DEMOLITION OF MUNITIONS STORAGE AREA FACILITIES ENVIRONMENTAL ASSESSMENT

ELLSWORTH AIR FORCE BASE, SOUTH DAKOTA

AUGUST 2009

ACRONYMS AND ABBREVIATIONS

µg/m^3	Micrograms per Cubic Meter
28 BMW	28th Bombardment Wing
28 BW	28th Bomb Wing
AAM	Annual Arithmetic Mean
AAQS	Ambient Air Quality Standards
ACC	Air Combat Command
ACHP	Advisory Council on Historic Preservation
ACM	Asbestos-Containing Materials
AEC	Atomic Energy Commission
AFB	Air Force Base
AFI	Air Force Instruction
AFMC	Air Force Materiel Command
AFS	Air Force Station
Air Force	United States Air Force
AMC	Air Materiel Command
AT/FP	Anti-terrorism/Force Protection
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon Monoxide
cpm	Counts per Minute
CRM	Cultural Resource Manager
CWA	Clean Water Act
dB	Decibel
DoD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
FY	Fiscal Year
HAZMART	Hazardous Materials Pharmacy
Hz	Hertz
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
INRMP	Integrated Natural Resources Management Plan
HSA	Historical Site Assessment
L_{dn}	Day-Night Average Sound Level
L_{max}	Maximum Sound Level
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MBTA	Migratory Bird Treaty Act
MSA	Munitions Storage Area
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NM	Nautical Miles
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NRHP	National Register of Historic Places
O_3	Ozone
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
Pb	Lead
PM	Particulate Matter
PM_{10}	Particulate Matter Less Than or Equal to 10 Microns in Diameter
$PM_{2.5}$	Particulate Matter Less than or Equal to 2.5 Microns in Diameter
ppm	Parts per Million
PSD	Prevention of Significant Deterioration
Q-D	Quantity-Distance
RCAAB	Rapid City Army Air Base
RCNM	Roadway Construction Noise Model
ROI	Region of Influence
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SNL	Sandia National Laboratories
SO_2	Sulfur Dioxide
SO_x	Sulfur Oxides
SVOC	Semi-Volatile Organic Compound
TCE	Trichloroethylene
U.S.	United States
UFC	Unified Facilities Criteria
USACE	United States Army Corps of Engineers
USC	United States Code
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UST	Underground Storage Tanks
VOC	Volatile Organic Compound
WSA	Weapons Storage Area
WWII	World War II

FINDING OF NO SIGNIFICANT IMPACT

NAME OF THE PROPOSED ACTION

Demolition of Munitions Storage Area Facilities at Ellsworth AFB, South Dakota.

DESCRIPTION OF THE PROPOSED ACTION AND NO-ACTION ALTERNATIVE

Ellsworth Air Force Base (AFB) proposes to demolish eight facilities at Ellsworth AFB located in the munitions storage area (MSA) on the north side of the Base with a total square footage of approximately 31,300. Demolition is proposed for Buildings 88315, 88316, 88319, 88323, 88327, 88030, 88036, and 88320.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Proposed Action: This Environmental Assessment (EA) provides an analysis of the potential environmental consequences associated with the Proposed Action and No Action alternative. Nine resource categories received thorough evaluation to identify potential environmental consequences. As indicated in Chapter 4.0, neither the Proposed Action nor the No Action alternative would result in significant impacts to any resource area.

Land Use Resources: Demolition of the eight facilities would be consistent with the *Ellsworth AFB General Plan* and would eliminate structures that are located in an area with limited access and no longer provide useful function to Ellsworth AFB. No conflicts with existing on-Base land uses would result from the demolition. The areas cleared would be available for redevelopment to meet future mission requirements. No significant adverse environmental consequences would be expected.

Noise: Demolition of the eight facilities would have temporary, localized noise effects during the demolition phase. These localized noise increases may disrupt Base personnel working in nearby structures. Because the noise disruptions would be temporary and would be limited to daytime hours, impacts are considered insignificant.

Physical Resources: No significant adverse environmental consequences are anticipated from the demolition. Standard demolition practices would include silt fences, storm drain inlet and outlet protection, and other appropriate demolition practices in accordance with state and federal regulations to prevent soil erosion and stormwater runoff. Additional sediment and erosion control measures, such as seeding with natural vegetation, would be required once demolition is complete. The MSA is not located within a 100-year floodplain.

Biological Resources: Demolition activities would have no significant adverse effects to individual species or native plants or animals since the only plant or animal species likely to be displaced from this marginal habitat are individuals of common and locally abundant species. No impacts are anticipated to wetlands as there are no wetlands within the project footprints.

No threatened, endangered, or special species/communities would be adversely affected by the Proposed Action. Incidentally occurring listed, proposed, or candidate species are not likely to be adversely affected because no critical habitat exists on Ellsworth AFB. No significant adverse environmental consequences are anticipated from the demolition.

Cultural Resources: Demolition activities are not expected to impact archaeological or traditional resources under the Proposed Action. Soils in the project area were previously disturbed during the initial construction and operation of the facilities. Consultation with the South Dakota State Historic Preservation Office (SHPO), in compliance with Section 106 of the National Historic Preservation Act (NHPA) (16 United States Code [USC] §470 *et seq.*) with its implementing regulations (36 Code of Federal Regulations [CFR] Parts 60, 63, and 800) has been completed for all of the buildings proposed for demolition agreeing with the Base's determination of "No Historic Properties Affected." If resources are inadvertently discovered during demolition, all work would halt at that location, the Base Cultural Resource Manager (CRM) would be notified, and proper procedures for the discovery of unanticipated resources would be completed prior to work resuming. No impacts to archaeological or traditional resources are likely under the Proposed Action.

Air Quality: Demolition-related air emissions generated both on Base and within the Meade/Pennington counties would be below the 100 tons per year *de minimis* and 10 percent region federal conformity thresholds set forth in 40 CFR 51 Subpart W. Furthermore, emissions generated by demolition projects are temporary in nature and would end when the project is complete. The emissions from fugitive dust (particulate matter less than or equal to 10 microns in diameter [PM_{10}] and particulate matter less than or equal to 2.5 microns in diameter [$PM_{2.5}$]) would be significantly less due to the implementation of control measures in accordance with standard demolition practices. No direct operational emissions are expected to occur after the proposed project is completed, as the facilities would no longer exist. No new stationary sources or additional personnel would be added to the Base as a result of the proposed project. No changes to the Base's Synthetic Minor Operating permit are anticipated.

Safety: Demolition activities would result in a short-term increase in the ground safety risks, however no significant adverse impacts are anticipated with the application of standard industrial safety standards. Implementation of the Proposed Action would not affect compliance with Anti-Terrorism/Force Protection (AT/FP) standards. The MSA is protected from external threats in accordance with Unified Facilities Criteria (UFC) 4-010-01. Flight safety at Ellsworth AFB would not be substantially affected by implementation of the Proposed Action. The MSA lies entirely outside of United States Air Force (Air Force) designated Clear Zones and Accident Potential Zones. Structures proposed to be demolished under the Proposed Action may provide roosting sites for some species of birds. As such, demolition of these structures may marginally reduce bird-aircraft strike hazard at Ellsworth AFB.

Hazardous Materials and Waste Management: Demolition of the eight facilities would occur within the Environmental Restoration Program (ERP) site Operable Unit (OU)-7. The Ellsworth

AFB ERP Manager would request a waiver from Air Combat Command (ACC) policy concerning demolition disturbances on ERP sites. This waiver identifies the appropriate control measures that would be necessary for the activities at the ERP site and no long-term adverse environmental consequences are anticipated. Ellsworth AFB has an excavation Environmental Response Plan for all excavation activities in the MSA. The plan provides awareness briefings for the workers as well as stop work and notification procedures if unexpected material are found. This plan will apply to demolition activities. Ellsworth AFB will obtain approval/coordination of the demolition plans from the Air Force Safety Center, which is responsible for Air Force oversight/regulation of 91b nuclear material associated with weapon storage and nuclear reactor sites. Hazardous waste generated during the demolition process would be managed in compliance with the Ellsworth AFB Hazardous Waste Management Plan and no significant adverse impacts are anticipated. Demolition activities would generate solid wastes that would be recycled if possible or otherwise disposed of at a landfill. Landfill capacity would not be significantly altered with the implementation of the Proposed Action.

Environmental Justice: There would be no significant impacts expected from the Proposed Action because no adverse impacts have been identified and civilian populations are not in proximity to the proposed demolition site.

No Action Alternative: Under the no action alternative, demolition of the eight facilities would not take place and no significant environmental consequences would occur. These facilities would remain in their current condition.

CONCLUSION

Based on information and analysis presented in the EA conducted in accordance with the requirements of the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) regulations, and implementing regulations set forth in 32 CFR Part 989 (Environmental Impact Analysis Process [EIAP]), as amended, and review of the public and agency comments submitted during the 30-day public comment period, I conclude that implementation of the Proposed Action would not result in significant impacts to the quality of the human or natural environment. For these reasons, a finding of no significant impact (FONSI) is made and preparation of an environmental impact statement (EIS) is not warranted.

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JEFFREY B. TALIAFERRO DATE
Colonel, USAF
Commander, 28th Bomb Wing

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AUGUST 2009

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

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EXECUTIVE SUMMARY

This Environmental Assessment (EA) describes the potential environmental consequences resulting from a proposal to demolish eight facilities at Ellsworth Air Force Base (AFB), South Dakota.

ENVIRONMENTAL IMPACT ANALYSIS PROCESS

This EA has been prepared by the United States Air Force (Air Force) and the 28th Bomb Wing (28 BW) in accordance with the requirements of the National Environmental Policy Act (NEPA) of 1969, (42 United States Code [USC] 4321-4347), Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] §§ 1500-1508), and 32 CFR Part 989, *et seq.*, *Environmental Impact Analysis Process* (formerly known as Air Force Instruction [AFI] 32-7061).

PURPOSE AND NEED FOR ACTION

The purpose of this action is to demolish eight facilities in the Munitions Storage Area (MSA) at Ellsworth AFB. These facilities were constructed between 1952 and 1961 and were a component of the former Rushmore Air Force Station (AFS). Currently, these facilities are not considered mission critical and are empty or underutilized. The unique construction and infrastructure of these facilities, as well as their location in a limited access area, would make it difficult to rehabilitate or renovate these facilities to another purpose. In addition, the demolition of these facilities would contribute to the Air Force-wide demolition goal to reduce the facility footprint 20 percent between Fiscal Year (FY) 2008 and FY 2020.

PROPOSED ACTION AND ALTERNATIVES

Ellsworth AFB proposes to demolish eight facilities located in the MSA with a total square footage of approximately 31,300. This EA analyzes the impacts associated with the demolition associated with the Proposed Action and the no action alternative.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

This EA provides an analysis of the potential environmental consequences during the demolition associated with the Proposed Action and the no action alternative. Nine resource categories received thorough evaluation to identify potential environmental consequences. As indicated in Chapter 4.0, demolition of these facilities would not result in significant impacts to any resource area.

Land Use Resources: Demolition of the eight facilities would be consistent with Base plans and standard demolition practices would be included in the project to reduce the potential for soil erosion. No conflicts with existing on-Base land uses would result from the demolition. It is

possible that contractor truck traffic may lead to some degradation of Base road surfaces and occasional congestion at the gates. No significant adverse environmental consequences would be expected.

Noise: Demolition of the eight facilities would have temporary, localized noise effects during the demolition phase. These localized noise increases may disrupt Base personnel working in nearby structures. Because the noise disruptions would be temporary and would be limited to daytime hours, impacts are considered insignificant.

Physical Resources: Demolition of the eight facilities would not be expected to significantly affect the water quality or availability with the adoption of standard sediment control and erosion practices. The MSA at Ellsworth AFB is not located within the 100-year floodplain. No significant adverse environmental consequences are anticipated from the demolition.

Biological Resources: Demolition activities would have no significant adverse effects to individual species or native plants or animals since the only plant or animal species likely to be displaced from this marginal habitat are individuals of common and locally abundant species. No impacts are anticipated to wetlands as there are no wetlands within the project footprints. No threatened, endangered, or special species/communities would be adversely affected by the Proposed Action. Incidentally occurring listed, proposed, or candidate species are not likely to be adversely affected because no critical habitat exists on Ellsworth AFB.

Cultural Resources: Demolition activities are not expected to impact archaeological or traditional resources under the Proposed Action. Soils in the project area were previously disturbed during the initial construction and operation of the facilities. In 2004, Ellsworth AFB consulted with the South Dakota State Historic Preservation Office (SHPO) in compliance with Section 106 of the National Historic Preservation Act (NHPA) (16 USC §470 *et seq.*) with its implementing regulations (36 CFR Parts 60, 63, and 800) for five of the eight buildings. In March 2004, the South Dakota SHPO concurred with Ellsworth AFB's assessment of "No Historic Properties Affected" for the five buildings. SHPO consultation on the remaining three buildings took place in 2005 with a determination of "No Historic Properties Affected." If resources are inadvertently discovered during demolition, all work would halt at that location; the Base Cultural Resource Manager (CRM) would be notified; and proper procedures for the discovery of unanticipated resources would be completed prior to work resuming. No traditional resources have been identified within the project areas. No significant adverse consequences to cultural resources are expected.

Air Quality: Project-related air emissions would be generated both on Base and within the region with the hauling of materials and other earth-moving activities. Demolition-related air emissions generated both on Base and within the Meade/Pennington counties would be below the 100 tons per year *de minimis* and 10 percent region federal conformity thresholds set forth in 40 CFR 51 Subpart W. The emissions from fugitive dust (particulate matter less than or equal to 10 microns in diameter [PM_{10}] and particulate matter less than or equal to 2.5 microns in diameter [$PM_{2.5}$]) would be significantly less due to the implementation of control measures in

accordance with standard demolition practices. No direct operational emissions are expected to occur after the proposed project is completed, as the facilities would no longer exist. No new stationary sources or additional personnel would be added to the Base as a result of the proposed project. No changes to the Base's Synthetic Minor Operating permit are anticipated.

Safety: Demolition activities would result in a short-term increase in the ground safety risks, however no significant adverse impacts are anticipated with the application of standard industrial safety standards.

Hazardous Materials and Waste Management: Demolition of the eight facilities would occur within the Environmental Restoration Program (ERP) site Operable Unit (OU)-7 which comprises the site of the former Rushmore Air Force Station (AFS). The Ellsworth AFB ERP Manager would request a waiver from Air Combat Command (ACC) policy concerning demolition disturbances on ERP sites. The waiver would identify the appropriate control measures that would be necessary for the activities at the ERP sites and no long-term adverse environmental consequences are anticipated. Ellsworth AFB has an excavation Environmental Response Plan for all excavation activities in the MSA. The plan provides awareness briefings for the workers as well as stop work and notification procedures if unexpected material is found. This plan will apply to demolition activities. Ellsworth AFB will obtain approval/coordination of the demolition plans from the Air Force Safety Center, which is responsible for Air Force oversight/regulation of 91b nuclear material associated with weapon storage and nuclear reactor sites. Hazardous waste generated during the demolition process would be managed in compliance with the Ellsworth AFB Hazardous Waste Management Plan and no significant adverse impacts are anticipated. Demolition activities would generate solid wastes that would be recycled if possible or otherwise disposed of at a landfill. Landfill capacity would not be significantly altered with the implementation of the Proposed Action.

Environmental Justice: Under environmental justice there would be no significant impacts expected from the Proposed Action because no adverse impacts have been identified and civilian populations are not in proximity to the proposed demolition site.

No Action Alternative: Under the No Action alternative, demolition of the eight facilities would not take place and no significant environmental consequences would occur. These facilities would remain in their current condition.

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1.0 PURPOSE AND NEED

1.1 INTRODUCTION

The 28th Bomb Wing (28 BW) is located at Ellsworth Air Force Base (AFB), Rapid City, South Dakota. The 28 BW is the host unit at Ellsworth AFB and consists of the 28th Operations Group, the 28th Mission Support Group, the 28th Maintenance Group, and the 28th Medical Group. The mission of the 28 BW is to deliver decisive combat power for global response.

The 28 BW proposes to demolish eight buildings located in the Ellsworth AFB Munitions Storage Area (MSA). These buildings were originally constructed between 1952 and 1961 and were part of the Weapons Storage Area (WSA) for the Rushmore Air Force Station (AFS). Rushmore AFS was a separately secured installation between 1950 and 1962 responsible for the storage, maintenance, and loading of atomic and thermonuclear weapons. The buildings proposed for demolition were formerly maintenance and support facilities for the Rushmore AFS mission. These buildings include the following:

- Warehouse, Supply and Equipment Depot, Building 88030
- Paint Shop, Building 88036
- Crew Readiness/Handling Crew Building, Building 88320
- Inert Spares Storage, Building 88315
- Administration Office/Base Spares Office, Building 88316
- Supply and Equipment Shed, Building 88319
- Inert Spare Warehouse #3/Heated Auto Storage, Building 88323
- Communications, Building 88327

In accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] 4321-4347), Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] §§ 1500-1508), and 32 CFR Part 989, *et seq.*, Environmental Impact Analysis Process (EIAP) (formerly known as Air Force Instruction [AFI] 32-7061), the 28 BW has prepared this Environmental Assessment (EA) that considers the potential consequences to the human and natural environment that may result from implementation of the Proposed Action or the alternatives.

Section 1.2 provides background information that briefly describes Ellsworth AFB and Rushmore AFS. The purpose and need for the Proposed Action are described in Section 1.3. A

detailed description of the Proposed Action and No Action alternative are provided in Chapter 2.0. Chapter 3.0 describes the existing conditions of various environmental resources that could be affected if the proposal were implemented. Chapter 4.0 describes how those resources would be affected by implementation of the Proposed Action and alternatives. Chapter 5.0 addresses the cumulative effects of the Proposed Action, as well as other recent, past, current, and future action that may be implemented in the Region of Influence (ROI) for the Proposed Actions.

1.2 BACKGROUND

Ellsworth AFB is located approximately 12 miles east of Rapid City in Meade and Pennington counties, South Dakota (Figure 1-1). The Base occupies approximately 5,410 acres of which the MSA is approximately 250 acres.

The mission of the 28 BW is to train and support crews for the B-1B Lancer. The B-1B was originally designed as a low-altitude penetrator with nuclear capabilities. However, with changes in mission requirements and technology, the B-1B has adapted to conventional missions such as close air support of ground troops, shows of force, distant target identification, and time-sensitive targeting.

Rushmore AFS included the current MSA in the northern portion of Ellsworth AFB and was operational between 1950 and 1962 (ACC 1997). It was operated by Air Force Materiel Command (AFMC), Armed Forces Special Weapons Project, and the Atomic Energy Commission (AEC). Sandia National Laboratories (SNL) was under contract to provide oversight and technical responsibility of the weapons housed at the AFS. The facilities comprising the Rushmore AFS were primarily associated with the maintenance and storage of atomic and thermonuclear weapons (Air Force Strategic Air Command n.d.). Storage and maintenance activities were compartmentalized to specialized facilities for each stage of maintenance for security, safety, and quality assurance. Other facilities on Rushmore AFS were to support the administrative and security requirements for the secure facility including office space, unaccompanied housing, crew readiness and dining facilities, and communications (Ellsworth AFB 1997). SNL and Department of Defense (DoD) personnel performed the maintenance and storage functions required by the weapons, including transporting the weapons to the flightline and loading them into the nuclear-capable bombers assigned to Ellsworth AFB. In 1962, Rushmore AFS was transferred to Ellsworth AFB. By 1992, Ellsworth AFB was included in the newly created Air Combat Command (ACC) and the assigned B-1B bombers were adapted to a conventional mission.

