Virginia 22031 • (703) 752-7755 • Fax (703) 752-7754

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30 March 2011

The Base Library
210 Missile Avenue
Building 156, Suite 1
Minot AFB, ND 58705

Dear Sir or Madam:

The public notice shown below was published in the *Minot Daily News* on **4 April 2011**. Included with this letter is a copy of the Draft Environmental Assessment and Finding of No Significant Impact statement. Please place a copy of this document either on reserve or in the reference section of your library. Members of the public have been invited to review the document at your library until **4 May 2011**. The document should not leave the library.

PUBLIC NOTICE
Notice of Availability

**ENVIRONMENTAL ASSESSMENT ADDRESSING THE PRIVATIZATION OF MILITARY FAMILY HOUSING
AT MINOT AIR FORCE BASE, NORTH DAKOTA**

Headquarters Air Force Global Strike Command, in conjunction with Minot Air Force Base (AFB), has completed a Draft Environmental Assessment (EA) that evaluates the potential effects of conveying military family housing (MFH) units, granting leases of land, and transferring responsibility for providing housing at Minot AFB to a private developer (the Project Owner). The transition period would begin upon completion of contractual matters initiating the Proposed Action and would last for up to 6 years. During the transition period, the number of available MFH units would be gradually reduced from 1,746 to 1,606 units, but at no time would there be fewer than 1,606 units available. At all times during the transition period, sufficient numbers of MFH units for all eligible pay grades would be maintained.

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Written comments on the Draft EA are invited and will be received for 30 days from the publication of this notice. Comments on this document should be provided in writing to Ms. Janice Hoke, Attn: MFH Draft EA Comments, 5th Civil Engineering Squadron, 320 Peacekeeper Place, Building 445, Minot AFB, North Dakota 58705-5006; email: janice.hoke@minot.af.mil; telephone: (701) 723-7052.

If you have any questions, please contact Ms. Elizabeth Vashro at (703) 752-7755, Ext. 139. Thank you.

Sincerely,

Elizabeth Vashro
Project Manager
HDR

2751 Prosperity Avenue, Suite 200, Fairfax, Virginia 22031 • (703) 752-7755 • Fax (703) 752-7754

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APPENDIX D

REQUIRED AND DESIRED FEATURES FOR PRIVATIZED MINOT AFB MFH UNITS

Required and Desired Features for Privatized Minot AFB MFH Units

New Housing Construction

Design and construction of all new housing units shall provide the following:

General Requirements. Designs and construction shall comply with all applicable codes, standards, and regulations; meet basic requirements described herein; and shall be appropriate to the climate and lifestyle of the area. Designs shall provide innovative design and construction techniques conforming to local market (private-sector) standards for quality housing. The local market area is defined as being within a 60-minute or 20-mile commute (whichever is greater) during peak driving conditions. Best professional judgment shall be exercised in choice of style, type, design, configuration, functional solutions, and materials. Each housing area shall have an identification sign at the entrance of each neighborhood.

Floor Plans. Floor plans shall incorporate orderly arrangement of functions, minimize circulation, and maximize open spaces. Designs shall provide inviting entrances, indoor/outdoor integration, and pleasing interior appearance. Kitchens shall have a modern, well-organized work area with quality fixtures, appliances, and finishes. Layout of bathrooms shall follow modern planning techniques and use quality fixtures. Maximized storage space is an essential element due to the mobility of Air Force families. Interior storage shall include conveniently located and adequately sized cabinets; and coat, linen, pantry, bulk storage, and clothes closets. Exterior storage shall include maximized space for bikes and mowers.

Handicap Accessibility. At least 5 percent of the total end-state number of housing units shall be compliant with the Americans with Disabilities Act (ADA), meaning either handicap accessible, or “readily adaptable” to be accessible, including entrance ramps, bathroom grab bars, and chair lifts. “Accessible” means the units can be approached, entered, and used by physically handicapped people. Modifications shall be accomplished on a high-priority basis when a requirement is identified. The housing units shall comply with the accessibility standards set forth in all applicable Federal, state, or local laws pertaining to accessibility, together with the Fair Housing Act (FHA) and the relevant provisions of the Uniform Federal Accessibility Standards (UFAS) dealing with accessibility. In complying with said authorities, the private developer (the Highest Ranked Offerer [HRO]) shall abide by those provisions that are the most stringent. Should the HRO choose to make the premises “readily adaptable” then the HRO shall bear the cost of making the housing units accessible at its sole expense.

Elevations. Elevation designs shall provide pleasing and interesting appearances, comparable to other quality residential developments currently being built and marketed in the area. The elevations shall be inviting with modulated facades, rooflines, and massing to provide interest. Materials and colors shall be varied to break up facades of larger structures and prevent excessive uniformity among the smaller units.

Energy Efficiency. Design, materials, equipment, and construction methods shall reduce energy and water consumption to current Energy Star criteria. Design features shall include optimizing glass locations and areas; optimizing insulation in exterior walls, ceilings, and between adjoining units; weatherstripping throughout; and minimizing duct leakage. Attention to construction details, exterior fenestration materials, and passive solar energy systems shall be employed wherever possible.

Materials, Equipment, and Finishes. Materials, equipment, and finishes shall be durable, low maintenance, and functional. Choice of finishes shall be aesthetically pleasing with a richness of texture and detailing. Basic quality features include copper potable water plumbing, copper electrical wiring,

dual-pane insulated windows and patio doors, storm doors with screens at main entrances, and overhead lighting in bedrooms and large closets.

Attached Units. Stacked units are not acceptable. No more than six dwelling units per building shall be constructed. Units shall include privacy features including a Sound Transmission Class (STC) rating of 55 between living units.

