July

2022

Draft

Environmental Assessment

Addressing Infrastructure Improvements at Cannon Air Force Base, New Mexico

United States Air Force
Air Force Special Operations Command
27th Special Operations Wing

PRIVACY ADVISORY

This EA is provided for public comment in accordance with the National Environmental Policy Act (NEPA), the President's Council on Environmental Quality (CEQ) NEPA Regulations (40 CFR Parts 1500–1508), and 32 CFR Part 989, Environmental Impact Analysis Process (EIAP).

The EIAP provides an opportunity for public input on Air Force decision-making, allows the public to offer inputs on alternative ways for the Air Force to accomplish what it is proposing, and solicits comments on the Air Force's analysis of environmental effects.

Written comments and inquiries regarding this document should be directed by mail to NEPA Manager, 27th Special Operations Civil Engineer Squadron, 506 North Air Commando Way, Cannon AFB, New Mexico 88103, or via email to 27soces.ceie.environmental@us.af.mil.

Public commenting allows the Air Force to make better, informed decisions. Letters or other written or oral comments provided may be published in the EA. As required by law, comments provided will be addressed in the EA and made available to the public. Providing personal information is voluntary. Any personal information provided will be used only to identify your desire to make a statement during the public comment portion of any public meetings or hearings or to fulfill requests for copies of the EA or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of EA; however, only the names of the individuals making comments and specific comments will be disclosed. Personal home addresses and phone numbers will not be published in the EA.

Draft Finding of No Significant Impact (FONSI) and Finding of No Practicable Alternative (FONPA)

FOR THE

ENVIRONMENTAL ASSESSMENT ADDRESSING INFRASTRUCTURE IMPROVEMENTS AT CANNON AIR FORCE BASE, NEW MEXICO

Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to support the Air Force Special Operations Command (AFSOC) mission requirements by improving facilities, infrastructure, and utilities for current and future use at Cannon Air Force Base (AFB). The purpose of the new dormitory is to provide adequate housing that meets the mission requirements for airmen and addresses what is currently a 192-room deficit. The purpose of the 26 Special Tactics Squadron (STS) Equipment Storage Facility is to provide adequate storage facility space for 26 STS equipment displaced by emerging STS manning requirements. The purpose of relocating the Munitions Storage Area (MSA) is to mitigate risk by providing improved infrastructure and reducing conflicts with modern safety distance requirements.

The Environmental Assessment (EA) addressing the construction and operation of infrastructure improvements at Cannon AFB, New Mexico, attached hereto and incorporated herein, analyzes the potential impacts of the Proposed Action. The EA considers all potential impacts of the Proposed Action and the No Action Alternative. The EA also considers aggregate environmental impacts with other projects in the vicinity of the Proposed Action.

Description of the Proposed Action and Alternatives

Proposed Action. The United States Air Force (USAF) and AFSOC propose to construct and operate infrastructure at Cannon AFB, New Mexico. This would be accomplished through the construction of a 59,331 square foot dormitory southwest of dormitories 1155, 1159, and 1161 on West Alison Avenue; a 15,532 square foot storage facility near other 26 STS facilities on the eastern portion of Cannon AFB; and an approximately 240-acre MSA within the 603-acre land gift area at the southwest corner of Cannon AFB. These actions would restore military readiness by addressing a 192-dormitory room deficit, restore military readiness by providing adequate storage facility space for 26 STS equipment, and mitigate safety and distance violations by relocating the MSA. The Proposed Action would comply with Department of Defense (DoD) Anti-Terrorism/Force Protection (AT/FP) requirements per Unified Facilities Criteria (UFC) 4-010-01.

AFSOC E1–E4 manning at Cannon AFB has historically been documented at 18–20 percent overmanned (more personnel present than can be accommodated) per the installation's Unit Manning Document. The existing inventory at Cannon AFB includes 738 beds for E1–E4 included in 8 dormitories located on one campus. The Integrated Manpower Requirement Document outlines the requirement of 929 E1–E4 beds, which results in a deficit of 191 beds. This deficit has forced many E1–E4 airmen off installation for housing. The Clovis, New Mexico community has a shortage of adequate housing for commandos and drives the cost of living up for acceptable

housing. This puts many airmen in less desirable areas and housing units, affecting retainability and morale.

The 59,331 square foot, three-story, “1+1” (two room unit, one individual in each room) dormitory would include 192 rooms, each with private bathrooms and kitchenettes. The reinforced concrete foundation, steel frame, and reinforced concrete walls and floors would meet Integrated Manpower Requirement Document E1–E4 requirements. The exterior finish would consist of split-face concrete masonry unit walls and standing-seam metal roof. Construction would include all utilities, pavements, site improvements, landscaping, a paved parking lot, and all required facility support. Sustainable principles, to include life-cycle cost-effective practices, would be integrated into the design, development, and construction of the dormitory in accordance with UFC 1-200-02. This project would comply with DoD AT/FP requirements per UFC 4-010-01. This project would be located southwest of dorms 1155, 1159, and 1161 on West Alison Avenue.

26 STS organizes, trains, and equips Special Tactics operators for a variety of missions including precision strike, global access, personnel recovery, and battlefield surgery. The unit is currently located in temporary facilities pending completion of their fiscal years 2015 and 2016 Military Construction (MILCON) projects to construct facilities that properly support their training and day to day operations. In their current facilities, there is insufficient storage for specialized equipment; therefore, those assets are being stored outside with no protection from the harsh New Mexico environment. As for storage in their new facility, while the MILCON design originally included storage, changes in mission requirements, to include manning and administrative increases, necessitated more space for electrical, mechanical, and communications rooms. Manpower authorization during MILCON development was 189 but has since risen to 236. Construction of a separate, dedicated storage facility for specialized vehicles, boats, equipment, and deployment assets would allow 26 STS to continue to meet mission requirements.

The 15,532 square foot 26 STS Equipment Storage Facility would consist of a reinforced concrete foundation and floor slab, steel structure, insulated walls and standing seam metal roof, environmental control (heating, air conditioning and ventilation), fire detection and protection, mass notification system, etc. Construction would include all utilities, pavements, site improvements, landscaping, a paved parking lot, and all required facility support. Functional areas would include storage space, offices, and restrooms. Supporting facilities would include utilities, pavements, site improvements, communications, and all necessary support. DoD principles for high performance and sustainable building requirements would be included in the design and construction of the facility in accordance with federal laws and executive orders (EO). Low impact development features would be included in the design and construction as appropriate. This project would provide AT/FP features and comply with AT/FP regulations and physical security mitigation in accordance with DoD Minimum Anti-Terrorism Standards for Buildings.

The existing MSA poses numerous concerns to include: (1) the munitions storage facility and bomb build-up pad are currently used as a conventional munitions maintenance facility though not designed to support maintenance actions; (2) there is insufficient lighting within the munitions storage structures; (3) the installation master plan mapping is inaccurate; (4) the location of the

electrical substation (just north of the existing MSA) is too close and requires Public Traffic Route Distance arcs due to its dual use; (5) conventional munitions maintenance and munitions inspection facilities violate multiple distance regulations; and (6) Water Well 5 does not solely support the MSA, does not meet safety criteria, and has multiple distance violations.

The new MSA would be constructed within the 603-acre land gift area at the southwest corner of Cannon AFB. The facilities would house Special Operations Forces-specific munition operations and include earthen covered storage igloos, aboveground magazine storage facilities, earthen berms, spare inert munition storage, munition shops, and administrative facilities and multicubes. Supporting facilities would include roads, driveways, privately-owned and government-owned vehicle parking, fencing, and utilities that are directly related to the functioning of the facilities being constructed as well as any other necessary support/critical features. Existing MSA facilities currently occupied by the Special Operations Forces specific functions would be demolished and replaced as a part of the Proposed Action. DoD principles for high performance and sustainable building requirements would be included in the design and construction of the MSA in accordance with federal laws and EOs. Sustainability and energy features, as well as cyber security measures would be put in place. Low impact development features would be included in the design and construction as appropriate. No areas would be left bare following construction, and the Sustainable Landscape Development Plan would be followed when revegetating the disturbed area. This project would provide AT/FP features and comply with AT/FP regulations and physical security mitigation in accordance with DoD Minimum Anti-Terrorism Standards for Buildings.

Construction of the new infrastructure at Cannon AFB would result in 91.69 acres of ground disturbance from demolition activities and 193.33 acres of new construction disturbance.

Alternatives. Potential alternatives for each project were considered but dismissed and not carried forward for full environmental analysis in the EA in accordance with the four universal selection standards discussed in **Section 2.2** of the EA.

No Action Alternative. The No Action Alternative is carried forward for further analysis in the EA to provide a baseline against which the effects of the Proposed Action can be assessed. The No Action Alternative would be “no change” from current practices or continuing with the present course of action until that action is changed.

Under the No Action Alternative, the new infrastructure would not be constructed and AFSOC would not address the 192-dormitory room deficit, provide adequate storage facility space for 26 STS equipment, or mitigate risk due to the location of the existing MSA. The No Action Alternative would maintain the current inadequate state of the installation’s military housing availability, storage space, and MSA. The No Action Alternative in the EA assumes that the Proposed Action would not occur.

Summary of Environmental Effects

The Proposed Action and alternatives have been reviewed in compliance with the National Environmental Policy Act, as implemented by Council on Environmental Quality and USAF regulations. The analysis focuses on the following environmental resources: noise, air quality,

land use, geological resources, water resources, biological resources, cultural resources, infrastructure, hazardous materials and wastes, and safety. The analysis in the EA for each of the environmental resource areas listed above identified negligible to moderate adverse impacts under the Proposed Action. Potential environmental effects are not expected to be significant. A summary of the environmental consequences is provided in **Table 2-1** of the EA.

Stakeholder Involvement

Based on the description of the Proposed Action as set forth in the EA, all activities have been found to comply with the criteria or standards of environmental quality. Coordination with appropriate federal, state, and local agencies regarding this EA has been completed. The attached EA and this FONSI/FONPA were made available to the public for a 30-day review period on 8 July 2022. Agencies received coordination throughout the EA development process, and their comments were addressed as part of the analysis of potential environmental effects performed in the EA.

Finding of No Practicable Alternative

EO 11988, *Floodplain Management*, requires federal agencies to avoid, to the maximum extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct and indirect support of development in a floodplain wherever there is a practicable alternative. If it is found that there is no practicable alternative, the agency must minimize potential harm to the floodplain and circulate a notice explaining why the action is to be located in the floodplain prior to taking action. Additionally, new construction in a floodplain must apply accepted flood proofing and flood protection, such as diverting water away from the area of development and implementing stormwater best management practices (BMPs).

Although no Federal Emergency Management Agency (FEMA) 100-year floodplains have been delineated on Cannon AFB, potential flooding areas and conceptual solutions to address flooding problems around the installation were identified in a 2009 drainage study for the installation. Significant flow of surface drainage from the north of Cannon AFB across the cantonment area and flightline toward the southeast occurs during heavy rain events. This flow area is identified in the 2009 study as the 100-year floodplain for Cannon AFB.

Short and long-term, minor, adverse and beneficial impacts on the 100-year floodplain would occur as a result of the Proposed Action. Construction of the storage facility would directly increase obstructions and impervious surfaces within the 100-year floodplain; meanwhile, demolition of the existing MSA would reduce impervious surfaces at the site. Implementation of appropriate BMPs during construction would limit short-term impacts from construction and demolition, such as sediment and surface runoff. Long-term, minor, adverse impacts on the floodplains would occur from operation of the storage facility because of the continued total increase of impervious surfaces within the 100-year floodplain. No impacts on FEMA floodplains have been identified within Cannon AFB.

A *Notice for Early Public Review of a Proposed Action in a 100-Year Floodplain* was published in *The Eastern New Mexico News* on 5 June 2022. No comments were received in response to this notice.

Pursuant to EO 11988 and the authority delegated in Headquarters Air Force Mission Directive 1-18, and in consideration of the findings of the EA, I find that there is no practicable alternative to this action and that these projects include all practicable measures to minimize harm to the environment. This decision has been made after considering all submitted information and considering a range of reasonable alternatives that would meet project requirements and are within the legal authority of the USAF.

Finding of No Significant Impact

Based on the information and analysis presented in the EA and on review of the public and agency comments submitted during the 30-day public comment period, I conclude that the environmental impacts of implementing installation development projects at Cannon AFB are not significant, that preparation of an Environmental Impact Statement is unnecessary, and that a FONSI/FONPA is appropriate.

CARLOS SOTO-LORENZO, GS-14, USAF
Deputy Base Civil Engineer

Date

Attachment: *EA Addressing Infrastructure Improvements at Cannon AFB, New Mexico*

COVER SHEET

DRAFT
ENVIRONMENTAL ASSESSMENT
ADDRESSING INFRASTRUCTURE IMPROVEMENTS AT CANNON AIR FORCE BASE, NEW MEXICO

Responsible Agencies: United States Air Force (USAF), Air Force Special Operations Command (AFSOC), 27th Special Operations Wing (SOW).

Affected Location: Cannon Air Force Base (AFB), New Mexico.

Proposed Action: Infrastructure Improvements at Cannon AFB.

Report Designation: Draft Environmental Assessment (EA).

Abstract: This EA was developed in compliance with USAF's *Environmental Impact Analysis Process* in support of construction and operation of infrastructure at Cannon AFB, New Mexico. The purpose of the Proposed Action is to support AFSOC mission requirements by improving facilities, infrastructure, and utilities for current and future use at Cannon AFB. The Proposed Action includes three separate construction projects—a 59,331 square foot dormitory southwest of dormitories 1155, 1159, and 1161 on West Alison Avenue; a 15,532 square foot storage facility near other 26th Special Tactics Squadron (STS) facilities on the eastern portion of Cannon AFB; and an approximately 240-acre Munitions Storage Area (MSA) within the 603-acre land gift area at the southwest corner of Cannon AFB. Existing MSA facilities currently occupied by the Special Operations Forces-specific functions would be demolished and replaced as a part of the Proposed Action. These actions would restore military readiness by addressing a 192-dormitory room deficit, restore military readiness by providing adequate storage facility space for 26 STS equipment, and mitigate risk by relocating the MSA.

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1 **ACRONYMS AND ABBREVIATIONS**

ACAM	Air Conformity Applicability Model
ACM	asbestos-containing material
AFB	Air Force Base
AFI	Air Force Instruction
AFMAN	Air Force Manual
AFSOC	Air Force Special Operations Command
AOC	area of concern
APE	area of potential effect
APZ	accident potential zone
asl	above sea level
AST	aboveground storage tank
AT/FP	Anti-Terrorism/Force Protection
bgs	below ground surface
BISON-M	Biota Information System of New Mexico
BMP	best management practice
CEIE	Civil Engineering Installation Environmental
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2e	carbon dioxide equivalent
CWA	Clean Water Act
CZ	clear zone
dB	decibel
dBA	A-weighted decibel
DNL	day-night sound level
DoD	Department of Defense
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
ESQD	Explosive Safety Quantity Distance
FD	Fire Department
FEMA	Federal Emergency Management Agency
FONPA	Finding of No Practicable Alternative
FONSI	Finding of No Significant Impact
FY	Fiscal Year
GHG	greenhouse gas
gpd	gallons per day
HCP	Hot Cargo Pad
HWMP	Hazardous Waste Management Plan
IBD	Inhabited Building Distance
ICRMP	Integrated Cultural Resource Management Plan
IDP	Installation Development Plan
INRMP	Integrated Natural Resources Management Plan
JAA	Jet A Aviation
kV	kilovolts
LBP	lead-based paint
MBTA	Migratory Bird Treaty Act
mcg	million cubic feet
MGD	million gallons per day
MILCON	Military Construction
MSA	Munitions Storage Area
MW	megawatts
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMDGF	New Mexico Department of Game and Fish
NMED	New Mexico Environment Department
NOA	Notice of Availability
NO_X	nitrogen oxide
NRHP	National Register of Historic Places
O_3	ozone
OSH	occupational safety and health
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyl
PGM	Precision Guided Missile
PM_{10}	particulate matter measured less than or equal to 10 microns in diameter
$PM_{2.5}$	particulate matter measured less than or equal to 2.5 microns in diameter
PNM	Public Service of New Mexico
POL	petroleum, oils, and lubricants
PPE	personal protective equipment
ppm	parts per million
PTRD	Public Traffic Route Distance

RCRA	Resource Conservation and Recovery Act
SHPO	State Historic Preservation Officer
SLDP	Sustainable Landscape Development Plan
SOCES	Special Operations Civil Engineer Squadron
SOF	Special Operations Forces
SOW	Special Operations Wing
SO_X	sulfur oxide
SPR	Spill Prevention and Response
STS	Special Tactics Squadron
TPH	total petroleum hydrocarbons
tpy	tons per year
UFC	Unified Facilities Criteria
USAF	United States Air Force
USC	United States Code
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UST	underground storage tank
VOCs	volatile organic compounds
WOTUS	Waters of the United States
WWTP	wastewater treatment plant

1.0 PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

Cannon Air Force Base (AFB) is in eastern New Mexico near the Texas panhandle, approximately 8 miles west of Clovis, New Mexico, and occupies 4,397 acres of land (see **Figure 1-1**). It was established during World War II and has hosted a variety of missions and aircraft types throughout its history. In 2007, Cannon AFB became home to the 27th Special Operations Wing (SOW), which operates CV-22 Osprey, C-130, MQ-9 Reaper, and other aircraft. 27 SOW is one of four United States Air Force (USAF) active-duty SOWs within Air Force Special Operations Command (AFSOC). The primary mission of the 27 SOW is to execute specialized airpower from a premier installation.

This Environmental Assessment (EA) supports a proposal by AFSOC to construct and operate infrastructure at Cannon AFB, New Mexico. The Proposed Action includes three separate construction projects—a 59,331 square foot dormitory southwest of dormitories 1155, 1159, and 1161 on West Alison Avenue; a 15,532 square foot storage facility near other 26th Special Tactics Squadron (STS) facilities on the eastern portion of Cannon AFB; and an approximately 240-acre Munitions Storage Area (MSA) within the 603-acre land gift area at the southwest corner of Cannon AFB. Existing MSA facilities currently occupied by the Special Operations Forces (SOF) specific functions would be demolished and replaced as a part of the Proposed Action. These actions would provide adequate housing by addressing a 192-dormitory room deficit, restore military readiness by providing adequate storage facility space for 26 STS equipment, and mitigate the risk of substandard facilities and failure to meet distance requirements by relocating the MSA.

While the anticipated construction start date for the dormitory is planned for Fiscal Year (FY) 2024 or 2025, no construction dates have been established for either the storage facility or MSA.

1.2 PURPOSE OF THE PROPOSED ACTION

The purpose of the Proposed Action is to support the AFSOC mission requirements by improving facilities, infrastructure, and utilities for current and future use at Cannon AFB. The purpose of the new dormitory is to provide adequate housing that meets the mission requirements for airmen and address the 192-room deficit. The purpose of the 26 STS Equipment Storage Facility is to provide adequate storage facility space for 26 STS equipment displaced by emerging STS manning requirements. The purpose of relocating the MSA is to mitigate risk by providing improved infrastructure and reducing conflicts with modern safety distance requirements.

1.3 NEED FOR THE PROPOSED ACTION

The AFSOC mission at Cannon AFB continues to grow and evolve, as do demands on aging facilities and infrastructure. Improvements and updates are needed to keep pace as warfare grows more technologically advanced and specialized. The need for the Proposed Action is to (1) restore military readiness by addressing a 192-dormitory room deficit, (2) restore military readiness by providing adequate storage facility space for 26 STS equipment, and (3) mitigate safety and distance violations by relocating the MSA. AFSOC does not have adequate facilities to meet or carry out their mission.

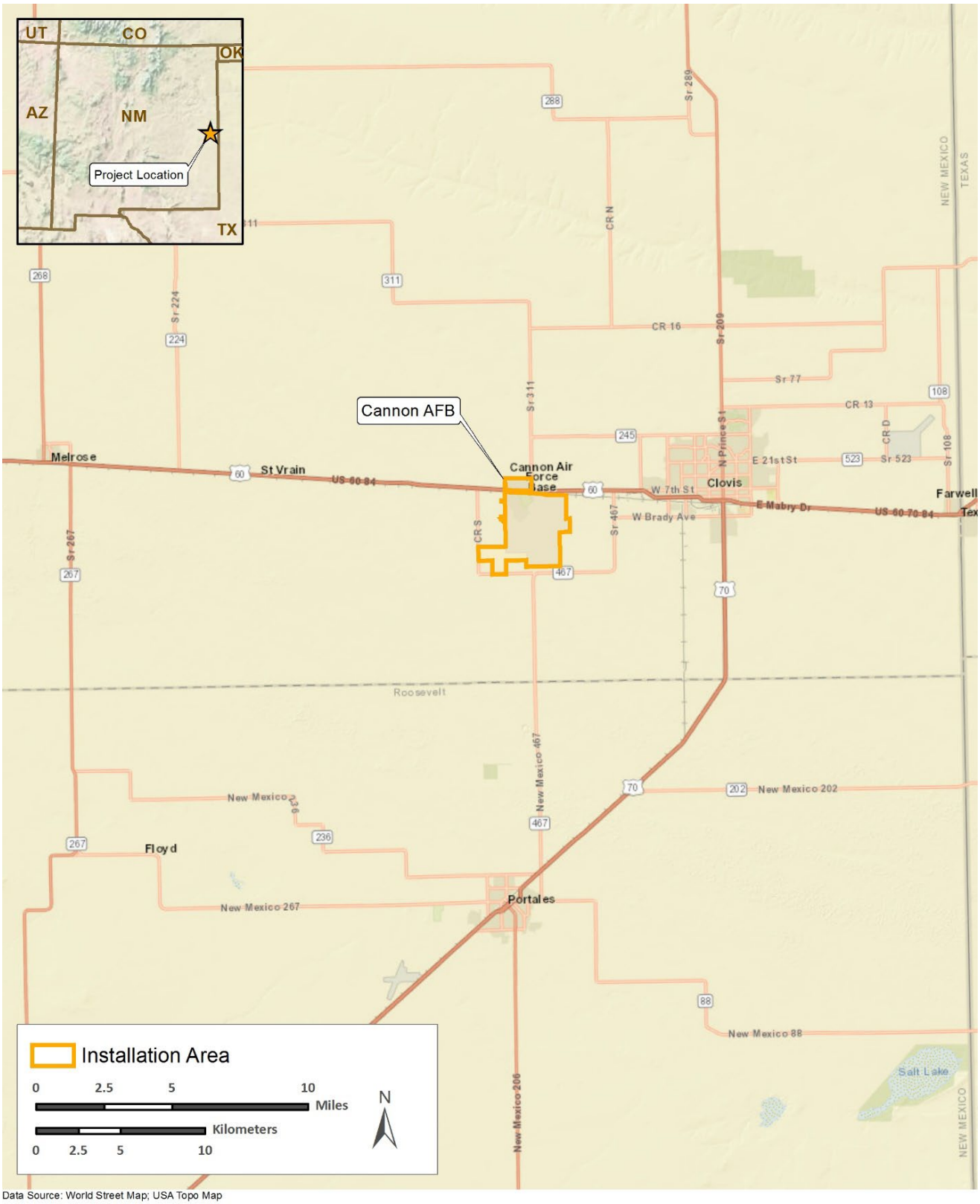

Figure 1-1. Cannon AFB Vicinity Map

1.4 DECISION TO BE MADE

The EA evaluates whether the Proposed Action would result in significant impacts on the human environment. If significant impacts are identified, Cannon AFB would undertake mitigation to reduce impacts to below the level of significance, undertake the preparation of an Environmental Impact Statement addressing the Proposed Action, or abandon the Proposed Action. If significant impacts are not identified, the EA would be finalized and a Finding of No Significant Impact (FONSI) would be signed. The decision would be made by the authorizing officer and could incorporate the Proposed Action, its alternatives, or any combination of the Proposed Action and alternatives. The EA is a planning and decision-making tool that will be used to guide Cannon AFB in implementing the Proposed Action in a manner that complies with all applicable federal, state, and local environmental laws and regulations and is consistent with USAF standards for environmental stewardship. It is prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) (42 United States Code [USC] 4331 et seq.), the regulations of the President's Council on Environmental Quality that implement NEPA procedures (40 Code of Federal Regulations [CFR] Parts 1500–1508), and the Air Force Environmental Impact Analysis Process (EIAP) Regulations at 32 CFR Part 989.

Because this EA includes the evaluation of actions proposed to occur within a 100-year floodplain, if it is determined that a FONSI is appropriate, a Finding of No Practicable Alternative (FONPA) and approval from Headquarters AFSOC would be required. In accordance with 32 CFR Part 989 and EO 11988, *Floodplain Management*, because construction of the storage facility and portions of the existing MSA demolition would occur within a 100-year floodplain, a FONPA would need to accompany the FONSI to discuss why no other practicable alternatives exist to avoid impacts. Impacts would be reduced by the maximum extent practicable through project design and implementation of environmental protection measures. Additionally, appropriate permits would be obtained from applicable regulatory agencies to address impacts and determine potential mitigation measures, if required. As required by EO 11988 and Air Force Manual (AFMAN) 32-7003, *Environmental Conservation*, early public notification for potential floodplain impacts was provided in *The Eastern New Mexico News* on Sunday, 5 June 2022.

1.5 INTERGOVERNMENTAL COORDINATION / CONSULTATIONS

1.5.1 Interagency and Intergovernmental Coordination and Consultations

Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, as amended by EO 12416, requires federal agencies to provide opportunities for consultation by elected officials of state and local governments that would be directly affected by a federal proposal. In compliance with NEPA, Cannon AFB notified relevant stakeholders about the Proposed Action and alternatives (see **Appendix A** for all stakeholder coordination materials). The notification process provided these stakeholders the opportunity to cooperate with Cannon AFB and provide comments on the Proposed Action and alternatives.

Per the requirements of Section 106 of the National Historic Preservation Act (NHPA) and implementing regulations (36 CFR Part 800), Section 7 of the Endangered Species Act (ESA) and implementing regulations (50 CFR Part 17) including the Migratory Bird Treaty Act (MBTA), findings of effect and a request for concurrence were transmitted to the State Historic Preservation Officer (SHPO) and the United States Fish and Wildlife Service (USFWS). A brief summary of comments received is shown below. All correspondence with SHPO and USFWS is included in **Appendix A**.

- ***SHPO (HPD Log 116983).*** The SHPO had no concerns about the construction of the new MSA but did request additional information regarding the location of access roads, construction staging areas, fences, and other infrastructure needed to support the MSA. They noted that a historic period archaeological site (LA 161297), which is eligible for listing in the National Register of Historic Places (NRHP), is near the area of potential effect (APE). The SHPO recommended that Cannon AFB design the project to avoid effects to this site. The SHPO also requested more information regarding the new dormitory. Specifically, if the project would require the demolition of existing buildings in the APEs. They asked that if any building demolition was planned, to provide their office with current documentation and NRHP evaluations for these buildings. Additionally, the SHPO requested more information concerning Cannon AFB's plan to demolish the existing MSA. Lastly, the SHPO had no concerns about the construction of the 26th STS storage facility, stating that the APEs had been surveyed and contains no properties eligible for listing the NRHP.
- ***USFWS.*** The USFWS clarified that the monarch butterfly (*Danaus plexippus*) is a candidate species and is not currently listed or proposed for listing under the ESA. It was noted that the lesser prairie-chicken (*Tympanuchus pallidicinctus*) is known to occur in Curry County, New Mexico. However, given the Southern Great Plains Crucial Habitat Assessment Tool category of the Proposed Action, distribution of habitat present relative to the installation, and distance to active and historic leks, there is no need to conference on the Proposed Action at this time. Additionally, coordination with the regional Migratory Birds Division for compliance with the MBTA and Bald and Golden Eagle Protection Act was encouraged.

Scoping letters were provided to relevant federal, state, and local agencies. The agencies were requested to provide information regarding impacts of the Proposed Action on the natural environment or other environmental aspects that they feel should be included and considered in the preparation of this EA. During the scoping period, the USAF received responses from two state agencies, the New Mexico State Land Office, and New Mexico Environment Department, and two landowners. A brief summary of the concerns and comments is shown below. All correspondence with federal, state, and local agencies is included in **Appendix A**.

- ***New Mexico State Land Office.*** The New Mexico State Land Office requested additional information regarding budget, risk and safety distance requirements, significant impacts, and disturbance boundaries. Cannon AFB provided the requested information via email.
- ***New Mexico Environment Department.*** The New Mexico Environment Department provided a listing of potential environmental impacts to evaluate as the installation prepares the EA. Recommended best management practices (BMPs) to be followed during that duration of the project were also provided. All applicable regulations and recommended BMPs were taken into consideration during the preparation of this EA.
- ***Landowner 1.*** Landowner 1 requested additional information regarding access to and potential impacts on their agricultural property. Cannon AFB provided the requested information via email. Restrictive easements would be required for the Proposed Action. The easements would not restrict the landowner from using the land for agricultural purposes but would grant the USAF permission to access the land surrounding the new MSA and restrict the landowner from building additional infrastructure on the land.
- ***Landowner 2.*** Landowner 2 noted they had no concerns with the proposed expansion.

1.5.2 Government to Government Coordination and Consultations

EO 13175, *Consultation and Coordination with Indian Tribal Governments*, directs federal agencies to coordinate and consult with Native American tribal governments whose interests may be directly and substantially affected by activities on federally administered lands. To comply with legal mandates, federally recognized tribes that are historically affiliated with the geographic region were invited to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes (see **Appendix A** for all tribal coordination materials).

Scoping letters were provided to Native American tribes whose ancestors were historically affiliated with the land underlying Cannon AFB, inviting them to consult on the proposed undertakings outlined within this EA. Two comments from tribes were received. A brief summary of the concerns and comments is shown below. All correspondence is included in **Appendix A**.

- ***Southern Ute Indian Tribe***. The Southern Ute Indian Tribe requested additional information on the planned site to determine the impact on properties of religious and cultural importance. They accepted the invitation to consult and requested that the installation provide all previous survey reports and a map of the proposed project areas, as well as a project timeline.

- ***Pueblo of Laguna***. The Pueblo of Laguna determined they do not need to be part of the consultation process because the project would not fall within Laguna tribal lands. The pueblo would rely on the New Mexico SHPO should a Laguna or Ancestral Puebloan artifact or human remains be found.

1.6 PUBLIC AND AGENCY REVIEW OF DRAFT EA

A Notice of Availability (NOA) for the Draft EA will be published in *The Eastern New Mexico News* announcing the availability of the Draft EA. Letters will be provided to relevant federal, state, and local agencies and Native American tribal governments informing them that the Draft EA is available for review. Publication of the NOA will initiate a 30-day comment period. If open, a copy of the Draft EA will be made available for review at the Clovis-Carver Public Library at 701 N Main Street, Clovis, NM 88101. A copy of the Draft EA will also be made available for review online at *http://www.cannon.af.mil* under the Environment tab. At the closing of the public review period, applicable comments from the general public and interagency and intergovernmental coordination/consultation will be incorporated into the analysis of potential environmental impacts performed as part of the EA, where applicable, and included in **Appendix A** of the Final EA.

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2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

USAF and AFSOC propose to construct and operate the dormitory, storage facility, and MSA to satisfy the purpose of and need for the Proposed Action as described in **Sections 1.2** and **1.3**.

2.2 SELECTION STANDARDS

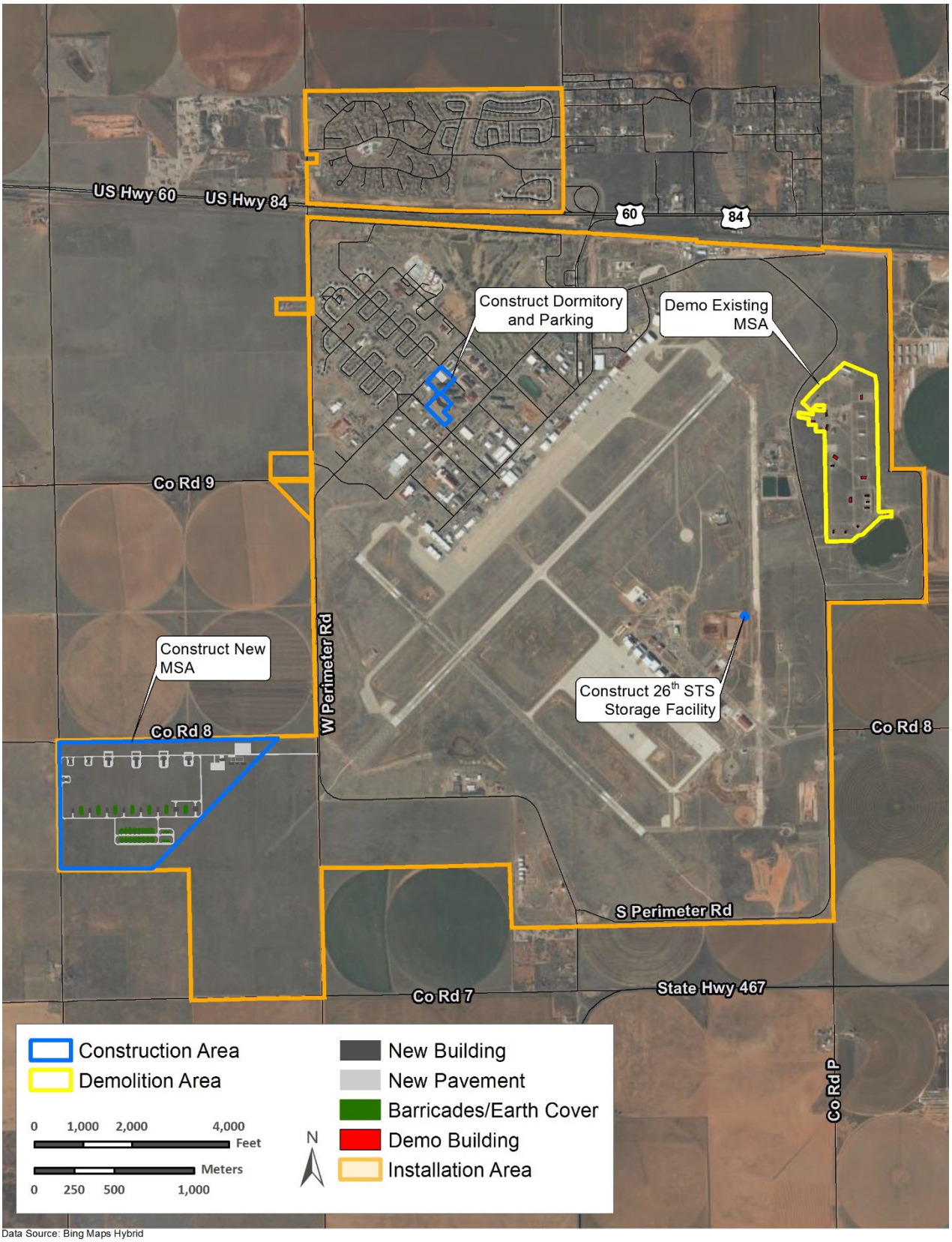
The scope and location of each project and, where applicable, their alternatives will undergo extensive review by AFSOC personnel, local government agencies, and supporting installation and USAF staff specialists. Potential alternatives were evaluated against four universal selection standards:

- **Selection Standard 1:** The alternative(s) must meet the purpose of the Proposed Action to remedy deficiencies in the infrastructure of Cannon AFB. The alternative(s) must also address the need to provide and maintain infrastructure that is adequate to support the installation's mission and applicable USAF, state, and federal requirements. Alternatives must also satisfy the purpose of and need for each individual project (see **Sections 1.2** and **1.3**).
- **Selection Standard 2:** The alternative(s) must make as much use as possible of existing land and facilities, avoid creating or maintaining redundant space or infrastructure, avoid or minimize operational inefficiencies, and represent the most cost-effective and sustainable alternative.
- **Selection Standard 3:** The alternative(s) must be consistent with all Cannon AFB internal planning documents and zoning requirements, applicable installation architectural compatibility guides, and relevant legal and regulatory requirements, and must accommodate applicable, known man-made and natural development constraints (e.g., Environmental Restoration Program [ERP] sites and floodplains—the relevant constraints vary depending on the project).
- **Selection Standard 4:** The alternative(s) must maintain or improve the quality of life enjoyed by personnel and dependents at Cannon AFB.