Figure 1-1. Regional Location of Ellsworth AFB, South Dakota

The United States Environmental Protection Agency (USEPA) has established the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) to provide a nationally consistent consensus approach to conducting radiation surveys and investigations at potentially contaminated sites. One of the first steps in this approach is to conduct a Historical Site Assessment (HSA) to identify radiological contaminants of potential concern, to identify non-impacted and impacted areas requiring surveys, and to provide information for radiation survey design in accordance with the MARSSIM. Non-impacted areas are classified as areas that have no reasonable potential for residual contamination. These areas have no radiological impact from site operations and are typically identified early in decommissioning. Areas with reasonable potential for residual contamination are classified as impact areas. An HSA has been prepared that generally follows the outline suggested by USEPA and focuses on 12 buildings within the MSA (Air Force 2009). These buildings were 88020, 88030, 88036, 88247, 88307, 88315, 88316, 88319, 88320, 88323, 88327 and 88328. The HSA found that 8 of the 12 buildings were non-impacted and further investigation is continuing on Buildings 88020, 88247, 88307, and 88328.

1.3 PURPOSE AND NEED

The purpose of this action is to demolish eight buildings located in the MSA at Ellsworth AFB that have been identified as non-impacted in the HSA that has been prepared evaluating these structures. These buildings were a component of the former Rushmore AFS between 1950 and 1962. Currently, the buildings are not considered mission critical and are empty or underutilized. The unique construction and infrastructure included in the buildings would make it difficult to rehabilitate or renovate these buildings to another purpose. In addition, the Air Force has set a demolition goal in response to budget shortfalls to reduce the service-wide facility footprint by 20 percent between Fiscal Year (FY) 2008 and FY 2020. The demolition of these buildings would contribute to the overall Air Force demolition goal.

2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

This section describes the Proposed Action for the demolition of eight buildings in the MSA. This section also describes the No Action alternative which would leave the buildings as-is.

2.1 PROPOSED ACTION

Implementation of the Proposed Action would involve the demolition of eight buildings with a total square footage of approximately 31,300. A list of the buildings and related characteristics are included in Table 2-1. Appendix A provides aerial photographs, site photographs, and floor plans of the buildings proposed for demolition. Figure 2-1 shows the location of the MSA as it pertains to the main Base. Figure 2-2 highlights the buildings proposed for demolition within the MSA.

Table 2-1. Buildings Proposed for Demolition

Building Number	Function	Footprint (square feet)	Date Constructed
88030	Warehouse, Supply and Equipment Depot	2,124	1952
88036	Paint Shop	875	1961
88315	Inert Spares Storage/Base Spares Warehouse #1	5,375	1952
88316	Administration Office/Base Spares Office	3,993	1952
88319	Supply and Equipment Shed/Base Spares Warehouse #2	4,494	1952
88320	Crew Readiness/Handling Crew Building	599	1952 (1954)
88323	Inert Spares Warehouse #3/Heated Auto Storage	6,558	1956
88327	Communications	7,266	1952 (1954)

Note: Real estate documentation indicates that Buildings 88320 and 88327 were constructed in 1952; however, these buildings are not visible in aerial photos until 1954.

The eight buildings are underutilized and not currently able to support the current and future mission requirements for Ellsworth AFB. Many of the buildings are in poor condition and their location within a limited access area would make it difficult and costly to convert the buildings to other uses. At this time, Ellsworth AFB does not have plans to construct new facilities in the cleared footprints of the proposed demolitions.

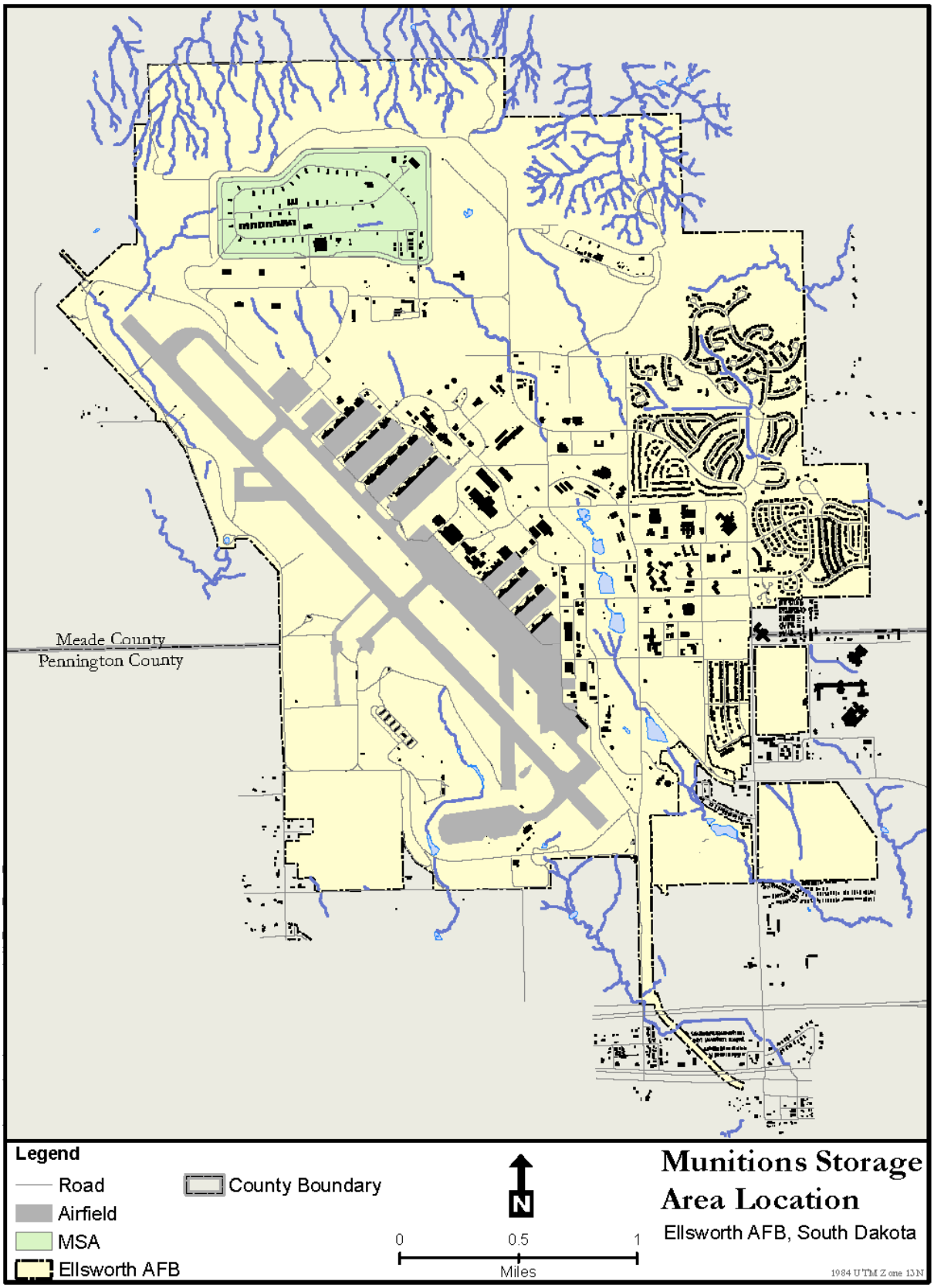

Figure 2-1. Munitions Storage Area, Ellsworth AFB, South Dakota

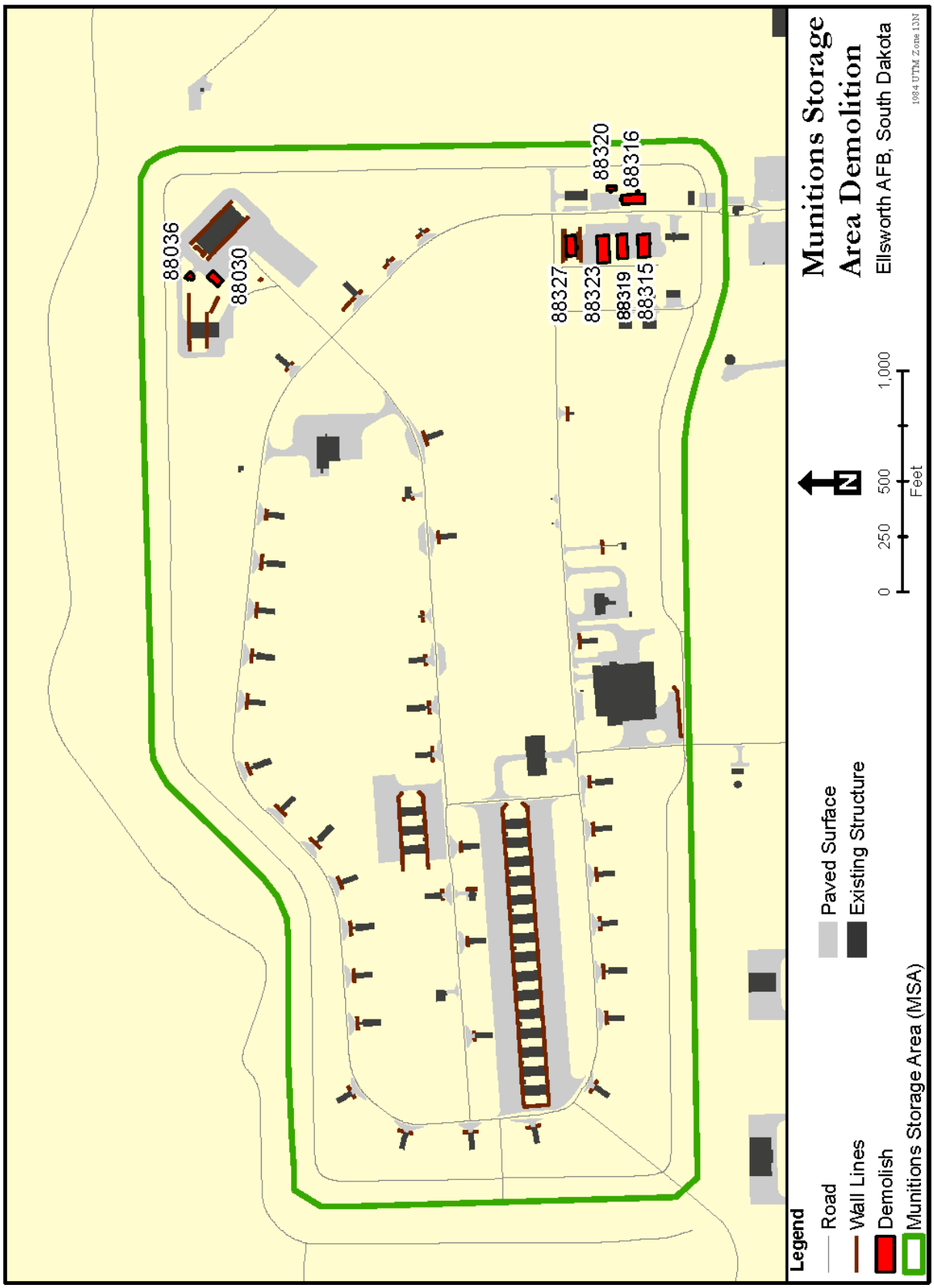

Figure 2-2. Buildings Proposed for Demolition, Ellsworth AFB, South Dakota

2.2 NO ACTION ALTERNATIVE

Under the No Action alternative, the proposed demolition would not be implemented. The facilities would remain in their current condition.

2.3 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD

With the location of the facilities proposed for demolition within a limited access area and their former utilization, no other alternative actions were considered reasonable.

2.4 ENVIRONMENTAL IMPACT ANALYSIS PROCESS

The EIAP is used to evaluate a proposal's potential environmental consequences, and to notify and involve the public in the agency's decision-making process. The proponent of a given action is ultimately responsible for compliance with the EIAP. The Air Force EIAP requires that decisions on proposals be based on an understanding of the potential environmental consequences of the Proposed Action, and its reasonable alternatives, including the No Action alternative. Based on the EIAP, any of the alternatives could be selected for implementation.

As a part of the EIAP, this EA has been prepared to evaluate the potential environmental impacts of the proposed demolition of MSA facilities. The following resources are analyzed in this EA: land use, noise, physical resources, biological resources, cultural resources, air quality, safety, hazardous materials and waste management, and environmental justice. Several resources were not analyzed in this EA because it was determined that the Proposed Action and alternatives would not have the potential for impacts due to the nature of the resource. The resources not analyzed in this EA include: airspace and airspace management, socioeconomics, transportation, and infrastructure. A comparison of the environmental consequences is presented at the end of this chapter in Table 2-2.

2.4.1 Public and Agency Involvement

Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, requires notifications to other agencies that may have relevant information regarding resources at the site prior to making any detailed statement of potential environmental consequences. Through the process of Interagency and Intergovernmental Coordination for Environmental Planning (IICEP), Ellsworth AFB will notify concerned federal, state, and local agencies and allow them sufficient time to evaluate potential environmental impacts of the Proposed Action. All federal, state, and local agency input will be placed in Appendix B of the Final EA. All relevant comments will be addressed and incorporated into the text, as appropriate.

2.4.2 Regulatory Compliance

National Environmental Policy Act

NEPA requires federal agencies to take into consideration the potential environmental consequences of proposed actions in their decision-making process. The intent of NEPA is to protect, restore, and enhance the environment through well-informed federal decisions. The CEQ was established under NEPA to implement and oversee federal policy in this process. The CEQ subsequently issued the Regulations for Implementing the Procedural Provisions of the NEPA (40 CFR Sections 1500–1508) (CEQ 1978). These requirements specify that an EA be prepared to:

- Briefly provide sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).
- Aid in an agency's compliance with NEPA when an EIS is not necessary.
- Facilitate preparation of an EIS when one is necessary.

The activities addressed within this document constitute a federal action and therefore must be assessed in accordance with NEPA. To comply with NEPA, as well as other pertinent environmental requirements, the decision-making process for the Proposed Action includes the development of the EA to address the environmental issues related to the proposed activities. The Air Force implementing procedures for NEPA are contained in 32 CFR Part 989 *et seq.*, *Environmental Impact Analysis Process.*

Endangered Species Act

The Endangered Species Act (ESA) of 1973 (16 USC §§ 1531–1544, as amended) established measures for the protection of plant and animal species that are federally listed as threatened and endangered, and for the conservation of habitats that are critical to the continued existence of those species. Federal agencies must evaluate the effects of their proposed actions through a set of defined procedures, which can include the preparation of a Biological Assessment and can require formal consultation with the United States Fish and Wildlife Service (USFWS) under Section 7 of the Act.

Clean Air Act

The Clean Air Act (CAA) (42 USC §§ 7401–7671, as amended) provided the authority for the USEPA to establish nationwide air quality standards to protect public health and welfare. Federal standards, known as the National Ambient Air Quality Standards (NAAQS), were developed for six criteria pollutants: ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter (PM), and lead (Pb). The Act also requires that each state prepare a State Implementation Plan (SIP) for maintaining and improving air quality and eliminating violations of the NAAQS. Under the CAA Amendments of 1990, federal

agencies are required to determine whether their undertakings are in conformance with the applicable SIP and demonstrate that their actions will not cause or contribute to a new violation of the NAAQS; increase the frequency or severity of any existing violation; or delay timely attainment of any standard, emission reduction, or milestone contained in the SIP.

Water Resources Regulatory Requirements

The Clean Water Act (CWA) of 1977 (33 USC § 1251 *et seq*.) regulates pollutant discharges that could affect aquatic life forms or human health and safety. The United States Army Corps of Engineers (USACE) and EO 11990 regulates the discharge of dredged and/or fill material into waters of the United States (U.S.) including wetlands under Section 404 of the CWA. Waters of the U.S. include any water body or watercourse which has been determined to be regulated under Section 404 using the Rapanos Guidance of June 5, 2007 and may include ephemeral washes, drainage ditches, intermittent and perennial watercourses, and wetlands. EO 11988 requires federal agencies to take action to reduce the risk of flood damage; minimize the impacts of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial values served by floodplains. Federal agencies are directed to consider the proximity of their actions to or within floodplains.

Cultural Resources Regulatory Requirements

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

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

Other Regulatory Requirements

Additional regulatory legislation that potentially applies to the implementation of this proposal includes guidelines promulgated by EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, to ensure that citizens in either of these categories are not disproportionately affected. Additionally, potential health and safety impacts that could disproportionately affect children will be considered under the guidelines established by EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*.

In a policy formulated to address EO 13084, *Consultation and Coordination with Indian Tribal Governments*, the DoD has clarified its policy for interacting and working with federally recognized American Indian and Alaska Native governments. Under this policy guidance, proponents must provide timely notice to, and consult with, tribal governments prior to taking any actions that have the potential to affect protected tribal resources, tribal rights, or Indian lands. Tribal input must be solicited early enough in the planning process that it may influence the decision to be made.

2.5 COMPARISON OF ALTERNATIVES

Table 2-2. Comparison of Alternatives

Resource	Proposed Action	No Action Alternative
Land Use	+	0
Noise	-	0
Physical Resources	0	0
Biological Resources	0	0
Cultural Resources	0	0
Air Quality	-	0
Safety	-	0
Hazardous Materials and Waste Management	-	0
Environmental Justice	0	0

- = Adverse, but not significant, impact
+ = Positive/beneficial impact
0 = No change

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3.0 AFFECTED ENVIRONMENT

3.1 LAND USE RESOURCES

3.1.1 Definition of Resource

Land use is the classification of either natural or human-modified activities occurring at a given location. Natural land use includes rangeland and other open or undeveloped areas. Human-modified land use classifications include residential, commercial, industrial, airfield, recreational, and other developed areas. Land use is regulated by management plans, policies, and regulations determining the type and extent of land use allowable in specific areas and protection specially designated for environmentally sensitive areas. The ROI for land use consists of all the lands of Ellsworth AFB, in particular the MSA.

3.1.2 Affected Environment

Ellsworth AFB comprises approximately 5,410 acres of government-owned land. The MSA is approximately 250 acres. The majority of the Base is unimproved land with 3,151 acres and only 150 acres of improved land which includes administrative buildings, sports complexes, and on-Base housing areas. Semi-improved areas include the airfield, restricted areas, and most housing areas and comprise 2,113 acres.

There are 12 land use categories at Ellsworth AFB as listed in Table 3-1 (Ellsworth AFB 2005). Open space is the most prevalent land use followed by the Airfield category. The open space category includes areas where protection of natural and cultural resources applies constraints to development. The eight facilities proposed for demolition are located in a limited access area in the current MSA and is categorized as industrial.

