Final

Environmental Impact Statement

for T-7A Recapitalization at
Vance Air Force Base, Oklahoma

EISX-007-57-UAF-1727440574

March
2026

Privacy Advisory

This Environmental Impact Statement (EIS) was provided for public comment. Letters or other written or verbal comments provided may be published in this EIS. Providing personal information is voluntary. Private addresses were compiled to develop a mailing list for those requesting copies of this EIS. However, only the names of the individuals making comments and specific comments will be disclosed. Personal information, home addresses, telephone numbers, and email addresses are not published in this EIS.

Section 508 of the Rehabilitation Act of 1973

This EIS and its project website are compliant with Section 508 of the Rehabilitation Act of 1973 because assistive technology (e.g., “screen readers”) can be used to help the disabled to understand these electronic media. Due to the nature of graphics, figures, tables, and images occurring in the document, accessibility may be limited to a descriptive title for each item.

Cover Photo Credit: Boeing T-7A Red Hawk Website, July 2022
https://www.boeing.com/defense/t-7a/#/gallery

DEPARTMENT OF THE AIR FORCE
WASHINGTON DC

OFFICE OF THE ASSISTANT SECRETARY

April 2, 2026

MEMORANDUM FOR WHOM IT MAY CONCERN

FROM: SAF/IE
1665 Air Force Pentagon
Washington, DC 20330-1665

SUBJECT: Environmental Impact Statement (EIS) for T-7A Recapitalization at Vance Air Force Base (AFB), Oklahoma, Certification of Page Limits and Deadline

This memorandum pertains to the Vance AFB T-7A Recapitalization EIS. In accordance with the National Environmental Policy Act (NEPA), 42 U.S.C. § 4321, et seq., the Department of the Air Force (DAF) has considered the factors mandated by NEPA in the preparation of this EIS.

I certify that the analysis within the EIS has been tailored to comply with page limits and deadlines. The EIS represents DAF's good-faith effort to prioritize and document the most important considerations required by NEPA within the congressionally mandated page limits. This prioritization reflects DAF's expert judgment. Considerations addressed briefly or unaddressed were, in DAF's judgment, to be comparatively unimportant or frivolous. The resulting EIS represents DAF's good-faith effort to fulfill NEPA's requirements within the Congressional timeline and such effort is substantially complete.

In the DAF's expert opinion, it has thoroughly considered the factors mandated by NEPA. The analysis contained within the EIS is, in DAF's judgment, adequate to inform and reasonably explain the DAF's final decision regarding the proposed action for T-7A recapitalization at Vance AFB.

SAUNDERS.MICHAEL.E.
1022640700
2026.04.02 15:45:34
-04'00'

MICHAEL E. SAUNDERS, P.E., SES, DAF
Principal Deputy Assistant Secretary of the Air Force
Energy, Installations & Environment

ABBREVIATIONS AND ACRONYMS

°F	degrees Fahrenheit
ACAM	Air Conformity Applicability Model
ACM	asbestos-containing material
AETC	Air Education and Training Command
AFB	Air Force Base
AFFF	aqueous film forming foam
AFH	Air Force Handbook
AFI	Air Force Instruction
AGL	above ground level
AICUZ	Air Installations Compatible Use Zones
APE	area of potential effect
APZ	accident potential zone
AQCR	Air Quality Control Region
BASH	Bird/Wildlife Aircraft Strike Hazard
bgs	below ground surface
BMP	best management practice
CAA	Clean Air Act
CASS	Centralized Aircraft Support System
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	equivalent CO_2 emissions
CSU	Colorado State University
CWA	Clean Water Act
CY	calendar year
CZ	clear zone
DAF	Department of the Air Force
DAFI	DAF Instruction
dB	decibels
dBA	A-weighted decibels
DEQ	Department of Environmental Quality
DNL	Day-Night Average Sound Level
DoD	Department of Defense
DoW	Department of War
EA	Environmental Assessment
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act
EO	Executive Order
ESA	Endangered Species Act
ESQD	Explosive Safety Quantity Distance
FAA	Federal Aviation Administration
FBF	Fighter Bomber Fundamental
FEMA	Federal Emergency Management Agency
ft^2	square foot/feet
FTA	Fire Training Area
FTW	Flying Training Wing
GBTS	ground-based training system
GHG	greenhouse gas
GIS	Geographic Information System
HMMP	Hazardous Materials Management Process
HWMP	Hazardous Waste Management Plan
IDP	Installation Development Plan
INRMP	Integrated Natural Resources Management Plan
IPaC	Information for Planning and Consultation
IR	instrument route
IRP	Installation Restoration Program
ISWMP	Integrated Solid Waste Management Plan
JLUS	Joint Land Use Study
LBP	lead-based paint
L_{dnmr}	Onset-Rate Adjusted Monthly Day-Night Average Sound Level
L_{eq}	Equivalent Sount Level
$L_{eq(24h)}$	24-Hour Equivalent Sound Level
$L_{eq(7h)}$	7-Hour Equivalent Sound Level
$L_{eq(h)}$	Hourly Equivalent Sound Level
L_{max}	Maximum Sound Level
MBTA	Migratory Bird Treaty Act
MMRP	Military Munitions Response Program
MOA	Military Operating Area
MSL	mean sea level

MTR	Military Training Route
N/A	not applicable
N_2O	nitrous oxide
NA	number of events (at or) above a specified threshold
$NA75L_{max}$	total number of events that meet or exceed 75 dB L_{max}
NA90SEL	Total number of events that exceed 90 dB SEL
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NIPTS	Noise Induced Permanent Threshold Shifts
NMODD	Noise Model Operational Data Document
NO_2	nitrogen dioxide
NOI	Notice of Intent
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O_3	ozone
OAS	Oklahoma Archaeological Survey
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyl
pCi/L	picocuries per liter
PFAS	per- and polyfluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PHL	Potential for Hearing Loss
PM_{10}	particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns in diameter
POI	Points of Interest
ppb	parts per billion
PPE	personal protective equipment
PSD	Prevention of Significant Deterioration
ROI	region of influence
SAF	Secretary of the Air Force
SEL	Sound Exposure Level
SHPO	State Historic Preservation Officer
SI	Site Inspection
SO_X	sulfur oxides
SPCC	Spill Prevention, Control, and Countermeasure
SUA	special use airspace
SWPPP	Stormwater Pollution Prevention Plan
TA	time (at or) above a specified threshold
$TA75L_{max}$	total time that meets or exceeds 75 dB
TCP	traditional cultural property
tpy	tons per year
U.S.	United States
UFC	Unified Facilities Criteria
UMT	unit maintenance training
UPT	Undergraduate Pilot Training
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

Cover

Environmental Impact Statement for T-7A Recapitalization at Vance AFB, Oklahoma

Responsible Agency: United States Department of the Air Force (DAF), Air Education and Training Command (AETC).

Affected Locations: Vance Air Force Base (AFB) in Garfield County, Oklahoma; the airspace of Military Operating Areas Vance 1A, Vance 1C, and Vance 1E; and Military Training Routes instrument route (IR)-145, IR-171, IR-175, IR-181, and IR-185 in north-central Oklahoma, northern Texas, and south-central Kansas.

Report Designation: Final Environmental Impact Statement (EIS).

Abstract: DAF has prepared this EIS to address AETC's proposal to recapitalize the T-38C Talon flight training program at Vance AFB with T-7A Red Hawk aircraft. This proposal supports the Secretary of the Air Force's strategic basing decisions to recapitalize existing T-38C pilot training installations and is referred to as the Proposed Action. Vance AFB is the fourth of five installations to be analyzed environmentally for possible recapitalization. Recapitalization would entail introduction of T-7A aircraft and flight operations at Vance AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; temporary changes to the number of personnel and dependents in the Vance AFB region; and construction and upgrade of operations, support, and maintenance facilities. DAF is considering three alternative ways to implement the Proposed Action (i.e., Alternatives 1, 2, and 3), and the No Action Alternative.