2.3 DETAILED DESCRIPTION OF THE ALTERNATIVES

2.3.1 Proposed Action

USAF and AFSOC propose to construct and operate infrastructure at Cannon AFB, New Mexico. This would be accomplished through the construction of a 59,331 square foot dormitory southwest of dormitories 1155, 1159, and 1161 on West Alison Avenue; a 15,532 square foot storage facility near other 26 STS facilities on the eastern portion of Cannon AFB; and an approximately 240-acre MSA within the 603-acre land gift area at the southwest corner of Cannon AFB (see **Figure 2-1**). These actions would restore military readiness by addressing a 192-dormitory room deficit, restore military readiness by providing adequate storage facility space for 26 STS equipment, and mitigate safety and distance violations by relocating the MSA. The Proposed Action would comply with Department of Defense (DoD) Anti-Terrorism/Force Protection (AT/FP) requirements per Unified Facilities Criteria (UFC) 4-010-01.



Data Source: Bing Maps Hybrid

Figure 2-1. Locations of the Proposed New Infrastructure

AFSOC E1–E4 manning at Cannon AFB has historically been documented at 18–20 percent overmanned (more personnel present than can be accommodated) per the installation's Unit Manning Document. The existing inventory at Cannon AFB includes 738 beds for E1–E4 included in 8 dormitories located on one campus. The Integrated Manpower Requirement Document outlines the requirement of 929 E1–E4 beds, which results in a deficit of 191 beds (CAFB 2018a). This deficit has forced many E1–E4 airmen off installation for housing. The Clovis, New Mexico community has a shortage of adequate housing for commandos and drives the cost of living up for acceptable housing. This puts many airmen in less desirable areas and housing units, affecting retainability and morale.

The 59,331 square foot, three-story, "1+1" (two room unit, one individual in each room) dormitory would include 192 rooms each with private bathrooms and kitchenettes. The reinforced concrete foundation, steel frame, and reinforced concrete walls and floors would meet Integrated Manpower Requirement Document E1–E4 requirements. The exterior finish would consist of split-face concrete masonry unit walls and standing-seam metal roof. Construction would include all utilities, pavements, site improvements, landscaping, a paved parking lot, and all required facility support. Sustainable principles, to include life-cycle cost-effective practices, would be integrated into the design, development, and construction of the dormitory in accordance with UFC 1-200-02. This project would comply with DoD AT/FP requirements per UFC 4-010-01. This project would be located southwest of dorms 1155, 1159, and 1161 on West Alison Avenue.

26 STS organizes, trains, and equips Special Tactics operators for a variety of missions including precision strike, global access, personnel recovery, and battlefield surgery. The unit is currently located in temporary facilities pending completion of their FYs 2015 and 2016 Military Construction (MILCON) projects to construct facilities that properly support their training and day to day operations. In their current facilities, there is insufficient storage for specialized equipment; therefore, those assets are being stored outside with no protection from the harsh New Mexico environment. As for storage in their new facility, while the MILCON design originally included storage, changes in mission requirements, to include manning and administrative increases, necessitated more space for electrical, mechanical, and communications rooms. Manpower authorization during MILCON development was 189 but has since risen to 236. Construction of a separate, dedicated storage facility for specialized vehicles, boats, equipment, and deployment assets would allow 26 STS to continue to meet mission requirements.

The 15,532 square foot 26 STS Equipment Storage Facility would consist of a reinforced concrete foundation and floor slab, steel structure, insulated walls and standing seam metal roof, environmental control (heating, air conditioning and ventilation), fire detection and protection, mass notification system, etc. Construction would include all utilities, pavements, site improvements, landscaping, a paved parking lot, and all required facility support. Functional areas would include storage space, offices, and restrooms. Supporting facilities would include utilities, pavements, site improvements, communications, and all necessary support. DoD principles for high performance and sustainable building requirements would be included in the design and construction of the facility in accordance with federal laws and EOs. Low impact development features would be included in the design and construction as appropriate. This project would provide AT/FP features and comply with AT/FP regulations and physical security mitigation in accordance with DoD Minimum Anti-Terrorism Standards for Buildings.

The existing MSA poses numerous concerns to include: (1) the munitions storage facility and bomb build-up pad are currently used as a conventional munitions maintenance facility though not designed to support maintenance actions; (2) there is insufficient lighting within the munitions storage structures; (3) the installation master plan mapping is inaccurate; (4) the location of the

electrical substation (just north of the existing MSA) is too close and requires Public Traffic Route Distance (PTRD) arcs due to its dual use; (5) conventional munitions maintenance and munitions inspection facilities violate multiple distance regulations; and (6) Water Well 5 does not solely support the MSA, does not meet safety criteria, and has multiple distance violations.

The new MSA would be constructed within the 603-acre land gift area at the southwest corner of Cannon AFB. The facilities would house SOF-specific munition operations and include earthen covered storage igloos, aboveground magazine storage facilities, earthen berms, spare inert munition storage, munition shops, and administrative facilities and multicubes. Supporting facilities would include roads, driveways, privately-owned and government-owned vehicle parking, fencing, and utilities that are directly related to the functioning of the facilities being constructed as well as any other necessary support/critical features. Existing MSA facilities currently occupied by SOF would be demolished once the new MSA facilities have been constructed as a part of the Proposed Action. DoD principles for high performance and sustainable building requirements would be included in the design and construction of the MSA in accordance with federal laws and EOs. Sustainability and energy features, as well as cyber security measures would be put in place. Low impact development features would be included in the design and construction as appropriate. No areas would be left bare following construction, and the Sustainable Landscape Development Plan (SLDP) would be followed when revegetating the disturbed area (CAFB 2022d). This project would be fenced and provide AT/FP features and comply with AT/FP regulations and physical security mitigation in accordance with DoD Minimum Anti-Terrorism Standards for Buildings.

Construction of the new infrastructure at Cannon AFB would result in 91.69 acres of ground disturbance from demolition activities and 193.33 acres of new construction disturbance.

2.3.2 No Action Alternative

Under the No Action Alternative, the new infrastructure would not be constructed and AFSOC would not address the 192-dormitory room deficit, provide adequate storage facility space for 26 STS equipment, or mitigate risk due to the location of the existing MSA. The No Action Alternative would maintain the current inadequate state of the installation's military housing availability, storage space, and MSA. The No Action Alternative would not meet the purpose of or need for the Proposed Action as described in **Section 1.3**; however, the USAF EIAP (32 CFR § 989.8[d]) requires consideration of the No Action Alternative. Therefore, the No Action Alternative will be carried forward for detailed analysis in the EA.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

The following alternatives were eliminated from further consideration based on the selection standards outlined in **Section 2.2** and other reasons as explained below.

2.4.1 Alternative for Dormitory Construction

2.4.1.1 *Use of Existing Building for New Dormitory*

Cannon AFB considered the option to repurpose an existing building near the current dormitories, but this alternative was eliminated due to space constraints. No buildings in the vicinity would be large enough to fulfill the 192-dorm deficit and would therefore not meet Selection Standards 1 and 4.

2.4.1.2 *Add 192 Rooms to Building 555*

Cannon AFB considered the option to add 192 rooms to Building 555, but this alternative was eliminated due to it having a high Net Present Value and a high cost-benefit ratio. This alternative would have resulted in 30 airmen currently living in Building 555 having to relocate off base because their rooms would have been adjacent to the new addition being constructed. Additionally, there are future plans to expand Building 575 which could have resulted in AT/FP concerns. This alternative would not meet Selection Standards 2, 3, and 4.

2.4.2 Alternative for 26 STS Equipment Storage

2.4.2.1 *Alternative Building Placement*

Cannon AFB considered the option to place the 26 STS equipment storage facility in other locations on the installation, but these alternatives were eliminated due to the lack of colocalization. There are no other locations existing near the 26 STS buildings and therefore a storage facility in any other location than the Proposed Alternative would not meet Selection Standard 1.

2.4.3 Alternatives for MSA

2.4.3.1 *Facility Updates in Existing MSA*

This alternative would have resulted in the demolition of substandard facilities and the construction of new munitions storage and inspection facilities and a conventional munitions maintenance and inspection shop. Implementation of this alternative would have been phased to mitigate negative effects to current operations; however, ongoing operations would have required workarounds. After working through this alternative, it was determined to be the least feasible alternative and was not carried forward for further analysis or estimation of costs (CAFB 2018b).

2.4.3.2 *Revised MSA Layout*

The proposed revised layout for the existing MSA was based on revised net explosives weights to existing explosives storage and operating facilities and optimizing the location and types of new storage facilities to meet mission requirements. Although there would have been optimization of MSA functions under this alternative, there would have been disadvantages associated with Explosive Safety Quantity Distance (ESQD) arcs and East Aderholt Loop Road. A decision was required whether to apply for a waiver for MSA ESQD arcs (PTRD arc) that currently extend beyond the road, or to close the road to public traffic. Upon full implementation of the site plan for this alternative, all MSA facilities would have met quantity distance requirements in accordance with Air Force Manual (AFMAN) 91-201, *Explosives Safety Standards*, eliminating the need for waivers associated with MSA operations. However, a Hot Cargo Pad (HCP), which will soon be expanded, would have ESQD arcs that extend beyond the proposed East Aderholt Loop Road realignment. In addition to the HCP PTRD arc, the road realignment would have also traversed the proposed skeet range safety arc, which would have resulted in the requirement for waivers or closure of the road.

The proposed improvements to the existing MSA included a new Precision Guided Missile (PGM) Shop. The only feasible location for the new PGM Shop was at the northeast end of the MSA. Another option for the new PGM Shop to the south would have required expansion of the MSA to the south and west, which would have required remediation of ERP sites, relocation of the wastewater treatment plant and HCP; identification of a new site for the skeet range/Combat Arms

Training and Maintenance, and closure of East Aderholt Loop Road, which as stated above is not feasible. Therefore, the option of MSA expansion to the southwest was determined to not be feasible due to potentially prohibitive costs and the long timeframe associated with all of the required implementation actions.

Another option considered for this alternative was siting the PGM Shop at the north end of the existing MSA. It also would have been necessary to purchase approximately 1.6 acres of private agricultural land in order to expand the installation perimeter near the proposed PGM shop to meet security requirements. Operations within the new PGM Shop would also have resulted in the expansion of existing Inhabited Building Distance (IBD) and PTRD arcs outside the installation's boundary.

Easements on private agricultural land to the east have been in place for years for MSA operations and, assuming an agreement could have been signed with the private landowner, the PGM Shop would have required an additional 40.3 acres of easements. The current easements include restrictions on private land use that limit the number of people that can gather, prohibits human habitation, and provides access by Cannon AFB. The IBD arcs would have required relocation of 10 privately-owned covered storage facilities. The PTRD arcs would not have affected private property since there are no public roads in the area. This option for MSA expansion was also determined to not be feasible due to potentially prohibitive costs (CAFB 2018b).

2.5 COMPARATIVE SUMMARY OF IMPACTS

The table below presents a summary of the impacts anticipated under the Proposed Action and No Action Alternative.

Table 2-1. Summary of Potential Impacts

Affected Resource	Proposed Action	No Action Alternative
Noise	Short- and long-term, negligible, adverse impacts would occur. The intermittent, temporary increases in construction noise would negligibly affect the ambient noise levels in the area. To reduce adverse impacts on the ambient noise environment, construction equipment would include use of noise abatement components, and other BMPs would be implemented. Vehicular traffic from daily personnel commuting to and from the new infrastructure would result in a slight increase in noise. Vehicular traffic would not result in an increase beyond ambient noise levels and would not impact noise sensitive receptors.	Existing conditions would remain unchanged.
Land Use	No short- or long-term, adverse impacts would occur. Following construction, no areas would be left bare in adherence with the SLDP for revegetation. Long-term, beneficial impacts would occur. Relocation of the MSA to the Southwest Development District would support AFSOC mission growth and mitigate failure to meet safety distance requirements and risk associated with substandard facilities and limited storage space at the existing MSA.	Existing conditions would remain unchanged.

Affected Resource	Proposed Action	No Action Alternative
Air Quality	Short-term, minor to moderate, and long-term, negligible, adverse impacts would occur. Emissions of criteria pollutants and greenhouse gases (GHGs) would occur during construction; however, such emissions would be temporary in nature. Construction activities would incorporate BMPs and environmental control measures to minimize adverse impacts. Long-term impacts would result from operational air emissions, which would be produced by the heating systems at the new infrastructure. GHG emissions would not meaningfully contribute to the potential impacts of global climate change.	Existing conditions would remain unchanged.
Geology and Soils	Short-term, moderate, adverse impacts on local topography and soil resources would occur. Construction activities would include ground disturbance or excavation to prepare the site for building construction; minor disturbances to soils to access adjacent utilities and construct new communications lines; grading to address surface water runoff during storm events; and potential installation of grade control structures. Strategies to minimize soil erosion and sedimentation would include environmental protection measures and appropriate BMPs.	Existing conditions would remain unchanged.
Water Resources	Short- and long-term, minor, adverse impacts would be expected during construction activities due to ground disturbance from the use of heavy equipment. Long-term, minor, adverse impacts would result from increased water usage by the new dormitory residents, which could place a new minor demand on the Ogallala Aquifer. The increased water demand would not be expected to cause Cannon AFB to exceed their allowed water use from the Ogallala Aquifer. Short-term, moderate, adverse impacts would be expected during construction. Demolition activities could transport sediment and other material into the adjacent North Playa wetland. Cannon AFB would obtain a Discharge Permit issued by the New Mexico Environment Department (NMED) if it is deemed necessary to release discharge into the impoundments on the installation. Additionally, implementation of standard stormwater protection BMPs and spill prevention and management plans would reduce or eliminate permanent, adverse impacts on the water quality of surface waters. Short and long-term, minor, adverse, and beneficial impacts on the 100-year floodplain would occur. Construction of the storage facility would directly increase obstructions and impervious surfaces within the 100-year floodplain; meanwhile, demolition of the existing MSA would reduce impervious surfaces. Long-term, minor, adverse impacts on the floodplains would occur from the increase of impervious surfaces within the 100-year floodplain. No impacts on Federal Emergency Management Agency (FEMA) floodplains have been identified within Cannon AFB.	Existing conditions would remain unchanged.

Affected Resource	Proposed Action	No Action Alternative
Biological Resources	Short-term, minor, adverse impacts on grassland vegetation would occur. Direct effects on vegetation from removal and crushing and indirect effects from soil compaction and the potential for establishment of invasive species would occur. However, long-term, negligible, beneficial impacts would result from revegetation or landscaping of disturbed sites with native species supporting the native plant community on the installation. Short- and long-term, minor to moderate, adverse impacts on wildlife species and habitat, and long-term, minor, beneficial impacts on wildlife and habitat would occur. Construction and demolition activities would result in temporary, minor degradation of wildlife habitat, while construction of the new facilities would result in permanent, minor to moderate degradation of habitat. Adherence to BMPs would minimize unnecessary disturbances to habitat. No impacts on federally or state listed threatened and endangered, or candidate species, would be expected to occur as no federal or state listed species have been observed on Cannon AFB.	Existing conditions would remain unchanged.
Cultural Resources	No short- or long-term impacts would occur. No known historic properties are present within the APE for the Proposed Action. Should inadvertent discoveries be made during construction or demolition, standard operating procedures for inadvertent discoveries outlined in the installation's Integrated Cultural Resource Management Plan (ICRMP) would be implemented.	Existing conditions would remain unchanged.
Infrastructure	Short- and long-term impacts are expected to occur on infrastructure systems, except for the liquid fuel system. Construction vehicles and equipment are not expected to utilize the liquid fuel system. The activities performed at the new facilities during operation would slightly increase electricity, natural gas, and water utilization and waste generated by Cannon AFB. Cumulatively, the Proposed Action and subsequent activities would have minor effects on the installation's infrastructure.	Existing conditions would remain unchanged.

Affected Resource	Proposed Action	No Action Alternative
Hazardous Materials and Wastes	Short-term, negligible to minor, adverse and long-term, negligible, adverse, and beneficial impacts would occur. Construction contractors would ensure handling and storage of hazardous material and petroleum products is carried out in compliance with applicable laws and regulation. Should any hazardous materials or petroleum products be released into the environment, adherence to applicable management plans would occur. BMPs and environmental protection measures would be implemented, reducing the potential for an accidental spill. No hazardous materials or wastes or petroleum products or wastes are stored within the MILCON project areas, and any hazardous materials and wastes or petroleum products and wastes within the existing MSA would be removed and disposed of accordingly prior to demolition. Negligible amounts of hazardous materials such as paints, adhesives, solvents, and cleansers would be used during operation and maintenance of the new infrastructure. All hazardous and petroleum wastes generated at the new MSA would be handled and disposed of in accordance with the installation's management plans and applicable laws and regulations. No impacts on or from ERP sites are expected to occur from construction of the new infrastructure. Because there are three areas of concern (AOCs) within the existing MSA, Cannon AFB would coordinate with NMED and demolition activities would adhere to all guidelines established by the installation and NMED.	Existing conditions would remain unchanged.
Safety	Short-term, negligible to moderate, adverse impacts on the health and safety of construction personnel would occur. Additionally, short-term, negligible, adverse impacts on the health and safety of military personnel that work near the 26 STS Equipment Storage Facility and new dormitory construction areas would occur. Demolition and operation of the MSA would result in short- and long-term, minor to moderate, adverse impacts on the health and safety of military personnel due to the potential for a mishap at the MSA. No impacts on public safety are expected.	Existing conditions would remain unchanged.

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3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 SCOPE OF THE ANALYSIS

3.1.1 Resources Analyzed

The resources in the project area that were analyzed include noise, land use, air quality, geology and soils, water resources, biological resources, cultural resources, infrastructure, hazardous materials and wastes, and safety. There are no proposed future projects in the surrounding area that would impact the Proposed Action.

The significance of an action is measured in terms of its context and intensity. The context and intensity of potential environmental impacts are described in terms of duration, the magnitude of the impact, and whether they are adverse or beneficial as summarized below:

- ***Short-term or long-term.*** In general, short-term impacts are those that would occur only with respect to a particular activity, for a finite period, or only during the time required for construction or installation activities. Long-term impacts are those that are more likely to be persistent and chronic.
- ***Significant, moderate, minor, negligible, or no impact.*** These relative terms are used to characterize the magnitude or intensity of an impact. Significant impacts are those effects that would result in substantial changes to the environment (as defined by 40 CFR § 1508.27) and should receive the greatest attention in the decision-making process. Less than significant impacts are those that would be slight but detectable.
- ***Adverse or beneficial.*** An adverse impact is one having unfavorable or undesirable outcomes on the man-made or natural environment. A beneficial impact is one having positive outcomes on the man-made or natural environment.

3.1.2 Resources Eliminated from Detailed Analysis

Based on the scope of the Proposed Alternative, environmental resources with few to no impacts were identified and removed from detailed analysis. The following describes those resource areas and why they were eliminated:

- ***Airspace Management.*** Under the Proposed Action, no changes to current airspace types, flight activities, or training would occur. Similarly, the No Action Alternative would not change any current flight patterns for aircraft in the area. The USAF anticipates no short- or long-term impacts on airspace management; therefore, airspace management has been eliminated from detailed analysis in this EA.
- ***Socioeconomics.*** Construction and demolition associated with the Proposed Action would result in temporary increases in payroll tax revenue from hired construction workers and the purchase of construction materials and goods in the local area. Long-term, the new dormitory would provide needed housing for installation personnel and contribute to a lower cost of living for those that previously lacked on-installation housing. Because these beneficial impacts are negligible, socioeconomics is not carried forward for detailed analysis.
- ***Environmental Justice.*** EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, and EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, require that federal agencies

address the potential effects of policies on minorities, low-income populations, and children. Because of the distance of the project areas from off-installation populated areas, no off-installation minority, low income, or youth populations would be adversely impacted by the Proposed Action; thus, they would not experience disproportionately high and adverse impacts. Therefore, environmental justice is not carried forward for detailed analysis.

3.2 NOISE

3.2.1 Affected Environment

Noise is defined as undesirable sound that interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Human responses to similar noise events vary depending on the type and characteristics of the noise, distance between the noise and receptor, time of day, and the noise sensitivity of the individual. Sensitive noise receptors could include specific locations (e.g., schools, churches, hospitals) or an expansive area (e.g., nature preserves, conservation areas, historic preservation districts) in which occasional or persistent sensitivity to noise above ambient levels exist. Noise is often generated by activities essential to a community's quality of life, such as construction or vehicular traffic.

Sound intensity is quantified using a measure of sound pressure level called decibels (dB). The A-weighted decibel (dBA) is a measurement in which "A-weighting" is applied to the dB to approximate a frequency response expressing the perception of sound by the human ear and deemphasizes the higher and lower frequencies that the human ear does not perceive well. The range of audible sound levels for humans is considered to be 1 to 130 dBA and the threshold of audibility is generally within the range of 5 to 25 dBA (USEPA 1981a, USEPA 1981b). The threshold for perception of a noise change is 5 dBA. A noise level that increased by 10 dBA is perceived as being twice as loud, while a noise level that decreases by 10 dBA is perceived as being half as loud (USEPA 1971). Day-night sound level (DNL) is also a useful noise metric and is used to describe the average sound energy in a 24-hour period with a 10 dB added to nighttime (10 p.m. to 7 a.m.) levels.

The Noise Control Act of 1972 established a national policy to promote an environment free from noise that jeopardizes human health and welfare. It directs deferral agencies to comply with applicable federal, state, and local noise control regulations. Neither the state of New Mexico nor Curry County maintain a noise ordinance. The city of Clovis does maintain a nuisance noise ordinance, but it does not contain specific "not-to-exceed" noise levels (City of Clovis Code § 9.40.010). According to the Federal Aviation Administration and the US Department of Housing and Urban Development, residential units and other noise-sensitive land uses are "clearly unacceptable" in areas where noise exposure exceeds 75 dBA, and "normally acceptable" in areas where noise exposure is 65 dBA or less (24 CFR Part 51).

Cannon AFB is located in rural eastern New Mexico near the Texas border, approximately 8 miles west of Clovis, New Mexico. The ambient noise environment around Cannon AFB is affected mainly by military aircraft overflights. Noise from these operations typically occurs beneath main approach and departure corridors and in areas immediately adjacent to runways, aircraft parking ramps, and aircraft staging areas. As aircraft take off and gain altitude, their contribution to the noise environment drops to levels indistinguishable from the background. Other existing sources of noise at Cannon AFB include road traffic, lawn maintenance equipment, construction, and bird and animal vocalizations. Areas surrounding the installation are primarily rural with estimated

background noise levels of 40 dBA in the daytime, 34 dBA at night, and 42 DNL overall (ANSI 2013).

Environmental noise at Cannon AFB is managed through the DoD Air Installation Compatible Use Zone Program, which helps to mitigate noise and safety concerns for surrounding communities and advises these communities about potential impacts from flight operations. As part of the program, noise contours related to aircraft operations have been identified. Areas exposed to sound levels greater than 65 dBA DNL are predominantly within the installation boundary. There are no schools, churches, or hospitals off the installation within the existing 65 dBA DNL noise contour. Noise sensitive receptors near the MILCON project areas include dormitories 1155, 1159, and 1161 adjacent to the proposed site for the new dormitory. There are no noise sensitive receptors near the MILCON project areas for the storage facility or MSA.

Construction noise can cause an increase in sound that is well above ambient levels. Noise levels associated with common types of construction equipment are listed in **Table 3-1**. The Occupational Safety and Health Administration (OSHA) sets legal limits on construction noise exposure levels. Permissible noise exposure levels for construction workers must not exceed 90 dBA over an 8-hour period. The maximum allowable sound level to which construction workers can be constantly exposed is 115 dBA; however, exposure to this level must not exceed 15 minutes within an 8-hour period (29 CFR § 1926.52).

Table 3-1. Average Noise Levels for Common Construction Equipment

Construction Category and Equipment	Predicted Noise Level at 50 feet (dBA)	Predicted Noise Level at 250 feet (dBA)	Predicted Noise Level at 500 feet (dBA)	Predicted Noise Level at 1,000 feet (dBA)
Clearing and Grading				
Grader	80 to 93	66 to 79	60 to 73	54 to 67
Truck	83 to 94	69 to 80	63 to 74	57 to 68
Backhoe	72 to 93	58 to 79	52 to 73	46 to 67
Construction				
Concrete Mixer	74 to 88	60 to 74	54 to 68	48 to 62
Paver	86 to 88	72 to 74	66 to 88	60 to 62
Dozer/Tractor/Front Loader	75 to 80	61 to 66	55 to 60	49 to 54

Source: USEPA 1971, TRS Audio 2022

3.2.2 Environmental Consequences

3.2.2.1 *Proposed Action*

Noise from construction and demolition would result in short-term, negligible to minor, adverse impacts on the ambient noise environment. Construction would require the use of heavy construction equipment, such as those identified in **Table 3-1**, which would generate temporary increases in noise levels. Individual pieces of equipment would be expected to produce noise levels between 72 and 94 dBA at a distance of 50 feet. Any noise generated would decrease with increasing distance from construction activities and these noise levels would noticeably attenuate to below 65 dBA between approximately 500 and 1,500 feet from the source. The Proposed Action would occur within Cannon AFB, where noise levels from aircraft operations regularly exceed 65 dBA. During construction, trucks would travel to and from the installation and project areas. Because of the existing ambient noise environment of the project and surrounding areas, negligible noise increases would occur from truck activity, as road traffic is a common source of

ambient noise at Cannon AFB. Construction equipment would remain at the project areas during construction and demolition periods; therefore, increased truck traffic noise levels would occur only when construction vehicles are required to enter and exit the project areas.

Construction and demolition activities typically require several pieces of equipment to be used simultaneously. In general, the addition of a piece of equipment with identical noise levels to another piece of equipment would add approximately 3 dB to the overall noise environment (TRS Audio 2022). Additive noise associated with multiple pieces of construction equipment operating simultaneously would increase the overall noise environment by a few dB over the noisiest equipment, depending on the noise levels; therefore, adverse impacts from additive noise levels would be negligible to minor. Additionally, noise generation would only occur for the duration of construction and would be confined to normal workdays and working hours (i.e., 7 a.m. to 5 p.m.). All applicable noise regulations and guidelines would be followed to reduce the effects from noise produced by construction activities.

Construction noise levels would mostly be limited to the immediate vicinity of the project areas where the primary receptors would be construction workers. Adherence to appropriate OSHA standards would protect the workers from excessive noise. Additionally, workers would be required to use proper personal hearing protection in accordance with Air Force Instruction (AFI) 48-127, *Occupational Noise and Hearing Conservation Program*, to limit exposure to high noise levels. Construction noise levels also could affect the ambient noise environment for noise sensitive receptors, including dormitories 1155, 1159, and 1161. The following BMPs could be implemented to limit noise exposure at sensitive noise receptors:

- Ensure that all heavy construction equipment includes all factory-equipped noise abatement components such as muffler, engine enclosures, engine vibration isolators, or other sound dampening supplements.
- Turn off all idling equipment when not in use.
- Maintain uniform noise levels and avoid impulsive noises.
- Maintain good relationships with the community, publish/distribute notices before noisy operations occur, and provide the community with frequent updates as to when and where construction actions would take place.

Operations of the new infrastructure would result in long-term, negligible, adverse impacts on the noise environment. Daily operations of the facilities would result in an increase in vehicular traffic from personnel commuting to and from these facilities that would produce noise levels of approximately 50 dBA (USEPA 1981b). However, these facilities would be sited on an active military installation where aircraft operations are part of the ambient noise environment. Additional noise from vehicular traffic would not produce noise beyond what is present within the ambient environment at Cannon AFB. Therefore, operation of these facilities would not impact the ambient noise environment at any noise sensitive receptors, including dormitories 1155, 1159, and 1161.

3.2.2.2 ***Aggregate Impacts***

The Proposed Action would result in short-term, negligible to minor, adverse impacts on the ambient noise environment for the duration of the construction periods. No significant change in ambient noise levels from operation of the new infrastructure would be expected following the construction period. Additional construction activities that coincide with the Proposed Action may contribute to slightly increased noise levels; however, all such occurrences would be temporary

in nature and cease upon completion of such construction activities. Additionally, operation of the new infrastructure under the Proposed Action, when combined with operation of other proposed facilities, would not likely result in an increase in the noise environment beyond ambient levels. Therefore, cumulative impacts on the noise environment from the Proposed Action, combined with other actions both on and off the installation, would not be significant.

3.2.2.3 *Unavoidable Adverse Impacts*

Construction and demolition activities require the use of heavy construction equipment, which is inherently noisy, causing increased noise levels. To reduce adverse impacts on the ambient noise environment, construction equipment would include noise abatement components and noise reducing BMPs would be implemented. Although these measures would help reduce impacts on the ambient noise environment, construction equipment could still produce noise levels beyond ambient levels. These unavoidable impacts would be negligible to minor.

3.2.2.4 *No Action Alternative*

Under the No Action Alternative, the new infrastructure would not be constructed and temporary increases in noise levels would not occur. Therefore, existing conditions discussed in **Section 3.2.1** would remain unchanged.

3.3 LAND USE

Land use refers to real property classifications indicating either natural conditions or the types of human activity occurring on a parcel of land. In many cases, land use descriptions are organized in master planning and local zoning laws. Land use planning ensures orderly growth and compatible uses among adjacent property parcels or areas. However, no nationally recognized convention or uniform terminology for describing land use categories exists. As a result, the meanings of various land use descriptions, labels, and definitions vary among jurisdictions (USAF 2018). Land use is described by humans economic and cultural activities that are practiced in a given place (USEPA 2022a). Natural conditions of property can be described or categorized as unimproved, undeveloped, conservation or preservation area, and natural or scenic area. A wide variety of land use categories result from human activity. Descriptive terms for human activity land uses generally include commercial, industrial, military, residential, agricultural, institutional, transportation, communications and utilities, and recreational (USAF 2018).

In appropriate cases, the location and extent of a proposed action needs to be evaluated for its potential effects on a project site and adjacent land uses. The foremost factor affecting a proposed action in terms of land use is its compliance with any applicable land use or zoning regulations. Other relevant factors include matters such as existing land use at the project site, the types of land uses on adjacent properties and their proximity to a proposed action, the duration of a proposed activity, and its permanence (USAF 2018).

3.3.1 Affected Environment

Cannon AFB consists of 4,397-acres within the contiguous boundaries, including a 3.8-acre land lease at the northwest portion of the installation and a 603-acre land gift area from the State of New Mexico at the southwest corner of the installation. Cannon AFB is in Curry County, New Mexico, and is a predominantly rural area; however, the region surrounding the installation is expected to experience continued population growth. Cannon AFB works with surrounding counties to maintain appropriate land uses around the installation that are compatible with the military mission (CAFB 2016).

Land uses around Cannon AFB primarily consist of agricultural uses, with the heaviest development occurring in and around nearby cities and counties. Even though there is little development around the installation, the possibility of incompatible land uses still exist. The only identified incompatible development is the sparsely populated residential/commercial area northeast of the installation. Although there has not been much land development in this area, apart from farming and ranching, recent development has begun along highway frontages, including U.S. Highway 60/84 (CAFB 2016).

The long-term ability to capitalize on undeveloped acreage without constraints depends on the installation's ability to plan future uses and facilities strategically, to prevent internal encroachment. Cannon AFB has a total of 6 planning districts formed based on 15 identified land uses rather than parcel-by-parcel assignment. The districts enhance future land use plans at the installation, regulate the character of each district, and ensure long-term mission effectiveness (CAFB 2016).

The proposed projects under the Proposed Action fall within various planning districts and land use designations, including the Community Development District, Southeast Development District, and Southwest Development District. The dormitory would be constructed in the Community Development District, where residential land use, to include multistory and dormitories, is permitted but with restrictions. The storage facility would be constructed in the Southeast Development District, where industrial and light industrial land uses are permitted alongside other land usage in this district. The new MSA would be constructed in the Southwest Development District, where low-density, low-intensity industrial and manufacturing land uses are permitted. The existing MSA, which would be demolished under the Proposed Action, is in the Southeast Development District and the surrounding land is undeveloped due (1) its proximity to the clear zone (CZ) for Runway 04/22, (2) the requirement of AT/FP by the perimeter fence, (3) the ESQD arcs associated with munitions storage and operations, and (4) ERP sites (CAFB 2016).

The land east of the existing MSA is privately-owned agricultural land. The existing MSA ESQD arcs fall beyond the installation's perimeter and is in violation of land use under airfield CZs and accident potential zones (APZs). Construction of a new flightline near the transportation network of East Aderhold Loop Road is expected to increase traffic density and has affected the PTRD ESQD criteria by the existing MSA. A wastewater treatment plant facility next to the existing MSA has an IBD violation. The installation's goal with the Proposed Action is to eliminate all violation waivers with PTRDs and IBDs. AFSOC's mission growth is unlikely to occur at the existing MSA unless additional land and easements are obtained (CAFB 2018b; CAFB 2016).

The proposed MSA project area covers approximately 240 acres within the 603-acre land gift area at the southwest corner of Cannon AFB, falling within the Southwest Development District. The Southwest Development District permits weapons and munitions storage; therefore, implementation of the Proposed Action would not change this land use designation. The land gift area had a previous agreement in place between Cannon AFB and surrounding landowners to refrain from developing that area until after 30 September 2017. Only an agriculture irrigation system and farm outbuildings were on the land gift area, but those have since been removed. The former County Road R ran parallel to the installation's west perimeter fence, but it has since been closed to public vehicles.

Almost half (297-acres) of the 603-acre land gift area is constrained by the CZ and APZ I of Runway 04/22, specifically the runway approach lighting system. The APZ I of Runway 04/22 has significant potential for accidents, but the CZ has a 3,000-foot wide by 5,000-foot-long area with land use compatibility guidelines in place to allow for industrial and manufacturing uses. The

2016 Cannon AFB Installation Development Plan (IDP) recommended relocation and reconstruction of the MSA to the Southwest Development District if land use guidance associated with APZ 1 were respected. The size of the land gift area is adequate for current and future AFSOC mission growth. Cannon AFB would require a land purchase of approximately 320-acres from surrounding privately-owned agriculture landowners for expansion of the installation boundary, specifically for AT/FP barriers, and easement land for the IBD and PTRD ESQD arcs in the land gift area (see **Figure 3-1**). The new MSA would adhere to the same perimeter fence setback requirements as the existing MSA (CAFB 2018b; CAFB 2016).

3.3.2 Environmental Consequences

3.3.2.1 *Proposed Action*

Dormitory construction would result in no short- or long-term, adverse impacts on land use in the Community Development District, as this area is already slated by the installation for residential land use. After construction is complete, no areas would be left bare in adherence with the SLDP for revegetation. Construction of this dormitory would restore military readiness by addressing the 192-dormitory room deficit (CAFB 2016).

Storage facility construction would result in no short- or long-term, adverse impacts on land use in the Southeast Development District, as this area is already slated by the installation for industrial or light industrial land use. Similar to the dormitory, no areas would be left bare following the SLDP for revegetation. Construction would restore military readiness by providing adequate storage facility space for 26 STS equipment. (CAFB 2016).

Relocation of the MSA to the Southwest Development District would result in long-term, beneficial impacts on Cannon AFB, benefiting the MSA system and overall AFSOC mission growth. The Proposed Action would be beneficial as it would address and mitigate failure to meet safety distance requirements and risk associated with substandard facilities and limited existing storage space (CAFB 2016).

The new MSA would house SOF-specific munition operations and include earthen covered storage igloos, aboveground magazine storage facilities, earthen berms, spare inert munition storage, munition shops, and administrative facilities and multicubes. Supporting facilities would include roads, driveways, privately-owned and government-owned vehicle parking, fencing, and utilities that are directly related to the functioning of the facilities being constructed as well as any other necessary support and critical features.

All utility systems, to include communications, water, and electric, would require extension into the land gift area. Purchased land and easements of 320-acres for the IBD and PTRD ESQD arcs would change that land use from agricultural to industrial with a negligible impact; however, the area of explosives easements could continue to be used for open agriculture land use. The explosive easements would prohibit human habitation and structures, limit the number of people that can gather within the easement, and ultimately it would be unlikely these restrictions would negatively affect agricultural operations on the private land. Demolition of the existing MSA and construction of the new MSA would mitigate safety risks and distance violations by relocating the MSA, and in turn increase the Cannon AFB current and future AFSOC mission growth (CAFB 2018b; CAFB 2016).

