Draft
Environmental Assessment for Construction of a Fire Crash/Rescue Station and Enlisted Unaccompanied Housing Facility at Vance Air Force Base, Oklahoma

September 2023

Prepared for:
United States Air Force
71st Flying Training Wing
Vance Air Force Base, Oklahoma

PRIVACY ADVISORY

This Environmental Assessment (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.

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 the 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 Personal home addresses and phone numbers will not be published in the EA.

COMPLIANCE

This document has been certified that it does not exceed 75 pages, not including appendices, as defined in 40 CFR § 1501.5(f). In accordance with 40 CFR § 1508.1(v), a "page" means 500 words and does not include maps, diagrams, graphs, tables, and other means of graphically displaying quantitative or geospatial information.

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COVER SHEET
Draft Environmental Assessment for
Construction of a Fire Crash/Rescue Station and Enlisted Unaccompanied Housing Facility at Vance Air Force Base, Oklahoma

a. *Responsible Agency: United States Air Force*

b. *Location: Vance Air Force Base, Enid, Oklahoma*

c. *Designation: Draft Environmental Assessment*

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Abstract:

This Environmental Assessment (EA) has been prepared pursuant to provisions of the National Environmental Policy Act, Title 42 *United States Code*, §§ 4321–4347, implemented by Council on Environmental Quality Regulations at Title 40, *Code of Federal Regulations* (CFR) Parts 1500–1508, and 32 CFR Part 989, *Environmental Impact Analysis Process (EIAP)*. Potentially affected environmental resources were identified in coordination with local, state, and federal agencies. Specific environmental resources with the potential for environmental consequences include land use; air quality and climate change; earth, water, biological, and cultural resources; noise; hazardous materials and waste, toxic substances, and contaminated sites; infrastructure including transportation, utilities, and communications; safety and occupational health; socioeconomics; and environmental justice and protection of children.

The purpose of the fire crash/rescue station component of the Proposed Action would be to provide updated facilities to accommodate current and future mission and facility spacing requirements for fire, rescue, and emergency services. The fire crash/rescue station component of the Proposed Action is needed to address deficiencies in the current facility that prevent Vance AFB from meeting current and future mission needs. The existing fire crash/rescue station (Building 140) is undersized and has improper configuration and does not meet current and future mission needs as required in Department of Air Force Manual 32-1084, *Facility Requirements Standards*, and United Facilities Criteria 4-730-10, *Fire Stations*.

The purpose of the enlisted unaccompanied housing (UH) facility component of the Proposed Action is to provide updated facilities to accommodate current and future mission and facility spacing requirements for housing enlisted unaccompanied Airmen. The enlisted UH facility component of the Proposed Action is needed to address characteristics in existing UH housing that affect troop readiness, morale, and quality of life and to bring Vance AFB into compliance with *Architectural Barriers Act* and *Americans with Disabilities Act* standards, as neither facility has an elevator.

The analysis of the affected environment and environmental consequences of implementing the Proposed Action concluded that by implementing standing environmental protection measures and best management practices, there would be no significant adverse impacts from the actions at Vance AFB on the environmental resources. Vance AFB is an active installation with equipment operations, demolition, and new construction actions currently underway as well as future development currently in the planning phase. Impacts associated with construction, demolition, and renovation would be minor; therefore, significant cumulative impacts are not anticipated with implementation of the Proposed Action when considered in conjunction with past, present, and reasonably foreseeable environmental trends or future actions at Vance AFB.

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ACRONYMS AND ABBREVIATIONS

71 FTW	71st Flying Training Wing
ABA	Architectural Barriers Act
ACAM	Air conformity applicability mode
ACM	asbestos-containing material
ADA	Americans with Disabilities Act
AETC	Air Education and Training Command
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
AFMAN	Air Force Manual
AFI	Air Force Instruction
AGE	aerospace ground equipment
Air Force	United States Air Force
APE	Area of Potential Effect
APZ	Accident Potential Zone
AST	aboveground storage tank
BGEPA	Bald and Golden Eagle Protection Act
BMPs	Best Management Practices
BX	Base exchange
CAA	Clean Air Act
CCD	Census County Division
CE	Civil Engineering
CEQ	Council on Environmental Quality
CEJC	community of environmental justice concern
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO_2e	carbon dioxide-equivalent
CWA	Clean Water Act
CZ	Clear Zone
DAFMAN	Department of Air Force Manual
dB	Decibels
DNL	Day-Night Average Sound Level
DoD	United States Department of Defense
DTZ	deep transmissive zone
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act
EIT	Enid Isolated Terrace
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
ESQD	explosive safety quantity distance
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
ft^2	square foot/feet
FTW	Flight Training Wing
FY	fiscal year
GBI	Green Building Initiative
GHG	Greenhouse gas
HAZMAT	hazardous materials
HVAC	heating, ventilation, and air conditioning
IAQCR	Intrastate Air Quality Control Region
ICT	interceptor collector trench
IDP	Installation Development Plan

INRMP	Integrated Natural Resources Management Plan
IPaC	Information for Planning and Consultation
ITZ	intermediate transmissive zone
IZ	Industrial Zone
lbs	pounds
lf	linear foot/feet
LBP	lead-based paint
$\mu g/m^3$	micrograms per cubic meter
µg/L	micrograms per liter
MBTA	Migratory Bird Treaty Act
MCL	Maximum Contaminant Level
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollution Discharge Elimination System
NRHP	National Register of Historic Places
ODEQ	Oklahoma Department of Environmental Quality
ODWC	Oklahoma Department of Wildlife Conservation
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyls
PCE	tetrachloroethylene
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
ROI	Region of Influence
SARA	Superfund Amendments and Reauthorization Act
SHPO	State Historic Preservation Office
SQG	small-quantity generator
STZ	shallow transmissive zone
TCE	trichloroethene
TCP	Traditional Cultural Property
UFC	Unified Facilities Criteria
UH	Unaccompanied Housing
US	United States
USACE	US Army Corps of Engineers
USC	United States Code
USCB	United States Census Bureau
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGBC	US Green Building Council
UST	underground storage tank
VOC	volatile organic compound

CHAPTER 1 PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION AND BACKGROUND

The United States (US) Air Force (Air Force), 71st Flying Training Wing (71 FTW) at Vance Air Force Base (AFB), Oklahoma, has prepared this Environmental Assessment (EA) in accordance with the requirements of the *National Environmental Policy Act of 1969*, as amended (42 *United States Code* [USC] § 4321 et seq.) (NEPA), implemented through the Council on Environmental Quality (CEQ) regulations of 1978 and amended in 2020 (Title 40 *Code of Federal Regulations* [CFR] Parts 1500–1508 [the 14 September 2020 version of the CEQ NEPA rules is being used; see Volume 85 *Federal Regulations* page 43304], as modified by the CEQ NEPA implementing regulation revisions that became effective 20 May 2022), and codified at 32 CFR Part 989, *Environmental Impact Analysis Process (EIAP)*. The Air Force considered other pertinent environmental statutes, regulations, and compliance requirements during the preparation of this EA and are addressed in relevant sections.

The information presented in this EA will serve as the basis for deciding whether the Proposed Action and Alternatives would result in a significant impact to the human or natural environment, requiring the preparation of an Environmental Impact Statement (EIS), or whether no significant impacts would occur, in which case a Finding of No Significant Impact (FONSI) would be issued.

The 71 FTW proposes to construct a fire crash/rescue facility and enlisted unaccompanied housing (UH) facility on Vance AFB. These projects are proposed to meet Vance AFB's current and future mission needs, address facility and infrastructure deficiencies, and improve quality of life and welfare for military and other personnel on Base. Projects included under the Proposed Action would occur within the Flightline District and/or Community District during fiscal years (FY) 2024–2025.

1.2 VANCE AFB

Vance AFB is located in Garfield County in north-central Oklahoma, on the south side of the city of Enid, approximately 90 miles north-northwest of Oklahoma City (**Figure 1-1**). The Installation is approximately 2,122 acres in size, which includes fee-owned land and easements. Vance AFB serves as the headquarters for the 71 FTW, which is part of the Air Education and Training Command (AETC). Tenants at Vance AFB also include several Army National Guard and Reserve units. The mission of Vance AFB is to "train the world's best pilots to defend our nation." The 71 FTW conducts undergraduate pilot training for qualified US and international military Officers. Vance AFB is the northernmost undergraduate pilot training base in the AETC (Air Force. 2022a).

The 71 FTW operates four flying squadrons plus a student squadron consisting of more than 200 aircraft that fly more than 50,000 sorties annually and log more than 74,000 flying hours. Primary assigned aircraft at Vance AFB include the T-1A Jayhawk, T-6A Texan II, and T-38C Talon aircraft. More than 300 Air Force student pilots graduate from pilot training at Vance AFB each year (Air Force, 2022a).

1.2.1 Airfield District

The Airfield District is approximately 1,355 acres and is bounded by farmland to the north, south, and west., and by the Flightline District to the east. The airfield at Vance AFB consists of three runways: Runway 17L/35R (inside runway), Runway 17C/35C (center runway), Runway 17R/35L (outside runway). The inside runway primarily is used for T-6 operations; the center and outside runways primarily are used for T-38 and T-1 operations and are fully equipped with aircraft arresting systems. The center runway is the main instrument landing system runway (Air Force 2021a).

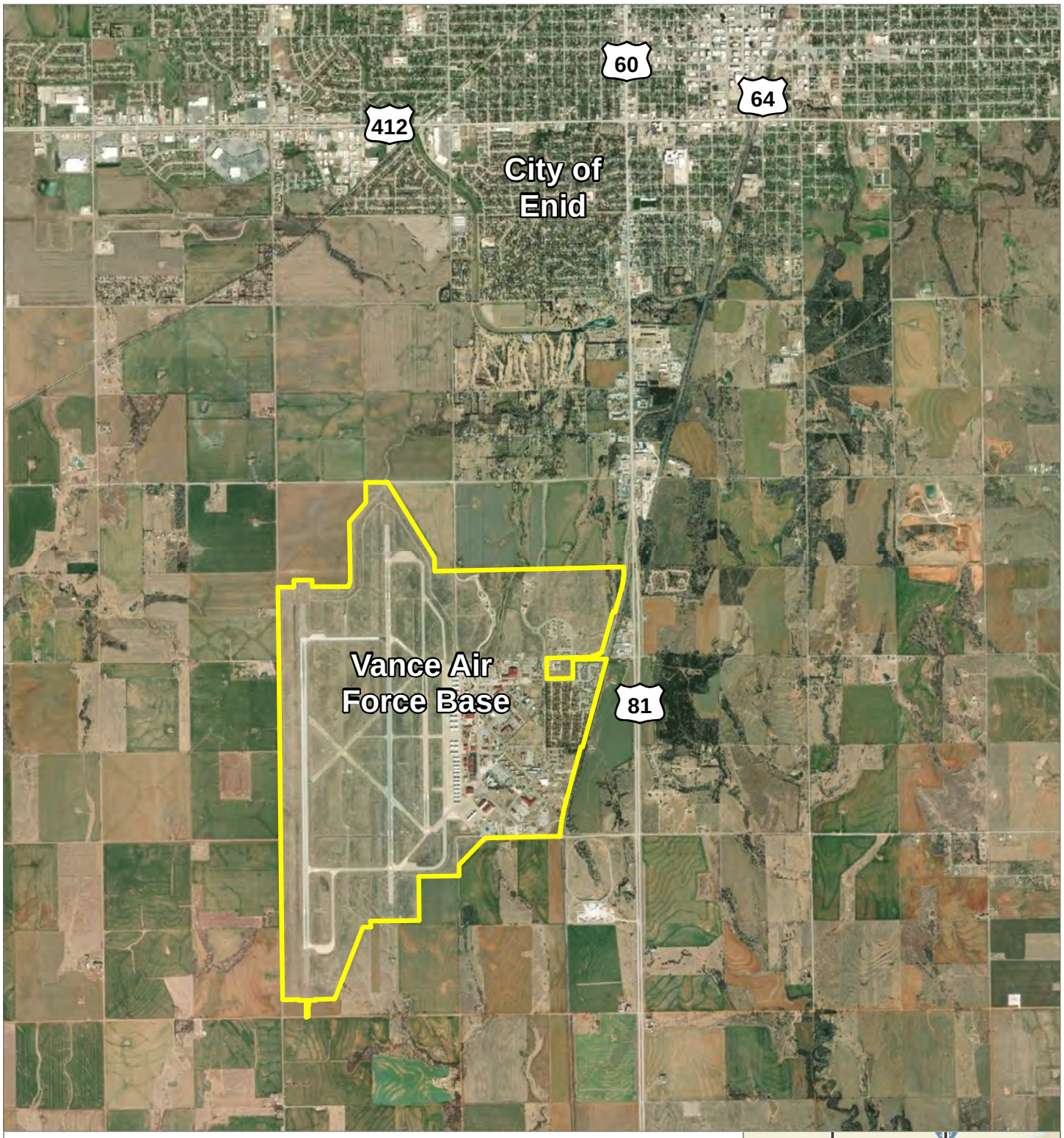


FIGURE 1-1
Vance AFB Vicinity

Installation Boundary

N

0 1 Miles

Imagery: ESRI, 2021
Coordinate System: NAD 83 UTM Zine 14N

1.2.2 Flightline District

The Flightline District primarily consists of the aircraft parking apron, which occupies approximately half of the usable portion of the district, and adjacent areas north and east of the apron. Operators and maintainers in the Flightline District support the training of pilots for the Air Force. Primary functions include aircraft parking, aircraft maintenance, flight operations, airfield operations, pilot training, and other essential support functions. Adjacent key features include aircraft hangars; aircraft maintenance shops; warehouses for aircraft-related materials; aerospace ground equipment (AGE) storage; aircraft refueling equipment; and the fire crash/rescue station (Air Force, 2022a).

1.2.3 Community District

Community buildings are primarily used to support military personnel who live on Base. The commissary, Base exchange (BX), dorms, chapel, and other such buildings are included in this group. Unaccompanied housing is provided for enlisted and Officers, and separate facility complexes exist for each. Officer dormitories are located between Williams Avenue and Hancock Avenue, and enlisted dorms are located between Fields Street and Weaver Street. The BX is collocated with the commissary in forming a community center immediately north of the enlisted dormitories. The centralized location of unaccompanied housing is advantageous to Aircrew allowing easy access to various community services, the fitness center, outdoor recreation, medical complex, and work centers (Air Force, 2022c).

1.3 Purpose and Need for Action

1.3.1 Fire Crash/Rescue Station

The purpose of the fire crash/rescue station component of the Proposed Action would be to provide updated facilities to accommodate current and future mission and facility spacing requirements for fire, rescue, and emergency services.

The fire crash/rescue station component of the Proposed Action is needed to address deficiencies in the current facility that prevent Vance AFB from meeting current and future mission needs. The existing fire crash/rescue station (Building 140) is undersized, has improper configuration, and does not meet current and future mission needs as required in Department of Air Force Manual (DAFMAN) 32-1084, *Facility Requirements Standards*, and United Facilities Criteria (UFC) 4-730-10, *Fires Stations*. The components in the existing facility are aging, and a modern, right-sized facility is needed to bring Vance AFB into compliance with health and safety regulations as outlined in DAFMAN 32-1084, UFC 4-730-10, the *Architectural Barriers Act of 1968* (42 USC § 4151–4157) (ABA), and the *Americans with Disabilities Act of 1990* (42 USC § 12101 et seq.) and amendments (ADA). The building's aging electrical system does not have a 100-percent emergency back-up system, as required by UFC 4-730-10; the Proposed Action is needed to bring Vance AFB into compliance. Building 140 has water intrusion and mold issues; air quality tests identified black mold in multiple areas of the facility, causing several sleeping rooms and offices to be sealed and removed from use until the mold is remediated. The Proposed Action is needed to enhance morale, wellness, and quality of life for personnel and visitors.

Further, the configuration of the apparatus bays at the current fire crash/rescue station creates operational inefficiencies and increases risk of damage to the vehicles and the building. None of the apparatus bays are pull-through (i.e., the current fire station facility standard), so all apparatuses must be backed into the bays. This configuration, along with the undersized overhead doors, increases the risk of damage to vehicles and the building; some vehicles have already experienced damage due to this situation. The hazardous materials trailer, rescue trailer, and other support vehicles are double-parked behind other vehicles; their use requires coordination and moving of other vehicles, which poses operational inefficiency. The current apparatus bay size also poses a risk to the mission, as the P19 Striker fire engine does not fit adequately within the bay. With the inability to maneuver the apparatus in and out of the bay efficiently, airfield response times have, on occasion, been delayed.

1.3.2 Enlisted Unaccompanied Housing Facility

The purpose of the enlisted UH facility component of the Proposed Action is to provide updated facilities to accommodate current and future mission and facility spacing requirements for housing enlisted unaccompanied Aircrew.

The enlisted UH facility component of the Proposed Action is needed to address characteristics in existing UH housing that affect troop readiness, morale, and quality of life. The current housing for enlisted unaccompanied Aircrew is not sufficient to meet current and future mission requirements. The current kitchen areas in Buildings 421 and 423 are undersized to meet current and future mission demands; Vance AFB has limited dining facilities for enlisted personnel. The Proposed Action is also needed to bring Vance AFB into compliance with ABA and ADA standards, as neither facility has an elevator.

The floor-to-ceiling heights in the existing facilities do not have enough vertical space to integrate contemporary building support systems. The ceilings were lowered to accommodate a heating, ventilation, and air conditioning (HVAC) system due to structural constraints. The low ceiling height has caused increased difficulty of maintaining and replacing mechanical components. In addition, condensation from the HVAC units has caused recurring water leaks and flooding in the facilities. Due to this, it is very costly to maintain, renovate, and improve the existing spaces.

The enlisted UH facility component of the Proposed Action is also needed to enhance morale, wellness, and quality of life for enlisted unaccompanied Aircrew at Vance AFB. Communal areas in Buildings 421 and 423 are underutilized, lack amenities, and cannot easily be modified or updated. The building entrance for both facilities is a single passageway that does not connect to a communal space, which leads to a lack of interaction and sense of community for the residents of the facility. There are three exits from each facility; two are exterior stairwells, which further limit opportunities for Aircrew to interact.

1.4 PROJECTS IDENTIFIED FOR INSTALLATION DEVELOPMENT

1.4.1 Fire Crash/Rescue Station

The current fire crash/rescue station is located in Building 140 near the flightline. Building 140 is an 18,116-square foot (ft^2), single-story facility that was constructed in 1968. A standing seam metal roof was constructed over the existing built-up roof in 1995, providing an extension to the base structural apparatus bays and adding space for the fire inspection office and the logistics office. The 2004 addition provided individual dorm rooms and closets.

Building 140 has administrative offices, sleeping quarters, lockers for storage, the Base alternate 911 communication room, training rooms, exercise rooms, a day room, kitchen, and an apparatus bay for vehicles, hazardous materials response trailer, and equipment. The Vance AFB Fire Department typically responds to 500 calls per year with about 5 of those being fires. The Fire Department has approximately 60 staff with 13 firefighters on duty at any given time, not including administrative staff.

The Fire Department provides services to all of Vance AFB, which includes structural and aircraft rescue and firefighting vehicles. The Fire Department also provides Base services including inspections and training. Building 140 was constructed to meet the needs of Vance AFB in the 1960s, and the size, configuration, and condition of this facility do not meet current or future needs. A temporary facility is currently under construction to the west and north of Building 140. This facility is expected to be completed on or before January 2023 and would allow most residential functions to move out of the existing facility until Building 140 is renovated or replaced.

1.4.2 Enlisted Unaccompanied Housing Facility

The enlisted UH facilities and campus consist of two buildings (Buildings 421, Garside Hall, and Building 423, Westfall Hall), a covered pavilion with tables and barbeque area, covered gazebo, recreational areas

including basketball and volleyball courts, open grass space with shade trees, an aircraft static display, and associated parking areas.

Buildings 421 and 423 were constructed in 1956 and renovated in 1995 and 1996, respectively. The identically configured buildings are three stories tall with inside and outside stairwells. Each floor of the buildings has a shared kitchen, common rooms with chairs and televisions, and laundry facilities. Each resident's room has a sink, bed, chair, desk, refrigerator, and closets. Some furniture is optional, and the room configuration can be changed based on the resident. Each facility has three different levels of quarters for residents:

- Common rooms have two rooms separated by a shared bathroom.
- Suites are considerably larger than the common rooms and have their own bathroom.
- Courtesy rooms are generally used for female residents, are slightly larger than common rooms, and have their own bathroom.

Enlisted unaccompanied Aircrew are required to live in the enlisted UH facility until they reach Senior Airman rank and are with the Air Force for 3 years or more. However, some Aircrew choose to live in the facilities even after this requirement has been met.

1.5 Intergovernmental Coordination, Public and Agency Participation

The EIAP, in compliance with NEPA guidance, includes public and agency review of information pertinent to a proposed action and alternatives. The Air Force's compliance with the requirement for intergovernmental coordination and agency participation begins with the scoping[1] process (40 CFR § 1501.9). Accordingly, and per Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, the Air Force notified federal, state, and local agencies and tribal governments with jurisdiction that could potentially be affected by the Proposed Action and Alternatives via written correspondence throughout development of this EA. A mailing list of the recipients of this correspondence as well as a sample of the outgoing letters and all responses are included in **Appendix A**.

1.5.1 Government-to-Government Consultation

The *National Historic Preservation Act* (54 USC § 300101, et seq.) (NHPA) and its regulations at 36 CFR Part 800 direct federal agencies to consult with federally recognized Indian tribes when a proposed action or alternatives may have an effect on tribal lands or on properties of religious and cultural significance to a tribe. Consistent with the NHPA, the *Native American Graves and Protection and Repatriation Act* (25 USC § 3001 et seq.), Department of Defense (DoD) Instruction 4710.02, *Interactions with Federally Recognized Tribes*, and DAFI 90-2002, *Air Force Interaction with Federally Recognized Tribes*, the Air Force has invited federally recognized tribes that are historically affiliated with lands in the vicinity of the Proposed Action and Alternatives to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes. The tribal consultation process is distinct from NEPA consultation and requires separate notification to all relevant tribes. The timelines for tribal consultation are also distinct from those of NEPA consultation. The Vance AFB point of contact for Indian tribes is the Base Commander. The point of contact for consultation with the Tribal Historic Preservation Officer and the Advisory Council on Historic Preservation is the Vance AFB Cultural Resources Manager. A sample of the outgoing tribal government correspondence and all responses are included in **Appendix A.**

1.5.2 Agency Consultations and Coordination

Implementation of the Proposed Action involves coordination with several organizations and agencies. Compliance with Section 7 of the *Endangered Species Act of 1973*, as amended (16 USC § 1531 et seq.)

[1] Scoping is a process for determining the extent of issues to be addressed and analyzed in a NEPA document.

(ESA), and implementing regulations (50 CFR Part 402) requires communication with the US Fish and Wildlife Service (USFWS) and/or National Oceanic and Atmospheric Administration National Marine Fisheries Service in cases where a federal action could affect listed threatened or endangered species, species proposed for listing, or candidates for listing. On 10 February 2023, the Air Force initiated Section 7 informal consultation under the ESA for the Proposed Action using the USFWS's online Information for Planning and Consultation (IPaC) tool. Information concerning the location and nature of the projects included in the Proposed Action was input to IPaC to obtain an official species list from the USFWS. The list identifies threatened and endangered species and other protected species (e.g., migratory birds) with potential to be affected by the Proposed Action. This information is included in **Appendix A** and incorporated into this EA where applicable.

Other federal agencies the Air Force might coordinate with include the US Environmental Protection Agency (USEPA), Federal Aviation Administration, US Bureau of Indian Affairs, and US Army Corps of Engineers (USACE).

The Air Force coordinated with the following state and local government agencies regarding potential effects from the Proposed Action and Alternatives:

- NHPA Section 106 compliance – State Historic Preservation Office (SHPO)
- Air and water quality effects – Oklahoma Department of Environmental Protection
- Habitat and species of concern – Oklahoma Department of Wildlife Conservation
- Garfield County Commissioners
- City of Enid Planning

Finally, notice of the Proposed Action and Alternatives was provided to elected officials that represent the state at the federal and local levels. A sample of agency correspondence and all responses are included in **Appendix A**.

1.6 PUBLIC AND AGENCY REVIEW

The Air Force invites the public and other interested stakeholders to review and comment on the EA. Accordingly, a Notice of Availability of the Draft EA and Draft FONSI was published in the following newspapers to commence a 30-day public comment period:

- *Enid News & Eagle*
- *Vance Air Scoop*

The public comment period of the Draft EA and Draft FONSI concludes 30 days from the publication of the Notice of Availability. During the public comment period, the Draft EA and Draft FONSI will be available for view or download online at https://www.vance.af.mil. Additionally, printed copies of the Draft EA and Draft FONSI will be available by request (see **Cover Sheet**) and placed at the following local libraries for review:

- Enid Public Library, 120 W Maine St, Enid, OK 73701
- Vance AFB Library, 446 McAffrey Ave, Enid, OK 73705

1.7 DECISION TO BE MADE

This EA analyzes the potential environmental consequences of the Proposed Action and Alternatives. The Proposed Action involves construction of new facilities, renovation and repair of existing facilities, implementation of infrastructure improvements, and demolition of obsolete facilities.

Based on the analysis in this EA, the Air Force will make one of three decisions regarding the Proposed Action: 1) choose to implement the Proposed Action or Alternatives and sign a FONSI, allowing

implementation of the preferred alternative; 2) initiate preparation of an EIS if it is determined that implementation of the Proposed Action and Alternatives would cause significant impacts to the human and natural environment; or 3) select the No Action Alternative, whereby the Proposed Action would not be implemented. As required by NEPA and its implementing regulations, preparation of an environmental document must precede final decisions regarding the proposed project and be available to inform decision-makers of the potential environmental impacts.

1.8 SCOPE OF THE ENVIRONMENTAL ASSESSMENT

This EA evaluates the potential environmental consequences of implementing the Proposed Action and Alternatives. This EA has been prepared in accordance with NEPA, CEQ regulations, and the Air Force EIAP. NEPA ensures that environmental information, including the anticipated environmental consequences of a proposed action, is available to the public, federal and state agencies, and the decision-maker before decisions are made and before actions are taken.

Consistent with the CEQ regulations, the EA is organized into the following sections:

- Chapter 1, Purpose and Need for Action, includes an introduction and information on the project location, purpose and need statements, scope of environmental analysis, decision to be made, IICEP process, applicable laws and environmental regulations, and a description of public and agency review of this EA.
- Chapter 2, Description of the Proposed Action and Alternatives, includes a description of the Proposed Action, alternative selection standards, screening of alternatives, alternatives eliminated from further consideration, a description of the selected alternatives, summary of potential environmental consequences, and any mitigation and environmental commitments.
- Chapter 3, Affected Environment and Environmental Consequences, includes a description of the natural and man-made environments within and surrounding Vance AFB that may be affected by the Proposed Action and Alternatives. This chapter also includes a discussion of direct and indirect impacts.
- Chapter 4, List of Preparers, provides a list of the preparers of this EA.
- Chapter 5, References, contains references for studies, data, and other resources used in the preparation of this EA.
- Appendices, as required, provide relevant correspondence, studies, modeling results, and public review information.

NEPA, which is implemented through the CEQ regulations, requires federal agencies to consider alternatives to the Proposed Action and to analyze potential impacts of alternative actions. Potential impacts of the Proposed Action and Alternatives described in this EA will be assessed in accordance with the CEQ regulations, which require that federal agencies analyze the potentially affected environment and degree of the effects of the action.

1.9 APPLICABLE LAWS AND ENVIRONMENTAL REGULATIONS

Implementation of the Proposed Action and Alternatives would involve coordination with several organizations and agencies (see **Section 1.5**). Adherence to the requirements of specific laws, regulations, Best Management Practices (BMPs), and necessary permits are described in detail in each resource section in Chapter 3.

Other laws and regulations applicable to the Proposed Action include, but are not limited to:

- *Clean Water Act* (33 USC § 1251 et seq.) (CWA)
- *Resource Conservation and Recovery Act* (42 USC § 6901 et seq.) (RCRA)

- *Energy Independence and Security Act of 2007* (Public Law 110-140) (EISA)
- *Comprehensive Environmental Response, Compensation, and Liability Act* (42 USC § 9601 et seq.) (CERCLA)
- Federal *Clean Air Act* (42 USC § 7401 et seq., as amended) (CAA)
- *Migratory Bird Treaty Act* (16 USC § 703 et seq.) (MBTA)
- *Toxic Substances Control Act* (15 USC § 2601 et seq.) (TSCA)
- EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (1994)
- EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (1997), as amended by EO 13296 (2003)
- EO 14096, Revitalizing Our Nation's Commitment to Environmental Justice for All (2023)

CHAPTER 2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The following sections describe the Proposed Action, alternatives screening process, and alternatives dismissed and retained for analysis in this EA.

2.1 DESCRIPTION OF THE PROPOSED ACTION

The 71 FTW proposes to construct a fire crash/rescue station and an enlisted UH facility. These projects were selected based on current and future mission needs at Vance AFB. **Figure 2-1** shows the locations of the Proposed Actions on Vance AFB.

The Proposed Action would incorporate the planning considerations addressed in Vance AFB planning documents, including the Installation Development Plan (IDP) and District Plans for the Airfield District, as required by Air Force Instruction (AFI) 32-1015, *Integrated Installation Planning*. For example, the Proposed Action would adhere to project-specific development standards, including land use constraints for siting the new facilities, and regulate design parameters such as height, scale, and orientation. When appropriate, the standards and component plans of the applicable District Plans are discussed and referenced throughout this EA.

The planning principles set forth in AFI 32-1015 and included in the District Plans are also incorporated into the Proposed Action by design. These principles set objectives for sustainable development, including guidelines and requirements for land, water, and energy conservation. Standards and requirements common to the planning, design, construction, sustainment, restoration, and modernization of DoD-owned facilities are included in the Proposed Action, as applicable.[2] These standards and requirements include:

- UFC 1-200-02, *High Performance and Sustainable Building Requirements* (2016, as updated), and UFC 3-210-10, *Low Impact Development* (2015, as updated), in accordance with *Guiding Principles for Sustainable Federal Buildings and Associated Instructions* (CEQ, 2020) and implemented by AFI 32-1023, *Designing and Constructing Military Construction Projects* (2020), and the Air Force Corporate Facilities Standards.
- US Green Building Council (USGBC) or Green Building Initiative (GBI) certification for applicable projects as required by the *Air Force Sustainable Design and Development Implementing Guidance Memorandum* (Air Force Civil Engineer Center [AFCEC], 2017; Air Force, 2011). Applicable projects include:
  - new buildings larger than 5,000 ft^2 with construction costs greater than $3 million; and
  - building renovations of more than 5,000 ft^2 with construction costs greater than $3 million and an estimated 50-percent replacement cost.
- UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*.

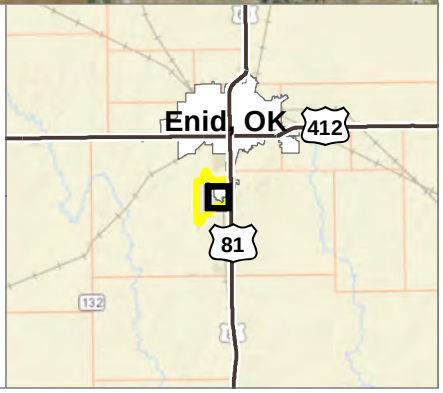
Design and construction of the fire crash/rescue station would comply with UFC 4-730-10. Design and construction of the enlisted UH facility would comply with requirements as described in the Air Force Standard Design for Permanent Party Enlisted Dormitory.[3] Under the Proposed Action, USGBC- or GBI-certified projects would meet the federal sustainability requirements as detailed in UFC 1-200-02. Green building designs and practices also would be incorporated into all other District Plan projects (i.e., below the thresholds noted above) to the extent practicable.

[2] The UFC Program develops, maintains, and organizes all technical criteria and guide specifications for the DoD.
[3] This Standard Design, as well as those for many other Air Force facilities, can be accessed at http://wbdg.org/ffc/af-afcec/prototypes-standard-designs

FIGURE 2-1
Proposed Action Locations on Vance AFB

Installation Boundary

Proposed Action and Alternative Project Locations



N

0 0.2 Miles

Imagery: ESRI, 2021
Coordinate System: NAD 83 UTM Zine 14N

Components of the District Plans and Installation-wide plans, such as those for transportation, energy, and natural and cultural resources management, implement these design and development standards and requirements at the Base level. Those measures that serve to prevent or reduce adverse environmental impacts are incorporated into the Proposed Action by design and described in this EA, where appropriate.

2.1.1 Construct Fire Crash/Rescue Station

The proposed fire crash/rescue station would be located on the flightline to meet access requirements for airside and landside fire protection services (**Figure 2-2**). The Proposed Action includes the following components:

- Construction of a new 43,900-ft^2 fire crash/rescue station on the flightline north of Building 140, east of the flightline, west of Elam Road. The new station would be constructed over the site where Buildings 61, 62, and 133 currently exist. The new station would be a two-story building and include spaces and functions identified by the Vance AFB Fire Rescue team as being applicable from the options available from the Facilities Dynamic Prototypes Design for Fire Station – Headquarters. The functional spaces to be included in the new facility would include residential space for fire rescue responders, administrative spaces for fire rescue personnel, dispatch suite, training space, equipment and maintenance rooms, apparatus bays, utility rooms, storage, and restrooms. A hardened area also would be constructed per UFC 4-730-10 and UFC 3-301-01 to provide fire rescue occupants a place to shelter during a storm event.
- Demolition of Building 61 (144 ft^2) liquid oxygen tank area, Building 62 (120 ft^2) liquid oxygen control area; and Building 133 (1,120 ft^2), and T-38 line shack.
- Removal and replacement of 75,150 ft^2 of pavements and 1,000 ft^2 of concrete sidewalks from Flightline Road East to Elam Road.
- Relocation and replacement of 4,705 linear feet (lf) of underground utilities including storm sewer, natural gas, sanitary sewer, water, fiber optic and copper cable communication, and electrical in the project area. This would also include construction of 200 ft^2 of concrete pads for electrical equipment.