For Alternative 1, Vance AFB would receive up to 68 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in up to 68 T-7A aircraft being delivered to Vance AFB; however, operations would be performed at an operational tempo approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Vance AFB would receive up to 99 T-7A aircraft, and T-7A operations would be approximately 45 percent greater than those for Alternative 1. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in this EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Vance AFB.

Alternatives 1, 2, and 3 satisfy the purpose and need for the Proposed Action. Therefore, these three alternatives have been carried forward with the No Action Alternative for analysis in this EIS.

Inquiries: Inquiries regarding this document should be directed to Chinling Chen, AFCEC/CIE, by emailing chinling.chen@us.af.mil. Provide "Vance AFB T-7A Recapitalization EIS" in the subject line of the email.

Final

ENVIRONMENTAL IMPACT STATEMENT

FOR

T-7A RECAPITALIZATION

AT

VANCE AIR FORCE BASE, OKLAHOMA

AIR EDUCATION AND TRAINING COMMAND

MARCH 2026

Table of Contents

Appendices

Figures

Tables

1. Purpose of and Need for the Proposed Action

1.1 Introduction and Background

This Environmental Impact Statement (EIS) addresses the United States (U.S.) Department of the Air Force (DAF), Air Education and Training Command (AETC) proposal to recapitalize the T-38C Talon flight training program at Vance Air Force Base (AFB), Oklahoma, with T-7A Red Hawk aircraft. This EIS analyzes the environmental impacts associated with T-7A recapitalization at Vance AFB and its alternatives, including the No Action Alternative. The Department of War (DoW) defines facility recapitalization as "the restoration, modernization, or replacement of facilities or their structural components to extend or restore a facility's lifecycle."

Procedurally, this EIS was prepared in compliance with the National Environmental Policy Act (NEPA), as amended by Public Law 118-5, the *Fiscal Responsibility Act of 2023* (42 United States Code [USC] Sections 4321 et seq.); *Department of Defense National Environmental Policy Act Implementing Procedures*, dated June 30, 2025 (DoD 2025); and DAF policy memoranda *Rescinded Executive Orders (EO) and Regulatory Changes relevant to the Department of the Air Force Environmental Impact Analysis Process*, dated February 26, 2025 (DAF 2025a) and *Initial Department of the Air Force (DAF) Policy for Implementation of the National Environmental Policy Act (NEPA)*, dated July 7, 2025 (DAF 2025b).

An EIS is prepared to provide full and fair discussion of significant environmental impacts and inform decision-makers and the public of the reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human environment. The primary intent of an EIS is to ensure agencies consider the environmental impacts of their actions in decision-making. In compliance with NEPA, DAF has prepared this EIS as the appropriate analysis level for the Proposed Action. The analysis summarized in the EIS is intended to provide the deciding official with sufficient information for a final decision.

1.1.1 The T-7A Recapitalization Program

1.1.1.1 Aircraft

The T-38C is a twin-engine, high-altitude, supersonic jet used by DAF and other nations for pilot training. The T-38C trains airmen for various fighter and bomber aircraft assignments, including the B-1B Lancer, F-15C Eagle, F-15E Strike Eagle, F-16 Fighting Falcon, F-22 Raptor, and F-35 Lightning II (DAF 2014).

The T-38 was originally developed in the 1950s with production occurring between 1961 and 1972. The fleet has undergone periodic upgrades over time, including in 2001 when many aircraft were converted to the T-38C variant by installing modern avionics and upgraded propulsion components to provide increased performance and superior reliability (DAF 2014). Nevertheless, as an older aircraft, training with the T-38C does not prepare pilots adequately for the technological advancements of modern fourth and fifth generation fighter aircraft.

"Fourth generation" refers to those fighter aircraft developed or manufactured with updated variants in the later part of the 20th century, such as the F-15E or the F-16. "Fifth generation" refers to modern fighter aircraft with advanced avionics developed in the early part of the 21st century, such as the F-22 and F-35.

Furthermore, T-38C aircraft incur greater maintenance requirements as they age. Greater maintenance leads to more individual aircraft downtime, which threatens the availability of pilot training hours. The T-38C is expected to reach the end of its service life within the next decade.

DAF plans to recapitalize the T-38C fleet with T-7A aircraft to provide a training environment suitable for modern aircraft. Program-wide, DAF expects to procure approximately 350 T-7A aircraft from Boeing and deliver these aircraft to the five T-38C pilot training installations using a geographically phased replacement plan.

1.1.1.2 Why Vance AFB?

In a Strategic Basing Decision Memorandum for Record dated February 16, 2018, the Secretary of the Air Force (SAF) identified Joint Base San Antonio-Randolph as the preferred alternative and Columbus, Laughlin, Vance, and Sheppard AFBs as reasonable alternatives for T-7A recapitalization. DAF pilot training relies on a unique runway structure and special use airspace (SUA) capable of supporting high volume pilot training. As such, the potential locations for T-7A aircraft are limited to the five existing pilot training installations. DAF evaluated each of the five installations using criteria that included mission factors (e.g., weather, ability to meet syllabus requirements), infrastructure capacity, and potential environmental constraints and costs (DAF 2018).

On January 29, 2021, the Acting SAF approved the preferred sequencing and locations for the installations to possibly undergo T-7A recapitalization. Following AETC recommendations, the Acting Secretary selected Vance AFB to be the fourth installation to be analyzed environmentally for possible recapitalization (DAF 2021a). The focus of this EIS is the T-7A recapitalization at Vance AFB.

1.2 Location

1.2.1 Vance AFB and Airspace

Vance AFB. Vance AFB occupies 2,122 acres in north-central Oklahoma in the southwest portion of the city of Enid within Garfield County (see **Figure 1-1**). Vance AFB is home to the 71st Flying Training Wing (FTW) of AETC's 19th Air Force. The 71 FTW provides Undergraduate Pilot Training (UPT) using the T-1 Jayhawk, T-6 Texan II, and T-38C.

SUA. T-38C aircraft stationed at Vance AFB use SUA in north-central Oklahoma, northern Texas, and south-central Kansas to perform aircraft operations and supplement training. Such airspace is approved by the Federal Aviation Administration (FAA) and managed by DAF. This SUA consists of three Military Operating Areas (MOAs) and five Military Training Areas (MTRs). MOAs separate military activities from other traffic. MTRs are flight corridors used by the military to connect MOAs and perform low-altitude, high-speed training. The SUA is designated on published aeronautical charts available online at the following website: https://www.faa.gov/air_traffic/flight_info/aeronav/productcatalog/vfrcharts/sectional.

The SUA where Vance AFB T-38C aircraft perform operations is depicted across portions of the Kansas City, Dallas – Ft. Worth, and Wichita sectional aeronautical charts and consists of:

- **MOAs.** Vance 1A, Vance 1C, and Vance 1E.
- **MTRs.** Instrument route (IR)-145, IR-171, IR-175, IR-181, and IR-185.