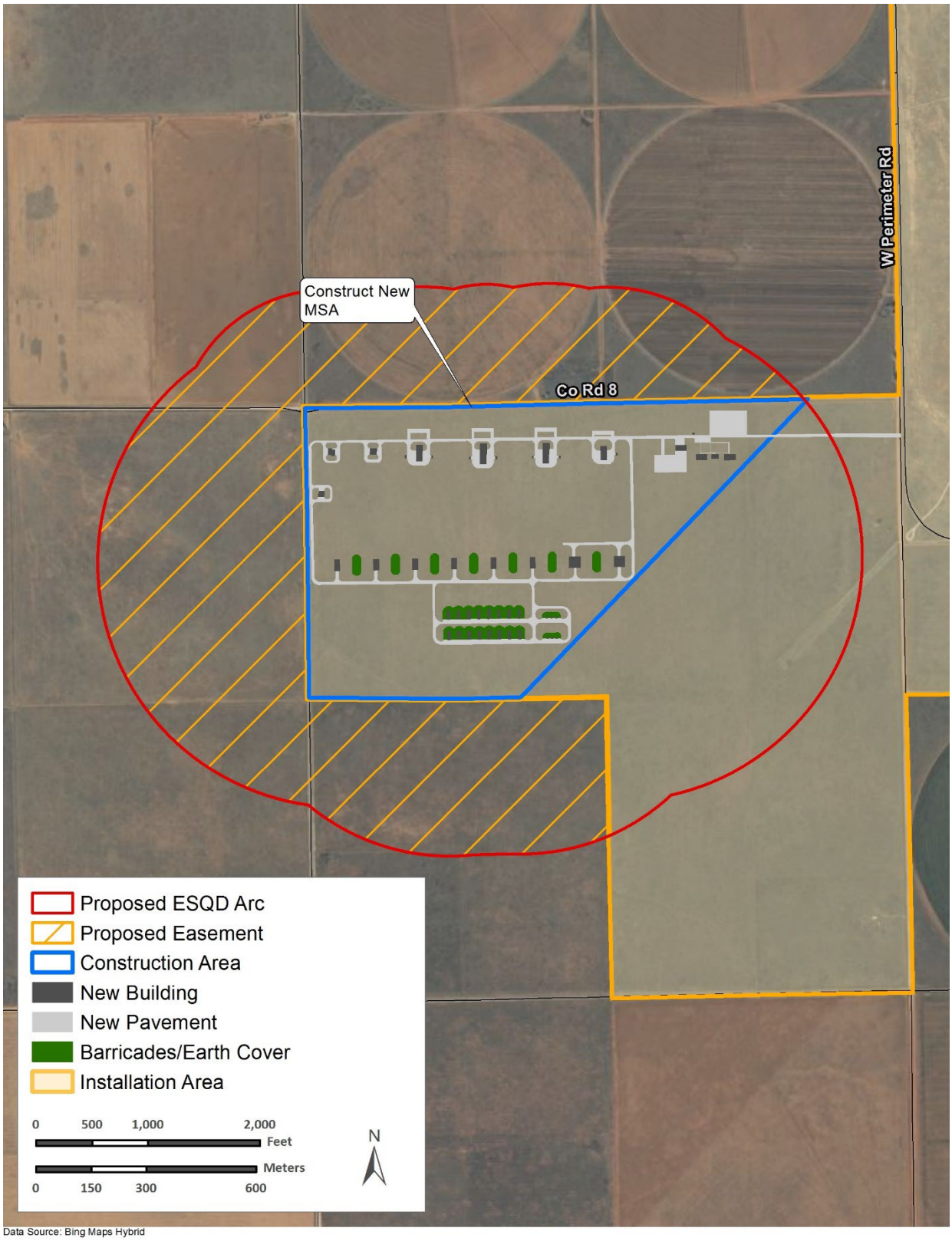

Figure 3-1. Cannon AFB Proposed MSA Site ESQD Arcs

3.3.2.2 *Aggregate Impacts*

The Proposed Action would capitalize on many existing in place land use elements. Activities performed at the facilities would slightly increase utilities utilization, infrastructure constraints, and would slightly increase the waste generated on the installation. Cannon AFB would need to purchase 320-acres of privately own land, which is a negligible impact on the landowner and installation. Cumulatively, the Proposed Action and subsequent activities would have minor effects on installation land use. Present and future construction projects conducted in the same region would also be held to the same standard with minimal expected impacts. Therefore, the Proposed Action, when combined with other actions both on and off the installation, would not result in a significant cumulative impact on land use, and in turn increase the installation's current and future AFSOC mission growth.

3.3.2.3 *Unavoidable Adverse Impacts*

The Proposed Action would result in a negligible loss of land use. Because the project area is in the land gift area and surrounded by agricultural land, the loss would be negligible and not considered significant; therefore, a less than significant impact on land use is expected.

3.3.2.4 *No Action Alternative*

Under the No Acton Alternative, the proposed infrastructure would not be constructed and the existing conditions discussed in **Section 3.3.1** would remain unchanged. No new impacts on land use would occur as a result of the No Action Alternative.

3.4 AIR QUALITY

3.4.1 Affected Environment

Air quality is defined by the concentration of various pollutants in the atmosphere at a given location. Under the Clean Air Act, the six pollutants defining air quality, called "criteria pollutants," include carbon monoxide (CO), sulfur dioxide, nitrogen dioxide, ozone (O_3), suspended particulate matter (measured less than or equal to 10 microns in diameter [PM_{10}] and less than or equal to 2.5 microns in diameter [$PM_{2.5}$]), and lead. CO, sulfur oxides (SO_X), and some particulates are emitted directly into the atmosphere from emissions sources. Nitrogen dioxide, O_3, and some particulates are formed through atmospheric and chemical reactions that are influenced by weather, ultraviolet light, and other atmospheric processes. Volatile organic compounds (VOCs) and nitrogen oxides (NO_x) are precursors of O_3 and are used to represent O_3 generation. Lead emissions from common air emissions sources that would be used under the Proposed Action have been negligible since leaded gasoline for on-road vehicles was phased out in the United States between 1973 and 1996. Therefore, lead is not included in the air quality analysis.

The United States Environmental Protection Agency (USEPA) established National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50) for criteria pollutants. NAAQS are classified as either primary, which protects against adverse health impacts, or secondary, which protects against adverse welfare impacts. Areas that are and have historically been in compliance with the NAAQS or have not been evaluated for NAAQS compliance are designated as attainment areas. Areas that violate an air quality standard are designated as nonattainment areas. Areas that have transitioned from nonattainment to attainment are designated as maintenance areas and are required to adhere to maintenance plans to ensure continued attainment.

The USEPA General Conformity Rule applies to federal actions occurring in nonattainment or maintenance areas. Cannon AFB is in Curry County, New Mexico, which is within the Pecos-Permian Basin Intrastate Air Quality Control Region (40 CFR § 81.242). The USEPA has designated Curry County as in attainment or unclassified for all criteria pollutants (40 CFR § 81.332) (USEPA 2022b).

The NMED Air Quality Bureau oversees programs for permitting the construction and operation of new or modified stationary source air emissions in the state of New Mexico. Cannon AFB is considered a major source, as defined by New Mexico Administrative Code 20.7.70, meaning the facility directly emits, or has the potential to emit, 100 tons per year (tpy) or more of any regulated air pollutant. As such, Cannon AFB maintains a Title V operating permit (Permit Number P119-R2) for stationary emissions sources, as administered by NMED. Stationary sources regulated under the Title V permit include combustion heaters, diesel-fired emergency generators, fuel storage tanks, emergency fire pumps, and paint booths (NMED 2019a). There are no regulated sources of air emissions within the proposed project areas; however, an emergency generator exists near Facility 2134 within the existing MSA. **Table 3-2** summarizes Cannon AFB's actual air emissions for 2019 and provides a percent of total reported 2017 emissions for Curry County.

Table 3-2. Calendar Year 2019 Cannon AFB Emissions, Cannon AFB Title V Permit Limits, and Calendar Year 2017 Curry County Air Emissions Inventories

Source Type	NO_X (tpy)	VOC (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2e (tpy)
Cannon AFB (2019 Air Emissions Inventory)							
Stationary Sources	13	16	8	0	1	1	10,474.16
Title V Permit Limits	131.5	97.6	72.4	9.3	7.7	7.3	None
Curry County, New Mexico (2017 Air Emissions Inventory)							
Stationary Sources	222.29	742.25	762.87	22.65	132.08	120.94	N/A
Mobile Sources	2,216.63	529.69	4,857.40	6.79	95.89	74.00	290,964.65
Other Area Sources	1,075.42	4,585.19	1,487.38	0.37	6,161.56	974.70	53.90
Total	3,514.34	5,857.13	7,017.89	29.82	6,389.53	1,169.64	291,018.55(1)
Cannon AFB (2019) Percent of Curry County Total Inventory (2017)							
Percent	0.37	0.27	0.11	0.00	0.02	0.09	–

Source: USEPA 2021, USEPA 2022c, NMED 2022, NMED 2019b.
Key: N/A = not available; CO_2e = carbon dioxide equivalent
(1) GHG emissions (CO_2e) from stationary sources are not available at the county level and total GHG emissions for Curry County are incomplete.

In addition to the Title V operating permit, Cannon AFB maintains a Prevention of Significant Deterioration Minor New Source Review Permit (permit number 1517-M5R1), which regulates minor sources of air emissions at the installation (NMED 2014).

Climate Change and Greenhouse Gases. Global climate change refers to long-term fluctuations in temperature, precipitation, wind, sea level, and other elements of Earth's climate system. Of particular interest, GHGs are gas emissions that trap heat in the atmosphere. These emissions occur from natural processes and human activities. Scientific evidence indicates a trend of increasing global temperature over the past century because of an increase in GHG emissions from human activities. In accordance with EO 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*, this EA follows the Council on Environmental Quality's August 2016 guidance titled *Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in*

National Environmental Policy Act Reviews. This EA addresses direct and indirect GHG emissions from the Proposed Action and the impacts of ongoing climate change on and from the Proposed Action.

Ongoing global climate change in the southwestern United States, including Curry County, has the potential to intensify droughts and occasional large floods, increase the risk of water shortages, increase the frequency of devastating wildfires, and intensify heat and arid weather conditions. These regional climate changes could lead to impairments of public health, damaged infrastructure, and greater risk of agriculture failure (Gonzales et al. 2018). As shown in **Table 3-2**, Cannon AFB produced a total of 10,474.16 tons of carbon dioxide equivalent (CO_2e) from stationary sources in 2019, while the total CO_2e emissions for Curry County were more than 291,018.55 tons in 2017.

3.4.2 Environmental Consequences

3.4.2.1 *Proposed Action*

Based on compliance with the NAAQS, the General Conformity Rule is not applicable to emissions of criteria pollutants in Curry County. Per the *Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II – Advanced Assessments*, the USAF applies insignificance indicators to actions occurring in an area that is in attainment or unclassified for the NAAQS to provide an indication of the significance of potential impacts to air quality. The indicator used by the USAF is the 250 tpy Prevention of Significant Deterioration threshold, as defined by USEPA, and is applied to the emissions for each criteria pollutant. The threshold indicator does not denote a significant impact; however, it does provide a threshold to identify actions that have insignificant impacts to air quality.

Air emissions from construction activities under the Proposed Action would result in short-term, minor to moderate, adverse impacts on air quality. Emissions of criteria pollutants and GHGs would be directly produced from operation of heavy construction equipment, heavy duty diesel vehicles hauling demolition debris and construction materials to and from the project areas, workers commuting daily to and from the project areas, and ground disturbance. All such emissions would be temporary in nature and produced only when construction activities are occurring.

The USAF Air Conformity Applicability Model (ACAM) was used to estimate the total air emissions from construction activities associated with the Proposed Action. For the purposes of this analysis, the Proposed Action was broken down by construction action (i.e., dormitory construction, storage facility construction, and MSA construction and existing MSA demolition). Each construction action was assumed to be implemented over a 1-year construction period and a surrogate year of 2023 was used. The actual construction period and the timeline for construction is likely to be different than what was assumed for the ACAM analysis, and each construction action is unlikely to occur at the same time. The total estimated emissions from construction under the Proposed Action are summarized in **Table 3-3**. Emissions of all criteria pollutants, except PM_{10}, would be less than the insignificance threshold of 250 tpy. The ACAM reports are included in **Appendix B**.

Table 3-3. Estimated Air Emissions from Construction Under the Proposed Action

VOCs (tpy)	NO_X (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2e (tpy)
Dormitory Construction						
1.603	1.884	2.299	0.005	9.178	0.078	493.0
26 STS Storage Facility Construction						
0.372	1.093	1.384	0.003	0.500	0.043	324.5
New MSA Construction and Existing MSA Demolition						
3.332	11.957	10.625	0.031	486.211	0.475	3,081.6
Total Construction Emissions						
5.307	**14.934**	**14.308**	**0.039**	**495.889**	**0.596**	**3,899.1**

The air pollutant of greatest concern is particulate matter, such as fugitive dust, which is generated from ground disturbing activities and combustion of fuels in construction equipment. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of activity. Fugitive dust emissions would be greatest during initial site preparation and site grading activities and would vary from day to day depending on the work phase, level of activity, and prevailing weather conditions. Most particulate matter emissions would be produced from site grading for the new MSA, which would include a disturbance area of 193.33 acres, and demolition of existing MSA facilities, which would include a disturbance area of 91.69 acres. Construction activities would incorporate BMPs and environmental control measures (e.g., wetting the ground surface) to minimize fugitive dust emissions. Additionally, work vehicles would be well-maintained and use diesel particulate filters to reduce emissions of criteria pollutants. These BMPs and environmental control measures could reduce particulate matter emissions from a construction site by approximately 50 percent.

If construction of the new MSA and demolition of the existing MSA were to occur within the assumed 1-year construction timeline, the estimated emissions would temporarily exceed the insignificance indicator of 250 tpy for PM_{10}, resulting in short-term, adverse impacts. However, the USAF would not follow such a timeline. Rather, construction of the MSA would occur over an 11- to 14-year period, which would minimize PM_{10} emissions in any 1 year to less than 250 tpy (USEPA 2022b). Emissions of PM_{10} from construction of the MSA and demolition of the existing MSA would be temporary and would cease once construction is completed, resulting in no long-term impacts to air quality. Additionally, the estimated emissions in **Table 3-3** do not account for BMPs and environmental control measures, which are likely to reduce uncontrolled particulate matter emissions by approximately 50 percent. Therefore, the Proposed Action is unlikely to cause or contribute to exceedance of one or more NAAQS.

Long-term, negligible, adverse impacts on air quality would occur from operation of the new facilities. Air emissions would be directly produced from operation of heating systems at the new facilities. The annual operational air emissions were estimated using ACAM and are summarized in **Table 3-4**. Operational air emissions would not exceed the insignificance indicator of 250 tpy; therefore, the Proposed Action would not be expected to result in a long-term significant impact on air quality. The capacity of the heating systems is likely to be low enough that they would not need to be added to the Title V operating permit. If required, new minor sources of air emissions would be added to the Minor New Source Review Permit.

Long-term, negligible, beneficial impacts on air quality would result from demolition of the existing MSA facilities, for which operation of heating systems for such facilities, along with operation of

the emergency generator near Facility 2134, within the existing MSA would cease, resulting in a reduction of operational air emissions.

As noted in **Section 3.4.1**, Curry County is designated by USEPA as in attainment or unclassified for all criteria pollutants. Therefore, the General Conformity Rule does not apply to emissions under the Proposed Action and a conformity applicability analysis is not required.

Table 3-4. Estimated Air Emissions from Operation Under the Proposed Action

VOCs (tpy)	NO_X (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2e (tpy)
Dormitory Operation						
0.011	0.191	0.160	0.001	0.015	0.015	229.9
26 STS Storage Facility Operation						
0.003	0.052	0.044	<0.001	0.004	0.004	63.0
MSA Operation						
0.026	0.473	0.397	0.003	0.036	0.036	568.9
Removal of Emissions Sources from Demolition of the Existing MSA						
-0.015	-0.191	-0.156	-0.006	-0.018	-0.018	-201.8
Total Operations Emissions (Net Change)						
0.025	**0.525**	**0.445**	**-0.002**	**0.037**	**0.037**	**660.0**

Climate Change and Greenhouse Gases. Construction of the MILCON projects under the Proposed Action would produce a total of approximately 3,899.1 tons (3,537 metric tons) of direct CO_2e during the construction periods. By comparison, 3,537 metric tons of CO_2e is approximately the GHG footprint of 762 passenger vehicles driven for 1 year or 688 homes' energy use for 1 year (USEPA 2022c). In 2017, Curry County produced more than 291,018.55 tons of CO_2e emissions. Emissions from construction would represent approximately 1.3 percent of the total CO_2e emissions from the county. Operation of the new infrastructure would produce a net total of 660 tons of CO_2e annually, which is equivalent to the GHG footprint of 142 passenger vehicles driven for 1 year or 128 homes' energy use for 1 year (USEPA 2022c). These emissions would represent approximately 0.2 percent of the total CO_2e emissions produced by the state. As such, air emissions produced during construction and operation of the new infrastructure would not meaningfully contribute to the potential effects of global climate change and would not notably increase the total CO_2e emissions produced by Curry County.

Ongoing changes to climate patterns in the southwestern United States are described in **Section 3.4.1**. These climate changes are unlikely to affect USAF's ability to implement the Proposed Action. The proposed project areas are not within a floodplain or forested areas. Increased temperature, prolonged drought duration, increased intensity of occasional large floods, increased frequency of devastating wildfires, and other results from ongoing climate change would not affect the Proposed Action, nor would the Proposed Action meaningfully contribute to the occurrence of such events.

3.4.2.2 *Aggregate Impacts*

The Proposed Action would result in short-term, minor to moderate, adverse impacts on air quality for the duration of the construction periods. No significant change in annual air emissions from operation of the new infrastructure would be expected following the construction periods.

Additionally, construction activities that coincide with the Proposed Action may contribute additional airborne dust (primarily PM_{10}); however, all such occurrences would be temporary in nature and cease upon completion of such construction activities. Emissions from the Proposed Action would not be considered significant for the region. Therefore, aggregate impacts on air quality from the Proposed Action, when combined with other actions both on and off the installation, would not have a significant impact on air quality.

3.4.2.3 *Unavoidable Adverse Impacts*

The use of heavy construction equipment and ground disturbance activities are required for the MILCON projects under the Proposed Action. Combustion of fuels, which produces emissions of criteria pollutants, is needed to operate construction equipment, and ground disturbance activities intrinsically produce fugitive dust air emissions. To reduce emissions of criteria pollutants and suppress fugitive dust, construction activities would incorporate BMPs and environmental control measures, which could include employing diesel particulate filters to reduce particulate matter air emissions and wetting the ground surface to reduce fugitive dust emissions. These measures could reduce emissions of particulate matter by approximately 50 percent. Therefore, the unavoidable impacts would not be significant.

3.4.2.4 *No Action Alternative*

Under the No Action Alternative, the new infrastructure would not be constructed and no changes in air quality conditions would occur. Therefore, existing conditions discussed in **Section 3.4.1** would remain unchanged.

3.5 GEOLOGICAL RESOURCES

Geological resources consist of the Earth's surface and subsurface materials. Within a given physiographic province, these resources typically are described in terms of topography and physiography, geology, soils, and, where applicable, geologic hazards. Topography and physiography pertain to the general shape and arrangement of the land surface, including its height and the position of its natural and man-made features. In appropriate cases, soil properties must be examined for their compatibility with construction activities or types of land use.

3.5.1 Affected Environment

Regional Geology. Cannon AFB is located within the Southern High Plains on the western edge of the Great Plains. Deep beneath the High Plains soils lie Paleozoic sediments consisting of brine-pool salts, anhydrite, red beds, and carbonates. These sediments are overlain by Mesozoic formations consisting of sand and gravel, marine sandstones, limestones, and shales, which represent the last occurrence of marine waters in the area. Overlying these sediments is the Ogallala Formation, which in eastern New Mexico and Texas ranges from 30 to 600 feet thick and consists of eolian sand and silt, fluvial and lacustrine sand, silt, clay, and gravel (CAFB 2018c).

The Ogallala Formation consists mostly of unconsolidated clay, silt, and fine- to coarse-grained sand, and gravel (Hart and McAda 1985). Greater quantities of Ogallala sediments were deposited in more deeply incised channels resulting in variable bottom elevations of the Ogallala Formation and areas of comparatively thinner and thicker sequences of deposits (Hart and McAda 1985, Musharrafieh and Logan 1999). As infilling of lower elevations progressed, sediment-laden streams became less energized, carrying and depositing lighter sediments because of a leveling of the landscape.

Significant caliche deposits (calcium carbonate cemented rock) are present across the Southern High Plains region, demarcating the top of the Ogallala Formation (Hart and McAda 1985). Caliche is a major feature of the Ogallala Formation, occurring in nearly continuous to discontinuous layers throughout. The uppermost caliche crops out around playas and the bounding escarpments of the Ogallala Formation. Caliches that occur lower in the Ogallala Formation are platy and harder. Caliche is likely to either be thin or absent below playas (Langman 2006, CAFB 2018c).

Topography and Soils. The topography of Cannon AFB is generally similar to the rest of the region (USAF 2017). The high point on the installation is 4,330 feet and the low is 4,260 feet above sea level (asl). The Southern High Plains is underlain by nearly horizontal sedimentary rocks that have been covered by alluvial and aeolian deposits (CAFB 2019).

Soil characteristics determine their potential for wind and water erosion, and the soil's suitability for siting buildings, roads, and pipelines, which are important factors to consider when planning for construction and stabilization of disturbed areas. The predominant soils found within the project areas are listed in **Table 3-5** (USDA Web Soil Survey 2022).

Table 3-5. Soil Characteristics

Soil Series	Slope	Runoff	Drainage Class	Farmland Classifications
Amarillo fine sandy loam	0 to 1%	Negligible	Well drained	Farmland of statewide importance
Amarillo loamy fine sand	0 to 3%	Low	Well drained	Farmland of statewide importance
Estacado loam	1 to 3%	Low	Well drained	Farmland of statewide importance
Randall clay	0 to 1%	Negligible	Poorly drained	Not prime farmland
Ranco clay	0 to 1%	Negligible	Poorly drained	Not prime farmland

Geological Hazards. Local terrain is geologically and seismically stable, lacking structural geologic elements such as faults, folding, and crustal deformation. No earthquakes above a 4.5 magnitude in the area have been recorded since 1869 (CAFB 2018c).

3.5.2 Environmental Consequences

3.5.2.1 *Proposed Action*

The Proposed Action would result in both short- and long-term impacts on the local topography and soil resources. No impacts on regional geology or geologic hazards are anticipated, so no change to the existing geologic features would occur. Therefore, regional geology and geologic hazards will not be discussed further.

Topography and Soils. Short-term, moderate, adverse impacts on local topography and soil resources due to construction and demolition activities are expected. Construction activities would include ground disturbance or excavation to prepare the area for building construction; minor disturbances to soils to access adjacent utilities and construct new communications lines; grading to address surface water runoff during storm events; and potential installation of grade control structures.

Construction of the new infrastructure at Cannon AFB would result in 91.69 acres of ground disturbance from demolition activities and 193.33 acres of new construction disturbance. Construction activities would also disturb and expose soils, which would increase their susceptibility to water and wind erosion. The use of heavy equipment or vehicles during construction could potentially result in localized soil compaction, altering their normal function relative to water storage, infiltration, or filtration. However, the use of existing paved roads and surfaces during construction would minimize these soil effects within the project areas. Environmental protection measures and appropriate BMPs would be implemented to minimize soil erosion and sedimentation.

3.5.2.2 *Aggregate Impacts*

The Proposed Action would result in short-term, minor, adverse and beneficial impacts on topography and soils due to construction and demolition activities. The increase in impervious surfaces in the areas of new construction and reduction of impervious surfaces in the demolition areas could potentially affect stormwater drainage. Therefore, the Proposed Action, when combined with other actions both on and off the installation, would not have a significant cumulative impact on geological resources.

3.5.2.3 *Unavoidable Adverse Impacts*

Under the Proposed Action, unavoidable short-term, adverse impacts include soil disturbance. The implementation of environmental controls and BMPs would minimize disturbance. Additionally, areas that undergo demolition activities would become revegetated.

3.5.2.4 *No Action Alternative*

Under the No Action Alternative, construction of the dormitory, MSA, and storage facilities, as well demolition of the existing MSA, would not occur and conditions would remain the same as described in **Section 3.4.1**. Therefore, no impacts on geological resources would occur as a result of the No Action Alternative.

3.6 WATER RESOURCES

Water resources are natural and man-made sources of water that are available for use by, and for the benefit of, humans and the environment. Water resources relevant to Cannon AFB's location in New Mexico include groundwater, surface water, floodplains, and wetlands/playas.

Groundwater. Groundwater is water that exists in the saturated zone beneath the Earth's surface that collects and flows through aquifers and is used for drinking, irrigation, and industrial purposes. Groundwater typically can be described in terms of depth from the surface, aquifer or well capacity, water quality, and recharge rates.

Surface Water. Surface water includes natural, modified, and man-made water confinement and conveyance features above groundwater that may or may not have a defined channel and discernable water flow. Stormwater is an important component of surface water systems because of its potential to introduce sediments and other contaminants that could degrade surface waters, such as lakes, rivers, or streams. Energy Independence and Security Act Section 438 (42 USC § 17094) establishes into law stormwater design requirements for federal development projects that disturb a footprint of greater than 5,000 square feet. Under these requirements, pre-development site hydrology must be maintained or restored to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow.

The Clean Water Act (CWA) establishes federal limits for regulating point and non-point discharges of pollutants into the Waters of the United States (WOTUS) and quality standards for surface waters. The term "Waters of the United States" has a broad meaning under the CWA and incorporates deep water aquatic habitats and special aquatic habitats (including wetlands/playas).

It is USAF policy to avoid construction of new facilities within areas containing wetlands where possible per AFMAN 32-7003*, Environmental Conservation*, and EO 11988. A FONPA would need to be prepared for all projects impacting wetland areas.

Floodplains. Floodplains are areas of low, level ground present along rivers, stream channels, or coastal waters that are subject to periodic or infrequent inundation because of rain or melting snow. Flood potential is evaluated by FEMA, which defines the 100-year floodplain as an area within which there is a one percent chance of inundation by a flood event in a given year, or a flood event in the area once every 100 years. EO 11988, Floodplain Management, requires federal agencies to determine whether a proposed action would occur within a floodplain and to avoid floodplains to the maximum extent possible wherever there is a practicable alternative.

It is USAF policy to avoid construction of new facilities within the 100-year floodplain, if possible, per AFMAN 32-7003 and EO 11988. A FONPA must be prepared and approved by AFSOC for all projects impacting floodplain areas.

3.6.1 Affected Environment

Groundwater. Cannon AFB overlies the Curry County Groundwater Basin within the Southern High Plains Aquifer (Langman 2006). The Southern High Plains Aquifer underneath Cannon AFB is part of the larger High Plains Aquifer System commonly referred to as the Ogallala Aquifer. The Ogallala Aquifer is the principal aquifer system underlying the region and provides the primary source of water for public supply, irrigation, and industrial purposes (Rawling 2016). The Ogallala Aquifer is located approximately 270 feet below ground surface (bgs) and covers an area of approximately 174,000 square miles, spanning eight states: South Dakota, Wyoming, Nebraska, Kansas, Colorado, Oklahoma, Texas, and New Mexico (Taghvaeian et al. 2017). Due to extensive withdrawals for agricultural and municipals uses, as well as high evaporation rates and minimal recharge through precipitation, the Ogallala Aquifer continues to experience significant declines in water levels (Rawling 2016). The estimated recharge rate of the aquifer is less than 1 inch per year (Langman 2006, Hart and McAda 1985).

Regional groundwater flow direction of the Southern High Plains Aquifer is generally to the east and southeast (Langman 2006). Numerous cones of depression created by 50 years of groundwater pumping have modified and, in some cases, reversed groundwater flow gradients around heavily irrigated areas (Musharrafieh and Logan 1999).

Cannon AFB draws its water supply from the High Plains Aquifer underlying the installation via wells located on the installation (CAFB 2018c). Water depth in these production wells ranges between 380 and 420 feet bgs. Cannon AFB holds water rights to approximately 2,450 acre-feet of groundwater. The groundwater supply in the source aquifer is diminishing primarily because of drawdown from irrigated agriculture and municipal consumption. Groundwater in certain areas of the aquifer has high concentrations of calcium, magnesium, and bicarbonate, as well as fluoride and chloride (Hart and McAda 1985). The 2020 Drinking Water Quality Report shows acceptable levels of contaminants within drinking water (CAFB 2021a).

Surface Water. There are no naturally occurring surface water bodies, major drainage ways, perennial streams, or jurisdictional waters on the installation (CAFB 2019). There are, however, numerous man-made water bodies present on the installation: several ponds on the golf course and two large playas—the North and South Playa lakes which are periodically inundated (see **Figure 3-2**) (USAF 2017, CAFB 2019). Playas have no surface outlet, and any water they collect is eventually lost to evaporation, infiltration, or consumption by plants and animals (USAF 2017). The North Playa Lake is in the eastern portion of the installation and collects stormwater runoff from the northeastern corner of the installation and a portion of the treated effluent from the wastewater treatment plant. The South Playa Lake is in the southwestern portion of the installation and collects stormwater runoff from the central and southwest portions. Due to low annual precipitation and high evaporation rates, little or no surface water reaches waters outside the installation (USAF 2017).

Wetlands on Cannon AFB are primarily associated with playa wetland communities. Fringe wetlands occur below ordinary high-water marks on gradually sloping areas along the shoreline of the North Playa basin. The wetland at the North Playa basin is located immediately adjacent to the MSA demolition project area (see **Figure 3-2**). The South Playa basin also experiences a wetland plant community when the area is temporarily flooded. The wetland hydrology is largely supplied by surface water runoff from the impervious surfaces associated with the runways (CAFB 2019, CAFB 2018c). Stormwater flows are generally to the south and east across the installation. During precipitation events, large amounts of surface water drain to the wetland forming a temporary lake. There are no jurisdictional WOTUS located on Cannon AFB (CAFB 2019, USFWS 2022). Water bodies and drainages within the Cannon AFB are isolated with no nexus to WOTUS and are, therefore, not subject to regulation under the CWA (USAF 2017).

Floodplains. Although no FEMA 100-year floodplains have been delineated on Cannon AFB, potential flooding areas and conceptual solutions to address flooding problems around the installation were identified in a 2009 drainage study for the installation (see **Figure 3-2**) (FEMA 2022, PBSJ 2009). Significant flow of surface drainage from the north of Cannon AFB across the cantonment area and flightline toward the southeast occurs during heavy rain events. This flow area is identified in the 2009 study as the 100-year floodplain for Cannon AFB (CAFB 2018c).

3.6.2 Environmental Consequences

3.6.2.1 *Proposed Action*

Groundwater. Short- and long-term, minor, adverse impacts would be expected during construction activities due to ground disturbance from the use of heavy equipment. Long-term minor impacts would result from water usage by the 192 new dormitory residents, which could place a new minor demand on the Ogallala Aquifer. In 2021, Cannon AFB used 720 acre-feet of its allowed 2,450 acre-feet of groundwater. The increased water demand from the Proposed Action would not be expected to cause Cannon AFB to exceed their allowed water use from the Ogallala Aquifer.

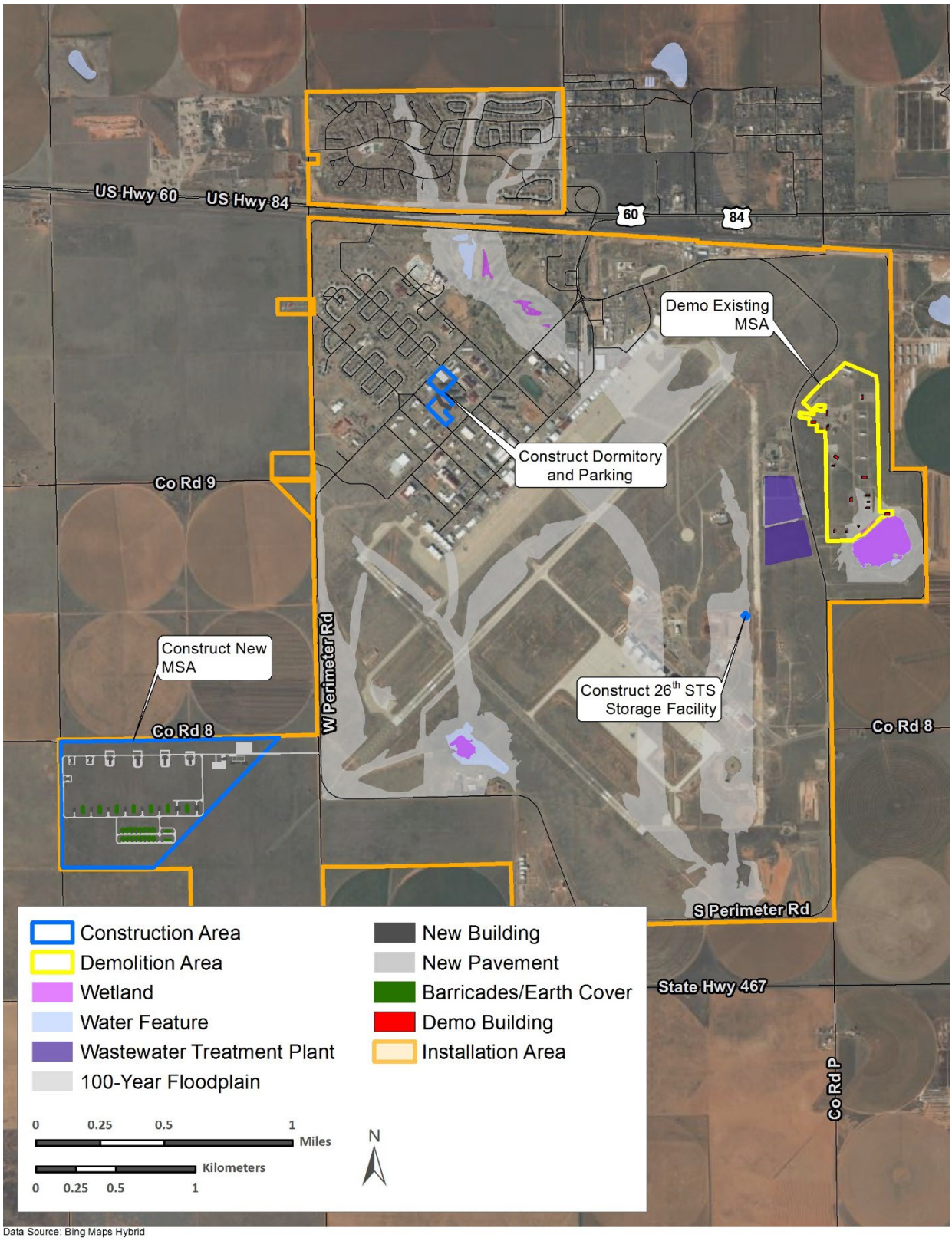

Figure 3-2. Water Features on Cannon AFB

During construction and demolition activities, soil disturbances could lead to increased sediment transportation during rainfall events that could eventually enter groundwater through recharge points. Implementation of BMPs and planning during construction would minimize such impacts by controlling the movement of surface water runoff and ensuring no direct access to groundwater recharge points. BMPs could include using temporary barriers such as fiber logs or silt fences, which would be placed based on site-specific evaluations on an as-needed basis.

Vehicles and equipment used during construction and demolition activities could increase the potential for petroleum or hazardous material spills, typically due to leaks or accidents at the work site. Any such leaks or spills could be transported to groundwater either by surface water runoff or by soil leaching. Proper housekeeping, maintenance of equipment, and containment of fuels and other potentially hazardous materials would be implemented to minimize the potential for a release of fluids. With the implementation of BMPs and minimal groundwater recharge in the area, implementation of the Proposed Action would not be expected to result in a significant impact on groundwater.