Table 3-1. Land Use Categories, Ellsworth AFB

Land Use Category	Acreage	Examples
Airfield	1,035	Runway, overruns, taxiways, aprons
Aircraft Operations and Maintenance	129	Hangars, maintenance shops, aircrew facilities, etc.
Industrial	736	Supply, Civil Engineering facilities, vehicle maintenance facilities, etc.
Administrative	50	Headquarters facilities, Base support, security, etc.
Community (Commercial)	45	AAFES, commissary, credit union, dining hall, etc.
Community (Service)	50	Schools, post office, library, chapel, etc.
Medical	22	Health care center, dental clinic, veterinarian facility, etc.
Housing (Accompanied)	584	Family housing, temporary housing, trailer courts
Housing (Unaccompanied)	49	Dormitories, visiting officers quarters, visiting airman quarters
Outdoor Recreation	291	Golf course, swimming pool, playing fields, etc.
Open Space	2,403	Conservation areas, safety clearance zones, etc.
Water	22	Storm drainage collection ponds, man-made lakes

Source: Ellsworth AFB 2005

3.2 NOISE

3.2.1 Definition of Resource

Noise is considered to be unwanted sound that interferes with normal activities or otherwise diminishes the quality of the environment. It may be intermittent or continuous, steady or impulsive. It may be stationary or transient. Stationary sources are normally related to specific land uses (e.g., housing tracts or industrial plants). Transient noise sources move through the environment, either along relatively established paths (e.g., highways, railroads, and aircraft flight tracks around airports), or randomly. There is wide diversity in responses to noise that not only vary according to the type of noise and the characteristics of the sound source, but also according to the sensitivity and expectations of the receptor, the time of day, and the distance between the noise source (e.g., an aircraft) and the receptor (e.g., a person or animal).

The physical characteristics of noise, or sound, include its intensity, frequency, and duration. Sound is created by acoustic energy, which produces minute pressure waves that travel through a medium, like air, and are sensed by the ear drum. This may be likened to the ripples in water that would be produced when a stone is dropped into it. As the acoustic energy increases, the intensity or amplitude of these pressure waves increase, and the ear senses louder noise. The unit used to measure the intensity of sound is the decibel (dB). Sound intensity varies widely (from a soft whisper to a jet engine) and is measured on a logarithmic scale to accommodate this wide range. The logarithm, and its use, is nothing more than a mathematical tool that simplifies dealing with very large and very small numbers. For example, the logarithm of the number 1,000,000 is 6, and the logarithm of the number 0.000001 is -6 (minus 6). Obviously, as more zeros are added before or after the decimal point, converting these numbers to their logarithms greatly simplifies calculations that use these numbers.

The frequency of sound is measured in cycles per second, or hertz (Hz). This measurement reflects the number of times per second the air vibrates from the acoustic energy. Low frequency sounds are heard as rumbles or roars, and high frequency sounds are heard as screeches. Sound measurement is further refined through the use of "A-weighting." The normal human ear can detect sounds that range in frequency from about 20 Hz to 15,000 Hz. However, all sounds throughout this range are not heard equally well. Therefore, through internal electronic circuitry, some sound meters are calibrated to emphasize frequencies in the 1,000 to 4,000 Hz range. The human ear is most sensitive to frequencies in this range, and sounds measured with these instruments are termed "A-weighted." Throughout this document, dB levels can be assumed to be A-weighted.

The duration of a noise event, and the number of times noise events occur, are also important considerations in assessing noise impacts.

As a basis for comparison when noise levels are considered, it is useful to note that at distances of about 3 feet, noise from normal human speech ranges from 63 to 65 dB, operating kitchen appliances range from about 83 to 88 dB, and rock and roll concerts may approach 110 dB.

The word "metric" is used to describe a standard of measurement. As used in environmental noise analysis, there are many different types of noise metrics. Each metric has a different physical meaning or interpretation and each metric was developed by researchers attempting to represent the effects of environmental noise. The metrics used to express noise levels in this document are: the maximum sound level (L_{max}) and Day-Night Average Sound Level (L_{dn}).

Maximum Sound Level

The L_{max} metric defines peak noise levels. L_{max} is the highest sound level measured during a single noise event (e.g., an aircraft overflight or the operation of heavy construction equipment). L_{max} is important in judging a noise event's interference with conversation, sleep, or other common activities.

Day-Night Average Sound Level

The number of times noise events occur during given periods is also an important consideration in assessing noise impacts. This metric sums the individual noise events and averages the resulting level over a 24-hour period. Thus, it is a composite metric which considers the maximum noise levels, the duration of the events, the number of events that occur, and the time of day during which they occur. This metric adds 10 dB to those events that occur between 10 p.m. and 7 a.m. to account for the increased intrusiveness of noise events that occur at night when ambient noise levels are normally lower than during the day time. This cumulative metric does not represent the variations in the sound level heard. Nevertheless, it does provide an excellent measure for comparing environmental noise exposures when there are multiple noise events to be considered. Its use in determining which land uses are compatible with a given noise level is endorsed by the scientific community and several governmental agencies (USEPA 1974; Federal Interagency Committee on Urban Noise 1980; Federal Interagency Committee on Noise 1992; Air Force 1999).

Finally, it should be noted that ambient background noise is not considered in the noise calculations that are presented below. There are two reasons for this. First ambient background noise, even in wilderness areas, varies widely depending on location and other conditions. For example, studies conducted in an open pine forest in the Sierra National Forest in California have measured up to a 10 dB variance in sound levels simply due to an increase in wind velocity (Harrison 1973). In general however, ambient noise levels in a typical low-density residential area can be expected to be approximately 51 dB and noise levels in a typical farm field (likely similar in noise level to Ellsworth AFB) can be expected to be approximately 44 dB (USEPA 1974). In calculating noise levels, louder sounds dominate the calculations and in general, aircraft and other transportation-related noise would be expected to be the dominant noise sources characterizing the acoustic conditions in the ROI. Therefore, it is reasonable to assume that ambient background noise in the project's ROI would have little or no effect on the calculated L_{dn}.

Using measured sound levels as a basis, the DoD and the U.S. Department of Transportation, Federal Highway Administration have developed several computer programs to calculate noise levels resulting from aircraft operations and construction/demolition activities. Sound levels calculated by these programs have been extensively validated against measured data, and have been proven to be highly accurate.

3.2.2 Affected Environment

The portions of the Ellsworth AFB MSA that are affected by the Proposed Action are exposed to aircraft noise between 65 dB L_{dn} and 75 dB L_{dn} (Ellsworth AFB 2008). These noise levels are considered to be conditionally compatible with the 'governmental services,' the primary land use in the MSA, as per guidelines found in Air Force Handbook 32-7084 (Air Force 1999). According to Air Force Handbook 32-7084, structures within this land use category that are exposed to noise between 70 and 75 dB L_{dn} should incorporate a minimum of 25 dB of outdoor-to-indoor noise attenuation. Given the heavy construction of the buildings in the MSA, it is likely that the majority are compliant with this recommendation. Those structures located between 65 and 70 dB L_{dn} are compatible without any specific level of noise attenuation.

Some additional noise results from day-to-day activities associated with operations, maintenance, and the industrial functions associated with the operation of Ellsworth AFB. These noise sources include the operation of ground-support equipment, and other transportation noise from vehicular traffic. However, this noise is generally temporary and highly localized. Noise resulting from aircraft operations remains the dominant noise source in the airfield vicinity.

3.3 PHYSICAL RESOURCES

3.3.1 Definition of Resource

Physical resources include topography, geology, soils, and water. Topography refers to an area's surface features including its vertical relief. These features may have scientific, historical, economic, and recreational value. Geologic resources of an area typically consist of surface and subsurface materials and their inherent properties. The term "soils" refers to unconsolidated materials formed from the underlying bedrock or other parent material. Soils play a critical role in both the natural and human environment.

Water resources include surface water, groundwater quantity and quality, floodplains, and wetlands. Surface water resources include lakes, rivers, and streams and are important for a variety of reasons, including economic, ecological, recreational, and human health. Groundwater includes the subsurface hydrologic resources of the physical environment and its properties are often described in terms of depth to aquifer or water table, water quality, and surrounding geologic composition.

Floodplains are defined by EO 11988, *Floodplain Management*, as "the lowland and relatively flat areas adjoining inland and coastal waters including flood-prone areas of offshore islands, including at a minimum, the areas subject to a one percent or greater chance of flooding in any given year." Floodplains are not expected to be affected by the actions considered, so the existing conditions and environmental consequences discussions analyzed in this section are limited to surface water and groundwater.

The ROI for physical resources includes Ellsworth AFB, particularly the MSA, and the area within 5 miles of the Base.

3.3.2 Affected Environment

The topography of Ellsworth AFB is level to gently sloping toward the south, except for steep northerly sloping areas in the north. Soils on the Base are primarily clays and clay-loams. Approximately 85 percent of the Base contains thick alluvial soils that are nearly level to gently sloping (ACC 2001). These are well drained and have a moderate erosion hazard. The extreme north portion of the Base is dominated by steeply sloped (15 to 40 percent) clay, characterized by low permeability, rapid runoff, and severe erosion hazard. Ellsworth AFB is situated on a gently sloping north-south upland plateau between Elk Creek to the north and Box Elder Creek to the south. Box Elder Creek is an ephemeral stream, while Elk Creek is a perennial stream. These drainages are within the Missouri River Basin and ultimately contribute to that river system. Box Elder and Elk Creeks join the Cheyenne River southeast and northeast of the Base, respectively. The extreme northern portion of the Base is drained via seven unnamed ephemeral drainages on a northward-facing escarpment to Elk Creek approximately 5 miles to the northeast. To the south, surface drainage on the plateau follows a topographic slope toward the southeast via retention ponds, ditches, storm sewers, and ephemeral streams. Runoff then discharges into Box Elder Creek, 1 mile south of the installation boundary. In total, there are seven primary drainages on Ellsworth AFB, each corresponding to an outfall permitted under a South Dakota Surface Water Discharge permit.

Four lakes and several small surface impoundments on the Base are linked with drainage creeks. Three of the lakes are stocked for recreational fishing. Ellsworth AFB has approximately 39 acres of jurisdictional wetlands that include drainage channels, impoundments, and swales. These are located in the southern portion of the Base, near runoffs to Box Elder Creek and the four man-made lakes.

3.4 BIOLOGICAL RESOURCES

3.4.1 Definition of Resource

Biological resources consist of native or naturalized plants and animals, along with their habitats, including wetlands. Although the existence and preservation of biological resources are both intrinsically valuable, these resources also provide essential aesthetic, recreational, and socioeconomic benefits to society. The analysis focuses on plant and animal species and

vegetation types that are important to the functioning of local ecosystems, are of special societal importance, or are protected under federal or state law or statute.

Biological resources include vegetation and habitat, wetlands, fish and wildlife, and special-status species. Due to the limited nature of the Proposed Action, the ROI for biological resources is defined as the MSA in the northern portion of Ellsworth AFB in Meade County, South Dakota.

Endangered Species Act

The ESA of 1973 (16 USC §§ 1531–1544, as amended) established measures for the protection of plant and animal species that are federally listed as threatened and endangered, and for the conservation of habitats that are critical to the continued existence of those species. Federal agencies must evaluate the effects of their proposed actions through a set of defined procedures, which can include the preparation of a Biological Assessment and can require formal consultation with the USFWS under Section 7 of the Act.

Implementation of an alternative will involve coordination with several organizations and agencies. Compliance with the ESA requires communication with the USFWS in cases where a federal action could affect listed threatened or endangered species, species proposed for listing, or candidates for listing. The primary focus of this consultation is to request a determination of whether any of these species occur in the region of influence. If any of these species are present, a determination of the potentially adverse effects on the species is made. Should no species protected by the ESA be affected by the Proposed Action, no additional action is required.

Clean Water Act

The CWA of 1977 (33 USC § 1251 *et seq.*) and the USEPA Storm Water General Permit regulate pollutant discharges that could affect aquatic life forms or human health and safety. Section 404 of the CWA and EO 11990, *Protection of Wetlands*, regulate development activities in or near streams or wetlands. Section 404 regulates development in streams and wetlands and requires a permit from the USACE for dredging and filling in wetlands. EO 11988, *Floodplain Management*, requires federal agencies to take action to reduce the risk of flood damage; minimize the impacts of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial values served by floodplains. Federal agencies are directed to consider the proximity of their actions to or within floodplains. There are no wetlands in any of the proposed demolition areas at Ellsworth AFB.

Migratory Bird Treaty Act (16 USC 703 et seq.) and EO 13186

The Migratory Bird Treaty Act (MBTA) governs the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests. The take of all migratory birds is governed by the MBTA's regulation of taking migratory birds for educational, scientific, and recreational purposes and requiring harvest to be limited to levels that prevent overuse. The

MBTA also prohibits the take, possession, import, export, transport, selling, purchase, barter, or offering for sale, purchase or barter, any migratory bird, their eggs, parts, and nests, except as authorized under a valid permit (50 CFR 21.11).

EO 13186 (effective January 10, 2001), outlines the responsibilities of federal agencies to protect migratory birds, in accordance with the MBTA, the Bald and Golden Eagle Protection Acts, the Fish and Wildlife Coordination Act, ESA, and NEPA. This order specifies the following:

- The USFWS as the lead for coordinating and implementing EO 13186;
- Requires federal agencies to incorporate migratory bird protection measures into their activities; and
- Requires federal agencies to obtain permits from USFWS before any "take" occurs, even when the agency intent is not to kill or injure migratory birds.

Sikes Act (16 USC 670)

The Sikes Act requires military services to establish Integrated Natural Resources Management Plans (INRMPs) to conserve natural resources for their military installations. The INRMPs include threatened and endangered species, other fish and wildlife resources, wetlands, migratory bird habitat, and forest lands. INRMPs are developed in cooperation with the USFWS and State Fish and Wildlife agencies.

3.4.2 Affected Environment

Approximately 34 percent of Ellsworth AFB remains as undeveloped in Kentucky bluegrass, smoothbrome, native mixed grass prairie, and riparian wildlife habitat. The facilities in the MSA are within a previously disturbed or developed area. Other facilities within the MSA are still operational and experience regular traffic and the presence of humans. The potential impact areas contained within the 5-mile radius of the runways vary in the percentage of available wildlife habitat. The area surrounding Ellsworth AFB contains approximately 50 percent undeveloped land potentially providing wildlife habitat. The area is predominately Northern Great Plains Grassland, consisting of moderately dense, short to medium grasses (Air Force 1997a).

Ellsworth AFB is not known to have any threatened and endangered species on Base, although numerous species are known to occur near the Base. Table 3-2 provides a list of all state and federally threatened and endangered animal species potentially found within 5 nautical miles (NM) of the Ellsworth AFB runway. These lists include both the common and scientific names and state and federal rankings, potential habitat where the species is commonly found, and if they are found within the Base boundaries. Data was compiled from the USFWS, Natural Heritage Programs, Department of Natural Resources and existing Base surveys.

Table 3-2. Threatened and Endangered Species Potentially Found within 5 Nautical Miles of Ellsworth AFB

Scientific Name	Common Name	Status		Habitat	Observed at Base	County
		Federal	State			
MAMMALS						
Felis concolor	Mountain Lion		T	Montane regions and semi-wooded canyons	No	Pennington/ Meade
Lontra canadensis	Northern River Otter		T	Streams, lakes, marshes, beaver flowages	No	Pennington
Lynx canadensis	Lynx	T		Boreal forest and regeneration of mix forest	No	Pennington
Mustela nigripes	Black-Footed Ferret	E	E	Associated with prairie dog towns	No	Pennington/ Meade
Vulpes velox	Kit or Swift Fox	C	T	Open prairie/grassland plains	No	Pennington
BIRDS						
Cinclus mexicanus	American Dipper		T	Montane streams	No	Pennington/ Meade
Falco peregrinus	Peregrine Falcon		E	Open areas for foraging with cliffs or other vertical components	No	Pennington
Grus americana	Whooping Crane	E	E	Freshwater marshes and wet prairies	No	Pennington/ Meade
Haliaeetus leucocephalus	Bald Eagle	T	E	Larger rivers and lakes, coast	No	Meade
Pandion haliaetus	Osprey		T	Larger rivers and lakes, coast	No	Pennington
Sterna antillarum athalossos	Interior Least Tern	E	E	Nest on bare ground along river and streams, forages along lakes and rivers	No	Pennington/ Meade
FISH						
Catostomus catostomus	Longnose Sucker		T	Coldwater lakes and streams	No	Pennington/ Meade
Macryhbopsis gelida	Sturgeon Chub	C	T	Medium to large turbid rivers with sand or fine gravel substrate	No	Pennington

Sources: South Dakota Department of Game, Fish and Parks 2000; Air Force 1997a

3.5 CULTURAL RESOURCES

3.5.1 Definition of Resource

Cultural resources are any prehistoric or historic district, site, or building, structure, or object considered important to a culture, subculture, or community for scientific, traditional, religious or other purposes. They include archaeological resources, historic architectural resources, and traditional resources. Archaeological resources are locations where prehistoric or historic activity measurably altered the earth or produced deposits of physical remains (e.g., arrowheads, bottles). Historic architectural resources include standing buildings, dams, canals, bridges, and other structures of historic or aesthetic significance. Traditional resources are associated with cultural practices and beliefs of a living community that are rooted in its history, and are important in maintaining the continuing cultural identity of the community.

Historic properties (as defined in 36 CFR 60.4) are significant archaeological, architectural, or traditional resources that are either eligible for listing, or listed in, the NRHP. Historic properties are evaluated for potential adverse impacts from an action, as are significant traditional resources identified by American Indian tribes or other groups. In 1999, the DoD promulgated its *American Indian and Alaska Native Policy*, which emphasizes the importance of respecting and consulting with tribal governments on a government-to-government basis. The policy requires an assessment, thorough consultation of the effect of proposed DoD actions that may have the potential to significantly affect protected tribal resources, tribal rights, and Indian lands before decisions are made by the services.

The ROI includes the MSA in the northern portion of Ellsworth AFB in Meade County, South Dakota. The history of this area is described below.

3.5.2 Affected Environment

Ellsworth AFB was established in 1942 as Rapid City Army Air Base (RCAAB). The first mission of the new Base was to train flight crews for the B-17 bomber under the Second Air Force. The Base was designated as an Operational Training Unit Base. This training program was the final step in training for flight crews. Airplanes, crews, and ground support personnel were combined into cohesive units that trained and served together, improving the efficiency of the team members. By the end of 1942, approximately 4,912 enlisted and 620 officers were stationed at RCAAB. By 1943, the Army was moving towards using the B-24 and B-29 bombers and RCAAB had completed its wartime goals for training B-17 flight crews. The Base's mission transitioned into a Combat Crew Training School. Similar to its previous mission, this mission concentrated on B-17 bomber training for individual air and ground crew members who could join existing units as replacement crew members. At the end of World War II (WWII), the B-17 was retired and the mission at RCAAB was deactivated.

In 1947, at about the same time that the Army Air Force became the U.S. Air Force, a new bomber wing was assigned to RCAAB, the 28th Bombardment Group. The 28th Bombardment Group has been the longest-reigning Base host and the 28th Bombardment Wing (28 BMW) is the host unit at the current Ellsworth AFB. By the end of 1947, three squadrons of B-29 Superfortress aircraft were transferred to the Base. In 1949, the B-29 bombers stationed at Rapid City AFB were replaced by the B-36 Peacemaker, the largest bomber in the Air Force and the first bomber capable of carrying thermonuclear weapons. The B-36 operated out of Ellsworth AFB until the spring of 1957 when they were retired from service at Ellsworth AFB. Also around this time, the 54th Fighter Interceptor Squadron was transferred to Rapid City AFB. Between 1952 and 1960, the 54th Fighter Interceptor Squadron maintained alert status with a variety of aircraft, particularly the F-51, F-84, F-86, and F-89, before being inactivated in 1960 (Air Force Historical Research Agency, n.d.).

As early as 1948, designs for a new bomber with nuclear capabilities, the B-52 Stratofortress, were being developed. The resulting aircraft, the B-52, was put into service in 1955 with the first B-52 aircraft arriving at Ellsworth AFB in 1957. Another phase of Base-wide construction and renovation was conducted to update Base facilities to accommodate the B-52, as well as update the facilities that had been built during WWII.