2.1.2 Construct Enlisted Unaccompanied Housing Facility

The Proposed Action would include construction of a new enlisted UH facility, demolition of Buildings 421 and 423, and associated construction work within the vicinity of the dormitory campus (**Figure 2-3**).

The Project Action includes the following components:

- Demolition of the existing enlisted UH Buildings 421 (25,666 ft^2) and 423 (25,726 ft^2) along with the covered pavilion area, basketball and volleyball courts, and other infrastructure to construct the new facility. Demolition would be done in phases. Building 421 would be demolished at the start of the project and Building 423 would continue to be used during construction. Some enlisted Aircrew would move to the Officers' Quarters during construction, and the Officers would move off Base. Building 423 would be demolished at the end of construction and the area would be reclaimed to grass.
- Construction of a 66,773-ft^2 enlisted UH facility on the same site as the existing enlisted UH facilities between Thompson Avenue, Fields Street, Weaver Avenue, and the Bowling Alley (Building 345). The new facility would be a three-story building and include 104 dormitory rooms and shared activity spaces for enlisted occupants. The new facility would include a hardened area to provide dormitory personnel and occupants a place to shelter during a storm event.

FIGURE 2-2
Fire Crash/Rescue Station – Alternative 1

Construction

Demolition

Demolition of Temporary Facility

N

0 250 Feet

Imagery: ESRI, 2021
Coordinate System: NAD 83 UTM Zine 14N

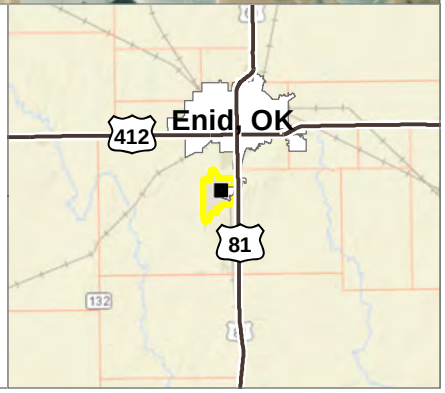


FIGURE 2-3
Enlisted Unaccompanied Housing Facility – Alternative 1

- Relocation of the static display.
- Mill, overlay, and restriping of the surrounding 9,900 ft^2 of street pavements and the parking lot to the northeast of the dormitory campus between Building 421 and the Bowling Alley (Building 345).
- Relocation and replacement of 14,000 ft^2 of concrete sidewalks.
- Relocation and replacement of 3,655 lf of underground utilities including storm sewer, natural gas, sanitary sewer, water, fiber optic and copper cable communication, and electrical in the project area. This would also include construction of 100 ft^2 of concrete pads for electrical equipment.

2.2 SELECTION STANDARDS FOR ALTERNATIVES SCREENING

In accordance with 32 CFR § 989.8(c), selection standards were developed to establish a means for determining the reasonableness of an alternative and whether an alternative should be carried forward for further analysis in the EA. Consistent with 32 CFR § 989.8(c), the following selection standards meet the purpose of and need for the Proposed Action and were used to identify reasonable alternatives for analysis in the EA. The supporting alternatives must ensure the following:

1. Remedy facilities and infrastructure deficiencies in order to adequately support current and future strategic missions.
2. Be consistent with land use requirements, force protection, and planning concepts as defined in the IDPs; District Plans for the Airfield District, Flightline District, and Community District; and other Air Force guidance and ensure that facilities are owned and operated by the Air Force.
3. Minimize operational inefficiencies and promote sustainable development.
4. Provide and promote the quality of life and wellness environment on Vance AFB and maintain military personnel readiness and response times to support the Air Force mission.

2.3 ALTERNATIVES

The NEPA and CEQ regulations mandate the consideration of reasonable alternatives to the Proposed Action. “Reasonable alternatives” are those that could also be utilized to meet the purpose of and need for the Proposed Action. Alternatives were considered for each of the proposed projects. The NEPA process is intended to support flexible, informed, decision-making; the analysis provided by this EA and feedback from stakeholders will inform decisions made about whether, when, and how to execute the Proposed Action. Among the alternatives evaluated for each project is a No Action Alternative, which evaluates the potential consequences of not undertaking the Proposed Action and serves to establish a comparative baseline for analysis. This section presents reasonable and practicable alternatives for projects where multiple, viable courses of action exist. Each alternative is assessed against the selection standards above and tabulated for applicability (see **Section 2.3.4**).

2.3.1 Fire Crash/Rescue Station

2.3.1.1 Alternative 1 (Preferred Alternative)

Alternative 1, identified as the Air Force’s Preferred Alternative, is described in detail in **Section 2.1.1**.

2.3.1.2 Alternative 2 – Construct Fire Crash/Rescue Station Near Buildings 119, 121, 122, and 125

Alternative 2 includes elements of the Proposed Action as described in **Section 2.1.1** and the following (Air Force, 2021b):

- Construction of a 43,900-ft^2 fire crash/rescue station north of Building 140 and Hangar 129, east of the flightline, west of Elam Road, and south of the fuel storage area (**Figure 2-4**). The new station would be constructed over the site where Buildings 119, 121, 122, and 125 currently exist.
- Demolition of Buildings 119 (1,055 ft^2), 121 (950 ft^2), 122 (1,040 ft^2), and 125 (5,280 ft^2).
- Construction of a 1,040-ft^2 replacement for Building 122 to the northwest of Hangar 141 on the flightline. This relocation would also require demolition and relocation of Building 118 (83 ft^2), which is used for oxygen tank storage. Building 118 would be relocated and constructed on the flightline south of Building 128, west of Building 130, and north of Hangar 141.
- Provision of temporary facilities to house the functions of AGE Buildings 119, 121, and 125 during construction. Once construction of the new station is complete and the Fire Department has moved into the new station, Building 140 would be renovated to permanently house the AGE functions of Buildings 119, 121, and 125. Renovation would include interior structural, electrical, HVAC, and plumbing modifications as well as mold remediation.
- Relocation of a 5,000-gallon deicer tank with secondary containment located near Building 121. The tank and containment would be moved to the temporary AGE facilities and then eventually moved to Building 140 once renovation is complete.
- Removal and replacement of 75,150 ft^2 of pavements and 1,000 ft^2 of concrete sidewalks from Flightline Road East to Elam Road.
- Relocation and replacement of 4,705 lf of underground utilities including storm sewer, natural gas, sanitary sewer, water, fiber optic and copper cable communication, and electrical in the project area. This would also include construction of 200 ft^2 of concrete pads for electrical equipment.

2.3.1.3 Alternative 3 – Add/Repair Fire Crash/Rescue Station

Under Alternative 3, the Air Force would implement construction, renovation, and demolition activities at Building 140 and other associated construction work within the vicinity of Building 140. Alternative 3 would include the following (Air Force, 2022b):

- Construction of a 2,000-ft^2 addition on the southeast corner of Building 140 (see **Figure 2-5**) to provide new offices, training rooms, public restrooms, and a storm shelter. The addition would also free up operational space within Building 140 to use for other purposes.
- Demolition of three offices in the southeast corner of Building 140 (733 ft^2) and approximately 5,400 ft^2 of pavements to construct the new addition and 1,910 ft^2 of sidewalks and parking areas. In addition, approximately 900 ft^2 of pavements would be demolished on the west side of Building 140 to improve site drainage.
- Renovation of Building 140, including repairing structural damage; installing new windows and doors; replacing the roof; installing new vehicle exhaust, HVAC, and fire protection systems; reconfiguring the apparatus bay and doors to meet UFC and other regulatory requirements; constructing a new laundry room and restrooms; making the facility ABA and ADA compliant; renovating and painting the interior and exterior of the facility; and replacing interior and exterior utilities.
- Remediation of mold damage, including removing and replacing affected ceilings, walls, finishes, insulation, fixtures, and other impacted areas.
- Relocation and replacement of 270 lf of storm sewer utilities, grading of the site to promote positive drainage away from the building, and removal of some landscaped areas.

The fire crash/rescue station would remain operational to respond to emergency calls throughout renovation and construction activities.

FIGURE 2-4
Fire Crash/Rescue Station – Alternative 2

Construction

Demolition

Demolition of Temporary Facility

N

0 250 Feet

Imagery: ESRI, 2021
Coordinate System: NAD 83 UTM Zine 14N

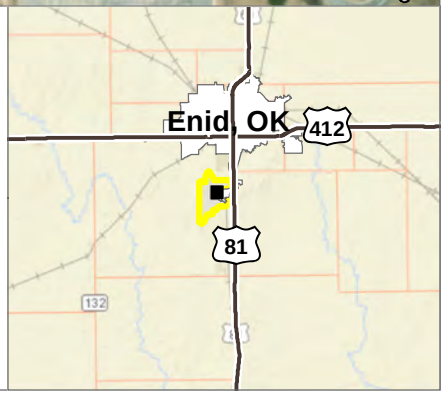


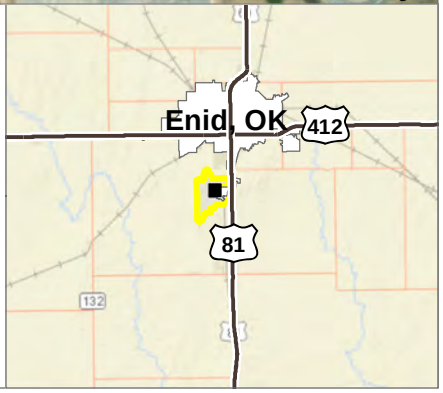
FIGURE 2-5
Fire Crash/Rescue Station – Alternative 3

Construction
Demolition
Demolition of Temporary Facility
Renovation

N

0 250 Feet

Imagery: ESRI, 2021
Coordinate System: NAD 83 UTM Zine 14N



2.3.2 Enlisted Unaccompanied Housing Facility

2.3.2.1 Alternative 1 (Preferred Alternative)

Alternative 1, identified as the Air Force's Preferred Alternative, is described in detail in **Section 2.1.2**.

2.3.2.2 Alternative 2 – Add/Repair Enlisted UH Facilities

Alternative 2 would include the following activities at Buildings 421 and 423 and associated construction near the dormitory campus (**Figure 2-6**).

- Renovation of the exterior and interior of Buildings 421 and 423. The proposed renovation activities have not yet been decided and a planning charrette is currently being developed to determine what is needed for each facility. Potential renovation activities could include converting some rooms into additional social gathering spaces; increasing the size of the kitchens; updating rooms, walls, ceilings, and doors; repairing hallway ceiling heights; connecting the entrances to communal spaces; upgrading appliances and equipment; improving security; making the facilities ABA and ADA compliant; replacing or upgrading the HVAC system and other utilities; and replacing the roof.
- Construction of an exterior elevator on each facility. The location of these elevators would be determined during design.
- Mill, overlay, and restriping of the surrounding 9,900 ft^2 of street pavements and the parking lot to the northeast of the dormitory campus between Building 421 and the Bowling Alley (Building 345).
- Relocation and replacement of 14,000 ft^2 of concrete sidewalks.
- Renovation of the courtyard, covered parking, and barbeque area.
- Construction of a 13,200-ft^2 temporary housing facility (the size of the facility is an estimate and would be determined during design) to use while the existing facilities are being renovated. Two location options have been chosen for this temporary housing facility: Under Option 1, the facility would be located at the corner of Fields Street and Thompson Avenue; under Option 2, the facility would be located parallel to Weaver Street. The temporary housing facility would be demolished at the end of construction and the area would be reclaimed to grass.
- Relocation and replacement of 3,655 lf of underground utilities to support the temporary housing facility and renovation of Buildings 421 and 423, including storm sewer, natural gas, sanitary sewer, water, fiber optic and copper cable communication, and electrical in the project area. This would also include construction of 100 ft^2 of concrete pads for electrical equipment.

2.3.3 No Action Alternative

Under the No Action Alternative, the Air Force would not implement the proposed projects. The existing fire crash/rescue station and enlisted UH facility would continue to degrade and would not accommodate current and future mission and facility spacing requirements. In addition, activities that occur in the existing facilities would continue to operate in substandard and congested conditions; health, safety, and welfare deficiencies would still exist; facilities would not be in compliance with ABA and ADA standards; aging facilities and infrastructure would require extensive and costly upkeep; and inefficient workarounds to meet mission requirements would continue.

While the No Action Alternative would not satisfy the purpose of and need for the Proposed Action, this alternative is retained to provide a comparative baseline against which to analyze the effects of the Proposed Action, as required under the CEQ regulations (40 CFR § 1502.14(d)). The No Action Alternative reflects the status quo and serves as a benchmark against which the effects of the Proposed Action can be evaluated.

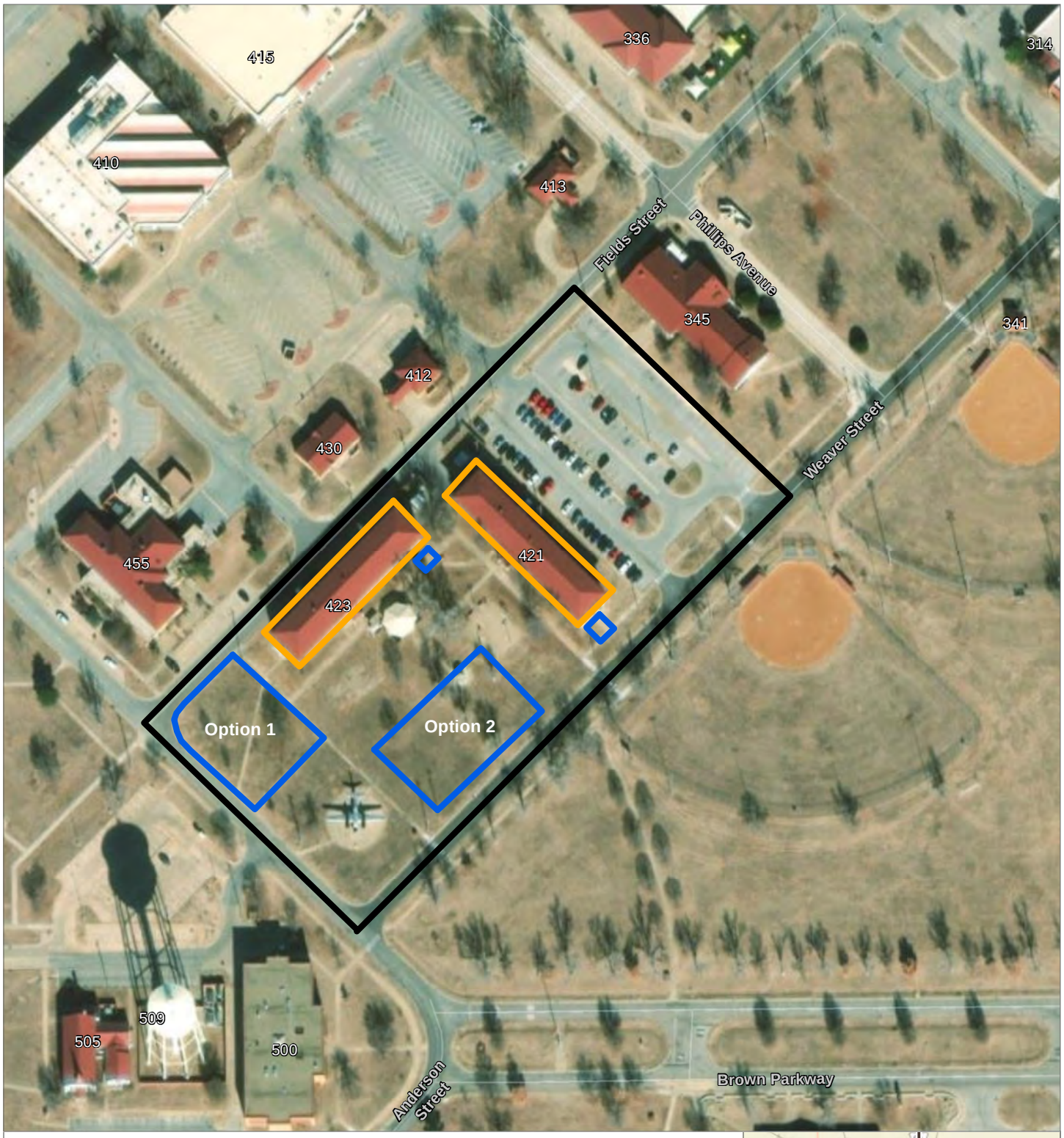


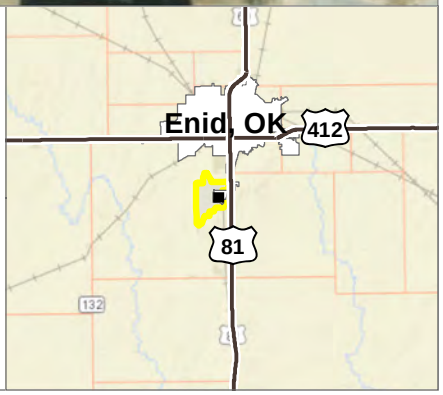
FIGURE 2-6
Enlisted Unaccompanied Housing Facility – Alternative 2

Construction
Proposed Project Area
Renovation

N

0 250 Feet

Imagery: ESRI, 2021
Coordinate System: NAD 83 UTM Zine 14N



2.3.4 Application of Screen Criteria

Table 2-1 provides a comparison of the alternatives considered and how they meet the selection standards in **Section 2.2** and whether they meet the purpose and need. These alternatives meet the screening criteria; therefore, they were all carried forward for detailed analysis.

Table 2-1
Comparison of Alternatives

Alternative Actions	Selection Standard				Meets Purpose and Need
	1. Remedy Deficiencies	2. Land Use and Ownership	3. Operational Efficiency and Sustainable Development	4. Quality of Life and Readiness	
Construct Fire/Crash Rescue Station					
Alternative 1	Yes	Yes	Yes	Yes	Yes
Alternative 2	Yes	Yes	Yes	Yes	Yes
Alternative 3	Yes	Yes	Yes	Yes	Yes
Construct Enlisted Unaccompanied Housing Facility					
Alternative 1	Yes	Yes	Yes	Yes	Yes
Alternative 2	Yes	Yes	Yes	Yes	Yes

2.3.5 Alternatives Considered but Eliminated from Detailed Analysis

The Air Force considered two additional alternatives for the enlisted UH facility but eliminated them from further consideration because they do not meet selection standards for the Proposed Action as outlined in **Section 2.2**.

- The first alternative included privatization of the enlisted UH facilities and construction of a new facility on a vacant parcel of land near the intersection of Fields Street, Phillips Avenue, and Weaver Street. However, this alternative was dismissed due to scope and costs of more than $10 million, which exceeds the spending cap by the Office of Management and Budget. In addition, the DoD has expressed concerns in the past few years related to privatization of housing facilities and has been investigating current privatization companies due to reports of unsafe living conditions, maintenance issues, and some cases of fraud. This alternative would fail to meet the second selection standard because the facility would be owned and operated by a private contractor.
- The second alternative included permanently moving the enlisted Aircrew to the Officers' Quarters and moving the Officers off Base. This alternative was dismissed due to the lack of housing in the surrounding area for Officers; some Officers have a one-hour commute to Vance AFB. This alternative would fail to meet the fourth selection standard because it would decrease military personnel readiness and increase response times.

2.4 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Table 2-2 summarizes the potential impacts of the Proposed Action and Alternatives for the fire crash/rescue station and enlisted UH facility, respectively. The summary is based on information discussed in detail in **Chapter 3** of this EA and includes a concise definition of the issues addressed and the potential environmental impacts associated with each alternative.

Table 2-2
Summary of Environmental Consequences

Resource Area	Fire Crash/Rescue Station - Alternative 1	Fire Crash/Rescue Station - Alternative 2	Fire Crash/Rescue Station - Alternative 3	Enlisted UH Facility – Alternative 1	Enlisted UH Facility – Alternative 2	Cumulative Effects	No Action Alternative
Land Use	No changes to existing or future land use.	No changes to existing or future land use.	No changes to existing or future land use.	No changes to existing or future land use.	No changes to existing or future land use.	No significant cumulative effects to land use would occur.	No changes to existing land use.
Air Quality and Climate Change	Negligible impacts to air quality and GHGs.	Negligible impacts to air quality and GHGs.	Negligible impacts to air quality and GHGs.	Negligible impacts to air quality and GHGs.	Negligible impacts to air quality and GHGs.	No significant cumulative effects to air quality or GHGs would occur.	No impacts would occur to regional air quality or GHG emissions.
Earth Resources	Short-term, minor impacts to soils and negligible impacts to topography.	Short-term, minor impacts to soils and negligible impacts to topography.	Short-term, minor impacts to soils and negligible impacts to topography.	Short-term, minor impacts to soils and negligible impacts to topography.	Short-term, minor impacts to soils and negligible impacts to topography.	No significant cumulative effects to earth resources would occur.	No impacts to earth resources.
Water Resources	No adverse effects to stormwater, and no impacts to surface waters or floodplains.	No adverse effects to stormwater, and no impacts to surface waters or floodplains.	No adverse effects to stormwater, and no impacts to surface waters or floodplains.	No adverse effects to stormwater, and no impacts to surface waters or floodplains.	No adverse effects to stormwater, and no impacts to surface waters or floodplains.	No cumulative impacts to surface water, or floodplains. Negligible, long-term, cumulative impacts to stormwater runoff.	Water resources would not change from current condition.
Biological Resources	No significant impacts to biological resources. No adverse effects on threatened or endangered species.	No significant impacts to biological resources. No adverse effects on threatened or endangered species.	No significant impacts to biological resources. No adverse effects on threatened or endangered species.	No significant impacts to biological resources. No adverse effects on threatened or endangered species.	No significant impacts to biological resources. No adverse effects on threatened or endangered species.	No significant cumulative effects to biological resources would occur.	No significant impacts to biological resources.

Resource Area	Fire Crash/Rescue Station - Alternative 1	Fire Crash/Rescue Station - Alternative 2	Fire Crash/Rescue Station - Alternative 3	Enlisted UH Facility – Alternative 1	Enlisted UH Facility – Alternative 2	Cumulative Effects	No Action Alternative
Cultural Resources	No adverse impacts to cultural resources would occur.	No adverse impacts to cultural resources would occur.	No adverse impacts to cultural resources would occur.	No adverse impacts to cultural resources would occur.	No adverse impacts to cultural resources would occur.	No significant cumulative effects to cultural resources would occur.	Cultural resources would not change from current condition.
Noise	Short-term, minor noise impacts would occur near the project area. No long-term impact to the noise environment.	Short-term, minor noise impacts would occur near the project area. No long-term impact to the noise environment.	Short-term, minor noise impacts would occur near the project area. No long-term impact to the noise environment.	Short-term, minor noise impacts would occur near the project area. No long-term impact to the noise environment.	Short-term, minor noise impacts would occur near the project area. No long-term impact to the noise environment.	No cumulative impact to the noise environment.	No significant impacts to noise.
Hazardous Materials and Waste, Toxic Substances, and Contaminated Sites	No impacts to hazardous materials and wastes. Short-term, minor impacts during removal of and long-term, minor impacts from removing asbestos-containing material and lead-based paint. The potential exists for short-term impacts from disturbance of contaminated soils. Existing groundwater contamination sites have a low probability for exposure during construction.	Short-term impacts from the demolition of buildings which are hazardous waste initial accumulation points. Short-term, minor impacts during removal of and long-term, minor impacts from removing asbestos-containing material and lead-based paint. The potential exists for short-term impacts from disturbance of contaminated soils. Existing groundwater contamination	No impacts to hazardous materials and wastes. Short-term, minor impacts during removal of and long-term, minor impacts from removing asbestos-containing material and lead-based paint. No impacts to ERP sites.	No impacts to hazardous materials and wastes. Short-term, minor impacts during removal of and long-term, minor impacts from removing asbestos-containing material and lead-based paint. No impacts to ERP sites.	No impacts to hazardous materials and wastes. Short-term, minor impacts during removal of and long-term, minor impacts from removing asbestos-containing material and lead-based paint. No impacts to ERP sites.	No cumulative effects from hazardous materials or to hazardous waste streams would occur. Beneficial impacts from the removal asbestos-containing material and lead-based paint would be cumulative with other similar actions.	No change to hazardous materials and wastes, contaminated sites, and toxic substances. Buildings with asbestos-containing material and lead-based paint would remain in the workplace.

Resource Area	Fire Crash/Rescue Station - Alternative 1	Fire Crash/Rescue Station - Alternative 2	Fire Crash/Rescue Station - Alternative 3	Enlisted UH Facility – Alternative 1	Enlisted UH Facility – Alternative 2	Cumulative Effects	No Action Alternative
		sites have a low probability for exposure during construction.					
Infrastructure, including Transportation and Utilities	Short-term, negligible impacts to traffic during construction. Beneficial improvements to pavements and sidewalks. No significant impacts to utility usage or services.	Short-term, negligible impacts to traffic during construction. Beneficial improvements to pavements and sidewalks. No significant impacts to utility usage or services.	Short-term, negligible impacts to traffic during construction. Beneficial improvements to pavements and sidewalks. No significant impacts to utility usage or services.	Short-term, negligible impacts to traffic during construction. Beneficial improvements to pavements and sidewalks. No significant impacts to utility usage or services.	Short-term, negligible impacts to traffic during construction. Beneficial improvements to pavements and sidewalks. No significant impacts to utility usage or services.	Beneficial cumulative effects to sidewalks, road surfaces, and parking lots as well as the utility connections to the proposed or renovated facilities.	No impacts to local traffic or utilities.
Safety and Occupational Health	Temporary, negligible, adverse impacts to ground safety during construction. Long-term, beneficial impacts to ground safety from improvements in buildings.	Temporary, negligible, adverse impacts to ground safety during construction. Long-term, beneficial impacts to ground safety from improvements in buildings.	Temporary, negligible, adverse impacts to ground safety during construction. Long-term, beneficial impacts to ground safety from improvements in buildings.	Temporary, negligible, adverse impacts to ground safety during construction. Long-term, beneficial impacts to ground safety from improvements in buildings.	Temporary, negligible, adverse impacts to ground safety during construction. Long-term, beneficial impacts to ground safety from improvements in buildings.	Beneficial cumulative effects to ground safety would occur with actions to improve facilities. No cumulative impact of construction safety hazards.	No significant impacts to ground safety.
Socioeconomics	No significant adverse impacts to socioeconomics.	No significant adverse impacts to socioeconomics.	No significant adverse impacts to socioeconomics.	No significant adverse impacts to socioeconomics.	No significant adverse impacts to socioeconomics.	No significant adverse cumulative effects on socioeconomics.	No change to socioeconomic conditions.

Resource Area	Fire Crash/Rescue Station - Alternative 1	Fire Crash/Rescue Station - Alternative 2	Fire Crash/Rescue Station - Alternative 3	Enlisted UH Facility – Alternative 1	Enlisted UH Facility – Alternative 2	Cumulative Effects	No Action Alternative
Environmental Justice and Protection of Children	No disproportionate and adverse impacts to CEJCs or youth populations.	No disproportionate and adverse impacts to CEJCs or youth populations.	No disproportionate and adverse impacts to CEJCs or youth populations.	No disproportionate and adverse impacts to CEJCs or youth populations.	No disproportionate and adverse impacts to CEJCs or youth populations.	No significant cumulative effects to CEJCs or youth populations.	No change to minority, low-income, or youth populations.

CEJC = community of environmental justice concern; ERP = Environmental Restoration Program; GHG = greenhouse gas

CHAPTER 3 EXISTING CONDITIONS AND ENVIRONMENTAL CONSEQUENCES

3.1 FRAMEWORK FOR ANALYSIS

To provide a framework for the analyses in this EA, the Air Force defined a study area specific to each resource or sub-resource area. Referred to as a Region of Influence (ROI), these areas delineate a boundary where possible effects from the considered alternatives would have a reasonable likelihood to occur. Beyond these ROIs, potential adverse effects on resources would not be anticipated. For the purposes of analysis, potential effects are described as follows:

- **Beneficial –** positive effects that improve or enhance resource conditions
- **Adverse –** negative or harmful results
- **Negligible –** effects likely to occur but at levels not readily observable by evaluation
- **Minor –** observable, measurable, tangible effects qualified as below one or more significance threshold(s)
- **Moderate –** tangible effects that are readily apparent, qualified as below one or more significance threshold(s)
- **Significant –** obvious, observable, verifiable effects qualified as above one or more significance threshold(s); not mitigable to below significance

When relevant to the analyses in this EA, potential effects are further defined as direct or indirect; short- or long-term; and temporary, intermittent, or permanent.

To determine the potential for "significant" effects under the Proposed Action, the Air Force defined impact thresholds to support the analyses in this EA. Based upon the nature of the Proposed Action and the affected environment, both qualitative and quantitative thresholds were used as benchmarks to qualify effects. Further, each resource analysis section (i.e., **Sections 3.3–3.14**) concludes with a cumulative effects analysis considering the Proposed Action in conjunction with other past, present, and reasonably foreseeable environmental trends and planned actions at Vance AFB. **Table 3-1** summarizes past, present, and reasonably foreseeable planned actions at Vance AFB considered in the cumulative effects evaluation.

3.2 RESOURCES CARRIED FORWARD FOR DETAILED ANALYSIS

Based on the results of internal and external scoping (see **Section 1.5**), the following resources were carried forward for analysis: land use; air quality and climate change; earth, water, biological, and cultural resources; noise; hazardous materials and waste, toxic substances, and contaminated sites; infrastructure, including transportation and utilities; safety and occupational health; socioeconomics; and environmental justice and protection of children.

3.3 LAND USE

3.3.1 Definition of the Resource

Land use is the natural or developed condition of a given parcel of land or area and the type of functions and structures it supports. Land use designations vary by jurisdiction, but common terms include residential, commercial, industrial, agricultural, and recreational space. Land use is typically guided and regulated by management plans, policies, regulations, and ordinances that determine the type and extent of land use allowable in specific areas, including specially designated land uses or environmental conservation lands. Land use on Vance AFB is broadly classified and managed using planning districts, which are areas that contain common functions and types of operational activities.

The ROI for land use is Vance AFB.

Table 3-1
Past, Present, and Reasonably Foreseeable Environmental Trends and Planned Actions

Name	Description	Timeframe	Approximate Distance from Installation
Water Distribution Upgrades	The project would replace the existing cast-iron pipes, valves, hydrants, and fittings 6 inches or larger in diameter installed prior to 1980 or with unknown installation dates. This amounts to approximately 40,000 linear feet of water mains and service lines. The project would also replace the existing elevated water storage tower with a right-sized tower. The project would demolish the existing elevated water storage tower, the previously abandoned groundwater storage tank, and the existing pump house.	FY 2023	On Vance AFB
Runway Improvements	The project would repair Runway 17C/35C (center runway) and portions of Taxiways C and D. Due to the age and condition of the pavement, the replacement of the concrete and asphalt areas on the Runway 17C/35C is required to reduce spalling and foreign object debris potential. Work includes the repair of Runway 17C/35C and its overruns, the first 200 feet of Taxiway C west, the first 160 feet of Taxiway D east, along with portions of Taxiways A, E, and F. In order to minimize the risk of exposing the underlying subgrade material, the project will include the overlay of the existing concrete and asphalt surfaces associated with the runway and overruns.	FY 2023	On Vance AFB
T7 Bed down	The project would include the construction of two facilities: a ground-based training system simulator and a Unit maintenance training facility.	FY 2026	On Vance AFB
Local Street Repairs	The project would make repairs to West Fox Drive from South Van Buren Street to Pride Drive.	FY 2023	0.25 mile
Enid Master Trails Plan	The project involves Southgate Lane Trail, a proposed trail in south Enid that begins at Meadowlake Park and moves south toward Vance AFB. The trail connects Vance AFB with Channel Fairway Trail and Boggy Creek West Trail as well as the rest of the city of Enid.	Long term	0.25 mile

FY = fiscal year

3.3.2 Existing Conditions

Vance AFB occupies approximately 2,122 acres in Garfield County, located in north-central Oklahoma. The land surrounding the Installation is mostly farmland with the city of Enid to the north. Vance AFB is organized into six Planning Districts based on land use: the Airfield, Flightline, Training, Industrial, Community, and Residential districts. The Proposed Action and Alternatives would occur within the Flightline and Community districts, as shown in **Figure 3-1** and as described in **Sections 1.2.2 and 1.2.3**. Several plans and programs guide Vance AFB's planning strategies within these districts to support the military mission.

Thirteen land use categories have been established for land management at Vance AFB: administration, agricultural, airfield, airfield clearance, community, housing, industrial, maintenance and operations, recreational, research and development, reserved/land buffer, training, and utilities. Their names are descriptive of their general function. Airfield and open space usage accounts for the majority of the Installation's cumulative area. Industrial usage and housing are the next largest land uses.