Parking and Roads. All units shall have provisions for parking two vehicles off-street. Additional parking spaces shall be provided throughout the neighborhoods for guest parking at a rate of one parking space for every two units except for General Officers Quarters (GOQ), Senior Officers Quarters (SOQ), and Prestige units which shall have nearby guest parking available for additional vehicles per unit. All attached units shall have a one-car garage with an automatic door opener. All single-family detached units shall have a two-car garage with an automatic door opener. All roads and turns shall be large enough to allow moving vans, fire trucks, etc. to adequately move around the community as needed, and all roads and parking areas shall have adequate snow stacking capacity and storm drainage.

Privacy. All units shall have patios with screened fencing or landscaping to provide a private area in the rear of each unit. Privacy fencing shall be a minimum of 6 feet tall and encompass at least the patio area.

Window Treatments. The HRO shall provide window coverings (such as mini-blinds) in all units.

Floor Finishes. All units shall have high quality, durable, low-maintenance hard finish flooring in kitchen, informal dining area, wet areas, and high traffic areas. All units shall have carpet in bedrooms and other living areas.

Appliances. All appliances shall be energy-efficient, new, and from an established manufacturer. Each housing unit shall be provided with the following items:

- Combination refrigerator/freezer (minimum 18 cubic feet [ft³] for 2-bedroom units and 21 ft³ for 3-and 4-bedroom units)
- Built-in two-level dishwasher
- Four-burner stove with self-cleaning oven, view window, and vent hood
- Built-in microwave oven
- Garbage disposal
- Carbon monoxide detector
- Interior floor space and connections shall be provided for a full size washer and dryer (electric and natural gas connections)
- Interior floor space and connections for a full-size freezer.

Telephone and Cable. All residential units shall be prewired for cable television (CATV) and telephone jacks. Telephone systems shall be in accordance with those standards set forth by the local telephone company. Each bedroom, living area, and kitchen shall have one phone jack that can accommodate two lines and one cable outlet. The coordination of equipment locations and final design of utilities and services is subject to review by the government.

Mailboxes. The HRO shall provide cluster mailboxes for all units in accordance with U.S. Postal Service regulations. Single mailboxes for the GOQ, SOQ, and Prestige Family Housing units shall be provided.

Utilities. All new utility systems shall be designed and constructed by the HRO. The HRO shall coordinate all tie-in locations with the government. The HRO shall provide for the installation of all utility meters. All newly constructed units must have individual electric and natural gas meters. Utilities shall be connected to a utility provider by the HRO by the end of the Transition Period. The PO shall ensure proper back flow protection is in place for water systems.

Termite Treatment. New foundations shall have soil treated for termites in accordance with state law, to include a certificate of termite treatment by the provider.

Exterior Features. Easily accessible hose bibs and exterior electrical outlets on the front and rear of the house shall be provided. Hidden trash container storage area shall be provided.

Group Desired Community Features

Below are some desired community features of MFH neighborhoods:

- Covered bus shelters
- Community-wide and neighborhood-wide recreational facilities in the MFH areas, including group picnic areas, swimming pools, pavilions, tables, grills, and library space
- Community center/clubhouse with exercise room
- New community features (such as community centers and administrative facilities) designed and constructed so they are capable of achieving “Leadership in Energy and Environmental Design (LEED) for New Construction” Silver certification (additional evaluation credit will be given to Offerors who propose building to LEED Gold or LEED Platinum standards)
- Community center with an indoor playground and splash park
- Tennis courts (preferably lighted)
- Volleyball courts
- Concrete walks or asphalt trails leading to playgrounds, where possible
- Road and trail connectivity among all MFH areas, where possible.

Specific Requirements

In addition to the above General Requirements, proposed designs and construction shall provide the following:

Prestige Family Housing (E-9). Prestige housing may be detached single-family or attached multifamily-type housing. Any Prestige Family Housing units constructed at Minot AFB shall be completed and ready for occupancy prior to the demolition of the existing Prestige Family Housing units. Prestige Housing shall meet at a minimum the following standards:

- A geographically separate location in installation housing
- Two-car garages with automatic door openers and storage space
- Additional off-street parking
- Larger, enhanced patios with privacy screening
- Central air conditioning in all habitable areas
- Carpeted and/or upgraded floor treatments
- Ceiling fans and upgraded mini-blinds or other window treatments
- Upgraded kitchens and appliances

- At least two full bathrooms.

Prestige Housing for all designated key and essential E-9 positions shall have 4-bedrooms. Newly constructed units to be designated for the Command Chiefs, shall be single-family detached units, at least 10 percent larger than the largest E-9 unit.

General Officers Quarters (O-7+). Any housing and associated improvements for General Officers (O-7+) shall be designed and constructed as single-family detached units. The design of any GOQs that are constructed at Minot AFB shall be in conjunction with local architectural and climatic conditions. If any new GOQs are constructed, those units shall be completed and ready for occupancy prior to the demolition of the existing GOQs. Refer to **Table D-1** for the square footage requirements for GOQ units.

Table D-1. GOQ and SOQ Housing Requirements for New Construction

Requirement	Type of Unit	
	Four-bedroom	
	Rank/Grade	
	O-6	O-7 to O-10
Minimum Gross (square feet [ft ²])*	2,110	2,600
Programming Benchmark (ft ²)*	2,520	3,330
Maximum Gross (ft ²)*	2,920	4,060

Note:

* All interior spaces within the exterior faces of exterior walls of housing units with the following areas of exclusion: carports and garages, exterior bulk storage (detached), trash enclosures, porches, terraces, patios, balconies, and entrance stoops.

Two-car garages would be provided for detached homes.

The HRO shall provide quality finishes for the floor, architectural millwork, wall base, walls, ceilings, window treatments and coverings, light fixtures, entryway, staircases (if applicable), cabinetry, countertops, and appliances for each habitable area. The HRO shall also use quality roof materials, exterior wall finishes, exterior window and door finishes, and upscale landscaping.

In addition to standard residential telephone service, the HRO shall supply and install a minimum of two telephone lines, two CATV lines, one fiber optic line, and one Unshielded Twisted Pair (UTP) where available in the local community. The HRO shall also supply associated terminals and distribution boxes to be designated only for government use for each unit. The location within the units shall be the same as for the regular telephone boxes. The government shall own and maintain the terminals, cable, and the distribution box after installation. Telecommunication standard 568A shall apply to dedicated government cable.