Surface Water. Short-term, moderate, adverse impacts would be expected during construction and demolition activities. The Proposed Action, specifically the demolition activities, could transport sediment and other material into the adjacent North Playa wetland.

Additionally, stormwater has the potential to transport sediment and hazardous materials to drainage ditches that connect to various surface water bodies and wetlands throughout the installation. Cannon AFB would obtain a Discharge Permit issued by NMED if it is deemed necessary to release discharge into the impoundments on the installation. Additionally, implementation of standard stormwater protection BMPs and spill prevention and management plans would reduce or eliminate permanent, adverse impacts on the quality of surface waters. Given that the water bodies located within the Cannon AFB do not connect to jurisdictional waters, the Proposed Action is not expected to impact water bodies outside the installation.

Floodplains. Short and long-term, minor, adverse and beneficial impacts on the 100-year floodplain would occur as a result of the Proposed Action. Construction of the storage facility would directly increase obstructions and impervious surfaces within the 100-year floodplain; meanwhile, demolition of the existing MSA would reduce impervious surfaces at the site. Implementation of appropriate BMPs during construction would limit short-term impacts from construction and demolition, such as sediment and surface runoff. Long-term, minor, adverse impacts on floodplains would occur from operation of the storage facility because of the continued total increase of impervious surfaces within the 100-year floodplain. No impacts on FEMA floodplains have been identified within Cannon AFB.

3.6.2.2 *Aggregate Impacts*

Short-term, negligible to minor, adverse impacts would be expected on groundwater and surface water during construction activities associated with the Proposed Action. This would primarily be a result of general construction activities, including potential leaks from heavy equipment. Impacts could be minimized with the use of BMPs and controls, such as temporary barriers and absorbent pads. Present and future construction projects conducted in the same region would also be held to the same standard with minimal expected impacts.

Long-term, minor, adverse impacts would be expected on groundwater resources due to the continued use of water by residents of the new dormitory. Therefore, the Proposed Action, when

combined with other actions both on and off the installation, would not have a significant cumulative impact on water resources.

3.6.2.3 *Unavoidable Adverse Impacts*

Construction of the storage facility and portions of the existing MSA demolition would occur within the 100-year floodplain. Cannon AFB has determined that there are no practicable alternatives for this facility, and where project design cannot avoid the floodplains, these projects require a FONPA.

Additionally, the Proposed Action would require water for dust suppression during construction and demolition activities. Although some water use would be unavoidable, impacts on these resources would not be expected to affect the availability of water resources.

3.6.2.4 *No Action Alternative*

Under the No Action Alternative, construction of the dormitory, MSA, and storage facilities, as well demolition of the existing MSA would not occur, and the existing conditions discussed in **Section 3.6.1** would remain unchanged, resulting in no impacts on water resources.

3.7 BIOLOGICAL RESOURCES

Biological resources include native or naturalized plants and animals and the habitats in which they occur, and native or introduced species found in landscaped or disturbed areas. Protected species are defined as those listed as threatened, endangered, or proposed or candidate for listing by the USFWS or New Mexico Department of Game and Fish (NMDGF). Federal species of concern are not protected by the ESA; however, these species could become listed, and therefore are given consideration when addressing biological resource impacts of an action. Further, the USAF is responsible for the protection of migratory birds under the MBTA and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*.

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

3.7.1 Affected Environment

Cannon AFB encompasses approximately 4,397 acres in a rural area of Curry County, New Mexico, and is located within the High Plains Ecoregion. This ecoregion is higher and drier than the Central Great Plains to the east, and in contrast to the mostly grassland of the Northwestern Great Plains to the north, much of the High Plains is characterized by smooth to slightly irregular plains with a high percentage of cropland (USEPA 2013). Specifically, Cannon AFB is within a sub-ecoregion of the High Plains known as the Llano Estacado. Thousands of playa lakes (ephemeral, depressional wetlands), ranging in size from a few acres to over 200 acres occur in this area, that serve as recharge areas for the important Ogallala Aquifer. The climate is arid to semiarid, with light precipitation, a high percentage of clear days, low relative humidity, and a relatively large change in diurnal temperatures (Demere et al. 2019).

Cannon AFB is located on a southeastward-sloping regional plateau known as the Southern High Plains. Within this area of the plateau, the topography is typified by flat, featureless terrain having

almost no relief. Characteristically, the High Plains have a smooth and gently sloping or undulating surface on which scattered, normally dry, flat-bottomed depressions are the dominant relief feature. The highest elevation on Cannon AFB is 4,330 feet asl in the northwest portion of the installation, while the lowest point is 4,260 feet asl in the southeast portion. The natural land surface is flat, sloping to the southeast. The only topographical features are several small, shallow, playa lake beds. Playas are shallow lakes which collect water during rain events and often contain wetland or hydrophytic vegetation during wet seasons (Demere et al. 2019).

Cannon AFB's Integrated Natural Resources Management Plan (INRMP) provides interdisciplinary strategic guidance for natural resources management on the installation for a period of 5 years. Implementation of the INRMP ensures that the installation continues to support present and future mission requirements while preserving, improving, and enhancing ecosystem integrity (CAFB 2020). The 2020 INRMP was used as a baseline to develop an understanding of the resources in the project area. Additionally, a Threatened and Endangered Species Assessment was prepared in October 2019 (Demere et al. 2019).

Vegetation. The northwestern quadrant of the installation is predominantly covered by improved/landscaped habitat. The flightline, installation operations, housing areas, and golf course comprise most of the improved/developed areas. Vegetation in these areas consists primarily of cultivated landscape plants. Additional areas of development are scattered around the northeastern quadrant of the installation and the airfield. Other areas with improved/developed vegetative structure include the MSA. This habitat type is not maintained and is composed primarily of Bermuda grass (*Cynodon dactylon*), tumble windmill grass (*Chloris verticillate*), Johnson grass (*Sorghum halapense*), and silver bluestem grass (*Bothriochloa saccharoides*). Forbs include common sunflower (*Helianthus annuas*) and ragweed (*Ambrosia psilotrachya*) (CAFB 2020). The proposed project areas for both the new dormitory and storage facility are highly developed and dominated by bare ground, Bermuda grass, and landscaped trees and shrubs. Every portion of Cannon AFB is highly modified from its natural state. Despite this fact, the installation provides habitat to a variety of resident, transitory, and migrant wildlife species (CAFB 2020).

Wildlife Species and Habitat. Wildlife communities at Cannon AFB are typical of those in woodland and grassland habitats in the central New Mexico region. Since 2014, one study with relevance to threatened and endangered species has been conducted on Cannon AFB, *Migratory and Breeding Bird Survey Report, Cannon Air Force Base and Melrose Air Force Range, New Mexico*. The study directed the species survey effort to emphasize listed species and birds of conservation concern that are breeding/nesting birds. During the 2015–2016 surveys, no federally or state listed species or potentially occurring state-listed sensitive species were observed on Cannon AFB. However, five species of concern were observed including the black-tailed prairie dog (*Cynomys ludovicianus*), Western burrowing owl (*Athene cunicularia*), Prairie falcon (*Falco mexicanus*), Cassin's sparrow (*Peucaea cassinii*), and Lark bunting (*Calamospiza melanocorys*) (CAFB 2020).

Black-Tailed Prairie Dog. The black-tailed prairie dog is one of the most visible species and is present across much of the installation. Their abandoned burrows are used by Western burrowing owl, cottontail rabbits, snakes, lizards, and other wildlife. Black-tailed prairie dogs shape the landscape through the creation of communal habitats known as "prairie dog towns." Black-tailed prairie dog populations vary drastically from year to year with births, deaths, disease, and precipitation. These towns provide habitat for numerous other species through the creation of burrows and relatively vegetation free areas that are exploited by numerous other species. Killdeer (*Charadrius vociferus*) prefer the openness of these areas for nesting, rearing young, and

obtaining food. Burrowing owls almost exclusively use abandoned burrows for nesting and brood rearing. Desert cottontails, plus numerous small mammals and reptiles, utilize the areas for their numerous abandoned burrows. Prairie dog towns attract predators such as American badger, coyote, gray fox (*Urocyon cinereoargenteus*), ferruginous hawk (*Buteo regalis*) and red-tailed hawk (*Buteo jamaicensis*) (CAFB 2020).

According to the *Western Burrowing Owl and Black-tailed Prairie Dog Assessment, Cannon Air Force Base and Melrose Air Force Range, New Mexico*, the estimated number of black-tailed prairie dogs has increased on Cannon AFB in 2019 at a drastically higher rate than in previous years. As a result, the 2019 population count has more than doubled that which was documented in 2018. Potential factors contributing to this increase in black-tailed prairie dogs are favorable environmental conditions and the increased number of acres surveyed across years. Due to the inability to map the towns for the 2019 season, an increase or decrease in acreage for town sizes cannot be definitively given. This would also have to include a new town designated as Town 9. All the towns observed from 2016 to 2018 occur near runways or taxiways; regions where vegetation height is kept between 7–14 inches. Town 9 is located immediately to the southwest of the Caprock Inn and is the northernmost town on Cannon AFB. While maintaining low vegetation height is necessary for mission safety, it also encourages prairie dog town establishment (Holstead et al. 2019).

Western Burrowing Owl. The western burrowing owl, a USFWS Bird of Conservation Concern, is a small ground owl. It is very closely associated with the prairie dog colonies on the installation, as they use abandoned prairie dog burrows for nesting. The owls generally occur on Cannon AFB between March and October before migrating south, although a few birds may remain on the installation during mild winters. Burrowing owls are found within developed areas where grasses are less dense and are known to be present within the existing MSA. According to the *Western Burrowing Owl and Black-tailed Prairie Dog Assessment, Cannon Air Force Base and Melrose Air Force Range, New Mexico*, Western burrowing owl populations on Cannon AFB steadily increased from 2016–2018, with 2019 observation counts decreasing slightly. The total number of burrowing owls on Cannon AFB dropped from 167 to 146 individuals. Additional acreage surveyed in 2018 could be one explanation for the observed increase. Alternatively, favorable environmental conditions from 2016 to 2018 could have facilitated a localized increase in burrowing owl reproduction and viability. The documentation of 12 successful nesting attempts with multiple fledglings in each burrow supports this observation, which increased from seven observed nests from the 2018 survey season. Burrowing owls frequently exhibit annual site and burrow fidelity, so the potential return of owls that had fledged from towns on Cannon AFB could indicate that conditions on the installation are favorable for rearing young, leading to potential future increases in population counts and nesting attempts (Holstead et al. 2019).

Prairie Falcon. A large falcon of the arid west, the prairie falcon is nearly the size of the peregrine, but differs in its hunting behavior, often pursuing small prey with rapid, maneuverable flight close to the ground. Although it is characteristic of desolate plains and desert wilderness, this falcon has also adapted to altered landscapes. In the winter, it is often seen flying over southwestern cities, or hunting horned larks in farm country. Nesting sites are typically found on the ledge of a cliff, in a recessed site, and protected by an overhang of rock. This species is also known to nest on a dirt bank or use the abandoned nest of a raven or hawk on a ledge. They rarely nest in trees (Audubon 2022a).

Cassin's Sparrow. In the dry grassland of the southwest in summer, this plain brown sparrow is often seen flying up from a bush top and then fluttering down in a 'skylarking' display, giving a song of sweet trills and notes. With their nomadic tendencies, they sometimes turn up far outside

their normal range, with scattered records from coast to coast. Somewhat irregular in their nesting, especially in western and northern parts of range, they may appear in numbers and breed only in years with good rainfalls. Nesting sites are usually on the ground and well hidden among weeds or at the base of a bush. Sometimes they are found in a low shrub, up to a foot above ground. Nests consist of an open cup made of dry grasses, weed stems, bark, and plant fibers and are lined with fine grasses (Audubon 2022b).

Lark Bunting. On the western plains in the early summer, the male lark bunting can be seen fluttering up from the grass to deliver its varied flight song. In the winter, when males and females are patterned in streaky brown, the species is more subtle. When they fly in compact flocks sweeping low over the ground, some of them will flash patches of white or buff in the wings. Nesting sites are typically found on the ground in grassy areas, usually sheltered or protected by overhanging grass or weeds. Nests are often sunken into a small depression in the soil, so that the rim of nest is level with the ground or only slightly above it. Nests consist of an open cup made of grasses, weeds, and rootlets and are typically lined with fine grasses, plant down, and animal hair (Audubon 2022c).

A list of the species observed during the 2014–2016 surveys conducted for Cannon AFB and Melrose Air Force Range is included in **Appendix C**.

Threatened and Endangered Species and State Listed. According to USFWS's Information for Planning and Consultation, it was determined that no federally listed threatened or endangered species have the potential to occur within the project area (USFWS 2022). However, one candidate species has the potential to occur on the installation, the Monarch Butterfly (*Danaus plexippus*), but has not been identified on the installation. It should be noted that candidate species have no legal protections under the ESA. To ensure no impact, an updated species list from USFWS is required to be obtained within 90 days of starting construction activities.

Based on the data provided in the Biota Information System of New Mexico (BISON-M), six species listed by NMDGF as threatened or endangered have the potential to occur in Curry County (BISON-M 2022) (see **Appendix D**). However, the results of biological surveys conducted from 2015–2016 on Cannon AFB did not document any threatened and endangered or candidate species on the installation (CAFB 2020). Species listings are frequently reviewed and updated; however, continued surveying on installation is a priority. Similarly, the mobility of avian species could allow for incidental or migratory occurrences of federally listed species on the installation.

Critical Habitat. Critical habitats are those areas of land, air, or water that are essential for maintaining or restoring threatened or endangered plant or animal populations. Neither the NMDGF nor USFWS has designated or identified any critical habitat on Cannon AFB or in the project areas. Although not considered critical habitat, surveys and literature indicate that important habitats on the installation include prairie dog towns, which provide nesting habitat for the western burrowing owl (CAFB 2020).

3.7.2 Environmental Consequences

3.7.2.1 *Proposed Action*

Vegetation. The Proposed Action would result in short-term, minor, adverse impacts on grassland vegetation. Direct effects on vegetation from removal and crushing and indirect effects from soil compaction and the potential for establishment of invasive species would occur.

However, long-term, negligible, beneficial impacts would result from revegetation or landscaping of disturbed sites with native species supporting the native plant community on the installation.

Crushing and soil compaction would occur when vehicles and equipment access, park, and maneuver around the project areas during construction and demolition. Additionally, ground disturbance and transportation of construction equipment could increase the potential for the establishment of invasive plant species. Adverse impacts on vegetation would be minimized with the use of appropriate BMPs, such as cleaning construction equipment prior to entering the project areas. In accordance with EO 13112, *Invasive Species*, active measures would be implemented to help prevent and control dissemination of invasive plant species during ground-disturbing activities. Revegetation of disturbed sites with native vegetation would further reduce the establishment of invasive species.

Wildlife Species and Habitat. There is the potential for the Proposed Action to result in short-term, minor to moderate, adverse impacts on the species of concern listed above. Ground-disturbing demolition activities could directly impact the burrowing owls and black-tailed prairie dogs as well as their habitats in the existing MSA, and construction would result in both temporary and permanent, minor degradation of habitat. To help mitigate these impacts, Cannon AFB would conduct surveys prior to any construction, have a monitor onsite during construction to observe the owls' and prairie dogs' response to demolition activities and ensure their safety, and add traffic signage for speeding. Species should be relocated only as a last resort and is the responsibility of the United States Department of Agriculture Animal and Plant Health Inspection Service. To mitigate any impacts, an updated species list from USFWS is required to be obtained within 90 days of starting any construction activities. There is also the potential for long-term, minor, beneficial impacts on burrowing owls and black-tailed prairie dogs because after the existing MSA is demolished, the area would be more widely available for potential habitat use.

The Proposed Action has the potential to result in short-term, negligible to minor, adverse impacts on avian species of concern including the prairie falcon, Cassin's sparrow, and lark bunting. However, while habitat in the project area is suitable for these species, it is not exclusive, meaning other habitat could be easily found on Cannon AFB. As with the burrowing owl and prairie dog, to ensure no impact, an updated species list from USFWS is required to be obtained within 90 days of starting any construction activities.

Temporary displacement of mobile wildlife from noise, lighting, and other disturbances would occur from construction and demolition activities. High-impact construction activities that require heavy equipment could cause more-mobile mammals, reptiles, and birds, including breeding migratory birds, to temporarily relocate to nearby similar habitat. This disturbance is expected to be minor, and it is assumed that displaced wildlife would return soon after activities conclude. However, in order to avoid nest abandonment and other adverse impacts, surveys would be conducted prior to the start of construction activities. These impacts would be short-term and BMPs would be implemented to minimize adverse impacts.

Individuals of smaller, less-mobile species could be inadvertently killed or injured during ground-disturbing activities or transportation of equipment and personnel. Burrowing animals, such as rodents and reptiles, could be impacted. However, vehicles associated with construction activities would be used primarily on the established roads, which limits the potential for impacts on burrowing species.

The Proposed Action would result in both short- and long-term, minor to moderate, adverse impacts on wildlife species and habitat, and long-term, minor, beneficial impacts on wildlife and

habitat. Construction and demolition activities would result in temporary, minor degradation of wildlife habitat, while construction of the new facilities would result in permanent, minor to moderate degradation of habitat. Adherence to BMPs would minimize unnecessary disturbances to habitat.

Threatened and Endangered and State Listed Species. No impacts on federally or state listed threatened and endangered, or candidate species, would be expected to occur as a result of the Proposed Action as no federal- or state-listed species have been observed on Cannon AFB.

3.7.2.2 *Aggregate Impacts*

Construction and demolition activities under the Proposed Action, as well as present and reasonably foreseeable future projects on the installation and within the city of Clovis, would result in impacts on vegetation crushing and soil compaction during ground-disturbing activities, which could result in establishment of invasive species. Adverse impacts on vegetation would be minimized through the use of appropriate BMPs, such as cleaning construction equipment prior to entering the project area and measures would be implemented to help prevent and control dissemination of invasive plant species during ground-disturbing activities. Revegetation of disturbed sites with native vegetation would further reduce the establishment of invasive species.

Project activities that require heavy equipment could cause mobile mammals, reptiles, and birds, including breeding migratory birds, to temporarily relocate to nearby similar habitat. This disturbance is expected to be minor, and it is assumed that displaced wildlife would return to areas that had not been improved soon after activities conclude or would move to adjacent areas of similar habitat. Adverse impacts on wildlife would be minimized through the use of appropriate BMPs, such as conducting surveys prior to any construction activities taking place and scheduling project activities to occur outside of the nesting season of 1 March to 30 September in order to reduce impacts on migratory birds. Although growth and development can be expected to continue outside of Cannon AFB and within the surrounding natural areas, significant adverse impacts on these resources would not be expected. Therefore, the Proposed Action, when combined with other actions both on and off the installation, would not result in a significant cumulative impact on biological resources.

3.7.2.3 *Unavoidable Adverse Impacts*

The Proposed Action would result in a negligible loss of vegetation and wildlife habitat. Because the project area consists primarily of previously disturbed ground with minimal vegetation, the loss would be negligible and not considered significant; therefore, a less than significant impact from the irretrievable loss of vegetation and wildlife habitat is expected.

3.7.2.4 *No Action Alternative*

Under the No Acton Alternative, the proposed infrastructure would not be constructed, and the existing conditions discussed in **Section 3.11.1** would remain unchanged. No new impacts on biological resources would occur as a result of the No Action Alternative.

3.8 CULTURAL RESOURCES

Cultural resources are historic sites, buildings, structures, objects, or districts considered important to a culture, subculture, or community for scientific, traditional, religious, or other purposes. They include archaeological resources, historic architectural or engineering resources, and traditional cultural resources. Federal laws and EOs that pertain to cultural resources

management include the NHPA (1966), the Archeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (1978), the Archaeological Resources Protection Act (1979), and the Native American Graves Protection and Repatriation Act (1990). The NHPA defines historic properties as buildings, structures, sites, districts, or objects listed in or eligible for listing in the NRHP. Resources found significant under NRHP criteria are considered eligible for listing in the NRHP. Historic properties are generally 50 years of age or older (i.e., considered historic age), are historically significant, and retain sufficient integrity to convey their historic significance.

3.8.1 Affected Environment

Under Section 106 of the NHPA, federal agencies must take into account the effect of their undertakings on historic properties within the proposed undertaking's APE. Federal agencies must assess the possible effects of the proposed undertaking on historic properties in consultation with the SHPO and other consulting or interested parties, including the public. The APE is defined as the geographic area or areas within which an undertaking (project) may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. Construction of the new infrastructure at Cannon AFB would result in 91.69 acres of ground disturbance from demolition activities and 193.33 acres of new construction disturbance. The APE for the Proposed Action is discontinuous and includes 1) the construction footprint of the new dormitory; 2) the construction footprint of the new storage facility, 3) the construction footprint of the new MSA in the land gift area, and 4) the boundaries of the demolition activities in the existing MSA.

The ICRMP for Cannon AFB and Melrose Air Force Range is the guidance document for cultural resources for planning and proposed activities at Cannon AFB and Melrose Range. The ICRMP summarizes the results of multiple archaeological and architectural inventories that have been conducted on Cannon AFB over the past 40 years. Past surveys at Cannon AFB have identified 75 archaeological sites that are eligible for listing in the NRHP. No traditional cultural properties or sacred sites have been identified on Cannon AFB. The 2021 ICRMP lists one NRHP-eligible architectural resource at Cannon AFB (Facility 2, a World War II-era flagpole at Wing Headquarters) (CAFB 2021b). However, the eligibility of the flagpole was reassessed in February 2022 and recommended not eligible due to a lack of integrity. The previously unevaluated Prisoners of War Monument (Facility 51) was recommended NRHP-eligible in the same study (CAFB 2022a). Consultation with SHPO regarding the eligibility recommendations for Facilities 2 and 51 is ongoing. However, neither are within the APE for the Proposed Action. Therefore, there are no previously surveyed historic properties within the APE for the Proposed Action.

The new 240-acre MSA would be constructed in the 603-land gift area at the southwest corner of Cannon AFB. In 2018, a cultural resource inventory was completed in the land gift area. One NRHP-eligible archaeological site (LA 161297) was identified in the land gift area, but that site is approximately 0.5 mile east of the construction area for the new MSA and would not be disturbed as part of the Proposed Action (CAFB 2018). Additionally, six isolated occurrences were recorded in the land gift area, but none met the definition of a site, and none were recommended eligible for listing in the NRHP. In Scoping correspondence for NEPA dated 18 April 2022, SHPO noted the proximity of LA 161297 to the APE and requested additional information on the location of access roads, construction staging areas, fences, and other infrastructure associated with the proposed new MSA (see **Appendix A** for interagency coordination).

The new dormitory and storage facility, and the existing MSA are located in areas that have previously experienced ground disturbing activities, including grading or construction. The site of

the new dormitory is at the center of the installation and is currently a grassy field south of the existing dorms. Additionally, demolition of existing buildings would not be necessary to facilitate construction of the new dormitory. Scoping correspondence for NEPA with SHPO regarding the Proposed Action confirmed the site of the new storage facility has been previously surveyed and no NRHP-eligible properties have been identified in that portion of the APE (see **Appendix A**).

The existing MSA, which is scheduled for demolition, is not NRHP eligible. It includes 25 individual facilities of which 15 (Facilities 2110, 2112, 2114, 2122, 2125, 2126, 2127, 2129, 2134, 2140, 2143, 2146, 2148, 2149, and 2154) are scheduled for demolition under the Proposed Action (CAFB 2018b). Seven of the 15 facilities scheduled for demolition are ammunition storage facilities of a type (identified by DoD Category Group) included in the *Program Comment for World War II and Cold War Era (1939 – 1974) Ammunition Storage Facilities* (Program Comment), issued by the Advisory Council of Historic Preservation to assist DoD in managing and fulfilling its obligations under Section 106 for those property types (ACHP 2006). As demolition is one of the management actions included in the Program Comment, the USAF's Section 106 compliance responsibilities for those seven facilities (Facilities 2125, 2126, 2127, 2129, 2140, 2148, and 2149) under the Proposed Action are considered fulfilled. Two of the 15 facilities scheduled for demolition are not included in the Program Comment (Facilities 2110 and 2112) but are historic-age and were previously evaluated as not eligible for listing in the NRHP in the Cannon AFB Cold War-Era Historic Property Survey (CAFB 2009). The remaining six facilities in the existing MSA that are scheduled for demolition (Facilities 2114, 2122, 2134, 2143, 2146, and 2154) are less than 50 years old and have not been identified in previous studies as potentially eligible for listing in the NRHP under Criteria Consideration G.

3.8.2 Environmental Consequences

3.8.2.1 *Proposed Action*

[[Preparer's Note: Consultation with the New Mexico SHPO, other identified consulting parties, and federally recognized Tribes under Section 106 of the NHPA is currently ongoing. Sections below and appendices of subsequent iterations of this EA will be updated with outcomes of the Section 106 consultation process and official correspondence.]]

There are no known historic properties within the APE for the Proposed Action. Additionally, design of the MSA and construction activities would avoid the NRHP-eligible archaeological site on the eastern side of the land gift area. Therefore, the Proposed Action would have no impacts on known historic properties. Should inadvertent discoveries be made during construction or demolition, the standard operating procedures for inadvertent discoveries of archaeological resources outlined in the installation's ICRMP would be implemented.

3.8.2.2 *Aggregate Impacts*

There are no foreseeable aggregate impacts associated with the Proposed Action that would affect historic properties at Cannon AFB.

3.8.2.3 *Unavoidable Adverse Impacts*

There are no known historic properties within the APE for the Proposed Action. Therefore, there are no unavoidable impacts on historic properties under the Proposed Action.

3.8.2.4 *No Action Alternative*

Under the No Action Alternative, the new infrastructure would not be constructed and no impacts on cultural resources would occur. Therefore, existing conditions discussed in **Section 3.8.1** would remain unchanged.

3.9 INFRASTRUCTURE

Infrastructure encompasses the fundamental systems that provide water, sewer, and electrical and heating/cooling capability, as well as roads, parking, paths, and land. Most infrastructure maintenance is supervised by the 27 Special Operations Mission Support Group and local private utility systems with whom Cannon AFB has partnered.

Infrastructure consists of the manmade systems and physical structures that enable a population in a specified area to function. Infrastructure components at Cannon AFB include transportation, MSA storage, utilities, and solid waste management. Transportation includes major and minor roadways that feed into the installation and the security gates, roadways, parking areas, and pedestrian networks on the installation. Utilities include electrical supply, liquid fuel supply, natural gas supply, water supply, sanitary sewer and wastewater systems, stormwater drainage, communications systems, and solid waste management.

3.9.1 Affected Environment

Transportation. There are approximately 70 miles of paved roads and 0.5 miles of unpaved roads at Cannon AFB. In the 2016 IDP, deteriorated primary pavement was noted and identified as requiring future remediation at the following locations: Aderholt Loop, Chindit Boulevard, Eagle Claw Boulevard, Ingram Boulevard, Liberator Avenue, and several MSA pavements. There are currently two gated entrances to Cannon AFB. Vehicles enter and exit Cannon AFB through the Main Gate and the Portales Gate. The Main Gate is located immediately south of US Highway 60-84 and currently connects the off-installation housing area and the US Highway 60-84 traffic to the installation. The Portales Gate is located on the south side of Cannon AFB and is the designated commercial gate and performs commercial/contractor access vehicle inspections (CAFB 2016).

Utility Systems

Electrical System. Electrical power is provided to Cannon AFB by a local utility. A 115-kilovolt (kV) transmission circuit is energized by substations east and south of the installation. At capacity, 56 megawatts (MW) of electricity can be supplied to Cannon AFB. Peak electrical energy demand averages 12.5 MW and occurs during the summer (CAFB 2016).

Natural Gas System. Natural gas is supplied to Cannon AFB through a Public Service of New Mexico (PNM) transmission/distribution pipeline system. There is a network of natural gas lines, comprised of 1- to 6-inch polyethylene pipes, on the western side of the flightline. Natural gas is delivered to the installation's master meter at an approximately 55–60 pounds per square inch. There are three natural gas storage facilities located on the installation. The current daily average demand at Cannon AFB is 44.4 million cubic feet (mcf). A majority of the annual natural gas demand is consumed in January, with the peak demand of 10,800 mcf. The annual average demand is 16,000 mcf. The capacity provided by PNM is unknown; however, they are generally able to provide the required demand. Distribution mains follow the installation roadway network and would remain in place (CAFB 2016).

Petroleum, Oils, and Lubricants/Liquid Fuel Systems. Liquid fuel is procured by DLA-Energy and delivered to the installation by commercial tank truck. Liquid fuels at Cannon AFB are primarily used to power military aircraft and ground-based vehicles. Liquid fuels are stored at the fuel storage complex, which is located on the north side of the installation. The fuel storage complex includes two Jet A Aviation (JAA) fuel tanks, one motor gasoline tank, one bio-diesel tank, one ethanol gasoline, and one ultra low-sulfur diesel tank. A 6-inch JAA pipeline physically exists between the city of Clovis and Cannon AFB, but it has not been used since the mid-1990s and it is no longer in serviceable condition (CAFB 2016).

Water Supply System. Cannon AFB is independent from outside water sources. Water is supplied via seven potable water wells on the installation (Wells 2, 3, 5, 7, 8, 9 and 12). The wells draw water from the Ogallala Aquifer, which provides the groundwater supply to the surrounding South Plains region. Average current demand is 571,600 gallons per day (gpd) with the peak demand being 1,671,000 gpd (CAFB 2016).

Wastewater System/Collection System. The wastewater treatment and collection system at Cannon AFB is comprised of 13 lift stations, 14 septic tank systems, 584 sewer manholes, and 57.59 miles of pipeline collection. Domestic and industrial wastewater is discharged to an on-base wastewater treatment plant (WWTP) through a gravity sewer system. Up to 7,500 gpd of domestic wastewater is authorized to be discharged to septic systems and holding tanks. The WWTP has an average daily flow of 1.13 million gallons per day (MGD) with a peak flow of 1.5 MGD. Reclaimed water from the WWTP is regulated by the National Pollutant Discharge Elimination System and is discharged into the North Playa Lake and a golf course pond (CAFB 2016).

Stormwater Discharge/Collection System. Stormwater runoff on Cannon AFB is controlled by a drainage system. Surface runoff is directed to a network of culverts, storm sewers, and ditches. Stormwater runoff generated on Cannon AFB primarily drains to the south and southwest and collects at South Playa Lake, where it is allowed to infiltrate and evaporate via natural processes. Developed areas on the installation have underground storm drainage piping with associated catch basins, drain inlets, manholes, and similar drainage appurtenances. Surface runoff from the flightline is conveyed through storm sewers on the southwest and northeast portions of the installation and enters natural stormwater watercourses. Pumping of the golf course pond is sometimes required due to flooding during large rainfall events (CAFB 2016).

The Master Draining Study, conducted in 2009, noted the flooding issues that Cannon AFB experiences during intense rainfall events. The following recommendations were made in the report pertaining to stormwater infrastructure at Cannon AFB (PBS&J 2009):

- Evaluate problematic stormwater sub-basins and collection of data to prepare stormwater drainage system model.
- Model the stormwater drainage system to identify those areas requiring maintenance, upgrade, or replacement.
- Develop an inventory and operations and maintenance plan for stormwater pumps.

Heating/Cooling Distribution Systems. There are no centralized heating and cooling systems in place at Cannon AFB. Facilities are served by localized heating/cooling systems. There is an Energy Management Control System; however, not all facilities are compatible with this system and rely instead on localized control systems (CAFB 2016).

Communications System. The communication network at Cannon AFB consists of telephone, unclassified network, classified network, and defense messaging systems. There are diverse paths for critical voice and data circuits in place. A wireless/wired network is in place at all dormitories (CAFB 2016).

Solid Waste Management. Reducing waste streams minimizes environmental compliance requirements, disposal and transportation costs, and long-term liabilities. Solid wastes can be solid, semi-solid, liquid, or a contained gas. Nonhazardous solid wastes include household solid waste, construction and demolition debris, inert sludge, worn out materials, discarded products, and manufacturing byproducts. Nonhazardous solid waste is collected by a contractor and transported to the Clovis Regional Landfill (CAFB 2020). Hazardous wastes are discussed in **Section 3.10**.

3.9.2 Environmental Consequences

3.9.2.1 *Proposed Action*

Transportation. The Proposed Action would result in short- and long-term, adverse impacts on the transportation system. Construction, demolition, and operation activities associated with the Proposed Action are expected to result in intermittent, short-term, negligible to minor, adverse impacts on area roadways because of a temporary increase in the number of construction-related vehicles accessing the installation. However, early coordination with Cannon AFB organizations would ensure necessary safety precautions are taken and would allow ample advance notice to affected commuters and personnel. If any intermittent road closures are required for construction activities, closures and potential installation-wide traffic changes would be communicated to installation staff via electronic signs, bulletins, and memos. Additionally, construction-related traffic would be timed to not occur during peak travel periods. Typical construction-related traffic would include delivery trucks, haul trucks, and passenger vehicles. Long-term impacts on transportation would include increased traffic within the project areas, including commuters and personnel, delivery vehicles (potentially including semi-tractor trailer traffic), and maintenance vehicles. Additional traffic to newly constructed roads, driveways, and vehicle parking areas for construction equipment and contractor vehicles as part of the Proposed Action would also be expected. These impacts are anticipated to be negligible.

Utility Systems

Electrical System. The Proposed Action would result in short- and long-term, negligible to minor, adverse impacts on the installation's electrical system. The Proposed Action would require installation of new electrical lines to connect the newly constructed buildings to the electrical grid. Interruptions to the electrical system may occur during connection of the newly constructed facilities to the installation's electrical distribution system. The anticipated impact from the installation of these new lines is expected to be negligible. Additionally, because Cannon AFB purchases power from Xcel Energy, the net change to the global electrical power grid is expected to be minor.

Natural Gas System. The Proposed Action would result in short- and long-term, negligible to minor, adverse impacts on the installation's natural gas and propane system. The newly constructed facilities would be connected to the installation's natural gas distribution system using existing lines or additional lines would be added. The net change in total natural gas consumption due to the new facilities is expected to be minor. Interruptions to the natural gas system may

occur during connection of the newly constructed facilities to the installation's natural gas distribution system.

Petroleum, Oils, and Lubricants/Liquid Fuel Systems. The Proposed Action is not anticipated to result in any changes to the installation's petroleum, oils, and lubricants (POL) or liquid fuel systems, and equipment and construction vehicles would not utilize the installation's fuel supply. Therefore, the liquid fuel system will not be discussed further.

Water Supply System. The Proposed Action would result in short- and long-term, negligible to minor, adverse impacts on the installation's water supply system. Existing water supply lines from wells present on the installation would be accessed to provide water to the facility. The additional water supply lines to the newly constructed facilities would not add significant infrastructure to the installation's system. Interruptions to the water supply system may occur during connection of the newly constructed facilities to the installation's water distribution system.

Wastewater System/Collection System. The Proposed Action would result in short- and long-term, negligible to minor, adverse impacts on the sanitary sewer and wastewater systems. The Proposed Action would require the integration of sanitary sewer and wastewater systems with the utilities that would be associated with the project areas. This would increase the sanitary sewer and wastewater system infrastructure at the installation. Wastewater from the newly constructed facilities would increase the total sanitary sewer and wastewater generated by the installation. However, current sanitary sewer and wastewater discharge from Cannon AFB is below the maximum supply capacity. The increase in wastewater generated from operation of the facilities would not increase the sanitary sewer and wastewater generation to the maximum allowable limit for the installation. Therefore, the total impact to the sanitary sewer and wastewater system would be negligible.

Stormwater Discharge/Collection System. The Proposed Action would result in short- and long-term, minor, adverse impacts on stormwater handling at Cannon AFB. Short-term construction activities would potentially result in adverse impacts on stormwater handling by disruption of natural drainage patterns, contamination of stormwater discharge, and heavy sediment loading. The Proposed Action would not be expected to result in significant impacts on the stormwater handling system.