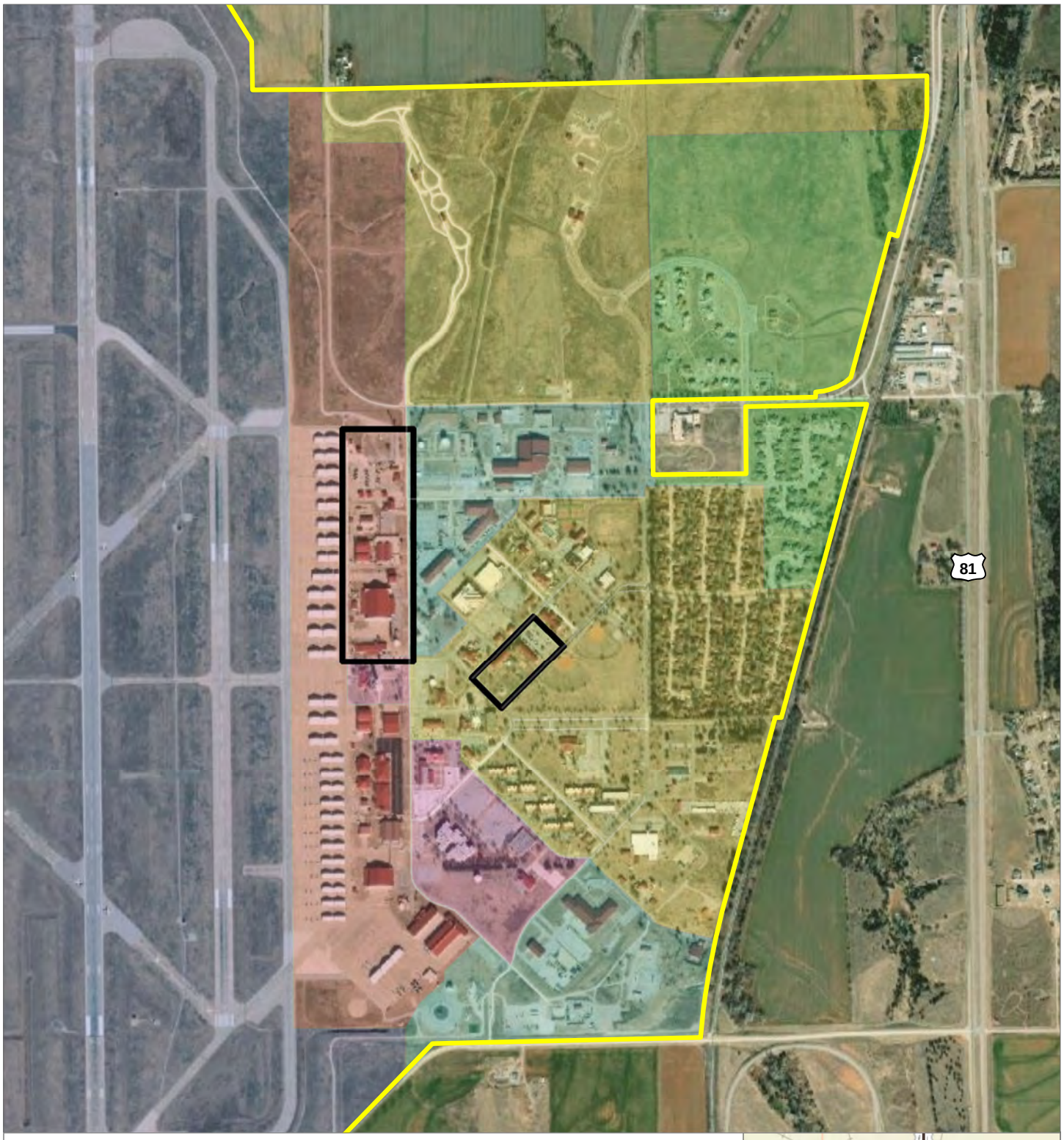


FIGURE 3-1
Planning Districts

- Installation Boundary
- Project Locations
- Airfield Planning District
- Community Planning District
- Flightline Planning District
- Industrial Planning District
- Residential Planning District
- Training Planning District

N

0 ¼ Miles

Imagery: ESRI, 2021
Coordinate System: NAD 83 UTM Zone 14N

3.3.3 Environmental Consequences

3.3.3.1 Evaluation Criteria

The Air Force defines a significant effect on or from land use within the ROI as one or both of the following:

- land use that would discontinue or substantially change existing or adjacent land use; and/or
- land use that would be inconsistent with applicable management plans, policies, regulations, and ordinances.

3.3.3.2 Fire Crash/Rescue Station – Alternative 1

Construction of a new fire crash/rescue station under Alternative 1 would occur on previously developed land currently designated for industrial and maintenance/operations usage (**Figure 3-2**). Temporary facilities during construction would not have long-term impacts on overall land use. The existing fire crash/rescue building is currently located within an area of maintenance/operations land use within the Flightline District; the new fire crash/rescue station would be constructed within an area of industrial land use. Implementation of Alternative 1 would be compatible with the existing activities within the project construction area; therefore, Alternative 1 would not result in any significant impacts or changes to land use.

3.3.3.3 Fire Crash/Rescue Station – Alternative 2

Under Alternative 2, existing facilities within the maintenance/operations area would be demolished to provide space for construction of a new fire crash/rescue station and associated facilities. Construction would occur entirely within areas currently designated for maintenance/operations (**Figure 3-3**). Therefore, no impacts to land use would occur under Alternative 2.

3.3.3.4 Fire Crash/Rescue Station – Alternative 3

Impacts to land use under Alternative 3 of the fire crash/rescue station (**Figure 3-4**) would be the same as described under Alternative 2.

3.3.3.5 Enlisted Unaccompanied Housing Facility – Alternative 1

Alternative 1 of the enlisted UH facility project would occur entirely within the boundaries on Vance AFB. The construction of a new enlisted UH facility would occur on the same parcel as the existing enlisted UH buildings, resulting in no change to the current housing land use (**Figure 3-5**). The relocation of the static display would not alter the recreational usage of the southern corner of the project area. Implementation of Alternative 1 of the enlisted UH facility project would not result in any significant effects to land use.

3.3.3.6 Enlisted Unaccompanied Housing Facility – Alternative 2

Impacts to land use under Alternative 2 of the enlisted UH facility (**Figure 3-6**) would be the same as under Alternative 1 in **Section 3.4.3.5**.

3.3.3.7 Cumulative Impacts

The Proposed Action and Alternatives would not change land use, would be consistent with existing land use, and would not affect future adjacent land use. Ongoing and reasonably foreseeable projects at Vance AFB would improve existing infrastructure but would not alter the existing land uses at the Installation. When considered in conjunction with other past, present, and reasonably foreseeable environmental trends and planned actions at Vance AFB, no significant cumulative effects to land use would be anticipated to occur with implementation of the Proposed Action.

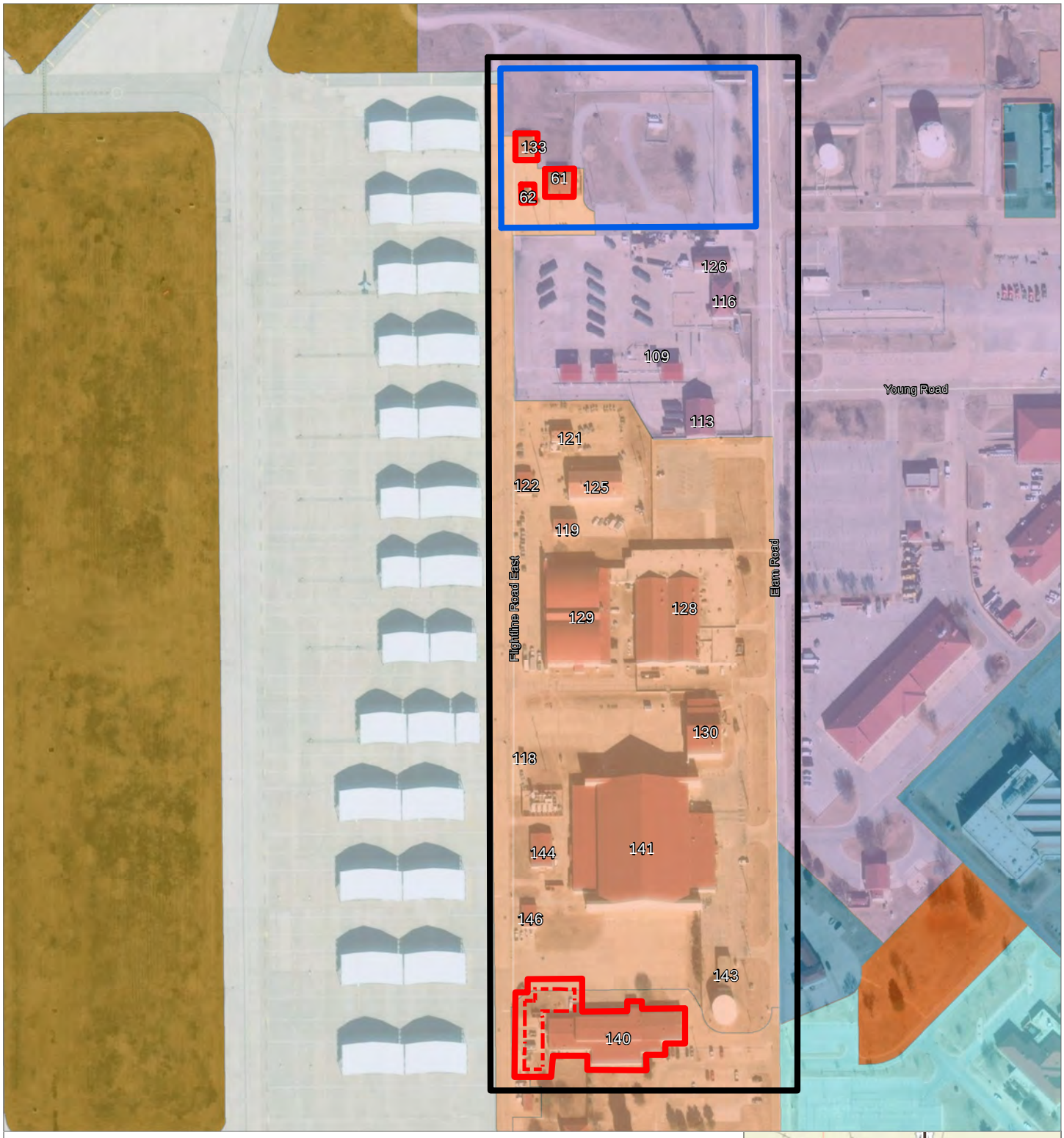


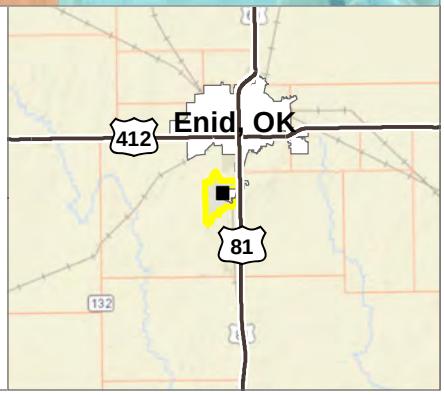
FIGURE 3-2
Land Use – Fire Crash/Rescue Station Alternative 1

- Construction
- Demolition
- Project Area
- Temporary Office
- Administration
- Airfield
- Airfield Clearance
- Community Commercial
- Industrial
- Maintenance/Operations
- Reserved/Land Buffer

N

0 250 Feet

Imagery: ESRI, 2021
Coordinate System: NAD 83 UTM Zone 14N



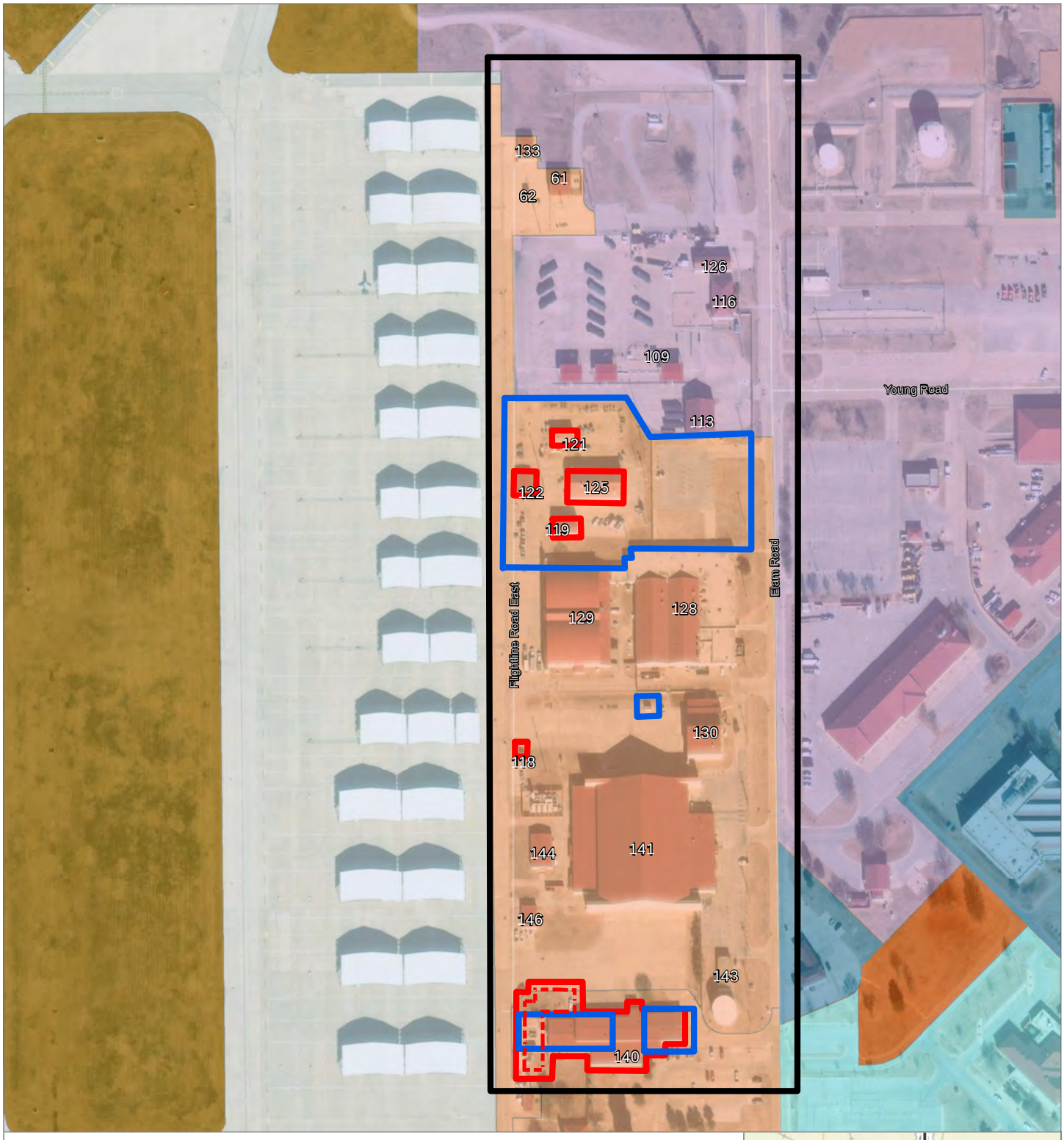


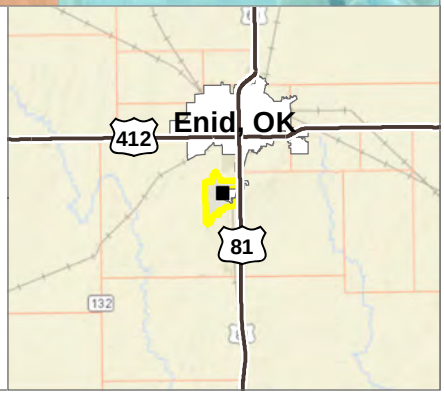
FIGURE 3-3
Land Use – Fire Crash/Rescue Station Alternative 2

- Construction
- Demolition
- Project Area
- Temporary Office
- Administration
- Airfield
- Airfield Clearance
- Community Commercial
- Industrial
- Maintenance/Operations
- Reserved/Land Buffer

N

0 250 Feet

Imagery: ESRI, 2021
Coordinate System: NAD 83 UTM Zone 14N



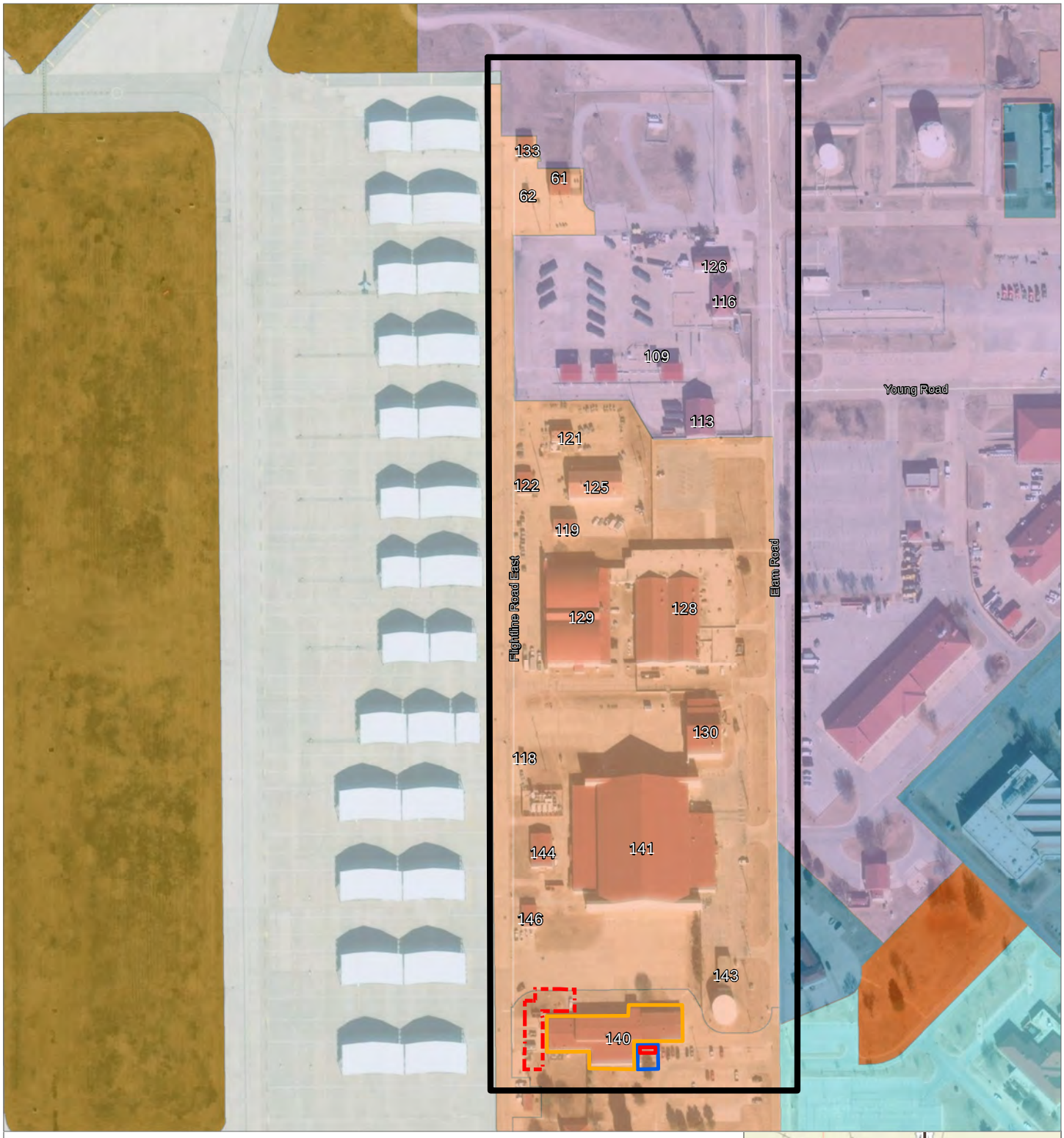


FIGURE 3-4
Land Use – Fire Crash/Rescue Station Alternative 3

- Construction
- Demolition
- Project Area
- Renovation
- Temporary Office
- Administration
- Airfield
- Airfield Clearance
- Community Commercial
- Industrial
- Maintenance/Operations
- Reserved/Land Buffer

N

0 250 Feet

Imagery: ESRI, 2021
Coordinate System: NAD 83 UTM Zone 14N

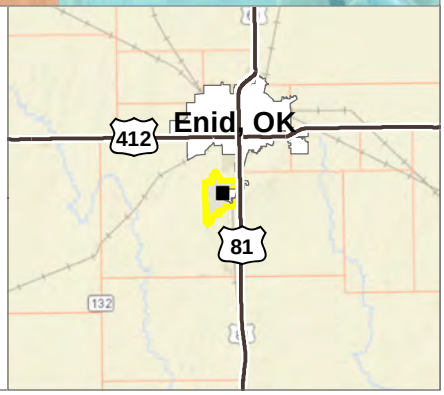


FIGURE 3-5
Land Use – Enlisted UH Facility Alternative 1

- Construction
- Demolition
- Project Area
- Renovation
- Administration
- Community Commercial
- Family/Troop Housing
- Industrial
- Maintenance/Operations
- Recreational/Water
- Reserved/Land Buffer

N

0 250 Feet

Imagery: ESRI, 2021
Coordinate System: NAD 83 UTM Zone 14N

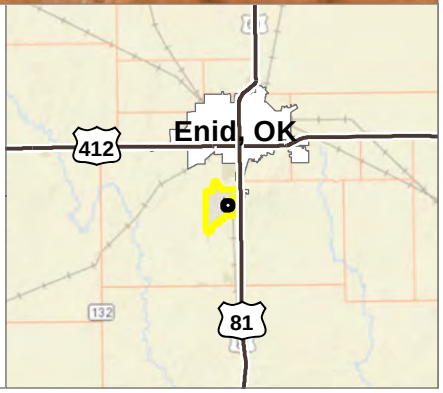


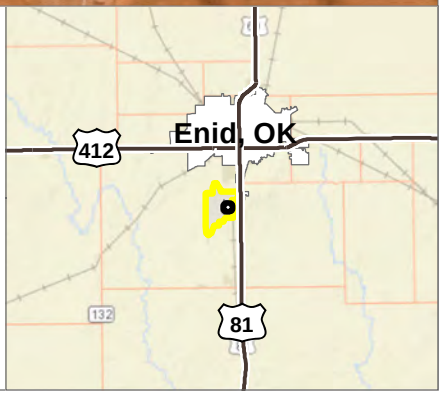
FIGURE 3-6
Land Use – Enlisted UH Facility Alternative 2

- Construction
- Project Area
- Renovation
- Administration
- Community Commercial
- Family/Troop Housing
- Industrial
- Maintenance/Operations
- Recreational/Water
- Reserved/Land Buffer

N

0 250 Feet

Imagery: ESRI, 2021
Coordinate System: NAD 83 UTM Zone 14N



3.3.3.8 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. The land use in the project areas would be unaltered from existing conditions. The fire crash/rescue station would continue to not meet current and future mission needs. The station would be out of compliance with DAFMAN 32-1084, UFC 4-730-10, ABA regulations, and ADA regulations. The risk for damage to the facilities and vehicles would continue due to the inadequate existing bay size, and operational inefficiencies would limit the effectiveness of the station. Under the No Action Alternative, the enlisted UH facility would remain in its current state, which is not sufficient to meet the current and future mission requirements. The degrading facilities would continue to affect morale, wellness, and quality of life for enlisted unaccompanied Aircrew at Vance AFB.

3.4 AIR QUALITY AND CLIMATE CHANGE

3.4.1 Definition of the Resource

Air pollution is a threat to human health and damages trees, crops, other plants, waterbodies, and animals. It creates haze or smog that reduces visibility in national parks and cities and interferes with aviation. To improve air quality and reduce air pollution, Congress passed the CAA and its amendments in 1970 and 1990, which set regulatory limits on air pollutants and help to ensure basic health and environmental protection from air pollution.

The USEPA has divided the country into geographical regions known as Air Quality Control Regions to evaluate compliance with the National Ambient Air Quality Standards (NAAQS). Vance AFB is located in Garfield County within the North Central Oklahoma Intrastate Air Quality Control Region (IAQCR) (40 CFR § 81.124), which serves as the ROI.

3.4.1.1 Criteria Pollutants

In accordance with CAA requirements, the air quality in any given region or area is measured by the concentration of various pollutants in the atmosphere. Measurements of these “criteria pollutants” in ambient air are expressed in units of parts per million (ppm) or in units of micrograms per cubic meter ($\mu g/m^3$).

The CAA directs the USEPA to develop, implement, and enforce environmental regulations that would ensure clean and healthy ambient air quality. To protect public health and welfare, the USEPA developed numerical concentration-based standards (i.e., NAAQS) for pollutants that have been determined to impact human health and the environment. The USEPA also established both primary and secondary NAAQS under the provisions of the CAA (**Table 3-2**). The primary NAAQS represent maximum levels of background air pollution that are considered safe, with an adequate margin of safety to protect public health. Secondary NAAQS represent the maximum pollutant concentration necessary to protect vegetation, crops, and other public resources in addition to maintaining visibility standards.

Ozone is not usually emitted directly into the air but is formed in the atmosphere by photochemical reactions involving sunlight and previously emitted pollutants, or “ozone precursors.” These ozone precursors consist primarily of nitrogen oxides and volatile organic compounds (VOCs) that are directly emitted from a wide range of emission sources. For this reason, regulatory agencies limit atmospheric ozone concentrations by controlling VOC pollutants (also identified as reactive organic gases) and nitrogen oxides.

Table 3-2
National Ambient Air Quality Standards

Pollutant		Primary/ Secondary[a,b]	Averaging Time	Level[c]	Form
Carbon monoxide		Primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Lead		Primary and Secondary	Rolling 3-month average	0.15 µg/m^3	Not to be exceeded
Nitrogen dioxide		Primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Primary and Secondary	1 year	53 ppb	Annual mean
Ozone		Primary and Secondary	8 hours	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution	$PM_{2.5}$	Primary	1 year	12.0 µg/m^3	Annual mean, averaged over 3 years
		Secondary	1 year	15.0 µg/m^3	Annual mean, averaged over 3 years
		Primary and Secondary	24 hours	35 µg/m^3	98th percentile, averaged over 3 years
	PM_{10}	Primary and Secondary	24 hours	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur dioxide		Primary	1 hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

Source: USEPA NAAQS table

µg/m^3 = micrograms per cubic meter; NAAQS = National Ambient Air Quality Standards; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than or equal to 10 microns in diameter; ppb = parts per billion; ppm = parts per million; USEPA = US Environmental Protection Agency

Notes:

a. Primary Standards: the levels of air quality necessary, with an adequate margin of safety to protect public health. Each state must attain the primary standards no later than 3 years after that state's implementation plan is approved by the USEPA.

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

c. Concentrations are expressed first in the units in which they were promulgated.

(1) In areas designated nonattainment for the lead standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m^3 as a calendar quarter average) also remain in effect.

(2) The level of the annual nitrogen dioxide standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

(3) The final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) ozone standards are not revoked and remain in effect for designated areas. Additionally, some areas may have certain continuing implementation obligations under the prior revoked 1-hour (1979) and 8-hour (1997) ozone standards.

(4) The previous sulfur dioxide standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous sulfur dioxide standards or is not meeting the requirements of a state implementation plan call under the previous sulfur dioxide standards (40 CFR § 50.4(3)). A state implementation plan call is a USEPA action requiring a state to resubmit all or part of its state implementation plan to demonstrate attainment of the required NAAQS.

3.4.1.2 General Conformity and Attainment

When a region or area meets NAAQS for a criteria pollutant, that region or area is classified as in "attainment" for that pollutant. When a region or area fails to meet NAAQS for a criteria pollutant, that region or area is classified as "nonattainment" for that pollutant. In cases of nonattainment, the affected state, territory, or local agency must develop a state implementation plan for USEPA review and approval. The state implementation plan is an enforceable plan developed at the state level that lays out a pathway for how the state will comply with air quality standards. If air quality improves in a region that is classified as nonattainment, and the improvement results in the region meeting the criteria for classification as attainment, then that region is reclassified as a "maintenance' area.

Under the CAA, the General Conformity Rule requires proposed federal agency activities in designated nonattainment or maintenance areas (i.e., attainment areas reclassified from a prior nonattainment designation) to demonstrate conformity with the state implementation plan for attainment of NAAQS. Agencies are required to show that the net change in emissions from a federal proposed action would be below applicable *de minimis* threshold levels.

3.4.1.3 Greenhouse Gases

Greenhouse gases (GHGs) are gases that trap heat in the atmosphere. These emissions are generated by both natural processes and human activities. The accumulation of GHGs in the atmosphere helps regulate the earth's temperature and contributes to global climate change. GHGs include water vapor, carbon dioxide, methane, nitrous oxide, ozone, and several hydrocarbons and chlorofluorocarbons. Each GHG has an estimated global warming potential, which is a function of its atmospheric lifetime and its ability to absorb and radiate infrared energy emitted from the earth's surface. The global warming potential of a particular gas provides a relative basis for calculating its carbon dioxide-equivalent (CO_2e) or the amount of CO_2e to the emissions of that gas. Carbon dioxide has a global warming potential of 1 and is therefore the standard by which all other GHGs are measured. The GHGs are multiplied by their global warming potential, and the resulting values are added together to estimate the total CO_2e.

The USEPA regulates GHG primarily through a permitting program known as the GHG Tailoring Rule. This rule applies to GHG emissions from larger stationary sources. Additionally, the USEPA promulgated a rule for large GHG emission stationary sources, fuel and industrial gas suppliers, and carbon dioxide injection sites if they emit 25,000 metric tons or more of CO_2e per year (40 CFR § 98.2(a)(2)).

Per the CEQ interim guidance released January of 2023, "Agencies should exercise judgment when considering whether to apply this guidance to the extent practicable to an on-going NEPA process." The Air Force guidance on applying and conducting a Social Cost of GHG Analysis is under development. The Air Force guidance will be released shortly and will provide specifics on applying Social Cost of GHG Analyses and ensure standardization across the Air Force. Therefore, no Social Cost of GHG Analysis will be conducted for EAs and EISs that are currently ongoing.

3.4.1.4 Operating Permits

The State of Oklahoma has adopted the federal NAAQS. Pursuant to Title 252 of the *Oklahoma Administrative Code*, Chapter 100 (OAC 252:100), the Oklahoma Department of Environmental Quality (ODEQ) administers a permit program for stationary source emissions generated at federal facilities. Permitting requirements for federal owners and operators are largely based on a "potential to emit," defined as the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design or configuration. Calculations are used to determine whether a federal facility is defined as a "major source" under the CAA requiring a Title V operating permit; however, some "non-major" or "minor source" federal owners or operators are subject to permit-by-rule requirements. Permits-by-rule authorize stationary source emissions for individual or specific operations.

3.4.2 Existing Conditions

The North Central Oklahoma IAQCR, in which Vance AFB is located, is designated as in attainment for all criteria air pollutants. Vance AFB is not considered a "major source" contributor for air pollution and does not operate under a Title V permit.

3.4.2.1 Air Emission Sources at Vance AFB

There are several air emissions sources at Vance AFB that contribute to the total emissions reported at the end of each calendar year. The Vance AFB comprehensive stationary annual emissions inventory lists the following air emission sources:[4]

- Internal combustion sources: emergency generators (diesel fuel) and general-purpose generators (diesel fuel);
- Jet engine testing;
- External combustion sources: sources include, but are not limited to those boilers, heaters, spray booth heaters and bake-off ovens;
- Fuel storage tanks: underground and aboveground storage tanks (USTs and ASTs);
- Abrasive blasting;
- Herbicide/pesticide application;
- Surface and spray coating operations: sources include, but are not limited to, surface and spray coating (paint booth) operations; and
- Miscellaneous chemical usage: sources include, but are not limited to, solvent cleaning equipment.

3.4.2.2 Regional Climate

The regional climate of the Enid area is temperate with mild winters, hot summers, and moderate precipitation. The average July temperature at Vance AFB is 83.3 degrees Fahrenheit (°F). Average temperatures in spring and fall are 58.0°F (April) and 60.8°F (October), respectively. Winter temperatures tend to be mild; January is the coolest month of the year, with an average daily temperature of 35.7°F. Daily minimum temperatures range from 24.5°F (January) to 71.8°F (July). On average, the land surrounding Vance AFB has a growing season of 210 days per year.

Median annual precipitation at Vance AFB is approximately 40 inches, with the wettest months being May, June, July, and August with an annual average of 4.36, 4.83, 3.34, and 3.63 inches, respectively. Average snowfall for Vance AFB is approximately 35 inches annually.

3.4.3 Environmental Consequences

3.4.3.1 Evaluation Criteria

General Conformity applies to nonattainment and maintenance areas. If the emissions from a federal action proposed in a nonattainment area exceed annual *de minimis* thresholds identified in the General Conformity Rule, a formal conformity determination of that action is required.

When the ROI is in attainment for all NAAQS, the Prevention of Significant Deterioration (PSD) value is used as a threshold for all criteria pollutants other than lead. Due to the toxicity of lead, the use of the PSD threshold as an indicator of potential air quality impact insignificance is not protective of human health or the environment. Therefore, the *de minimis* value is used instead. A PSD value is not used for CO_2e; however, it is still listed within the Air Force's Air Conformity Applicability Model (ACAM) to show that it is below the GHG Tailoring Rule of 25,000 metric tons per year. The following thresholds are applicable for the Proposed Action and Alternatives:

[4] https://www.aqhelp.com/apims.html

- 250 tpy PSD value for ozone precursors (VOCs and nitrogen oxides), carbon monoxide, sulfur dioxide, PM 10, PM 2.5 precursor ammonia.
- 25 tpy *de minimis* value for lead.