In addition to the continued bomber mission, Ellsworth AFB also became host to some of the first intercontinental ballistic missiles. Construction for the Titan I missile complexes in Wicksville, Hermosa, and Sturgis, South Dakota began in 1959. The Minuteman program was also hosted at Ellsworth AFB and as the program grew, the Titan missiles were deactivated in 1965. Ellsworth AFB continued to control the Minuteman missiles until they were deactivated in 1991. Also during that time, the B-52 aircraft stationed at Ellsworth AFB were retired and replaced by the B-1B Lancer between 1986 and 1987. The B-1B Lancer is the aircraft currently flown by the 28 BW.

The Rushmore AFS WSA was first constructed beginning in 1951 as an operational storage site for early atomic and thermonuclear weapons. Operational storage sites were similar to the national stockpile sites in the required infrastructure. However, the operational sites were smaller and maintained alert status so that the maximum level of war effort could be achieved in a number of hours. While the Rushmore AFS facility was controlled by the Air Materiel Command, now known as the AFMC, the AEC controlled the materials and nuclear components stored in the WSA. Personnel from SNL were responsible for the maintenance and inspection of the weapon components. The first atomic weapons arrived in 1952 and the first thermonuclear weapons arrived by 1955 (Ellsworth AFB 1996). Control and ownership of Rushmore AFS was transferred to Ellsworth AFB in 1962.

Currently, Ellsworth AFB contains few archaeological sites, 11 historic buildings are considered to be eligible or potentially eligible for the NRHP. No Native American traditional resources have been recorded. No NRHP-listed properties have been recorded on the Base or within 5 NM of the Base.

Of the buildings proposed for demolition, four were constructed in 1952; two were constructed between 1952 and 1954; one in 1956; and one in 1961. The buildings constructed between 1952 and 1956 have undergone varying degrees of change, both internally and externally. In a letter provided by the SHPO in 2004, the SHPO concurred with Ellsworth AFB's determination that some buildings remain largely unchanged externally or internally from a historic perspective, while others retain little historic integrity and character (Appendix B). According to Ellsworth AFB's Integrated Cultural Resources Management Plan, dated 2005, appropriate consultation has taken place with the SHPO per Section 106 of the NHPA for the remaining three buildings proposed for demolition (88030, 88036, 88320) that were not previously addressed in the 2004 consultation letter.

3.6 AIR QUALITY

3.6.1 Definition of Resource

This section discusses air quality considerations and conditions in the area around Ellsworth AFB in Meade County and Pennington County, South Dakota. Because Ellsworth AFB is located partially in both Meade and Pennington County, the two counties are considered the ROI for air quality analysis. It addresses air quality standards and describes current air quality conditions in the region.

Federal Air Quality Standards. Air quality is determined by the type and concentration of pollutants in the atmosphere, the size and topography of the air basin, and local and regional meteorological influences. The significance of a pollutant concentration in a region or geographical area is determined by comparing it to federal and/or state ambient air quality standards (AAQS). Under the authority of the CAA, the USEPA has established nationwide air quality standards to protect public health and welfare, with an adequate margin of safety.

These federal standards, known as the NAAQS, represent the maximum allowable atmospheric concentrations and were developed for seven "criteria" pollutants: O_3, NO_2, CO, SO_2, particulate matter less than or equal to 10 microns in diameter (PM_{10}), particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$), and Pb. Because volatile organic compounds (VOCs) and nitrogen oxides (NO_x) are precursors to the formation of O_3 in the atmosphere, control of these pollutants is the primary method of reducing O_3 concentrations in the atmosphere. The NAAQS are defined in terms of concentration (e.g., parts per million [ppm] or micrograms per cubic meter [$\mu g/m^3$]) determined over various periods of time (averaging periods). Short-term standards (1-hour, 8-hour, or 24-hour periods) were established for pollutants with acute health effects and may not be exceeded more than once a year. Long-term standards (annual periods) were established for pollutants with chronic health effects and may never be exceeded.

Based on measured ambient criteria pollutant data, the USEPA designates areas of the U.S. as having air quality equal to or better than the NAAQS (attainment) or worse than the NAAQS (nonattainment). Upon achieving attainment from a nonattainment designation, areas are then

considered to be a "maintenance" area for a period of 10 or more years. Areas are designated as unclassifiable for a pollutant when there is insufficient ambient air quality data for the USEPA to form a basis of attainment status. For the purpose of applying air quality regulations, unclassifiable areas are treated the same as areas in attainment of the NAAQS.

State Air Quality Standards. Under the CAA, state and local agencies may establish AAQS and regulations of their own, provided that these are at least as stringent as the federal requirements. For all criteria pollutants, South Dakota has adopted the NAAQS. A summary of the federal and South Dakota AAQS that apply to the proposed project area is presented in Table 3-3.

Table 3-3. South Dakota and Federal Ambient Air Quality Standards

Air Pollutant	Averaging Time	South Dakota AAQS[2]	Federal (NAAQS)	
			Primary	Secondary
Carbon Monoxide (CO)	8-hour 1-hour	9 ppm 35 ppm	9 ppm 35 ppm	--- ---
Nitrogen Dioxide (NO_2)	AAM	0.053 ppm	0.053 ppm	0.053 ppm
Sulfur Dioxide (SO_2)	AAM 24-hour 3-hour	0.030 ppm 0.140 ppm —	0.030 ppm 0.140 ppm ---	--- --- 0.500 ppm
Particulate Matter (PM_{10}) [1]	AAM 24-hr	50 µg/m^3 150 µg/m^3	--- 150 µg/m^3	--- 150 µg/m^3
Particulate Matter ($PM_{2.5}$) [2]	AAM 24-hour	15 µg/m^3 65 µg/m^3	15 µg/m^3 35 µg/m^3	15 µg/m^3 35 µg/m^3
Ozone (O_3) [3]	1-hour 8-hour	--- 0.075 ppm	0.120 ppm 0.080 ppm	0.120 ppm 0.080 ppm
Lead (Pb) and Lead Compounds	Calendar Quarter	1.5 µg/m^3	1.5 µg/m^3	1.5 µg/m^3

Sources: USEPA 2008a, 2008b; South Dakota Legislature 2009

Notes: AAM = Annual Arithmetic Mean; ppm = parts per million; µg/m^3 = micrograms per cubic meter

(1)Standards, other than for O_3 and those based on annual averages, are not to be exceeded more than once a year. The O_3 standard is attained when the number of days above the standard in three continuous calendar years is less than four.

(2) Concentrations are expressed in units in which they were promulgated. Units shown as µg/m^3 are based upon a reference temperature of 25 degrees Celsius and a reference pressure of 760 millimeters of mercury.

(3) Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

(4) Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

State Implementation Plan. For nonattainment regions, states are required to develop an SIP designed to eliminate or reduce the severity and number of NAAQS violations, with an underlying goal to bring state air quality conditions into (and maintain) compliance with the NAAQS by specific deadlines. The SIP is the primary means for the implementation, maintenance, and enforcement of the measures needed to attain and maintain the NAAQS in each state.

Prevention of Significant Deterioration (PSD). Section 162 of the CAA further established the goal of PSD of air quality in all international parks, national parks which exceeded 6,000 acres, and national wilderness areas and memorial parks which exceeded 5,000 acres if these areas were in existence on August 7, 1977. These areas were defined as mandatory Class I areas, while all other attainment or unclassifiable areas were defined as Class II areas. Under CAA Section 164, states or tribal nations, in addition to the federal government, have the authority to redesignate certain areas as (nonmandatory) PSD Class I areas (e.g., a national park or national wilderness area established after August 7, 1977) which exceeds 10,000 acres. PSD Class I areas are areas where any appreciable deterioration of air quality is considered significant. Class II areas are those where moderate, well-controlled growth could be permitted. Class III areas are those designated by the governor of a state as requiring less protection than Class II areas. No Class III areas have yet been so designated. The PSD requirements affect construction of new major stationary sources in the PSD Class I, II, and III areas and are a pre-construction permitting system.

Visibility. CAA Section 169(a) established the additional goal of prevention of further visibility impairment in PSD Class I areas. Visibility impairment is defined as a reduction in the visual range and atmospheric discoloration. Determination of the significance of an activity on visibility in a PSD Class I area is typically associated with evaluation of stationary source contributions. The USEPA is implementing a Regional Haze rule for PSD Class I areas that will address contributions from mobile sources and pollution transported from other states or regions. Emission levels are used to qualitatively assess potential impairment to visibility in PSD Class I areas. Decreased visibility may potentially result from elevated concentrations of PM_{10} and SO_2 in the lower atmosphere.

General Conformity. CAA Section 176(c), General Conformity, established certain statutory requirements for federal agencies with proposed federal activities to demonstrate conformity of the proposed activities with each state's SIP for attainment of the NAAQS. Federal activities must not:

(a) cause or contribute to any new violation;

(b) increase the frequency or severity of any existing violation; or

(c) delay timely attainment of any standard, interim emission reductions, or milestones in conformity to a SIP's purpose of eliminating or reducing the severity and number of NAAQS violations or achieving attainment of NAAQS.

General conformity applies only to nonattainment and maintenance areas. If the emissions from a federal action proposed in a nonattainment area exceed annual thresholds identified in the rule, a conformity determination is required of that action. The thresholds become more restrictive as the severity of the nonattainment status of the region increases. Meade and Pennington Counties, like the entire state of South Dakota are classified as being in attainment of the NAAQS for all criteria pollutants (USEPA 2009).

3.6.2 Affected Environment

The USEPA estimates point, area, and mobile source emissions as part of their National Emission Trends database. The emission data for 2002 (USEPA 2008c) are summarized in Table 3-4. In general, the largest stationary sources of air emissions within the region are related to energy exploration and production. The region is very rural in nature with known coal, natural gas, and oil reserves. The coal power plants show the highest annual emissions for all parameters.

Table 3-4. Summary of Annual Emissions (TPY)

Counties	*VOCs*	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
2002 ANNUAL EMISSIONS						
Meade	1,267.22	9,662.48	1,545.94	135.80	5,068.90	786.77
Pennington	5,448.76	40,535.73	9,558.01	2,738.69	8,409.39	1,802.38
Total ROI	6,715.98	50,198.21	11,103.95	2,874.49	13,478.29	2,589.15
2006 ANNUAL EMISSIONS						
Ellsworth AFB	1.01	2.90	13.31	0.17	1.50	-

Source: USEPA 2008c

3.7 SAFETY

3.7.1 Definition of Resource

This section addresses ground, explosive, and flight safety associated with activities conducted by the 28 BW. Ground safety considers issues associated with human activities, and operations and maintenance activities that support 28 BW operations. Specific aspects of ground safety are radioactive material contamination safety and Anti-terrorism/Force Protection (AT/FP) considerations. Explosive safety discusses the management and use of ordnance or munitions associated with installation operations and training activities. The ROI for safety is the MSA and lands immediately adjacent.

3.7.2 Affected Environment

Ground Safety

Day-to-day operations and maintenance activities conducted by the 28 BW are performed in accordance with applicable Air Force safety regulations, published Air Force Technical Orders, and standards prescribed by Air Force Office of Safety and Health requirements.

Anti-terrorism/Force Protection

As a result of terrorist activities, the DoD and the Air Force have developed a series of AT/FP guidelines for military installations. These guidelines address a range of considerations that include access to the installation, access to facilities on the installation, facility siting, exterior design, interior infrastructure design, and landscaping (DoD 2003; Air Force nd). The intent of

this siting and design guidance is to improve security, minimize fatalities, and limit damage to facilities in the event of a terrorist attack. The Ellsworth AFB MSA is compliant with current AT/FP standards

Explosives Safety

The 28 BW stores and maintains a range of munitions required for performance of their mission in the MSA. All ordnance is handled and stored in accordance with Air Force explosive safety directives (Air Force Manual 91-201), and all munitions maintenance is carried out by trained, qualified personnel using Air Force-approved technical procedures. Explosives safety quantity-distance (Q-D) arcs are associated with the MSA and extend outwards from the MSA for several hundred feet.

Flight Safety

The primary public concern with regard to flight safety is the potential for aircraft accidents. Such mishaps may occur as a result of mid-air collisions, collisions with man-made structures or terrain, weather-related accidents, mechanical failure, pilot error, or bird-aircraft collisions. Flight safety considerations addressed include aircraft mishaps and bird-aircraft strikes.

3.8 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

3.8.1 Definition of Resource

This section describes the affected environment associated with solid waste management, hazardous materials and wastes, storage tanks, asbestos-containing materials (ACMs), and the Environmental Restoration Program (ERP) sites associated with the proposed demolition areas.

Municipal solid waste management and compliance at Air Force installations is established in AFI 32-7042, *Solid and Hazardous Waste Compliance*. In general, AFI 32-7042 establishes the requirements for installations to have a solid waste management program to incorporate a solid waste management plan; procedures for handling, storage, collection, and disposal of solid waste; record-keeping and reporting; and pollution prevention. AFI 32-7080, *Pollution Prevention Program*, addresses source reduction, resource recovery, and recycling of solid waste.

The ROI for hazardous materials and wastes includes Ellsworth AFB, in particular the MSA in which demolition would occur.

3.8.2 Affected Environment

Hazardous materials are identified and regulated under the Comprehensive Environmental Response, Compensation, and Liability Act; the Occupational Safety and Health Act; and the Emergency Planning and Community Right-to-Know Act. Hazardous materials have been defined in AFI 32-7086, *Hazardous Materials Management*, to include any substance with special characteristics that could harm people, plants, or animals when released. Aircraft flight

operations and maintenance at Ellsworth AFB, as well as many other activities, require the use and storage of a variety of hazardous materials which include flammable and combustible liquids, acids, corrosives, caustics, anti-icing chemicals, compressed gases, solvents, paints, paint thinners, pesticides, petroleum hydrocarbons, batteries, hydraulic fluids, fire retardant, and photographic chemicals.

Ellsworth AFB inventories and tracks all hazardous materials and established waste streams. Hazardous wastes are accumulated at storage facilities and handled according to state, federal, and Air Force policy and law. Ellsworth AFB is responsible for developing and maintaining a *Hazardous Materials Emergency Planning and Response Plan*, updated annually, that addresses storage locations on Base and proper handling procedures for all hazardous materials to minimize the potential for spills and releases. If a spill occurs, the plans also outline how Base personnel should respond, including notification, containment, decontamination, and cleanup of spilled materials to minimize the adverse effects of a spill.

Hazardous waste is defined in the Resource Conservation and Recovery Act as any solid, liquid, contained gaseous or semisolid waste, or any combination of wastes that could or do pose a substantial hazard to human health or the environment. Waste may be classified as hazardous because of its toxicity, reactivity, ignitibility, or corrosivity. In addition, certain types of waste are "listed" or identified as hazardous in 40 CFR 263. Hazardous wastes are generated from a variety of functions on Ellsworth AFB, including aircraft support; wastewater treatment; soil and groundwater remediation; training exercises; civil engineering; printing; medical facilities; services; and security. Because of the magnitude of flight operations, aircraft support functions are typically major sources of hazardous waste at Air Force bases. Aircraft maintenance support shops, which generate significant hazardous waste streams, include the following: Aerospace Ground Equipment, Corrosion Control, Fuels Management, Non-Destructive Inspection, Munitions and Armament Shops, In-Squadron Maintenance, and Wheel and Tire Shops. Numerous other shops (e.g., avionics, egress systems, electrical, metals, hydraulics, radio, jet engine, and structural maintenance) collectively add to hazardous waste streams. Waste minimization programs are mandated by law and Air Force policy. The Air Force has implemented a continuous process for minimizing waste, which includes identifying opportunities for substitution of nonhazardous materials. Generators of hazardous wastes are responsible for properly segregating, storing, characterizing, labeling, marking, packaging, and transferring all hazardous waste for disposal from their sections to accumulation points according to federal, state, local, and Air Force regulations. They are also responsible for transferring storage material from the satellite or initial accumulation points to established 90-day storage areas, ensuring that waste is accurately weighed and labeled before transfer. Facilities that generate more than 2,200 pounds of hazardous waste or 2.2 pounds of acute hazardous waste per month are considered to be large-quantity generators by the USEPA. Ellsworth AFB is currently registered as large-quantity generator (Air Force 2004). Wastes generated on a Base are typically moved to the Defense Reutilization and Marketing Office (DRMO) storage facility and managed under regulations in DRMO's Part B storage permit.

The Air Force ERP is designed to identify, investigate, and clean up contamination associated with past Air Force activities. ERP activities are conducted according to either the required federal cleanup process or the corrective action process, as appropriate. The ERP began in May 1985 at Ellsworth AFB with a Base-wide investigation to identify sites of potential contamination. Fifteen ERP sites were identified in the initial investigation and further investigations through the 1980s and 1990s identified a total of 20 ERP sites and 1 Area of Concern. In 1990, Ellsworth AFB was placed on the National Priorities List with 12 Operable Units (OUs) identified which consisted of one or more ERP sites (Pavek 2009). By 2007, ten OUs had been delisted following soil remedies. All Base groundwater is identified as part of OU-11 and OU-7 is the fenced portion of the WSA portion of the former Rushmore AFS. If ERP sites were to occur within any construction sites, then appropriate measures would be undertaken to avoid effects and mitigate any impacts. Ellsworth AFB has all remedies in place and is in long-term operation and maintenance status.

The site of the fenced portion of the former WSA of Rushmore AFS in the MSA on Ellsworth AFB is designated as OU-7 in the *Environmental Restoration Program Management Action Plan*, December 2004. OU-7 is a low-level radioactive waste burial site. Radioactive wastes were generated between 1952 and 1962 by the AEC. Originally, OU-7 had five underground storage tanks (USTs) that were designed to collect wastewater containing radioactive materials. These USTs were removed in 1993 as part of a comprehensive tank removal program at Ellsworth AFB. The USTs had capacities ranging from 1,000 to 5,000 gallons and were used as weapons wash-down water overflow tanks for Buildings 88020, 88134, 88271, 88285, 88289, and 88307. The USTs were full or partially full of water at the time of removal and were judged safe for discharge in 1972. In 1992, liquids within the USTs were sampled for laboratory radiological screening analyses and all concentrations of radionuclide emitters were below background levels. In 1993, a surface radiation screening of the UST fill pipes prior to and during liquid sampling of the USTS was conducted. The collection of liquid samples from the USTs was for analyses of VOCs, semi-volatile organic compounds (SVOCs), and metals. The only analyte that exceeded its corresponding standard in the National Primary Drinking Water Regulations was pentachlorophenol in the UST for Building 88307. However, this value was estimated below the quantification limit for the compound (Ellsworth AFB 1996**).** In October 1993, the liquids from the five USTs were pumped out and the USTs and associated piping were removed. Liquids from the tanks were taken to the Ellsworth AFB wastewater treatment plant for treatment and disposal. Radiation monitoring was conducted during the removal and soil samples were taken from the bottom of the UST excavations. No radioactivity readings were detected above background limits and the soil was determined to be uncontaminated (Air Force 1997b).

It was believed that OU-7 included two disposal trenches which included unidentified waste and two large boxes containing used radioactive clothing and rags. A subsequent ground surface radiation survey was conducted in 1995 and an anomaly was identified south of Building 88304 in an area unaffected by the action considered for this report. In 1996, an

archive search was conducted by the USACE, St. Louis District, and two additional pieces of information became available. A 1971 Master Plan Base Map was found that showed radioactive waste burial pits in three locations (B, C, D). An additional design document was found that pointed to areas A and B (areas previously surveyed).