The increase in impervious surfaces, including facilities and the supporting facilities such as roads, driveways, and vehicle parking areas, associated with the Proposed Action would result in long-term, minor, adverse impacts on stormwater handling. These potential impacts would include increased runoff, erosion and sedimentation, and changes in downstream direction and volume of stormwater, which could affect the topography and soil resources. Disturbed and bare areas would be revegetated in accordance with the SLDP to reduce impacts, and the Proposed Action would not be expected to result in significant impact on the stormwater handling system.

Heating/Cooling Distribution Systems. The Proposed Action is not anticipated to result in any changes to the installation's heating and cooling systems as there are no centralized heating and cooling systems in place at Cannon AFB. Facilities would be serviced with localized heating and cooling systems as seen fit.

Communications System. The Proposed Action would result in short- and long-term, negligible, adverse impacts on the installation's communications system. New communications lines would need to be installed from the existing communications lines to the newly constructed facilities. Interruptions to the communications system may occur during connection of the newly

constructed facilities to the installation's communications system. The Proposed Action would potentially need to address both physical (e.g., storage capacity) and logistical (e.g., below or aboveground connections) considerations to ensure security and capacity of the communications system is adequate. Although new communications lines would increase the overall communications infrastructure at the installation, the overall impact is expected to be negligible.

Solid Waste Management. The Proposed Action would result in short- and long-term, minor, adverse impacts on solid waste management at Cannon AFB. Construction activities would generate minimal amounts of solid waste, primarily recyclable and reusable building materials (e.g., concrete, metals). Waste disposal would be conducted in accordance with all federal, state, and local laws and regulations. To reduce the amount of waste disposed of at the landfill, materials that could be recycled or reused would be diverted from landfills to the greatest extent possible.

The weights of all materials diverted for recycling or reuse would be reported to the Cannon AFB Quality Recycling Program to be credited toward the DoD-mandated construction and demolition diversion rate of 60 percent. Currently, Cannon AFB has a construction debris diversion rate of 92 percent (CAFB 2016). Nonhazardous construction and demolition waste that is not recyclable or reusable would be disposed of at an offsite permitted landfill facility which would have a long-term, negligible, adverse effect on solid waste management. Whenever possible, clean construction and demolition debris (e.g., concrete, asphalt) would be reused for fill and road work, rather than disposed of in a landfill.

Solid waste generated during operation of the new infrastructure would be added to the waste already collected by a contractor and transported to the Clovis Regional Landfill. To reduce the amount of waste disposed of at the landfill, materials that could be recycled or reused would be diverted from landfills to the greatest extent possible.

The Proposed Action would increase the overall amount of solid waste generated at Cannon AFB but would not significantly alter the existing waste and recycling streams maintained by the installation.

3.9.2.2 *Aggregate Impacts*

The Proposed Action would capitalize on many existing in place infrastructure elements. Operation of the new infrastructure would slightly increase electricity, natural gas, and water utilization and would slightly increase the waste generated on the installation. Therefore, the Proposed Action, when combined with other actions both on and off the installation, would not have a significant cumulative impact on the installation's infrastructure.

3.9.2.3 *Unavoidable Adverse Impacts*

Under the Proposed Action no unavoidable adverse impacts are anticipated.

3.9.2.4 *No Action Alternative*

Under the No Acton Alternative, the proposed infrastructure would not be constructed, and the existing conditions discussed in **Section 3.9.1** would remain unchanged. No new impacts on infrastructure would occur as a result of the No Action Alternative.

3.10 HAZARDOUS MATERIALS AND WASTES

3.10.1 Affected Environment

Hazardous Materials and Petroleum Products. Contractors proposing to use hazardous materials on the installation are required to coordinate with the 27 Special Operations Civil Engineer Squadron (SOCES)/Civil Engineering Installation Environmental (CEIE) Hazardous Material Program Manager. The Cannon AFB Spill Prevention and Response (SPR) Plan documents storage locations of POL and provides inspection, testing, and maintenance procedures for proper handling. Additionally, to minimize adverse impacts, the plan outlines procedures for reporting and responding to a spill (CAFB 2017a).

The MILCON project areas are vacant areas that do not contain any known hazardous materials or petroleum products. A generator and associated 145-gallon aboveground storage tank (AST) containing diesel fuel are present at Facility 2134, which would be demolished under the Proposed Action (CAFB 2017a).

Hazardous and Petroleum Wastes. 27 SOCES/CEIE is responsible for implementing the hazardous waste management program at Cannon AFB through waste characterization; establishing collection sites; receiving and processing hazardous waste for turn-in; reporting, tracking logs, and manifesting; regulatory interface; recordkeeping; and hosting and conducting inspections (CAFB 2017b). The installation's Hazardous Waste Management Plan (HWMP) establishes procedures to comply with applicable federal, state, and local standards for solid waste and hazardous waste management. Cannon AFB is a large-quantity generator of hazardous waste (USEPA ID #NM7572124454).

The MILCON project areas are vacant areas that do not contain known hazardous or petroleum wastes. The HWMP notes a 30-gallon drum for parts washer waste (cadmium) at Facility 2123, which would be demolished under the Proposed Action (CAFB 2017b).

Toxic Substances. Toxic substances are substances that might pose a risk to human health and are addressed separately from hazardous materials and hazardous wastes. A toxic substance is a chemical or mixture of chemicals that may present an unreasonable risk of injury to health or the environment. These substances include asbestos-containing materials (ACM), lead-based paint (LBP), and polychlorinated biphenyls (PCBs), which are regulated by the USEPA under the Toxic Substances Control Act. Existing MSA facilities 2110, 2112, 2125, 2126, 2127, 2129, 2140, and 2149, which are proposed for demolition under the Proposed Action, were constructed prior to 1978 and have the potential to contain ACM, LBP, and PCBs. Additionally, existing MSA facilities 2114 and 2143, which are also proposed for demolition under the Proposed Action, were constructed prior to 1990 and have the potential to contain ACM.

Environmental Restoration Program. Cannon AFB has 38 active ERP sites that include known and suspected soil and groundwater contamination associated with POL storage areas, oil/water separators, drainage areas, septic systems, fire training areas, and spill areas. Of these, 14 are in "deferred" status, which means these sites are deferred from full investigation or remediation until the sites are no longer in use and can be investigated and remediated as applicable (NMED 2018). There are no active ERP sites within the MILCON project areas under the Proposed Action; however, 16 active sites occur within 0.5 mile of the proposed new dormitory and storage facility (see **Figures 3-3** and **3-4**). No active ERP sites occur within 0.5 mile of the proposed new MSA. The existing MSA, which would be demolished under the Proposed Action, occurs within AOCs HH*, FFF, and GGG (see **Figure 3-5**). No monitoring wells are present within the project areas; however, monitoring well MW-RB is immediately west of the existing MSA project area (see **Figure 3-4**). There are no active Military Munitions Response Program sites on Cannon

AFB; therefore, Military Munitions Response Program sites will not be discussed further (CAFB 2018e).

Table 3-7 presents the status of the sites that occur within 0.5 mile of the MILCON project areas under the Proposed Action. AOCs HH*, FFF, and GGG, which occur within the existing MSA, are discussed below.

Table 3-6. Status of Active ERP Sites within 0.5-Mile Radius of MILCON Project Areas

ERP Site No.	Site Title	Site Status	Approximate Distance and Direction to Project Area
New Dormitory and Parking Project Area			
AOC CC*	POL Storage Tank No. 420	Additional investigation recommended 28 Feb 22	0.4 mile east of parking
AOC EE*	POL Storage Tank No. 444	Additional investigation recommended 28 Feb 22	0.45 mile east of dormitory
AOC ZZ	NSAv Maintenance Hangar, Facility No. 133	Deferred	0.5 mile south of dormitory
AOC AAA	HAZ-Mat Storage, Facility No. 202	Recommended Corrective Action Complete 28 Feb 22	0.45 mile east of parking
AOC DDD	Vehicle Maintenance, Facility No. 335	Deferred	0.35 mile east of parking
AOC EEE	Vehicle Maintenance, Facility No. 379	Deferred	0.45 mile east of dormitory
AOC III	Vehicle Maintenance, Facility No. 375	Deferred	0.45 mile east of dormitory
SWMU 21	Building 185 Non-Destructive Inspection (NDI) Lab	Additional investigation recommended 28 Feb 22	0.4 mile southeast of parking
SWMU 22	Building 593 Non-Destructive Inspection (NDI) Lab	Deferred	0.35 mile southeast of dormitory
SWMU 73	Stormwater Drainage and Retention Pond	Deferred	0.35 mile northeast of dormitory
26 STS Storage Facility Project Area			
AOC QQ	POL Storage Tank No. 2313	Additional investigation recommended 28 Feb 22	0.35 mile northwest
AOC GGG	98-Acre Munitions Storage Area	Deferred	0.4 mile northwest
AOC JJJ	Active Fire Training Area and associated retention pond (approximately 900 feet southeast of southeast flight apron)	Deferred	0.5 mile south
AOC KKK	Various berm and concrete pad structures and pits approximately 850 feet northwest of AOC F	Additional investigation recommended 28 Feb 22	0.3 mile northwest
AOC OOO	C-130 Aircraft Hangar/Maintenance Facility (Buildings 4605, 4606, 4607, 4608, 4609, and 4610)	Deferred	0.35 mile southwest
SWMU 103	Wastewater Playa Lake	Deferred	0.5 mile northwest
Demo Existing MSA Project Area			
AOC II*	POL Storage Tank No. 2160	Additional investigation recommended 28 Feb 22	Immediately west
AOC PP	POL Storage Tank No. 2309	Additional investigation recommended 28 Feb 22	0.5 mile northwest
AOC QQ	POL Storage Tank No. 2313	Additional investigation recommended 28 Feb 22	0.4 mile west
SWMU 103	Wastewater Playa Lake	Deferred	Immediately south

Source: CAFB 2022b, CAFB 2022c, CAFB 2018f

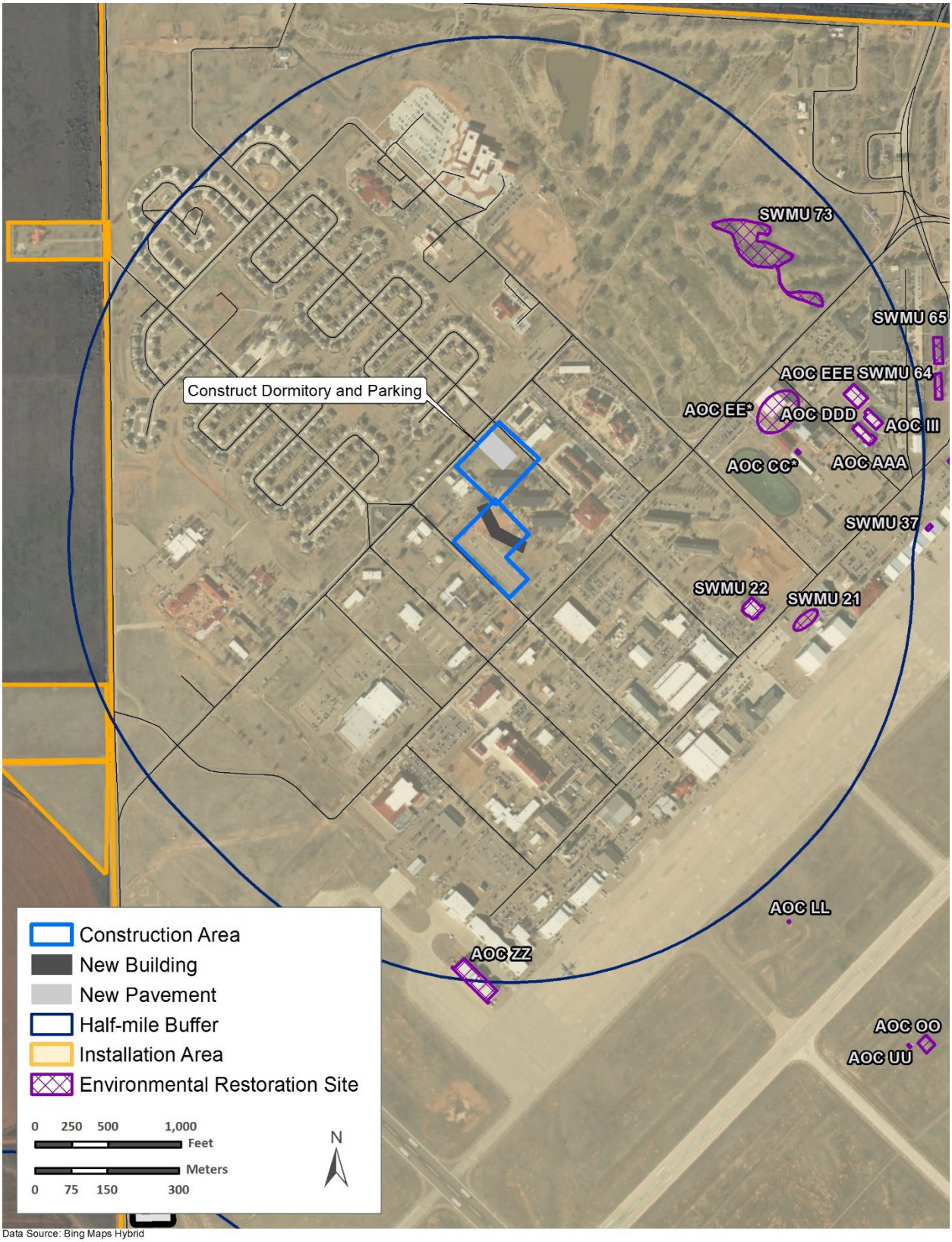

Figure 3-3. Active ERP Sites within 0.5 Mile of the Dormitory Project Area

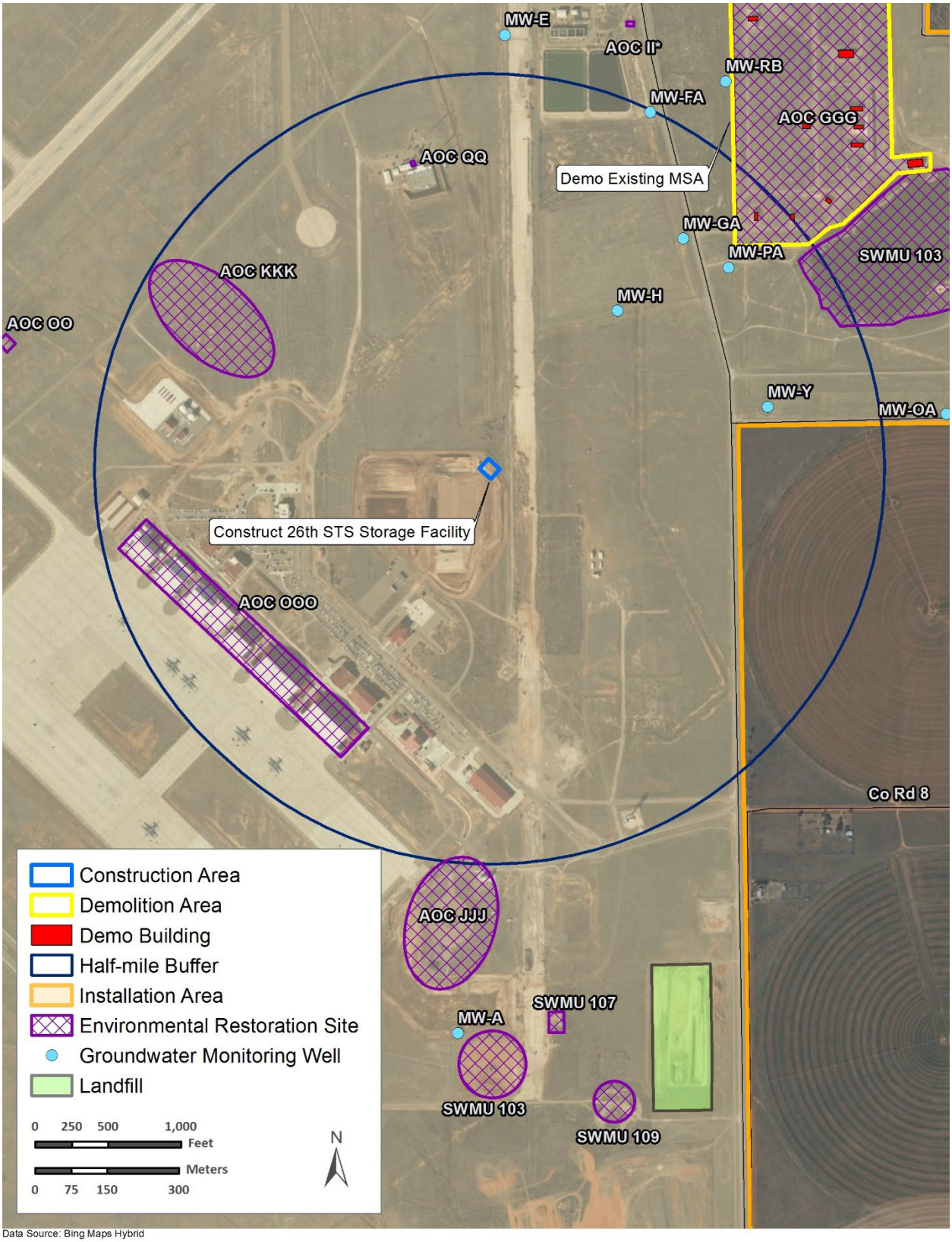

Figure 3-4. Active ERP Sites within 0.5 Mile of the Storage Facility Project Area

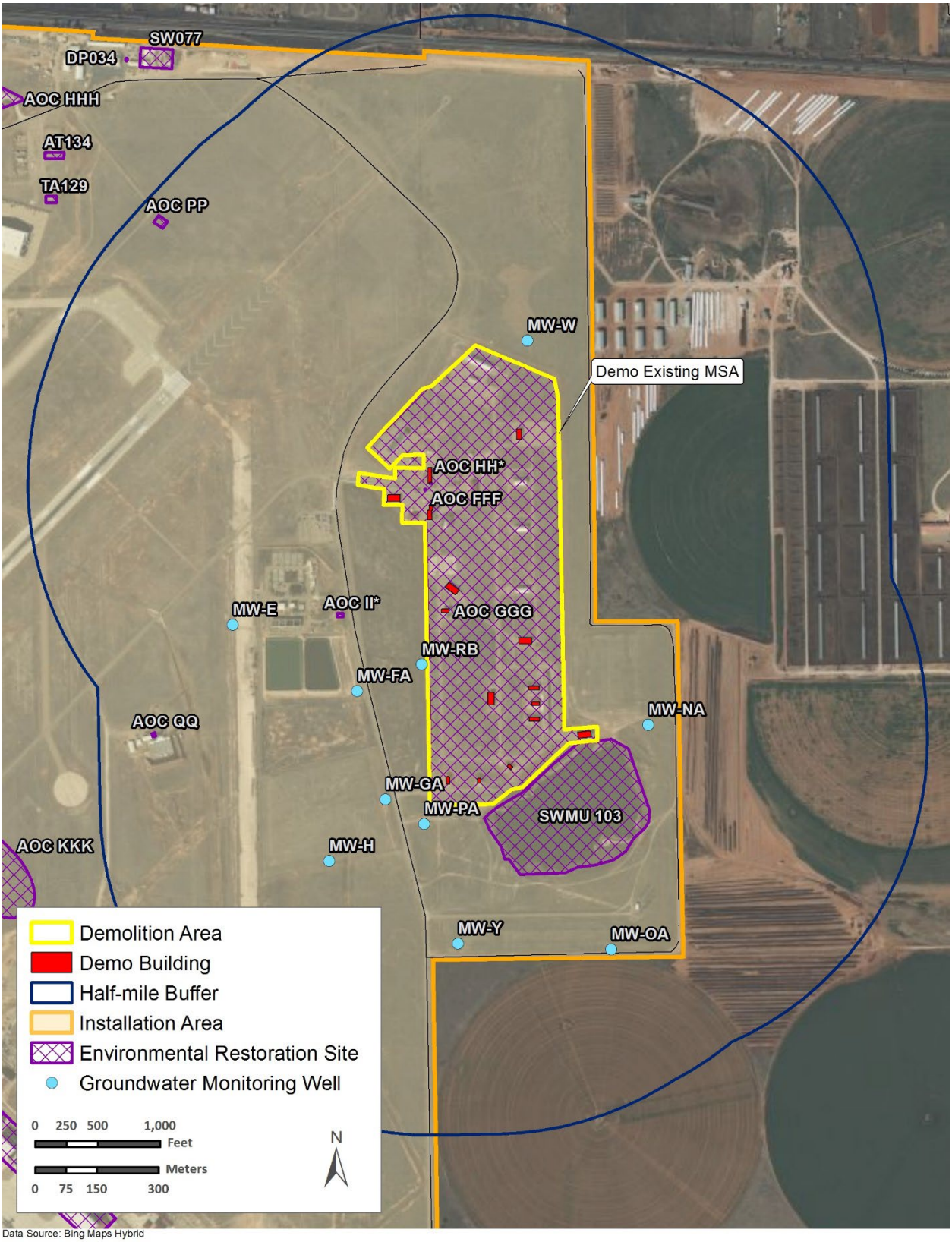

Figure 3-5. Active ERP Sites within 0.5 Mile of the Existing MSA

AOC HH*, POL Storage Tank No. 2110, was a fuel release discovered when removing a 550-gallon diesel underground storage tank (UST) being replaced with an AST. Based on elevated concentrations of total petroleum hydrocarbons (TPH) of 121 parts per million (ppm) in the soil beneath the UST, which exceeds the NMED Soil Screening Levels of 100 ppm, an additional 2 feet of soil was removed from the excavation area. Confirmatory sampling identified concentrations of TPH at 65 ppm, which is below the NMED 100 ppm standard for reporting a release. Additionally, no product or soil staining was observed during excavation of the UST. Groundwater data collected between 2008 and 2018 has not indicated any VOCs that exceed New Mexico Groundwater Quality Standards. Therefore, Cannon AFB recommended in the 28 February 2022 Release Assessment Report that the status of AOC HH* be considered Corrective Action Complete without controls in the Resource Conservation and Recovery Act (RCRA) Hazardous Waste Permit for Cannon AFB (CAFB 2022b).

AOCs FFF, Munitions Wash Rack Facility Number 2153, and GGG, 98-Acre MSA, both have a status of deferred in the 2018 NMED RCRA Hazardous Waste Permit. The wash rack within AOC FFF was a self-contained recirculating system that did not drain to the environment. With the facility no longer in use, the pump house was removed and only the foundation and drain remain. AOC FFF was added to the 2018 RCRA Hazardous Waste Permit because Facility 2153 was listed as a facility to be demolished or repurposed in the 2016 IDP and wash rack operations typically generate hazardous waste or waste containing hazardous constituents. For NMED to make a determination regarding AOC FFF, information pertaining to the wash rack to include dimensions, capacities, and a structural and mechanical description of the wash rack and all available information pertaining to the generation of wastewater or other wastes must be submitted to NMED prior to demolition or repurposing (NMED 2018).

AOC GGG was added to the 2018 RCRA Hazardous Waste Permit because the MSA was listed as a facility that could be relocated with a potential for decommissioning or repurposing in the 2016 IDP. Concerns with the area include unaccounted storage, treatment, and disposal areas associated with abandoned, discarded, deteriorating, or damaged munitions as well as other operations associated with munitions such as hazardous or solid waste generation, management, and storage areas such as wash pads, loading facilities, and any storage bunkers, magazines, or igloos slated for decommissioning or demolition. For NMED to make a determination regarding AOC GGG, information pertaining to current or prior storage, treatment, and disposal of abandoned, discarded, deteriorating, or damaged military munitions and any release associated with the MSA and associated functional areas must be submitted to NMED prior to demolition or reconfiguration of the area (NMED 2018).

3.10.2 Environmental Consequences

3.10.2.1 *Proposed Action*

The Proposed Action would result in short-term, negligible to minor, adverse and long-term, negligible, adverse and beneficial impacts on hazardous materials and wastes management.

Hazardous Materials and Petroleum Products. Construction and demolition would result in short-term, negligible to minor, adverse impacts. Construction contractors would ensure the handling and storage of any hazardous materials and petroleum products are carried out in compliance with applicable laws and regulations.[1] Construction equipment would use small

[1] Construction contractors would be subject to applicable laws and regulations pertaining to hazardous materials and wastes, as well as installation-specific protocols and procedures. These requirements would be written into contracts in accordance with the Cannon AFB HWMP.

quantities of hazardous materials and petroleum products such as solvents, hydraulic fluid, oil, antifreeze, and other hazardous materials. Hazardous materials could be used for minor equipment servicing and repair activities. Should any hazardous materials or petroleum products be released into the environment, applicable management plans such as the installation's SPR Plan would be adhered to. The severity of a potential impact from an accidental release would vary based on the extent of a release and the substance(s) involved. No hazardous materials or petroleum products are stored within the MILCON project areas and any hazardous materials or petroleum products within the existing MSA, such as the 145-gallon diesel AST at Facility 2134, would be removed and disposed of accordingly prior to demolition. Construction activities may require the temporary use of ASTs onsite for power generation or equipment fuel, and their use and maintenance would comply with applicable federal, state, and local laws and regulations to include secondary containment. ASTs would be used temporarily and removed from the project area upon project completion.

Operation and maintenance of the new infrastructure would result in long-term, negligible, adverse impacts. Negligible amounts of hazardous materials such as paints, adhesives, solvents, and cleansers would be used during operation and maintenance of the new infrastructure.

Hazardous and Petroleum Wastes. Construction and demolition would result in short-term, negligible to minor, adverse impacts. Construction and demolition would involve the use of hazardous materials and petroleum products, which would result in the generation of hazardous wastes and used petroleum products. Implementation of BMPs and environmental protection measures would reduce the potential for an accidental release of these materials. All construction equipment would be maintained according to the manufacturer's specifications and drip mats would be placed under parked equipment as needed. Additionally, all hazardous and petroleum wastes generated would be handled and disposed of in accordance with the installation's HWMP and federal, state, and local regulations. Additionally, the 30-gallon drum associated with the parts washer waste would be removed and the contents disposed of in accordance with the installation's HWMP prior to demolition within the existing MSA.

No long-term impacts are expected from operation and maintenance of the new dormitory or storage facility; however, long-term, negligible, adverse impacts on hazardous and petroleum wastes are expected from operation and maintenance of the new MSA. All hazardous and petroleum wastes generated would be handled and disposed of in accordance with the installation's HWMP and federal, state, and local regulations.

Should unknown, potentially hazardous wastes be discovered or unearthed during construction and demolition, construction contractors would immediately cease work, contact appropriate installation personnel, and await sampling and analysis results before taking any further action. Any unknown wastes determined to be hazardous would be managed or disposed of in accordance with applicable laws and regulations.

Toxic Substances. Short-term, negligible to minor, adverse impacts would result from the potential for exposure to ACM, LBP, and PCBs. Because of their age, existing MSA Facilities 2110, 2112, 2125, 2126, 2127, 2129, 2140, 2148, and 2149 are assumed to contain toxic substances such as ACM, LBP, and PCBs and MSA facilities 2114 and 2143 are assumed to contain ACM. Prior to demolition, surveys for these substances would be completed, as necessary, by a certified contractor to ensure that appropriate measures are taken to reduce the potential for exposure to, and release of, toxic substances. Contractors would wear appropriate personal protective equipment (PPE) and adhere to all federal, state, and local regulations as well as the installation's management plans for toxic substances. All ACM-, LBP-, and PCB-

contaminated debris would be disposed of at a USEPA-approved landfill. New construction is not likely to include the use of these substances because federal policies and laws limit their use in building construction applications.

Demolition of facilities containing toxic substances would result in long-term, negligible, beneficial impacts from the reduced potential for future human exposure to and reduced amounts of ACMs, LBP, and PCBs to maintain at Cannon AFB. No short- or long-term, adverse impacts on toxic substances are expected from operation and maintenance of the new infrastructure.

Environmental Restoration Program. No short- or long-term impacts on or from ERP sites are expected to result from construction of the new infrastructure under the Proposed Action. The MILCON project areas are not within or immediately adjacent to an active ERP site; therefore, construction is not expected to result in an impact on or from ERP sites or associated groundwater monitoring wells.

Short-term, negligible to minor, adverse impacts on or from AOCs HH*, FFF, and GGG could result from demolition of the existing MSA. Prior to demolition, Cannon AFB would coordinate with NMED, and demolition activities would adhere to all guidelines established by the installation and NMED. Should potentially hazardous wastes be discovered or unearthed during demolition, the contractor would immediately cease work, contact appropriate installation personnel, and await sampling and analysis results before taking any further action. Any wastes determined to be hazardous would be managed or disposed of in accordance with applicable laws and regulations. Monitoring well MW-RB, which is immediately west of the existing MSA project area, would be clearly marked and avoided to ensure no damage to the monitoring well occurs during demolition activities.

3.10.2.2 *Aggregate Impacts*

The Proposed Action, as well as present and reasonably foreseeable future projects at Cannon AFB and within the city of Clovis would incorporate appropriate BMPs and environmental protection measures to limit and control hazardous materials and wastes into their design and operations plans. Therefore, the Proposed Action, when combined with other actions both on and off the installation, would not result in a significant cumulative impact on hazardous materials and wastes management.

3.10.2.3 *Unavoidable Adverse Impacts*

The use and generation of hazardous materials and wastes during construction and operations of the new infrastructure would be unavoidable; however, the materials and wastes would be handled in accordance with federal, state, and local policies and would not be expected to result in significant impacts.

3.10.2.4 *No Action Alternative*

Under the No Action Alternative, the new infrastructure would not be constructed and no impacts on hazardous material and waste management would not occur. Therefore, existing conditions discussed in **Section 3.10.1** would remain unchanged.

3.11 SAFETY

A safe environment is one in which there is no, or an optimally reduced, potential for death, serious bodily injury or illness, or property damage. Human health and safety address workers' and public health and safety during and following construction, demolition, and training activities.

Site safety requires adherence to regulatory requirements imposed for the benefit of employees and the public. Site safety includes implementation of engineering and administrative practices that aim to reduce risks of illness, injury, death, and property damage. The health and safety of onsite military and civilian workers are safeguarded by numerous DoD and military branch-specific requirements designed to comply with standards issued by federal OSHA, USEPA, and state occupational safety and health (OSH) agencies. These standards specify health and safety requirements, the amount and type of training required for workers, the use of PPE, administrative controls, engineering controls, and permissible exposure limits for workplace stressors.

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

3.11.1 Affected Environment

Contractor Safety. All contractors performing construction and demolition activities are responsible for following federal and state safety regulations and are required to conduct activities in a manner that does not increase risk to workers or the public. Additionally, contractors would be required to submit a Safety Plan detailing how safety requirements would be met prior to beginning work.

New Mexico is one of several states that administer their own OSH program according to the provision of the federal OSH Act of 1970, which permits a state to administer its own OSH program if it meets all of the federal requirements regarding the program's structure and operations. The New Mexico Occupational Health and Safety Bureau has the responsibility of enforcing OSH regulations within the state. Its jurisdiction includes all private and public entities such as city, county, and state government employees. Federal employees are excluded as they are covered by federal OSHA regulations.

OSH programs address the health and safety of people at work. OSH regulations cover potential exposure to a wide range of chemical, physical, and biological hazards, and ergonomic stressors. The regulations are designed to control these hazards by eliminating exposure to the hazards via administrative or engineering controls, substitution, or use of PPE. Occupational health and safety is the responsibility of each employer, as applicable. Employer responsibilities are to review potentially hazardous workplace conditions; monitor exposure to workplace chemical (e.g., asbestos, lead, hazardous substances), physical (e.g., noise propagation, falls), and biological (e.g., infectious waste, wildlife, poisonous plants) agents, and ergonomic stressors; recommend and evaluate controls (e.g., prevention, administrative, engineering, PPE) to ensure

exposure to personnel is eliminated or adequately controlled; and ensure a medical surveillance program is in place to perform occupational health physicals for those workers subject to the use of respiratory protection or engaged in hazardous waste, asbestos, lead, or other work requiring medical monitoring.

Military Personnel Safety. Each branch of the military has its own policies and regulations that act to protect its workers, despite their work location. AFI 91-202, *The U.S. Air Force Mishap Prevention Program,* "establishes mishap prevention program requirements, assigns responsibilities for program elements, and contains program management information." In order to meet the goals of minimizing loss of USAF resources and protecting military personnel, mishap prevention programs should address groups at increased risk for mishaps, injury of illness; a process for tracking incidents; funding for safety programs; metrics for measuring performance; safety goals; and methods to identify safety BMPs.

The USAF host and tenant safety offices are responsible for implementing AFI 91-202. The Wing Safety Office implements mishap prevention programs and processes for all 27 SOW programs on Cannon AFB. Safety staff at all levels assist with implementation and integration of operational risk management in all USAF operations and missions. Detailed standard operating procedures fulfill many health and safety requirements, and personnel involved with different test equipment are instructed on the proper use of equipment and PPE. Surface danger zones are delineated for all small arms and explosives ranges to protect personnel operating inside and outside those ranges while they are active.

Explosive safety clearance zones are established around facilities used for storage, handling, or maintenance of munitions to safeguard military and civilian communities. AFMAN 91-201 establishes the size of clearance zones based on quantity distance criteria or the category and weight of the explosives contained within the facility. ESQD arcs have been established at Cannon AFB to ensure that the minimum safety distance is present where explosions could occur. The existing MSA currently operates under safety waivers because the ESQD arcs extend beyond the MSA onto County Road 8 (see **Figure 3-6**). The goal of the Proposed Action would be to eliminate safety violations. Additionally, Cannon AFB Equipment Maintenance Squadron's Munitions Flight controls, maintains, and stores all ordnance and munitions required for mission performance. Ordnance is handled and stored in accordance with USAF explosive safety directives and all munitions maintenance is carried out by trained, qualified personnel using USAF-approved technical data.

Public Safety. Cannon AFB has its own emergency services department. The emergency services department provides the installation with fire suppression, crash response, rescue, emergency medical response, hazardous substance protection, and emergency response planning and community health and safety education. The nearest major hospital that offers emergency room services and inpatient care is the US Air Force Hospital at 208 West Casablanca Avenue #1400 near Cannon AFB. Surgical facilities and intensive care services are also offered. For regular health care services at the installation, the Cannon AFB Medical Clinic takes daily appointments and offers immunizations and general medical care.