Senior Officers Quarters (O-6). Any housing and associated improvements for Senior Officers (O-6) shall be designed and constructed as single-family detached units. If any new SOQs are constructed, those units shall be completed and ready for occupancy prior to the demolition of the existing SOQs. In addition to standard residential telephone service, the HRO shall supply and install a minimum of two telephone lines, two CATV lines, one fiber optic line, and one UTP where available in the local community. The HRO shall also supply associated terminals and distribution boxes to be designated only for government use for each unit. The location within the units shall be the same as for the regular telephone boxes. The government shall own and maintain the terminals, cable, and the distribution box after installation. Telecommunication standard 568A shall apply to dedicated government cable. The

SOQ designs shall provide ample area for entertaining dignitaries and officials. Refer to **Table D-1** for the square footage requirements for SOQs.

Enlisted and Non-Senior Officer Housing (E-1 to E-8 and O-1 to O-5). Any design and construction of Enlisted and Non-Senior Officer Housing units and associated improvements shall be a mixture of multiplex and detached single-family housing. Construction shall be complete within five years of project closing. **Table D-2** shows the type units per grade, broken down by square footage according to the minimum, programming benchmark, and maximum size.

Table D-2. Enlisted and Non-Senior Officer Housing Requirements for New Construction

Requirement	Type of Unit							
	Two-bedroom Modified		Three-bedroom			Four-bedroom		
	Rank/Grade							
	E-1 to E-6	O-1 to O-3	E-1 to E-6	E-7 to E-8 and O-1 to O-3	E-9 and O-4 to O-5	E-1 to E-6	E-7 to E-8 and O-1 to O-3	E-9 and O-4 to O-5
Minimum Gross (ft ²)*	1,330	1,420	1,490	1,670	1,740	1,670	1,800	1,920
Programming Benchmark Gross (ft ²)*	1,480	1,670	1,630	1,860	2,020	1,950	2,150	2,310
Maximum Gross (ft ²)*	1,630	1,920	1,760	2,050	2,300	2,220	2,500	2,700

Note:

* All interior spaces within the exterior faces of exterior walls and center line of party walls (in multiplex units) of housing units, with the following areas of exclusion: garages, exterior bulk storage (detached), trash enclosures, porches, terraces, patios, balconies, and entrance stoops.

Two-car garages would be provided for detached homes and one-car garages for multiplex family units.

Two-Bedroom Modified Units. The HRO shall design and construct two-bedroom modified units with an additional room between 110–120 net ft² to provide flexible living space for residents and would be designed to serve as a family room, bedroom, den, or playroom. The additional room shall include a closet. The two-bedroom modified design shall also include an additional three-quarters-size bathroom between 45 and 50 net ft². The three-quarters-bath shall include, at a minimum, a vanity sink, toilet, and shower.

Desired New Housing Construction Features

The desired features listed below are in descending order of importance.

- Three- and four-bedroom units in lieu of two-bedroom modified units
- Two-car garages with automatic garage door openers and key pads for all units
- Additional square footage above the programming benchmark
- Access to front and rear of unit through house and garage
- More single-family units in lieu of multiplex units

- New units designed and constructed so they are capable of achieving “LEED for Homes” Silver certification (additional evaluation credit will be given to Offerors who propose building to LEED Gold or LEED Platinum standards)
- Reduced number of dwelling units per building
- Walk-in clothes closets
- Double sinks in bathrooms
- Ceiling fans with light fixtures
- Overhead lighting in all rooms, switched at the entry door
- Programmable thermostats.

Renovation

General Requirements. General Requirements for New Construction (as mentioned above) shall be used to the extent possible in the renovation of existing units. If any Prestige, General Officer, or Senior Officer housing is to be renovated, the requirements specified in New Construction as mentioned above shall be followed. **Tables D-3 and D-4** show the type units per grade, broken down by square footage according to the minimum, programming benchmark, and maximum size.

Table D-3. Renovation Size Requirements – Enlisted and Non-Senior Officer Housing

Requirement	Type of Unit							
	Two Bedroom Modified		Three Bedroom			Four Bedroom		
	Rank/Grade							
	E-1 to E-6	O-1 to O-3	E-1 to E-6	E-7 to E-8 and O-1 to O-3	E-9 and O-4 to O-5	E-1 to E-6	E-7 to E-8 and O-1 to O-3	E-9 and O-4 to O-5
Minimum Gross (ft ²)*	1,220	1,300	1,370	1,530	1,590	1,530	1,650	1,760
Benchmark Gross (ft ²)*	1,330	1,420	1,490	1,670	1,740	1,670	1,800	1,920
Maximum Gross (ft ²)*	1,480	1,670	1,630	1,860	2,020	1,950	2,150	2,310

Note:

* All interior spaces within the exterior faces of exterior walls and center line of party walls (in multiplex units) of housing units with the following areas of exclusion: carports and garages, exterior bulk storage (detached), trash enclosures, porches, terraces, patios, balconies and entrance stoops. Any renovated units at Minot shall have an additional 300 GSF of Arctic space.

Garages: 2-car for detached units; 1-car for multi-family units.

Table D-4. Renovation Size Requirements – Senior and General Officer Quarters

Requirement	Type of Unit	
	Four Bedroom	Four Bedroom
	Rank/Grade	
	O-6	O-7 to O-10
Minimum Gross (ft ²)*	1,930	2,380
Benchmark Gross (ft ²)*	2,110	2,600
Maximum Gross (ft ²)*	2,520	3,330

Note:

- * All interior spaces within the exterior faces of exterior walls and center line of party walls (in multiplex units) of housing units with the following areas of exclusion: carports and garages, exterior bulk storage (detached), trash enclosures, porches, terraces, patios, balconies and entrance stoops. Any renovated units at Minot shall have an additional 300 GSF of Arctic space.