3.4.3.2 Methodology

The environmental impact methodology for air quality impacts presented in this EA is derived from Air Force Manual (AFMAN) 32-7002, *Environmental Compliance and Pollution Prevention* (February 2020). The Proposed Action is broken down into basic units. For example, a basic development project that consists of replacing a building with a new building could be broken down into demolition (ft^2), grading (ft^2), building construction (ft^2 and height), architectural coatings (ft^2), and paving (ft^2). These data are then input into the Air Force's ACAM, which models emissions based on the inputs and estimates air emissions for each specific criteria and precursor pollutant, as defined in the NAAQS. The calculated emissions are then compared against the applicable threshold based on the attainment status of the ROI. If the annual net increase in emissions from the project are below the applicable thresholds, then the Proposed Action and Alternatives are not considered significant and would not be subject to any further conformity determination. Assumptions of the model, methods, and detailed summary results are provided in **Appendix B** of this EA.

ACAM modeling for the Proposed Action and Alternatives assumes that construction, demolition, and renovation project activities involve an estimated area of paving, grading, construction, and demolition activities. The paving and demolition area actions have been estimated based on the square footage of the existing and proposed structures. The construction and grading areas anticipate an area assumed to be greater than the existing structures to allow for construction area accessibility, utilities improvements, and laydown storage. For the purpose of the model, the demolition, grading, paving, and construction activities have been spread out over a 2-year estimated schedule (i.e., FY 2024–FY 2025).

3.4.3.3 Fire Crash/Rescue Station – Alternative 1

Table 3-3 summarizes the results of the ACAM analysis annualized over the course of implementation of Alternative 1 of the fire crash/rescue station project. The highest annual emissions would be anticipated to occur in the first year of construction. For all criteria pollutants, the increase in emissions would be negligible in comparison to the applicable threshold.

Table 3-4 represents "steady-state" emissions, which measure the net annual increase in emissions that would be expected to continue in perpetuity after the construction phase is completed. The only steady-state emissions that would be anticipated to occur under Alternative 1 are associated with heating the newly constructed buildings. These steady-state emissions increases, resulting from an increase in heating square footage, would be considered minor and negligible in comparison to the applicable thresholds.

Table 3-3
Air Emissions and Annual PSD Thresholds: Fire Crash/Rescue Station – Alternative 1

Pollutant	Year 1 Action Emissions (ton/yr)	Year 2 Action Emissions (ton/yr)	GENERAL CONFORMITY	
			Threshold (ton/yr)	Exceedance (yes or no)
Volatile organic compound	0.610	0.534	250	No
Nitrogen oxides	1.864	1.420	250	No
Carbon monoxide	2.402	2.051	250	No
Sulfur oxides	0.006	0.005	250	No
PM_{10}	1.986	1.967	250	No
$PM_{2.5}$	0.073	0.054	250	No
Lead	0.000	0.000	25	No
Ammonia	0.002	0.001	250	No
Carbon dioxide-equivalent	594.4	514.7	N/A	N/A

N/A = not applicable; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than or equal to 10 microns in diameter

Table 3-4
Steady-State Air Emissions and Annual PSD Threshold: Fire Crash/Rescue Station Alternative 1

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (yes or no)
Volatile organic compound	0.004	250	No
Nitrogen oxides	0.066	250	No
Carbon monoxide	0.056	250	No
Sulfur oxides	0.000	250	No
PM_{10}	0.005	250	No
$PM_{2.5}$	0.005	250	No
Lead	0.000	25	No
Ammonia	0.000	250	No
Carbon dioxide-equivalent	80.0	N/A	N/A

N/A = not applicable; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than or equal to 10 microns in diameter

3.4.3.4 Fire Crash/Rescue Station - Alternative 2

Table 3-5 summarizes the results of the ACAM analysis annualized over the course of implementation of Alternative 2 of the fire crash/rescue station project. The highest annual emissions would be anticipated to occur in the first year of construction. Due to the larger construction area, these emissions would be slightly higher than those anticipated under Alternative 1; however, for all criteria pollutants, the increase in emissions would be negligible in comparison to the applicable threshold.

Table 3-6 represents "steady-state" emissions associated with heating the newly constructed buildings. These steady-state emissions increases, resulting from an increase in heating square footage, would be considered minor and negligible in comparison to the applicable thresholds.

Table 3-5
Air Emissions and Annual PSD Thresholds: Fire Crash/Rescue Station Alternative 2

Pollutant	Year 1 Action Emissions (ton/yr)	Year 2 Action Emissions (ton/yr)	GENERAL CONFORMITY	
			Threshold (ton/yr)	Exceedance (yes or no)
Volatile organic compound	0.807	0.733	250	No
Nitrogen oxides	2.022	1.609	250	No
Carbon monoxide	2.564	2.245	250	No
Sulfur oxides	0.006	0.006	250	No
PM_{10}	2.527	2.511	250	No
$PM_{2.5}$	0.080	0.064	250	No
Lead	0.000	0.000	25	No
Ammonia	0.002	0.002	250	No
Carbon dioxide-equivalent	684.3	656.0	N/A	N/A

N/A = not applicable; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than or equal to 10 microns in diameter

Table 3-6
Steady-State Air Emissions and Annual PSD Thresholds: Fire Crash/Rescue Station Alternative 2

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (yes or no)
Volatile organic compound	0.009	250	No
Nitrogen oxides	0.158	250	No
Carbon monoxide	0.133	250	No
Sulfur oxides	0.001	250	No
PM_{10}	0.012	250	No
$PM_{2.5}$	0.012	250	No
Lead	0.000	25	No
Ammonia	0.000	250	No
Carbon dioxide-equivalent	190.5	N/A	N/A

N/A = not applicable; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than or equal to 10 microns in diameter

3.4.3.5 Fire Crash/Rescue Station Alternative 3

Table 3-7 summarizes the results of the ACAM analysis annualized over the course of implementation of Alternative 3 of the fire crash/rescue station project. The highest annual emissions would be anticipated to occur in the first year of construction. Emissions would be anticipated to be lower than those observed under Alternative 1 or 2 because Alternative 3 would emphasize renovation of existing facilities rather than the construction of entirely new facilities. There would be a small increase in square footage, and modeling indicated this would not result in an observable difference to the "steady-state" emissions. Impacts to air quality would be short term and negligible.

Table 3-7
Air Emissions and Annual PSD Thresholds: Fire Crash/Rescue Station – Alternative 3

Pollutant	Year 1 Action Emissions (ton/yr)	Year 2 Action Emissions (ton/yr)	GENERAL CONFORMITY	
			Threshold (ton/yr)	Exceedance (yes or no)
Volatile organic compound	0.417	0.341	250	No
Nitrogen oxides	1.746	1.283	250	No
Carbon monoxide	2.309	1.935	250	No
Sulfur oxides	0.005	0.004	250	No
PM_{10}	0.414	0.393	250	No
$PM_{2.5}$	0.067	0.046	250	No
Lead	0.000	0.000	25	No
Ammonia	0.002	0.001	250	No
Carbon dioxide-equivalent	527.4	411.5	N/A	N/A

N/A = not applicable; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than or equal to 10 microns in diameter

3.4.3.6 Enlisted Unaccompanied Housing Facility – Alternative 1

Table 3-8 summarizes the results of the ACAM analysis annualized over the course of implementation of Alternative 1 of the enlisted UH facility project. The highest annual emissions would be anticipated to occur in the first year of construction. For all criteria pollutants, the increase in emissions would be negligible in comparison to the applicable threshold. There would be an increase in square footage, but modeling

indicated that the project would not result in an observable difference to the "steady-state" emissions. Impacts to air quality would be short term and negligible.

Table 3-8
Air Emissions and Annual PSD Thresholds: Enlisted Unaccompanied Housing Facility – Alternative 1

Pollutant	Year 1 Action Emissions (ton/yr)	Year 2 Action Emissions (ton/yr)	GENERAL CONFORMITY	
			Threshold (ton/yr)	Exceedance (yes or no)
Volatile organic compound	0.722	0.643	250	No
Nitrogen oxides	1.961	1.464	250	No
Carbon monoxide	2.511	2.122	250	No
Sulfur oxides	0.006	0.005	250	No
PM_{10}	3.722	3.700	250	No
$PM_{2.5}$	0.074	0.052	250	No
Lead	0.000	0.000	25	No
Ammonia	0.002	0.002	250	No
Carbon dioxide-equivalent	598.9	472.8	N/A	N/A

N/A = not applicable; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than or equal to 10 microns in diameter

3.4.3.7 Enlisted Unaccompanied Housing Facility – Alternative 2

Table 3-9 summarizes the results of the ACAM analysis annualized over the course of implementation of Alternative 2 of the enlisted UH facility project. The highest annual emissions would be anticipated to occur in the first year of construction, and these emissions would be lower than those observed under Alternative 1, due to the renovation of housing facilities rather than new building construction. For all criteria pollutants, the increase in emissions would still be negligible in comparison to the applicable threshold. No change in steady-state emissions would occur as a result of implementation of Alternative 2. Impacts to air quality would be short term and negligible.

Table 3-9
Air Emissions and Annual PSD Thresholds: Enlisted Unaccompanied Housing Facility – Alternative 2

Pollutant	Year 1 Action Emissions (ton/yr)	Year 2 Action Emissions (ton/yr)	GENERAL CONFORMITY	
			Threshold (ton/yr)	Exceedance (yes or no)
Volatile organic compound	0.693	0.615	250	No
Nitrogen oxides	1.868	1.378	250	No
Carbon monoxide	2.399	2.012	250	No
Sulfur oxides	0.006	0.004	250	No
PM_{10}	0.872	0.851	250	No
$PM_{2.5}$	0.071	0.049	250	No
Lead	0.000	0.000	25	No
Ammonia	0.002	0.002	250	No
Carbon dioxide-equivalent	573.9	448.2	N/A	N/A

N/A = not applicable; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than or equal to 10 microns in diameter

3.4.3.8 Cumulative Impacts

Air emissions associated with construction and demolition activities under the Proposed Action and Alternatives would be short term (limited to the construction period) and negligible. The estimated long-term, steady-state air emissions would remain below threshold values. When considered in conjunction with other past, present, and reasonably foreseeable environmental trends and planned actions at Vance AFB, no significant cumulative effects to air quality would be anticipated to occur with implementation of the Proposed Action.

3.4.3.9 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. The air quality and steady-state emissions in the project areas would be unaltered from existing conditions. The fire crash/rescue station would continue to not meet current and future mission needs. The station would be out of compliance with DAFMAN 32-1084, UFC 4-730-10, ABA regulations, and ADA regulations. The risk for damage to the facilities and vehicles would continue due to the inadequate existing bay size, and operational inefficiencies would limit the effectiveness of the station. Under the No Action Alternative, the enlisted UH facility would remain in its current state, which is not sufficient to meet the current and future mission requirements. The degrading facilities would continue to affect morale, wellness, and quality of life for enlisted unaccompanied Aircrew at Vance AFB.

3.5 EARTH RESOURCES

3.5.1 Definition of the Resource

Earth resources include geology, topography, and soils. Geology refers to the structure and configuration of the earth's surface and subsurface features. Characteristics of geology include geomorphology, subsurface rock types, and structural elements. Topography refers to the shape, height, and position of the land surface. Soil refers to the unconsolidated materials overlying bedrock or other parent material. Soils are defined by their composition, slope, and physical characteristics. Attributes of soil, such as elasticity, load-bearing capacity, shrink-swell potential, and erodibility determine its suitability to support a particular land use.

Prime farmland, as defined by the United States Department of Agriculture in the *Farmland Protection Policy Act* (7 USC §§ 4201–4209), is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is available for these uses.

The ROI for earth resources is Vance AFB.

3.5.2 Existing Conditions

3.5.2.1 Geology

Geologic bed formations underlying Vance AFB consist of the Cedar Hills Unit of the Permian System. These beds are consistent of the Permian Age (299–251 million years ago). Permian rock formations are generally represented by long, parallel belts of outcrops, with westward slopes dropping 20–30 feet per mile. Specifically underlying Vance AFB are deposits of the Hennessey shale formation. The reddish-brown color of Hennessey shale formation soils is indicative of weakly cemented sandstone, clay sands, and shale.

3.5.2.2 Topography

The elevation of Oklahoma generally slopes downward from the northwest to the southeast. The state is generally flat with the exception of mountain ranges in the southwest, south-central, and eastern border

(Vance AFB, 2022a). The topography at Vance AFB, located in the interior lowlands in the north-central portion of the state, consists of a broad, low ridgetop at an average elevation of 1,285 feet and varies by approximately 40 feet across the Installation.

3.5.2.3 Soils

Soils within the ROI primarily consist of fertile, fine sandy loam that is gently rolling and well drained. Within the ROI, Bethany silt loam and Pond Creek silt loam are the most prevalent soil types, accounting for more than 50 percent of the acreage on Vance AFB (**Table 3-10)** (**Figure 3-7**). Soils on Vance AFB are considered moderately to highly susceptible to wind and water erosion as a result of the terrain and weather patterns. Soils within the ROI are considered to be "active soils," meaning that they are expected to experience considerable volume and period moisture content changes (Vance AFB, 2022a). Most soils on the Installation have been previously disturbed, highly urbanized, or developed and used for military purposes.

Table 3-10
Soil Types at Vance AFB

Soil Symbol	Soil Name	Slope	Acres in ROI	Percent of Total ROI
BeA	Bethany silt loam	0–1%	627.9	29.5
GaB	Grant silt loam	1–3%	311.5	14.6
GaC2	Grant silt loam, *slopes eroded*	3–5%	47.2	2.2
GnE	Kingfisher-Ironmound complex	8–20%	19.4	<1.0
GnE2	Kingfisher-Ironmound complex *slopes eroded*	8–20%	1.8	<1.0
KrB	Kirkland-Renfrow complex	1–3%	92.0	4.3
PcA	Pond Creek silt loam	0–1%	63.7	3.0
PcB	Pond Creek silt loam	1–3%	568.5	26.7
RvC2	Renthin-Masham complex, *slopes eroded*	3–5%	10.5	<1.0
TaA	Tabler silt loam	0–1%	389.6	18.3

Source: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx
ROI = region of influence

3.5.2.4 Prime Farmland

The land on Vance AFB is under military use and is not developable for agricultural purposes. No prime farmlands occur on Vance AFB and prime farmland is not evaluated further in this EA.

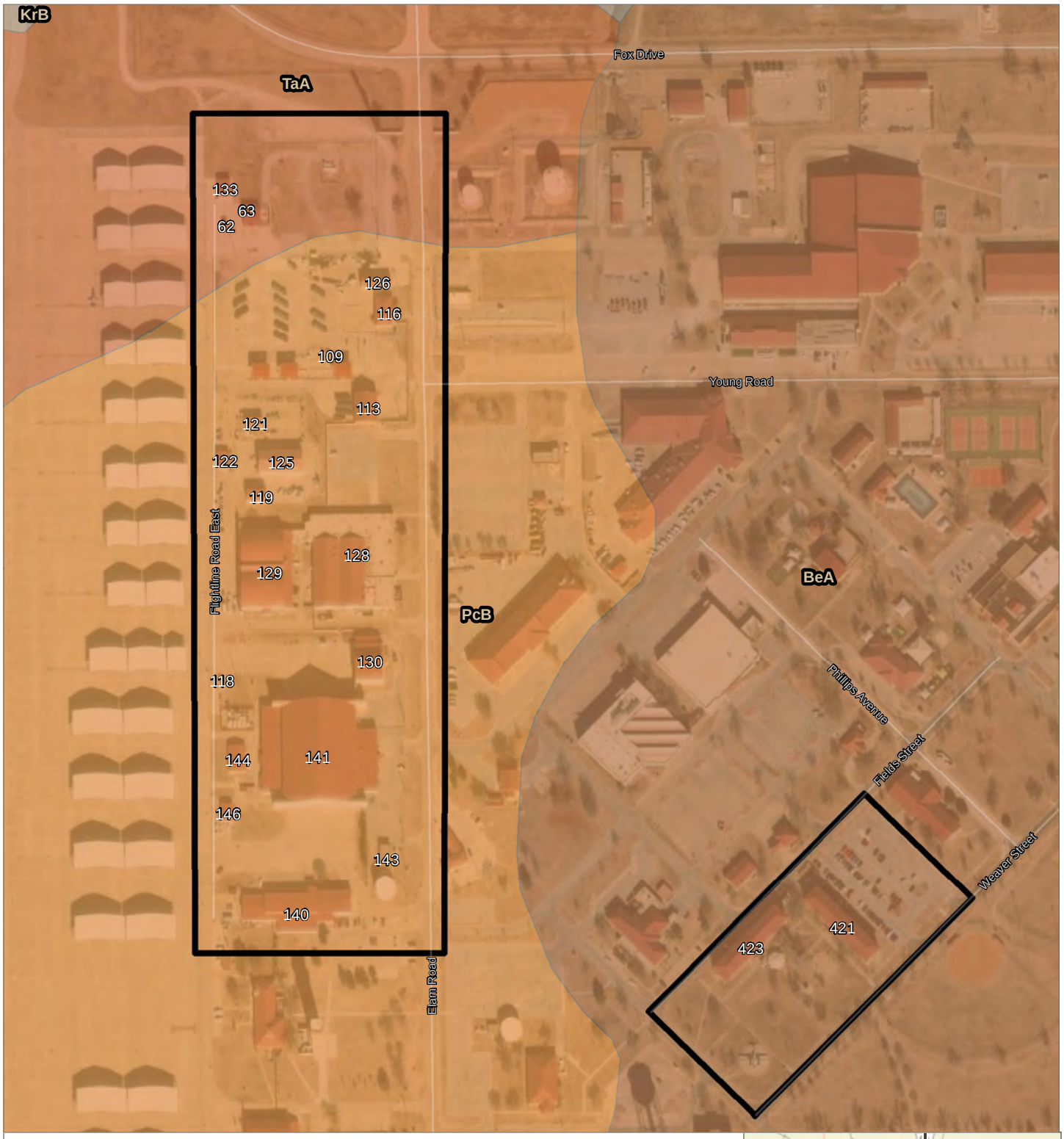


FIGURE 3-7
Soils

Project Locations

PcB — Pond Creek Silt Loam, 1-3 percent slopes

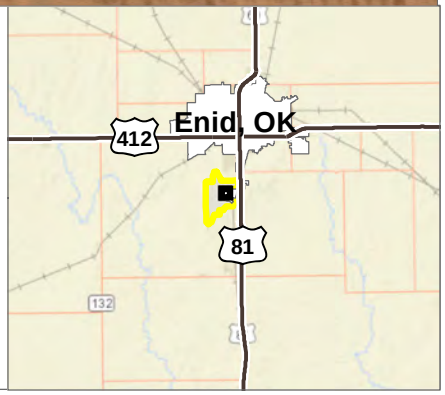
BeA — Bethany Silt Loam (0 to 1 percent slopes)

TaA — Tabler Silt Loam, 0-1 percent slopes

N

0 500 Feet

Imagery: ESRI, 2021
Coordinate System: NAD 83 UTM Zone 14N



3.5.3 Environmental Consequences

3.5.3.1 Evaluation Criteria

The Air Force defines a significant effect on earth resources within the ROI as one or more of the following:

- substantial alteration of unique or valued geologic or topographic conditions;
- substantial soil erosion, sedimentation, and/or loss of natural function (e.g., compaction); and/or
- development on soils with characteristics that do not support the intended land use.

3.5.3.2 Fire Crash/Rescue Station – Alternative 1

Geology

The underlying geology of Vance AFB would not change under Alternative 1 of the fire crash/rescue station project. No direct or indirect impacts to geology would be anticipated to occur with implementation of Alternative 1.

Topography

Alternative 1 would not require large-scale alteration of topography to accommodate construction. Any alteration of ground surfaces would be limited to basic construction activities such as compacting and excavating to prepare the ground for siting of a structure. After placing and compacting reuse or fill soils, superficial soils would be graded to match the local topography to maintain or improve efficient stormwater drainage. Therefore, short-term, negligible impacts to topography would be anticipated to occur with implementation of Alternative 1.

Soils

Alternative 1 would result in minor, short term impacts to soils. The area proposed for development under Alternative 1 is highly developed. Actions under Alternative 1 would disturb a total of approximately 139,750 ft^2 of soil. Minor, short-term adverse impacts to soils would also occur while relocating and replacing 4,705 lf of underground utilities. The primary soil found within the project area is Pond Creek silt loams with 1- to 3-percent slopes. This soil is characterized by moderate permeability and has a low potential for runoff. Sedimentation and erosion would have the potential to occur during construction and demolition activities; however, these impacts would be anticipated to be minor due to the low slope and low runoff potential of the soil. Long-term, adverse impacts to soils would not be anticipated and minor impacts would be prevented through the use of BMPs during construction.

3.5.3.3 Fire Crash/Rescue Station – Alternative 2

Geology

As with Alternative 1, there would be no direct or indirect impacts to the underlying geology of Vance AFB under Alternative 2.

Topography

Impacts to topography under Alternative 2 would be the same as those under Alternative 1.

Soils

Actions under Alternative 2 would result in similar impacts as described under Alternative 1. Alternative 2 would disturb a total of approximately 177,890 ft^2 of Pond Creek silt loam soil, which is more than the amount of soil that would be disturbed under Alternative 1. However, potential impacts to soils under Alternative 2 would be negligible due to the low slope and low runoff potential of the soil. Long-term, adverse

impacts to soils would not be anticipated, and minor impacts would be prevented through the use of BMPs during construction.

3.5.3.4 Fire Crash/Rescue Station – Alternative 3

Geology

As with Alternative 1, there would be no direct or indirect impacts to geology under Alternative 3.

Topography

Impacts to topography under Alternative 3 would be the same as those under Alternative 1.

Soils

Alternative 3 would result in minor, short-term impacts to soils. Alternative 3 would disturb approximately 10,210 ft^2 of soil, which is less than the amount of soil that would be disturbed under both Alternatives 1 and 2. Soil disturbance would also occur during the replacement of storm sewer utilities. This action would correct a drainage issue, resulting in positive storm drainage away from the building, preventing unwanted erosion and runoff. Long-term, beneficial impacts to soils would be anticipated, and minor, adverse impacts would be prevented through the use of BMPs during construction.

3.5.3.5 Enlisted Unaccompanied Housing Facility – Alternative 1

Geology

The underlying geology of Vance AFB would not change under Alternative 1 of the enlisted UH facility project. No direct or indirect impacts to geology would be anticipated to occur with implementation of Alternative 1.

Topography

Alternative 1 would not require large-scale alteration of topography to accommodate construction. Any alteration of ground surfaces would be limited to basic construction activities such as compacting and excavating to prepare the ground for siting of a structure. After placing and compacting reuse or fill soils, superficial soils would be graded to match the local topography to maintain or improve efficient stormwater drainage. Therefore, short-term, negligible impacts to topography would be anticipated to occur with implementation of Alternative 1.

Soils

Alternative 1 of the enlisted UH facility project would have minor, short-term, adverse impacts to soils. Construction and demolition activities under Alternative 1 would disturb approximately 132,164 ft^2 of soil. Additional soil disturbance would occur as a result of the relocation and replacement of 3,655 lf of underground utilities to accommodate the new construction. The primary soil found within the project area is Bethany silt loam, a well-drained soil with low slopes and low runoff potential. Demolition of the existing facilities and construction of the new housing would occur in phases, limiting the amount of disturbed soil at any one point in time. The risk for erosion or runoff would be limited to the construction and demolition timeframe. Long-term adverse impacts to soils would not be anticipated, and minor impacts would be minimized through the use of BMPs during construction.

3.5.3.6 Enlisted Unaccompanied Housing Facility – Alternative 2

Geology

As described for Alternative 1, there would be no direct or indirect impacts to geology under Alternative 2 of the enlisted UH facility project.

Topography

Impacts to topography under Alternative 2 would be the same as Alternative 1.

Soils

Alternative 2 of the enlisted UH facility project would have minor, short-term, adverse impacts to soils that would be less than under Alternative 1. Construction and demolition activities under Alternative 2 would disturb approximately 27,200 ft^2 of soil. Impacts to soils associated with replacement of utilities would be the same as described in Alternative 1. Long-term, adverse impacts to soils would not be anticipated, and minor impacts would be minimized through the use of BMPs during construction.

3.5.3.7 Cumulative Impacts

The Proposed Action and Alternatives would have negligible adverse impacts to geology and topography at Vance AFB. Potential impacts to soils would be expected to be short term and would be limited to the construction timeframe. When considered in conjunction with other past, present, and reasonably foreseeable environmental trends and planned actions at Vance AFB, no significant cumulative effects to earth resources would be expected to occur with implementation of the Proposed Action.

3.5.3.8 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. There would be no changes to earth resources beyond baseline conditions. The fire crash/rescue station would continue to not meet current and future mission needs. The station would be out of compliance with DAFMAN 32-1084, UFC 4-730-10, ABA regulations, and ADA regulations. The risk for damage to the facilities and vehicles would continue due to the inadequate existing bay size, and operational inefficiencies would limit the effectiveness of the station. Under the No Action Alternative, the enlisted UH facility would remain in its current state, which is not sufficient to meet the current and future mission requirements. The degrading facilities would continue to affect morale, wellness, and quality of life for enlisted unaccompanied Aircrew at Vance AFB.

3.6 WATER RESOURCES

3.6.1 Definition of the Resource

Water resources include surface water, groundwater, stormwater, and floodplains. The *Federal Water Pollution Control Act of 1948*, as amended by the CWA, was enacted to protect water resources vulnerable to contamination and quality degradation. The CWA provides the authority to establish water quality standards, control discharges into surface and subsurface waters (including groundwater), develop waste treatment management plans and practices, and issue permits for discharges. A National Pollutant Discharge Elimination System (NPDES) permit under Section 402 of the CWA is required for discharges into navigable waters. The USEPA oversees the issuance of NPDES permits at federal facilities as well as water quality regulations (CWA, Section 401) for both surface- and groundwater.

The ROI for water resources is Vance AFB and the surrounding watersheds.

3.6.1.1 Surface Water

The USEPA defines surface waters as waters of the US, which are primarily lakes, rivers, estuaries, coastal waters, and wetlands. Jurisdictional waters, including surface water resources, as defined in 33 CFR § 328.3, are regulated under Sections 401 and 404 of the CWA and Section 10 of the *Rivers and Harbors Act*. Man-made features not directly associated with a natural drainage, such as upland stock ponds and irrigation canals, are generally not considered jurisdictional waters.

3.6.1.2 Stormwater

Stormwater is surface water runoff generated from precipitation and has the potential to introduce sediments and other pollutants into surface waters. Stormwater is regulated under the CWA Section 402 NPDES program. Impervious surfaces such as buildings, roads, parking lots, and even some natural soils increase surface runoff. Stormwater management systems are designed to contain runoff on site during construction and to maintain predevelopment stormwater flow characteristics following development through either the application of infiltration or retention practices. EISA (Public Law 110-140) establishes stormwater design requirements for development and redevelopment projects. Under these requirements, federal facility projects larger than 5,000 ft^2 must maintain or restore, to the maximum extent feasible, the predevelopment hydrology of the property with respect to the water temperature, rate, volume, and duration of flow.

3.6.1.3 Groundwater

Groundwater is water that exists in the saturated zone beneath the earth's surface in pore spaces and fractures and includes aquifers. Groundwater is recharged through percolation of water on the ground's surface (e.g., precipitation and surface water bodies) and upward movement of water in lower aquifers through capillary movement. Groundwater is an essential resource that can be used for drinking, irrigation, and industrial processes, and can be described in terms of depth from the surface, aquifer or well capacity, water quality, recharge rate, and surrounding geologic formations. Groundwater quality and quantity are regulated under several different programs. The federal underground injection control regulations, authorized under the *Safe Drinking Water Act of 1974* (Public Law 93-523; 42 USC 300f–300j) require a permit for the discharge or disposal of fluids into a well. The federal sole source aquifer regulations, also authorized under the *Safe Drinking Water Act*, protect aquifers that are critical to water supply.

3.6.1.4 Floodplains

Floodplains are areas of low-level ground along rivers, stream channels, or coastal waters that provide a broad area to inundate and temporarily store floodwater. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body. Floodplains are subject to periodic or infrequent inundation due to rain or melting snow. The risk of flooding is influenced by local topography, the frequency of precipitation events, and the size and characteristics of the watershed upslope of the floodplain.

The Federal Emergency Management Agency (FEMA) evaluates and maps flood potential, which defines the 100-year (regulatory) floodplain. The 100-year floodplain is the area that has a one-percent annual chance of inundation by floodwater. FEMA uses letter designations for flood zone classification. Zone A designates 100-year floodplains where flood depths (base flood elevations) have not been calculated and further studies are needed. Zone AE floodplains include calculated base flood elevations. Base flood elevations are minimum elevation standards for buildings. Zone X indicates areas outside of the FEMA 100-year regulatory floodplain and indicate a low risk of flooding hazards (FEMA, 2020). Federal, state, and local regulations often limit floodplain development to passive uses, such as recreational and preservation activities, to reduce the risks to property and human health and safety.

EO 11988, *Floodplain Management*, provides guidelines that agencies should carry out as part of their decision-making process on projects that have potential impacts to or within the floodplain. This EO requires that federal agencies avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and avoid direct and indirect support of floodplain development wherever there is a practicable alternative. EO 13690, *Establishing a Flood Risk Management Standard and Process for Further Soliciting and Considering Stakeholder Input*, established a Federal Flood Risk Management Standard and a process for further soliciting and considering stakeholder input; however, this EO was later revoked by Section 6 of EO 13807, *Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure*. EO 13807 did not revoke or otherwise alter EO 11988.

3.6.1.5 Wetlands

The CWA regulates discharges of pollutants in surface waters of the US. Section 404 of the CWA established a program to regulate the discharge of dredged and fill material into waters of the US, including wetlands. The USACE defines wetlands as "those areas that are inundated or saturated with ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions" (Environmental Laboratory, 1987). Wetlands generally include swamps, marshes, bogs, and similar areas (33 CFR Part 328). Federal protection of wetlands is also promulgated under EO 11990, *Protection of Wetlands*, the purpose of which is to reduce adverse impacts associated with the destruction or modification of wetlands. This EO directs federal agencies to provide leadership in minimizing the destruction, loss, or degradation of wetlands.

3.6.2 Existing Conditions

3.6.2.1 Surface Water

Boggy Creek is located approximately 4 miles northeast of the Vance AFB. Other waterbodies on the Installation are the Meadowlake Reservoir, which is located on the Meadowlake Golf Course, approximately 1 mile north of the Base, and Hackberry Creek, approximately 1.5 miles southwest of the Base (**Figure 3-8**). There are minor, intermittent tributary branches that are part of the storm drainage system and associated with Boggy Creek located in the northeastern portion of the Vance AFB. A man-made channel within this system is approximately 475 ft from the northeast corner of the project area.

3.6.2.2 Stormwater

Any water resulting from rainfall on the Installation is conveyed through a series of robust drainage systems (Vance AFB, 2022a). Vance AFB is divided into 13 drainage areas that empty into 11 outfalls. Vance AFB supports stormwater efforts with two permits: an Industrial permit issued by the State of Oklahoma and a General Contractor permit, required for projects with ground movement larger than 1 acre. Both permits are issued by the State of Oklahoma. Extreme storms in and around Vance AFB do not currently pose pollution concerns at the Base (Vance AFB, 2022a). A well-functioning stormwater system helps to prevent issues that can contribute to pollution, such as clogs and backups.

3.6.2.3 Groundwater

The Enid Isolated Terrace (EIT) is the primary source of water for the city of Enid. The EIT is an aquifer that comprises roughly 82 square miles in Garfield County, Oklahoma. The EIT is an unconfined aquifer with deposits made up of clay, sandy clay, sand, and gravel. Terrace deposits are at their thickest, approximately 80 ft, near the city of Enid (US Geological Survey, 1997). Water provided from the EIT is very hard, moderately alkaline, and considered fair to good in quality.

Data suggest that there are three distinct water-bearing units beneath the surface at Vance AFB. These areas are termed the shallow (STZ), intermediate (ITZ), and deep transmissive zone (DTZ) based on their depth below the surface. These transmissive zones consist of materials that are porous enough to transmit water separated by layers of silt and clay stone that do not typically transmit water.

The STZ ranges from 10 to 30 ft and consists of clayey silt and silty clay; the ITZ ranges from 35 to 50 ft and consists of siltstone and claystone, and the DTZ ranges from 55 to 75 ft and consists of silt and siltstone. Groundwater is encountered at an average depth of 10 ft and the average groundwater flow velocity in the STZ has been calculated at approximately 20.99 ft per year with a general direction of flow to the north northeast (AFCEC, 2023).

The Installation-wide groundwater monitoring system contains 61 compliance wells and is maintained in accordance with RCRA permit specifications to evaluate groundwater resources. Ten Environmental

Restoration Program (ERP) sites located across Vance AFB also require specific groundwater monitoring mandates. Groundwater contamination within the proposed project area is discussed in greater detail in **Section 3.11**.

3.6.2.4 Floodplains

Floodplain modeling last occurred in May 2022 and delineated 100-year and 500-year flood zones occurring on the Installation. Mapped floodplains are only located within the fence line of Vance AFB in the undeveloped northeast portion of Installation; there are no floodplains located within the vicinity of the proposed projects (**Figure 3-8**). These floodplains are associated with intermittent Boggy Creek tributaries and are located more than 0.5 mile from the project area. Due to the distance from the Proposed Action, floodplains are not evaluated further in this EA.

3.6.2.5 Wetlands

There are no jurisdictional wetlands located within Vance AFB (Vance AFB, 2022a); therefore, wetlands are not evaluated further in this EA.

3.6.3 Environmental Consequences

3.6.3.1 Fire Crash/Rescue Station – Alternative 1

Surface Waters

No surface waters fall within the project area. Alternative 1 of the fire crash/rescue station project would involve construction approximately 475 ft from a tributary of Boggy Creek that is part of the Vance AFB storm drain system. BMPs would minimize the risk for impacts outside of the project area, and no adverse impacts to surface waters would be anticipated.