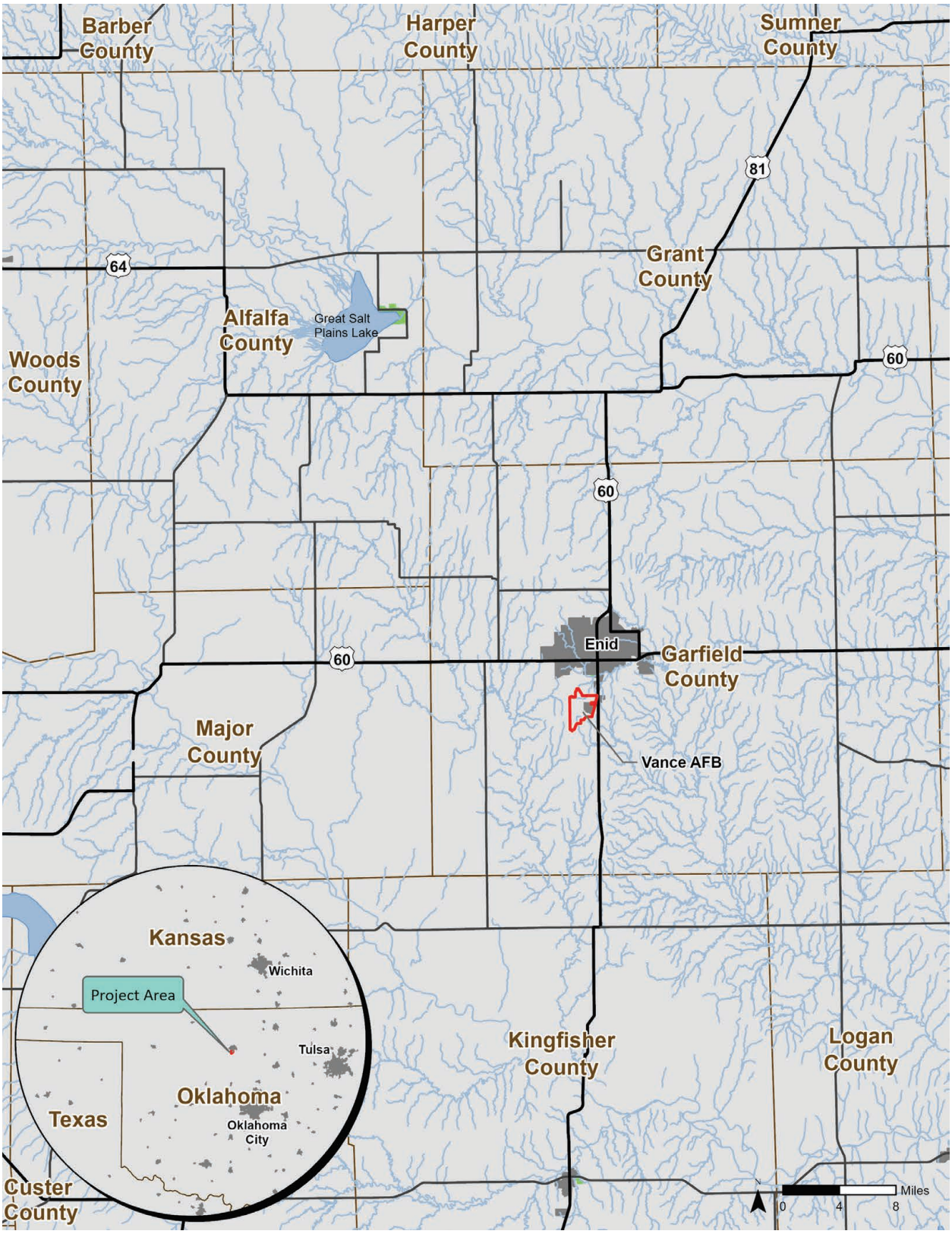


Figure 1-1. Vance AFB and Vicinity

1.3 Purpose and Need

The purpose of the Proposed Action is to continue the T-7A recapitalization program to prepare pilots to operate modern fourth and fifth generation aircraft.

The need for the Proposed Action is to provide infrastructure and training systems to support the newer T-7A aircraft, allow for enhanced and improved flight and simulator training, and ensure DAF pilot training requirements are met. By 2031, more than 60 percent of the Combat Air Force will be comprised of fifth generation aircraft, requiring a modern, capable training platform with capabilities beyond those available with the T-38C. Additionally, training systems provided with the newer T-7A aircraft allow for enhanced and improved flight and simulator training. The T-7A recapitalization program will allow DAF to provide more efficient and effective instructor and pilot training for operating fourth and fifth generation aircraft. T-7A recapitalization at Vance AFB would allow DAF to continue the geographically phased T-7A recapitalization sequence, ensuring DAF pilot training requirements are met.

1.4 Public Participation

Notice of Intent (NOI). A notice announcing DAF's intent to prepare an EIS was published in the *Federal Register* on June 4, 2024. The NOI formally initiated the public scoping process and included a description of the Proposed Action and alternatives; the date, time, and location for the in-person public scoping meetings; and an invitation to federal, state, and local agencies, elected officials, affected Native American tribes, and interested persons (e.g., public) to participate in the scoping process.

Scoping. The scoping process is designed to involve the public early in the assessment process and solicit input from the public and interested agencies on the nature and extent of issues and impacts to be addressed and the methods by which potential impacts are evaluated.

In addition to the NOI, DAF published newspaper advertisements in the *Enid News & Eagle* on June 7 and 8, 2024; issued press releases to local media outlets and via Facebook posts; and mailed letters to potentially interested federal, state, and local agencies, elected officials, and Native American tribes to announce the scoping period. Each newspaper advertisement, press release, and letter briefly described the Proposed Action, solicited comments, and provided the date, time, and location for the in-person public scoping meetings, which were held using an open house format to inform the public about the proposal. The scoping meetings were held at the Autry Technology Center at 1201 West Willow Road in Enid, Oklahoma, on June 25 and 26, 2024, from 4:00 to 7:00 p.m. central daylight time. The 30-day scoping period began on June 4, 2024, and officially ended on July 8, 2024.

A total of 19 comment correspondences were received from 17 parties during scoping. These comment correspondences were from three federal agencies, two state agencies, five representatives of local government, three Native American tribal nations, and four private citizens. A summary of the comments contained in the comment correspondences is provided in **Appendix D**.

***Draft EIS Public Comment*.** DAF initiated a 45-day Draft EIS public comment period on August 29, 2025, when the Notice of Availability for the Draft EIS was published in the *Federal Register*. The public was informed of the Draft EIS public comment period through notices published in the *Enid News & Eagle* on August 29 and September 20-21, 2025; social media posts; and a memo emailed to potentially interested federal, state, and local agencies, elected officials, and citizens. The Draft EIS public comment period ended on October 14, 2025.

A total of 22 comment correspondences were received from 22 parties during the Draft EIS public comment period. These comment correspondences were from 3 federal agencies, 3 state agencies, 4 representatives of local government, and 12 private citizens. A summary of the comments contained in the comment correspondences is provided in **Appendix D**.

2. Description of the Proposed Action and Alternatives

2.1 Proposed Action

The Proposed Action is recapitalization of the T-38C flight training program at Vance AFB with T-7A aircraft. This is the fourth location of the T-7A recapitalization program, as described in **Section 1.1.1.** Recapitalization entails the following elements:

- Replacement of all T-38C aircraft assigned to Vance AFB with T-7A aircraft.
- Transition of aircraft operations at Vance AFB and associated SUA from the T-38C to the T-7A.
- Temporary changes to the number of personnel and dependents in the Vance AFB region.
- Construction of and upgrades to operations, support, and maintenance facilities to support pilot training and aircraft operation and maintenance.

2.2 Alternatives

2.2.1 Alternatives to Vance AFB

As discussed in **Section 1.1.1**, the Acting SAF expressed preference for Vance AFB to be the fourth of five pilot training installations to undergo possible T-7A recapitalization. The Secretary's preference was based on several factors, such as minimizing impact on continued pilot production during the transition of aircraft types, providing the most cost-efficient student production/management plan, and aligning with AETC's student pipeline flow for the UPT and Introduction to Fighter Fundamentals curricula. For these reasons, the Proposed Action identified and evaluated within this EIS focuses on the Vance AFB recapitalization effort, and no alternative locations to Vance AFB are addressed in this EIS.

2.2.2 Alternative Ways to Implement the Proposed Action

DAF is considering three alternative ways to implement T-7A recapitalization at Vance AFB (i.e., Alternatives 1, 2, and 3). These alternatives have different numbers of T-7A aircraft that would be stationed at Vance AFB and different numbers of T-7A operations at Vance AFB and associated SUA.

2.2.2.1 Alternative 1

Alternative 1 addresses DAF's anticipated training needs. Vance AFB would receive up to 68 T-7A aircraft and phase in T-7A operations at a level sustaining pilot training while simultaneously phasing out the T-38C. The aircraft, aircraft operations, personnel and dependents, and construction and renovation projects for Alternative 1 are described in the following subsections.