The above rows stating “Maximum” gross square footages are furnished only as information on maximum gross square footages applicable to military construction projects, and are not to be construed as an upper limitation on unit gross square footage sizes which would be acceptable under this Solicitation. Offerors may propose units larger than these maximum gross square footage sizes so long as such room patterns and floor areas are generally comparable to similar housing units in the locality concerned.

Desired Renovation Features

Desired features listed below are in descending order of importance.

- Newly constructed units in lieu of renovated units (excluding historic units)
- Additional square footage above the programming benchmark
- Access to front and rear of unit through house and garage
- More single-family units in lieu of multiplex units
- Renovations designed and constructed so they are capable of achieving “LEED for Homes” Silver certification (additional evaluation credit will be given to Offerors who propose building to LEED Gold or LEED Platinum standards)
- Chain-link fences for back yards
- Reduced number of dwelling units per building
- Walk-in clothes closets in master bedrooms in all units
- Double sinks in full bathrooms in all units
- Ceiling fans with light fixtures in all bedrooms and living room in all units
- Overhead lighting in all rooms, switched at the entry door
- Programmable thermostats in all units
- Built-in microwave ovens.

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APPENDIX E

REPRESENTATIVE PHOTOS OF MFH AREAS AT MINOT AFB

Representative Photos of MFH Areas at Minot AFB



North Point



Sunflower Haven



Sunflower Haven



Sunflower Haven



Prairie Rose Estates



Prairie Rose Estates



Prairie Rose Estates



Prairie Rose Estates



Prairie Rose Estates



Prairie Rose Estates



Prairie Rose Estates



Prairie Rose Estates

APPENDIX F

AIR EMISSIONS CALCULATIONS

Air Emissions Calculations

Summary	Summarizes total emissions by calendar year for Privatization of Military Family Housing at Minot Air Force Base, North Dakota
Combustion	Estimates emissions from non-road equipment exhaust.
Fugitive	Estimates particulate emissions from construction activities including earthmoving, vehicle traffic, and windblown dust.
Grading	Estimates the number of days of site preparation, to be used for estimating heavy equipment exhaust and earthmoving dust emissions.
Haul Truck On-Road	Estimates emissions from haul and water trucks delivering materials to the job site.
Construction Commuter	Estimates emissions for construction workers commuting to the site.
AQCR Tier Report	Summarizes total emissions for the State of North Dakota Air Quality Control Region 172 Tier report for 2002, to be used to compare the project to regional emissions.

*Summary
Estimated Emissions for MFH PA at Minot AFB*

Air Quality Emissions from Privatization of Military Family Housing at Minot AFB

	NO _x (ton)	VOC (ton)	CO (ton)	SO ₂ (ton)	PM ₁₀ (ton)	PM _{2.5} (ton)	CO ₂ (ton)
Construction Combustion	19,750	1,498	8,030	0.676	1,249	1,212	2,286,763
Construction Fugitive Dust	--	--	--	--	29,916	1,811	--
Haul and Water Trucks	3,559	2,574	10,459	0.280	4,233	1,101	901,082
Construction Commuter	0.099	0.099	0.892	0.001	0.009	0.006	118,334
TOTAL	23,409	4,171	19,381	0.958	35,407	4,129	3,308,169

Note: Total CY2010 PM_{10/2.5} fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO₂ emissions converted to metric tons = **2,998,695 metric tons**
 State of North Dakota's CO₂ emissions = **52,511,913 metric tons (DOE/EIA 2010)**
 Percent of North Dakota's CO₂ emissions = **0.006% metric tons**

Source: U.S. Department of Energy (DOE)/Energy Information Administration (EIA). 2010. State Carbon Dioxide Emissions Summary for the State of North Dakota. Released 4 February 2010. Available online: <http://www.eia.doe.gov/oiat/1605/state/state_emissions.html>. Accessed 18 March 2010.

Since future year budgets were not readily available, actual 2002 air emissions inventories for the counties were used as an approximation of the regional inventory. Because the Proposed Action is several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

State of North Dakota Air Quality Control Region 172

Year	Point and Area Sources Combined					
	NO _x (tpy)	VOC (tpy)	CO (tpy)	SO ₂ (tpy)	PM ₁₀ (tpy)	PM _{2.5} (tpy)
2002	167,162	41,961	295,198	165,860	355,336	63,216

Source: USEPA-AirData NET Tier Report (<http://www.epa.gov/air/data/geosel.html>). Site visited on 18 March 2010.

Air Emissions from Privatization of Military Family Housing at Minot AFB Determination Significance (Significance Threshold = 10% of regional)

Point and Area Sources Combined					
NO _x (tpy)	VOC (tpy)	CO (tpy)	SO ₂ (tpy)	PM ₁₀ (tpy)	PM _{2.5} (tpy)
167,162	41,961	295,198	165,860	355,336	63,216
23,41	4,17	19,38	0.96	35,41	4,13
0.014%	0.010%	0.007%	0.001%	0.010%	0.007%

Regional Emissions
 % of Regional

Combustion Emissions

Combustion Emissions of VOC, NO_x, SO₂, CO, PM_{2.5}, PM₁₀, and CO₂ due to Construction

General Construction Activities	Area Disturbed	Backup/Assumptions
Construct Community Center/Clubhouse/Splash Park	30,000 ft ²	Assume one centralized Community Center/Clubhouse with indoor playground and splash park (30,000 ft ²).
Construct Storage Facilities for MFH Residents	50,000 ft ²	Assume one storage facility (50,000 ft ²).
Install Utility Lines for new facilities (Community Center/Storage and individual meters)	30,000 ft ²	Assume 10,000 ft long by 3 ft wide.
Construct Pavements for New Community Center and Storage Facility (driveways, sidewalks, vehicular parking areas, and roadways)	108,900 ft ²	Assume 1 acre of pavement for Community Center and 1.5 acres for Storage Facility.
Demolish Existing Pavements in Demolition Areas (driveways, sidewalks, vehicular parking areas, and roadways)	452,806 ft ²	Assume winding way and Coral Court roads and associated sidewalks will be demolished; obtained these areas by GIS analysis. Assumed each MFH driveway is 30 ft. by 20 ft.
Demolish 140 MFH Units, including utility areas	339,573 ft ²	Assume area of MFH units from 95% Design HCP report. Assumed 30 ft. by 3 ft. area per housing unit disturbed for demolishing utilities.
Total MFH Grading Area	1,011,279 ft ²	