Stormwater

Alternative 1 of the fire crash/rescue station project would result in the addition of approximately 24,400 ft^2 of new impervious surface area. Stormwater utility infrastructure connecting to the facility would be replaced as a result of the fire crash/rescue station relocation. No adverse impacts would be anticipated to stormwater resources under Alternative 1.

Groundwater

Impacts to groundwater would have the potential to occur during construction and demolition activities and during relocation of underground utilities under Alternative 1. Groundwater resources and contamination are discussed in greater detail in **Section 3.10.**

3.6.3.2 Fire Crash/Rescue Station – Alternative 2

Surface Waters

Alternative 2 would result in the same impacts to surface waters as described in Alternative 1, although the construction activity would take place farther from any surface water feature and would be managed by BMPs, minimizing risk to these resources even further.

Stormwater

Alternative 2 of the fire crash/rescue station project would result in up to approximately 47,283 ft^2 of new impervious surface area. Stormwater utility infrastructure connecting to the facility would be replaced as a result of the fire crash/rescue station relocation. No adverse impacts would be anticipated to stormwater resources under Alternative 2.

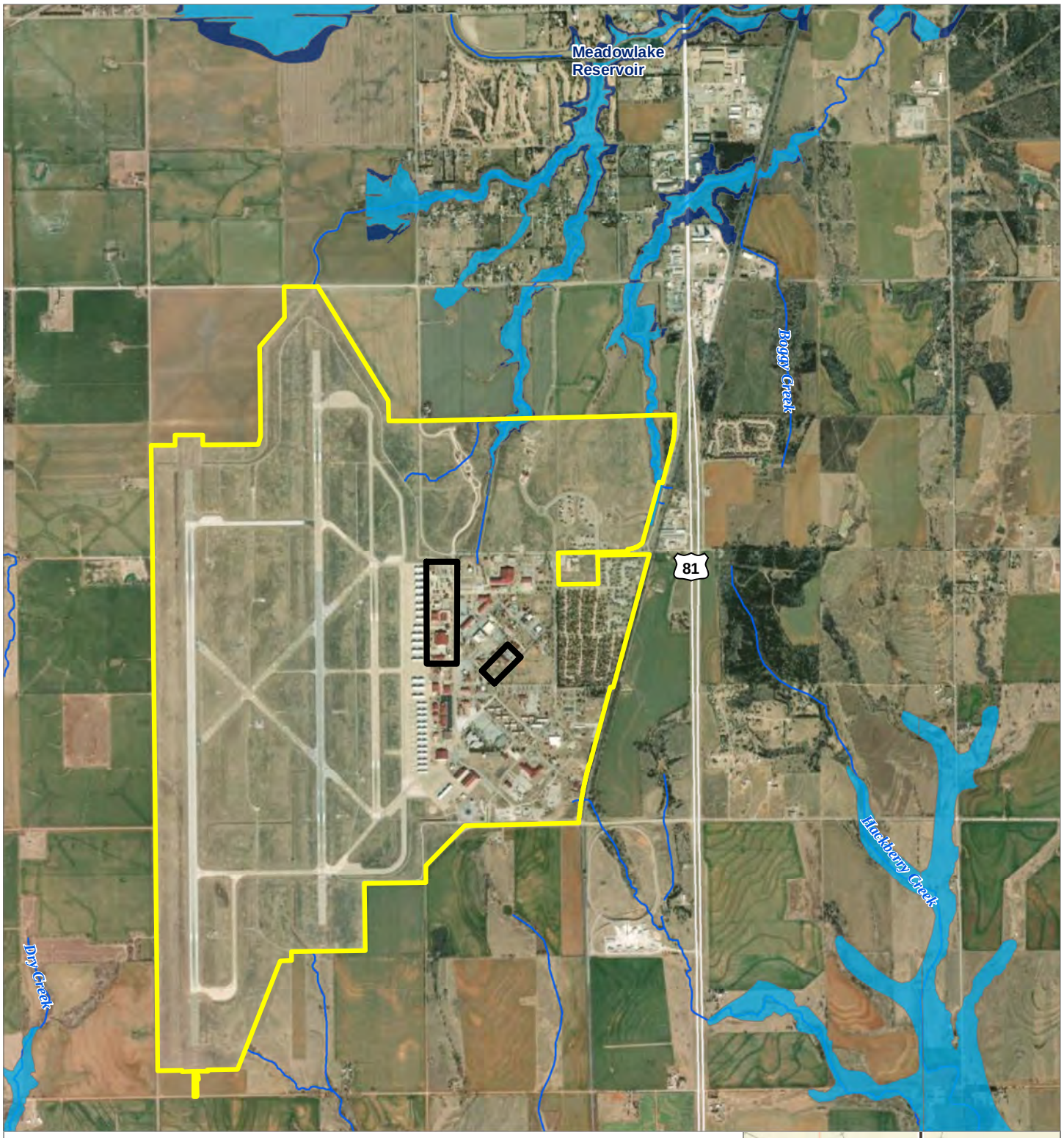


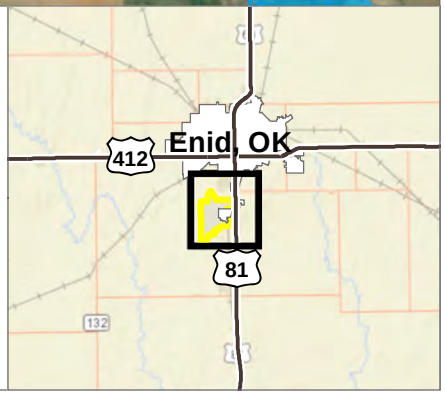
FIGURE 3-8
Water Resources

Stream
Installation Boundary
Project Locations
100-Year Flood Zone
500-Year Flood Zone

N

0 1 Miles

Imagery: ESRI, 2021
Coordinate System: NAD 83 UTM Zone 14N



Groundwater

Impacts to groundwater would have the potential to occur during construction and demolition activities and during relocation of underground utilities under Alternative 2. Groundwater resources and contamination are discussed in greater detail in **Section 3.11**.

3.6.3.3 Fire Crash/Rescue Station – Alternative 3

Surface Waters

Alternative 3 would result in the same impacts to surface waters as described in Alternative 1, although the construction activity would take place farther from any surface water feature and would be managed by BMPs, minimizing risk to these resources even further.

Stormwater

Alternative 3 of the fire crash/rescue station project would result in a reduction of impervious surface area by approximately 1,323 ft^2. A length of 227 lf of stormwater utility infrastructure connecting to the facility would be replaced as part of the renovations, and the site grading for positive drainage away from the building would result in a long-term, beneficial impacts to stormwater resources under Alternative 3.

Groundwater

Impacts to groundwater would have the potential to occur during construction and demolition activities and during relocation of underground utilities under Alternative 3. Groundwater resources and contamination are discussed in greater detail in **Section 3.11.**

3.6.3.4 Enlisted Unaccompanied Housing Facility – Alternative 1

Surface Waters

Alternative 1 of the enlisted UH facility project would not occur within proximity of surface water resources and would not result in any adverse impacts.

Stormwater

Alternative 1 of the enlisted UH facility project would result in an increase of approximately 15,381 ft^2 of impervious surfaces. Storm sewer infrastructure replacement would also occur in association with the construction and relocation of the new housing facility. Adverse impacts to stormwater resources would not be anticipated under Alternative 1.

Groundwater

The potential for impacts to groundwater under Alternative 1 of the enlisted UH facility project would be minor. Construction activities could create the potential for contaminants from fuel leaks; workers would be required to follow BMPs to prevent leaks and polluted stormwater runoff. With measures in place, long-term, adverse impacts to groundwater resources would not be anticipated to occur under Alternative 1.

3.6.3.5 Enlisted Unaccompanied Housing Facility – Alternative 2

Surface Waters

Alternative 2 of the enlisted UH facility project would not occur within proximity of surface water resources and would not result in any adverse impacts.

Stormwater

Alternative 2 of the enlisted UH facility project would not result in a permanent change to the impervious surface area within the project area. Storm sewer replacements would also be included in the renovation activities under this alternative. Alternative 2 would not result in adverse impacts to stormwater resources.

Groundwater

The potential for impacts to groundwater under Alternative 2 of the enlisted UH facility project would be the same as those described for Alternative 1.

3.6.3.6 Cumulative Impacts

The Proposed Action and Alternatives would have low potential to affect surface waters, which would be managed by use of BMPs, and none of the projects would occur in a floodplain. The Proposed Action and Alternatives would have minor cumulative impacts on stormwater runoff from increases in impervious surfaces. When considered in conjunction with other past, present, and reasonably foreseeable environmental trends and planned actions at Vance AFB, no significant cumulative effects to water resources would be anticipated to occur with implementation of the Proposed Action.

3.6.3.7 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. There would be no changes to water resources beyond baseline conditions and the stormwater drainage issues identified at Building 140 would continue. The fire crash/rescue station would continue to not meet current and future mission needs. The station would be out of compliance with DAFMAN 32-1084, UFC 4-730-10, ABA regulations, and ADA regulations. The risk for damage to the facilities and vehicles would continue due to the inadequate existing bay size, and operational inefficiencies would limit the effectiveness of the station. Under the No Action Alternative, the enlisted UH facility would remain in its current state, which is not sufficient to meet the current and future mission requirements. The degrading facilities would continue to affect morale, wellness, and quality of life for enlisted unaccompanied Aircrew at Vance AFB.

3.7 BIOLOGICAL RESOURCES

3.7.1 Definition of the Resource

Biological resources include native or invasive plants and animals; sensitive and protected floral and faunal species; and the associated habitats, such as wetlands, forests, grasslands, cliffs, and caves in which they exist. Habitat can be defined as the resources and conditions in an area that support a defined suite of organisms. The following is a description of the primary federal statutes that form the regulatory framework for the evaluation of biological resources.

The ROI for biological resources is Vance AFB.

3.7.1.1 Endangered Species Act

The ESA established protection for threatened and endangered species and the ecosystems upon which they depend. Sensitive and protected biological resources include plant and animal species listed as threatened, endangered, or special status by USFWS. The ESA also allows the designation of geographic areas as critical habitat for threatened or endangered species. Under the ESA, an “endangered species” is defined as any species in danger of extinction throughout all, or a large portion, of its range. A “threatened species” is defined as any species likely to become an endangered species in the foreseeable future. USFWS maintains a list of candidate species being evaluated for possible listing as threatened or endangered under the ESA. Although candidate species receive no statutory protection under the ESA, USFWS has attempted to advise government agencies, industry, and the public that these species are at risk and may warrant protection in the future under the ESA.

3.7.1.2 Migratory Bird Treaty Act

The MBTA makes it unlawful for anyone to take migratory birds or their parts, nests, or eggs unless permitted to do so by regulations. Per the MBTA, "take" is defined as "pursue, hunt, shoot, wound, kill, trap, capture, or collect" (50 CFR § 10.12). Birds protected under the MBTA include nearly all species in the US except for non-native/human-introduced species and some game birds.

EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, requires all federal agencies undertaking activities that may negatively impact migratory birds to follow a prescribed set of actions to further implement MBTA. EO 13186 directs federal agencies to develop a Memorandum of Understanding with USFWS that promotes the conservation of migratory birds.

The *National Defense Authorization Act for Fiscal Year 2003* (Public Law 107-314, 116 Stat. 2458) provided the Secretary of the Interior the authority to prescribe regulations to exempt the armed forces from the incidental take of migratory birds during authorized military readiness activities. Congress defined military readiness activities as all training and operations of the US Armed Forces that relate to combat and the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use. Further, in October of 2012, the Authorization of Take Incidental to Military Readiness Activities was published in the *Federal Register* (50 CFR § 21.15), authorizing incidental take during military readiness activities unless such activities may result in significant adverse effects on a population of a migratory bird species.

In December 2017, the US Department of the Interior issued M-Opinion 37050, which concluded that the take of migratory birds from an activity is not prohibited by the MBTA when the purpose of that activity is not the take of a migratory birds, eggs, or nests. On August 11, 2020, the US District Court, Southern District of New York, vacated M-Opinion 37050. Thus, incidental take of migratory birds is again prohibited. The interpretation of the MBTA remains in flux, and additional court proceedings are expected.

3.7.1.3 Bald and Golden Eagle Protection Act

The *Bald and Golden Eagle Protection Act of 1940* (16 USC §§ 668–668d) (BGEPA) prohibits actions to "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle [or any golden eagle], alive or dead, or any part, nest, or egg thereof." Further, the BGEPA defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb," and "disturb" is defined as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, injury to an eagle, a decrease in productivity by substantially interfering with the eagle's normal breeding, feeding or sheltering behavior, or nest abandonment by substantially interfering with the eagle's normal breeding, feeding, or sheltering behavior." The BGEPA also prohibits activities around an active or inactive nest site that could result in disturbance to returning eagles.

3.7.1.4 Aquatic Resources

Aquatic resources are habitats that contain either permanent or sufficient temporary water to support plant or wildlife species that require water or hydric soils for at least part of their life cycle.

3.7.1.5 Invasive Species

Invasive species are non-native species in an ecosystem whose introduction causes or is likely to cause economic or environmental harm, or harm to human, animal, or plant health. EO 13751, *Safeguarding the Nation from the Impacts of Invasive Species*, requires federal agencies to identify actions that may affect invasive species; use relevant programs to prevent introductions of invasive species; detect, respond, and control such species; monitor invasive species populations; and provide for restoration of native species. Invasive species damage native habitat and impede management by outcompeting native species.

3.7.2 Existing Conditions

3.7.2.1 Vegetation

Vance AFB is classified within the Dry Domain, Temperate Steppe Division, Great Plains Steppe Province and South-Central Great Plains Section (Vance AFB, 2022a). This region is characterized by hot, humid summers and cool winters. Ecosystems in this division are considered humid subtropical. Since direct solar radiation and outgoing radiation are high, there are extreme variations between day and night temperatures. Vance AFB has no abrupt features, and land areas are gently rolling, well drained, and of medium to high susceptibility to wind and water erosion.

The historic native vegetation in the region surrounding Vance AFB is tallgrass prairie with small areas of post oak/blackjack oak forest collectively referred to as the "Cross Timbers" (Tyrl et al., 2017; Vance AFB, 2022a). Most of the native vegetation in the region and adjacent to Vance AFB has been converted to agricultural land. A substantial portion of Vance AFB is developed and has disturbed vegetation. Vance AFB is covered with grassy areas that are maintained by periodic mowing during the growing season, April through October. Vegetation associated with Vance AFB is typical of the tallgrass prairie region and consists primarily of short and tall grasses including sand bluestem (*Andropogon hallii*), sand lovegrass (*Eragrostis trichodes*), and Indian grass (*Sorghastrum nutans*). Airfield areas are planted in Bermuda grass (*Cynodon dactylon*) and other native grasses. The tree populations consist of a variety of species commonly found in the region, including elm, cedar, oak, pine, and maple. Trees on Vance AFB are located primarily in residential areas.

3.7.2.2 Wildlife

The land within Vance AFB is mostly developed and surrounded by agricultural land with small areas of trees and grass along stream channels and in mesic areas. Within the ROI, wildlife is restricted to those few remaining areas of native vegetation and consists of species that have adapted to urban life. Mammal species common to Vance AFB include opossum (*Didelpis virginiana*), red fox (*Vulpes vulpes*), squirrels (*Sciurus* spp.), coyote (*Canis latrans*), racoon (*Procyon lotor*), and bobcat (*Lynx rufus*). Bird species observed on Vance AFB include raptors (hawks and falcons), mourning dove (*Zenaida macroura*), grackles (*Quiscalus* spp.), waterfowl (ducks and geese), and American crow (*Corvus brachyrhynchos*).

3.7.2.3 Aquatic Resources

There are no aquatic resources on Vance AFB (Vance AFB, 2022a); therefore, these resources are not evaluated further in this EA.

3.7.2.4 Threatened or Endangered Species

The 2022 Integrated Natural Resources Management Plan (INRMP) for Vance AFB identified that no state or federal threatened and endangered species of concern reside on the Base property and most likely do not inhabit the immediate area (Vance AFB, 2022a). No critical habitat for threatened or endangered species exists on Vance AFB. The USFWS IPaC online review tool was used to obtain a list of potential threatened or endangered and candidate species in the vicinity of the Proposed Action (see **Appendix A**). Seven federally listed threatened, endangered, or candidate species have the potential to occur in the vicinity of Vance AFB (**Table 3-11**); however, only three of these species are known to occur within the vicinity of the Installation.

The tricolored bat (*Perimyotis subflavus*) is known to occur in Garfield County (Oklahoma Department of Wildlife Conservation [ODWC], 2020). The USFWS proposed listing the tricolored bat as an endangered species in 2022 (87 FR 56381). During the winter, the tricolored bat primarily uses caves and mines for hibernation, which are absent from Vance AFB. The tricolored bat less frequently uses road culverts and tree cavities for hibernation (USFWS, 2021). During the non-hibernation season (spring, summer, and fall), the tricolored bat primarily roosts among leaf clusters of live or recently dead deciduous hardwood trees,

also not common in the proposed project area. Vance AFB is highly disturbed and does not support habitat for this species.

Table 3-11
Federally Listed Species with the Potential to Occur Within the Vicinity of Vance AFB

Species	Type	Federal Status	Known to Occur in the Vicinity of Vance AFB
Tricolored bat *Perimyotis subflavus*	Mammal	Proposed Endangered	Yes, but does not reside on Vance AFB
Piping plover *Charadrius melodus*	Bird	Threatened	No
Red knot *Caidris canutus rufa*	Bird	Threatened	No
Whooping crane *Grus americana*	Bird	Endangered	Yes, last observed on Vance AFB in 2012
Arkansas river shiner *Notropis Girardi*	Fish	Threatened	No
Peppered chub *Macrhybopsis tetranema*	Fish	Endangered	No
Monarch butterfly *Danaus plexippus*	Insect	Candidate	Yes, but does not reside on Vance AFB

According to the 2022 INRMP with consultation with the USFWS ODWC, Vance AFB does not support habitat for the piping plover (*Charadrius melodus*) or the red knot (*Caidris canutus rufa*). Both species occur in the region as transients during spring and fall migration. The piping plover prefers shoreline beach and sandbar habitat along streams and lakes, both of which do not exist on Vance AFB. The red knot is a long-distance migrant and may use freshwater areas such as wetlands and riverine sandbars as potential stopover habitat, neither of which occurs on Vance AFB.

Vance AFB is within the migratory corridor of the whooping crane (*Grus americana*). However, the last sighting of a whooping crane at Vance AFB occurred in 2012 (Vance AFB, 2022a). Current efforts at Vance AFB are focused on the prevention of an airstrike with a whooping crane during migration in the spring and fall between wintering areas along the gulf coast and breeding areas in Canada (USFWS, 2007). In coordination with USFWS and AFCEC, Vance AFB is researching the potential tracking of whooping crane movements biometrically in the Vance AFB managed airspace. The purpose is to provide for protection of the whooping cranes and safety of the Vance AFB flying mission. Current visual surveillance methods utilized by the 71 FTW Safety Office Wildlife Services have not positively identified a whooping crane traversing the Vance AFB airfield since 2012. Vance AFB is highly disturbed and does not support habitat for this species. However, this species can occur in the region and has transient migrants through the central part of the state.

The monarch butterfly (*Danaus plexippus*) is known to occur in Oklahoma. Vance AFB is highly disturbed and does not support habitat for the monarch butterfly. Areas containing milkweeds (*Asclepias* sp.) are necessary for breeding. However, this species does occur in the region and has transient potential anywhere in the state.

3.7.2.5 Migratory Birds

Migratory bird species protected under the federal MBTA likely occur in the undeveloped areas surrounding the Base, do not typically reside at Vance AFB, and are transient in nature. In addition, developed areas of the ROI have been fragmented into small habitat patches, decreasing the quality of habitat available to migratory birds. One migratory bird, the Mississippi kite (*Ictinia mississippiensis*), does nest at Vance AFB

and in the surrounding region (Vance AFB, 2022a). It is an aggressive bird when nesting, and warning signs are posted around trees with nests until the young fledge and the bird typically moves on in August of each year. The Mississippi kites that nest at Vance AFB are migrants from South America and continue migration as soon as their young are fledged. No additional measures are necessary to manage the species while on the Installation.

Bald and golden eagles are protected under the BGEPA. Neither species occurs on Vance AFB and suitable habitat does not occur on the Installation.

3.7.2.6 Invasive Species

There are no invasive species concerns on Vance AFB; therefore, invasive species are not evaluated further in this EA.

3.7.3 Environmental Consequences

3.7.3.1 Evaluation Criteria

The level of impact on biological resources is based on the following:

- importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource;
- proportion of the resource that would be affected relative to its occurrence in the region;
- sensitivity of the resource to the proposed activities; and
- duration of potential ecological impact.

Adverse impacts on biological resources would occur if the Proposed Action or Alternatives negatively affect species or habitats of high concern over relatively large areas or if estimated disturbances cause reductions in population size or distribution of a species of high concern.

As a requirement under the ESA, federal agencies must provide documentation that ensures that the agency's proposed actions would not adversely affect the existence of any threatened or endangered species. The ESA requires that all federal agencies avoid "taking" federally threatened or endangered species (which includes jeopardizing threatened or endangered species habitat). Section 7 of the ESA establishes a consultation process with USFWS that ends with either a "no effect" determination by the federal agency or a Biological Opinion from the USFWS that the Proposed Action either would or would not jeopardize the continual existence of a species.

3.7.3.2 Fire Crash/Rescue Station – Alternative 1

Vegetation

No significant impacts to vegetation would occur from implementation of Alternative 1 of the fire crash/rescue station project because the areas designated for proposed project activities are highly disturbed or developed and no native vegetation occurs in those areas.

Wildlife

No significant impacts to wildlife would occur from implementation of Alternative 1 of the fire crash/rescue station project. There is limited suitable habitat for wildlife within the proposed project area under Alternative 1. The developed portion of Vance AFB supports relatively common wildlife species. It is possible that birds may nest or bats may roost on some of the buildings scheduled for demolition. Buildings and the surrounding construction area would be checked for nests during the primary nesting season, generally 1 May through 1 July in Oklahoma, and surveyed for the presence of migratory birds if construction occurs outside the nesting season. Buildings also would be checked for roosting bats prior to demolition. The bat

maternity season is generally from early May through mid-to-late August. Wildlife, especially avian species, utilize small, undeveloped areas between buildings for foraging and breeding.

Threatened or Endangered Species

No adverse effects to threatened or endangered species or other protected species would occur from implementation of Alternative 1 of the fire crash/rescue station project. Federally listed threatened or endangered species are not known to reside on Vance AFB. The Installation is highly disturbed with well-maintained grass and landscaping typical of an urban environment. There is no critical habitat for threatened and endangered species on Vance AFB. Therefore, the Air Force has determined that the construction and demolition actions under Alternative 1 would have no effect on federally listed threatened or endangered species.

Migratory Birds

Migratory birds have the potential to occur on Vance AFB. In coordination with Vance AFB environmental staff, construction and demolition sites would be surveyed for the presence of the Mississippi kite or other migratory birds before work would begin. With implementation of pre-construction surveys and BMPs, no significant impacts to migratory birds would be expected to occur under Alternative 1. In addition, no impacts to bald or golden eagles would be expected because suitable habitat for these species does not exist on Vance AFB.

3.7.3.3 Fire Crash/Rescue Station – Alternative 2

Potential impacts to biological resources under Alternative 2 of the fire crash/rescue station project would be the same as Alternative 1.

3.7.3.4 Fire Crash/Rescue Station – Alternative 3

Potential impacts to biological resources under Alternative 3 of the fire crash/rescue station project would be the same as Alternative 1.

3.7.3.5 Enlisted Unaccompanied Housing Facility – Alternative 1

The enlisted UH facility project would be located in a highly developed area of Vance AFB; therefore potential impacts to biological resources under Alternative 1 of the enlisted UH facility project would be the same as Alternative 1 of the fire crash/rescue station project (see **Section 3.7.3.2**).

3.7.3.6 Enlisted Unaccompanied Housing Facility – Alternative 2

As with Alternative 1, potential impacts to biological resources under Alternative 2 of the enlisted UH facility project would be the same as Alternative 1 of the fire crash/rescue station project (see **Section 3.7.3.2**).

3.7.3.7 Cumulative Impacts

The Proposed Action and Alternatives would result in no effect to threatened and endangered species, native vegetation, or wildlife habitat. No impacts to biological resources would be expected to occur under the Proposed Action, and when considered in conjunction with other past, present, and reasonably foreseeable environmental trends and planned actions at Vance AFB, no significant cumulative effects to biological resources would be anticipated to occur with implementation of the Proposed Action.

3.7.3.8 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. There would be no changes to biological resources beyond baseline conditions. The fire crash/rescue station would continue to not meet current and future mission needs. The station would be out of compliance with DAFMAN 32-1084, UFC 4-

730-10, ABA regulations, and ADA regulations. The risk for damage to the facilities and vehicles would continue due to the inadequate existing bay size, and operational inefficiencies would limit the effectiveness of the station. Under the No Action Alternative, the enlisted UH facility would remain in its current state, which is not sufficient to meet the current and future mission requirements. The degrading facilities would continue to affect morale, wellness, and quality of life for enlisted unaccompanied Aircrew at Vance AFB.

3.8 CULTURAL RESOURCES

3.8.1 Definition of the Resource

Cultural resources are any prehistoric or historic district, site, building, structure, or object considered important to a culture or community for scientific, traditional, religious, or other purposes. These resources are protected and identified under several federal laws and EOs including the *Archaeological and Historic Preservation Act of 1960*, as amended (54 USC § 300101 et seq.), the *American Indian Religious Freedom Act of 1978* (42 USC § 1996), the *Archaeological Resources Protection Act of 1979*, as amended (16 USC §§ 470aa–470mm), the *Native American Graves Protection and Repatriation Act of 1990* (25 USC §§ 3001–3013), the NHPA, as amended through 2016, and associated regulations (36 CFR Part 800). The NHPA requires federal agencies to consider effects of federal undertakings on historic properties prior to deciding or taking an action and integrate historic preservation values into their decision-making process. Federal agencies fulfill this requirement by completing the NHPA Section 106 consultation process, as set forth in 36 CFR Part 800. NHPA Section 106 also requires agencies to consult with federally recognized American Indian tribes with a vested interest in the undertaking. NHPA Section 106 requires all federal agencies to seek to avoid, minimize, or mitigate adverse effects to historic properties (36 CFR § 800.1(a)).

Cultural resources include the following subcategories:

- Archaeological (i.e., prehistoric or historic sites where human activity has left physical evidence of that activity, but no structures remain standing);
- Architectural (i.e., buildings, structures, groups of structures, or designed landscapes that are of historic or aesthetic significance); and
- Traditional Cultural Properties (TCPs) (resources of traditional, religious, or cultural significance to American Indian tribes).

Significant cultural resources are those listed on the National Register of Historic Places (NRHP) or determined to be eligible for listing. To be eligible for the NRHP, properties must be 50 years old and have national, state, or local significance in American history, architecture, archaeology, engineering, or culture. They must possess sufficient integrity of location, design, setting, materials, workmanship, feeling, and association to convey their historical significance and meet at least one of four criteria for evaluation:

1. Associated with events that have made a significant contribution to the broad patterns of our history (Criterion A);
2. Associated with the lives of persons significant in our past (Criterion B);
3. Embody distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C); and/or
4. Have yielded or be likely to yield information important in prehistory or history (Criterion D).

Properties that are less than 50 years old can be considered eligible for the NRHP under criteria consideration G if they possess exceptional historical importance. Those properties must also retain historic integrity and meet at least one of the four NRHP criteria (Criteria A, B, C, or D). The term “historic property” refers to National Historic Landmarks, NRHP-listed, and NRHP-eligible cultural resources.

For cultural resources analyses, the ROI is defined by the Area of Potential Effect (APE). The APE is defined as the "geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist," (36 CFR § 800.16(d)) and thereby diminish their historic integrity. The direct and indirect APE for this EA is 50 meters and 800 meters around each project location, respectively. For the purposes of this EA, project locations are defined as the buildings identified for activities under the Proposed Action.

3.8.2 Existing Conditions

In 2006, AETC approved a waiver that Vance AFB is not required to complete an Integrated Cultural Resources Management Plan due to the lack of archaeological resources, high levels of disturbance, and because there are no historic buildings and structures determined to be eligible for listing on the NRHP (AETC, 2006).

3.8.2.1 Archaeological Sites

A cultural resources survey was conducted at Vance AFB in 1993 by the National Park Service. This survey included both an archaeological assessment and historic resource survey to identify buildings and structures that could be potentially eligible for listing on the NRHP. The survey did not locate any archaeological resources on Vance AFB and concluded that no further surveys were required due to extensive land disturbance and the low potential for archaeological resources on the Installation. In its response to Vance AFB's scoping notice, the Oklahoma Archeological Survey confirmed in a letter dated 10 May 2023 that no sites have been identified within the project area and no archaeological materials are likely to be encountered (see **Appendix A**).

3.8.2.2 Historic Architectural Properties

A 2003 survey identified 41 potential Cold War-era buildings and structures that warranted further investigation as to their potential for historic significance. The SHPO determined that the buildings and structures were not eligible for listing on the NRHP under Criterion Consideration G (AETC, 2003). By 2014, the SHPO reviewed another 18 buildings for potential for historical significance and determined that they were not eligible for listing on the NRHP (SHPO 2013, 2014).

3.8.2.3 Traditional Cultural Properties

TCPs may include traditionally used plants and animals, trails, and certain geographic areas. Types of resources that have been specifically identified in recent studies include, but are not limited to, rock art sites; "power" rocks and locations; medicine areas; and landscape features such as specific peaks or ranges, hot springs, meadows, valleys, and caves. No Native American cemeteries, burials, sacred sites, or areas considered a TCP have been identified during surveys at Vance AFB (AETC, 2006). In its response to Vance AFB's notice of consultation, the US Department of the Interior, Bureau of Indian Affairs confirmed in a letter dated 17 May 2023 that there are no tribal or individual Indian trust lands in the vicinity of the proposed project area (see **Appendix A**).

3.8.3 Environmental Consequences

3.8.3.1 Evaluation Criteria

Adverse impacts on cultural resources would occur if the Proposed Action or Alternatives results in the following:

- physically altering, damaging, or destroying all or part of a resource;
- altering characteristics of the surrounding environment that contribute to the resource's significance;

- introducing visual or audible elements that are out of character with the property or alter its setting;
- neglecting the resource to the extent that it deteriorates or is destroyed; or
- the sale, transfer, or lease of the property out of agency ownership (or control) without adequate enforceable restrictions or conditions to ensure preservation of the property's historic significance.

For the purposes of this EA, an impact is considered significant if it alters the integrity of a NRHP-listed, eligible, or potentially eligible resource or potentially impacts TCPs.

3.8.3.2 Fire Crash/Rescue Station – Alternative 1

Archaeological Sites

Alternative 1 of the fire crash/rescue station project would be anticipated to have no adverse effect on archaeological sites because no archaeological resources are known to occur on Vance AFB. In accordance with federal and Air Force regulations, should any archaeological artifacts be exposed during construction or any other activities, those activities would cease until an investigation is completed (AETC, 2006). The Oklahoma Archeological Survey has also requested to be contacted if archaeological materials are encountered (see **Appendix A**).

Historic Architectural Properties

No buildings or structures on Vance AFB have been determined eligible for listing on the NRHP; therefore, Alternative 1 of the fire crash/rescue station project would be anticipated to have no adverse effect on any building or structure of historical significance.

Traditional Cultural Properties

No Native American TCPs, cemeteries, burials, or sacred sites have been identified on Vance AFB and no impacts to these cultural resources would occur from implementation of Alternative 1 of the fire crash/rescue station project. However, if an inadvertent discovery of Native American human remains occurs during any subsurface excavation during construction, all work activity would cease until an investigation is completed.

3.8.3.3 Fire Crash/Rescue Station – Alternative 2

Potential impacts to cultural resources under Alternative 2 of the fire crash/rescue station project would be the same as those under Alternative 1.

3.8.3.4 Fire Crash/Rescue Station – Alternative 3

Potential impacts to cultural resources under Alternative 3 of the fire crash/rescue station project would be the same as those under Alternative 1.

3.8.3.5 Enlisted Unaccompanied Housing Facility – Alternative 1

Potential impacts to cultural resources under Alternative 1 of the enlisted UH facility project would be the same as those under Alternative 1 of the fire crash/rescue station project (see **Section 3.8.3.2**).

3.8.3.6 Enlisted Unaccompanied Housing Facility – Alternative 2

Potential impacts to cultural resources under Alternative 2 of the enlisted UH facility project would be the same as those under Alternative 1 of the fire crash/rescue station project (see **Section 3.8.3.2**).

3.8.3.7 Cumulative Impacts

The Proposed Action and Alternatives would not result in adverse impacts to cultural resources. When considered in conjunction with the other past, present, and reasonably foreseeable environmental trends and planned actions at Vance AFB, no significant cumulative effects to cultural resources would be anticipated to occur with implementation of the Proposed Action.

3.8.3.8 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. There would be no changes to cultural resources beyond the baseline. The fire crash/rescue station would continue to not meet current and future mission needs. The station would be out of compliance with DAFMAN 32-1084, UFC 4-730-10, ABA regulations, and ADA regulations. The risk for damage to the facilities and vehicles would continue due to the inadequate existing bay size, and operational inefficiencies would limit the effectiveness of the station. Under the No Action Alternative, the enlisted UH facility would remain in its current state, which is not sufficient to meet the current and future mission requirements. The degrading facilities would continue to affect morale, wellness, and quality of life for enlisted unaccompanied Aircrew at Vance AFB.