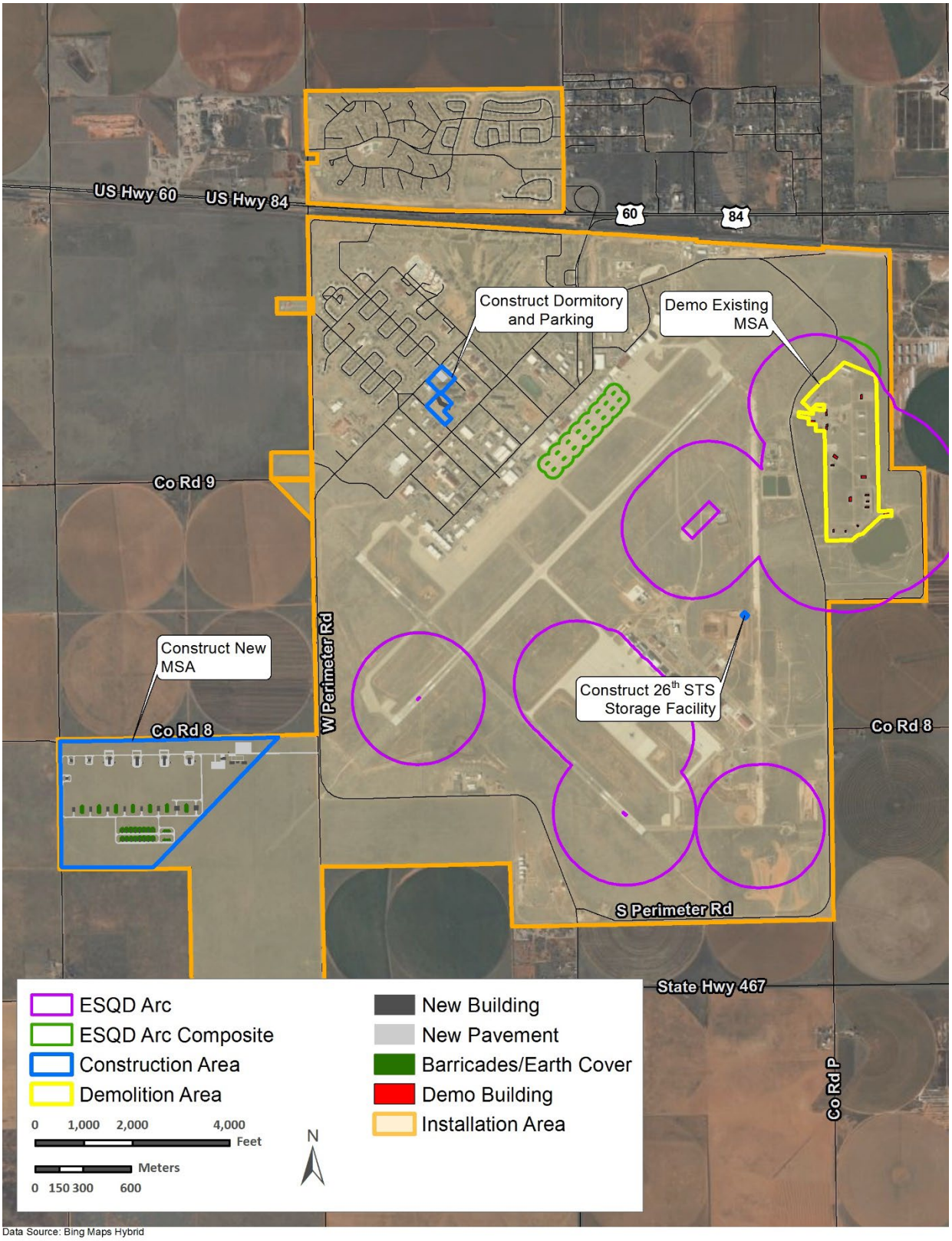

Figure 3-6. Existing ESQD Arcs at Cannon AFB

The Clovis Fire Department (FD) provides Fire Suppression, Technical Rescue, Hazardous Materials Spill/Release Mitigation, Emergency Medical Services, Life Safety and Enforcement Services and Emergency Preparedness for the citizens of Clovis. Clovis FD has 61 well-trained and highly skilled professional firefighters, fire engineers, fire officers, chief officers, fire inspectors, and administrative professionals. Together, they provide emergency services to over 119,000 residents within 26 square miles (City of Clovis 2020). The city of Clovis also has approximately 105 police officers available to provide law enforcement services (City of Clovis 2022).

3.11.2 Environmental Consequences

3.11.2.1 *Proposed Action*

Contractor Safety. The Proposed Action would result in a short-term, negligible to moderate, adverse impact on the health and safety of construction personnel. Construction activities associated with the new infrastructure would result in negligible, adverse impacts because of the slight increase the health and safety risk to personnel within the project area. While unlikely, short- and long-term, minor to moderate, adverse impacts could result from a mishap in the handling of munitions during operation of the MSA. However, Cannon AFB has safety protocols in place based on the *DoD Ammunition and Explosives Safety Standards: General Explosives Safety Information and Requirements* manual. Under the Proposed Action, ESQD arcs would be maintained and safety requirements described in AFMAN 91-201 would be followed.

The selected construction contractor would be required to develop a comprehensive health and safety plan detailing all potential hazards and site-specific guidance to ensure potential safety risks are minimized. The plan would include, at a minimum, emergency response and evacuation procedures; operating manuals; PPE recommendations; procedures for handling, storing, and disposing of hazardous materials and wastes; information on the effects and symptoms of potential exposures; and guidance with respect to hazard identification. Contractor personnel would be responsible for compliance with applicable federal, state, and local safety regulations and would be educated though daily safety briefings to review upcoming work activities and associated hazards. Only certified contractors would be allowed to perform remediation of toxic substances such as ACM or LBP, wearing appropriate PPE at all times, and be required to adhere to all federal, state, and local regulations during abatement. Therefore, the Proposed Action would not be expected to result in a significant impact on contractor safety.

Military Personnel Safety. The Proposed Action would result in a short-term, negligible, adverse impact on the health and safety of military personnel that work near the construction areas. However, operation of the MSA would result in long-term, minor to moderate, adverse impacts on the health and safety of military personnel due to the potential event of a mishap at the new MSA. Though there are to be no planned detonations of explosives in the MSA, there is the possibility of a mishap occurring during the storage and handling of munitions. As discussed above, under the Proposed Action, ESQD arcs would be maintained, and safety requirements described in AFMAN 91-201 would be followed.

Construction and demolition activities would comply with all applicable safety requirements and installation-specific protocols and procedures, including appropriately marking potentially hazardous areas and posting warning signs and barriers to limit access to approved construction and oversight personnel only. Therefore, the Proposed Action is not expected to result in significant impacts on the safety of military personnel.

Public Safety. The Proposed Action would result in short- or long-term, negligible, adverse impacts on the health and safety of the public. Construction and demolition activities would occur within the boundaries of Cannon AFB, an active military installation that is not open to the public. However, in areas where ESQD arcs would extend past the limits of Cannon AFB, easements would be acquired from landowners in the areas surrounding the new MSA (see **Figure 3-1**). Therefore, the Proposed Action would pose a negligible safety risk to off-installation areas. Additionally, construction areas would be appropriately delineated and posted with access limited to construction and site personnel. Construction activities would comply with all applicable safety requirements and installation-specific protocols and procedures, including appropriately marking potentially hazardous areas and posting warning signs and barriers to limit access to approved construction and oversight personnel only. Upon completion of construction activities, the new infrastructure would be secure and include security measures, to include a boundary fence, to prevent the public from entering. Therefore, the Proposed Action is not expected to result in a significant impact on public safety.

3.11.2.2 *Aggregate Impacts*

No adverse cumulative impacts on health and safety would be expected from the Proposed Action and present and reasonably foreseeable future projects on the installation and within the city of Clovis. Adherence to established procedures, including the use of PPE, fencing project areas, and posting signs and compliance with OSH, DoD, and OSHA standards would reduce or eliminate health and safety impacts on contractors, military personnel, and the general public. These procedures are typical for construction projects on the installation and within the city of Clovis. Therefore, the Proposed Action, when combined with other actions both on and off the installation, would not result in a significant cumulative impact on health and safety.

3.11.2.3 *Unavoidable Adverse Impacts*

Unavoidable adverse impacts would result from implementation of the Proposed Action; however, none of these impacts would be considered significant. There is the possibility of a mishap occurring at the MSA during the storage and handling of munitions. However, ESQD arcs would be maintained, and safety requirements described in AFMAN 91-201 would be followed.

3.11.2.4 *No Action Alternative*

Under the No Acton Alternative, the proposed infrastructure would not be constructed, and the existing conditions discussed in **Section 3.11.1** would remain unchanged. No new safety concerns would occur as a result of the No Action Alternative. The existing MSA would continue to operate under safety waivers, deteriorating infrastructure, environmental constraints, and limited existing storage space for future combat capability.

3.12 RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

The relationship between short-term uses and enhancement of long-term productivity from implementation of the Proposed Action is evaluated from the standpoint of short-term effects and long-term effects. Short-term effects would be those associated with construction of the new infrastructure and demolition of the existing MSA. The long-term enhancement of productivity would be those effects associated with operation and maintenance of the facilities after implementation of the Proposed Action.

The Proposed Action represents an enhancement of long-term productivity and enhanced capability for mission success at Cannon AFB. The negative effects of short-term impacts from

construction and demolition activities would be minor compared to the long-term positive impacts by enabling the AFSOC mission at Cannon AFB to continue to grow and evolve as warfare grows more technologically advanced and specialized.

3.13 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Irreversible and irretrievable resource commitments are related to the use of non-renewable resources and the impacts that the use of these resources would have on future generations. Irreversible impacts primarily result from the use or destruction of a specific resource that cannot be replaced within a reasonable timeframe (e.g., energy and minerals). The irreversible and irretrievable commitments of resources that would result from implementation of the Proposed Action involve the consumption of material resources used for construction, energy resources, biological resources, and human labor resources. The use of these resources is considered to be permanent.

Material Resources. Material resources used for the Proposed Action would potentially include building materials, concrete and asphalt, and various construction materials and supplies. Materials that would be consumed are not in short supply, would not limit other unrelated construction activities, and would not be considered significant.

Energy Resources. Energy resources, including petroleum-based products (e.g., gasoline and diesel), used for the Proposed Action would be irretrievably lost. During construction and maintenance activities, gasoline and diesel would be used for the operation of vehicles and construction equipment. However, consumption of these energy resources would not place a significant demand on their availability in the region. Therefore, less than significant impacts would be expected.

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

Biological Resources. The Proposed Action would result in a negligible loss of vegetation and wildlife habitat. Because the project area consists primarily of ground with minimal vegetation, the loss would be negligible and not considered significant; therefore, a less than significant impact on the irretrievable loss of vegetation and wildlife habitat is expected.

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APPENDIX A
INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR ENVIRONMENTAL PLANNING AND PUBLIC INVOLVEMENT MATERIALS

1

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Acting Regional Administrator
US Environmental Protection Agency,
Region 6
1201 Elm Street Suite 500
Dallas TX 75270

Ms. Cheryl Prewitt
Regional Environmental Coordinator
US Forest Service, Southwest Region
333 Broadway Boulevard SE
Albuquerque NM 87102

Mr. & Mrs. Arthur Schaap
650 Curry Road O
Clovis NM 88101

Ms. Jan McIntosh
2120 Circlewood
Clovis NM 88101

Mr. & Mrs. Dillon Lewis
1985 Curry Road 8
Clovis NM 88101

Mr. Vern Metzger
1040 York Dr
Clovis NM 88101

Ms. Charlene Laird
OMA Trustee
594 CR AJ
Floyd NM 88118

March Chapman LLC
44679 Mill Run Ct
Temecula CA 92592

Mr. Ryan Belcher
684 State Road 467
Clovis NM 88101

1 **Example Scoping Letter**

DEPARTMENT OF THE AIR FORCE
27TH SPECIAL OPERATIONS WING (AFSOC)
CANNON AIR FORCE BASE NEW MEXICO

Mr. Carlos Soto-Lorenzo
Deputy Base Civil Engineer
27th Special Operations Civil Engineer Squadron
506 North Air Commando Way
Cannon AFB NM 88103-5214

The Honorable Martin Heinrich
United States Senate
303 Hart Senate Office Building
Washington DC 20510

Dear Senator Heinrich

In accordance with the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality (CEQ) regulations, and the United States Air Force (USAF) NEPA regulations, the USAF is preparing an Environmental Assessment (EA) to address the potential environmental impacts associated with the construction and operation of new infrastructure at Cannon Air Force Base (AFB), New Mexico. The Proposed Action includes three separate construction projects—a 59,331 square foot dormitory southwest of dormitories 1155, 1159, and 1161 on West Alison Avenue; a 15,532 square foot storage facility near other 26th Special Tactics Squadron (STS) facilities on the eastern portion of Cannon AFB; and an approximately 240-acre munitions storage area (MSA) within the 603-acre land gift area at the southwest corner of Cannon AFB. Existing MSA facilities currently occupied by the Special Operations Forces-specific functions would be demolished and replaced as a part of the Proposed Action.

The purpose of the Proposed Action is to support the Air Force Special Operations Command (AFSOC) mission requirements by improving facilities, infrastructure, and utilities for current and future use at Cannon AFB. The AFSOC mission at Cannon AFB continues to grow and evolve, as do demands on aging facilities and infrastructure. Improvements and updates are needed to keep pace as warfare grows ever more technologically advanced and specialized. The need for the Proposed Action is to (1) restore military readiness by addressing a 192-dormitory room deficit, (2) restore military readiness by providing adequate storage facility space for 26 STS equipment, and (3) mitigate risk caused by safety and distance violations by relocating the MSA. AFSOC does not have adequate facilities to meet or carry out their mission.

If you have additional information regarding impacts of the Proposed Action on the natural environment or other environmental aspects of which we are unaware, we would appreciate receiving such information for inclusion and consideration during the NEPA compliance process. A copy of the Final Description of the Proposed Action and Alternatives for the EA Addressing Infrastructure Improvements at Cannon Air Force Base, New Mexico is available at https://www.cannon.af.mil/Environmental/. A hardcopy can also be provided upon

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request. We look forward to and welcome your participation in this process. Please respond within 30 days of receipt of this letter to ensure your concerns are adequately addressed in the EA.

Please send your written responses to Mrs. Amanda Hitchens, 27th Special Operations Civil Engineer Squadron, 506 North Air Commando Way, Cannon AFB, New Mexico 88103, amanda.hitchens@us.af.mil.

Sincerely

CARLOS SOTO-LORENZO, GS-14, USAF
Deputy Base Civil Engineer

Attachment:
Proposed Location of New Infrastructure

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Federal, State, and Local Agency & Landowner Responses

From: Bordegaray, James <jbordegaray@slo.state.nm.us>
Sent: Monday, March 28, 2022 11:55 AM
To: HITCHENS, AMANDA M GS-12 USAF AFSOC 27 SOCES/27 SOCES/CEIE <amanda.hitchens@us.af.mil>
Cc: Vierck, Steve <svierck@slo.state.nm.us>; Biernoff, Ari <abiernoff@slo.state.nm.us>
Subject: [URL Verdict: Unknown][Non-DoD Source] NEPA, Environmental Assessment Associated with Construction and Operation of New Infrastructure at CAFB

Good morning Ms. Hitchens,
I am in receipt of an undated letter to the commissioner of public lands from Mr. Carlos Soto-Lorenzo regarding the above, with a postmark of 03/25/2022. I tried to access the information at the web address listed (https://www.cannon.af.mil/environmntal/) but received a "404" error message.

The State Land Office needs additional information about the project, specifically the proposed 240-acre munitions storage area which is adjacent to state trust lands. As you know, the State Land Office holds land in trust for a variety of beneficiaries, predominantly, the public schools, so we need to ascertain if your proposed development might have a negative impact on our trust lands. We own the site immediately to the SE of the proposed munitions storage area. Our land is located at:
T 02N R 34E S 36. We currently have several leases on the section, including grazing and rights of way.

I look forward to receiving additional information about this proposal.

Jim Bordegaray
Director
Commercial Resources Division
(505) 827-5777
New Mexico State Land Office
310 Old Santa Fe Trail
P.O. Box 1148
Santa Fe, NM 87504-1148
jbordegaray@slo.state.nm.us
nmstatelands.org

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.....

From:	HITCHENS, AMANDA M GS-12 USAF AFSOC 27 SOCES/27 SOCES/CEIE
To:	Bordegaray, James
Cc:	Vierck, Steve; Biernoff, Ari; Elliott, April L.; Strang, Dana V.
Subject:	RE: NEPA, Environmental Assessment Associated with Construction and Operation of New Infrastructure at CAFB
Date:	Thursday, March 31, 2022 11:13:43 AM
Attachments:	image001.jpg image005.png image008.jpg image002.jpg image004.jpg image006.jpg

Good morning Mr. Bordegaray,

I have included clarifying information below. Please let me know if you have any additional comments/concerns.

1. I note that no construction dates have been established for the MSA. Is it budgeted?
   - At this time there are no funds budgeted for design or construction. As of right now, it is anticipated that this project is approximately 10 years out from starting.
2. At 1.2. "...the purpose of relocating the MSA is to mitigate risk caused by failure to meet safety distance requirements and risk associated with the substandard facilities and limited existing storage space."
   a. What are the identified risks? What are the "safety distance requirements" and what do they attach to?
   - The present concern with safety distances is that there are a significant number of violations of the Explosive Safety Quantity Distance (ESQD) arcs with the MSA's current position. The primary concern is the overlap with Aderholt loop road which is the main transportation route between northwest and southeast flight line areas.
   - The majority of the existing facilities constructed in the 50's do not meet current structural, safety, and security standards
   - There are facilities within the flood plain that have repeatedly sustained water damage
   - The MSA was constructed prior to the AFSOC mission and has no ability to expand its storage capacity should the mission require due to the north end's proximity to the runway clear zone, required stand off distance from base perimeter, north playa lake and flood plains, and ESQD arc proximity to facilities on the west side.
      i. Have safety distance requirements been considered outside of the confines of CAFB on private and state lands?
   - Yes, it is known that approximately 320 acres of easements would need to be acquired for private property within the proposed new ESQD arcs. These would lie around the North, West, and South side of the most northern arm of the land gift which can be seen outlined in blue in Figure 2-1 of the DOPAA.
3. At 1.4. What are "significant impacts" considered to be?
   - Each resource area, such as noise, air quality, water resources, safety and occupational health, hazardous materials/waste, biological resources, cultural resources, geology and soils, and socioeconomic, have unique criteria for identifying significant impacts, the Draft Environment Assessment will address significant impacts for each resource area specifically.
   - 1.5.1 Interagency and Intergovernmental Coordination and Consultations
   a. The letter we received yesterday noted a response date 30-days from the date of the letter. The letter was undated.
   - Responses should be received within 30 days from the receipt of the letter.
4. Where, within the 603-AC gift area will munitions be stored/assembled/tested?
   a. The Final DOPAA calls for 92 AC of ground disturbance and 193 AC of new construction disturbance. What are the boundaries of those disturbances?
   - Please see Figure 2-1 in the attached Description of the Proposed Action and Alternatives (DOPAA), construction of the new infrastructure at Cannon AFB would result in 91.69 acres of ground disturbance from demolition activities (yellow boundaries) and 193.33 acres of new construction disturbance (blue boundaries).
5. Is a skeet range also part of this plan? (2.4.3.2)
   - No, a skeet range was considered in one of the alternative to moving the MSA, but it was determined to not be a feasible alternative.

Respectfully,

Amanda Hitchens
NEPA Manager
27 SOCES/CEIE, CAFB

From: Bordegaray, James <jbordegaray@slo.state.nm.us>
Sent: Tuesday, March 29, 2022 12:04 PM
To: HITCHENS, AMANDA M GS-12 USAF AFSOC 27 SOCES/27 SOCES/CEIE <amanda.hitchens@us.af.mil>
Cc: Vierck, Steve <svierck@slo.state.nm.us>; Biernoff, Ari <abiernoff@slo.state.nm.us>; Elliott, April L. <aelliott@slo.state.nm.us>;

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Strang, Dana V. <dvstrang@slo.state.nm.us>
Subject: [URL Verdict: Unknown][Non-DoD Source] RE: NEPA, Environmental Assessment Associated with Construction and Operation of New Infrastructure at CAFB

Good morning Ms. Hitchens,
Thanks for getting this info to me. Below are some of my comments and questions:

1. I note that no construction dates have been established for the MSA. Is it budgeted?
2. At 1.2. "...the purpose of relocating the MSA is to mitigate risk caused by failure to meet safety distance requirements and risk associated with the substandard facilities and limited existing storage space."
    a. What are the identified risks? What are the "safety distance requirements" and what do they attach to?
        i. Have safety distance requirements been considered outside of the confines of CAFB on private and state lands?
3. At 1.4. What are "significant impacts" considered to be?
4. 1.5.1 Interagency and Intergovernmental Coordination and Consultations
    a. The letter we received yesterday noted a response date 30-days from the date of the letter. The letter was undated.
5. Where, within the 603-AC gift area will munitions be stored/assembled/tested?
    a. The Final DOPAA calls for 92 AC of ground disturbance and 193 AC of new construction disturbance. What are the boundaries of those disturbances?
6. Is a skeet range also part of this plan? (2.4.3.2)

-jim-

Jim Bordegaray
Director
Commercial Resources Division
(505) 827-5777

From: HITCHENS, AMANDA M GS-12 USAF AFSOC 27 SOCES/27 SOCES/CEIE [mailto:amanda.hitchens@us.af.mil]
Sent: Tuesday, March 29, 2022 8:43 AM
To: Bordegaray, James <jbordegaray@slo.state.nm.us>
Cc: Vierck, Steve <svierck@slo.state.nm.us>; Biernoff, Ari <abiernoff@slo.state.nm.us>
Subject: [EXTERNAL] RE: NEPA, Environmental Assessment Associated with Construction and Operation of New Infrastructure at CAFB

Good Morning Mr. Bordegaray,

Thank you for taking the time to review these proposed projects. I have attached a copy of the Description of Proposed Action and Alternatives (DOPAA) to this email for your convenience. The DOPAA is also available at https://www.cannon.af.mil/Environmental/ on the right hand side of the page. In this document you will find additional information regarding the proposed project and alternatives considered. Upon review of the DOPAA, please reach out to me for any additional clarification/information needed to assist in your review. I look forward to hearing from you and thank you for taking interest in the development of this ongoing Environmental Assessment.

Respectfully,

Amanda Hitchens
NEPA Manager
27 SOCES/CEIE, CAFB

From: Bordegaray, James <jbordegaray@slo.state.nm.us>
Sent: Monday, March 28, 2022 11:55 AM

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To: HITCHENS, AMANDA M GS-12 USAF AFSOC 27 SOCES/27 SOCES/CEIE <amanda.hitchens@us.af.mil>
Cc: Vierck, Steve <svierck@slo.state.nm.us>; Biernoff, Ari <abiernoff@slo.state.nm.us>
Subject: [URL Verdict: Unknown][Non-DoD Source] NEPA, Environmental Assessment Associated with Construction and Operation of New Infrastructure at CAFB

Good morning Ms. Hitchens,
I am in receipt of an undated letter to the commissioner of public lands from Mr. Carlos Soto-Lorenzo regarding the above, with a postmark of 03/25/2022. I tried to access the information at the web address listed (https://www.cannon.af.mil/environmntal/) but received a "404" error message.

The State Land Office needs additional information about the project, specifically the proposed 240-acre munitions storage area which is adjacent to state trust lands. As you know, the State Land Office holds land in trust for a variety of beneficiaries, predominantly, the public schools, so we need to ascertain if your proposed development might have a negative impact on our trust lands. We own the site immediately to the SE of the proposed munitions storage area. Our land is located at:
T 02N R 34E S 36. We currently have several leases on the section, including grazing and rights of way.

I look forward to receiving additional information about this proposal.

-jim-

Jim Bordegaray
Director
Commercial Resources Division
(505) 827-5777
New Mexico State Land Office
310 Old Santa Fe Trail
P.O. Box 1148
Santa Fe, NM 87504-1148
jbordegaray@slo.state.nm.us
nmstatelands.org

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Art Schaap
Highland Dairy
Highland Farms
650 Curry Road O
Clovis NM 88101

Mr. Carlos Soto-Lorenzo
Deputy Base Civil Engineer Squadron
27th Special Operations Civil Engineer Squadron
506 North Air Commando Way
Cannon AFB, NM 88103

Dear Mr. Carlos Soto-Lorenzo

I would like additional information on the proposed infrastructure improvements at Cannon Air Force Base.
I need to have access to all roads around the east and southern perimeter of my property.
Can you guarantee me that this installation won't pollute my ground water? Like PFOS.
How do you intend to protect my crop from over spray of chemicals or radiation from this new MSA section?
How will my employees who work those fields be protected?
Are you going to be setting off explosives at this site? If so, how are you going to protect my crops from the smoke or the overspray of the chemicals you use to put out the fires?
Are you going to compensate me for increase in insurance costs? What about my property value? Will your new construction limit my land use opportunities?
What if my crops loose value or quality due to your proposed improvements?
Why not just purchase my property?

Sincerely

Art Schaap
Land Owner Farmer

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From: HITCHENS, AMANDA M GS-12 USAF AFSOC 27 SOCES/27 SOCES/CEIE
To: Jan McIntosh
Subject: [External] - RE: [Non-DoD Source] CAFB- Location of New Infrastructure
Date: Monday, April 18, 2022 1:38:07 PM

Dear Ms. McIntosh,

Thank you for the response. We will be in touch further as the Environmental Assessment progresses. Please feel free to reach out if you have any additional comments on the matter.

Respectfully,

Amanda Hitchens
NEPA Manager
27 SOCES/CEIE, CAFB
Comm: (575)904-6746
DSN: 640-6746

From: Jan McIntosh <janmc2120@gmail.com>
Sent: Wednesday, April 13, 2022 7:05 PM
To: HITCHENS, AMANDA M GS-12 USAF AFSOC 27 SOCES/27 SOCES/CEIE <amanda.hitchens@us.af.mil>
Subject: [Non-DoD Source] CAFB- Location of New Infrastructure

Dear Ms. Hitchens,

I am contacting you to advise I received the letter regarding the above matter.

I have read the letter and have no concerns regarding the expansion. However, I would like to inform you that I am actively pursuing a solar lease on my property.

I hope this will not be a concern for this mission but if it is please contact me at this email address as soon as possible.

Respectfully,

Jan McIntosh
2120 Circlewood
Clovis, NM 88101

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MICHELLE LUJAN GRISHAM
GOVERNOR

JAMES C. KENNEY
CABINET SECRETARY

May 4, 2022

Mrs. Amanda Hitchens
27th Special Operations Civil Engineer Squadron
506 North Air Commando Way
Cannon Air Force Base, New Mexico 88103

Submitted electronically to: amanda.hitchens@us.af.mil

RE: Cannon Air Force Base Infrastructure Improvements

Dear Amanda Hitchens,

On behalf of the New Mexico Environment Department (NMED), attached please find our comments on the letter from Mr. Carlos Soto-Lorenzo regarding the request for review and comment on Cannon Air Force Base (CAFB) Infrastructure Improvements.

Strong intergovernmental coordination, as required by the National Environmental Policy Act (NEPA), is essential to ensure protection of human health and the environment.

NMED offers a few areas of potential environmental impacts in the attachment for you to evaluate as it continues the NEPA compliance review.

Thank you for providing the opportunity to review the project materials. Please don't hesitate to reach out to us with any further questions or concerns you may have. In the future, please send all comment requests to env.review@state.nm.us. This will help expedite a timely review of your request.

Sincerely,

Michael Chacon
Digitally signed by Michael Chacon
Date: 2022.05.04 13:32:06 -06'00'

Michael Chacón
Science Coordinator

Attachment (1)

Attachment

Introduction

Cannon Air Force Base has requested review and comment on infrastructure improvements.

Comments

Air Quality

When building demolition occurs, there is a concern that asbestos containing material may be present and could be disturbed during the project. If these materials are disturbed without ensuring that proper and safe procedures are used, there is a risk of asbestos contamination to the environment and exposure to the public. Prior to demolition, a certified asbestos inspector must perform an inspection. If asbestos is found, the certified inspector will determine if it must be removed prior to the demolition. The survey must have been conducted within three years of the start of asbestos removal. All demolitions must provide notification whether asbestos was present or not. Fill out the Asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP) Notification form (https://www.env.nm.gov/forms/) and send to the Air Quality Bureau at least 10 working days before the demolition. You may scan and email (preferred), fax, or mail your signed and dated form. Please do not send duplicate copies of the notice to the Bureau. At no time shall any asbestos containing material be crushed at the site.

Any construction activities associated with this project may cause temporary increases in dust and emissions from earthmoving, construction equipment, and other vehicles. Dust control measures should be taken to minimize the release of particulates due to vehicular traffic and construction.

All asphalt, concrete, quarrying, crushing, and screening facilities contracted in conjunction with the proposed project must have current and proper air quality permits.

Generators, including back-up power generators, light towers, and other equipment powered by diesel, gasoline, or natural gas engines may require inclusion in the Cannon AFB Title V air quality permit. If this project will include this equipment and the equipment is not exempt under 20.2.72.202 New Mexico Administrative Code (NMAC), the NMED Air Quality Bureau (AQB) Permitting Section must evaluate whether these new emission sources should be added to the existing permit. Please contact David Feather, Permitting Section Chief, at (505) 660-6110 to schedule an informal discussion regarding any temporary or portable equipment associated with this construction project.

Drinking Water

The project as described will likely require either approval from or written notice to the New Mexico Environment Department Drinking Water Bureau (DWB). Please review 20.7.10.200 NMAC or contact the DWB to determine which option is appropriate. In either case, the water system should submit an Application for Construction or Modification of Public Water Supply System if it has not already done so. Please review the complete application requirements at: https://www.env.nm.gov/forms/. Note that the application serves as written notice in the case that the project does not require DWB approval (20.7.10.200.C NMAC).

The nearest publicly regulated groundwater source is Cannon Air Force Base Water System (NM356705) Well #5. This well is surrounded on three sides with the proposed demolition zone of the project. It should

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be noted that the proximity to Well #5 to the existing Munitions Storage Area (MSA) is listed as one of the reasons for the project. As such the short-term issues associated with demolition near the well is more than offset by the benefits of removing the potential sources of contamination near it, therefore this project represents a net reduction in the risk to the system. There are no regulated public surface water system intakes within 10 miles downgradient.

Petroleum Storage Tank

There are numerous active petroleum storage tank facilities and sites where petroleum storage tank facilities have leaked or spilled (release sites) listed at CAFB in the Petroleum Storage Tank Bureau's (PSTB) database.

Active Facilities
The following facilities are listed in the Petroleum Storage Tank database as having storage tanks currently in use at CAFB. No street address is given unless shown here:

- Tank 280A, Facility 280 (PSTB Facility ID 53066) – one above ground storage tank. Not listed as a release (leak or spill) site.
- Tank 280B, Facility 280B (PSTB Facility ID 53067) – one above ground storage tank. Not listed as a release site.
- Affes Express, Bldg 1111 (PSTB Facility ID 53069) – three underground storage tanks. Not listed as a release site.
- Fuels Yard, 602 N Chindit (PSTB Facility ID 54815) – four above ground storage tanks. Not listed as a release site.
- Airfield (Runway 04/22), 602 N Chindit (PSTB Facility ID 54816) – one above ground storage tank. Not listed as a release site.
- 551st SOS, 119 E Cochran Ave (PSTB Facility ID 54817) – one above ground storage tank. Not listed as a release site.
- Security Forces, 122 E Cochran Ave (PSTB Facility ID 54818) – one above ground storage tank. Not listed as a release site.
- Base Operations, 207 W Alison Ave (PSTB Facility ID 54820) – one above ground storage tank. Not listed as a release site.
- 3rd SOS, 208 S Chindit Blvd (PSTB Facility ID 54821) – one above ground storage tank. Not listed as a release site.
- Airfield/Airfield Lights (PSTB Facility ID 54822) – one above ground storage tank. Not listed as a release site.
- Waste Water Treatment Plant, 413 N Anderholt Loop (PSTB Facility 54825) – one above ground storage tank. Not listed as a release site.
- Aircraft Maint Squadron (GPMX), 128 South Dagger Bldg 4617 (PSTB Facility ID 54843) – one above ground storage tank. Not listed as a release site.
- Melrose Air Force Range, 12 miles west and 4 miles south of Melrose, NM (PSTB Facility ID 54988) – three above ground storage tanks. Not listed as a release site.

Facilities at Cannon AFB with above ground storage tanks listed as exempt from petroleum storage tank regulations (no street address is given, not listed as a site with a leak or spill):

- Tank 216, Facility 216 (PSTB Facility ID 30949)
- Tank 5123B, Facility 5123B (PSTB Facility ID 50377)
- Tank 394, Facility 394 (PSTB Facility ID 53060)

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- Tank 395, Facility 395 (PSTB Facility ID 53064)
- Tank 396, Facility 396 (PSTB Facility ID 53065)
- Tank 5118, Facility 5118 (PSTB Facility ID 53074)
- Tank 5122, Facility 5122 (PSTB Facility ID 53075)
- Tank 5123A, Facility 5123A (PSTB Facility ID 53076)

There are numerous facilities listed at CAFB as having had all tanks removed or closed and not having a release. They are not listed here. Please contact NMED's Petroleum Storage Tank Bureau at 505-476-4397 if you need information on these facilities.

Release sites

The following sites are listed in the Petroleum Storage Tank Bureau's database as being located at CAFB and having had a release (spill or leak) from a petroleum storage tank:

- One release site is located between a half mile to a mile away from the demo of the existing MSA and the construction of the Dormitory and Parking: Facility 368, A BLDG 368 - Tank 368 A (Facility ID 30970 Release ID 2529) and has a status of Investigation.

Several release sites have no physical address in the database but are listed as being at Cannon AFB:

- Facility 1402, 1402 Sewage Lift STA – Tank 1402 (Facility ID 30940 Release ID 2398), has been referred to Groundwater Quality Bureau.
- Facility 1400 A, Facility #1400-Hospital – Tank 1400 A (Facility ID 30938 Release ID 2415), has a status of Investigation.
- Facility 2110, BLDG/FAC 2110 - Tank 2110 (Facility ID 30948 Release ID 2432), has a status of Cleanup.
- Facility 10, BLDG 10 - Tank 10 (Facility ID 30933 Release ID 2434), has a status of Cleanup.
- Facility 728, Facility 728 - Tank 728 (Facility ID 30990 Release ID 2439), has a status of Investigation.
- Facility 600, BLDG 600 - Tank 600 (Facility ID 30989 Release ID 2445), has a status of Investigation.
- Facility 3060, Facility #3060 - Tank 3060 (Facility ID 30964 Release ID 2500), has a status of Investigation.
- Facility 130, Facility 130 - Tank 130 (Facility ID 30935 Release ID 2520), has a status of Investigation.
- Facility 2285, BLDG 2285 - Tank 2285 (Facility ID 30953 Release ID 2530), has a status of Investigation.

One site has a no further action status, Facility 392 A, Facility 392 – Tank 392 A (Facility ID 30977 Release ID 843). The date NFA status was given is unknown.

If an abandoned storage tank system or petroleum contaminated soil or water is discovered, the Petroleum Storage Tank Bureau must be notified. Contact the Leak of the Week here during business hours: https://www.env.nm.gov/petroleum_storage_tank/ (see box to the right, Report a Leak or Spill) or call 505-476-4397. During non-business hours, call 505-827-9329.

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State Historic Preservation Office – Scoping Letters

Jeff Pappas, PhD
State Historic Preservation Officer and Director
New Mexico Historic Preservation Division
Department of Cultural Affairs
Bataan Memorial Building
407 Galisteo Street Suite 236
Santa Fe NM 87501

1 **Example Scoping Letter**

DEPARTMENT OF THE AIR FORCE
27TH SPECIAL OPERATIONS CIVIL ENGINEER SQUADRON (AFSOC)
CANNON AIR FORCE BASE NEW MEXICO

Mr. Carlos Soto-Lorenzo
Deputy Base Civil Engineer
27th Special Operations Civil Engineer Squadron
506 North Air Commando Way
Cannon AFB NM 88103-5214

Dr. Jeff Pappas
New Mexico State Historic Preservation Officer
Bataan Memorial Building
407 Galisteo Street, Suite 236
Santa Fe NM 87501-2834

Dear Dr. Pappas

In accordance with the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality (CEQ) regulations, and the United States Air Force (USAF) NEPA regulations, the USAF is preparing an Environmental Assessment (EA) to address the potential environmental impacts associated with the construction and operation of new infrastructure at Cannon Air Force Base (AFB), New Mexico. The Proposed Action includes three separate construction projects—a 59,331 square foot dormitory southwest of dormitories 1155, 1159, and 1161 on West Alison Avenue; a 15,532 square foot storage facility near other 26th Special Tactics Squadron (STS) facilities on the eastern portion of Cannon AFB; and an approximately 240-acre munitions storage area (MSA) within the 603-acre land gift area at the southwest corner of Cannon AFB. Existing MSA facilities currently occupied by the Special Operations Forces-specific functions would be demolished and replaced as a part of the Proposed Action.

The purpose of the Proposed Action is to support the Air Force Special Operations Command (AFSOC) mission requirements by improving facilities, infrastructure, and utilities for current and future use at Cannon AFB. The AFSOC mission at Cannon AFB continues to grow and evolve, as do demands on aging facilities and infrastructure. Improvements and updates are needed to keep pace as warfare grows ever more technologically advanced and specialized. The need for the Proposed Action is to (1) restore military readiness by addressing a 192-dormitory room deficit, (2) restore military readiness by providing adequate storage facility space for 26 STS equipment, and (3) mitigate risk caused by safety and distance violations by relocating the MSA. AFSOC does not have adequate facilities to meet or carry out their mission.

Pursuant to Section 106 of the National Historic Preservation Act (NHPA) of 1966 (36 Code of Federal Regulations Part 800), as amended, the USAF would like to initiate consultation concerning the Proposed Action to allow you the opportunity to identify any comments, concerns, and suggestions you might have. A copy of the Final Description of the Proposed

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Action and Alternatives for the EA Addressing Infrastructure Improvements at Cannon Air Force Base, New Mexico is available at https://www.cannon.af.mil/Environmental/. As we move forward through this process, we welcome your participation and input.