Total Building Construction Area: 110,000 ft²
2.5 acres
Total Demolition Area: 792,379 ft²
18.2 acres
Total Pavement Area: 108,900 ft²
2.5 acres
Total Disturbed Area: 1,011,279 ft²
23.2 acres
Construction Duration: 12 months
Annual Construction Activity: 240 days/yr

Conservatively assume work occurs over 12 months at 4 weeks per month, 5 days per week.

Project Combustion
Estimated Emissions for MFHPI at Mind AFB

Emission Factors Used for Construction Equipment

References: Guide to Air Quality Assessment, SMAQMD, 2004; and U.S. EPA NONROAD Emissions Model, Version 2005.0.0
Emission factors are taken from the NONROAD model and were provided to e³M by Larry Landman of the Air Quality and Modeling Center (Landman.Larry@epamail.epa.gov) on 12/14/07. Factors provided are for the weighted average US fleet for CY2007.
Assumptions regarding the type and number of equipment are from SMAQMD Table 3-1 unless otherwise noted.

Grading

Equipment	No. Req. ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)	CO ₂ (lb/day)
Bulldozer	1	13.60	95.742%	5.50	1.02	0.89	0.87	1456.90
Motor Grader	1	9.69	0.73	3.20	0.80	0.66	0.64	1141.65
Water Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Total per 10 acres of activity	3	41.64	2.58	15.71	0.83	2.55	2.47	4941.53

Paving

Equipment	No. Req. ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)	CO ₂ (lb/day)
Paver	1	3.83	0.37	2.06	0.28	0.35	0.34	401.93
Roller	1	4.82	0.44	2.51	0.37	0.43	0.42	536.07
Truck	2	36.71	1.79	14.01	3.27	1.99	1.93	4685.95
Total per 10 acres of activity	4	45.37	2.61	18.58	0.91	2.78	2.69	5623.96

Demolition

Equipment	No. Req. ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)	CO ₂ (lb/day)
Loader	1	13.45	0.99	5.58	0.95	0.93	0.90	1360.10
Haul Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Total per 10 acres of activity	2	31.81	1.89	12.58	0.64	1.92	1.87	3703.07

Building Construction

Equipment ^d	No. Req. ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)	CO ₂ (lb/day)
Stationary								
Generator Set	1	2.38	0.32	1.18	0.15	0.23	0.22	213.06
Industrial Saw	1	2.62	0.32	1.97	0.20	0.32	0.31	291.92
Welder	1	1.12	0.38	1.50	0.08	0.23	0.22	112.39
Mobile (non-road)								
Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Forklift	1	5.34	0.56	3.33	0.40	0.55	0.54	572.24
Crane	1	9.57	0.66	2.39	0.65	0.50	0.49	931.93
Total per 10 acres of activity	6	39.40	3.13	17.38	3.12	2.83	2.74	4464.51

Note: Footnotes for tables are on following page

Architectural Coatings

Equipment	No. Req'd. ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)	CO ₂ (lb/day)
Air Compressor	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77
Total per 10 acres of activity	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77

- The SMAQMD 2004 guidance suggests a default equipment fleet for each activity, assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.
- The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purposes of this worksheet ROG = VOC.
- The NONROAD model contains emissions factors for total HC and for VOC. The factors used here are the VOC factors.
- The NONROAD emission factors assume that the average fuel burned in nonroad trucks is 1100 ppm sulfur. Trucks that would be used for the Proposed Actions will all be fueled by highway grade diesel fuel which cannot exceed 500 ppm sulfur. These estimates therefore over-estimate SO₂ emissions by more than a factor of two.
- Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

PROJECT-SPECIFIC EMISSION FACTOR SUMMARY

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)						
		NO _x	VOC	CO	SO ₂ **	PM ₁₀	PM _{2.5}	CO ₂
Grading Equipment	2	83,282	5,154	31,420	1,666	5,091	4,938	9883,053
Paving Equipment	1	45,367	2,606	18,578	0,907	2,776	2,693	5623,957
Demolition Equipment	2	63,615	3,771	25,168	1,272	3,846	3,731	7406,147
Building Construction	1	39,396	3,130	17,382	3,116	2,829	2,744	4464,512
Air Compressor for Architectural Coating	1	3,574	0,373	1,565	0,251	0,309	0,300	359,773
Architectural Coating**			23,052					

*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.

**Emission factor is from the evaporation of solvents during painting, per "Air Quality Thresholds of Significance", SMAQMD, 1994

Example: SMAQMD Emission Factor for Grading Equipment NO_x = (Total Grading NO_x per 10 acre)/(Equipment Multiplier)

Summary of Input Parameters

	Total Area (ft ²)	Total Area (acres)	Total Days
Grading:	1,011,279	23.22	6
Paving:	108,900	2.50	12
Demolition:	792,379	18.19	455
Building Construction:	80,000	1.84	240
Architectural Coating:	80,000	1.84	20

(from "Grading" worksheet)

(per SMAQMD "Air Quality of Thresholds of Significance", 1994)

NOTE: The 'Total Days' estimate for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19th Edition, for 'Asphaltic Concrete Pavement, Lots and Driveways - 6" stone base', which provides an estimate of square feet paved per day. There is also an estimate for 'Plain Cement Concrete Pavement', however the estimate for asphalt is used because it is more conservative. The 'Total Days' estimate for demolition is calculated by dividing the total number of acres by 0.02 acres/day, which is a factor also derived from the 2005 MEANS reference. This is calculated by averaging the demolition estimates from 'Building Demolition - Small Buildings, Concrete', assuming a height of 30 feet for a two-story building; from 'Building Footings and Foundations Demolition - 6" Thick, Plain Concrete'; and from 'Demolish, Remove Pavement and Curb - Concrete to 6" thick, rod reinforced'. Paving is double-weighted since projects typically involve more paving demolition. The 'Total Days' estimate for building construction is assumed to be 230 days, unless project-specific data is known.