2.2.2.1.1 Aircraft

T-7A aircraft would be delivered to Vance AFB from the manufacturer (Boeing) beginning in 2032 and continuing through 2033. As T-7A aircraft are placed into service, T-38C aircraft would be withdrawn from service. The first T-38Cs would be

withdrawn in 2032 and the last in 2033. In total, all 63 T-38C aircraft assigned to Vance AFB would be withdrawn from service and considered for retirement or repurposed for use at other locations. The potential reuse of T-38C aircraft at other locations is a separate DAF action and subject to separate environmental analysis not addressed by this EIS. **Table 2-1** provides Vance AFB's proposed T-7A delivery and T-38C withdrawal schedule for Alternatives 1 and 2.

Table 2-1. T-38C and T-7A Aircraft Changes for Alternatives 1 and 2

Aircraft Type	2023 and No Action	2032	2033	2034 and Thereafter
Annual Aircraft Withdrawn From/Delivered to Vance AFB				
T-38C (withdrawn)	N/A	14	49	N/A
T-7A (delivered)	N/A	24	44	N/A
Total T-38C/T-7A Aircraft at Vance AFB at Year End				
T-38C	63	49	0	0
T-7A	0	24	68	68
Total Aircraft	**63**	73	68	**68**

Source: AETC 2024a
N/A = not applicable

2.2.2.1.2 Aircraft Operations

On a per aircraft basis, the T-7A would perform the same number of operations as the current T-38C, but on an installation-wide basis, total annual T-7A operations in 2034 and later would be approximately 5,100 greater than current T-38C operations (i.e., 69,800 versus 64,700) because five additional aircraft would be assigned to the installation. **Table 2-2** provides the approximate number of annual operations for both types of aircraft at the Vance AFB airfield, and **Table 2-3** provides the approximate number of annual sorties in the Vance AFB SUA. The numbers in both tables are based on the 2023 T-38C tempo of operations.

The Proposed Action includes evening and nighttime T-7A operations at the Vance AFB airfield. Evening operations are those performed from dusk until 10 p.m., and nighttime operations, as defined for aircraft noise modeling, occur between 10 p.m. and 7 a.m. It is likely that, as times of sunrise and sunset change throughout the seasons, the daily and hourly distribution of flight operations may vary to accommodate training curriculum requirements. At full implementation, up to 698 annual nighttime T-7A operations would occur at Vance AFB for Alternative 1, which is approximately 1 percent of the total annual daytime and nighttime T-7A operations. All operations within SUA would occur during authorized active times during daytime and evening hours (7 a.m. to 10 p.m.), and no nighttime (between 10 p.m. and 7 a.m.) operations would occur.

Exact T-7A flight parameters, such as flight tracks, patterns, and altitudes, have not yet been developed and will not be known until DAF begins flying the T-7A for pilot training. Therefore, at this stage of the proposal, T-7A flight parameters are assumed to be similar to those flown by the T-38C for the No Action Alternative. All routine T-38C and T-7A traffic would use runways in the manner currently used. Consistent with T-38C practices, no nearby airfields—such as Kegelman Auxiliary Field or Woodring Municipal Airport—would be used for regular T-7A operations.

T-7A pilot training would use the same SUA currently used by the T-38C. No changes to SUA configurations (i.e., size, shape, or location) or their active times are proposed for T-7A recapitalization. The 71 FTW has proposed an additional low-altitude MOA to support a possible Fighter Bomber Fundamental (FBF) training mission at Vance AFB. That proposal would occur independent of T-7A recapitalization and is not part of the Proposed Action addressed by this EIS. An Environmental Assessment (EA) addressing the low-altitude MOA proposal was completed in September 2025 resulting in a Finding of No Significant Impact (DAF 2025c). T-7A aircraft would be limited to sub-sonic speeds in all phases of pilot training (AFCEC/CZN 2021).

What is an Aircraft Operation?

In **Table 2-2** for Alternative 1 and the corresponding tables for Alternatives 2 and 3, the number of projected aircraft operations is provided as a means to analyze both the air quality and noise impacts from aircraft flights. For the purposes of these tables, an aircraft operation is defined as (1) a single takeoff, (2) a single landing, or (3) a closed pattern. A closed pattern is a "touch-and-go" where an aircraft approaches the airfield, momentarily touches its wheels or flies close to the runway, and departs the airfield for additional flight maneuvers.

Aircraft operations are often discussed using the term "sorties." A single aircraft sortie at an airfield consists of one takeoff and one landing and may include closed patterns. For T-38C flight training at Vance AFB, approximately 2.215 closed patterns are performed on average per sortie. Average conditions were used to calculate the operations presented in this EIS, and an identical closed pattern-to-sortie ratio was used for T-7A flight training. In actuality, some sorties flown may include fewer closed patterns while others may include greater closed patterns than average.

An example of how operations were calculated is as follows: If 10,000 sorties were flown in any single year, the table would show a total of 42,150 aircraft operations for that year. These operations would consist of 10,000 takeoffs, 10,000 landings, and 22,150 closed patterns.

Table 2-2. T-38C and T-7A Aircraft Operations at Vance AFB Airfield for Alternative 1

Aircraft Type	2023 and No Action	2032	2033	2034 and Later
Annual Aircraft Operations (Total)				
T-38C	64,677	58,004	16,169	0
T-7A	0	9,240	54,411	69,810
Total	**64,677**	67,244	70,580	**69,810**
Annual Aircraft Operations (Nighttime)[1]				
T-38C	2,900	580	162	0
T-7A	0	92	544	698
Total	**2,900**	672	706	**698**

Sources: AETC 2024b, Vance AFB 2022a, HMMH 2025

[1] Annual aircraft operations (nighttime) are the number of operations at Vance AFB between 10 p.m. and 7 a.m. provided for noise modeling purposes. Assumes T-7A nighttime ops would be approximately 1 percent of total operations.

Table 2-3. T-38C and T-7A Aircraft Sorties within Vance AFB SUA for Alternative 1

SUA Unit	Aircraft Type	2023 and No Action	2032	2033	2034 and Later
Annual Aircraft Sorties within the SUA[1]					
Vance 1A	T-38C	3,024	2,927	816	0
	T-7A	0	466	2,746	3,523
Vance 1C	T-38C	6,108	5,474	678	0
	T-7A	0	872	5,135	6,588
Vance 1E	T-38C	816	728	203	0
	T-7A	0	116	683	876
IR-145	T-38C	324	289	81	0
	T-7A	0	46	271	348
IR-171	T-38C	180	150	42	0
	T-7A	0	24	140	180
IR-175	T-38C	192	170	47	0
	T-7A	0	27	159	204
IR-181	T-38C	180	31	44	0
	T-7A	0	25	150	192
IR-185	T-38C	240	219	61	0
	T-7A	0	35	206	264
Annual Aircraft Sorties Below 3,000 feet AGL within the SUA[2]					
Vance 1A	T-38C	0	0	0	0
	T-7A	0	0	0	0
Vance 1C	T-38C	0	0	0	0
	T-7A	0	0	0	0
Vance 1E	T-38C	816	728	203	0
	T-7A	0	116	683	876
IR-145	T-38C	309	276	77	0
	T-7A	0	44	259	332
IR-171	T-38C	172	143	40	0
	T-7A	0	23	134	172
IR-175	T-38C	183	162	45	0
	T-7A	0	26	152	195
IR-181	T-38C	172	24	42	0
	T-7A	0	24	143	183
IR-185	T-38C	229	209	58	0
	T-7A	0	33	197	252

Sources: AETC 2024b, Vance AFB 2022a, HMMH 2025
AGL = above ground level
[1] Annual aircraft sorties within the SUA were extrapolated based on the number of T-38C and T-7A aircraft at Vance AFB shown in **Table 2-1**. All operations within SUA would occur during authorized active times during daytime and evening hours (7 a.m. to 10 p.m.), and no nighttime (between 10 p.m. and 7 a.m.) operations would occur.
[2] Annual aircraft sorties below 3,000 feet AGL within the SUA are provided for air emission estimation purposes.