Please send your written responses to Mrs. Amanda Hitchens, 27th Special Operations Civil Engineer Squadron, 506 North Air Commando Way, Cannon AFB, New Mexico 88103, amanda.hitchens@us.af.mil.

Sincerely

CARLOS SOTO-LORENZO, GS-14, USAF
Deputy Base Civil Engineer

Attachment:
Proposed Location of New Infrastructure

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1 **State Historic Preservation Office Response**

Michelle Lujan Grisham
Governor

STATE OF NEW MEXICO
DEPARTMENT OF CULTURAL AFFAIRS
HISTORIC PRESERVATION DIVISION

BATAAN MEMORIAL BUILDING
407 GALISTEO STREET, SUITE 236
SANTA FE, NEW MEXICO 87501
PHONE (505) 827-6320 – NM.SHPO@state.nm.us

April 18, 2022

Mrs. Amanda Hitchens
27th Special operations Civil Engineering Squadron
506 North Air Commando Way,
Cannon Airforce Base, NM 88103

VIA EMAIL: amanda.hitchens@us.af.mil

RE: Three construction projects at CAFB (HPD log 116983)

Dear Mrs. Hitchens:

On behalf of the New Mexico State Historic Preservation Officer (SHPO), I want to thank Cannon Air Force Base (CAFB) for providing information on four projects at Cannon Air Force Base (CAFB), which we received on March 28, 2022. We understand the projects include construction of a new dormitory, and storage facility, a munitions storage area (MSA), and the demolition of an existing MSA. This letter provides SHPO review comments and request for more information.

First the SHPO has no concerns about the construction of the new MSA at the location indicated on the attached map. However, we would like more information on the location of access roads, construction staging areas, fences and other infrastructure needed to support the MSA. Please note that a historic period archaeological site (LA 161297), which is eligible for listing in the National Register of Historic Places (NRHP), is near the area of potential effects (APE). We recommend that CAFB design the project to avoid effects to this site. However, we need more information before we can comment of the project's potential to affect historic properties.

The SHPO requests more information about the project to construct a new dormitory. Specifically, we would like to know if the project will require the demolition of existing buildings in the APE. We have no records that CAFB has consulted with the SHPO on the NRHP eligibility for nearby buildings. If any building demolition is planned, please provide our office with current documentation and NRHP evaluations for these buildings. The documentation needs to include the State of New Mexico's Historic Cultural Property Inventory (HCPI) Base form (aka Form 1), with a request for concurrence for CAFBs' determination of eligibility.

The SHPO requests more information concerning CAFBs' plan to demolish the existing MSA. We have no record that CAFB has consulted with the SHPO concerning the NRHP eligibility for the existing MSA., which should include the individual buildings and magazines (igloos) and their eligibility as a potential historic district. Like the dormitory project, CAFB needs to provide documentation for each building or structure and NRHP eligibility evaluations. We also need a request for concurrence for the determinations of eligibility and the finding of effect.

2

Last, we have no concerns about the construction of the 26th STS storage facility. The APE has been surveyed and contains no properties eligible for listing the NRHP.

We are looking forward to completing this consultation with CAFB. If you have any questions or comments, please feel free to call me directly at 505-819-7609 or email me.

Sincerely,

John R. (Bob) Estes
Historic Preservation Specialist

cc:

1

Native American Tribes – Scoping Letters

Pueblo of Acoma
Governor Brian D. Vallo
PO Box 309
Acoma NM 87034

Pueblo of Cochiti
Governor Joseph L. Herrera
PO Box 70
Cochiti Pueblo NM 87072

Hopi Tribal Council
Chairman Timothy L. Nuvangyaoma
PO Box 123
Kykotsmovi AZ 86039

Pueblo of Isleta
Governor Vernon B. Abeita
PO Box 1270
Isleta NM 87022

Pueblo of Jemez
Governor Michael Toledo, Jr.
PO Box 100
Jemez Pueblo NM 87024

Jicarilla Apache Nation
President Edward Velarde
PO Box 507
Dulce NM 87528

Pueblo of Laguna
Governor John E. Antonio
PO Box 194
Laguna NM 87026

Mescalero Apache Tribe
President Gabe Aguilar
PO Box 227
Mescalero NM 88340

Pueblo of Nambe
Governor Phillip A. Perez
15A NP 102 West
Santa Fe NM 87506

Navajo Nation
President Jonathan Nez
PO Box 7440
Window Rock AZ 86515

Ohkay Owingeh Pueblo
Governor Patrick Aguino
PO Box 1099
San Juan Pueblo NM 87566

Pueblo of Picuris
Governor Craig Quanchello
PO Box 127
Peñasco NM 87553

Pueblo of Pojoaque
Governor Jenelle Roybal
78 Cities of Gold Road
Santa Fe NM 87506

Pueblo of Sandia
Governor Stuart Paisano
481 Sandia Loop
Bernalillo NM 87004

Pueblo of San Felipe
Governor Anthony Ortiz
PO Box 4339
San Felipe Pueblo NM 87001

Pueblo of San Ildefonso
Governor Christopher Moquino
02 Tunyo Po
Santa Fe NM 87506

Pueblo of Santa Ana
Governor Ulysses Leon
2 Dove Road
Santa Ana Pueblo NM 87004

Pueblo of Santa Clara
Governor J. Michael Chavarria
PO Box 580
Española NM 87532

Pueblo of Taos
Governor Clyde M. Romero, Sr.
PO Box 1846
Taos NM 87571

Pueblo of Tesuque
Governor Mark Mitchell
02 TP828
Santa Fe NM 87506

White Mountain Apache Tribe
Tribal Chairwoman Gwendena Lee-Gatewood
PO Box 700
Whiteriver AZ 85941

Pueblo of Zia
Governor Jerome Lucero
135 Capitol Square Drive
Zia Pueblo, NM 87053-6013

Pueblo of Zuni
Governor Val R. Panteah, Sr.
PO Box 339
Zuni NM 87327

Fort Sill Apache Tribe of Oklahoma
Chairwoman Lori Gooday-Ware
43187 U.S. Highway 281
Apache OK 73006

Ute Mountain Ute Tribe
Chairman Manuel Heart
124 Mike Wash Road
Towaoc CO 81334

Apache Tribe of Oklahoma
Chairman Bobby Komardley
PO Box 1330
Anadarko OK 73005

Kiowa Tribe of Oklahoma
Chairman Matthew Komalty
PO Box 369
Carnegie OK 73015

Comanche Nation of Oklahoma
Chairman Mark Woommavovah
PO Box 908
Lawton OK 73502

Chairman Terry Rambler
San Carlos Apache Tribe
PO Box 209
San Carlos AZ 85550-0209

Southern Ute Indian Tribe
Chairman Melvin J. Baker
PO Box 737
Ignacio CO 81137

Example Scoping Letter

DEPARTMENT OF THE AIR FORCE
27TH SPECIAL OPERATIONS WING (AFSOC)
CANNON AIR FORCE BASE NEW MEXICO

Colonel Terence G. Taylor
USAF Commander
27th Special Operations Wing
100 Air Commando Way Suite 100
Cannon AFB NM 88103-5214

Governor Brian D. Vallo
Pueblo of Acoma
PO Box 309
Acoma NM 87034

Dear Governor Vallo

In accordance with the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality (CEQ) regulations, and the United States Air Force (USAF) NEPA regulations, the USAF is preparing an Environmental Assessment (EA) to address the potential environmental impacts associated with the construction and operation of new infrastructure at Cannon Air Force Base (AFB), New Mexico. The Proposed Action includes three separate construction projects—a 59,331 square foot dormitory southwest of dormitories 1155, 1159, and 1161 on West Alison Avenue; a 15,532 square foot storage facility near other 26th Special Tactics Squadron (STS) facilities on the eastern portion of Cannon AFB; and an approximately 240-acre munitions storage area (MSA) within the 603-acre land gift area at the southwest corner of Cannon AFB. Existing MSA facilities currently occupied by the Special Operations Forces-specific functions would be demolished and replaced as a part of the Proposed Action.

The purpose of the Proposed Action is to support the Air Force Special Operations Command (AFSOC) mission requirements by improving facilities, infrastructure, and utilities for current and future use at Cannon AFB. The AFSOC mission at Cannon AFB continues to grow and evolve, as do demands on aging facilities and infrastructure. Improvements and updates are needed to keep pace as warfare grows ever more technologically advanced and specialized. The need for the Proposed Action is to (1) restore military readiness by addressing a 192-dormitory room deficit, (2) restore military readiness by providing adequate storage facility space for 26 STS equipment, and (3) mitigate risk caused by safety and distance violations by relocating the MSA. AFSOC does not have adequate facilities to meet or carry out their mission.

Pursuant to Section 106 of the National Historic Preservation Act (36 Code of Federal Regulations Part 800), the USAF would like to initiate government-to-government consultation to allow you and your designee the opportunity to identify any comments, concerns, and suggestions relevant to the NEPA compliance process concerning the Proposed Action. A

copy of the Final Description of the Proposed Action and Alternatives for the EA Addressing Infrastructure Improvements at Cannon Air Force Base, New Mexico is available at https://www.cannon.af.mil/Environmental/. As we move forward through this process, we welcome your participation and input. For technical information, please contact Mrs. Amanda Hitchens, 27th Special Operations Civil Engineer Squadron, at amanda.hitchens@us.af.mil.

Sincerely

TERENCE G. TAYLOR, Colonel, USAF
Commander

Attachment:
Proposed Location of New Infrastructure

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1 **Tribal Responses**

Southern Ute Indian Tribe

Cultural Preservation Department
Tribal Historic Preservation Office
Phone: (970) 563-2983 Fax: (970) 563-1098
P.O. Box 737
Ignacio, CO 81137

May 06, 2022

ATTN: Dept. of Defense | Dept. of the Air Force | Cannon AFB
100 Air Commando Way Suite 100
Cannon AFB New Mexico 88103

Dear Amanda Hitchens,

We have reviewed your Consultation Request per the National Historic Preservation Act regarding the **Proposed Infrastructure project** and offer the following response as indicated by the box that is checked.

☐ **DEFER**

☐ **NO EFFECT:** I have determined that there are no properties of religious and cultural significance to the Southern Ute Indian Tribe that are listed on the National Register within the area of potential effect or that the proposed project will have no effect on any such properties that may be present.
Comments:

☐ **NO ADVERSE EFFECT:** I have identified properties of cultural and religious significance within the area of effect that I believe are eligible for listing in the National Register, for which there would be no adverse effect as a result of the proposed project.
Comments:

****

☐ **ADVERSE EFFECT:** I have identified properties of cultural and religious significance within the area of potential effect (APE) that are eligible for listing in the National Register. I believe the proposed project would cause an adverse effect on these properties.
Comments:

☑ **REQUEST FOR ADDITIONAL INFORMATION:** The Southern Ute Indian Tribe requests additional information on the planned site for its impact on properties of religious and cultural importance to the Tribe as follows:
We accept your invitation to consult pursuant to Section 106 of NHPA. Please provide us with all previous survey reports and a map of the proposed project areas, as well as a project timeline.

Please respond to Shelly Thompson at sthompson@southernute-nsn.gov and Xavier Watts at xwatts@southernute-nsn.gov and refer to *SUCPD_FY2022_NHPA_0408* in future correspondence with this office so that administrative record is accurately managed.

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Toghoyaqh,

Acting THP Deputy Officer, Southern Ute Indian Tribe
THPO, Cultural Preservation Department

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PUEBLO OF LAGUNA

June 20, 2022

NEPA Program Manager
27 SOCES/CEIE, CAFB
506 North Air Commando Way
Cannon AFB, NM, 88103

RE: Construction of Facilities, Improvements to Utilities and Infrastructure

Dear NEPA Program Manager,

This letter is in response to the above titled project. Upon review, we at Laguna do not need to be part of consultations. However, because it does not fall within Laguna tribal lands, we are to rely on the New Mexico SHPO in the event that a Laguna or Ancestral Puebloan artifact or human remains are found. When we report is available, we request a copy of the report. Any information can be mailed and/or emailed to our office.

If you any questions or concerns, feel free to contact me by telephone; (505) 552-5034 or by email: romeror@pol-nsn.gov. Or you may contact Richard Smith, Sr- THPO Manager at: (505) 552-5033 or by email; rsmith@pol-nsn.gov.

Sincerely,

Robert Romero, M.A.
Pueblo of Laguna
Cultural Resource Specialist

PO BOX 194 • LAGUNA • NEW MEXICO • 87026
PH: 505.552.6654 • FX: 505.552.6941

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US Fish and Wildlife Service

Ms. Amy Leuders, Regional Director
US Fish & Wildlife Service
Southwest Regional Office
PO Box 1306
Albuquerque NM 87103-1306

Example Scoping Letter

DEPARTMENT OF THE AIR FORCE
27TH SPECIAL OPERATIONS CIVIL ENGINEER SQUADRON (AFSOC)
CANNON AIR FORCE BASE NEW MEXICO

Mr. Carlos Soto-Lorenzo
Deputy Base Civil Engineer
27th Special Operations Civil Engineer Squadron
506 North Air Commando Way
Cannon AFB NM 88103-5214

Ms. Amy Lueders
Regional Director
US Fish and Wildlife Service, Southwest Region
PO Box 1306
Albuquerque NM 87103-1306

Dear Ms. Lueders

In accordance with the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality (CEQ) regulations, and the United States Air Force (USAF) NEPA regulations, the USAF is preparing an Environmental Assessment (EA) to address the potential environmental impacts associated with the construction and operation of new infrastructure at Cannon Air Force Base (AFB), New Mexico. The Proposed Action includes three separate construction projects—a 59,331 square foot dormitory southwest of dormitories 1155, 1159, and 1161 on West Alison Avenue; a 15,532 square foot storage facility near other 26th Special Tactics Squadron (STS) facilities on the eastern portion of Cannon AFB; and an approximately 240-acre munitions storage area (MSA) within the 603-acre land gift area at the southwest corner of Cannon AFB. Existing MSA facilities currently occupied by the Special Operations Forces-specific functions would be demolished and replaced as a part of the Proposed Action.

The purpose of the Proposed Action is to support the Air Force Special Operations Command (AFSOC) mission requirements by improving facilities, infrastructure, and utilities for current and future use at Cannon AFB. The AFSOC mission at Cannon AFB continues to grow and evolve, as do demands on aging facilities and infrastructure. Improvements and updates are needed to keep pace as warfare grows ever more technologically advanced and specialized. The need for the Proposed Action is to (1) restore military readiness by addressing a 192-dormitory room deficit, (2) restore military readiness by providing adequate storage facility space for 26 STS equipment, and (3) mitigate risk caused by safety and distance violations by relocating the MSA. AFSOC does not have adequate facilities to meet or carry out their mission.

Pursuant to Section 7(a)(2) of the Endangered Species Act of 1973, as amended (16 United States Code 1531, et seq.), Cannon AFB conducted an effect determination for this project. All interrelated and interdependent actions were analyzed during that review. The United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) Official Species and Habitat List was received 11 January 2022 under Consultation Code

02ENNM00-2022-SLI-0390. The USFWS IPaC tool listed a total of one federally listed threatened or endangered species with the potential to occur within the project area. The federally listed species that could occur on the installation, the Monarch Butterfly (*Danaus plexippus*), does not have suitable habitat and have not been identified on the installation. However, to ensure no impact, an updated species list from USFWS is required to be obtained within 90 days of starting construction activities.

If you have additional information regarding impacts of the Proposed Action on the natural environment or other environmental aspects of which we are unaware, we would appreciate receiving such information for inclusion and consideration during the NEPA compliance process. A copy of the Final Description of the Proposed Action and Alternatives for the EA Addressing Infrastructure Improvements at Cannon Air Force Base, New Mexico is available at https://www.cannon.af.mil/Environmental/. We look forward to and welcome your participation in this process. Please respond within 30 days of receipt of this letter to ensure your concerns are adequately addressed in the EA.

Please send your written responses to Mrs. Amanda Hitchens, 27th Special Operations Civil Engineer Squadron, 506 North Air Commando Way, Cannon AFB, New Mexico 88103, amanda.hitchens@us.af.mil.

Sincerely

CARLOS SOTO-LORENZO, GS-14, USAF
Deputy Base Civil Engineer

Attachment:
Proposed Location of New Infrastructure

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1 **US Fish and Wildlife Service Response**

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New Mexico Ecological Services Field Office
2105 Osuna Road NE
Albuquerque, New Mexico 87113
Telephone 505-346-2525 Fax 505-346-2542
www.fws.gov/southwest/es/newmexico

May 18, 2022

Cons. #2022-0043134

Amanda Hitchens
27th Special Operations Civil Engineer Squadron
506 North Air Commando Way
Cannon AFB, New Mexico 88103-5214

Dear Ms. Hitchens:

Thank you for seeking our input regarding the Air Force's preparation of an Environmental Assessment evaluating the effects of the construction and operation of new infrastructure at Cannon Air Force Base, New Mexico (Cannon AFB). Your scoping notice identified the need of constructing adequate facilities to meet and carry out the Air Force Special Operations Command's mission.

The Air Force is proposing the construction of new facilities to support the Air Force Special Operations Command's mission by improving facilities, infrastructure, and utilities. The proposed action includes the construction of a 59,331 square foot dormitory, a 15,532 square foot storage facility, and an approximately 240-acre munitions storage area. The dormitory will provide adequate housing and will address a 192-room deficit, the storage facility will provide adequate storage facility space for equipment, and the relocation of the munitions storage area will mitigate risk by meeting safety distance requirements, and will address risk associated with substandard space, and limited existing storage space.

In your scoping notice the monarch butterfly (*Danaus plexippus*) was identified as a federally listed species that could occur on the installation, but you state that there is no suitable habitat on the installation and the monarch butterfly has not been identified on the installation. The monarch butterfly is a candidate species and is not currently listed or proposed for listing under the Endangered Species Act of 1973, as amended (16 USC § 1531 et seq.; Act). For species that are candidate species, federal agencies are not required to consult with the Service under Section 7 of the Act.

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The lesser prairie-chicken (*Tympanuchus pallidicinctus*) is a species of prairie grouse endemic to the southern and central high plains of the United States and is known to occur in Curry County, New Mexico. The Southern Great Plains Crucial Habitat Assessment Tool (CHAT) divides the range of the lesser prairie-chicken into four categories of habitat. Cannon AFB is located in a CHAT category of 4, meaning it is modeled non-habitat. For species such as the lesser prairie-chicken that are proposed for listing under Act, federal agencies are required to conference with the Service when their proposed action is likely to jeopardize the continued existence of the species, or destroy or adversely modify proposed critical habitat. Given the CHAT category of the proposed action, distribution of habitat present relative to the installation, and the distance to active and historic leks, we believe there is no need to conference on the proposed action at this time.

Finally, we encourage coordination with our regional Migratory Birds Division for compliance with the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act. The U.S. Fish and Wildlife Service recently published the Birds of Conservation Concern 2021 list (https://www.fws.gov/sites/default/files/documents/birds-of-conservation-concern-2021.pdf), which identifies 269 migratory and non-migratory bird species of conservation concern. This designation is intended to avert the need of listing by promoting proactive conservation of these species. We suggest referencing this list and highlighting the birds of conservation concern that may exist near the project area in the final Environmental Assessment

Thank you for working to conserve endangered and threatened species and their habitats. If you or your staff have any questions regarding this matter, please contact Lauren Rangel, Fish and Wildlife Biologist, by email at lauren_rangel@fws.gov.

Sincerely,

SHAWN SARTORIUS Digitally signed by SHAWN SARTORIUS Date: 2022.05.18 12:43:50 -06'00'

Shawn Sartorius
Field Supervisor

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APPENDIX B
AIR QUALITY SUPPORT DOCUMENTATION

1

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, *Environmental Compliance and Pollution Prevention*; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: CANNON AFB
State: New Mexico
County(s): Curry
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Infrastructure Improvements at Cannon Air Force Base (AFB)

c. Project Number/s (if applicable): 1: Construction and Operation of a Dormitory

d. Projected Action Start Date: 1 / 2023

e. Action Description:

The Proposed Action is to construct and operate infrastructure at Cannon AFB, New Mexico. The Proposed Action includes construction of a 59,331 square foot dormitory southwest of dormitories 1155, 1159, and 1161 on West Alison Avenue; a 15,532 square foot storage facility near other 26 STS facilities on the eastern portion of Cannon AFB; and an approximately 240-acre MSA within the 603-acre land gift area at the southwest corner of Cannon AFB.

For the purposes of this analysis, each construction project at Cannon AFB was assumed to be implemented over a 1-year construction period. A surrogate year of 2023 was used.

f. Point of Contact:

Name: Carolyn Hein
Title: Contractor
Organization: HDR
Email: carolyn.hein@hdrinc.com
Phone Number: 484-612-1060

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable
__X__ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 tons/year Prevention of Significant Deterioration (PSD) major source

threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR *de minimis* values (25 tons/year for lead and 100 tons/year for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see Chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

Analysis Summary:

2023

VOC	1.603	250	No
NO_x	1.884	250	No
CO	2.299	250	No
SO_x	0.005	250	No
PM_{10}	9.178	250	No
$PM_{2.5}$	0.078	250	No
Pb	0.000	25	No
NH_3	0.001	250	No
CO_2e	493.0		

2024

VOC	0.011	250	No
NO_x	0.191	250	No
CO	0.160	250	No
SO_x	0.001	250	No
PM_{10}	0.015	250	No
$PM_{2.5}$	0.015	250	No
Pb	0.000	25	No
NH_3	0.000	250	No
CO_2e	229.9		

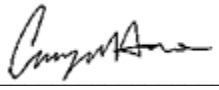
2025 - (Steady State)

VOC	0.011	250	No
NO_x	0.191	250	No
CO	0.160	250	No
SO_x	0.001	250	No
PM_{10}	0.015	250	No
$PM_{2.5}$	0.015	250	No

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

Pb	0.000	25	No
NH_3	0.000	250	No
CO_2e	229.9		

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.



Carolyn Hein, Contractor

4/11/2022
DATE

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, *Environmental Compliance and Pollution Prevention*; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: CANNON AFB
State: New Mexico
County(s): Curry
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Infrastructure Improvements at Cannon Air Force Base (AFB)

c. Project Number/s (if applicable): 2: Construction and Operation of a Storage Facility

d. Projected Action Start Date: 1 / 2023

e. Action Description:

The Proposed Action is to construct and operate infrastructure at Cannon AFB, New Mexico. The Proposed Action includes construction of a 59,331 square foot dormitory southwest of dormitories 1155, 1159, and 1161 on West Alison Avenue; a 15,532 square foot storage facility near other 26 STS facilities on the eastern portion of Cannon AFB; and an approximately 240-acre MSA within the 603-acre land gift area at the southwest corner of Cannon AFB.

For the purposes of this analysis, each construction project at Cannon AFB was assumed to be implemented over a 1-year construction period. A surrogate year of 2023 was used.

f. Point of Contact:

Name: Carolyn Hein
Title: Contractor
Organization: HDR
Email: carolyn.hein@hdrinc.com
Phone Number: 484-612-1060

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable
__X__ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 tons/year Prevention of Significant Deterioration (PSD) major source

threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR *de minimis* values (25 tons/year for lead and 100 tons/year for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see Chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

Analysis Summary:

2023

VOC	0.372	250	No
NO_x	1.093	250	No
CO	1.384	250	No
SO_x	0.003	250	No
PM_{10}	0.500	250	No
$PM_{2.5}$	0.043	250	No
Pb	0.000	25	No
NH_3	0.001	250	No
CO_2e	324.5		

2024

VOC	0.003	250	No
NO_x	0.052	250	No
CO	0.044	250	No
SO_x	0.000	250	No
PM_{10}	0.004	250	No
$PM_{2.5}$	0.004	250	No
Pb	0.000	25	No
NH_3	0.000	250	No
CO_2e	63.0		

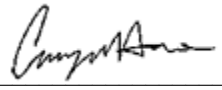
2025 - (Steady State)

VOC	0.003	250	No
NO_x	0.052	250	No
CO	0.044	250	No
SO_x	0.000	250	No
PM_{10}	0.004	250	No
$PM_{2.5}$	0.004	250	No

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

Pb	0.000	25	No
NH_3	0.000	250	No
CO_2e	63.0		

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.



Carolyn Hein, Contractor

4/11/2022
DATE

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, *Environmental Compliance and Pollution Prevention*; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: CANNON AFB
State: New Mexico
County(s): Curry
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Infrastructure Improvements at Cannon Air Force Base (AFB)

c. Project Number/s (if applicable): 3: Construction and Operation of a Munitions Storage Area (MSA)

d. Projected Action Start Date: 1 / 2023

e. Action Description:

The Proposed Action is to construct and operate infrastructure at Cannon AFB, New Mexico. The Proposed Action includes construction of a 59,331 square foot dormitory southwest of dormitories 1155, 1159, and 1161 on West Alison Avenue; a 15,532 square foot storage facility near other 26 STS facilities on the eastern portion of Cannon AFB; and an approximately 240-acre MSA within the 603-acre land gift area at the southwest corner of Cannon AFB.

For the purposes of this analysis, each construction project at Cannon AFB was assumed to be implemented over a 1-year construction period. A surrogate year of 2023 was used.

f. Point of Contact:

Name: Carolyn Hein
Title: Contractor
Organization: HDR
Email: carolyn.hein@hdrinc.com
Phone Number: 484-612-1060

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable
__X__ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 tons/year Prevention of Significant Deterioration (PSD) major source

threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR *de minimis* values (25 tons/year for lead and 100 tons/year for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see Chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

Analysis Summary:

2023

VOC	3.332	250	No
NO_x	11.957	250	No
CO	10.625	250	No
SO_x	0.031	250	No
PM_{10}	486.211	250	Yes
$PM_{2.5}$	0.475	250	No
Pb	0.000	25	No
NH_3	0.007	250	No
CO_2e	3081.6		

2024

VOC	0.011	250	No
NO_x	0.282	250	No
CO	0.241	250	No
SO_x	-0.003	250	No
PM_{10}	0.018	250	No
$PM_{2.5}$	0.018	250	No
Pb	0.000	25	No
NH_3	0.000	250	No
CO_2e	367.1		

2025 - (Steady State)

VOC	0.011	250	No
NO_x	0.282	250	No
CO	0.241	250	No
SO_x	-0.003	250	No
PM_{10}	0.018	250	No
$PM_{2.5}$	0.018	250	No

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

Pb	0.000	25	No
NH_3	0.000	250	No
CO_2e	367.1		

The estimated annual net emissions associated with this action temporarily exceed the insignificance indicators. However, the steady state estimated annual net emissions are below the insignificance indicators showing no significant long-term impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

Carolyn Hein, Contractor — 4/11/2022 DATE

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location

Base: CANNON AFB
State: New Mexico
County(s): Curry
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: Infrastructure Improvements at Cannon Air Force Base (AFB)

- Project Number/s (if applicable): 1: Construction and Operation of a Dormitory

- Projected Action Start Date: 1 / 2023

- Action Purpose and Need:

The purpose of the Proposed Action is to support the Air Force Special Operations Command (AFSOC) mission requirements by improving facilities, infrastructure, and utilities for current and future use at Cannon AFB. The purpose of the new dormitory is to provide adequate housing that meets the mission requirements for airmen and address the 192-room deficit. The purpose of the 26th Special Tactics Squadron (STS) Equipment Storage Facility is to provide adequate storage facility space for the 26 STS equipment while the purpose of relocating the Munitions Storage Area (MSA) is to mitigate risk caused by failure to meet safety distance requirements and risk associated with substandard facilities and limited existing storage space.

The AFSOC mission at Cannon AFB continues to grow and evolve, as do demands on aging facilities and infrastructure. Improvements and updates are needed to keep pace as warfare grows more technologically advanced and specialized. The need for the Proposed Action is to (1) restore military readiness by addressing a 192-dormitory deficit, (2) restore military readiness by providing adequate storage facility space for 26 STS equipment, and (3) mitigate risk caused by safety and distance violations by relocating the MSA. AFSOC does not have adequate facilities to meet or carry out their mission.

- Action Description:

The Proposed Action is to construct and operate infrastructure at Cannon AFB, New Mexico. The Proposed Action includes construction of a 59,331 square foot dormitory southwest of dormitories 1155, 1159, and 1161 on West Alison Avenue; a 15,532 square foot storage facility near other 26 STS facilities on the eastern portion of Cannon AFB; and an approximately 240-acre MSA within the 603-acre land gift area at the southwest corner of Cannon AFB.

For the purposes of this analysis, each construction project at Cannon AFB was assumed to be implemented over a 1-year construction period. A surrogate year of 2023 was used.

- Point of Contact

Name: Carolyn Hein
Title: Contractor
Organization: HDR
Email: carolyn.hein@hdrinc.com
Phone Number: 484-612-1060

- Activity List:

2.	Construction / Demolition	Construct Dormitory and Parking
3.	Heating	Heat Dormitory

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location
County: Curry
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Construct Dormitory and Parking

- Activity Description:
For the purposes of this analysis, a 1-year construction period was assumed and a surrogate year of 2023 was used.

Site grading would occur on approximately 7 acres (304,920 square feet). Site grading would begin in January 2023 and last approximately 3 months.

Construction would include the 59,331 square foot dormitory containing 192 rooms (96 two-room units). Construction would begin in April 2023 and last approximately 8 months.

Architectural coatings would be applied to the dormitory, for a total of 59,331 square feet. Architectural coating application would begin in November 2023 and last approximately 1 month.

Paving for the dormitory parking area would occur on an area totaling 146,302 square feet. Paving would begin in November 2023 and last approximately 2 months.

- Activity Start Date
Start Month: 1
Start Month: 2023

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2023

- Activity Emissions:

VOC	1.603270
SO_x	0.005079
NO_x	1.884335
CO	2.299429
PM_{10}	9.177917

$PM_{2.5}$	0.077825
Pb	0.000000
NH_3	0.001407
CO_2e	493.0

2.1 Site Grading Phase

2.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 1
Start Quarter: 1
Start Year: 2023

- Phase Duration
Number of Month: 3
Number of Days: 0

2.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (feet^2): 304,920
Amount of Material to be Hauled On-Site (yard^3): 0
Amount of Material to be Hauled Off-Site (yard^3): 0

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Tractors/Loaders/Backhoes Composite	2	7

- Vehicle Exhaust
Average Hauling Truck Capacity (yard^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

POVs	50.00	50.00	0	0	0	0	0

2.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (pound/hour) (default)

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0757	0.0014	0.4155	0.5717	0.0191	0.0191	0.0068	132.91
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0483	0.0012	0.2497	0.3481	0.0091	0.0091	0.0043	122.61
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.1830	0.0024	1.2623	0.7077	0.0494	0.0494	0.0165	239.49

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

2.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 pounds / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (pound/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site ($yard^3$)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site ($yard^3$)
HC: Average Hauling Truck Capacity ($yard^3$)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC $yard^3$)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.2 Building Construction Phase

2.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2023

- Phase Duration
Number of Month: 8
Number of Days: 0

2.2.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Multi-Family
Area of Building (feet^2): 59,331
Height of Building (feet): N/A
Number of Units: 96

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Cranes Composite	1	6
Forklifts Composite	2	6
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8
Welders Composite	3	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

POVs	0	0	0	0	0	100.00	0

2.2.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (pound/hour) (default)

	VOC	**SO_x**	**NO_x**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**CH_4**	**CO_2e**
Emission Factors	0.0754	0.0013	0.5027	0.3786	0.0181	0.0181	0.0068	128.79
	VOC	**SO_x**	**NO_x**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**CH_4**	**CO_2e**
Emission Factors	0.0258	0.0006	0.1108	0.2145	0.0034	0.0034	0.0023	54.454
	VOC	**SO_x**	**NO_x**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**CH_4**	**CO_2e**
Emission Factors	0.0320	0.0006	0.2612	0.2683	0.0103	0.0103	0.0028	61.065
	VOC	**SO_x**	**NO_x**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**CH_4**	**CO_2e**
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879
	VOC	**SO_x**	**NO_x**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**CH_4**	**CO_2e**
Emission Factors	0.0242	0.0003	0.1487	0.1761	0.0067	0.0067	0.0021	25.657

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

2.2.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (pound/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = NU * 0.36 * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
NU: Number of Units
0.36: Conversion Factor units to trips
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$VMT_{VT} = NU * 0.11 * HT$

VMT_{VT}: Vender Tips Vehicle Miles Travel (miles)
NU: Number of Units
0.11: Conversion Factor units to trips
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.3 Architectural Coatings Phase

2.3.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 11
Start Quarter: 1
Start Year: 2023

- Phase Duration
Number of Month: 1
Number of Days: 0

2.3.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Multi-Family
Total Square Footage (feet^2): N/A
Number of Units: 96

- Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

POVs	50.00	50.00	0	0	0	0	0

2.3.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

2.3.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (feet^2)
800: Conversion Factor square feet to man days (1 foot^2 / 1 man * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$VOC_{AC} = (NU * 850 * 2.7 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
NU: Number of Units
850: Conversion Factor units to square feet (850 feet^2 / unit)
2.7: Conversion Factor total area to coated area (2.7 feet^2 coated area / total area)
0.0116: Emission Factor (pound/foot^2)
2000: Conversion Factor pounds to tons

2.4 Paving Phase

2.4.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month: 11
Start Quarter: 1
Start Year: 2023

- Phase Duration

Number of Month: 2
Number of Days: 0

2.4.2 Paving Phase Assumptions

- General Paving Information

Paving Area (feet^2): 146,302

- Paving Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	2	6
Rollers Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

POVs	50.00	50.00	0	0	0	0	0

2.4.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (pound/hour) (default)

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0757	0.0014	0.4155	0.5717	0.0191	0.0191	0.0068	132.91
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0483	0.0012	0.2497	0.3481	0.0091	0.0091	0.0043	122.61
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.1830	0.0024	1.2623	0.7077	0.0494	0.0494	0.0165	239.49
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

2.4.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (pound/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area ($feet^2$)
0.25: Thickness of Paving Area (feet)
(1 / 27): Conversion Factor cubic feet to cubic yards ($1\ yard^3 / 27\ feet^3$)

HC: Average Hauling Truck Capacity ($yard^3$)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC $yard^3$)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA) / 43,560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (pounds/acre)
PA: Paving Area ($feet^2$)
43,560: Conversion Factor square feet to acre (43,560 $feet^2$ / $acre)^2$ / acre)

3. Heating

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Curry
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Heat Dormitory

- Activity Description:
For the purposes of this analysis operation of the new dormitory was assumed to begin in 2024. Heating for the new dormitory would begin following the completion of construction, approximately January 2024.

- Activity Start Date
Start Month: 1
Start Year: 2024

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

VOC	0.010504
SO_x	0.001146
NO_x	0.190989
CO	0.160431
PM_{10}	0.014515

$PM_{2.5}$	0.014515
Pb	0.000000
NH_3	0.000000
CO_2e	229.9

3.2 Heating Assumptions

- Heating
Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method
Area of floorspace to be heated (feet^2): 59,331
Type of fuel: Natural Gas
Type of boiler/furnace: Industrial (10 - 250 MMBtu/hour)
Heat Value (MMBtu/feet^3): 0.00105
Energy Intensity (MMBtu/feet^2): 0.0676

- Default Settings Used: Yes

- Boiler/Furnace Usage
Operating Time Per Year (hours): 900 (default)

3.3 Heating Emission Factor(s)

- Heating Emission Factors (pound/1,000,000 scf)

5.5	0.6	100	84	7.6	7.6			120,390

3.4 Heating Formula(s)

- Heating Fuel Consumption feet^3 per Year
FC_{HER}= HA * EI / HV / 1,000,000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (feet^2)
EI: Energy Intensity Requirement (MMBtu/feet^2)
HV: Heat Value (MMBTU/feet^3)
1000000: Conversion Factor

- Heating Emissions per Year
HE_{POL}= FC * EF_{POL} / 2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location

Base: CANNON AFB
State: New Mexico
County(s): Curry
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: Infrastructure Improvements at Cannon Air Force Base (AFB)

- Project Number/s (if applicable): 2: Construction and Operation of a Storage Facility

- Projected Action Start Date: 1 / 2023

- Action Purpose and Need:

The purpose of the Proposed Action is to support the Air Force Special Operations Command (AFSOC) mission requirements by improving facilities, infrastructure, and utilities for current and future use at Cannon AFB. The purpose of the new dormitory is to provide adequate housing that meets the mission requirements for airmen and address the 192-room deficit. The purpose of the 26th Special Tactics Squadron (STS) Equipment Storage Facility is to provide adequate storage facility space for the 26 STS equipment while the purpose of relocating the Munitions Storage Area (MSA) is to mitigate risk caused by failure to meet safety distance requirements and risk associated with substandard facilities and limited existing storage space.