3.9 NOISE

3.9.1 Definition of the Resource

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air or water, and are sensed by the human ear. Noise is generally described as unwanted sound. Unwanted sound can be grounded in objectivity (e.g., hearing loss or damage to structures) or subjectivity (e.g., an individual's level of tolerance or annoyance to different sounds). Noise events elicit varying responses within a population or area based on the activity generating noise and its perceived importance and related factors, such as setting, time of day, exposure period or duration, and receptor sensitivity. In addition to humans, noise may also affect wildlife as indicated by behavioral changes during nesting, foraging, migration, or other life-cycle activities (USEPA, 1978).

The ROI for noise is Vance AFB.

3.9.1.1 Noise Metrics

Noise and sound levels are expressed in logarithmic units measured by decibels (dB). A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech equates to a sound level of approximately 60 dB, sound levels above 120 dB begin to be felt inside the human ear as discomfort, and sound levels between 130 and 140 dB are felt as pain (Berglund and Lindvall, 1995). To mimic the human ear's non-linear sensitivity and perception of different frequencies of sound, the spectral content is weighted to de-emphasize very low and very high frequencies to better replicate human sensitivity and is denoted as an A-weighted decibel (dBA). All sound levels presented in this document are in units dBA unless otherwise noted.

In accordance with DoD guidelines and standard practice for environmental impact analysis documents, the noise analysis herein uses the Day-Night Average Sound Level (DNL) and the Onset-Rate Adjusted DNL. DNL is a cumulative measure of multiple flight and engine maintenance activities throughout an average year.

The *Noise Control Act of 1972* (Public Law 92-574) directs federal agencies to comply with applicable federal, state, and local noise control regulations. In 1974, the USEPA provided information suggesting that continuous and long-term noise levels greater than 65 dBA are normally unacceptable for noise-sensitive receptors such as residences, schools, churches, and hospitals (USEPA, 1974).

3.9.2 Existing Conditions

As is normal for military installations with a flying mission, the primary driver of noise at Vance AFB is aircraft operations. Vance AFB serves as the headquarters for the 71 FTW and supports several other Army National Guard and Reserve units. Training aircraft such as the T-1A Jayhawk, T-6A Texan II, and T-38C Talon make up most flight operations at Vance AFB. Vance AFB conducts more than 50,000 sorties in its local airspace annually.

Typical ambient sound levels on the Base have been modeled previously for a noise effects assessment as part of the Vance *Air Installations Compatible Use Zones (AICUZ) Study* (Vance AFB, 2022b). Modeling results for that assessment indicate that existing DNL ranges from 65 dBA to 85 dBA across Vance AFB. Ambient noise levels from aircraft operations at the proposed project locations are in the range of 65 dBA to 85 dBA.

In addition to aviation noise, other noise is generated from the day-to-day activities from operations, maintenance, and the industrial functions associated with airfield operations. These noise sources include ground-support equipment and vehicular transportation. Noise from aircraft operations remains the dominant noise source.

Noise-sensitive receptors in the ROI are primarily associated with schools, healthcare facilities, recreation and conservation lands (including the wildlife that inhabits these areas), and places of religion. Noise-sensitive receptors within 800 feet of the planned demolition and construction activities, that is, those who could reasonably be expected to hear construction noise under the Proposed Action, include the following:

- Vance AFB Child Development Center (childcare facility) – 0.13 mi from the proposed enlisted UH facility project area
- Vance AFB Chapel (place of worship) – 0.10 mi from the proposed enlisted UH facility project area
- UH facility baseball and soccer fields (recreation facilities) – 0.07 mi from the proposed enlisted UH facility project area.

3.9.3 Environmental Consequences

When evaluating noise effects, several aspects are examined:

- the degree to which noise levels generated by training and operations, as well as construction, demolition, and renovation activities, would be higher than the ambient noise levels;
- the degree to which there would be hearing loss and/or annoyance; and
- the proximity of noise-sensitive receptors (e.g., residences, schools, hospitals, parks) to the noise source.

3.9.3.1 Fire Crash/Rescue Station – Alternative 1

Alternative 1 of the fire crash/rescue station project would include construction and demolition activities that would occur entirely within the boundaries of Vance AFB. These actions would be short term, implemented over time, and would not contribute to the long-term baseline noise environment. Sound would be generated from construction equipment and traffic. The sound levels typical of typical construction equipment are listed in **Table 3-12**.

Noise associated with the operation of construction equipment would be generally short term, intermittent, and localized, with the loudest machinery typically producing peak sound pressure levels ranging from 86 to 95 dBA at a 50-foot distance from the source (**Table 3-12**). However, the equipment would be operated intermittently during construction, and potential noise impacts would be short term and limited to daylight hours. Sound from construction would be confined to the Installation and would be localized at the project

location; sensitive-noise receptors would not be within close proximity to construction or demolition activities.

Table 3-12
Peak Sound Pressure Level of Construction Equipment from 50 Feet

Equipment	Sound Pressure Level (dBA)
Bulldozer	95
Scraper	94
Front Loader	94
Backhoe	92
Grader	91
Crane	86

Source: Reagan and Grant, 1977
dBA = A-weighted decibel

3.9.3.2 Fire Crash/Rescue Station – Alternative 2

Potential noise impacts under Alternative 2 of the fire crash/rescue station project would be expected to be similar to Alternative 1. Alternative 2 would include a larger amount of construction and demolition actions. Noise impacts would be associated with individual actions that occur over time; therefore, differences in noise impacts between Alternative 1 and Alternative 2 would be indiscernible.

3.9.3.3 Fire Crash/Rescue Station – Alternative 3

The noise from demolition, grading, and construction activities under Alternative 3 of the fire crash/rescue station project would be less than under Alternatives 1 and 2. Potential noise impacts from renovations under Alternative 3 would be short term and minor, and interior renovation noise would be confined to the inside of the existing fire crash/rescue facility.

3.9.3.4 Enlisted Unaccompanied Housing Facility – Alternative 1

Under Alternative 1 of the enlisted UH facility project, noise from the operation of construction equipment would be short term and localized. This project alternative has the potential to affect multiple noise-sensitive receptors on Vance AFB: the Child Development Center, Chapel, and UH facility baseball fields, all of which are within 0.13 mi of the project area. These areas have the potential to experience noise from equipment during the construction of the new UH facility and the demolition of the outdated buildings. The residents of Building 423 would also experience construction noise because this building would remain in use until its planned demolition after the new facility is complete. Alternative 1 would cause short-term, minor noise impacts during these construction and demolition activities. Equipment would be operated intermittently during construction, and potential noise impacts would be limited to daylight hours. There would be no long-term change to the existing noise environment with the implementation of Alternative 1.

3.9.3.5 Enlisted Unaccompanied Housing Facility – Alternative 2

Potential noise impacts under Alternative 2 of the enlisted UH facility project would be expected to be similar to Alternative 1. Alternative 2 would renovate the existing buildings, confining some interior construction noise inside; however, the renovations would also include exterior work on the housing buildings as well as the construction of exterior elevators. Like Alternative 1, equipment would be operated intermittently, and potential noise impacts would be short term and limited to daylight hours during the construction period. The implementation of Alternative 2 would not result in long-term impacts to the existing noise environment.

3.9.3.6 Cumulative Impacts

The potential noise impacts associated with the Proposed Action and Alternatives would be short term (i.e., limited to the construction period) and localized to the individual construction projects; therefore, noise impacts would not contribute to cumulative noise impacts when considered in conjunction with other past, present, and reasonably foreseeable environmental trends and planned actions at Vance AFB. No significant cumulative effects on the existing noise environment would be anticipated to occur with implementation of the Proposed Action.

3.9.3.7 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. There would be no changes to the noise environment beyond the baseline. The fire crash/rescue station would continue to not meet current and future mission needs. The station would be out of compliance with DAFMAN 32-1084, UFC 4-730-10, ABA regulations, and ADA regulations. The risk for damage to the facilities and vehicles would continue due to the inadequate existing bay size, and operational inefficiencies would limit the effectiveness of the station. Under the No Action Alternative, the enlisted UH facility would remain in its current state, which is not sufficient to meet the current and future mission requirements. The degrading facilities would continue to affect morale, wellness, and quality of life for enlisted unaccompanied Aircrew at Vance AFB.

3.10 HAZARDOUS MATERIALS AND WASTE, TOXIC SUBSTANCES, AND CONTAMINATED SITES

3.10.1 Definition of the Resource

CERCLA (42 USC § 9601 et seq.), as amended by the *Superfund Amendments and Reauthorization Act* (SARA) and TSCA (15 USC § 2601 et seq., as implemented by 40 CFR Part 761), defines hazardous materials (HAZMAT) as any substance with physical properties of ignitability, corrosivity, reactivity, or toxicity that might cause an increase in mortality, serious irreversible illness, and incapacitating reversible illness, or that might pose a substantial threat to human health or the environment. The Occupational Safety and Health Administration (OSHA) is responsible for the enforcement and implementation of federal laws and regulations pertaining to worker health and safety under 29 CFR Part 1910. OSHA also includes the regulation of HAZMAT in the workplace and ensures appropriate training in their handling.

The *Solid Waste Disposal Act*, as amended RCRA (42 USC § 6901 et seq.), which was further amended by the *Hazardous and Solid Waste Amendments of 1984*, defines hazardous wastes as any solid, liquid, contained gaseous, or semi-solid waste, or any combination of wastes, that pose a substantial present or potential hazard to human health or the environment. In general, both HAZMAT and hazardous wastes include substances that, because of their quantity, concentration, physical, chemical, or infectious characteristics, might present substantial danger to public health and welfare or the environment when released or otherwise improperly managed.

Under AFPD 32-70, *Environmental Considerations in Air Force Programs and Activities*, the Air Force is committed to performing the following actions:

- Cleaning up environmental damage resulting from its past activities,
- Meeting all environmental standards applicable to its present operations,
- Planning its future activities to minimize environmental impacts,
- Responsibly managing the irreplaceable natural and cultural resources it holds in public trust, and
- Eliminating pollution from its activities wherever possible.

AFI 32-7044, *Storage Tank Compliance*, implements AFPD 32-70 and identifies compliance requirements for USTs and ASTs, and associated piping, that store petroleum products and hazardous substances. Evaluation of HAZMAT and hazardous wastes focuses on USTs and ASTs as well as the storage, transport,

and use of pesticides, fuels, oils, and lubricants. Evaluation might also extend to generation, storage, transportation, and disposal of hazardous wastes when such activity occurs at or near the project site of a proposed action. In addition to being a threat to humans, the improper release of HAZMAT and hazardous wastes can threaten the health and well-being of wildlife species, botanical habitats, soil systems, and water resources. In the event of HAZMAT or hazardous waste release, the extent of contamination would vary based on type of soil, topography, weather conditions, and water resources.

AFI 32-7086, *Hazardous Materials Management*, establishes procedures and standards that govern management of HAZMAT throughout the Air Force. It applies to all Air Force personnel who authorize, procure, issue, use, or dispose of HAZMAT, and to those who manage, monitor, or track any of those activities.

Through the ERP initiated in 1980, a subcomponent of the Defense ERP that became law under SARA (formerly the Installation Restoration Program), each DoD installation is required to identify, investigate, and clean up hazardous waste disposal or release sites. Remedial activities for ERP sites follow the Hazardous and Solid Waste Amendments under the RCRA Corrective Action Program. The ERP provides a uniform, thorough methodology to evaluate past disposal sites, control the migration of contaminants, minimize potential hazards to human health and the environment, and clean up contamination through a series of stages until it is decided that no further remedial action is warranted.

Description of ERP activities provides a useful gauge of the condition of soils, water resources, and other resources that might be affected by contaminants. It also aids in the identification of properties and their usefulness for given purposes (e.g., activities dependent on groundwater usage might be foreclosed where a groundwater contaminant plume remains to complete remediation).

Toxic substances might pose a risk to human health but are not regulated as contaminants under the hazardous waste statutes. Included in this category are asbestos-containing materials (ACMs), lead-based paint (LBP), radon, and polychlorinated biphenyls (PCBs). The presence of special hazards or controls over them might affect, or be affected by, a proposed action. Information on special hazards describing their locations, quantities, and condition assists in determining the significance of a proposed action.

The ROI for this resource is Vance AFB.

3.10.1.1 Asbestos

AFI 32-1052, *Facility Asbestos Management*, provides directions for asbestos management at Air Force installations. This instruction incorporates by reference applicable requirements of 29 CFR Part 669, 29 CFR § 1910.1025, 29 CFR § 1926.58, 40 CFR § 61.3.80, CAA Section 112, and other applicable AFIs and DoD Directives. AFI 32-1052 requires bases to develop an asbestos management plan to maintain a permanent record of the status and condition of ACM in Installation facilities, as well as to document asbestos management efforts.

3.10.1.2 Lead-Based Paint

OSHA, USEPA, and other agencies have determined that human exposure to lead presents an adverse health risk. Sources of exposure to lead are dust, soils, and paint. In 1978, the *Consumer Product Safety Act* (as implemented by 16 CFR Part 1303), established the maximum lead content in paint of 0.06 percent by weight (down from the original 1973 maximum of 0.5 percent). DoD implemented a ban on LBP use in 1978; however, it is possible that facilities constructed 1978 or earlier may contain LBP.

3.10.1.3 Radon

The US Surgeon General defines radon as an invisible, odorless, and tasteless gas, with no immediate health symptoms, that comes from the breakdown of naturally occurring uranium inside the earth. Radon that is present in soil can enter a building through small spaces and openings, accumulating in enclosed

areas such as basements. USEPA and the US Surgeon General have evaluated the radon potential around the country to organize and assist building code officials in deciding whether radon-resistant features are applicable in new construction. Radon zones can range from 1 (high) to 3 (low). Each zone designation reflects the average short-term radon measurement that can be expected in a building without the implementation of radon control methods. Garfield County is located within Radon Zone 3 with average indoor radon levels less than 2 picocuries per liter. Due to the low probability of radon levels exceeding the USEPA's guidance level of 4 picocuries per liter, radon is not evaluated further in this EA.

3.10.2 Existing Conditions

3.10.2.1 Hazardous Materials and Wastes

HAZMAT is used at Vance AFB for aircraft operations support and maintenance, including petroleum, oils, and lubricants management and distribution. Types of hazardous substances found on Vance AFB include hydraulic fluid, engine oil, Jet Propellant 8 and other fuels, brake fluid, antifreeze, solvents, filters, mercury, corrosive liquids, paints, paint thinner, adhesives, batteries, light bulbs, scrap metal, used tires, medical waste, and contaminated solids.

HAZMAT has historically been used and stored at the point of generation across the Base. Waste is consolidated at Building 250 for pickup by an appropriate waste contractor.

Hazardous and toxic substances generated at Vance AFB are tracked by the Environmental, Safety, and Occupational Health Management Information System. Hazardous and toxic substances disposal procedures are identified in the Vance AFB *Hazardous Waste Management Plan* (Vance AFB, 2022c), and all waste is disposed of in compliance with all federal, state, and local regulations.

USEPA considers Vance AFB a small-quantity generator (SQG) of hazardous waste. To maintain the SQG status, the facility cannot dispose of more than 2,200 pounds (lbs) of hazardous waste a month. Hazardous waste at Vance AFB is consolidated at Building 250 from several satellite accumulation areas throughout the Base (Vance AFB, 2022c). Activities on Base, including aircraft maintenance and support, community services, vehicle maintenance, and facility management operations, are contributors to hazardous waste streams. Basic processes and waste-handling procedures for general and aircraft maintenance activities are identified in the Vance AFB *Hazardous Waste Management Plan* (Vance AFB, 2022c).

3.10.2.2 Environmental Restoration Program Sites

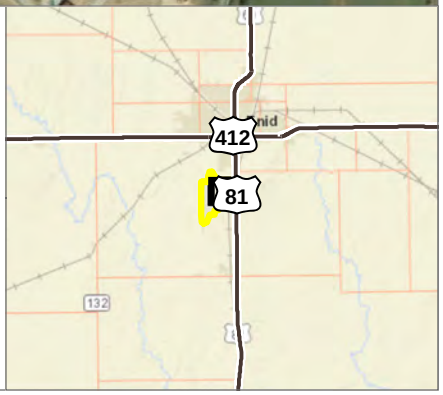
In 1996, Vance AFB was issued a RCRA Post-Closure Care permit by the ODEQ. The permit describes the requirements of Vance AFB to conduct post-closure care at applicable sites, as well as monitoring and continued corrective action for additional sites under the Special Conditions Pursuant to Hazardous and Solid Waste Amendments under RCRA. It lays out a framework of requirements that dictate how Vance AFB should continue to address remediation sites at the Installation. The permit was renewed in 2010 and again in 2020, with modifications requested in 2019.

ERP sites are primarily concentrated within three "zones" where historical activities resulted in releases to the environment; these zones are the primary focus of remedial actions on the Installation and are the Corrective Measures Implementation area, the Industrial Zone (IZ), and the southern boundary sites (**Figure 3-9**). The IZ is located in the northwest quadrant of the developed portion of Vance AFB, just east of the flight line, and contains the highest density of remediation sites as related to the proposed project area. The Corrective Measures Implementation area is located farther south along the flight line. The southern boundary sites are not located in the proposed project area and are not evaluated further in this EA. The following ERP sites are located within the immediate vicinity of the proposed project area; all sites are located in the vicinity of the fire crash/rescue station (**Figure 3-9**):

- SS007
- ST008
- SS028
- ST011
- LF003

FIGURE 3-9
Contamination Sites Environmental Overview

Corrective Measures Implementation Area
Environmental Restoration Site
Industrial Zone
Project Locations



N

0 0.2 Miles

Imagery: ESRI, 2021
Coordinate System: NAD 83 UTM Zone 14N

Site SS007

Site SS007 is a former hazardous waste accumulation point located in the IZ area of Vance AFB. The site is composed of two areas: the Defense Reutilization and Marketing Office and the old Civil Engineering (CE) Storage Yard, referred to as the South Site, as well as an open field north of the storage yard, referred to as the North Site. The South Site is located within the boundaries of the proposed project area; the North Site is geographically separated from the proposed project area is not evaluated further in this EA.

A 1993 remedial investigation confirmed the presence of fuel, solvent, and PCBs in the soil and groundwater of the STZ, as defined in **Section 3.6.2**, with a groundwater contamination plume extending to the north. The main source area was identified as the CE storage yard, located in the northwest quadrant of the SS007 South Site. The primary contaminant of concern was identified as trichloroethene (TCE). Vance AFB has taken the following remediation actions at SS007:

- An interceptor collection trench (ICT) was constructed immediately downgradient of the source area in 1997 to capture contaminated groundwater and transport it to a treatment facility.
- A second ICT was constructed farther downgradient on the North Site in 2002.
- *In-situ* bioremediation was incorporated as part of the remedial action in 2014, including the injection of emulsified vegetable oil to promote enhanced breakdown of chlorinated solvents.
- The 2014 phase of the remediation also included modification of the existing groundwater extraction system to a groundwater recirculation system in which extracted groundwater is treated in an onsite trailer and recirculated to injection wells.
- As of January 2023, this system remains active along with periodic injections of emulsified vegetable oil in the source area.

A study was conducted in 2013 to further define and characterize site conditions prior to the 2014 remedial actions listed above. Groundwater and soil samples were collected from the existing monitoring well network along with the temporary wells. Soil vapor was not evaluated during the study due to a lack of occupied buildings for accumulation risk. The results of the analysis defined the horizontal extent of TCE contamination and other contaminants in the STZ and confirmed that the groundwater contamination in the South Site was limited to the northwest quadrant (AECOM, 2014a).

The latest round of groundwater samples was collected in July 2022. According to the analysis, TCE was detected in the groundwater at a concentration of 71.1 micrograms per liter (µg/L) along the northern perimeter of the South Site. While this is significantly lower than the concentration of 2,310 µg/L that was detected in 2013, it is still more than an order of magnitude higher than the maximum contaminant level (MCL) of 5 µg/L. TCE was also detected at a concentration of 13.3 µg/L in a monitoring well to the northeast during the 2022 South Site sampling event. This monitoring well is considered to be an off-site well associated with ERP Site LF003.

Site ST008

Site ST008 is located adjacent to the south of SS007 and directly north of SS028. The site is the former location of an underground storage tank farm consisting of five tanks, each with a capacity of 12,000 gallons. Four of the tanks were reported to have been used to store petroleum products and the fifth was used for solvent storage (AECOM, 2017). All five tanks were removed from the site in March 1989, and soil contamination was encountered at that time. Impacted soil associated with the solvent tank was removed at the time of tank excavation; however, some residual impacted soils were left in place. The area was covered with a concrete RCRA cap in 1991. The RCRA Post-Closure Care permit issued to Vance AFB in 1996 required monitoring of specific wells on a semi-annual basis and maintenance of the cap.

A study conducted in 2013 added borings and ITZ monitoring wells to define the horizontal extent of soil and groundwater impacts and contamination at the site. Analytical results from the study indicated that soils above the water table were impacted above regional screening levels or residential standards and may be

contributing to groundwater contamination in the STZ. Analysis of groundwater samples collected during the study from permanent and temporary monitoring wells in the STZ indicated that shallow groundwater was impacted by benzene at concentrations greater than the MCL in seven of the sampling locations near and around the former tank cavity. Vinyl chloride was detected in three samples collected from the STZ in the northeast corner of ST008. Analysis of groundwater samples collected from wells installed within the ITZ demonstrated that TCE concentrations increased upgradient of ST008. This discovery resulted in the establishment of another remediation site south of ST008, SS028 (AECOM, 2016).

In 2016, Vance AFB constructed a dual-phase extraction system designed to remove soil vapor and contaminated groundwater. Use of the dual-phase extraction remediation system between 2017 and 2020 has likely reduced the levels of soil and soil vapor contamination at Site ST008; however, no sampling has occurred to quantify potential reductions (AECOM, 2017).

Site SS028

Site SS028 was established based on data collected as part of the 2013 study for Site ST008. During the investigation, four wells were installed at Site ST008 to establish whether soil contamination in the STZ had impacted the groundwater in the ITZ. TCE and tetrachloroethylene (PCE) were detected in the four wells and, based on the concentrations at which the analytes were detected, it was determined that the source of the contamination was upgradient of Site ST008.

A limited investigation was completed at SS028 in 2016 that included seven borings and the installation of three monitoring wells screened in the ITZ. VOCs were detected in the soil at concentrations below the residential soil regional screening levels and were not indicative of significant contamination. However, associated boring logs noted strong petroleum odors. The borings were converted into temporary monitoring wells for collection of groundwater samples in the STZ. Several VOCs were detected at low levels in the collected groundwater samples; however, only vinyl chloride was detected at a concentration that exceeded the MCL. TCE and PCE were detected at concentrations exceeding the MCLs in the three monitoring wells that were installed and screened in the ITZ, as well as the existing ITZ monitoring wells previously installed at ST008.

Groundwater impacts within the STZ of SS028 are minimal, and vinyl chloride was detected above the MCL in one location. Groundwater in the ITZ is impacted with chlorinated hydrocarbons TCE, PCE, vinyl chloride, and other miscellaneous breakdown products. The presence of these products indicates that breakdown of these compounds has been naturally occurring for some time. VOCs were detected in soil gas samples at concentrations greater than both residential and industrial soil gas screening levels. However, the chemicals detected in the soil gas do not fully align with the constituents detected in the groundwater. Further investigation may be warranted to determine the source of the soil gas and ascertain the level of risk associated with soil vapor and potential vapor intrusion. The impacts to the soils themselves appear to be minimal and contaminants were not detected at concentrations exceeding the regional screening levels. No further soil investigation is planned (GEO, 2018).

Site ST011

Investigation of ST011 began in the 1980s. The site was a former fuel distribution system that consisted of ten, 25,000-gallon-capacity storage tanks. A site characterization plan developed in 1987 indicated that when the underground fuel distribution lines were abandoned in place, not all of the fuel was emptied from the lines. During installation of a new fuel distribution system, the old lines were reportedly severed in at least one location and fuel was encountered at the breach. A total of eight drums of fuel were removed from the line at that time.

Research conducted in 1988 indicated that ten inactive 25,000-gallon USTs were still present at ST011. The USTs were removed in 1993 and soil samples were collected from the tank excavations. Most of the soil samples collected from the tank excavations contained VOCs and total petroleum hydrocarbons above the associated residential clean-up levels in place at the time. The excavation was backfilled with clean fill and the site was placed under the jurisdiction of the Oklahoma Corporation Commission and was exempt

from the RCRA Post-Closure Care permit for the Installation. The site was closed by the Oklahoma Corporation Commission in March 2000.

A supplemental remedial investigation was conducted on multiple sites, including ST011, during the period 1999–2000. VOCs and benzene were detected in the shallow STZ wells but not in any of the ITZ or DTZ wells.

Groundwater samples were collected from some of the wells associated with ST011 in 2005 and 2015 as part of investigations for downgradient sites SS026 and LF003, respectively. Benzene was detected in the groundwater in the samples collected from the STZ but not the ITZ or DTZ.

A 2014 report prepared for LF003 contains a figure that indicates that free product, which is a hazardous liquid substance that is not dissolved in water, was detected in two STZ monitoring wells at ST011 in November 2013. The figure shows that up to 3 inches of free product was detected in the former tank cavity (AECOM, 2014b).

An investigation was initiated at ST011 in 2018 and 2019. The activities included soil gas sampling, soil sampling, and groundwater monitoring well installation and sampling. Benzene was detected in every shallow monitoring well at concentrations ranging from 0.4 µg/L to 170 µg/L, exceeding the MCL of 5 µg/L. Benzene was not detected in the ITZ or DTZ (AFCEC, 2021).

Groundwater in and around ST011 remains impacted above the MCL for benzene; however the concentrations at which benzene has been detected have decreased significantly since the wells were installed in the 1990s. VOCs were detected at concentrations greater than industrial soil gas screening levels in two soil gas probe locations. The constituents detected included benzene, PCE, TCE, and vinyl chloride. Elevated soil vapor concentrations are likely to remain as long as residual contamination remains in place at the site. Residual contamination remains in the soil; however, the risk and hazards from exposure to soil at ST011 are below the USEPA upper limits for cancer risk and non-cancer hazard. No further investigation of the soil is likely.

Site LF003

Site LF003 is an inactive trench-type landfill with no constructed liner that is approximately 15 ft deep. The site covers an area of approximately 3 acres. The landfill was used during the period 1941–1952 primarily for disposal of municipal solid waste generated at the Installation. LF003 is located approximately 175 ft north of Site ST011.

Soil samples were collected at LF003 during the periods 1989–1990 and 2000–2001. VOCs commonly associated with solvents as well as VOCs associated with petroleum products were detected in the soil. In 1990, the VOC concentrations detected were indicative of potential soil contamination that could leach into groundwater. However, concentrations detected during the 2000 investigation were well below groundwater impact levels. Based on the results of the 2000 investigation, no definitive area of soil impacts has been identified and residual contamination is considered relatively low.

A study was conducted in 2013 to address critical data gaps at LF003. Soil samples were collected to evaluate the extent of potential soil contamination from VOCs, gasoline organic compounds, and diesel organic compounds using field screening techniques. Soil analytical results from the 2013 investigation were consistent with the results of the 2000 study; no constituents were detected at concentrations exceeding the screening criteria (AECOM, 2014b).

Groundwater analytical results from the 2013 investigation indicate that groundwater quality is significantly different depending on the interval at which the well is screened. Two distinct hydrologic units that divide the STZ are present. Analysis of samples collected from temporary wells screened above the division exhibit low levels of contamination. Laboratory analysis of groundwater samples collected from the permanent monitoring wells screened below the division indicated elevated concentrations of benzene,

toluene, ethylbenzene, and xylene were present in the groundwater. The most significant detections were for benzene.

The presence of free product, which is a hazardous liquid substance that is not dissolved in water, was identified just outside the northwest corner of the LF003 boundaries. The constituents of the contamination suggest a release of petroleum fuel. The free product was identified and communicated to ODEQ in 1997 and has continued to be monitored in site studies through 2014. The free product is indicated to have been measured ranging from 0.01 inches to 0.17 inches thick (AECOM, 2014b).

Based on the 2013 study, it is evident that groundwater along the west and northwest portions of the site is impacted with petroleum hydrocarbons. The contamination is most predominant below the top division of the STZ and consists predominantly of benzene. The source of the contamination is presumed to be off the LF003 site, as the contaminants are not characteristic of the contents of the landfill. Based on the results of the 2022 annual compliance groundwater sampling event, the presence of benzene in and to the northwest of LF003 is persistent and demonstrates an ongoing challenge to be addressed.

3.10.2.3 Asbestos and Lead-Based Paint

The State of Oklahoma requires that ODEQ be notified of all demolition of buildings containing asbestos unless the contamination is less than 260 lf of asbestos on pipes, 160 ft^2 on other building components, or 35 ft^3 located in areas that could not be previously measured, or the facility does not meet the definition of a facility as defined in 40 CFR 61.141 (ODEQ, 2022).

LBP is known to occur in buildings constructed prior to its ban by the USEPA in 1978. It can enter the body through inhalation or consumption of lead dust or LBP chips. The USEPA's Renovation, Repair, and Painting Rule requires that any party completing renovation, repair, and painting projects that disturb LBP in primary schools, childcare facilities, and residences built before 1978 be certified by the USEPA or a USEPA-authorized state. The rule also requires that those parties use certified LBP renovation supervisors and workers that are trained by USEPA-approved training providers to follow lead-safe practices. Oklahoma is a USEPA-authorized state and abides by USEPA regulations, as well as the *Oklahoma Lead-Based Paint Management Act of 1993*. This act created the processes for remediation and abatement contractors and establishes standards for certifying contractors or firms that conduct LBP inspections and risk assessments, as well as abatement and renovation activities. **Table 3-13** lists the sites that contain ACM and LBP in proximity to the proposed action area.

Table 3-13
Known Presence of ACM and LBP in Buildings to be Demolished or Renovated

Building Number	Project and Alternative	Year Built	ACM Potential	LBP Potential
125	Fire Crash/Rescue Station - Alternative 2	1967	Yes	Yes
140	Fire Crash/Rescue Station – Alternatives 1, 2, and 3	1968	Yes	Yes
421	Enlisted UH Facility – Alternatives 1 and 2	1957	Yes	Yes
423	Enlisted UH Facility – Alternatives 1 and 2	1957	Yes	Yes

ACM = asbestos-containing material; LBP = lead-based paint

3.10.3 Environmental Consequences

3.10.3.1 Evaluation Criteria

Impacts on HAZMAT management would be considered adverse if the Proposed Action resulted in noncompliance with applicable federal and state regulations or increased the amounts generated or procured beyond current Vance AFB waste management procedures and capacities. Impacts on the ERP would be considered adverse if the Proposed Action disturbed (or created) contaminated sites resulting in negative effects on human health or the environment.

3.10.3.2 Fire Crash/Rescue Station – Alternative 1

Hazardous Materials and Wastes

Alternative 1 of the fire crash/rescue station project would not result in significant long-term impacts on HAZMAT usage or hazardous waste generation. Vance AFB would maintain its SQG status with the completion of construction activities. No hazardous waste accumulation points or sites are anticipated to be impacted with implementation of Alternative 1 (**Figure 3-10**). Equipment and machinery used to perform the construction and demolition duties would have the potential to spill into the environment in the event of an accident or machine failure. In the event of an accident causing a discharge to the environment, the clean-up debris would be considered a hazardous waste. All effort should be made to prevent discharges to the environment through the use of spill containment, equipment inspections, and hazardous waste management practices.

Environmental Restoration Program Sites and Contamination

There is little to no data regarding shallow soil conditions at SS007. All the soil analytical data reviewed to date characterizes deeper soil conditions near the groundwater interface. Building occupants and site workers are not likely to come into contact with these soils and are more likely to disturb soils present within the top 4 feet of the soil column. Implementation of Alternative 1 of the fire crash/rescue station project may require planners to investigate shallow soil conditions for the sake of worker protection. If a shallow soil investigation is conducted and shallow soil impacts are discovered, the handling of construction waste at SS007 may need to be altered. As discussed, soil vapor and vapor intrusion have not been evaluated at SS007. Placement of an enclosed occupied structure, especially one that is anticipated to be continuously occupied, may spur discussion regarding soil vapor conditions and could result in additional investigation of SS007. Construction and demolition activities under Alternative 1 would also occur within proximity of Sites ST008 and LF003; however, soils from these sites have been determined to not contain contaminants above screening levels and impacts would not occur.

TCE and associated breakdown products are the primary groundwater concern at SS007. The associated impacts would be limited to the STZ along the northern perimeter of the South Site, which is within the footprint of Alternative 1 (**Figure 3-11**). It is reasonable to suggest that the source area is near the location of the highest groundwater concentrations. Although contamination has been substantially reduced, recent groundwater data indicate that TCE is present in the groundwater at SS007 at concentrations exceeding the MCL by an order of magnitude.

While subsurface conditions in the IZ have been investigated and known soil and groundwater impacts have been delineated, conditions in the IZ are not static and continue to evolve. The emergence of the benzene plume encroaching the northeast corner of the South Site of SS007 is a persistent. Site ST011 has been implicated as the likely source; however, the data gathered to date do not establish a clear connection to ST011. There is the potential for workers to encounter contamination via groundwater in the proposed project area; however, the opportunity for exposure would be minimal because groundwater is encountered at an average depth of 10 ft.