In July through September 1997, initial removal actions were taken at Areas A, B, C, and D. Area B was located just north of Building 88328 and Area D was located southeast of Building 88328. Excavations at Area B were to a depth of 2.5 to 8 feet and gloves and dials were encountered, surveyed, and removed. Radiological surveys of the gloves were found at background levels (8 to 11 counts per minute [cpm]), however the dials measured at 120,000 cpm. All materials were disposed of in accordance with the approved work plan and the site was restored. No radioactive materials or debris were found at the excavation at Area D (Air Force 1997c). Additional investigation of Area D has been recently proposed based on an evaluation of as-built drawings, field investigations of underground building drain line location, and mapping of the 1997 removal action excavation. It has been noted by the Base that the removal action makes no mention of encountering the perforated pipe and gravel bed identified on as-built drawings for Building 88328. The Base has considered that the Area D excavation (in 1997) missed the drainage pit or it was previously removed.

In 1997, the Air Force instituted a voluntary action consisting of a portable pump and treatment system to address contaminated groundwater in the northeast corner of OU-7. Based on existing historical records, the Air Force performed a removal action at four sites within the MSA to locate and remove possible buried low-level radioactive waste. At two of the sites, low-level radioactive waste was found in the form of radium dials and other waste materials at two of the four sites. In August and September 1997, the removal action was performed and the low-level radioactive waste was disposed at Envirocare in Utah (Air Force 1997c). The Removal Action report for OU-7 was approved in September 1997. Since 1998, OU-7 has been under long-term semiannual monitoring. In April 2004, the results of monitoring detected trichloroethylene (TCE) above action levels in two of the long term monitoring wells in the northeastern corner of the OU. This value was slightly lower and still consistent with previous observed concentrations. No VOCs were detected in the southeast corner of the OU that monitors potential off-site movement in that area. In the northwest corner of OU-7, a small TCE plume continues to be monitored. In 2008, the results ranged from 10 to 15 micrograms per liter above the Maximum Contaminant Level of 5.

3.9 ENVIRONMENTAL JUSTICE

3.9.1 Definition of Resource

In 1994, EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations (Environmental Justice)*, was issued to focus the attention of federal agencies on human health and environmental conditions in minority populations and low-income populations. This EO was also established to ensure that, if there were a disproportionately

high and adverse human health or environmental effects of federal actions on these populations, those effects would be identified and addressed. The environmental justice analysis addresses the characteristics of race, ethnicity and poverty status for populations residing in areas potentially affected by implementation of the Proposed Action.

In 1997, EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (*Protection of Children*), was issued to identify and address anticipated health or safety issues that affect children. The protection of children analysis addresses the distribution of population by age in areas potentially affected by implementation of the Proposed Action.

For the purpose of the environmental justice analysis, minority and low-income populations and the population of children are defined as:

- *Minority Populations*: All persons identified by the Census of Population and Housing to be of Hispanic or Latino origin, regardless of race, plus non-Hispanic persons who are Black or African American, American Indian and Alaskan Native, Asian, Native Hawaiian and Other Pacific Islander, Some Other (i.e., non-white) Race or Two or More Races.

- *Low-Income Populations*: All persons who fall within the statistical poverty thresholds published by the U.S. Census Bureau in the Current Population Survey are considered to be low-income. For the purposes of this analysis, low-income populations are defined as persons living below the poverty level ($16,895 for a family of four with two children, adjusted based on household size and number of children), as reported in the 2000 Census. The percentage of low-income persons is calculated as the percentage of all persons for whom the Census Bureau determines poverty status, which is generally a slightly lower number than the total population since it excludes institutionalized persons, persons in military group quarters and college dormitories, and unrelated individuals under 15 years old.

- *Children*: All persons identified by the Census of Population and Housing to be under the age of 18 years.

The ROI for environmental justice consists of Meade and Pennington counties, South Dakota. Ellsworth AFB is contained in both of these counties. While the MSA is in Meade County only, Pennington County was included to provide a perspective for potential impacts that could be related to resources with broader influences such as air quality or noise.

3.9.2 Affected Environment

Meade County is the smaller county in terms of population with a total population at the time of the 2000 Census of 24,253 as compared to the population in Pennington County of 88,565. In Meade County, minorities comprise approximately 9.4 percent of the total population (Table 3-5). Pennington County, as the more populous county has a higher share of minorities with nearly 16 percent of the total population. The minority population in Pennington County is

primarily made up of American Indian or Native Alaskan persons followed by Hispanic or Latino persons of any race.

Table 3-5. Populations of Concern, 2000

	Total Population	Minority		Low-Income		Children	
		Number of Persons	Percent of Total Population	Number of Persons	Percent of Total Population	Number of Persons	Percent of Total Population
Meade County	24,253	2,291	9.4%	2,195	9.1%	7,591	31.3%
Pennington County	88,565	14,117	15.9%	9,967	11.3%	26,354	29.8%
South Dakota	754,844	96,343	12.8%	95,900	12.7%	227,481	30.1%
United States	281,421,906	105,267,098	37.4%	33,899,812	12.0%	80,473,265	28.6%

Source: U.S. Census Bureau 2000

Low-income and youth populations are comparable between the two counties. The low-income population in Meade County comprises 9.1 percent of the total population as compared to 11.3 percent in Pennington County. Additionally, children under the age of 18 comprise 31 percent of the population in Meade County and 29.8 percent in Pennington County.

In comparison with the state of South Dakota and the nation, populations of concern in Meade County comprise a smaller share of the total population with the exception of the youth population. The share of children below the age of 18 is slightly higher in Meade County and the nation. For Pennington County, the share of minority populations is slightly higher than the state; however, minority populations in both the state and Pennington County comprise a much lower share of the total population as in the nation. The share of the low-income and youth populations between Pennington County, the state of South Dakota, and the nation are comparable.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 LAND USE RESOURCES

The methodology to assess impacts on individual land uses requires identifying those uses, as well as affected land use planning and control policies and regulations, and determining the degree to which they would be affected by the proposal.

4.1.1 Proposed Action

Implementation of the Proposed Action would be consistent with the Base General Plan and demolition of facilities would eliminate structures that no longer provide useful function to Ellsworth AFB. The areas cleared would be available for redevelopment to meet future mission requirements. The Proposed Action is consistent with surrounding land uses and no significant impacts to land use are anticipated.

4.1.2 No Action Alternative

Without removal of facilities, redevelopment opportunities would not be created on Ellsworth AFB as recommended by the Base General Plan.

4.2 NOISE

In this section, noise associated with proposed demolition activities are considered and compared with current conditions to assess impacts. The L_{max} noise metric is referenced because it provides an intuitive measure of actual noise experienced near the worksite, and the and L_{dn} metric is used because it allows direct comparison between demolition noise and the noise of aircraft operations in the area. Current noise levels in the MSA were estimated using the Air Force's Noisemap computer program. Noise expected to be generated during construction was estimated using the Federal Highway Administration's Roadway Construction Noise Model (RCNM) (U.S. Department of Transportation 2006).

4.2.1 Proposed Action

Under the Proposed Action, the 28 BW would demolish several facilities within the Ellsworth AFB MSA. Primary noise sources during such activity would be heavy vehicles and earth moving equipment. Noise associated with the proposed demolition was estimated using the RCNM. Noise levels in the model originated from data developed by the USEPA, and were refined using a standard "acoustical usage factor" to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during the project (U.S. Department of Transportation 2006). For the purposes of modeling, it was assumed that all construction would occur between the hours of 7 a.m. and 5 p.m. (normal working hours).

Table 4-1 shows sound levels associated with the operation of typical heavy construction/ demolition equipment.

Table 4-1. Equipment Noise Levels

Equipment	L_{max} at 100 Feet (dBA)
Clam Shovel (Dropping)	81
Dozer	81
Excavator	76
Dump Truck	75
Total (All Simultaneous)	81

Source: U.S. Department of Transportation 2006

The RCNM also calculates the L_{dn} noise level that would be generated by all equipment in Table 4-2 operating during a single day. This noise level estimate is conservative in that demolition is typically phased, with different pieces of equipment being used on different days. For this project, a range of points were identified at varying distances from the edge of the project site. As shown in Table 4-2, modeled data indicate that noise levels fall below 65 dB L_{dn} at less than 500 feet from the edge of the site.

Table 4-2. Noise Levels at Varying Distances From Site Edge

Distance From Site Edge (in feet)	L_{dn} (dBA)
100	78
200	72
300	68
400	66
500	64

Source: U.S. Department of Transportation 2006

Demolition noise would be noticeable in the immediate vicinity of the project sites because its characteristics are quite distinct from aircraft noise and other noise currently experienced in the area. The effects would be localized to the area immediately surrounding the project site. Within 500 feet of the project sites, demolition noise would be below 65 dB L_{dn}. Persons exposed to this noise may become annoyed. However, the annoyance would be temporary, as noise would last only for the duration of the project. Construction workers would be required to wear hearing protection, in accordance with Occupational Safety and Health Administration (OSHA) regulations. Noise generated by heavy trucks during the removal of demolition debris would likely be noticeable along the haul route. The exact route that would be used to haul debris is not known at this time, but it is expected that high traffic roads would be used. Hauling would be expected to be accomplished during normal working hours and noise impacts would be expected to be not significant.

As described in Section 3.2, *Noise*, the Ellsworth AFB MSA is currently exposed to aircraft noise between 65 and 80 dB L_{dn}. These noise levels are considered to be conditionally compatible with the current land use in the Ellsworth AFB MSA. The long-term acoustic environment and

land use compatibility in the Ellsworth MSA would not be changed by implementation of the Proposed Action. Noise would be temporary and would be expected to be limited to normal working hours. Noise impacts are expected to be not significant.

4.2.2 No Action Alternative

Under the No Action alternative, no demolition would occur and noise levels would remain as they are currently. No noise impacts would result from implementation of the No Action alternative.

4.3 PHYSICAL RESOURCES

Protection of unique geologic features, minimization of soil erosion, and the siting of facilities in relation to potential geologic hazards and soil limitations are considered when evaluating impacts to earth resources. Generally, impacts can be avoided or minimized if proper construction techniques, erosion control measures, and structural engineering designs are incorporated into project development.

Analysis of potential impacts to geologic resources typically includes identification and description of resources that could potentially be affected, examination of the potential effects that an action may have on the resource, assessment of the significance of potential impacts, and provision of mitigation measures in the event that potentially significant impacts are identified. Analysis of impacts to soil resources resulting from proposed activities examines the suitability of locations for proposed operations and activities. Impacts to soil resources can result from earth disturbance that would expose soil to wind or water erosion.

Land development changes the physical, chemical, and biological conditions of water resources. When land is developed, the hydrology, or the natural cycle of water, can be altered. Impacts on hydrology can result from land clearing activities, disruption of the soil profile, loss of vegetation, introduction of pollutants, new impervious surfaces, and an increased rate or volume of runoff after major storm events. Without proper management controls, these actions can adversely impact the quality and/or quantity of water resources.

Criteria for evaluating impacts related to water resources associated with the Proposed Action are water availability, water quality, and adherence to applicable regulations. Impacts are measured by the potential to reduce water availability to existing users, endanger public health or safety by creating or worsening health hazards or safety conditions, or violate laws or regulations adopted to protect or manage water resources. An impact to water resources would be significant if it would: 1) reduce water availability to, or interfere with the supply of, existing users; 2) create or contribute to overdraft of groundwater basins or exceed safe annual yield of water supply sources; 3) adversely affect water quality or endanger public health by creating or worsening adverse health hazard conditions; 4) threaten or damage unique hydrologic characteristics; or 5) violate established laws or regulations that have been adopted to protect or manage water resources of an area. Impacts of flood hazards on proposed actions can be

significant if such actions are proposed in areas with high probabilities of flooding; however, these impacts can be mitigated through the use of specific design features to minimize the effects of flooding.

4.3.1 Proposed Action

There would be no significant impacts to soil or water resources from point source or non-point sources with implementation of the Proposed Action. Prior to the start of demolition, silt fences, storm drain inlet and outlet protection, and other appropriate standard demolition practices would be instituted in accordance with state and federal regulations. Additional sediment and erosion control measures, such as seeding with natural vegetation, would be required once demolition is complete to stabilize the soil and prevent erosion and runoff. The MSA is not located within a 100-year floodplain.

4.3.2 No Action Alternative

Under the No Action alternative, demolition of the eight facilities would not occur. There would be no environmental consequences to this resource.

4.4 BIOLOGICAL RESOURCES

Evaluation of impacts is based upon 1) the importance (legal, commercial, recreational, ecological, or scientific) of the resource, 2) the rarity of a species or habitat regionally, 3) the sensitivity of the resource to proposed activities, and 4) the duration of the impact. Impacts to biological resources are considered to be greater if priority species or habitats are adversely affected over relatively large areas and/or disturbances cause reductions in population size or distribution of a priority species.

4.4.1 Proposed Action

Under the Proposed Action, demolition would disturb areas that have been previously developed, currently experiencing levels of continual human activity, lacks native terrestrial habitat, and exhibits a low level of biodiversity. The only plant or animal species likely to be displaced from this marginal habitat are individuals of common and locally abundant species. The overall ecological effect would therefore be insignificant.

There would be no impacts to wetlands from the implementation of the Proposed Action. Soil erosion and sediment control measures consistent with the state and federal regulations would be applied during demolition, thereby avoiding secondary effects to any wetlands. With the implementation of these practices during demolition, no significant adverse environmental consequences are anticipated.

Species listed, proposed for listing, or candidates for listing as threatened and endangered in accordance with the ESA of 1973 (87 Stat. 884, as amended; 16 USC 1531 *et seq.*) are not

anticipated to be adversely affected by the Proposed Action. State-protected species would also not be adversely affected by the Proposed Action because their habitat would not be altered and because changes in Base activities are not expected to be biologically significant. No special species or sensitive habitats are expected to be impacted.

4.4.2 No Action Alternative

Under the No Action alternative, demolition of the eight facilities would not occur. There would be no environmental consequences to this resource.

4.5 CULTURAL RESOURCES

A number of federal regulations and guidelines have been established for the management of cultural resources. Section 106 of the NHPA, as amended, requires federal agencies to take into account the effects of their undertakings on historic properties. Historic properties are cultural resources that are listed in, or eligible for listing in, the NRHP. Eligibility evaluation is the process by which resources are assessed relative to NRHP significance criteria for scientific or historic research, for the general public, and for traditional cultural groups. Under federal law, impacts to cultural resources may be considered adverse if the resources have been determined eligible for listing in the NRHP or have significance for Native American groups.

Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may occur by physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the resource's significance; introducing visual or audible elements that are out of character with the property or alter its setting; or neglecting the resource to the extent that it deteriorates or is destroyed. Direct impacts are assessed by identifying the types and locations of proposed activity and determining the exact location of cultural resources that could be affected. Indirect impacts result primarily from the effects of project-induced population increases.

4.5.1 Proposed Action

Consultation with the South Dakota SHPO, in compliance with Section 106 of the NHPA (16 USC §470 *et seq.*) with its implementing regulations (36 CFR Parts 60, 63, and 800) has been completed for Buildings 88315, 88316, 88319, 88323, and 88327 with a letter submitted on 4 February 2004. The SHPO replied on 5 March 2004 agreeing with the Base's determination of "No Historic Properties Affected." A copy of the consultation letter is contained in Appendix B. SHPO consultation on the remaining buildings (88030, 88036, and 88320) took place in 2005 and resulted in a determination of "No Historic Properties Affected."

No impacts to archaeological or traditional resources are likely under the Proposed Action. Areas that would be disturbed by demolition activities have already been disturbed during the initial construction and operation of these facilities. If archaeological resources are inadvertently discovered during demolition, all work would halt at that location; the Base

Cultural Resource Manager (CRM) would be notified; and proper procedures for the discovery of unanticipated resources would be completed prior to work resuming. No traditional resources have been identified within the project areas.

4.5.2 No Action Alternative

Under the No Action alternative, no facilities would be demolished. No impacts to cultural resources would be expected. Resources would continue to be managed in compliance with federal law and Air Force regulation.

4.6 AIR QUALITY

In order to evaluate air emissions and their impact on the overall ROI, the emissions associated with the project activities were compared to the total emissions on a pollutant-by-pollutant basis for the ROI's 2002 National Emissions Inventory data. Potential impacts to air quality are identified as the total emissions of any pollutant that equals 10 percent or more of the ROI's emissions for that specific pollutant. The 10 percent criterion approach is used in the USEPA's General Conformity Rule as an indicator for impact analysis for nonattainment and maintenance areas. According to the USEPA's General Conformity Rule in 40 CFR Part 51, Subpart W, any proposed federal action that has the potential to cause violations in a NAAQS nonattainment or maintenance area must undergo a conformity analysis. A conformity analysis is not required if the Proposed Action occurs within an attainment area.

4.6.1 Proposed Action

The air quality analysis included an assessment of direct and indirect emissions from the known activities associated with the Proposed Action at Ellsworth AFB that would affect the regional air quality. Emissions from the Proposed Action are either "presumed to conform" (based on emissions levels that are considered insignificant in the context of overall regional emissions) or they must demonstrate conformity with approved SIP provisions.

Emissions for the project period were quantified to determine the potential impacts on regional air quality. Although both Meade and Pennington Counties are in attainment of the NAAQS, in order to provide a consistent approach, these emissions were compared to federal conformity *de minimis* and 10 percent thresholds on an individual pollutant basis. Emissions of VOC, NO_x, CO, sulfur oxides (SO_x), and PM_{10} and $PM_{2.5}$ from demolition activities were calculated using emission factors from the California Environmental Quality Act Air Quality Handbook (South Coast Air Quality Management District 2007), which is a compilation of USEPA (AP-42) emission factors. The emission included contributions from construction equipment engine exhaust emissions (i.e., on-site demolition and grading equipment such as excavators, backhoes, and generators), vehicle emissions from on-road work vehicles like dump trucks and personal vehicles used in worker commutes, and fugitive dust emissions (e.g., from demolition as well as from grading and trenching activities). Each demolition project was estimated to span a 5-day period, including demolition and material hauling, with grading and landscaping to

follow. Details of the emissions calculations and factors used can be found in Appendix C, *Air Emissions Calculations*. The emissions, in tons from the Proposed Action, in comparison to the significance thresholds are presented in Table 4-3. These emission estimates are conservatively high in that they include all of the demolition projects in the Proposed Action in one year.

Table 4-3. Project Emissions – Proposed Action

	Criteria Pollutant					
	CO	**NO_x**	**VOC**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Proposed Action	0.76	1.57	0.20	0.00	0.24	0.10
ROI Baseline Emissions	50,198	11,104	6,716	2,874	13,478	2,589
Percent of ROI	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**

CO = carbon monoxide; NO_x = nitrogen oxides; SO_2 = sulfur dioxide; PM_{10} = particulate matter less than or equal to 10 microns in diameter; $PM_{2.5}$ = particulate matter less than or equal to 10 microns in diameter; VOC = volatile organic compounds.

Total project emissions generated on Base and within the Meade/Pennington counties are below the 100 tons per year *de minimis* and 10 percent region federal conformity thresholds set forth in 40 CFR 51 Subpart W. Furthermore, emissions generated by demolition projects are temporary in nature and would end when the project is complete. The emissions from fugitive dust (PM_{10} and $PM_{2.5}$) would be significantly less due to the implementation of control measures in accordance with standard demolition practices. For instance, frequent spraying of water on exposed soil during ground disturbance and demolition activities and prompt replacement of ground cover or pavement are standard landscaping procedures that could be used to minimize the amount of dust generated during demolition. Using efficient grading practices and avoiding long periods where engines are running at idle may reduce combustion emissions from demolition equipment.