2.2.2.1.3 Personnel and Dependents

During the aircraft transition period (i.e., 2032 through 2034), a temporary increase of approximately 100 personnel is projected at Vance AFB. This increase would occur during the transition period because DAF would be training pilots with and maintaining two types of aircraft, resulting in a temporary increase in workforce requirements for operations, civilian simulator instructors, and maintenance. The initial increase in workforce would subside as T-38C aircraft are removed from service. After the aircraft transition period, the workforce associated with the T-7A flight training program would be approximately the same as that for the current T-38C flight training program and identical across all action alternatives because of physical space limitations to support additional maintenance and training staff.

Associated with the workforce change is a corresponding change in the number of dependents (e.g., spouses, children, other family members) who would accompany the personnel. DAF estimates that 1.9 dependents accompanied active-duty personnel in 2020 (DAF 2021b). Therefore, an estimated 190 dependents would accompany the 100 additional personnel during the aircraft transition period, for a total of 290 additional people in the Vance AFB vicinity during 2032 through 2034. After the aircraft transition period, the dependent population would be approximately the same as current levels and identical across all action alternatives.

2.2.2.1.4 Construction and Renovation Projects

Several construction and renovation projects potentially would occur at Vance AFB to provide modern facilities and infrastructure to support T-7A aircraft maintenance, training, and operational requirements. These projects are described in **Table 2-4**, and **Figure 2-1** shows the proposed locations of the projects as currently sited. **Table 2-5** provides the estimated amount of ground disturbance and new impervious surface resulting from each project.

Table 2-4. Construction and Renovation Projects for Vance AFB T-7A Program

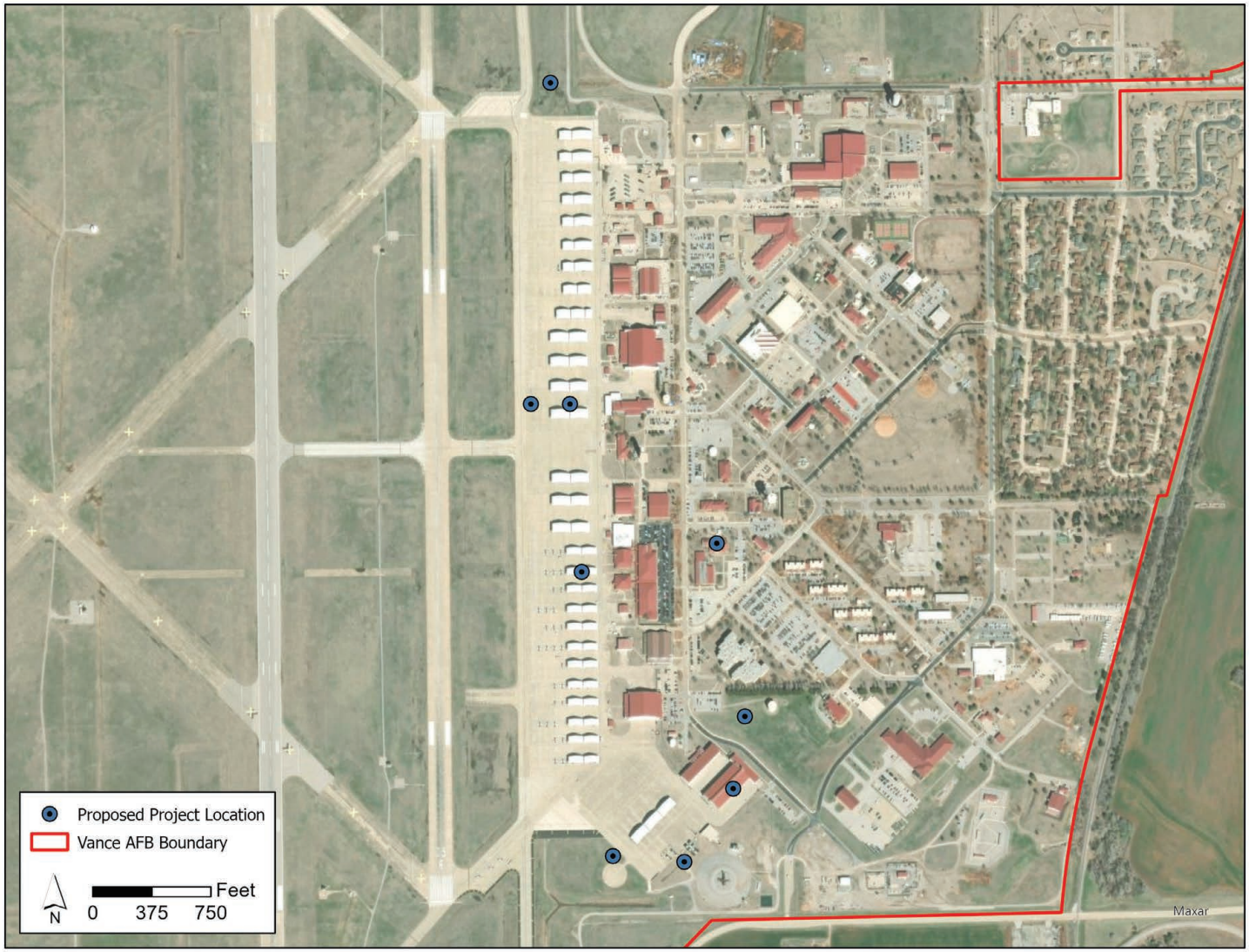
Project Name	Project Description
Hush House Pad	Construct a new hush house pad southwest of the installation's existing hush house. A hush house is an enclosed unit that contains noise suppressing equipment to accommodate in-frame or out-of-frame aircraft engine testing. Construction would include a reinforced concrete pad approximately 27,500 square feet (ft^2) with thick edges and paved shoulders for the hush house enclosure. The concrete pad would have an anchor block in the center to perform full-power engine diagnostics testing of the aircraft engine to keep the aircraft stationary. Approach pavements and supporting utilities would be extended to the proposed hush house pad.
T-7A Shelters and Site Work	Replace shelters (sunshades) and perform associated site construction on the existing T-38C aircraft parking apron to protect T-7A aircraft from adverse weather. Existing T-38C shelters would be removed, and T-7A shelters would be placed on existing pavement and appropriately spaced to accommodate the planned T-7A parking requirements on a schedule determined to best support the aircraft transition. Taxi lines would be removed and repainted. Electrical utilities, proper lighting, and tie-downs/grounding points would be installed for each shelter.

Project Name	Project Description
Addition to Egress Shop	Construct an addition onto Building 542. The addition would be approximately 3,200 ft^2 and constructed with a reinforced concrete foundation, concrete floor slab, structural steel frame, and standing seam metal roof and exterior.
Jet Blast Deflectors	Install jet blast deflectors on the airfield to protect parked aircraft, personnel, facilities, and pavements from jet blasts from taxiing aircraft. The locations for where to install the jet blast deflectors has not yet been determined but based on the most current and available information, the deflectors would likely be between aircraft parking rows on the apron.
Airfield Reconfiguration	Paint new markings to reconfigure the airfield and install new mooring and anchor rods. The parking layout would be repainted to accommodate the T-7A's larger physical dimensions. The mooring and anchor rods would be installed in the new T-7A parking area. The compass rose and trim pad would be moved slightly due to the siting of the new hush house.
Renovate Squadron Operations Buildings	Perform interior renovations to support the squadrons associated with the T-7A program. Facility options being considered include Buildings 179, 183, 541, and 690.
Modify Hangar	Modify hangar doors at Building 199, which currently houses T-1* aircraft maintenance functions.
Antenna Farm	Provide an additional antenna-yard area near Building 199 to assist with sending signals between the facility and the airfield. The antenna would be a maximum of 50 feet tall and installed on a 400-ft^2 concrete pad.
Remove Aboveground Centralized Aircraft Support System (CASS) Service Modules	Remove any T-38C CASS modules where T-7A aircraft would be located using previous T-38C spaces. CASS modules are electrical equipment panels attached to existing T-38C shelters. CASS lines to the rows would be cut and capped and vaults would be filled in with concrete.
Munitions Storage Pad	Install an estimated 3,600 ft^2 concrete pad for a storage container to store T-7A ejection system explosive components.
Ground-Based Training System (GBTS) Renovation	Renovate the interior of the current GBTS facility (Building 672) to accommodate the incoming T-7A training devices.
Unit Maintenance Training (UMT) Facility	Renovate the interior of Building 199 to accommodate the proposed UMT facility.