Total Project Emissions by Activity (lbs)

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
Grading Equipment	499.69	30.92	188.52	9.99	30.55	29.63	59,298
Paving	544.41	31.27	222.94	10.89	33.31	32.31	67,487
Demolition	28,929.82	1,714.93	11,445.26	578.60	1,749.19	1,696.71	3,368,042
Building Construction	9,455.12	751.15	4,171.75	747.92	678.97	658.60	1,071,483
Architectural Coatings	71.48	468.50	31.31	5.02	6.19	6.00	7,195
Total Emissions (lbs):	39,500.52	2,996.77	16,059.78	1,352.43	2,498.21	2,423.26	4,573,506

Results: Total Project Annual Emission Rates

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
Total Project Emissions (lbs)	39,500.52	2,996.77	16,059.78	1,352.43	2,498.21	2,423.26	4,573,506
Total Project Emissions (tons)	19.75	1.50	8.03	0.68	1.25	1.21	2,286.75

Project Combustion
Estimated Emissions for MFHPI at Minot AFB

Construction Fugitive Dust Emissions

Construction Fugitive Dust Emission Factors

	Emission Factor	Units	Source
General Construction Activities	0.19 ton PM_{10} /acre-month		MRI 1996; EPA 2001; EPA 2006
New Road Construction	0.42 ton PM_{10} /acre-month		MRI 1996; EPA 2001; EPA 2006

$PM_{2.5}$ Emissions
 $PM_{2.5}$ Multiplier

0.10	(10% of PM_{10} emissions assumed to be $PM_{2.5}$)	EPA 2001; EPA 2006
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Control Efficiency

0.50	(assume 50% control efficiency for PM_{10} and $PM_{2.5}$ emissions)	EPA 2001; EPA 2006
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Project Assumptions

New Roadway Construction (0.42 ton PM_{10} /acre-month)

Duration of Construction Project	12 months
Area	2.5 acres

General Construction Activities (0.19 ton PM_{10} /acre-month)

Duration of Construction Project	12 months
Area	20.7 acres

	Project Emissions (tons/year)			
	PM_{10} uncontrolled	PM_{10} controlled	$PM_{2.5}$ uncontrolled	$PM_{2.5}$ controlled
New Roadway Construction	12.60	6.30	1.26	0.63
General Construction Activities	47.23	23.62	2.36	1.18
Total	59.83	29.92	3.62	1.81

Construction Fugitive Dust Emission Factors

General Construction Activities Emission Factor

0.19 ton PM_{10} /acre-month Source: MRI 1996; EPA 2001; EPA 2006

The area-based emission factor for construction activities is based on a study completed by the Midwest Research Institute (MRI) Improvement of Specific Emission Factors (BACM Project No. 1), March 29, 1996. The MRI study evaluated seven construction projects in Nevada and California (Las Vegas, Coachella Valley, South Coast Air Basin, and the San Joaquin Valley). The study determined an average emission factor of 0.11 ton PM_{10} /acre-month for sites without large-scale outfill operations. A worst-case emission factor of 0.42 ton PM_{10} /acre-month was calculated for sites with active large-scale earth moving operations. The monthly emission factors are based on 168 work-hours per month (MRI 1996). A subsequent MRI Report in 1999, Estimating Particulate Matter Emissions From Construction Operations, calculated the 0.19 ton PM_{10} /acre-month emission factor by applying 25% of the large-scale earthmoving emission factor (0.42 ton PM_{10} /acre-month) and 75% of the average emission factor (0.11 ton PM_{10} /acre-month). The 0.19 ton PM_{10} /acre-month emission factor is referenced by the EPA for non-residential construction activities in recent procedures documents for the National Emission Inventory (EPA 2001; EPA 2006). The 0.19 ton PM_{10} /acre-month emission factor represents a refinement of EPA's original AP-42 area-based total suspended particulate (TSP) emission factor in Section 13.2.3 Heavy Construction Operations. In addition to the EPA, this methodology is also supported by the South Coast Air Quality Management District as well as the Western Regional Air Partnership (WRAP) which is funded by the EPA and is administered jointly by the Western Governor's Association and the National Tribal Environmental Council. The emission factor is assumed to encompass a variety of non-residential construction activities including building construction (commercial, industrial, institutional, governmental), public works, and travel on unpaved roads. The EPA National Emission Inventory documentation assumes that the emission factors are uncontrolled and recommends a control efficiency of 50% for PM_{10} and $PM_{2.5}$ in PM nonattainment areas.

New Road Construction Emission Factor

0.42 ton PM_{10} /acre-month Source: MRI 1996; EPA 2001; EPA 2006

The emission factor for new road construction is based on the worst-case conditions emission factor from the MRI 1996 study described above (0.42 tons PM_{10} /acre-month). It is assumed that road construction involves extensive earthmoving and heavy construction vehicle travel resulting in emissions that are higher than other general construction projects. The 0.42 ton PM_{10} /acre-month emission factor for road construction is referenced in recent procedures documents for the EPA National Emission Inventory (EPA 2001; EPA 2006).

$PM_{2.5}$ Multiplier

0.10

$PM_{2.5}$ emissions are estimated by applying a particle size multiplier of 0.10 to PM_{10} emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

Control Efficiency for PM_{10} and $PM_{2.5}$

0.50

The EPA National Emission Inventory documentation recommends a control efficiency of 50% for PM_{10} and $PM_{2.5}$ in PM nonattainment areas (EPA 2006). Wetting controls will be applied during project construction.