No direct operational emissions are expected to occur after the proposed project is completed, as the facilities would no longer exist. No new stationary sources or additional personnel would be added to the Base as a result of the proposed project. No changes to the Base's Synthetic Minor Operating permit are anticipated.

4.6.2 No Action Alternative

No impacts to air quality would occur under the No Action alternative. Under the No Action alternative, the facilities would not be demolished. Therefore, there would be no additional demolition emissions or impacts anticipated and emissions in the ROI would remain at or near the baseline levels. There would be no environmental consequences to this resource.

4.7 SAFETY

Impacts to safety are assessed according to the potential to increase or decrease safety risks to personnel, the public, and property. Proposal-related activities are considered to determine if

additional or unique safety risks are associated with their undertaking. If any proposal-related activity indicated a major variance from existing conditions, it would be considered a safety impact.

4.7.1 Proposed Action

Implementation of the Proposed Action would involve ground activities that may expose workers performing demolition to some risk. The Department of Labor, Bureau of Labor Statistics maintains data analyzing fatal and non-fatal occupational injuries based on occupation. Due to the varying range of events classified as non-fatal injuries, the considerations described below focus on fatal injuries since they are the most catastrophic. Data are categorized as incidence rates per 100,000 workers employed (on an annual average) in a specific occupation.

To assess relative risk associated with this proposal, it was assumed that the industrial classifications of workers involved are the Construction Trades. Based on Department of Labor data for calendar year 2006, the probability of a fatal injury was 10.8 per year out of 100,000 employed (U.S. Department of Labor, Bureau of Labor Statistics 2008). Although DoD guidelines for assessing risk hazards would categorize the hazard category as "catastrophic" (because a fatality would be involved), the expected frequency of the occurrence would be considered "remote" (DoD 1993). Strict adherence to all applicable occupational safety requirements would further minimize the relatively low risk associated with these construction activities.

Implementation of the Proposed Action would not affect compliance with AT/FP standards. The MSA is protected from external threats in accordance with Unified Facilities Criteria (UFC) 4-010-01.

Flight safety would not be substantially affected by implementation of the Proposed Action. The MSA lies entirely outside of Air Force-designated Clear Zones and Accident Potential Zones. Structures proposed to be demolished under the Proposed Action may provide roosting sites for some species of birds. As such, demolition of these structures may marginally reduce bird-aircraft strike hazard at Ellsworth AFB.

4.7.2 No Action Alternative

Under the No Action alternative, no facility demolition would take place. No impacts to ground, AT/FP, explosives, or flight safety would occur as a result of implementation of the No Action alternative.

4.8 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

This section addresses the potential impacts caused by hazardous materials and waste management practices and the impacts of existing contaminated sites (e.g., ERP or Military Munitions Response Program) on the Proposed Action.

The qualitative and quantitative assessment of impacts from hazardous materials and solid waste management focuses on how and to what degree the alternatives affect hazardous materials usage and management, hazardous waste generation and management, and waste disposal. A substantial increase in the quantity or toxicity of hazardous substances used or generated would be considered potentially significant. Significant impacts could result if a substantial increase in human health risk or environmental exposure was generated at a level that could not be mitigated to acceptable standards.

Regulatory standards and guidelines have been applied in evaluating the potential impacts that may be caused by hazardous materials and wastes. The following criteria were used to identify potential impacts:

- Generation of 100 kilograms (or more) of hazardous waste or 1 kilogram (or more) of an acutely hazardous waste in a calendar month, resulting in increased regulatory requirements.

- A spill or release of a reportable quantity of a hazardous substance as defined by the USEPA in 40 CFR Part 302.

- Manufacturing, use, or storage of a compound that requires notifying the pertinent regulatory agency according to Emergency Planning and Community Right-to-Know Act.

- Exposure of the environment or public to any hazardous material and/or waste through release or disposal practices.

4.8.1 Proposed Action

Hazardous Materials

Demolition of the facilities may require the use of hazardous materials by contractor personnel for equipment maintenance. In accordance with the Base's Hazardous Materials Pharmacy (HAZMART) procedure, copies of Material Safety Data Sheets must be provided to the Base and maintained on the demolition site. Demolition contractors would comply with federal, state, and local environmental laws.

All hazardous materials would be handled, stored, and disposed of in accordance with federal, state, and local regulations and laws. Permits for handling and disposal of hazardous material are the responsibility of the contractor. Hazardous materials would not be stored on Base. All

hazardous materials used at the demolition site including, but not limited to, paint, paint thinners, gasoline, diesel, oil and lubricants would be removed daily. Only quantities of hazardous materials required to carry out the work for the day would be permitted on site.

Hazardous Waste

Contractor personnel may generate hazardous waste during demolition including wastes removed from underground sumps or drainage facilities. Storage and disposal of these wastes would be the responsibility of the site contractor and managed as directed in the Base's *Hazardous Waste Management Plan*. Generations of appreciable amounts of hazardous wastes are not anticipated and no significant adverse environmental consequences are expected. Any soil suspected of contamination, as discovered during the demolition process, would be tested and either replaced back into the excavation or disposed of in accordance with proper South Dakota regulations.

Asbestos surveys have been conducted of Buildings 88030, 88036, 88316, and 88327 with positive results in each building. Surveys were not conducted of Buildings 88315, 88319, 88320, and 88323 because their use (cold storage) and the initial inspections and records did not identify any potential ACMs. If ACMs remain in these buildings prior to demolition or lead-based paint is found in or near the demolition areas, then the following federal and state regulations must be followed.

- *Asbestos Removal and Disposal.* Upon classification as friable or non-friable, all waste ACM should be disposed of and transported in accordance with the South Dakota regulations governing Transportation of Hazardous Materials.

- *Lead-Based Paint Removal and Disposal.* The proposed project should comply with the U.S. Department of Labor, OSHA regulations.

In the event of fuel spillage during demolition, the contractor would be responsible for its containment, clean up, and related disposal costs. The contractor would have sufficient spill supplies readily available on the pumping vehicle and/or at the site to contain any spillage. In the event of a contractor related release, the contractor would immediately notify the 28 BW Civil Engineering Office and take appropriate actions to correct its cause and prevent future occurrences.

Environmental Restoration Program

Demolition of the eight facilities would occur within ERP Site OU-7. The Base would request an ACC waiver for the demolition project. Any soil suspected of contamination, as discovered during demolition, would be tested and disposed of in accordance with proper South Dakota regulations. Disposal of contaminated soil would be funded by the demolition project. Ellsworth AFB has an excavation Environmental Response Plan for all excavation activities in the MSA. The plan provides awareness briefings for the workers, as well as stop work and

notification procedures if unexpected material is found. This plan will apply to demolition activities. Ellsworth AFB will obtain approval/coordination of the demolition plans from the Air Force Safety Center, which is responsible for Air Force oversight/regulation of 91b nuclear material associated with weapon storage and nuclear reactor sites. No significant adverse environmental effects would result from the implementation of the Proposed Action.

Solid Waste

Demolition of the eight facilities would generate solid wastes consisting of concrete, brick, wood, structural steel, glass, and miscellaneous metal building components. The total amount of demolition waste generated is estimated to be approximately 2,988 tons using a standard USEPA estimate of pounds of debris per square foot of demolition. Demolition contractors would be directed to recycle materials to the maximum extent possible, thereby reducing the amount of demolition debris disposed in landfills. Materials not suitable for recycling would be taken to a landfill permitted to handle construction debris wastes. Nearby construction and debris landfills have capacity to accept the waste generated by the Proposed Action and would not have a significant impact to the operating lives of the landfills.

4.8.2 No Action Alternative

Under the No Action alternative, demolition of the facilities would not occur. No significant adverse environmental consequences are expected.

4.9 ENVIRONMENTAL JUSTICE

In order to assess environmental justice issues, community and county figures are compared to regional and state demographics to determine proportional differences.

4.9.1 Proposed Action

Through comparing the counties' populations of concern to the state and national populations of concern, it was determined that these populations do not represent a disproportionate share of the total population. Also, the Proposed Action is not expected to create significantly adverse environmental or health impacts. The MSA is not located near any residential or commercial areas, or any areas with large concentrations of children, such as schools or daycares. Consequently, no disproportionately high or adverse human health or environmental impacts to minority and/or low-income populations have been identified. In addition, there are no known environmental health or safety risks associated with the Proposed Action that may disproportionately affect children. The MSA is a restricted area to unauthorized personnel. Areas in which demolition would occur would be restricted, to effectively bar any person, including children, from unauthorized access.

There would be no significant impacts expected from the Proposed Action because the populations of concern evaluated under environmental justice do not represent a

disproportionate share of the total population and civilian populations are not in proximity to the proposed demolition site.

4.9.2 No Action Alternative

Under the No Action alternative, demolition of facilities within the MSA would not occur. No populations of concern would have the potential to be affected as there are no civilian populations in proximity to the MSA and access is restricted to authorized personnel only.

5.0 CUMULATIVE EFFECTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

5.1 CUMULATIVE EFFECTS

This section provides (1) a definition of cumulative effects, (2) a description of past, present, and reasonably foreseeable actions relevant to cumulative effects, (3) an assessment of the nature of interaction of the Proposed Action and alternatives with other actions, and (4) an evaluation of cumulative effects potentially resulting from these interactions.

5.1.1 Definition of Cumulative Effects

CEQ regulations stipulate that the cumulative effects analysis within an EA should consider the potential environmental impacts 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). Recent 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 the proposed action and alternatives. The scope must consider geographic and temporal overlaps and must also evaluate the nature of interactions among these actions.

Cumulative effects are most likely to arise when a relationship or synergism exists between a proposed action and alternatives and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in close proximity to the proposed action would be expected to have more potential for a relationship than actions that may be geographically separated. Similarly, actions that coincide, even partially, in time would tend to offer a higher potential for cumulative effects.

To identify cumulative effects, this EA analysis addresses three questions:

1. Does a relationship exist such that elements of the proposed action might interact with elements of past, present, or reasonably foreseeable actions?

2. If one or more of the elements of the proposed action and another action could be expected to interact, would the proposed action affect or be affected by impacts of the other action?

3. If such a relationship exists, does an assessment reveal any potentially significant impacts not identified when the proposed action is considered alone?

In this EA, an effort has been made to identify all actions that are being considered and that are in the planning phase at this time. To the extent that details regarding such actions exist and

the actions have a potential to interact with the Proposed Action in this EA, these actions are included in this cumulative analysis. This approach enables decision makers to have the most current information available so that they can evaluate the environmental consequences of the Proposed Action.

5.1.2 Past, Present, and Reasonably Foreseeable Actions

This EA applies a stepped approach to provide decision makers with not only the cumulative effects of the Proposed Action but also the incremental contribution of past, present, and reasonably foreseeable actions. The activities described here are not all inclusive, but do serve to highlight some major influences in the region and to provide perspective on the contribution to any impacts generated by the Proposed Action.

Past Actions Relevant to the Proposed Action and Alternatives

Ellsworth AFB is an active military installation that undergoes continuous change in mission and training requirements. Some of the recent actions at Ellsworth AFB with potential to contribute to cumulative environmental effects of the Proposed Action and alternatives are listed below.

- Recent Force structure change relocated Weapons School and Operational Test and Evaluation from Ellsworth AFB to Dyess AFB, re-designated six B-1 aircraft at Ellsworth AFB to combat-coded aircraft, and decreased personnel by 5 positions.
- Air Force Reserve Officer Training Corps supports T-37 aircraft operations as part of Reserve Officer Training Corps summer encampment
- Construction of new 32,300 square foot Fire/Crash Rescue Station
- Construction of an area for loading and unloading live ordnance from combat aircraft
- Replacement of the 77th Bomb Squadron facility
- Construct new DRMO
- Relocate Explosive Ordnance Disposal Range
- Construct consolidated Civil Engineer Complex
- Dispose of excess Ellsworth AFB land to private owners
- Several minor construction and demolition project pavement and structures

Present Actions Relevant to the Proposed Action and Alternatives

Privatization of military housing at Ellsworth AFB is underway. Project approval is currently being processed and closing is scheduled to occur in April 2010. In addition to housing privatization, numerous construction and demolition projects are under way at Ellsworth AFB as part of ongoing efforts to support the mission.

Reasonably Foreseeable Actions that Interact with the Proposed Action and Alternatives

This category of actions includes Air Force actions that have a potential to coincide, either partially in time or geographic extent, with the Proposed Action. Information on these actions is included to determine whether these actions would, if implemented, incrementally affect environmental resources.

Ellsworth AFB is currently in the process of performing an environmental analysis for the creation of the Powder River Training Complex, an airspace complex that will meet training airspace requirements for the 28 BW and accommodate Large Force Exercises. This action is not expected to substantially alter flying operations at Ellsworth AFB and no construction would be conducted as part of the action. This action would coincide partially in time with the Proposed Action, but areas directly affected by the two projects would not overlap geographically.

5.1.3 Analysis of Cumulative Effects

The following analysis examines how the impacts of the actions presented above might be affected by those resulting from the Proposed Action and No Action alternative at Ellsworth AFB, and whether such a relationship would result in potentially significant impacts not identified when the Proposed Action or alternatives are considered individually.

The No Action alternative represents status quo conditions and would not represent any change from the existing environment.

No specific projects have been identified that would produce incremental impacts when added to other past, present, or reasonably feasible future actions. Ellsworth AFB is an active military installation that undergoes changes in mission and training requirements in response to defense policies, current threats, and tactical and technological advances. The Base, like any other major institution (e.g., university, industrial complex), requires new construction, facility improvements, infrastructure upgrades, and maintenance and repairs. All of these factors (i.e., mission changes, facility improvements, and tenant use) will continue to occur before, during, and after the Proposed Action, if it is selected. The Base actions described in Section 5.1.2 affect very specific areas on Base and, for the most part, the scope of the actions is focused. None of these on-Base actions would be expected to result in more than negligible impacts individually or cumulatively.

5.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

NEPA requires that environmental analysis include identification of "...any irreversible and irretrievable commitments of resources; which would be involved in the proposed action should it be implemented." Irreversible and irretrievable resource commitments are related to the use of nonrenewable resource and the effects that the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species or the disturbance of a cultural site).

For the Proposed Action, most resource commitments are neither irreversible nor irretrievable. Those limited resources that may involve a possible irreversible or irretrievable commitment under the Proposed Action are discussed below.

Flight and other Base operations would continue and involve consumption of nonrenewable resources, such as gasoline and diesel used in vehicles. None of these activities would be expected to significantly decrease the availability of minerals or petroleum resources.

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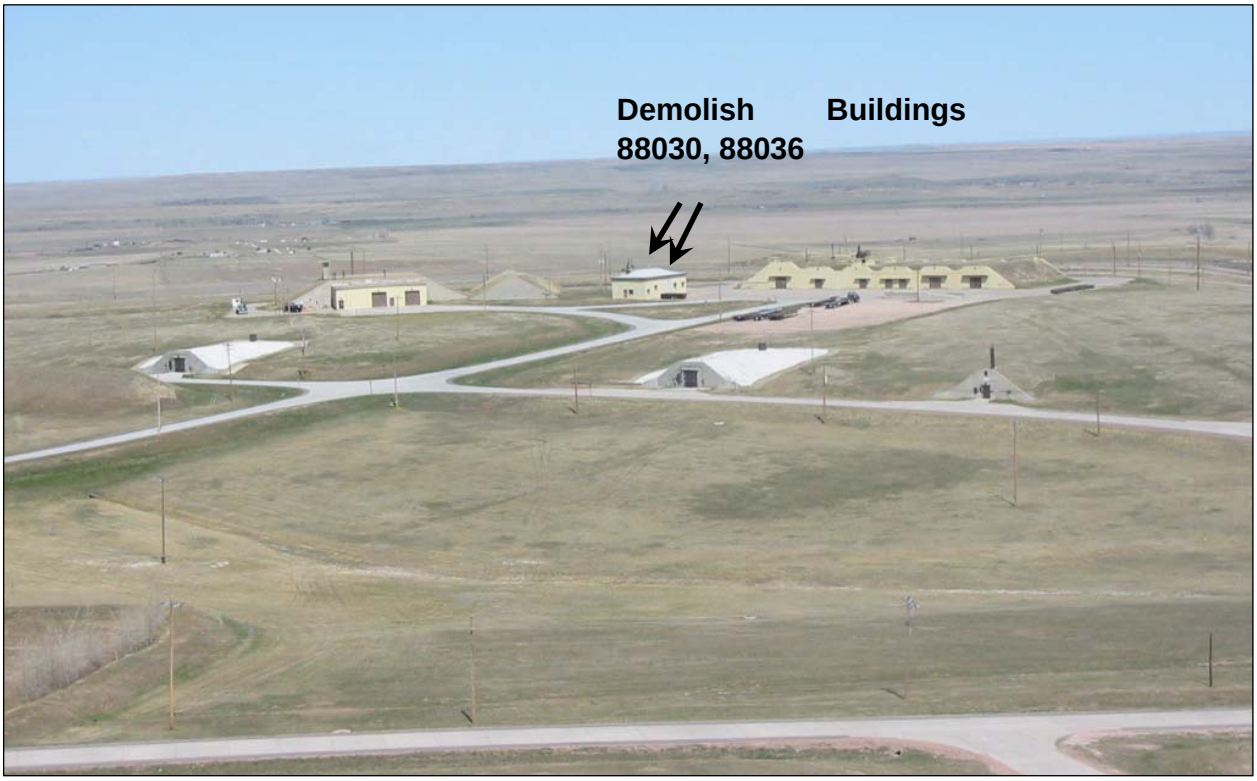
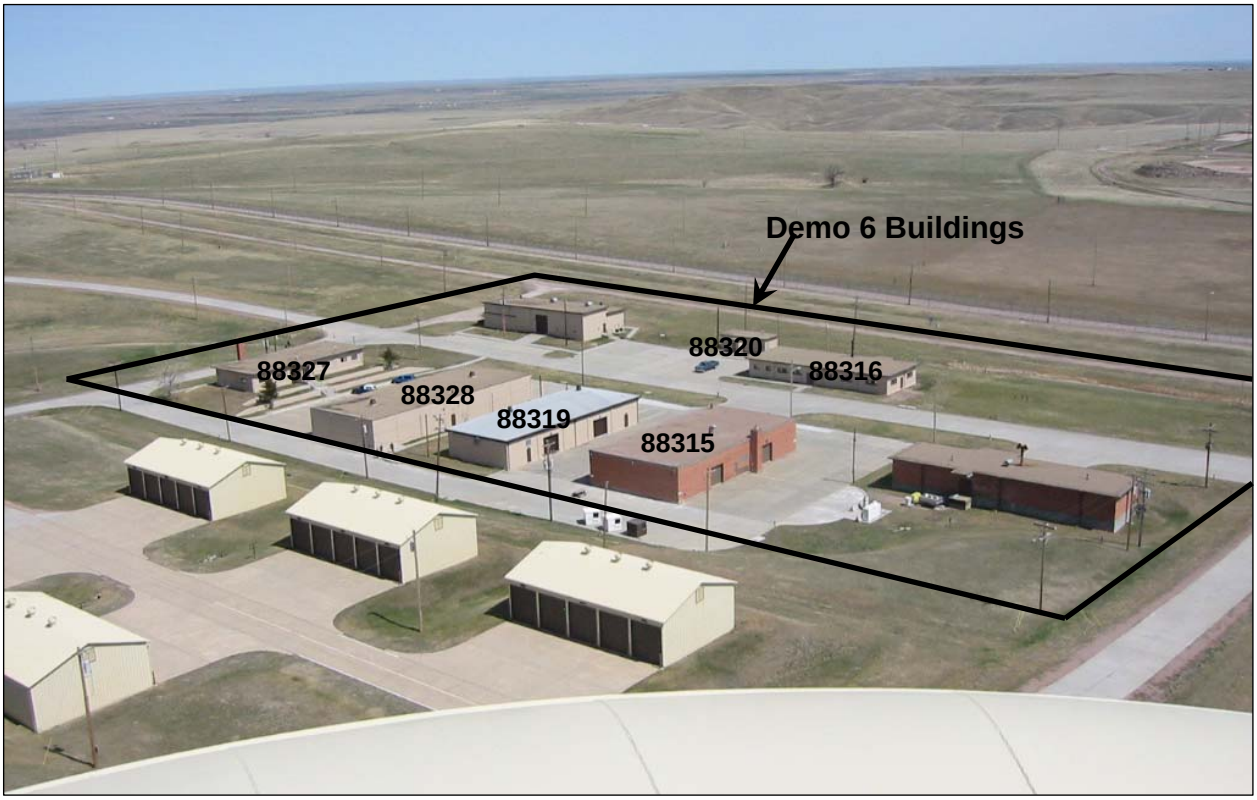
APPENDIX A