Sources: AETC 2022, AETC 2023, Vance AFB 2023
Note: * = Divestment of the T-1 aircraft would be complete before the first T-7A aircraft would arrive at the installation.

Table 2-5. Estimated Ground Disturbance and New Impervious Surface Area

Project	Construction Element	Current Site Condition	Dimensions (ft^2 / acres)
Hush House Pad	Pad	Grass	27,500 / 0.63
Addition to Egress Shop	Building Addition	Grass	3,200 / 0.07
Antenna Farm	Pad	Grass	400 / 0.01
Munitions Storage Pad	Pad	Grass	3,600 / 0.08
Total			**34,700 / 0.79**



Note: Dots represent proposed project locations and may include more than one project at that location.

Figure 2-1. Project Locations

Each renovated building potentially would incorporate cost-effective designs and technologies that minimize energy consumption for heating, cooling, lighting, and appliances. Examples of possible designs and technologies include use of insulation, energy-efficient windows, smart thermostats, and LED lighting, among others.

The construction and renovation projects are expected to begin in 2028 and 2029 and be completed prior to the arrival of the first T-7A aircraft in 2032. The exact projects selected for implementation and their timetable for execution will depend on funding levels and priorities in the overall T-7A program.

2.2.2.2 Alternative 2

Alternative 2 is intended to cover a scenario in which, for either broad strategic or tactical operational reasons, DAF requires a surge or increase in pilot training operations above current plan. Vance AFB would receive up to 68 T-7A aircraft and perform operations at a level that is approximately 25 percent greater than Alternative 1.

The number of T-7A aircraft delivered to Vance AFB, timeline for aircraft operations, construction and renovation projects, and personnel changes would be the same as described for Alternative 1 in **Section 2.2.2.1**. The difference from Alternative 1 is that beginning in 2032, T-7A and T-38C aircraft would perform annual operations at Vance AFB and associated SUA at an operational tempo that is 25 percent greater than Alternative 1. Total annual T-7A operations in 2034 and later at the installation would be approximately 22,600 greater than current T-38C operations (i.e., 87,300 versus 64,700). T-7A nighttime operations would occur with up to 873 annual nighttime operations at Vance AFB. **Table 2-6** provides the approximate number of T-38C and T-7A annual aircraft operations at the Vance AFB airfield, and **Table 2-7** provides the approximate number within the Vance AFB SUA for Alternative 2.

Table 2-6. T-38C and T-7A Aircraft Operations at Vance AFB Airfield for Alternative 2

Aircraft Type	2023 and No Action	2032	2033	2034 and Later
Annual Aircraft Operations (Total)				
T-38C	64,677	72,505	20,212	0
T-7A	0	11,549	68,014	87,264
Total	**64,677**	84,054	88,226	**87,264**
Annual Aircraft Operations (Nighttime)[1]				
T-38C	2,900	725	202	0
T-7A	0	115	680	873
Total	**2,900**	840	882	**873**

Sources: AETC 2024b, Vance AFB 2022a, HMMH 2025
[1] Annual aircraft operations (nighttime) are the number of operations at Vance AFB between 10 p.m. and 7 a.m. provided for noise modeling purposes. Assumes T-7A nighttime ops would be approximately 1 percent of total operations.

Table 2-7. T-38C and T-7A Aircraft Sorties within Vance AFB SUA for Alternative 2

SUA Unit	Aircraft Type	2023 and No Action	2032	2033	2034 and Later
Annual Aircraft Sorties within the SUA[1]					
Vance 1A	T-38C	3,024	3,390	945	0
	T-7A	0	540	3,180	4,080
Vance 1C	T-38C	6,108	6,840	847	0
	T-7A	0	1,090	6,416	8,232
Vance 1E	T-38C	816	907	253	0
	T-7A	0	145	851	1,092
IR-145	T-38C	324	359	100	0
	T-7A	0	57	337	432
IR-171	T-38C	180	189	53	0
	T-7A	0	30	178	228
IR-175	T-38C	192	209	58	0
	T-7A	0	33	196	252
IR-181	T-38C	180	39	56	0
	T-7A	0	32	187	240
IR-185	T-38C	240	279	78	0
	T-7A	0	44	262	336
Annual Aircraft Sorties Below 3,000 feet AGL within the SUA[2]					
Vance 1A	T-38C	0	0	0	0
	T-7A	0	0	0	0
Vance 1C	T-38C	0	0	0	0
	T-7A	0	0	0	0
Vance 1E	T-38C	816	907	253	0
	T-7A	0	145	851	1,092
IR-145	T-38C	309	343	96	0
	T-7A	0	55	322	413
IR-171	T-38C	172	181	50	0
	T-7A	0	29	170	218
IR-175	T-38C	183	200	56	0
	T-7A	0	32	188	241
IR-181	T-38C	172	30	53	0
	T-7A	0	30	179	229
IR-185	T-38C	229	267	74	0
	T-7A	0	42	250	321

Sources: AETC 2024b, Vance AFB 2022a, HMMH 2025

[1] Annual aircraft sorties within the SUA were extrapolated based on the number of T-38C and T-7A aircraft at Vance AFB shown in **Table 2-1**. All operations within SUA would occur during authorized active times during daytime and evening hours (7 a.m. to 10 p.m.), and no nighttime (between 10 p.m. and 7 a.m.) operations would occur.

[2] Annual aircraft sorties below 3,000 feet AGL within the SUA are provided for air emission estimation purposes.

2.2.2.3 Alternative 3

Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in this EIS provides analysis to evaluate future capacity needs. Vance AFB would receive up to 99 T-7A aircraft. **Table 2-8** provides Vance AFB's proposed T-7A delivery and T-38C withdrawal schedule for Alternative 3. If Alternative 3 were selected for implementation, the SAF would authorize SAF/IEI to modify the number of aircraft at Vance AFB in the Record of Decision.

Table 2-8. T-38C and T-7A Aircraft Changes for Alternative 3

Aircraft Type	2023 and No Action	2032	2033	2034	2035 and Thereafter
Annual Aircraft Withdrawn From/Delivered to Vance AFB					
T-38C (withdrawn)	N/A	14	49	N/A	N/A
T-7A (delivered)	N/A	24	48	27	N/A
Total T-38C/T-7A Aircraft at Vance AFB at Year End					
T-38C	63	49	0	0	0
T-7A	0	24	72	99	99
Total Aircraft	**63**	73	72	99	**99**

Source: AETC 2024a

Table 2-9 provides the approximate number of T-38C and T-7A annual aircraft operations at the Vance AFB airfield and **Table 2-10** provides the approximate number within the Vance AFB SUA for Alternative 3. On a per aircraft basis, the T-7A would perform the same number of operations as the current T-38C, but on an installation-wide basis, total annual T-7A operations in 2035 and later would be approximately 36,900 greater than current T-38C operations (101,600 versus 64,700) because 36 more aircraft would be assigned to the installation. This increase in operations is approximately 45 percent greater than Alternative 1. T-7A nighttime operations would occur with up to 1,016 annual nighttime operations at Vance AFB.