The AFSOC mission at Cannon AFB continues to grow and evolve, as do demands on aging facilities and infrastructure. Improvements and updates are needed to keep pace as warfare grows more technologically advanced and specialized. The need for the Proposed Action is to (1) restore military readiness by addressing a 192-dormitory deficit, (2) restore military readiness by providing adequate storage facility space for 26 STS equipment, and (3) mitigate risk caused by safety and distance violations by relocating the MSA. AFSOC does not have adequate facilities to meet or carry out their mission.

- Action Description:

The Proposed Action is to construct and operate infrastructure at Cannon AFB, New Mexico. The Proposed Action includes construction of a 59,331 square foot dormitory southwest of dormitories 1155, 1159, and 1161 on West Alison Avenue; a 15,532 square foot storage facility near other 26 STS facilities on the eastern portion of Cannon AFB; and an approximately 240-acre MSA within the 603-acre land gift area at the southwest corner of Cannon AFB.

For the purposes of this analysis, each construction project at Cannon AFB was assumed to be implemented over a 1-year construction period. A surrogate year of 2023 was used.

- Point of Contact

Name: Carolyn Hein
Title: Contractor
Organization: HDR
Email: carolyn.hein@hdrinc.com
Phone Number: 484-612-1060

- Activity List:

2.	Construction / Demolition	Construct Storage Facility
3.	Heating	Heat Storage Facility

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location
County: Curry
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Construct Storage Facility

- Activity Description:
For the purposes of this analysis, a 1-year construction period was assumed and a surrogate year of 2023 was used.

Site grading would occur on approximately X acres (X square feet). Site grading would begin in January 2023 and last approximately 3 months.

Construction would include the 15,332 square foot storage facility. The height of the storage facility was assumed to be 20 feet. Construction would begin in April 2023 and last approximately 8 months.

Architectural coatings would be applied to the dormitory, for a total of 15,332 square feet. Architectural coating application would begin in November 2023 and last approximately 1 month.

Paving for the storage facility was estimated to be 20,000 square feet. Paving would begin in November 2023 and last approximately 2 months.

- Activity Start Date
Start Month: 1
Start Month: 2023

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2023

- Activity Emissions:

VOC	0.372415
SO_x	0.003318
NO_x	1.092563
CO	1.383924
PM_{10}	0.500430

$PM_{2.5}$	0.042750
Pb	0.000000
NH_3	0.000989
CO_2e	324.5

2.1 Site Grading Phase

2.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1

Start Quarter: 1
Start Year: 2023

- Phase Duration
Number of Month: 3
Number of Days: 0

2.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (feet^2): 15,332
Amount of Material to be Hauled On-Site (yard^3): 0
Amount of Material to be Hauled Off-Site (yard^3): 0

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Capacity (yard^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

POVs	50.00	50.00	0	0	0	0	0

2.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (pound/hour) (default)

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0757	0.0014	0.4155	0.5717	0.0191	0.0191	0.0068	132.91
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0483	0.0012	0.2497	0.3481	0.0091	0.0091	0.0043	122.61
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.1830	0.0024	1.2623	0.7077	0.0494	0.0494	0.0165	239.49

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

2.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 pounds / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (pound/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site ($yard^3$)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site ($yard^3$)
HC: Average Hauling Truck Capacity ($yard^3$)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC $yard^3$)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.2 Building Construction Phase

2.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2023

- Phase Duration
Number of Month: 8
Number of Days: 0

2.2.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (feet^2): 15,332
Height of Building (feet): 20
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

POVs	0	0	0	0	0	100.00	0

2.2.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (pound/hour) (default)

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0754	0.0013	0.5027	0.3786	0.0181	0.0181	0.0068	128.79
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0258	0.0006	0.1108	0.2145	0.0034	0.0034	0.0023	54.454
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

2.2.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (pound/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building ($feet^2$)

BH: Height of Building (feet)
(0.42 / 1000): Conversion Factor feet^3 to trips (0.42 trip / 1000 feet^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (feet^2)
BH: Height of Building (feet)
(0.38 / 1000): Conversion Factor feet^3 to trips (0.38 trip / 1000 feet^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.3 Architectural Coatings Phase

2.3.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 11

Start Quarter: 1
Start Year: 2023

- Phase Duration
Number of Month: 1
Number of Days: 0

2.3.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (feet^2): 15,332
Number of Units: N/A

- Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

POVs	50.00	50.00	0	0	0	0	0

2.3.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

2.3.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

$VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (feet^2)
800: Conversion Factor square feet to man days (1 foot^2 / 1 man * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (feet^2)
2.0: Conversion Factor total area to coated area (2.0 feet^2 coated area / total area)
0.0116: Emission Factor (pound/feet^2)
2000: Conversion Factor pounds to tons

2.4 Paving Phase

2.4.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month: 11
Start Quarter: 1
Start Year: 2023

- Phase Duration

Number of Month: 2
Number of Days: 0

2.4.2 Paving Phase Assumptions

- General Paving Information

Paving Area (feet^2): 20,000

- Paving Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

POVs	50.00	50.00	0	0	0	0	0

2.4.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (pound/hour) (default)

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0757	0.0014	0.4155	0.5717	0.0191	0.0191	0.0068	132.91
	VOC	**SO_x**	**NO_x**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**CH_4**	**CO_2e**
Emission Factors	0.0483	0.0012	0.2497	0.3481	0.0091	0.0091	0.0043	122.61
	VOC	**SO_x**	**NO_x**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**CH_4**	**CO_2e**
Emission Factors	0.1830	0.0024	1.2623	0.7077	0.0494	0.0494	0.0165	239.49
	VOC	**SO_x**	**NO_x**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**CH_4**	**CO_2e**
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

2.4.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (pound/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area ($feet^2$)
0.25: Thickness of Paving Area (feet)
(1 / 27): Conversion Factor cubic feet to cubic yards ($1\ yard^3$ / $27\ feet^3$)
HC: Average Hauling Truck Capacity ($yard^3$)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC $yard^3$)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (pounds/acre)
PA: Paving Area ($feet^2$)
43560: Conversion Factor square feet to acre (43,560 $feet^2$ / $acre)^2$ / acre)

3. Heating

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Curry
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Heat Storage Facility

- Activity Description:
For the purposes of this analysis operation of the new storage facility was assumed to begin in 2024. Heating for the new storage facility would begin following the completion of construction, approximately January 2024.

- Activity Start Date
Start Month: 1
Start Year: 2024

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

VOC	0.002879
SO_x	0.000314
NO_x	0.052348
CO	0.043972
PM_{10}	0.003978

$PM_{2.5}$	0.003978
Pb	0.000000
NH_3	0.000000
CO_2e	63.0

3.2 Heating Assumptions

- Heating

Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method

Area of floorspace to be heated (feet^2): 15,332
Type of fuel: Natural Gas
Type of boiler/furnace: Industrial (10 - 250 MMBtu/hour)
Heat Value (MMBtu/feet^3): 0.00105
Energy Intensity (MMBtu/feet^2): 0.0717

- Default Settings Used: Yes

- Boiler/Furnace Usage

Operating Time Per Year (hours): 900 (default)

3.3 Heating Emission Factor(s)

- Heating Emission Factors (pound/1,000,000 scf)

5.5	0.6	100	84	7.6	7.6			120,390

3.4 Heating Formula(s)

- Heating Fuel Consumption feet^3 per Year

FC_{HER}= HA * EI / HV / 1,000,000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (feet^2)
EI: Energy Intensity Requirement (MMBtu/feet^2)
HV: Heat Value (MMBTU/feet^3)
1000000: Conversion Factor

- Heating Emissions per Year

HE_{POL}= FC * EF_{POL} / 2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location

Base: CANNON AFB
State: New Mexico
County(s): Curry
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: Infrastructure Improvements at Cannon Air Force Base (AFB)

- Project Number/s (if applicable): 3: Construction and Operation of a Munitions Storage Area (MSA)

- Projected Action Start Date: 1 / 2023

- Action Purpose and Need:

The purpose of the Proposed Action is to support the Air Force Special Operations Command (AFSOC) mission requirements by improving facilities, infrastructure, and utilities for current and future use at Cannon AFB. The purpose of the new dormitory is to provide adequate housing that meets the mission requirements for airmen and address the 192-room deficit. The purpose of the 26th Special Tactics Squadron (STS) Equipment Storage Facility is to provide adequate storage facility space for the 26 STS equipment while the purpose of relocating the Munitions Storage Area (MSA) is to mitigate risk caused by failure to meet safety distance requirements and risk associated with substandard facilities and limited existing storage space.

The AFSOC mission at Cannon AFB continues to grow and evolve, as do demands on aging facilities and infrastructure. Improvements and updates are needed to keep pace as warfare grows more technologically advanced and specialized. The need for the Proposed Action is to (1) restore military readiness by addressing a 192-dormitory deficit, (2) restore military readiness by providing adequate storage facility space for 26 STS equipment, and (3) mitigate risk caused by safety and distance violations by relocating the MSA. AFSOC does not have adequate facilities to meet or carry out their mission.

- Action Description:

The Proposed Action is to construct and operate infrastructure at Cannon AFB, New Mexico. The Proposed Action includes construction of a 59,331 square foot dormitory southwest of dormitories 1155, 1159, and 1161 on West Alison Avenue; a 15,532 square foot storage facility near other 26 STS facilities on the eastern portion of Cannon AFB; and an approximately 240-acre MSA within the 603-acre land gift area at the southwest corner of Cannon AFB.

For the purposes of this analysis, each construction project at Cannon AFB was assumed to be implemented over a 1-year construction period. A surrogate year of 2023 was used.

- Point of Contact

Name: Carolyn Hein
Title: Contractor
Organization: HDR
Email: carolyn.hein@hdrinc.com
Phone Number: 484-612-1060

- Activity List:

2.	Construction / Demolition	Construct MSA
3.	Construction / Demolition	Demolish Existing MSA Facilities
4.	Heating	Heat New MSA Facilities
5.	Heating	Remove Heat for Existing MSA Facilities
6.	Emergency Generator	Remove Emergency Generator at the Existing MSA (Building 2134)

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location
County: Curry
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Construct MSA

- Activity Description:
For the purposes of this analysis, a 1-year construction period was assumed and a surrogate year of 2023 was used.

It was estimated the entire MSA construction disturbance area, approximately 190 acres (8,276,000 square feet) would be graded. Site grading would begin in January 2023 and last approximately 3 months.

Trenching for site utilities (approximately 3,250 linear feet) and perimeter fencing (approximately 9,800 linear feet) would occur on an area totaling approximately 19,550 square feet. A 3-foot trench width for utilities and a 1-foot trench width for perimeter fencing was assumed. Trenching would begin in March 2023 and last approximately 1 month.

Construction of the new MSA would include 14 facilities totaling approximately 120,000 square feet. The height of all buildings was assumed to be 15 feet. Construction would begin in April 2023 and last approximately 8 months.

Architectural coatings would be applied to all buildings, for a total of approximately 120,000 square feet. Architectural coating application would begin in November 2023 and last approximately 1 month.

Paving for driveways, parking areas, and roadways would occur on an area totaling approximately 835,000 square feet. Paving would begin in November 2023 and last approximately 2 months.

- Activity Start Date
Start Month: 1
Start Month: 2023

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2023

- Activity Emissions:

VOC	2.254431
SO_x	0.013725
NO_x	5.290504
CO	4.850000
PM_{10}	247.392098

$PM_{2.5}$	0.207801
Pb	0.000000
NH_3	0.005400
CO_2e	1,381.8

2.1 Site Grading Phase

2.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2023

- Phase Duration
Number of Month: 3
Number of Days: 0

2.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (feet^2): 8,276,000
Amount of Material to be Hauled On-Site (yard^3): 27,000
Amount of Material to be Hauled Off-Site (yard^3): 45,000

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Excavators Composite	1	8
Graders Composite	2	8
Other Construction Equipment Composite	2	8
Rollers Composite	1	8
Rubber Tired Dozers Composite	3	8
Scrapers Composite	6	8
Tractors/Loaders/Backhoes Composite	2	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yard^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

POVs	50.00	50.00	0	0	0	0	0

2.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (pound/hour) (default)

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0614	0.0013	0.2820	0.5096	0.0117	0.0117	0.0055	119.71
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0757	0.0014	0.4155	0.5717	0.0191	0.0191	0.0068	132.91
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0483	0.0012	0.2497	0.3481	0.0091	0.0091	0.0043	122.61
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0464	0.0007	0.2939	0.3784	0.0158	0.0158	0.0041	67.139
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.1830	0.0024	1.2623	0.7077	0.0494	0.0494	0.0165	239.49
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.1640	0.0026	1.0170	0.7431	0.0406	0.0406	0.0148	262.85
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

2.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 pounds / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (pound/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site ($yard^3$)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site ($yard^3$)
HC: Average Hauling Truck Capacity ($yard^3$)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC $yard^3$)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.2 Trenching/Excavating Phase

2.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 3
Start Quarter: 1
Start Year: 2023

- Phase Duration
Number of Month: 1
Number of Days: 0

2.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated ($feet^2$): 19,550
Amount of Material to be Hauled On-Site ($yard^3$): 0
Amount of Material to be Hauled Off-Site ($yard^3$): 0

- Trenching Default Settings

Default Settings Used: Yes

Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

POVs	50.00	50.00	0	0	0	0	0

2.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (pound/hour) (default)

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0614	0.0013	0.2820	0.5096	0.0117	0.0117	0.0055	119.71
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0757	0.0014	0.4155	0.5717	0.0191	0.0191	0.0068	132.91
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0483	0.0012	0.2497	0.3481	0.0091	0.0091	0.0043	122.61
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0464	0.0007	0.2939	0.3784	0.0158	0.0158	0.0041	67.139
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.1830	0.0024	1.2623	0.7077	0.0494	0.0494	0.0165	239.49
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.1640	0.0026	1.0170	0.7431	0.0406	0.0406	0.0148	262.85
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896

LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

2.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 pounds / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (pound/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site ($yard^3$)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site ($yard^3$)
HC: Average Hauling Truck Capacity ($yard^3$)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC $yard^3$)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.3 Building Construction Phase

2.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2023

- Phase Duration
Number of Month: 8
Number of Days: 0

2.3.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (feet^2): 120,000
Height of Building (feet): 15
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Cranes Composite	1	6
Forklifts Composite	2	6
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8
Welders Composite	3	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

POVs	0	0	0	0	0	100.00	0

2.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (pound/hour) (default)

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0754	0.0013	0.5027	0.3786	0.0181	0.0181	0.0068	128.79
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0258	0.0006	0.1108	0.2145	0.0034	0.0034	0.0023	54.454
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0320	0.0006	0.2612	0.2683	0.0103	0.0103	0.0028	61.065
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0242	0.0003	0.1487	0.1761	0.0067	0.0067	0.0021	25.657

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

2.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (pound/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building ($feet^2$)
BH: Height of Building (feet)
(0.42 / 1000): Conversion Factor $feet^3$ to trips (0.42 trip / 1000 $feet^3$)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building ($feet^2$)
BH: Height of Building (feet)
(0.38 / 1000): Conversion Factor $feet^3$ to trips (0.38 trip / 1,000 $feet^3$)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.4 Architectural Coatings Phase

2.4.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 11
Start Quarter: 1
Start Year: 2023

- Phase Duration
Number of Month: 1
Number of Days: 0

2.4.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (feet^2): 120,000
Number of Units: N/A

- Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

POVs	50.00	50.00	0	0	0	0	0

2.4.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

2.4.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (feet^2)
800: Conversion Factor square feet to man days (1 feet^2 / 1 man * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (feet^2)
2.0: Conversion Factor total area to coated area (2.0 feet^2 coated area / total area)
0.0116: Emission Factor (pound/feet^2)
2000: Conversion Factor pounds to tons

2.5 Paving Phase

2.5.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month: 11
Start Quarter: 1
Start Year: 2023

- Phase Duration

Number of Month: 2
Number of Days: 0

2.5.2 Paving Phase Assumptions

- General Paving Information

Paving Area (feet^2): 835,000

- Paving Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Pavers Composite	1	8
Paving Equipment Composite	2	8
Rollers Composite	2	6

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

POVs	50.00	50.00	0	0	0	0	0

2.5.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (pound/hour) (default)

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0614	0.0013	0.2820	0.5096	0.0117	0.0117	0.0055	119.71
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0757	0.0014	0.4155	0.5717	0.0191	0.0191	0.0068	132.91
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0483	0.0012	0.2497	0.3481	0.0091	0.0091	0.0043	122.61
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0464	0.0007	0.2939	0.3784	0.0158	0.0158	0.0041	67.139
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.1830	0.0024	1.2623	0.7077	0.0494	0.0494	0.0165	239.49
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.1640	0.0026	1.0170	0.7431	0.0406	0.0406	0.0148	262.85
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

2.5.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (pound/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area ($feet^2$)
0.25: Thickness of Paving Area (feet)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 $yard^3$ / 27 $feet^3$)
HC: Average Hauling Truck Capacity ($yard^3$)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC $yard^3$)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (pound/acre)
PA: Paving Area ($feet^2$)
43560: Conversion Factor square feet to acre (43,560 $feet^2$ / $acre)^2$ / acre)

3. Construction / Demolition

3.1 General Information & Timeline Assumptions

- Activity Location
County: Curry
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Demolish Existing MSA Facilities

- Activity Description:
Demolition of existing MSA facilities was assumed to occur concurrently with construction activities. A 1-year construction period was assumed and a surrogate year of 2023 was used.

Demolition would include removal of approximately 15 existing MSA facilities totaling approximately 50,000 square feet. The height of the buildings to be demolished was assumed to be 15 feet. Demolition would begin in April 2023 and last approximately 8 months.

It was estimated the entire demolition disturbance area, approximately 91.69 acres (3,994,016.4 square feet) would be graded following demolition of the existing MSA buildings.

- Activity Start Date
Start Month: 1
Start Month: 2023

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2023

- Activity Emissions:

VOC	1.077107
SO_x	0.016945
NO_x	6.666804
CO	5.775289
PM_{10}	238.819030

$PM_{2.5}$	0.267351
Pb	0.000000
NH_3	0.001914
CO_2e	1,699.8

3.1 Demolition Phase

3.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2023

- Phase Duration
Number of Month: 6
Number of Days: 0

3.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (feet^2): 50,000
Height of Building to be demolished (feet): 15

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

- Vehicle Exhaust

Average Hauling Truck Capacity (yard^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

POVs	50.00	50.00	0	0	0	0	0

3.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (pound/hour) (default)

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0382	0.0006	0.2766	0.3728	0.0127	0.0127	0.0034	58.549

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.1830	0.0024	1.2623	0.7077	0.0494	0.0494	0.0165	239.49

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

3.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase
$PM10_{FD} = (0.00042 * BA * BH) / 2000$

$PM10_{FD}$: Fugitive Dust PM_{10} Emissions (TONs)
0.00042: Emission Factor (pound/feet^3)
BA: Area of Building to be demolished (feet^2)
BH: Height of Building to be demolished (feet)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (pound/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish ($feet^2$)
BH: Height of Building being demolish (feet)
(1 / 27): Conversion Factor cubic feet to cubic yards ($1\ yard^3 / 27\ feet^3$)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity ($yard^3$)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC $yard^3$)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

3.2 Site Grading Phase

3.2.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 7
Start Quarter: 1
Start Year: 2023

- Phase Duration

Number of Month: 6
Number of Days: 0

3.2.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (feet^2): 3,994,016.4
Amount of Material to be Hauled On-Site (yard^3): 0
Amount of Material to be Hauled Off-Site (yard^3): 0

- Site Grading Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Graders Composite	2	8
Other Construction Equipment Composite	2	8
Rollers Composite	1	8
Rubber Tired Dozers Composite	3	8
Scrapers Composite	6	8
Tractors/Loaders/Backhoes Composite	2	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yard^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

POVs	50.00	50.00	0	0	0	0	0

3.2.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (pound/hour) (default)

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0757	0.0014	0.4155	0.5717	0.0191	0.0191	0.0068	132.91
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0483	0.0012	0.2497	0.3481	0.0091	0.0091	0.0043	122.61
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.0464	0.0007	0.2939	0.3784	0.0158	0.0158	0.0041	67.139
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e
Emission Factors	0.1830	0.0024	1.2623	0.7077	0.0494	0.0494	0.0165	239.49
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	CH_4	CO_2e

Emission Factors	0.1640	0.0026	1.0170	0.7431	0.0406	0.0406	0.0148	262.85
	VOC	**SO_x**	**NO_x**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**CH_4**	**CO_2e**
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

3.2.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 pound / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (pound/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site ($yard^3$)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site ($yard^3$)
HC: Average Hauling Truck Capacity ($yard^3$)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC $yard^3$)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

4. Heating

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Curry
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Heat New MSA Facilities

- Activity Description:
For the purposes of this analysis operation of the new MSA was assumed to begin in 2024. It was assumed all new MSA facilities would require heating, totaling approximately 120,000 square feet of building space. Heating for the new MSA facilities would begin following the completion of construction, approximately January 2024.

- Activity Start Date
Start Month: 1
Start Year: 2024

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

VOC	0.025991
SO_x	0.002835
NO_x	0.472571
CO	0.396960
PM_{10}	0.035915

$PM_{2.5}$	0.035915
Pb	0.000000
NH_3	0.000000
CO_2e	568.9

4.2 Heating Assumptions

- Heating
Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method
Area of floorspace to be heated (feet^2): 120,000
Type of fuel: Natural Gas
Type of boiler/furnace: Industrial (10 - 250 MMBtu/hour)
Heat Value (MMBtu/feet^3): 0.00105
Energy Intensity (MMBtu/feet^2): 0.0827

- Default Settings Used: Yes

- Boiler/Furnace Usage
Operating Time Per Year (hours): 900 (default)

4.3 Heating Emission Factor(s)

- Heating Emission Factors (pound/1,000,000 scf)

5.5	0.6	100	84	7.6	7.6			120,390

4.4 Heating Formula(s)

- Heating Fuel Consumption feet^3 per Year
FC_{HER}= HA * EI / HV / 1,000,000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (feet^2)
EI: Energy Intensity Requirement (MMBtu/feet^2)
HV: Heat Value (MMBTU/feet^3)
1000000: Conversion Factor

- Heating Emissions per Year
HE_{POL}= FC * EF_{POL} / 2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

5. Heating

5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location
County: Curry
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Remove Heat for Existing MSA Facilities

- Activity Description:

For the purposes of this analysis, it was assumed heating requirements for the existing MSA facilities would cease following completion of construction for the new MSA, approximately January 2024. It was assumed all existing MSA facilities slated for demolition (approximately 50,000 total square feet) employ heating systems and would no longer require heating following their demolition.

- Activity Start Date

Start Month: 1
Start Year: 2024

- Activity End Date

Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

VOC	-0.009088
SO_x	-0.000991
NO_x	-0.165238
CO	-0.138800
PM_{10}	-0.012558

$PM_{2.5}$	-0.012558
Pb	0.000000
NH_3	0.000000
CO_2e	-198.9

5.2 Heating Assumptions

- Heating

Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method

Area of floorspace to be heated (feet^2): 50,000
Type of fuel: Natural Gas
Type of boiler/furnace: Industrial (10 - 250 MMBtu/hour)
Heat Value (MMBtu/feet^3): 0.00105
Energy Intensity (MMBtu/feet^2): 0.0694

- Default Settings Used: Yes

- Boiler/Furnace Usage

Operating Time Per Year (hours): 900 (default)

5.3 Heating Emission Factor(s)

- Heating Emission Factors (pound/1,000,000 scf)

5.5	0.6	100	84	7.6	7.6			120,390

5.4 Heating Formula(s)

- Heating Fuel Consumption feet^3 per Year

FC_{HER}= HA * EI / HV / 1,000,000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (feet^2)
EI: Energy Intensity Requirement (MMBtu/feet^2)
HV: Heat Value (MMBTU/feet^3)

1000000: Conversion Factor

- Heating Emissions per Year

HE_{POL}= FC * EF_{POL} / 2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

6. Emergency Generator

6.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Curry
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Remove Emergency Generator at the Existing MSA (Building 2134)

- Activity Description:

For the purposes of this analysis, it was assumed operation of the emergency generator at Building 2134, which is within the existing MSA and would be demolished, would cease following completion of construction of the new MSA, approximately January 2024.

- Activity Start Date

Start Month: 1
Start Year: 2024

- Activity End Date

Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

VOC	-0.006068
SO_x	-0.005111
NO_x	-0.025013
CO	-0.016704
PM_{10}	-0.005459

$PM_{2.5}$	-0.005459
Pb	0.000000
NH_3	0.000000
CO_2e	-2.9

6.2 Emergency Generator Assumptions

- Emergency Generator

Type of Fuel used in Emergency Generator: Diesel
Number of Emergency Generators: 1

- Default Settings Used: No

- Emergency Generators Consumption

Emergency Generator's Horsepower: 145
Average Operating Hours Per Year (hours): 30

6.3 Emergency Generator Emission Factor(s)

- Emergency Generators Emission Factor (pound/hp-hour)

0.00279	0.00235	0.0115	0.00768	0.00251	0.00251			1.33

6.4 Emergency Generator Formula(s)

- Emergency Generator Emissions per Year

$AE_{POL} = (NGEN * HP * OT * EF_{POL}) / 2000$

AE_{POL}: Activity Emissions (TONs per Year)
NGEN: Number of Emergency Generators
HP: Emergency Generator's Horsepower (hp)
OT: Average Operating Hours Per Year (hours)
EF_{POL}: Emission Factor for Pollutant (pound/hp-hour)

APPENDIX C
FAUNA OF CANNON AIR FORCE BASE AND MELROSE AIR FORCE RANGE

1

Fauna of Cannon Air Force Base and Melrose Air Force Range

Fauna Observed During Surveys and Monitoring Programs from 2014–2016 Cannon Air Force Base and Melrose Air Force Range

Amphibia	*Ambystoma mavortium*	Barred Tiger Salamander
Amphibia	*Spea multiplicata*	New Mexico Spadefoot Toad
Amphibia	*Anaxyrus woodhousii*	Woodhouse Toad
Aves	*Recurvirostra americana*	American Avocet
Aves	*Falco sparverius*	American Kestrel
Aves	*Turdus migratorius*	American Robin
Aves	*Spizelloides arborea*	American Tree Sparrow
Aves	*Myiarchus cinerascens*	Ash-Throated Flycatcher
Aves	*Tyto alba*	Barn Owl
Aves	*Hirundo rustica*	Barn Swallow
Aves	*Himantopus mexicanus*	Black-Necked Stilt
Aves	*Passerina caerulea*	Blue Grosbeak
Aves	*Anas discors*	Blue-Winged Teal
Aves	*Icterus bullockii*	Bullock's Oriole
Aves	*Campylorhynchus brunn eicapillus*	Cactus Wren
Aves	*Peucaea cassinii*	Cassin's Sparrow
Aves	*Corvus cryptolecucus*	Chihuahuan Raven
Aves	*Spizella passerina*	Chipping Sparrow
Aves	*Spizella pallida*	Clay-Colored Sparrow
Aves	*Chordeiles minor*	Common Nighthawk
Aves	*Toxostoma curvirostre*	Curved-Billed Thrasher
Aves	*Junco hyemalis*	Dark-Eyed Junco
Aves	*Streptophelia decaocto*	Eurasian Collared Dove
Aves	*Buteo regalis*	Ferruginous Hawk
Aves	*Aquila chrysaetos*	Golden Eagle
Aves	*Bubo virginianus*	Great Horned Owl
Aves	*Geococcyx californianus*	Greater Roadrunner
Aves	*Quiscalus mexicanus*	Great-Tailed Grackle
Aves	*Cartharsus guttatus*	Hermit Thrush
Aves	*Eremophila alpestris*	Horned Lark
Aves	*Charadrius vociferus*	Killdeer
Aves	*Dryobates scalaris*	Ladder-Backed Woodpecker
Aves	*Calamospiza melanocorys*	Lark Bunting
Aves	*Chondestes grammacus*	Lark Sparrow
Aves	*Spinus psaltria*	Lesser Goldfinch
Aves	*Tringa flavipes*	Lesser Yellowlegs
Aves	*Lanius lodovicianus*	Loggerhead Shrike
Aves	*Anas platyrhynchos*	Mallard
Aves	*Falco columbarius*	Merlin
Aves	*Ictinia mississippiensis*	Mississippi Kite
Aves	*Zenaida macroura*	Mourning Dove
Aves	*Colinus virginianus*	Northern Bobwhite Quail
Aves	*Circus cyaneus*	Northern Harrier
Aves	*Mimus polyglottos*	Northern Mockingbird
Aves	*Falco peregrinus*	Peregrine Falcon
Aves	*Falco mexicanus*	Prairie Falcon

Aves	*Melanerpes erythrocephalus*	Red-Headed Woodpecker
Aves	*Agelaius phoeniceus*	Red-Winged Blackbird
Aves	*Salpinctes obsoletus*	Rock Wren
Aves	*Regulus calendula*	Ruby-Crowned Kinglet
Aves	*Aimophila ruficeps*	Rufous-Crowned Sparrow
Aves	*Oreoscoptes montanus*	Sage Thrasher
Aves	*Grus canadensis*	Sandhill Crane
Aves	*Passerculus sandwichensis*	Savannah Sparrow
Aves	*Sayornis saya*	Say's Phoebe
Aves	*Callipepla squamata*	Scaled Quail
Aves	*Tyrannus forficatus*	Scissor-Tailed Flycatcher
Aves	*Asio flammeus*	Short-Eared Owl
Aves	*Melospizia melodia*	Song Sparrow
Aves	*Pipilo maculatus*	Spotted Towhee
Aves	*Buteo swainsoni*	Swainson's Hawk
Aves	*Cathartes aura*	Turkey Vulture
Aves	*Pooecetes gramineus*	Vesper Sparrow
Aves	*Sialia mexicana*	Western Bluebird
Aves	*Athene cunicularia hypugaea*	Western Burrowing Owl
Aves	*Tyrannus verticalis*	Western Kingbird
Aves	*Sturnella neglecta*	Western Meadowlark
Aves	*Znotrichia leucophrys*	White Crowned Sparrow
Aves	*Zenaida asiatica*	White-Winged Dove
Aves	*Cardellina pusilla*	Wilson's Warbler
Aves	*Sphyrapicus varius*	Yellow-Bellied Sapsucker
Aves	*Xanthocephalus*	Yellow-Headed Blackbird
Aves	*Setophaga coronata*	Yellow-Rumped Warbler
Mammalia	*Taxidea taxus*	American Badger
Mammalia	*Lepus californicus*	Black-Tailed Jackrabbit
Mammalia	*Cynomys ludovicianus*	Black-Tailed Prairie Dog
Mammalia	*Lynx rufus*	Bobcat
Mammalia	*Canis latrans*	Coyote
Mammalia	*Sylvilagus audubonii*	Desert Cottontail
Mammalia	*Urocyon cinereoargenteus*	Gray Fox
Mammalia	*Sigmodon hispidus*	Hispid Cotton Rat
Mammalia	*Chaetodipus hispidus*	Hispid Pocket Mouse
Mammalia	*Mus musculus*	House Mouse
Mammalia	*Odocoileus hemionus*	Mule Deer
Mammalia	*Peromyscus manicualtus*	North American Deer Mouse
Mammalia	*Onychomys leucogaster*	Northern Grasshopper Mouse
Mammalia	*Dipodomys ordii*	Ord's Kangaroo Rat1
Mammalia	*Reithrodontomys montanus*	Plains Harvest Mouse
Mammalia	*Geomys bursarius*	Plains Pocket Gopher
Mammalia	*Perognathus flavescens*	Plains Pocket Mouse
Mammalia	*Antilocapra americanus*	Pronghorn
Mammalia	*Perognathus flavus*	Silky Pocket Mouse
Mammalia	*Neotoma micropus*	Southern Plains Woodrat
Mammalia	*Spermophilus spilosoma*	Spotted Ground Squirrel
Mammalia	*Mephitis*	Striped Skunk
Mammalia	*Spermophilus tridecemlinatus*	Thirteen-Lined Ground Squirrel
Mammalia	*Reithrodontomys megalotis*	Western Harvest Mouse
Mammalia	*Peromyscus leucopus*	White-Footed Mouse

Mammalia	*Odocoileus virginianus*	White-Tailed Deer
Mammalia	*Neotoma albigula*	White-Throated Woodrat
Reptilia	*Pituophis catenifer*	Bullsnake
Reptilia	*Aspidoscelis exsanguis*	Chihuahuan Spotted Whiptail
Reptilia	*Crotaphytus collaris*	Common Collared Lizard
Reptilia	*Uta stansburiana*	Common Side-Blotched Lizard
Reptilia	*Terrepene ornata luteola*	Desert Box Turtle
Reptilia	*Plestiodon obsoletus*	Great Plains Skink
Reptilia	*Holbrookia maculate*	Lesser Earless Lizard
Reptilia	*Sistrurus catenatus*	Massasauga
Reptilia	*Crotalus viridis*	Prairie Rattlesnake
Reptilia	*Phrynosoma cornutum*	Texas Horned Lizard
Reptilia	*Masticophis flagellum*	Western Coachwhip
Reptilia	*Crotalus atrox*	Western Diamondback Rattlesnake
Reptilia	*Kinosternon flavescens*	Yellow Mud Turtle

1 Source: CAFB 2020.

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APPENDIX D
THREATENED AND ENDANGERED SPECIES

1

Threatened and Endangered Species on Cannon Air Force Base

Common Name	Scientific Name	NMDGF	USFWS	SGCN	Potential to Occur in Project Area
Baird's Sparrow	*Centronyx bairdii*	T		Y	N
Bald Eagle	*Haliaeetus leucocephalus*	T		Y	N
Bank Swallow	*Riparia riparia*			Y	N
Beavertail Fairy Shrimp	*Thamnocephalus platyurus*			Y	N
Black-tailed Prairie Dog	*Cynomys ludovicianus*			Y	Y
Burrowing Owl	*Athene cunicularia*			Y	Y
Eared Grebe	*Podiceps nigricollis*			Y	N
Least Shrew	*Cryptotis parvus*	T		Y	N
Least Tern	*Sternula antillarum*	E		Y	N
Lesser Prairie Chicken	*Tympanuchus pallidicinctus*		P	Y	N
Lewis's Woodpecker	*Melanerpes lewis*			Y	N
Loggerhead Shrike	*Lanius ludovicianus*			Y	Y
Long-billed Curlew	*Numenius americanus*			Y	Y
Monarch Butterfly	*Danaus plexippus*		C	N	N
Mountain Plover	*Charadrius montanus*			Y	N
Peregrine Falcon	*Falco peregrinus*	T		Y	N
Pinyon Jay	*Gymnorhinus cyanocephalus*			Y	N
Plains Leopard Frog	*Lithobates blairi*			Y	N
Red-headed Woodpecker	*Melanerpes erythrocephalus*			Y	Y
Sagebrush Sparrow	*Artemisiospiza nevadensis*			Y	N
Snowy Plover	*Charadrius nivosus*			Y	N
Sprague's Pipit	*Anthus spragueii*			Y	N
Versatile Fairy Shrimp	*Branchinecta lindahli*			Y	N
Williamson's Sapsucker	*Sphyrapicus thyroideus*			Y	N

Notes: NMDFG = New Mexico Department of Game and Fish; USFWS = United States Fish and Wildlife Service; SGCN = Species of Greatest Conservation Need; E=Endangered; T=Threatened; P = Proposed; C = Candidate; Y=Yes N= No

Source: BISON-M 2022 and USFWS 2022.

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