Facility Maps and Photographs

Aerial Photos



Ellsworth AFB MSA



Ellsworth AFB MSA

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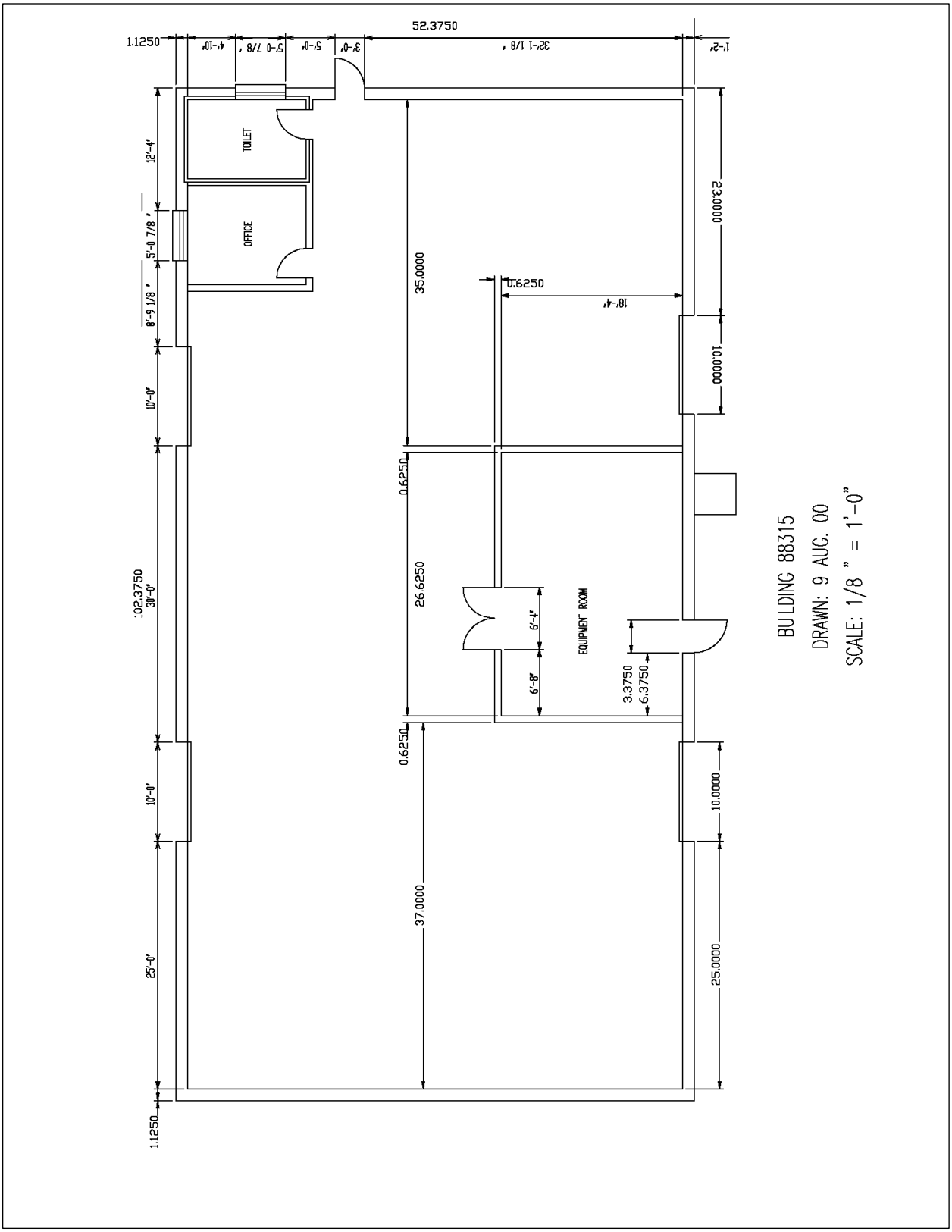
Building Photos

Building 88315 - storage facility for inert spares

Building 88319 - storage facility for inert spares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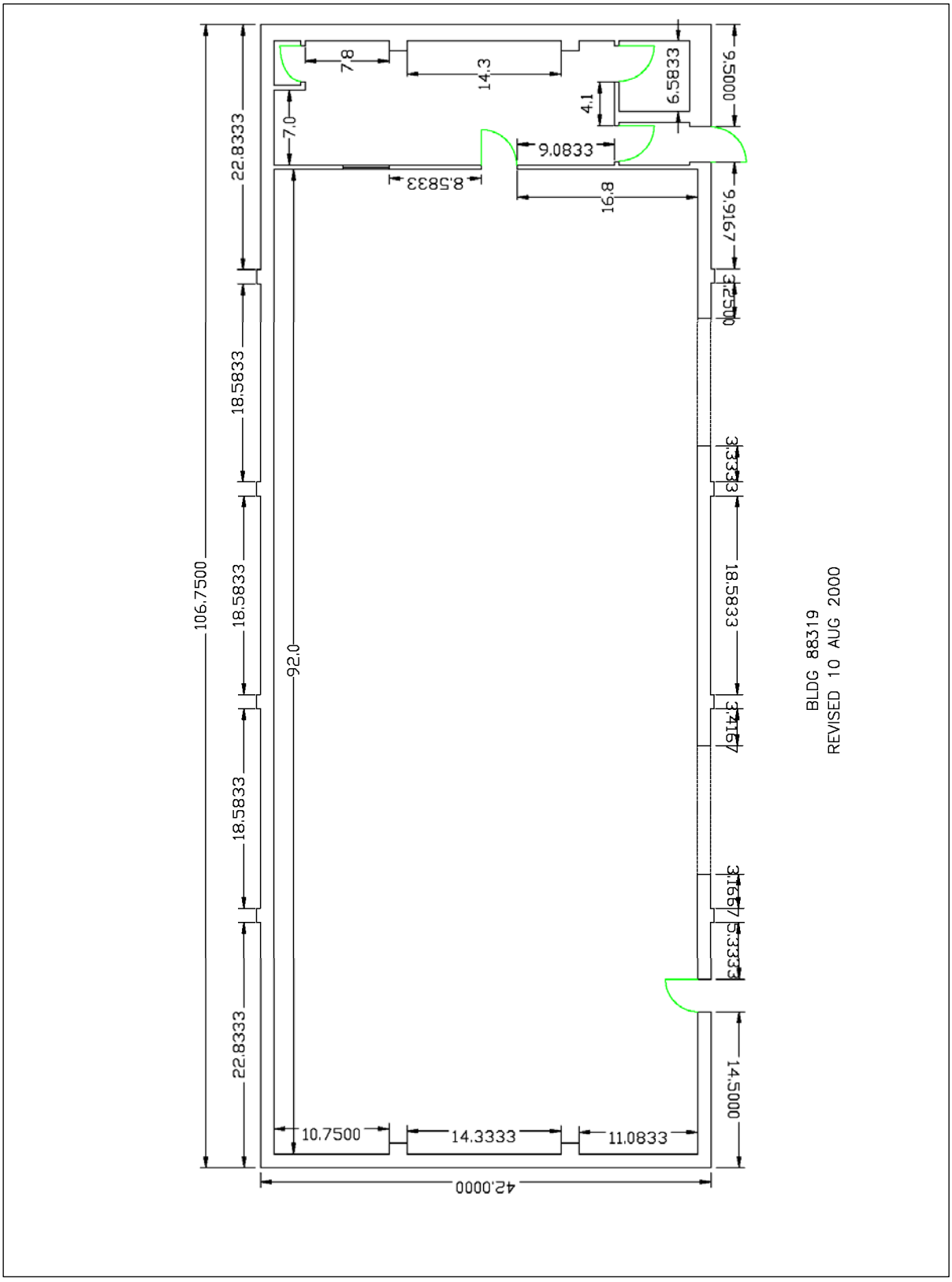
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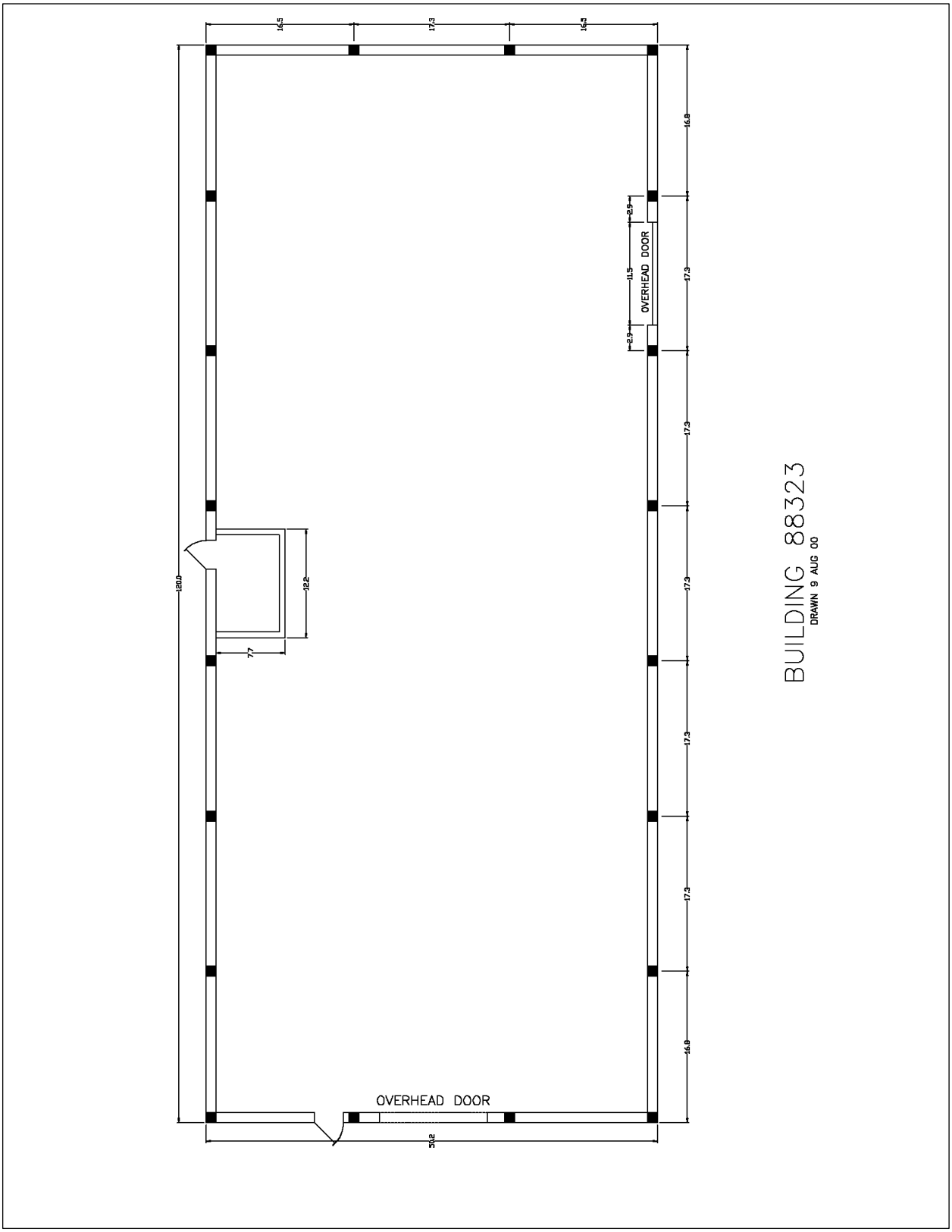
BLDG 88319
REVISED 10 AUG 2000

Building 88323 - storage facility for inert spares

Building 88327 - communications operation facility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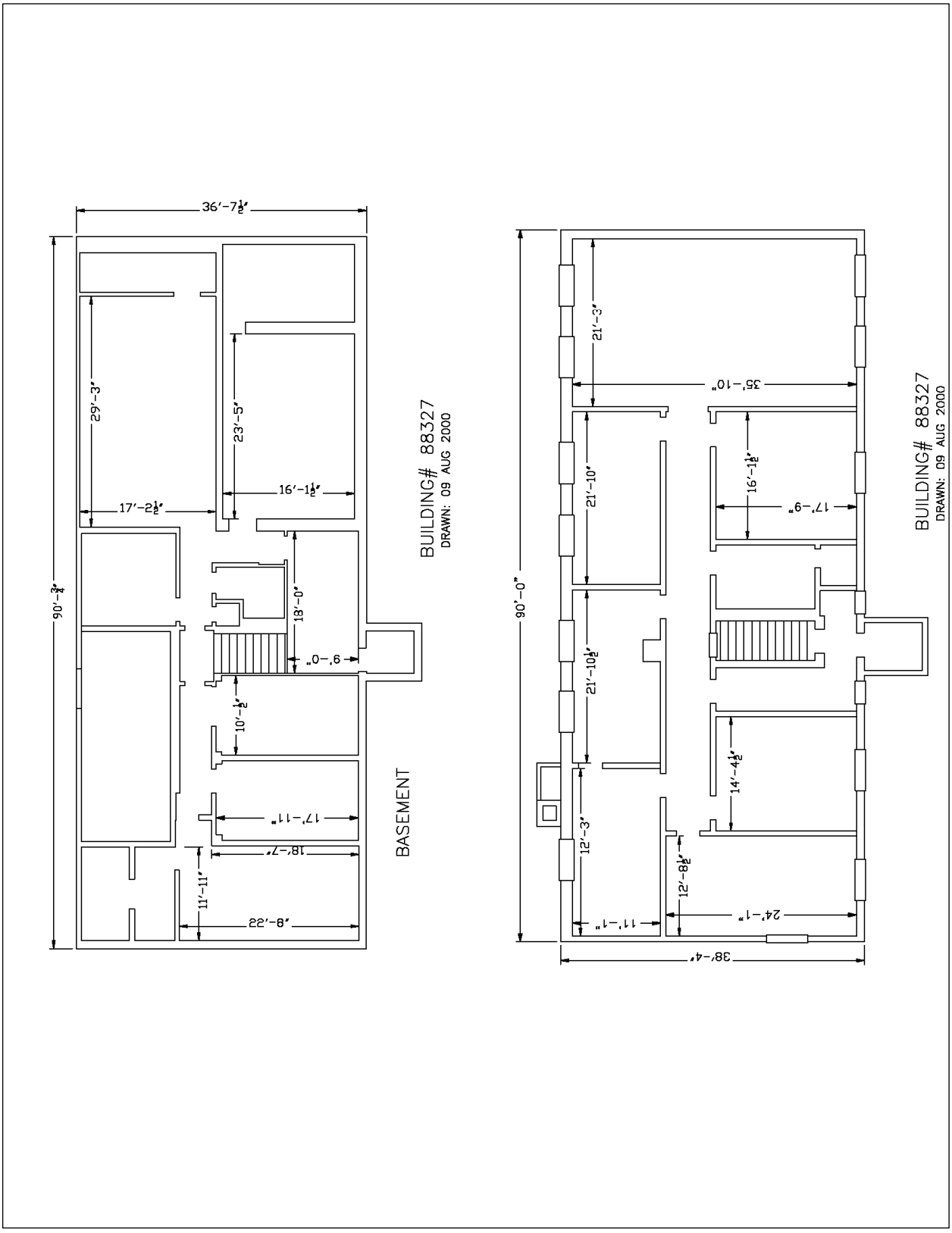
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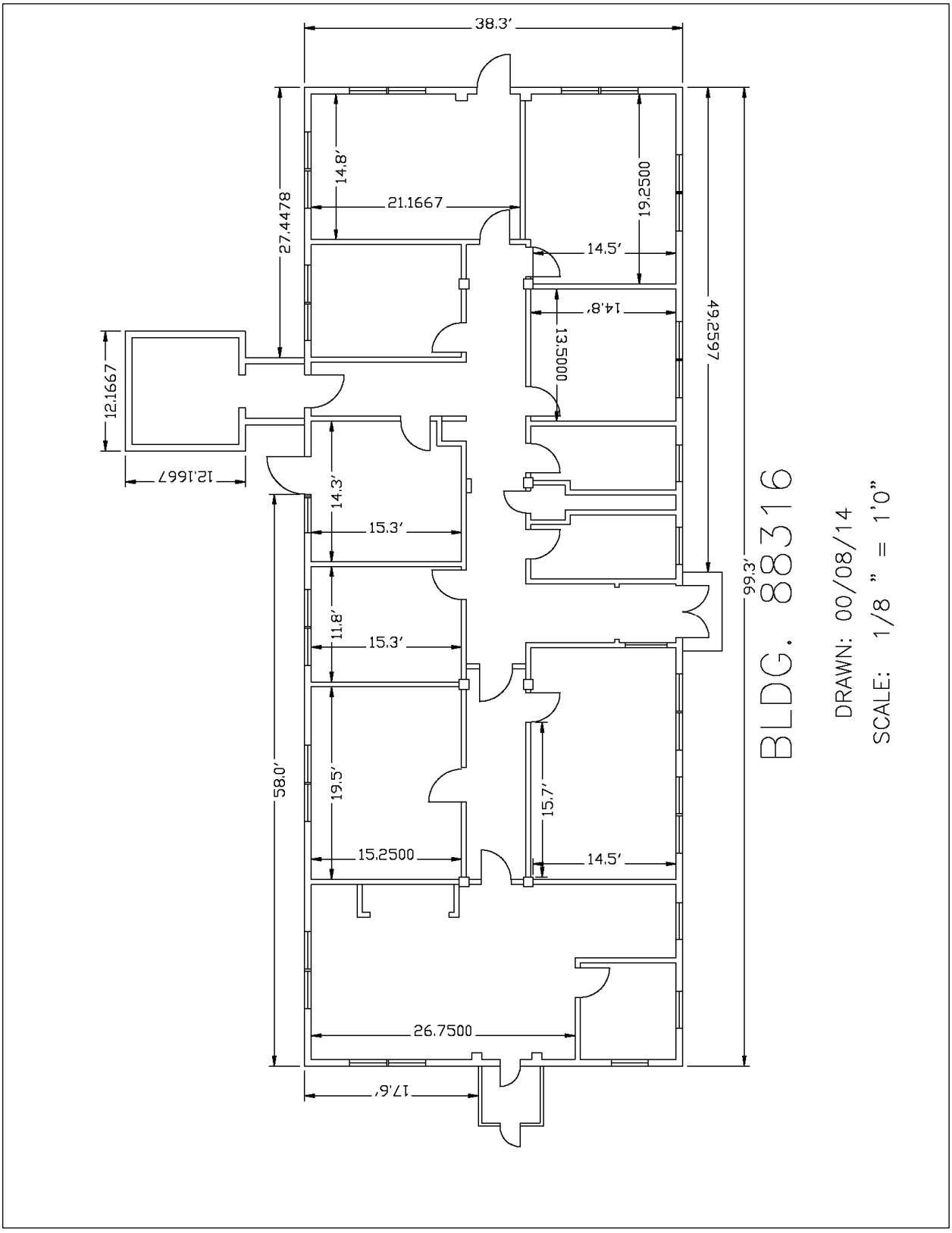
Building 88316 – Admin Building