References:

EPA 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999*. EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.
EPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants*. Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.
MRI 1996. *Improvement of Specific Emission Factors (BACM Project No. 1)*. Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March 29, 1996.

Grading Schedule

Estimate of time required to grade a specified area.

Input Parameters
 Construction area: 23.2 acres/yr (from Combustion Worksheet)
 Qty Equipment: 7.0 (calculated based on 3 pieces of equipment for every 10 acres)

Assumptions:
 Terrain is mostly flat.
 An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
 200 hp bulldozers are used for site clearing.
 300 hp bulldozers are used for stripping, excavation, and backfill.
 Vibratory drum rollers are used for compaction.
 Stripping, Excavation, Backfill and Compaction require an average of two passes each.
 Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day	equip-days per acre	Acres/yr (project- specific)	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8	acre/day	8	0.13	23.22	2.90
2230 500 0300	Stripping	Topsoil & stockpiling, adverse soil	1 650	cu. yd/day	2.05	0.49	23.22	11.35
2315 432 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.99	1.01	11.61	11.70
2315 120 5220	Backfill	Structural, common earth, 150' haul	1 950	cu. yd/day	2.42	0.41	11.61	4.80
2315 310 5020	Compaction	Vibrating roller, 6" lifts, 3 passes	2 300	cu. yd/day	2.85	0.35	23.22	8.14
TOTAL								38.90

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr 38.90
 Qty Equipment 7.00
 Grading days/yr 5.56

Haul and Water Truck Emissions

Emissions from hauling the raw materials for concrete and fill are estimated in this spreadsheet.
Emission Estimation Method: United States Air Force (USAF) Institute for Environment, Safety and Occupational Health Risk Analysis (IERA) Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations (Revised December 2003).

Raw Material Assumptions:

Haul trucks carry 20 cubic yards of material per trip.
The distance from Earthmovers, Inc. to Minot AFB is approximately 12 miles, therefore the haul truck will travel 24 miles roundtrip.
Estimated number of trips required by haul trucks = total amount of material to be brought on installation/20 cubic yards per truck

Total amount of imported materials = 410,022 cubic yards
Number of trucks required = 20,501 heavy duty diesel haul trucks
Miles per trip = 24 miles

Water Transportation Assumptions:

Water trucks carry 4,000 gallons per truckload.
Approximately 18,910,917 gallons of water will be required during construction.
Approximately 1/8 inch of water would be applied to project area once per day.
The distance from the nearest water source is 0.5 miles, therefore the water truck will travel 1 mile roundtrip.
Estimated number of trips required by water trucks = total gallons of water to be brought to project site/4,000 gallons per truck

Total amount of water needed for construction = 18,910,917 gallons
Number of trucks required = 4,728 heavy duty diesel haul trucks
Miles per trip = 1 miles

Heavy Duty Diesel Vehicle (HDDV) Average Emission Factors (grams/mile)

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
HDDV	6.500	4.7000	19.10	0.512	7.7	2.01	1646

Notes:
Emission factors for all pollutants except CO₂ are from USAF IERA 2003.
Emission factors for PM₁₀, SO₂ are from HDDV in Table 4-50 (USAF IERA 2003).
Emission factors for VOC, CO, and NO_x are from Tables 4-41 through 4-43 for the 2010 calendar year, 2000 model year (USAF IERA 2003).
Diesel fuel produces 22,384 pounds of CO₂ per gallon.
It is assumed that the average HDDV has a fuel economy of 6.17 miles per gallon, Table 4-51 (USAF IERA 2003).
CO₂ emission factor = 22,384 lbs CO₂/gallon diesel * gallon diesel/6.17 miles * 453.6 g/lb

HDDV Haul and Water Truck Emissions From Construction Activities

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
lbs	7118.40	5147.15	20917.14	560.71	8465.42	2201.23	1802164.57
tons	3.559	2.574	10.459	0.280	4.233	1.101	901.082

Example Calculation: NO_x emissions (lbs) = miles per trip * number of trips * NO_x emission factor (g/mile) * lb/453.6 g

Construction Commuter Emissions

Emissions from construction workers commuting to the job site are estimated in this spreadsheet

Emission Estimation Method: Emission factors from the South Coast Air Quality Management District (SCAQMD) EMFAC 2007 (v 2.3) Model (on-road) were used. These emission factors are available online at <http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html>.

Assumptions:

Passenger vehicle emission factors for scenario year 2010 are used
The average roundtrip commute for a construction worker = 30 miles
Number of construction days = 240 days
Number of construction workers (daily) = 30 people

Passenger Vehicle Emission Factors for Year 2010 (lbs/mile)

NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
0.00091814	0.00091399	0.00826276	0.00001077	0.00009698	0.00005478	1.0958235

Source: South Coast Air Quality Management District. EMFAC 2007 (ver 2.3) On-Road Emissions Factors. Last updated April 24, 2008. Available online: <<http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html>>. Accessed 27 May 2008.

Notes:
The SNAQMD 2007 reference lists emission factors for reactive organic gas (ROG). For purposes of this worksheet ROG = VOC

Construction Commuter Emissions

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
lbs	198.318	197.421	1784.755	2.327	18.787	11.833	236667.387
tons	0.099	0.099	0.892	0.0012	0.0094	0.0059	118.334

Example Calculation: NO_x emissions (lbs) = 60 miles/day * NO_x emission factor (lb/mile) * number of construction days * number of workers