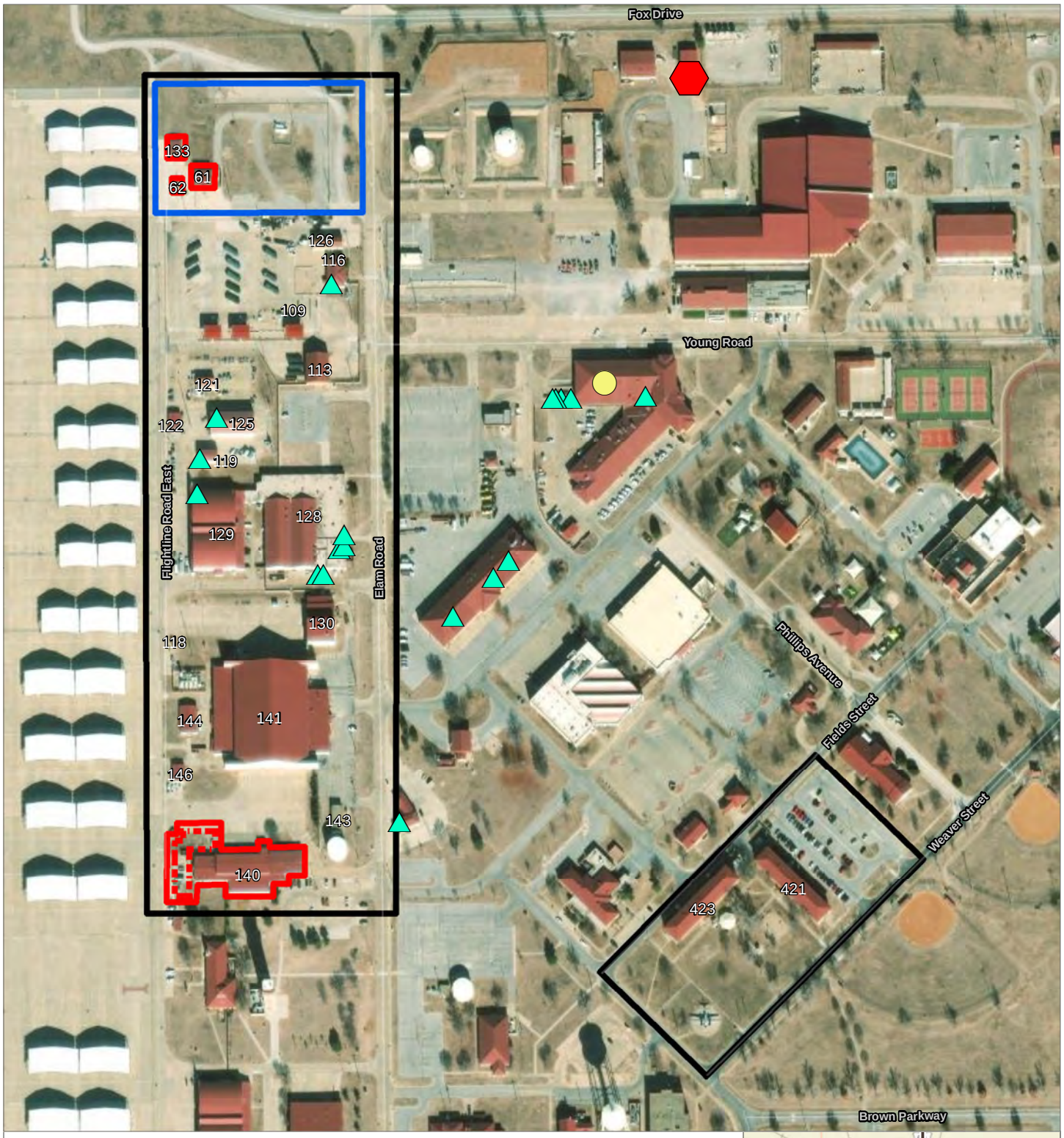


FIGURE 3-10

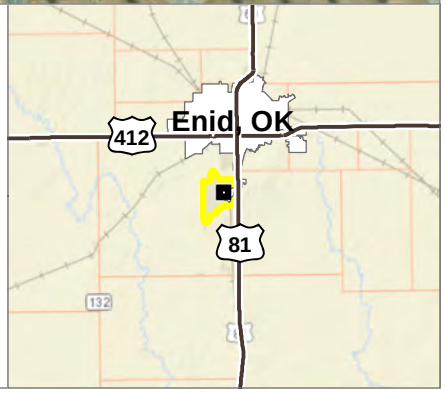
Hazardous Waste – Fire Crash/Rescue Station Alternative 1

- Hazardous Waste Accumulation Site
- Initial Accumulation Point
- Universal Waste Collection Site
- Construction
- Demolition
- Project Locations
- Temporary Office

N

0 0.1 Miles

Imagery: ESRI, 2021
Coordinate System: NAD 83 UTM Zone 14N



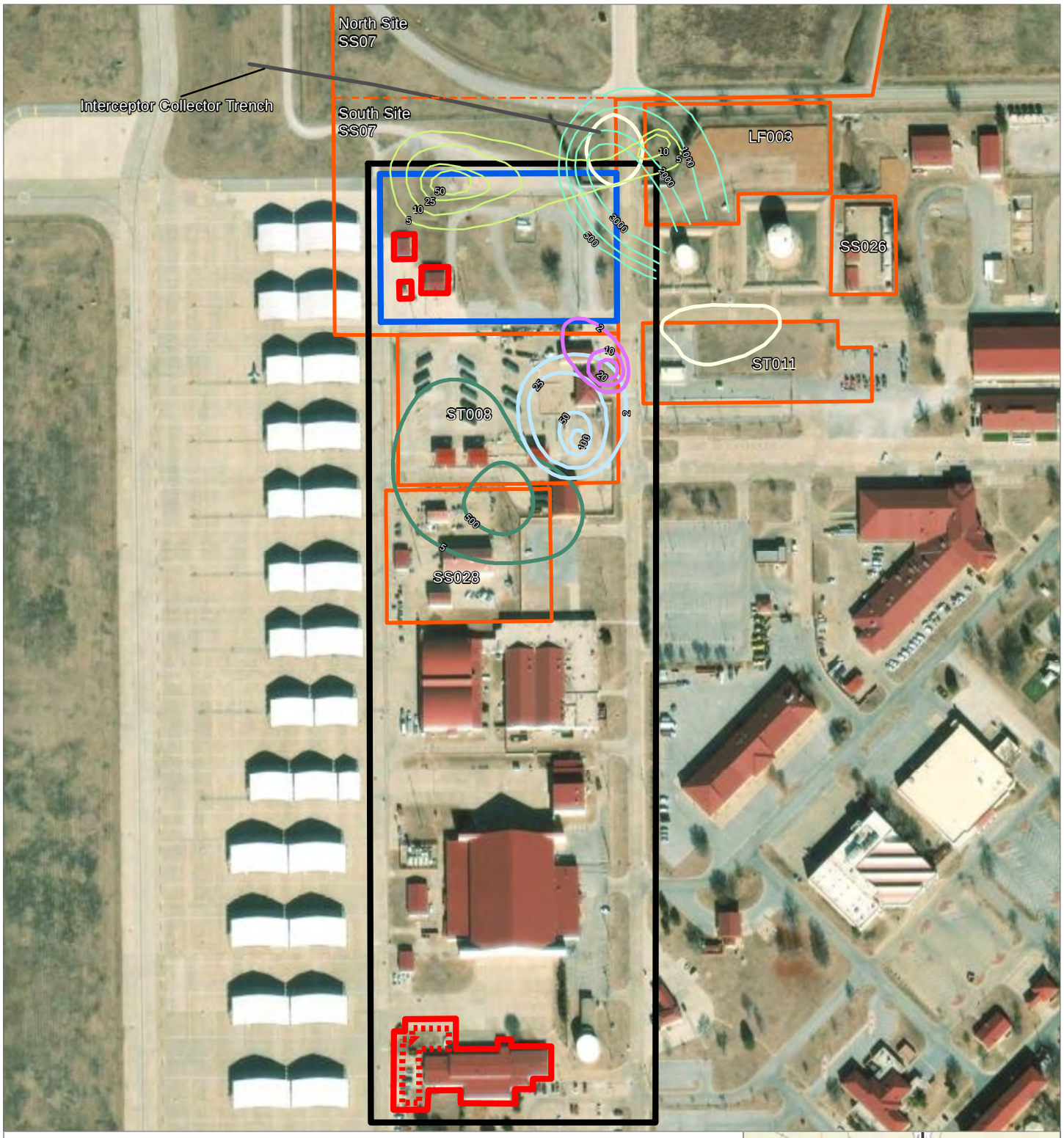


FIGURE 3-11

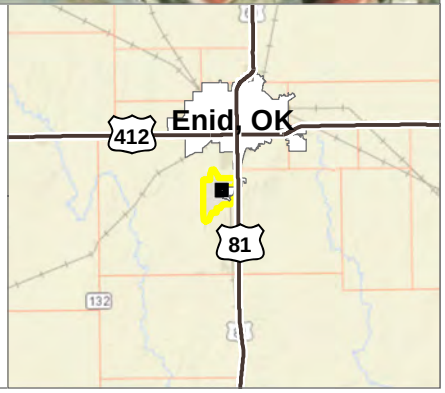
Groundwater Contamination – Fire Crash/Rescue Station Alternative 1

- Observed Free Product (2013)
- Shallow Benzene Contour (2015)
- Shallow Benzene Contour (2020)
- Shallow TCE Contour (2022)
- Shallow Vinyl Chloride (2015)
- Intermediate Zone TCE Contour (2019)
- Construction
- Demo
- Demo of Temporary Office
- IRP Site
- Project Locations

N

0 250 Feet

Imagery: ESRI, 2021
Coordinate System: NAD 83 UTM Zone 14N



Any time a new boring is performed or earth is moved in a historically industrial location, the possibility for encountering a tank, drum, buried waste, or additional contamination exists. Such a discovery could impact remedial action and may require additional effort and cost to investigate the discovery. This could impact the timeline for current prescribed actions and require modification to the existing RCRA Post-Closure Care permit.

Asbestos and Lead-Based Paint

Under Alternative 1 of the fire crash/rescue station project, Building 140, which is known to contain ACM and LBP, would be demolished. Debris from the demolition of this building` would be handled with extra caution to ensure compliance with environmental and safety regulations. The waste generated from the demolition of this building has the potential to be hazardous and thus would need to meet the appropriate storage and disposal requirements. Project contractors and Base personnel should be aware of this potential and trained to ensure compliance with all applicable regulations. The potential for adverse impacts from ACM and LBP release would be negligible, and long-term, beneficial impacts would result from the removal of the hazards from Vance AFB.

3.10.3.3 Fire Crash/Rescue Station – Alternative 2

Hazardous Materials and Wastes

The impacts from the generation and disposal of HAZMAT and waste under Alternative 2 of the fire crash/rescue station project would be the same as Alternative 1. Alternative 2 would involve the demolition of two buildings that are initial accumulation points for hazardous wastes: Building 119 and Building 125 (**Figure 3-12**). Sites are inspected monthly, and hazardous wastes are routinely moved from the initial generation points to the designated accumulation site at Building 250 due to volume restrictions. If encountered during construction or demolition, hazardous wastes would be handled, stored, and disposed of in accordance with federal and state laws and regulations. Adverse impacts to hazardous waste handling and storage are not anticipated to occur with implementation of Alternative 2.

Environmental Restoration Program Sites and Contamination

Alternative 2 would involve construction and demolition activities primarily within Site SS028; project construction could also occur within the boundaries of Site ST008. There is little to no data regarding shallow soil conditions at SS028. All of the soil analytical data reviewed to date characterize deeper soil conditions near the groundwater interface. Building occupants and site workers would not be considered likely to come into contact with these deep soils and would be more likely to disturb soils present within the top 4 feet of the soil column. Implementation for Alternative 2 of the fire crash/rescue station project may require planners to investigate shallow soil conditions for the sake of worker protection. If a shallow soil investigation is conducted and shallow soil impacts are discovered, the handling of construction waste at SS028 may need to be altered. Some soils may be disturbed within Site ST008; however, soils within this site have been remediated and disturbance of these soils would not result in adverse impacts. There is the potential for workers to encounter contamination via groundwater in the proposed project area (**Figure 3-13**); however, the opportunity for exposure would be minimal because groundwater is encountered at an average depth of 10 ft.

Any time a new boring is performed or earth is moved in a historically industrial location, the possibility for encountering a tank, drum, buried waste, or additional contamination exists. Such a discovery could impact remedial action and may require additional effort and cost to investigate the discovery. This could impact the timeline for current prescribed actions and require modification to the existing RCRA Post-Closure Care permit.

Asbestos and Lead-Based Paint

Under Alternative 2 of the fire crash/rescue station project, Building 140 and Building 125, both of which are known to contain ACM and LBP, would be demolished. The impacts to ACM and LBP would be the same as Alternative 1.

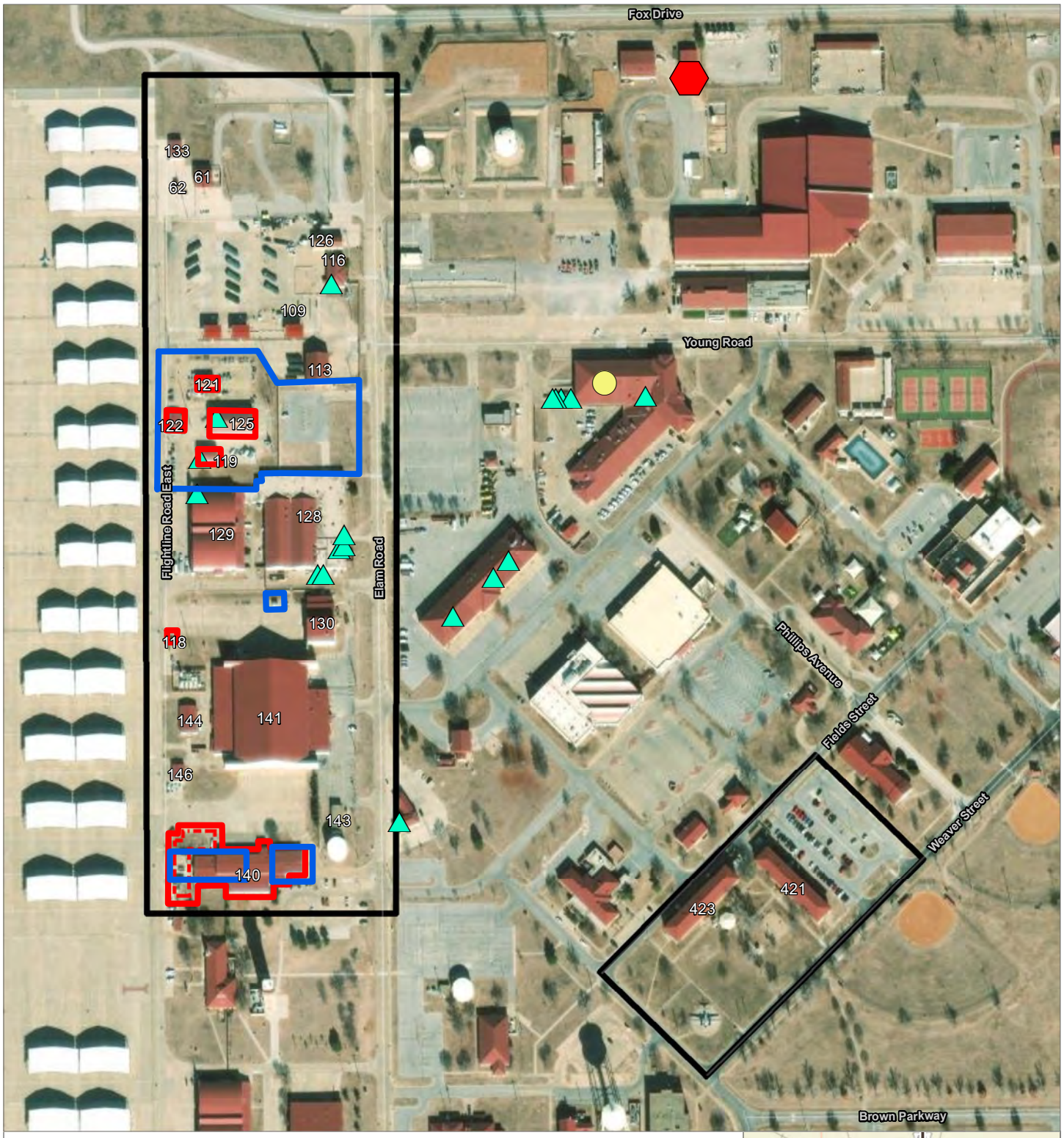


FIGURE 3-12

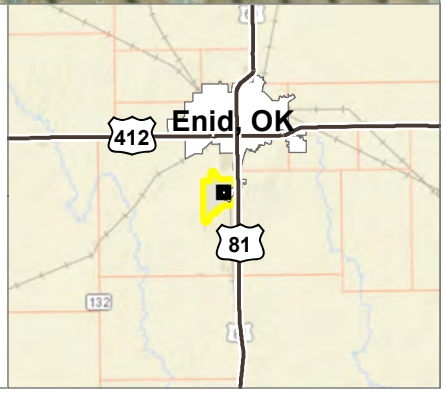
Hazardous Waste – Fire Crash/Rescue Station Alternative 2

- Hazardous Waste Accumulation Site
- Initial Accumulation Point
- Universal Waste Collection Site
- Construction
- Demolition
- Project Locations
- Temporary Office

N

0 0.1 Miles

Imagery: ESRI, 2021
Coordinate System: NAD 83 UTM Zone 14N



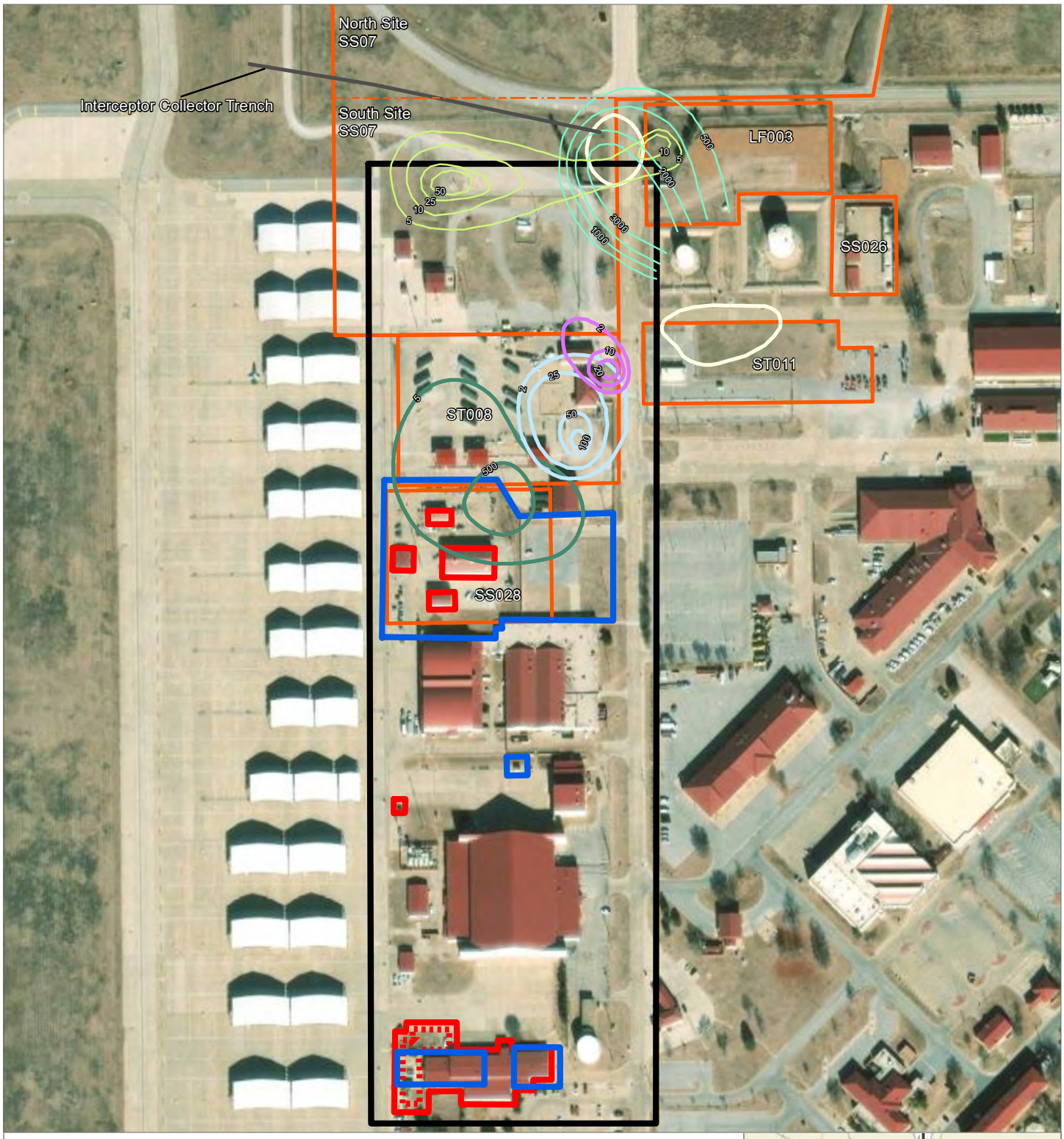


FIGURE 3-13

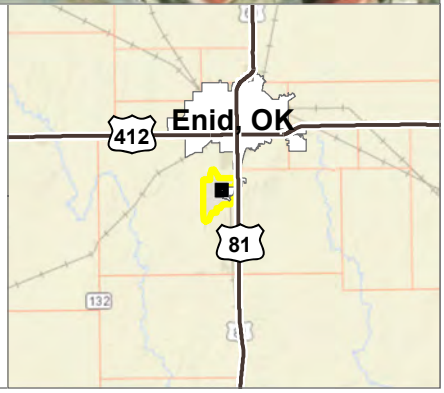
Groundwater Contamination – Fire Crash/Rescue Station Alternative 2

- Observed Free Product (2013)
- Shallow Benzene Contour (2015)
- Shallow Benzene Contour (2020)
- Shallow TCE Contour (2022)
- Shallow Vinyl Chloride (2015)
- Intermediate Zone TCE Contour (2019)
- Construction
- Demo
- Demo of Temporary Office
- IRP Site
- Project Locations

N

0 250 Feet

Imagery: ESRI, 2021
Coordinate System: NAD 83 UTM Zone 14N



3.10.3.4 Fire Crash/Rescue Station – Alternative 3

Hazardous Materials and Wastes

The potential impacts from the generation and disposal of HAZMAT and waste under Alternative 3 of the fire crash/rescue station project would be the same as Alternative 1.

Environmental Restoration Program Sites and Contamination

Alternative 3 of the fire crash/rescue station project would be located outside of ERP site boundaries and areas of groundwater contamination. No impacts to these sites would occur under implementation of Alternative 3.

Asbestos and Lead-Based Paint

Under Alternative 3 of the fire crash/rescue station project, Building 140, which is known to contain ACM and LBP, would be renovated. This would involve the removal of ACM and LBP materials from the structure. The waste generated from the renovation of this building would have the potential to be hazardous and would need to meet appropriate storage and disposal requirements. Project contractors and Base personnel should be aware of this potential and trained to ensure compliance with all applicable regulations. Any renovation of the building must include steps to remediate these materials, through either removal and disposal or encapsulation. The potential for adverse impacts from ACM and LBP release would be negligible, and long-term, beneficial impacts would result from the removal of the hazards from Vance AFB.

3.10.3.5 Enlisted Unaccompanied Housing Facility – Alternative 1

Hazardous Materials and Wastes

The impacts from the generation and disposal of HAZMAT and hazardous waste under Alternative 1 of the enlisted UH facility would be the same as described in Alternative 1 of the fire crash/rescue station (**Section 3.10.3.2**).

Environmental Restoration Program Sites

Alternative 1 of the enlisted UH facility would not take place within any known ERP, remediation, or groundwater contamination sites. No impacts to these resources would occur with implementation of this alternative.

Asbestos and Lead-Based Paint

Alternative 1 of the enlisted UH facility would involve demolition of Buildings 421 and 423, which are known to contain ACM or LBP. Debris from the demolition of these buildings would require special handling to ensure compliance with environmental and safety regulations. The waste generated from the demolition of these buildings would have the potential to be hazardous and would need to be disposed of in an appropriate facility. Project contractors and Base personnel should be aware of this potential and trained to ensure compliance with all applicable regulations. The potential for adverse impacts from ACM and LBP release would be negligible, and long-term, beneficial impacts would result from the removal of the hazards from Vance AFB.

3.10.3.6 Enlisted Unaccompanied Housing Facility – Alternative 2

Hazardous Materials and Wastes

The impacts from the generation and disposal of HAZMAT and hazardous waste under Alternative 2 of the enlisted UH facility would be the same as described in Alternative 1 of the fire crash/rescue station (see **Section 3.11.3.2**).

Environmental Restoration Program Sites

Alternative 2 of the enlisted UH facility would not take place within any known ERP, remediation, or groundwater contamination sites. No impacts to these resources would occur with implementation of this alternative.

Asbestos and Lead-Based Paint

Alternative 2 of the enlisted UH facility would involve renovation of Buildings 421 and 423, which may contain ACM or LBP. Any renovation must include steps to remediate these materials, through either removal and disposal or encapsulation. The waste generated from the renovation of these buildings would have the potential to be hazardous and would need to meet certain storage and disposal requirements. Project contractors and Base personnel should be aware of this potential and trained to ensure compliance with all applicable regulations. The potential for adverse impacts from ACM and LBP release would be negligible, and long-term, beneficial impacts would result from the removal of the hazards from Vance AFB.

3.10.3.7 Cumulative Impacts

The Proposed Action and Alternatives would result in beneficial impacts to the well-being of Aircrew at Vance AFB through the removal of outdated buildings containing ACM and LBP. No adverse impacts to the storage or handling of HAZMAT, hazardous wastes, or contaminated sites would be expected to occur under any the Proposed Action and Alternatives, although contact with contaminated soils or groundwater is possible during construction and demolition. Beneficial impacts would be anticipated due to the improved conditions of both the fire crash/rescue station and the enlisted UH facility through the removal of potentially hazardous materials. When considered in conjunction with other past, present, and reasonably foreseeable environmental trends and planned actions at Vance AFB, minor, beneficial cumulative impacts to this resource would be anticipated to occur with implementation of the Proposed Action.

3.10.3.8 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. There would be no changes to the infrastructure, transportation, or utility environment beyond the baseline. The fire crash/rescue station would continue to not meet current and future mission needs. The station would be out of compliance with DAFMAN 32-1084, UFC 4-730-10, ABA regulations, and ADA regulations. The risk for damage to the facilities and vehicles would continue due to the inadequate existing bay size, and operational inefficiencies would limit the effectiveness of the station. Under the No Action Alternative, the enlisted UH facility would remain in its current state, which is not sufficient to meet the current and future mission requirements. The degrading facilities would continue to affect morale, wellness, and quality of life for enlisted unaccompanied Aircrew at Vance AFB.

3.11 INFRASTRUCTURE, INCLUDING TRANSPORTATION, UTILITIES, AND COMMUNICATIONS

3.11.1 Definition of the Resource

Infrastructure consists of the systems and structures that enable a population in a specified area to function. Infrastructure is wholly man-made, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as developed. Infrastructure components include transportation and utility systems, solid waste management, and sanitary and storm sewers. The availability of infrastructure and its capacity to support more users, including future development of an area, are generally regarded as essential to continued economic growth.

Transportation is defined as the system of roadways, highways, and transit services that provide ingress/egress from or to a particular location, as well as access to regional goods and services. Utilities include electrical, potable water, sanitary sewage/wastewater, and communications systems. Solid waste management primarily relates to landfill capacity for disposal of non-hazardous solid waste (e.g., construction waste) generated in an area or by a population. Stormwater infrastructure includes the man-

made conveyance systems that function in tandem with natural drainages to collect and control the rate of surface runoff during and after a precipitation event. In urbanized areas, stormwater that is not discharged to a waterbody is conveyed to sanitary sewers, systems that collect, move, and treat liquid waste prior to its discharge back into the environment.

The ROI for this resource is Vance AFB and the external infrastructure components and services relied upon to operate the Installation.

3.11.2 Existing Conditions

3.11.2.1 Transportation

Vance AFB is located approximately 5 miles south of the city of Enid in Garfield County, Oklahoma. US Route 81 runs north to south along the eastern border of Vance AFB, and US Route 412 runs east to west, approximately 2.5 miles north of the Installation. Access to Vance AFB is provided via Hairston Gate, the main entrance to the Installation, located on Fox Drive. There are two additional gates that provide access to Vance AFB: the Industrial Gate along Fox Drive and the South Gate along Wheat Capital Road. The existing road network on the Installation is approximately 21 miles and consists of asphalt or concrete roadways. Parking on the Installation is adequate for the current mission needs with both street parking and parking lots available. The Installation does not presently have an adequate network for pedestrian circulation with limited off-street sidewalks, crosswalks, or recreational pathways (Vance AFB, 2007). The Enid Public Transportation Authority provides a curb-to-curb ride share service, including service to Vance AFB (Enid Public Transportation Authority, 2023).

3.11.2.2 Electricity and Natural Gas

Electricity and natural gas are purchased jointly through Oklahoma Gas and Electric Company and Southwestern Power Administration. Power is delivered to a single source main distribution substation located a quarter mile south of Hairston Gate. From the substation, electricity is supplied to the Base switchgear through an underground feed to five switches and one bypass switch that feeds five electric zones on the Installation (Vance AFB, 2021). The electrical system and natural gas system capacity are adequate for current and future demand.

3.11.2.3 Solid Waste

Vance AFB utilizes the Enid Municipal Landfill and the Garfield County Landfill. Base contractors collect non-hazardous solid waste from across the Base and deliver it to landfills. The Vance AFB Recycling Program is managed by contractor personnel (Vance AFB, 2007). The capacity of the Enid Municipal Landfill is projected to expire in 2031 and the capacity of the Garfield County Landfill is projected to expire in 2041 but is adequate for current demand (NWCC, 2014).

3.11.2.4 Potable Water Supply

Vance AFB purchases potable water from the City of Enid (Vance AFB, 2011). The City of Enid's water supply comes from various wells that draw from the Cimarron River Terrace Aquifer (75 wells), the EIT Aquifer (21 wells), and the Cedar Hills Sandstone Aquifer (20 wells) (Guernsey, 2009). The EIT Aquifer is located underneath Garfield County, but the City of Enid withdraws water at rates quicker than the aquifer can recharge (Enid News and Eagle, 2012).

Groundwater contamination on Base is discussed in **Section 3.10**.

3.11.2.5 Sanitary Sewer/ Wastewater

Wastewater treatment at Vance AFB is provided by the City of Enid's wastewater treatment facility. The wastewater collection system on the Installation is largely gravity-fed through cast-iron pipes and consists

of approximately 13.5 miles of gravity feed and force main pipes. There are eight lift stations with associated force mains to remove effluent from low-lying areas and facilities with basement fixtures on Base. Treated groundwater makes up about 25 percent of the Installation's total system flow into the wastewater collection system. There are two groundwater treatment units to treat volatile contaminants in extracted groundwater prior to discharge into the wastewater collection system. Treated groundwater is not considered industrial wastewater by the City of Enid or Vance AFB. The City of Enid wastewater collection system can accommodate up to 0.500 million gallons per day of flow from the Installation; historically the Installation has not exceeded 0.203 million gallons per day (Science Applications International Corporation, 2007). The capacity of the wastewater system is adequate for current and future needs.

3.11.2.6 Communications

The communication system on Vance AFB consists of copper and fiber-optics cabling. The copper cable network supports special communications circuits, enhanced terminal voices switches, telemetry, and radio air-to-ground circuits. The primary system is operated and maintained by AT&T; a secondary system is owned, operated, and maintained by SuddenLink. The communications system is thoroughly connected, well maintained, and adequate to meet current and future mission needs (Olsson, 2021).

3.11.3 Environmental Consequences

3.11.3.1 Evaluation Criteria

The Air Force defines a significant effect on or from infrastructure, including transportation and utilities, within the ROI as one or more of the following:

- measurable change or service reduction within the regional transportation network;
- prolonged or repeated interruption of public transportation services regionally;
- prolonged or repeated service disruptions to utility end users; and/or
- substantial increase in utility demand relative to existing and planned regional uses.

3.11.3.2 Fire Crash/Rescue Station – Alternative 1

Transportation

The proposed construction and demolition activities associated with Alternative 1 of the fire crash/rescue station project would include the removal and replacement of 1,000 ft^2 of concrete sidewalks from Flightline Road East to Elam Road, improving the pedestrian experience, which is a known deficiency. Rescue responders would be able to leave and return to a facility with an appropriate bay size for their vehicles, decreasing transportation time in the event of an accident. Implementation of Alternative 1 would have minor, beneficial impacts to the transportation environment at Vance AFB.

Electricity and Natural Gas

Alternative 1 of the fire crash/rescue station project would involve the relocation and replacement of 4,705 lf of underground utilities including electrical and natural gas. No long-term impacts to either the electrical or natural gas supply systems would be expected from the projects under Alternative 1. Energy-efficient construction of new buildings may decrease energy consumption consistent with EO 13693, *Planning for Federal Sustainability in the Next Decade*, and demolition of outdated and inefficient buildings would decrease energy demand. Therefore, net changes in long-term electrical or natural gas demand would be anticipated to be minimal. Any potential short-term disruptions to electrical or natural gas service within the proposed project area during construction and demolition activities would be mitigated through project planning. Disruptions could occur from temporary service interruptions during disconnections for demolition, rerouting of above- or belowground service lines, or installing connections to new buildings.

The proposed projects under Alternative 1 would have a minor, beneficial impact on the Installation with replacement of aging underground utilities and new, energy-efficient construction.