88320 – Crew Readiness Building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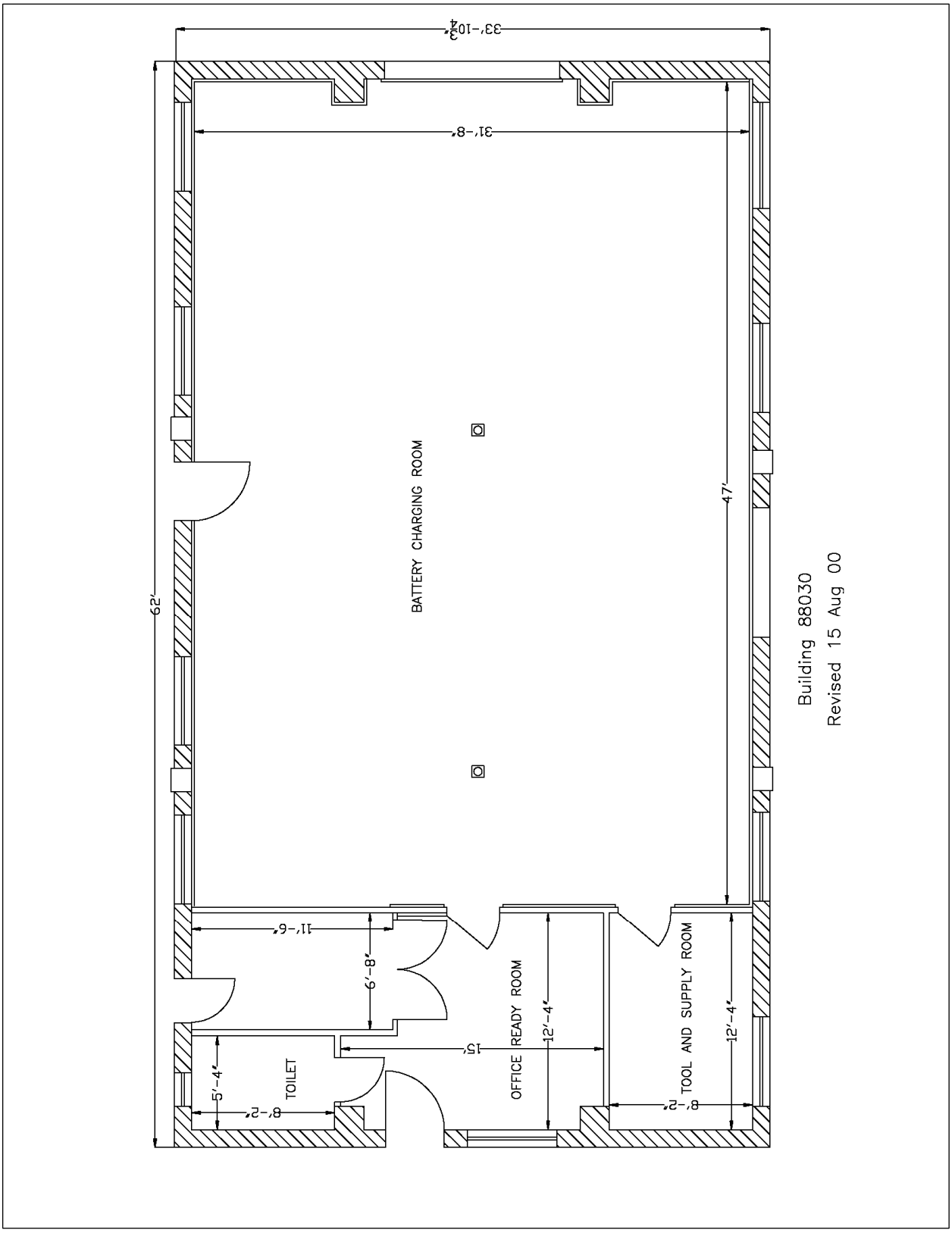
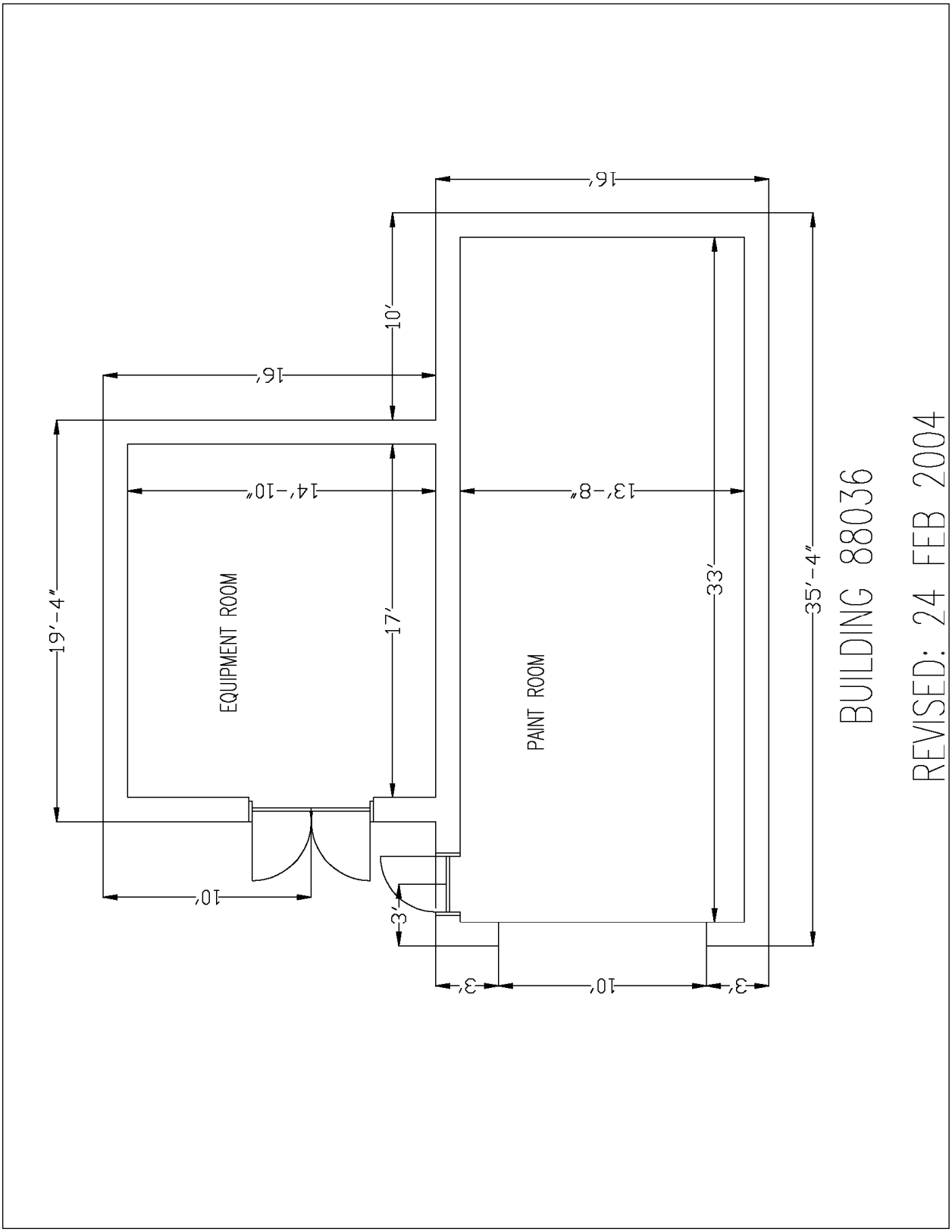
15.7'
15.2500
14.5'
26.7500
17.6'
99.3'
BLDG. 88316
DRAWN: 00/08/14
SCALE: 1/8 " = 1'0"

Building 88030 - Warehouse, Supplies and Equipment Building


33'-10¾"
31'-8"
62'
47'
BATTERY CHARGING ROOM
11'-6"
6'-8"
15'
12'-4"
TOILET
5'-4"
8'-2"
OFFICE READY ROOM
TOOL AND SUPPLY ROOM
8'-2"
12'-4"
Building 88030
Revised 15 Aug 00

Building 88036 – Paint Shop


BUILDING 88036
REVISED: 24 FEB 2004
EQUIPMENT ROOM
PAINT ROOM
16'
10'
16'
14'-10"
13'-8"
19'-4"
17'
33'
35'-4"
10'
3'
3'
10'
3'

APPENDIX B

Agency Correspondence

DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 28TH MISSION SUPPORT GROUP (ACC)
ELLSWORTH AIR FORCE BASE, SOUTH DAKOTA

4 February 2004

John Morgenstern
Cultural Resources Manager
28CES/CEVP
1203 Scott Drive
Ellsworth AFB, SD 57706

SECTION 106 DETERMINATION
Based upon the information provided to the South Dakota State Historic Preservation Office on 6 Feb 04 we concur with your agency's determination of "No Historic Properties Affected" for this undertaking.

State Historic Preservation Officer (SHPO)

By: [signature] 040206
5 MAR 04 SHPO Project #
Date

Mr. Stephen Rogers
Historic Preservation Coordinator
Cultural Heritage Center
900 Governors Drive
Pierre, SD 57501

Dear Mr. Rogers

Ellsworth AFB proposes to demolish 12 buildings on the air base as a condition of new military construction (MILCON) and as part of an ongoing process to reduce assets that no longer serve their original function and/or cannot be utilized for another purpose. Most of these buildings are involved with MILCON projects. Congress has mandated that for each square foot of new construction, an equal amount of old, non-serviceable buildings be demolished.

Enclosed for your review is a photo and short history for each building proposed for demolition. Of the buildings proposed for demolition, six were constructed in 1952, one in 1955, and four in 1956, one of which had a major remodel in 1990. As indicated on the enclosures, those buildings constructed between 1952 and 1956 have undergone varying degrees of change, both internally and externally. Externally, some remain largely unchanged from a historic perspective, while others retain little historic integrity and character. The same is true of the building interiors. Based on the information provided, I believe the proposed building demolition would affect historic properties as follows:

Building 8217* (constructed 1956/1990) - No Historic Properties Affected
Building 8301 (constructed 1955) - No Historic Properties Affected
Building 8302* (constructed 1956) - No Historic Properties Affected
Building 88020 (constructed 1952) - No Historic Properties Affected
Building 88247* (constructed 1956) - No Historic Properties Affected
Building 88307 (constructed 1952) - No Historic Properties Affected
Building 88315 (constructed 1952) - No Historic Properties Affected
Building 88316 (constructed 1952) - No Historic Properties Affected
Building 88319 (constructed 1952) - No Historic Properties Affected
Building 88323* (constructed 1956) - No Historic Properties Affected
Building 88327 (constructed 1952) - No Historic Properties Affected
Building 88328* (constructed 1956) - No Historic Properties Affected

* These buildings were not included in the Ellsworth AFB Cultural Resources Survey Report, completed by Renewable Technologies, Inc. (Hufstetler, et al.) in September 1997.

Global Power For America

In 1997 Renewable Technologies, Inc. completed a survey of cultural resources on Ellsworth Air Force Base. This survey documented all existing buildings on the base constructed in 1955 or earlier. While six of the buildings proposed for demolition are considered historic based on age and the retention of some historic characteristics, none were determined to be independently eligible for the National Register of Historic Places. The remaining buildings neither meet the age criteria nor would they be considered eligible under criteria exception "g".

I request the SHPO make a determination per Section 106 of the Historic Preservation Act regarding the proposed demolition of these buildings, within 30 days receipt of this package.

Sincerely

JOHN MORGENSTERN, GS-11

Attachment:
Photos with Bldg Information

APPENDIX C

Air Quality Calculations

Table C-1. Construction Equipment Emission Factors

Construction Equipment	Emission Factors (lbs/hour)					
	VOC	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Front-end loader	0.173	0.5552	1.382	0.0012	0.0776	0.069
Small excavator	0.1816	0.5977	1.4225	0.0013	0.0776	0.069
Medium excavator	0.1816	0.5977	1.4225	0.0013	0.0776	0.069
Large excavator	0.1816	0.5977	1.4225	0.0013	0.0776	0.069
Dozer	0.3789	1.695	3.4143	0.0025	0.1474	0.1312
Backhoe	0.1307	0.4142	0.8303	0.0008	0.0639	0.0569
Bobcat-style loader	0.173	0.5552	1.3821	0.0012	0.0768	0.0684
Crane	0.1882	0.6365	1.6948	0.0014	0.0755	0.0672
Generator	0.113	0.3549	0.7249	0.0007	0.0446	0.0397

1. Emission factors are from the South Coast Air Quality Management District offroad emission factor tables for the year 2007, http://www.aqmd.gov/ceqa/handbook/offroad/offroad.html (South Coast Air Quality Management District 2008).
2. Assumed composition emission factors for each equipment type.
3. $PM_{2.5}$ emission factors were calculated following the South Coast Air Quality Management District Particulate Matter (PM) 2.5 Significance and Calculation Methodology (South Coast Air Quality Management District 2006).

Table C-2. Vehicle Emission Factors

Vehicle Type	Emission Factors (lbs/mile)					
	VOC	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Passenger car	0.001383	0.01282	0.001361	0.000009	0.00008	0.000074
Delivery truck	0.002608	0.017455	0.024978	0.000033	0.00044	0.000424
Dump truck	0.002608	0.017455	0.024978	0.000033	0.00044	0.000424
Water truck	0.002608	0.017455	0.024978	0.000033	0.00044	0.000424
Pickup	0.001383	0.01282	0.001361	0.000009	0.00008	0.000074

1. Emission factors are from the South Coast Air Quality Management District onroad emission factor tables for the year 2007, http://www.aqmd.gov/ceqa/handbook/onfroad/onroad.html (South Coast Air Quality Management District 2008)
2. $PM_{2.5}$ emission factors were calculated following the South Coast Air Quality Management District Particulate Matter (PM) 2.5 Significance and Calculation Methodology (South Coast Air Quality Management District 2006).

Table C-3. Fugitive Dust Calculations

Grading Emissions					
Acres Graded per Day	$PM_{2.5}$ Emissions (lb/day)	Project Total PM_{10}	Project Total $PM_{2.5}$	Proposed Action Total PM_{10}	Proposed Action Total $PM_{2.5}$
0.5	1.04	25.00	5.20	300.00	62.40
Demolition					
Volume of Demolished Material per Day (ft^3/day)	$PM_{2.5}$ Emissions (lb/day)	Project Total PM_{10}	Project Total $PM_{2.5}$	Proposed Action Total PM_{10}	Proposed Action Total $PM_{2.5}$
915	0.08	1.92	0.40	23.06	4.80

1. Emission factors for grading and demolition are from the URBEMIS2007 Software User's Guide (South Coast Air Quality Management District 2007)
2. $PM_{2.5}$ emission factors were calculated following the South Coast Air Quality Management District Particulate Matter (PM) 2.5 Significance and Calculation Methodology (South Coast Air Quality Management District 2006).

Table C-4. Ellsworth AFB MSA Demolition Emissions

Construction Equipment Emissions

			Emission Factors (lbs/hour)						Emissions (lbs/day)					
Construction Equipment	**Quantity**	**Hours per Day**	**VOC**	**CO**	**NO_x**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**	**VOC**	**CO**	**NO_x**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Front-end loader	1	4	0.173	0.5552	1.382	0.0012	0.0776	0.069	0.69	2.22	5.53	0.00	0.31	0.28
Small excavator	2	4	0.1816	0.5977	1.4225	0.0013	0.0776	0.069	1.45	4.78	11.38	0.01	0.62	0.55
Medium excavator	1	4	0.1816	0.5977	1.4225	0.0013	0.0776	0.069	0.73	2.39	5.69	0.01	0.31	0.28
Large excavator	1	8	0.1816	0.5977	1.4225	0.0013	0.0776	0.069	1.45	4.78	11.38	0.01	0.62	0.55
Dozer	2	4	0.3789	1.695	3.4143	0.0025	0.1474	0.1312	3.03	13.56	27.31	0.02	1.18	1.05
Backhoe	1	4	0.1307	0.4142	0.8303	0.0008	0.0639	0.0569	0.52	1.66	3.32	0.00	0.26	0.23
Bobcat-style loader	1	4	0.173	0.5552	1.3821	0.0012	0.0768	0.0684	0.69	2.22	5.53	0.00	0.31	0.27
Crane	1	4	0.1882	0.6365	1.6948	0.0014	0.0755	0.0672	0.75	2.55	6.78	0.01	0.30	0.27
Generator	2	10	0.113	0.3549	0.7249	0.0007	0.0446	0.0397	2.26	7.10	14.50	0.01	0.89	0.79
Daily Totals									9.32	34.16	76.92	0.06	3.91	3.48
Building Totals									46.61	170.79	384.61	0.32	19.53	17.38
Construction Emissions Total									559.37	2049.50	4615.27	3.86	234.38	208.54

Table C-4. Ellsworth AFB MSA Demolition Emissions, Cont'd

Vehicle Emissions

			Emission Factors (lbs/mile)						Emissions (lbs/day)					
Vehicle Type	**Quantity**	**Miles per Day**	**VOC**	**CO**	**NO_x**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**	**VOC**	**CO**	**NO_x**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Delivery truck	2	10	0.002608	0.017455	0.024978	0.000033	0.00044	0.000424	0.05	0.35	0.50	0.00	0.01	0.01
Dump truck	1	20	0.002608	0.017455	0.024978	0.000033	0.00044	0.000424	0.05	0.35	0.50	0.00	0.01	0.01
Water truck	1	20	0.002608	0.017455	0.024978	0.000033	0.00044	0.000424	0.05	0.35	0.50	0.00	0.01	0.01
Passenger car	10	15	0.001383	0.01282	0.001361	0.000009	0.00008	0.000074	0.21	1.92	0.20	0.00	0.01	0.01
Pickup	5	15	0.001383	0.01282	0.001361	0.000009	0.00008	0.000074	0.10	0.96	0.10	0.00	0.01	0.01
Daily Totals									0.47	3.93	1.80	0.00	0.04	0.04
Building Total									2.34	19.66	9.02	0.02	0.22	0.21
Vehicle Emissions Total									28.06	235.91	108.29	0.24	2.66	2.53
Grading Emissions									-	-	-	-	300.00	62.40
Demolition Emissions									-	-	-	-	23.06	4.80
Proposed Action TOTAL (lbs)									587.43	2285.41	4723.57	4.10	560.11	278.26
Proposed Action TOTAL (tons)									**0.29**	**1.14**	**2.36**	**0.00**	**0.28**	**0.14**

Proposed Action TOTAL emissions includes emissions associated with demolition of all 12 buildings.
To provide a conservative assessment, it was assumed that all demolition and subsequent grading activities would occur within one calendar year.

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