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			Point Source Emissions					Area Source Emissions (Non-Point and Mobile Sources)						
Row #	State	County	CO	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC	CO	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC
1	ND	Adams Co	0	0	0	0	0	0	1,799	533	4,911	763	57.3	308
2	ND	Barnes Co	0	0	0	0	0	0	7,832	3,740	9,687	1,695	355	940
3	ND	Benson Co	0	0	0	0	0	0	4,941	1,130	7,364	1,173	145	700
4	ND	Billings Co	34.9	41.7	3.11	3.11	283	3.5	2,588	1,365	1,421	276	89.9	430
5	ND	Bottineau Co	0	0	0	0	0	0	5,683	1,559	7,809	1,315	179	723
6	ND	Bowman Co	0	0	0	0	0	0	2,250	738	2,718	447	73	390
7	ND	Burke Co	57.3	181	0.71	0.6	426	5.2	2,375	885	5,894	990	97.3	388
8	ND	Butterfield Co	0	0	0	0	0	0	22,345	4,500	10,005	1,495	713	3,001
9	ND	Cavalier Co	0	0	0	0	0	0	4,094	1,489	11,343	1,810	168	547
10	ND	Dickey Co	0	0	0	0	0	0	4,045	940	7,102	1,117	120	607
11	ND	Divide Co	0	0	0	0	0	0	2,457	888	5,056	844	104	394
12	ND	Dunn Co	96.8	100	0.84	0.51	5.3	13	2,845	737	4,129	676	93.7	438
13	ND	Eddy Co	0	0	0	0	0	0	2,038	1,125	3,357	558	91.7	328
14	ND	Emmons Co	0	0	0	0	0	0	2,911	652	5,232	822	84.8	414
15	ND	Foster Co	0	0	0	0	0	0	2,738	1,417	5,335	859	119	394
16	ND	Golden Valley Co	0	0	0	0	0	0	2,762	2,087	2,572	470	152	392
17	ND	Grand Forks Co	144	229	26.3	3.74	641	1.4	22,803	3,557	12,685	2,030	740	2,951
18	ND	Grant Co	0	0	0	0	0	0	2,188	550	5,993	946	59.6	380
19	ND	Griggs Co	0	0	0	0	0	0	2,210	1,263	4,956	805	128	369
20	ND	Hettinger Co	0	0	0	0	0	0	2,321	780	4,880	801	81.6	335
21	ND	Kidder Co	0	0	0	0	0	0	4,762	2,178	4,930	824	153	672
22	ND	Lakota Co	0	0	0	0	0	0	3,540	1,113	7,937	1,269	146	468
23	ND	Lohan Co	0	0	0	0	0	0	1,833	451	3,177	520	57.4	300
24	ND	McHenry Co	0.9	47	54.6	23.7	0.2	107	4,474	2,296	6,810	1,123	214	668
25	ND	McIntosh Co	95.9	105	0.9	0.55	6	12.8	2,497	598	4,067	647	86.4	355
26	ND	McKenzie Co	205	578	3.49	3.31	213	13	4,474	964	6,060	961	103	688
27	ND	McLean Co	1,908	10,357	2,911	2,349	24,428	153	7,588	1,734	11,053	1,748	179	1,206
28	ND	Mercer Co	3,974	45,350	3,334	2,904	91,617	588	5,111	768	3,341	576	96.4	1,085
29	ND	Morton Co	752	1,883	882	826	6,833	182	13,145	3,141	8,295	1,305	339	1,463
30	ND	Mountrail Co	0	0	0	0	0	0	5,348	1,897	6,831	1,113	195	803
31	ND	Nelson Co	0	0	0	0	0	0	2,670	752	6,055	949	89.6	381
32	ND	Oliver Co	1,100	22,845	1,390	1,256	28,565	241	1,717	374	2,573	475	46.1	271
33	ND	Pembina Co	568	758	193	78.7	730	145	8,051	1,889	8,196	1,264	275	817
34	ND	Pierce Co	0	0	0	0	0	0	2,344	1,110	5,630	924	138	570
35	ND	Ramsay Co	0	0	0	0	0	0	5,281	1,248	7,615	1,223	170	823
36	ND	Ransom Co	106	69	56.1	35.4	1.5	298	2,798	894	5,598	895	140	409
37	ND	Renville Co	0	0	0	0	0	0	2,627	992	5,270	875	102	390
38	ND	Richland Co	703	380	55.5	20.2	149	3	11,983	3,239	11,698	1,906	573	1,563
39	ND	Rolette Co	0	0	0	0	0	0	7,942	1,194	7,948	1,179	182	953
40	ND	Sargent Co	0	0	0	0	0	0	3,262	981	7,487	1,190	287	493
41	ND	Sheldon Co	0	0	0	0	0	0	1,893	626	3,952	655	69.7	366
42	ND	Sioux Co	0	0	0	0	0	0	2,362	355	2,875	362	55.5	328
43	ND	Slope Co	0	0	0	0	0	0	1,314	633	1,944	352	55.2	351
44	ND	Stark Co	60.5	180	0	0	0	0	11,710	3,368	6,239	1,019	399	1,471
45	ND	Steele Co	0	0	0	0	0	0	2,078	1,005	5,764	942	107	332
46	ND	Stutsman Co	0	0	0	0	0	0	185	12,048	4,131	11,090	1,852	380
47	ND	Towner Co	0	0	0	0	0	0	2,607	878	7,985	1,273	115	378
48	ND	Traill Co	684	446	126	53.1	479	15.5	7,800	1,855	10,296	1,603	167	845
49	ND	Walsh Co	0	0	0	0	0	0	8,114	1,892	9,819	1,555	291	1,006
50	ND	Ward Co	0	0	0	0	0	0	17,078	4,278	14,872	2,366	561	2,388
51	ND	Wells Co	0	0	0	0	0	0	3,959	1,943	9,669	1,546	187	549
52	ND	Williams Co	527	2,313	25.1	25.1	1,605	45.4	8,645	2,542	8,750	1,420	269	1,364
Grand Total			11,017	85,873	9,063	7,583	155,982	2,028	284,181	81,298	346,273	55,633	9,878	39,932

SOURCE:
<http://www.epa.gov/air/data/geocal.html>
 USEPA - AirData NE1 Tier Report
 *Net Air pollution sources (area and point) in tons per year (2002)
 Site visited on 18 March 2010.

State of North Dakota Air Quality Control Region 172 (40 CFR 81.335)