Solid Waste

Under Alternative 1 of the fire crash/rescue station project, construction and demolition activities would generate solid waste in the form of construction debris. Construction projects generate approximately 4.39 lbs/ft^2 of debris from construction activity and approximately 158 lbs/ft^2 of debris from demolition projects (buildings and impervious surfaces) (USEPA, 2009). Alternative 1 would involve 120,250 ft^2 of construction and 77,534 ft^2 of demolition. Therefore, construction and demolition projects under Alternative 1 would generate approximately 527,897 lbs and 12,250,372 lbs of solid waste, respectively. In accordance with AFMAN 37-7002, *Environmental Compliance and Pollution Prevention*, generated solid waste would be collected and transported off Base for disposal or recycling. Contractors would comply with federal, state, and local regulations for the collection and disposal of solid waste from the proposed projects.

No long-term impacts on solid waste management would occur under Alternative 1 because the increase in waste generation due to construction and demolition would be temporary. Additionally, the City of Enid Municipal Landfill and Garfield County Landfill have sufficient capacity to accommodate the waste generated at Vance AFB.

Potable Water Supply, Sanitary Sewer Wastewater, and Communications

Alternative 1 of the fire crash/rescue station project would involve relocation and replacement of 4,705 lf of underground utilities. The proposed projects under Alternative 1 would have a minor, beneficial impact on these resources due to improved underground utilities.

3.11.3.3 Fire Crash/Rescue Station – Alternative 2

Under Alternative 2 of the fire crash/rescue station project, activities would involve approximately 150,983 ft^2 of construction and 103,423 ft^2 of demolition. Construction and demolition actions would generate approximately 662,815 lbs and 16,340,834 lbs of solid waste, respectively. Contractors would comply with federal, state, and local regulations for the collection and disposal of solid waste from the proposed projects. As with Alternative 1, no long-term impacts on solid waste management would occur under Alternative 2 because the existing solid waste facilities have capacity to accommodate current needs.

All other actions under Alternative 2 of the fire crash/rescue station project would be the same as Alternative 1 and, as such, would have the same minor, long-term, beneficial impacts as Alternative 1 for this resource area.

3.11.3.4 Fire Crash/Rescue Station – Alternative 3

Transportation

Under Alternative 3 of the fire crash/rescue station project, a proposed 1,910 ft^2 of sidewalks and parking areas would be constructed. This would have long-term, minor, beneficial impacts to the transportation environment due to the upgraded pedestrian and vehicle infrastructure in the vicinity of the fire crash/rescue station.

Electricity and Natural Gas

Alternative 3 of the fire crash/rescue station project would involve renovations that would have a long-term, minor, beneficial impact on the energy environment due to upgraded HVAC and new, more energy-efficient construction.

Solid Waste

Under Alternative 3 of the fire crash/rescue station project, activities would include approximately 3,910 ft^2 of construction and 7,033 ft^2 of demolition. Construction and demolition actions would generate

approximately 17,164 lbs and 1,111,214 lbs of solid waste, respectively. Contractors would comply with federal, state, and local regulations for the collection and disposal of solid waste from the proposed projects. As with Alternative 1, no long-term impacts on solid waste management would occur under Alternative 3 because the existing solid waste facilities have capacity to accommodate current needs.

Potable Water Supply, Sanitary Sewer Wastewater, and Communications

There would be no change to these resource areas under Alternative 3 of the fire crash/rescue station project.

3.11.3.5 Enlisted Unaccompanied Housing Facility – Alternative 1

Transportation

Alternative 1 of the enlisted UH facility project would involve 9,900 ft^2 of mill and overlay of street pavement and the parking lot to the northeast of the dormitory campus. This alternative would also relocate and repair approximately 14,000 ft^2 of sidewalk. Alternative 1 would provide a minor, long-term, beneficial impact to both the pedestrian and the vehicular transportation environment around the housing area on Vance AFB.

Electricity and Natural Gas

Alternative 1 of the enlisted UH facility project would involve relocation and replacement of the underground utilities including electrical and natural gas in the enlisted UH facility, providing a minor, long-term, beneficial impact to the reliability of these services through updated underground infrastructure.

Solid Waste

Under Alternative 1 of the enlisted UH facility project, activities would include approximately 80,773 ft^2 of construction and 65,392 ft^2 of demolition. Construction and demolition actions would generate approximately 354,593 lbs and 10,331,936 lbs of solid waste, respectively. Contractors would comply with federal, state, and local regulations for the collection and disposal of solid waste from the proposed projects.

No long-term impacts on solid waste management would occur under Alternative 1 because the increase in waste generation due to construction and demolition would be temporary. Additionally, the City of Enid Municipal Landfill and Garfield County Landfill have sufficient capacity to accommodate the waste generated at Vance AFB.

Potable Water Supply, Sanitary Sewer Wastewater, and Communications

Alternative 1 of the enlisted UH facility project would involve relocation and replacement of underground utilities. The proposed projects under Alternative 1 would have a minor, long-term beneficial impact on these resources due to improved underground utilities.

3.11.3.6 Enlisted Unaccompanied Housing Facility – Alternative 2

Under Alternative 2 of the enlisted UH facility project, activities would include approximately 27,300 ft^2 of construction and 14,000 ft^2 of demolition. Construction and demolition actions would generate approximately 119,847 lbs and 2,212,000 lbs of solid waste, respectively. Contractors would comply with federal, state, and local regulations for the collection and disposal of solid waste from the proposed projects. As with Alternative 1, no long-term impacts on solid waste management would occur under Alternative 2 because the existing solid waste facilities have capacity to accommodate current needs.

All other actions under Alternative 2 of the enlisted UH facility project would be the same as Alternative 1 and, as such, would have the same minor, long-term, beneficial impacts as Alternative 1 for this resource area.

3.11.3.7 Cumulative Impacts

The minimal increase in demand for utilities during construction and demolition activities (i.e., electricity, natural gas, sanitary waste discharge, and solid waste disposal) would have negligible cumulative impacts when considered with other past, present, and reasonably foreseeable environmental planned actions at Vance AFB. Beneficial impacts associated with improvements to underground infrastructure (including potable water), sidewalks, road surfaces, and parking lots would cumulatively build upon other beneficial impacts associated with other past, present, and reasonably foreseeable planned actions at Vance AFB, including water distribution line upgrades and runway repairs, to improve infrastructure across the Installation.

3.11.3.8 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. There would be no changes to the infrastructure, transportation, or utility environment beyond the baseline. The fire crash/rescue station would continue to not meet current and future mission needs. The station would be out of compliance with DAFMAN 32-1084, UFC 4-730-10, ABA regulations, and ADA regulations. The risk for damage to the facilities and vehicles would continue due to the inadequate existing bay size, and operational inefficiencies would limit the effectiveness of the station. Under the No Action Alternative, the enlisted UH facility would remain in its current state, which is not sufficient to meet the current and future mission requirements. The degrading facilities would continue to affect morale, wellness, and quality of life for enlisted unaccompanied Aircrew at Vance AFB.

3.12 SAFETY AND OCCUPATIONAL HEALTH

3.12.1 Definition of the Resource

This section discusses safety and occupational health concerns associated with ground, flight, and explosives activities. Ground safety considers safety issues associated with ground operations and maintenance activities that support unit operations. Ground safety also considers the safety of personnel and facilities on the ground that may be placed at risk from flight operations in the vicinity of the airfield and in the airspace. Clear Zones (CZ) and Accident Potential Zones (APZs) around the airfield restrict the public's exposure to areas where there is a higher accident potential. Flight safety considers aircraft risks such as midair collisions, bird/wildlife-airstrike hazards, and in-flight emergencies. Explosives safety relates to the management and safe use of ordnance and munitions.

The ROI for this resource area is Vance AFB.

3.12.2 Existing Conditions

3.12.2.1 Ground Safety

Ground safety includes ground and industrial operations and motor vehicle use. Ground mishaps can occur from the use of equipment or materials and from construction, demolition, and maintenance functions.

Ongoing Air Force safety programs covering industrial activities, operation of motor vehicles and other equipment, and everyday operations are continuously refined as new activities and new information becomes available. All Aircrew receive regular safety training to keep the chances of mishaps as low as possible. All construction contractors operating on Vance AFB must follow ground safety regulations to avoid posing any risks to workers or personnel on or off Base. Construction contractors are responsible for reviewing potentially hazardous workplace operations, monitoring exposure to workplace chemicals (e.g., asbestos, lead, HAZMAT), physical hazards (e.g., noise propagation, slips, trips, falls), and biological agents (e.g., infectious waste, wildlife, poisonous plants).

The fire crash/rescue station at Vance AFB is undersized and does not meet the existing mission needs. Building 140 has water intrusion issues and contains black mold in multiple areas of the building, confirmed by air quality tests. Areas of the building are blocked off from access because of mold issues, representing a risk to human health and safety. The configuration of the bay requires the truck to be backed in, reducing operating efficiency and increasing the risk of a collision with the undersized door. Multiple support vehicles are commonly double-parked around the facility. The issues with maneuverability have affected response times to airfield incidents in the past, which puts human health and safety at risk.

The enlisted UH facility is undersized for current mission needs and the buildings themselves are out of ADA and ABA compliance. The buildings are outdated and unable to be effectively serviced, leading to recurring leaks and flooding. Over time, water intrusions have the potential to contribute to the growth of mold that would put the health and safety of residents at risk. The housing does not have any group space and lacks a sense of community, negatively impacting the mental well-being of the residents.

3.12.2.2 Flight Safety

The proposed fire crash/rescue station project area is located within the airfield adjacent to aircraft hangars. The potential for aircraft mishaps during flight is a public concern with regard to flight safety; however, the Proposed Action and Alternatives do not involve flight activities. Therefore, flight safety is not further evaluated in this EA.

3.12.2.3 Explosives Safety

Aircraft and weapon munitions include ammunition, propellants (solid and liquid), pyrotechnics, warheads, explosives devices, and chemical agent substances and associated components that present real or potential hazards to life, property, or the environment. Defense Explosive Safety Regulation 6055.09_Air Force Manual 91-201, *Explosives Safety Standards*, defines the guidance and procedures dealing with munition storage and handling.

Operational constraints are primarily associated with explosive safety quantity distance (ESQD) arcs, munitions storage, and transportation routes. ESQD arcs are defined distances from explosives storage that prevent development within their extents. There are three ESQD arcs at Vance AFB with associated land use constraints. The Proposed Action and Alternatives do not occur in the vicinity of these arcs; therefore, explosives safety is not further evaluated in this EA.

3.12.3 Environmental Consequences

Under 40 CFR § 989.27, the EIAP for an action must assess direct and indirect impacts of the proposed action and alternatives on the safety and health of Air Force employees and others at a work site. Air Force Policy Directive 91-2, *Safety Programs,* is implemented by AFI 91-202, *The US Air Force Mishap Prevention Program*, which manages risks to protect Air Force personnel from occupational deaths, injuries, or illnesses and minimize loss of Air Force resources. These standards apply to all Air Force activities; adherence to the Air Force's Mishap Prevention Program ensures Air Force workplaces meet federal safety and health requirements.

3.12.3.1 Evaluation Criteria

Safety-related impacts from a proposed activity are assessed according to the potential to increase or decrease safety risks to personnel, the public, property, or the environment. Adverse impacts related to safety would occur if the Proposed Action and Alternatives resulted in Air Force OSHA criteria being exceeded or the improper implementation of established or proposed safety measures, creating unacceptable safety risk to personnel. Adverse impacts would occur if the Proposed Action results in the following:

- substantially increases risks associated with the safety of construction personnel, contractors, military personnel, or the local community;
- substantially hinders the ability to respond to an emergency; or
- introduces a new health or safety risk for which the Base is not prepared or does not have adequate management and response plans in place.

3.12.3.2 Fire Crash/Rescue Station – Alternative 1

Potential minor, temporary, adverse impacts to ground safety would be anticipated under Alternative 1 of the fire crash/rescue station project during construction and demolition activities. Construction of new facilities and demolition or renovation of existing facilities would expose Air Force and contractor personnel to safety hazards from heavy-equipment operation, HAZMAT, falls, construction equipment, and potentially noisy and confined environments. The safety hazards would be typical of industrial construction projects but would be short term during the construction or demolition of individual buildings. To minimize health and safety risks, contractors would be required to maintain site-specific health and safety programs that follow applicable regulations. Vance AFB personnel and contractors would review these programs prior to beginning work to ensure appropriate actions are followed to reduce potential health and safety risks.

Under Alternative 1 of the fire crash/rescue station project, there would be moderate, long-term, beneficial impacts to the health and safety of Aircrew and other personnel who work in Building 140. The total demolition of Building 140 would eliminate major concerns to health and safety due to the black mold that is present.

3.12.3.3 Fire Crash/Rescue Station – Alternative 2

The potential impacts under Alternative 2 of the fire crash/rescue station project would be the same as Alternative 1.

3.12.3.4 Fire Crash/Rescue Station – Alternative 3

The potential impacts to the safety of construction and demolition contractors under Alternative 3 of the fire crash/rescue station project would be the same as Alternative 1.

Under Alternative 3, Building 140 would be renovated rather than demolished. Renovation activities would include the remediation of the black mold inside of the building. Implementation of Alternative 3 would improve the health and safety of the working environment within the facility in the short term; however, this alternative would not eliminate concerns for the safety and health of persons living and working in the building. Remediation and renovation of the building would allow for the black mold infestation to return. The mold spores are invisible to the human eye and travel through the air easily. They remain dormant until they make contact with water. Such conditions lead to concerns for overall health and safety of the Aircrew working and living in the facility.

3.12.3.5 Enlisted Unaccompanied Housing Facility – Alternative 1

The potential impacts to the safety of construction and demolition contractors under Alternative 1 of the enlisted UH facility would be the same as Alternative 1 of the fire crash/rescue station project (see **Section 3.13.3.2**).

Under Alternative 1 of the enlisted UH facility project, there would be a moderate, long-term, beneficial impact to the health and well-being of facility residents. The new facility would resolve the existing wellness issues due to the small quarters, lack of amenities, and lack of communal space. Health and wellness would be anticipated to improve for residents of the new facility. The new enlisted UH facility would also bring Vance AFB back into ADA and ABA compliance through the inclusion of an elevator and modern, right-

sized accommodations. This alternative would have a long-term, beneficial impact on the health and safety of the Installation personnel living in the enlisted UH facility.

3.12.3.6 Enlisted Unaccompanied Housing Facility – Alternative 2

The potential impacts to the safety of construction and demolition contractors under Alternative 2 of the enlisted UH facility would be the same as Alternative 1 of the fire crash/rescue station project (see **Section 3.13.3.2**).

Alternative 2 of the enlisted UH facility project would improve the health and well-being of the residents via improvements to social gathering spaces, enlarged kitchen sizes, updated appliances, and updated security. Renovation of the facility would bring Vance AFB back into ADA and ABA compliance through the construction of two external elevators, among other improvements to modernize the facilities. Alternative 2 would have a moderate, long-term, beneficial impact on the health and safety of the Installation personnel living in these buildings.

3.12.3.7 Cumulative Impacts

The Proposed Action and Alternatives would result in beneficial impacts to safety and occupational health. No adverse impacts to safety resources would be expected to occur under the Proposed Action and Alternatives, and beneficial impacts would be anticipated due to the improved conditions of both the fire crash/rescue station and the enlisted UH facility. When considered in conjunction with other past, present, and reasonably foreseeable environmental trends and planned actions at Vance AFB, beneficial cumulative impacts to safety and occupational health would be anticipated to occur with implementation of the Proposed Action.

3.12.3.8 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. There would be no changes to safety and occupational health beyond the baseline. The fire crash/rescue station would continue to not meet current and future mission needs. The station would be out of compliance with DAFMAN 32-1084, UFC 4-730-10, ABA regulations, and ADA regulations. The risk for damage to the facilities and vehicles would continue due to the inadequate existing bay size, and operational inefficiencies would limit the effectiveness of the station. The issues with black mold would continue to render portions of the station unusable and negatively impact the health and well-being of the crew. Under the No Action Alternative, the enlisted UH facility would remain in its current state, which is not sufficient to meet the current and future mission requirements and lacks fundamental amenities for the well-being of personnel. The degrading facilities would continue to affect morale, wellness, and quality of life for enlisted unaccompanied Aircrew at Vance AFB.

3.13 SOCIOECONOMICS

3.13.1 Definition of the Resource

Socioeconomics is the relationship between economics and social elements, such as population levels and economic activity. There are several factors that can be used as indicators of economic conditions for a geographic area, including demographics, median household income, percentage of families living below the poverty level, employment, and housing data. Data on employment identify gross numbers of employees, employment by industry or trade, and unemployment trends. Data on industrial, commercial, and other sectors of the economy provide baseline information about the economic health of a region. Socioeconomic data are typically presented at county, state, and national levels to characterize baseline socioeconomic conditions in the context of regional, state, and national trends.

The ROI for socioeconomics is Vance AFB and the surrounding environs.

3.13.2 Existing Conditions

3.13.2.1 Population

Vance AFB is located entirely within the Enid Census County Division (CCD), in Garfield County, Oklahoma. Since 2011, the US had an average annual growth rate of 0.7 percent and saw a 7.5 percent total increase in population over the 10-year period 2011–2021. Over the same 10-year period, Oklahoma had an average annual growth rate of 0.6 percent and a total population increase of approximately 4.9 percent, while the Enid CCD had an average annual growth rate of 0.6 percent and a total population increase of approximately 5.6 percent (**Table 3-14**). Of the total population of Oklahoma, approximately 1.6 percent reside in Garfield County and approximately 1.4 percent reside in the Enid CCD. There are approximately 1,400 active-duty and reserve military, as well as more than 1,500 family members and approximately 3,000 retired military members living in the area surrounding the Base.

Table 3-14
Community and County Population Estimates and Growth near Vance AFB

Geographic Area	2011 Population	2021 Population	Total Growth (percent)
United States of America	306,603,772	329,725,481	7.5
Oklahoma	3,714,520	3,948,136	6.3
Garfield County	59,680	62,628	4.9
Enid CCD	52,620	55,553	5.6

Source: US Census Bureau (USCB) 2023c, 2023d
AFB = Air Force Base; CCD= Census County Division

3.13.2.2 Employment

In 2021, the unemployment rate in the Enid CCD was 4 percent. This compares to 3.4 percent in Garfield County, 3.8 percent in the state of Oklahoma, and 5.3 percent in the US. The national unemployment rate was higher than the other geographies in this analysis. The state of Oklahoma had a marginally higher unemployment rate than Garfield County, but a marginally lower unemployment rate than the Enid CCD (Bureau of Labor Statistics [BLS], 2023a, 2023b; USCB, 2023a).

In 2021, the top three industries by employment in Oklahoma were Government and Government Enterprises, Retail Trade, and Healthcare and Social Assistance, which reflect the top three industries by employment in Garfield County as well (Bureau of Economic Analysis [BEA], 2021a, 2021b).

The single largest employer in Enid is Vance AFB. Vance AFB employs more than 1,400 federal civilian employees, non-appropriated fund civilian employees, and private-business employees (Air Force, 2022c).

3.13.2.3 Housing

USCB data indicate that housing vacancy rates in Garfield County for both homeowner and rental housing in 2021 were above the national average (**Table 3-15**). There are just under 4,000 vacant units in Garfield County, with approximately 90 percent of these units located within the Enid CCD (USCB, 2023b). The percentages of homes that are owner-occupied in Oklahoma (66.1) and Garfield County (65.2) are above the US average of 64.6 percent, while the percentage of owner-occupied homes the Enid CCD (62.8) is lower than the national average. Oklahoma, Garfield County, and the Enid CCD have higher homeowner and rental vacancy rates than the US, and approximately 14.2 percent, 13.9 percent, and 13.7 percent of housing units in the Enid CCD, Garfield County, and the state of Oklahoma, respectively, are vacant compared to 11.2 percent nationally (USCB, 2023b).

Table 3-15
Housing

Property Description	Enid CCD	Garfield County	Oklahoma	US
Total units	24,445	27,727	1,741,721	139,647,020
Owner-occupied (percent)	62.8	65.2	66.1	64.6
Renter-occupied (percent)	37.2	34.8	33.9	35.4
Vacant units	3,471	3,852	237,853	15,636,028
Homeowner vacancy rate[a] (percent)	2.6	2.3	1.6	1.2
Rental vacancy rate[b] (percent)	9.3	9.2	7.9	5.7
Median value[c]	$127,300	$128,800	$150,800	$244,900

Source: USCB 2023b
Notes:
a Homeowner vacancy rate is the proportion of the homeowner inventory that is vacant "for sale."
b Rental vacancy rate is the proportion of the rental inventory that is vacant "for rent."
c Median value of owner-occupied units.

3.13.2.4 Schools

There are no federally operated schools on Vance AFB. Eisenhower Elementary School, which is part of the Enid Public School District, is located on Base and is attended by the majority of pre-school and elementary-aged children living on the Installation. The Enid Public School District and the Chisolm Public School District are the two main districts near Vance AFB, and there are additional smaller school districts within the Enid CCD and surrounding area. There are also five private elementary schools, and one private middle/high school located in and around the CCD that are available to children living on Vance AFB (Military Installations, 2022). The Enid CCD is also home to a Northern Oklahoma College campus, a Northwestern Oklahoma State University campus, along with several adult and trade education options including the Autry Technology Center and the Formations Institute of Cosmetology and Barbering.

3.13.3 Environmental Consequences

3.13.3.1 Evaluation Criteria

Consequences to socioeconomic resources were assessed in terms of the potential impacts on the local economy from implementation of the Proposed Action and Alternatives. The level of impact was assessed in terms of direct impacts on the local economy and related impacts on other socioeconomic resources (e.g., housing, employment). The magnitude of potential impacts can vary greatly depending on the location of an action. For example, implementation of an action that creates 10 employment positions might be unnoticed in an urban area but might have significant impacts in a rural region. In addition, if potential socioeconomic changes from a proposed action result in substantial shifts in population trends or in adverse effects on regional spending and earning patterns, such impacts might be considered adverse.

3.13.3.2 Fire Crash/Rescue Station – Alternative 1

Population

Under Alternative 1 of the fire crash/rescue station project, no additional military personnel or their dependents would relocate to Vance AFB or the surrounding areas. Construction activities associated with this alternative would result in a temporary increase in construction personnel, which would have a negligible impact on the socioeconomic conditions in the region. No new in-migration regionally would be anticipated because there are enough existing construction personnel in Garfield County to support the new construction. No adverse impacts to the local population would be anticipated to occur under Alternative 1.

Employment

Under Alternative 1 of the fire crash/rescue station project, there would be a need for local construction personnel to complete associated construction actions, which would create a short-term beneficial impact on regional employment. There would be no increase in military personnel or their dependents associated with Vance AFB under Alternative 1, and there would be no impact on the availability of employment on the Base or in the region. Therefore, no long-term impacts to employment would be anticipated to occur under Alternative 1.

Housing

Under Alternative 1 of the fire crash/rescue station project, no impacts to housing would be anticipated to occur.

Schools

Under Alternative 1 of the fire crash/rescue station project, no impacts or additional draw on educational resources would be anticipated to occur.

3.13.3.3 Fire Crash/Rescue Station – Alternative 2

Potential impacts to socioeconomics under Alternative 2 of the fire crash/rescue station project would be the same as those under Alternative 1.

3.13.3.4 Fire Crash/Rescue Station –Alternative 3

Potential impacts to socioeconomics under Alternative 3 of the fire crash/rescue station project would be the same as those under Alternative 1.

3.13.3.5 Enlisted Unaccompanied Housing Facility – Alternative 1

Population

Under Alternative 1 of the enlisted UH facility project, no additional military personnel or their dependents would relocate to Vance AFB or the surrounding areas. Construction activities associated with this alternative would result in a temporary increase in construction personnel, which would have a negligible impact on the socioeconomic condition of the region. No regional migration would be anticipated because there are enough existing construction workers in Garfield County to support the new construction. No adverse impacts to population would be anticipated to occur under Alternative 1.

Employment

Under Alternative 1 of the enlisted UH facility project, there would be a need for local construction personnel to complete associated construction actions, which would create a short-term, beneficial impact on regional employment. There would be no increase in military personnel or their dependents, and there would be no impact on the availability of employment on the Base or in the region. Therefore, no long-term impacts to employment would be anticipated to occur under Alternative 1.

Housing

Under Alternative 1 of the enlisted UH facility, some enlisted Aircrew would need to move into Officers' Quarters, and some Officers would move off Base due to the temporary decrease in housing. Adequate housing is available in the ROI, specifically within the Enid CCD (see **Table 3-15**). In 2021, the Enid CCD had approximately 3,471 vacant units and a rental vacancy rate of 9.3 percent. Officers moving off Base would create a short-term beneficial impact on local housing by occupying several vacant units and contributing to the local economy by generating increased rental income for local property owners and helping to maintain property values (Housing and Urban Development, 2014). The shifting of personnel to housing outside the Base would increase commute times for Officers living off Base but would be temporary

and short term during construction. Once completed, the new housing facility would improve the outlook and quality of housing for the personnel living on Base. Long-term, minor, beneficial impacts to housing would occur under Alternative 1.

Schools

Under Alternative 1 of the enlisted UH facility project, some military personnel would temporarily relocate within Vance AFB or the surrounding areas. Since the housing is primarily for unaccompanied Aircrew, no adverse impacts or additional draw on educational resources would be anticipated to occur due to the absence of children living within the current facility.

3.13.3.6 Enlisted Unaccompanied Housing Facility – Alternative 2

Under Alternative 2 of the enlisted UH facility project, a temporary housing facility would be constructed for enlisted personnel to utilize for the duration of construction. Unlike Alternative 1, no Officers would be required to move off Base. Long-term, minor, beneficial impacts to housing would be anticipated to occur under Alternative 2.

All other actions under Alternative 2 of enlisted UH facility project would be the same as Alternative 1 and, as such, no adverse impacts would be anticipated to occur for this resource area.

3.13.3.7 Cumulative Impacts

The Proposed Action and Alternatives would result in minor, beneficial impacts to housing. No adverse impacts to socioeconomic conditions would be expected to occur, and beneficial impacts would be anticipated due to the improved conditions of both the fire crash/rescue station and the enlisted UH facility. When considered in conjunction with other past, present, and reasonably foreseeable environmental trends and planned actions at Vance AFB, no significant cumulative effects to socioeconomic conditions would be anticipated to occur with implementation of the Proposed Action.

3.13.3.8 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. There would be no changes to socioeconomic conditions beyond the baseline. The fire crash/rescue station would continue to not meet current and future mission needs. The station would be out of compliance with DAFMAN 32-1084, UFC 4-730-10, ABA regulations, and ADA regulations. The risk for damage to the facilities and vehicles would continue due to the inadequate existing bay size, and operational inefficiencies would limit the effectiveness of the station. The issues with black mold would continue to render portions of the station unusable and negatively impact the health and well-being of the crew. Under the No Action Alternative, the enlisted UH facility would remain in its current state, which is not sufficient to meet the current and future mission requirements and lacks fundamental amenities for the well-being of personnel. The degrading facilities would continue to affect morale, wellness, and quality of life for enlisted unaccompanied Aircrew at Vance AFB.

3.14 ENVIRONMENTAL JUSTICE AND PROTECTION OF CHILDREN

3.14.1 Definition of the Resource

Federal agencies are directed by EOs to address disproportionate environmental and human health effects in minority and low-income communities and to identify and assess environmental health and safety risks to children.

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, pertains to environmental justice issues and relates to various socioeconomic groups and disproportionate impacts that could be imposed on them. This EO requires that federal agencies' actions

substantially affecting human health, or the environment do not exclude persons, deny persons benefits, or subject persons to discrimination because of their race, color, or national origin. EO 12898 was enacted to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Consideration of environmental justice concerns includes race, ethnicity, and the poverty status of populations in the vicinity of a proposed action.

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

EO 14096, *Revitalizing Our Nation's Commitment to Environmental Justice for All*, signed 21 April 2023, builds on and supplements the foundational efforts of EO 12898. It broadens the definition of environmental justice to include income, race, color, national origin, tribal affiliation, or disability. EO 14096 was enacted to strengthen the Federal Government's commitment to deliver environmental justice to all communities in the US via an ambitious approach that utilizes scientific research, high-quality data, meaningful federal engagement, and that makes use of the tools available to the Federal Government, including enforcement of civil rights and environmental laws.

For the purposes of this analysis, minority populations are defined as Alaska Natives and American Indians, Asians, Blacks or African Americans, Native Hawaiians, and Pacific Islanders or persons of Hispanic origin (of any race); low-income populations include persons living below the poverty threshold as determined by the USCB; and youth populations are children under the age of 18 years.

The ROI for environmental justice and protection of children is Vance AFB and the surrounding environs.

3.14.2 Existing Conditions

In 2021, minority groups made up approximately 31.8 percent of the population in the US. In the state of Oklahoma, minority groups made up approximately 30.3 percent of the population, while Garfield County and the Enid CCD had minority populations of 21.3 percent and 23.1 percent, respectively. All areas within Oklahoma had a lower percentage of population belonging to minority groups than the US (**Table 3-16**), as well as a lower percentage Hispanic or Latino population, although the percentage of the population belonging to minority groups in Oklahoma was only lower than the national average by 1.5 percent (USCB, 2023d). American Indian and Alaska Native people made up approximately 0.8 percent of the population in the US in 2021, and made up approximately 7.7 percent in state of Oklahoma, reflecting the sizeable American Indian populations present throughout the state. American Indian and Alaska Native groups comprise approximately 2.2 percent of the population in Garfield County and approximately 2.4 percent within the Enid CCD. Black and African American people made up approximately 12.6 percent of the US population in 2021, approximately 7.2 percent of the population in Oklahoma, approximately 2.2 percent of the population in Garfield County, and approximately 2.4 percent of the population in the Enid CCD (USCB, 2023d). No communities with environmental justice concerns were identified within the ROI as a result of race or poverty status. A community with environmental justice concerns within the Enid CCD was identified as a result of the higher percentage of the population identifying as Hispanic or Latino.

In 2021, approximately 14.1 percent of the population in the US were living below the poverty line. In the same year, approximately 16 percent of the population in Oklahoma was living below the poverty line, and approximately 14.7 percent and 15.2 percent of the population were living below the poverty line in Garfield County and the Enid CCD, respectively (USCB, 2023e). The percentage of youth in the US in 2021 was approximately 22.5. The percentage of youth in 2021 in Oklahoma, Garfield County, and the Enid CCD was higher than the national percentage by approximately 1.8 percent, 2.5 percent, and 2.8 percent, respectively (USCB, 2023d).

Table 3-16
Total Populations and Populations of Concern by Community and Geographic Region

Location	Total Population	Percent Total Minority	Percent Hispanic or Latino (of any race)	Percent Below Poverty[a]	Percent Youth[b]
United States of America	329,725,481	31.8	18.4	14.1	22.5
Oklahoma	3,948,136	30.3	11.2	16.0	24.3
Garfield County, Oklahoma	62,628	21.3	13.4	14.7	25.0
Enid Census County Division	55,553	23.1	14.3	15.2	25.3

Source: USCB, 2023b, 2023d
a Percent youth are all persons under the age of 18.
b Hispanic and Latino denote a place of origin and percent youth are all persons under the age of 18.

3.14.3 Environmental Consequences

3.14.3.1 Evaluation Criteria

Environmental justice analysis applies to potential disproportionate and adverse effects on minority, low-income, elderly, and youth populations. Environmental justice issues could occur if an adverse environmental or socioeconomic consequence to the human population fell disproportionately on these populations.

3.14.3.2 Fire Crash/Rescue Station – Alternative 1

Under Alternative 1 of the fire crash/rescue station project, all construction activities would take place within the boundaries of Vance AFB. No communities with environmental justice concerns exist on Vance AFB. Therefore, no adverse impacts to minority, low-income, or youth populations would be anticipated to occur under Alternative 1.

3.14.3.3 Fire Crash/Rescue Station – Alternative 2

Potential impacts under Alternative 2 of the fire crash/rescue station project would be the same as Alternative 1.

3.14.3.4 Fire Crash/Rescue Station - Alternative 3

Potential impacts under Alternative 3 of the fire crash/rescue station project would be the same as Alternative 1.

3.14.3.5 Enlisted Unaccompanied Housing Facility – Alternative 1

Under Alternative 1 of the enlisted UH facility project, all construction activities would take place within the boundaries of the Installation. No communities with environmental justice concerns exist on Vance AFB. Therefore, no adverse impacts to minority, low-income, or youth populations would be anticipated to occur under Alternative 1.

3.14.3.6 Enlisted Unaccompanied Housing Facility – Alternative 2

Potential impacts under Alternative 2 of the enlisted UH facility would be the same as Alternative 1.

3.14.3.7 Cumulative Impacts

The Proposed Action and Alternatives would not result in adverse impacts to communities with environmental justice concerns. When considered in conjunction with the other past, present, and reasonably foreseeable environmental trends and planned actions at Vance AFB, no significant cumulative effects to communities with environmental justice concerns would be anticipated to occur with implementation of the Proposed Action.

3.14.3.8 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. There would be no changes to environmental justice conditions beyond the baseline. The fire crash/rescue station would continue to not meet current and future mission needs. The station would be out of compliance with DAFMAN 32-1084, UFC 4-730-10, ABA regulations, and ADA regulations. The risk for damage to the facilities and vehicles would continue due to the inadequate existing bay size, and operational inefficiencies would limit the effectiveness of the station. The issues with black mold would continue to render portions of the station unusable and negatively impact the health and well-being of the crew. Under the No Action Alternative, the enlisted UH facility would remain in its current state, which is not sufficient to meet the current and future mission requirements and lacks fundamental amenities for the well-being of personnel. The degrading facilities would continue to affect morale, wellness, and quality of life for enlisted unaccompanied Aircrew at Vance AFB.

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