Table 2-9. T-38C and T-7A Aircraft Operations at Vance AFB Airfield for Alternative 3

Aircraft Type	2023 and No Action	2032	2033	2034	2035 and Later
Annual Aircraft Operations (Total)					
T-38C	64,677	58,004	16,169	0	0
T-7A	0	9,240	55,437	97,016	101,635
Total	**64,677**	67,244	71,606	97,016	**101,635**
Annual Aircraft Operations (Nighttime)[1]					
T-38C	2,900	580	162	0	0
T-7A	0	92	554	970	1,016
Total	**2,900**	672	716	970	**1,016**

Sources: AETC 2024b, Vance AFB 2022a, HMMH 2025
[1] Annual aircraft operations (nighttime) are the number of operations at Vance AFB between 10 p.m. and 7 a.m. provided for noise modeling purposes. Assumes T-7A nighttime ops would be approximately 1 percent of total operations.

Table 2-10. T-38C and T-7A Aircraft Sorties within Vance AFB SUA for Alternative 3

SUA Unit	Aircraft Type	2023 and No Action	2032	2033	2034	2035 and Later
Annual Aircraft Sorties within the SUA[1]						
Vance 1A	T-38C	3,024	4,240	1,182	0	0
	T-7A	0	675	4,053	7,092	7,430
Vance 1C	T-38C	6,108	5,451	675	0	0
	T-7A	0	868	5,210	9,118	9,552
Vance 1E	T-38C	816	726	202	0	0
	T-7A	0	116	694	1,214	1,272
IR-145	T-38C	324	288	80	0	0
	T-7A	0	46	275	481	504
IR-171	T-38C	180	151	42	0	0
	T-7A	0	24	144	252	264
IR-175	T-38C	192	171	48	0	0
	T-7A	0	27	164	286	300
IR-181	T-38C	180	31	44	0	0
	T-7A	0	25	151	263	276
IR-185	T-38C	240	219	61	0	0
	T-7A	0	35	209	367	384
Annual Aircraft Sorties Below 3,000 feet AGL within the SUA[2]						
Vance 1A	T-38C	0	0	0	0	0
	T-7A	0	0	0	0	0
Vance 1C	T-38C	0	0	0	0	0
	T-7A	0	0	0	0	0
Vance 1E	T-38C	816	726	202	0	0
	T-7A	0	116	694	1,214	1,272
IR-145	T-38C	309	275	77	0	0
	T-7A	0	44	263	459	481
IR-171	T-38C	172	144	40	0	0
	T-7A	0	23	138	241	252
IR-175	T-38C	183	164	46	0	0
	T-7A	0	26	156	273	287
IR-181	T-38C	172	24	42	0	0
	T-7A	0	24	144	252	264
IR-185	T-38C	229	209	58	0	0
	T-7A	0	33	200	350	367

Sources: AETC 2024b, Vance AFB 2022a, HMMH 2025
[1] Annual aircraft sorties within the SUA were extrapolated based on the number of T-38C and T-7A aircraft at Vance AFB shown in **Table 2-6**. All operations within SUA would occur during authorized active times during daytime and evening hours (7 a.m. to 10 p.m.), and no nighttime (between 10 p.m. and 7 a.m.) operations would occur.
[2] Annual aircraft sorties below 3,000 feet AGL within the SUA are provided for air emission estimation purposes.

Although Alternative 3 has 31 additional T-7A aircraft assigned to the installation, compared to Alternative 1, only one construction and renovation project would be implemented differently than Alternative 1. That project is the construction of T-7A shelters and would include construction of additional shelters on existing aircraft parking ramp pavement to accommodate the additional T-7A aircraft. All other aspects of Alternative 3 would be identical to those described for Alternative 1 in **Section 2.2.2.1**. Even with the additional T-7A aircraft, personnel requirements would be identical to those described for Alternative 1 because of physical space limitations to support additional maintenance and training staff.

2.3 No Action Alternative

The No Action Alternative assesses environmental consequences that may occur if the Proposed Action is not implemented. The No Action Alternative serves as a reference against which the impacts of the Proposed Action and other potential action alternatives can be evaluated.

For the No Action Alternative, DAF would not implement T-7A recapitalization at Vance AFB. Vance AFB's existing fleet of T-38C aircraft would continue to be used in their current capacity. No changes to current flight operations would occur even though T-38C aircraft will reach the end of their service lives within the next decade. Maintenance requirements for these aircraft would continue to increase. The retention and continued use of the T-38C aircraft would not change the number of personnel on Vance AFB. The number and types of T-38C aircraft operations would remain the same, consistent with the current training curriculum and operations shown in **Table 2-2** and **Table 2-3** for 2023 conditions. The SUA (MOAs and MTRs) for T-38C operations, identified in **Section 1.2.1**, would continue to be used at the same tempo and in a similar manner. No construction or renovation projects would be undertaken to support the T-7A program at Vance AFB.

T-7A aircraft manufacturing has been contracted. If the No Action Alternative were selected, DAF would re-evaluate their T-7A strategic basing decisions and may implement all or a portion of the basing requirements proposed for Vance AFB at an undetermined installation.

2.4 Identification of the Preferred Alternative

Following the Draft EIS public comment period, DAF selected Alternative 3 (i.e., addressing recapitalization at Vance AFB with up to 99 T-7A aircraft and performing T-7A operations at a level that is approximately 45 percent greater than Alternative 1) as its preferred alternative because Alternative 3 provides sufficient T-7A aircraft to facilitate Vance AFB's projected pilot training requirement. As noted in **Section 2.2.2.3**, if Alternative 3 were selected for implementation, the SAF would authorize SAF/IEI to modify the number of aircraft at Vance AFB in the Record of Decision.

2.5 Environmental Comparison of the Alternatives

Table 2-11 provides a summary of the environmental impacts associated with each alternative.

Table 2-11. Summary of Environmental Impacts

Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Brief Description of the Alternatives			
T-7A recapitalization at Vance AFB would occur with up to 68 T-7A aircraft and phase in T-7A operations at a level sustaining pilot training while simultaneously phasing out the T-38C.	T-7A recapitalization at Vance AFB would occur with up to 68 T-7A aircraft and T-7A operations at a level 25 percent greater than Alternative 1.	T-7A recapitalization at Vance AFB would occur with up to 99 T-7A aircraft and T-7A operations at a level approximately 45 percent greater than Alternative 1.	T-7A recapitalization at Vance AFB would not occur. T-38C training would continue in its current capacity.
Air Quality			
Short- and long-term, not significant, adverse and beneficial impacts on air quality would occur. Short-term, adverse impacts from construction and temporary increases in personnel during the aircraft transition period would occur in the Vance AFB region of influence (ROI). Long-term, adverse and beneficial impacts from operation of expanded facilities and flight and maintenance operations would result in annual net changes in criteria pollutants and greenhouse gases (GHGs) in the Vance AFB and SUA ROIs. The proposed aircraft operations would result in annual net increases and decreases in criteria pollutants and GHGs depending on the location, year, and pollutant in question. Increases in criteria pollutant emissions would not exceed the insignificance indicators. Net GHG emissions would be insignificant.	Impacts from construction, operation of expanded facilities, and temporary increases in personnel would be identical to Alternative 1. Long-term, adverse and beneficial impacts from aircraft operations would occur in the Vance AFB and SUA ROIs and be greater than those from Alternative 1 but remain not significant. Although carbon monoxide (CO) emissions within the Vance AFB ROI would exceed the insignificance indicator in 2032 due to increased T-38C operations, the steady state (i.e., 2034 and later) annual net CO emissions would decrease by the end of the aircraft transition period, demonstrating a long-term, beneficial impact. Although GHG emissions would be greater than Alternative 1, they would remain insignificant.	Construction air emissions would be slightly greater than Alternative 1 due to the additional shelters but would still have a not significant impact. Impacts from operation of expanded facilities and temporary increases in personnel would be identical to Alternative 1. Long-term, adverse and beneficial impacts from aircraft operations would occur in the Vance AFB and SUA ROIs and be greater than those from Alternatives 1 and 2, but remain not significant. Net annual nitrogen oxides (NO_X) emissions from aircraft operations in the Vance AFB ROI would exceed the insignificance indicator by 13.5 tons per year (tpy) in 2034 and 22.5 tpy in 2035 and subsequent years; however, considering the type and context of such emissions, Alternative 3 is not expected to contribute to an exceedance of National Ambient Air Quality Standards (NAAQS). Starting in 2035, net annual NO_X emissions within the SUA ROI would exceed the insignificance indicator by 2.2 tpy, but it is unlikely the threshold would be exceeded in any one county. GHG emissions would be insignificant.	No impacts would occur.

Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Noise			
Short-term, not significant, and long-term, significant, adverse impacts would occur. Short-term impacts would be from noise generated by heavy equipment during construction and renovation. All construction would be within the Vance AFB boundary, be collocated with other existing noise-compatible activities, and end with the facility construction phase. No construction-related noise impacts to on- or off-installation residences are anticipated. Operation of the expanded facilities is not expected to generate additional noise levels. Long-term impacts from the introduction of the T-7A aircraft and increases in operational noise would result in areas of incompatible land use off installation increasing the population exposed to 65 decibels (dB) or greater Day-Night Average Sound Levels (DNL). These newly exposed areas encompass numerous land uses, including residential, commercial, undeveloped, and agricultural. Alternative 1 would result in between 0 and 1.5 additional speech-interfering events per daytime hour across relevant Points of Interest (POIs) as compared to the No Action Alternative. No on- or off-installation populations would be exposed to a DNL of at least 80 dB; therefore, the potential for hearing loss (PHL) is not anticipated. Any increases in noise associated with SUA sorties would not introduce incompatibilities and would not be significant.	Construction-related noise levels would be the same as those described for Alternative 1. Long-term, significant, adverse impacts from the introduction of the T-7A aircraft and increases in operational noise would result in areas of incompatible land use off installation increasing the population exposed to 65 dB or greater DNL. These newly exposed areas encompass numerous land uses, including residential, commercial, undeveloped, and agricultural. Alternative 2 would result in between 0 and 2.1 additional speech-interfering events per daytime hour across relevant POI as compared to the No Action Alternative. No on- or off-installation populations would be exposed to a DNL of at least 80 dB; therefore, the PHL is not anticipated. Any increases in noise associated with SUA sorties would not introduce incompatibilities and would not be significant.	Construction-related noise levels would be the same as those described for Alternative 1. However, construction noise could last slightly longer due to the construction of the additional T-7A shelters to accommodate the larger number of aircraft. Long-term, significant, adverse impacts from the introduction of the T-7A aircraft and increases in operational noise would result in areas of incompatible land use off installation increasing the population exposed to 65 dB or greater DNL. These newly exposed areas encompass numerous land uses, including residential, commercial, undeveloped, and agricultural. Alternative 3 would result in between 0.2 and 5.2 additional speech-interfering events per daytime hour across relevant POI as compared to the No Action Alternative. No on- or off-installation populations would be exposed to a DNL of at least 80 dB; therefore, the PHL is not anticipated. Any increases in noise associated with SUA sorties would not introduce incompatibilities and would not be significant.	Long-term, significant, adverse impacts would occur. Subsequent to publication of the 2022 Air Installations Compatible Use Zones (AICUZ) Study, flight tracks at Vance AFB were altered, changing the shape of the noise contours for the installation. Updated noise contours were created to reflect noise conditions with the altered flight tracks, and these updated noise contours represent the No Action Alternative. While the area of noise exposure would decrease compared to the 2023 Baseline, the population exposed would increase by a factor of seven, leading to the determination of significant impacts.

Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Land Use			
No significant impacts would occur from construction and renovation projects. Projects would be compatible with land use areas and sited, designed, and constructed consistent with the Vance AFB Installation Development Plan (IDP). Noise generated from aircraft operations would result in a significant impact on land uses and land use compatibility. An increase of approximately 2,581 acres of off-installation land would fall within the 65 dB or greater DNL when compared to the No Action Alternative resulting in an increase in incompatible land uses and the number of individuals living within the noise zones. Alternative 1 would not only increase the overall area impacted but also cover more land area to the north of the installation that includes more development. The majority of the land uses surrounding the installation are considered Open/Recreation/Agriculture/ Low-Density Residential.	Construction-related land use impacts would be the same as Alternative 1. Noise generated from aircraft operations would be slightly greater than those described for Alternative 1. An increase of approximately 4,464 acres of off-installation land would fall within the 65 dB or greater DNL when compared to the No Action Alternative resulting in an increase in incompatible land uses and the number of individuals living within the noise zones. Alternative 2 would not only increase the overall area impacted but also cover more land area to the north of the installation that includes more development. The majority of the land uses surrounding the installation are considered Open/Recreation/ Agriculture/Low-Density Residential.	Construction-related land use impacts would be the same as Alternative 1. Noise generated from aircraft operations would be slightly greater than those described for Alternatives 1 and 2. An increase of approximately 5,486 acres of off-installation land would fall within the 65 dB or greater DNL when compared to the No Action Alternative resulting in an increase in incompatible land uses and the number of individuals living within the noise zones. Alternative 3 would not only increase the overall area impacted but also cover more land area to the north of the installation that includes more development. The majority of the land uses surrounding the installation are considered Open/Recreation/Agriculture/ Low-Density Residential.	No impacts to on-installation land use would occur. Although no changes in aircraft operations would occur, the noise contours and mix of on- and off-installation land use types within the No Action Alternative noise contours would be different than those presented in the 2022 Vance AFB AICUZ Study and as the 2023 Baseline.
Biological Resources			
Short- and long-term, not significant, adverse impacts on vegetation and wildlife at Vance AFB would occur from the construction and renovation projects. Long-term, not significant, adverse impacts on wildlife and five federally listed or proposed species would occur from increased potential for aircraft strike incidents resulting from the proposed T-7A operations.	Construction-related impacts would be the same as those described for Alternative 1. The 25 percent increase in T-7A operations over Alternative 1 would slightly raise the potential for aircraft strike incidents but result in the same not significant overall impact on wildlife and the five federally listed or proposed species.	Construction-related impacts would be the same as those described for Alternative 1. The 45 percent increase in T-7A operations over Alternative 1 would further raise the potential for aircraft strike incidents but still result in the same not significant overall impact on wildlife and the five federally listed or proposed species.	No impacts would occur.

Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Cultural Resources			
The only aspects of the Proposed Action with potential to effect historic properties are the construction and renovation projects. DAF determined that these projects would have no effect on historic properties and consulted with the Oklahoma State Historic Preservation Officer (SHPO). The SHPO concurred with this determination on November 5, 2024, pending confirmation from the Oklahoma Archaeological Survey (OAS) that no archeological sites were present. OAS confirmed that no archaeological sites were present in a response dated January 30, 2025.	Impacts would be the same as those described for Alternative 1.	Impacts would be the same as those described for Alternative 1.	No impacts would occur.
Hazardous Materials and Wastes			
The additional quantities of hazardous materials, wastes, and petroleum products required for construction and aircraft maintenance during the aircraft transition period would result in short-term, not significant, adverse impacts. Their quantities would return to current levels by 2034, resulting in no long-term impacts. Short-term, not significant, adverse impacts could occur from the renovation of Buildings 179, 183, 541, 672, and 690 because these buildings potentially contain toxic substances in building materials. Long-term, not significant, beneficial impacts would occur from renovation of these buildings by reducing the potential for future human exposure to toxic substances. No impacts on or from legacy environmental contamination, polyfluoroalkyl substances, or radon would occur.	Impacts would remain not significant but be slightly greater than those described for Alternative 1, because the 25 percent increase in aircraft operations would require additional quantities of hazardous materials, wastes, and petroleum products (most notably jet fuel) to be delivered, stored, used, and disposed of appropriately at Vance AFB.	Impacts would remain not significant but be slightly greater than those described for Alternative 2, because the 45 percent increase in aircraft operations and the delivery of up to 31 additional aircraft to maintain would require additional quantities of hazardous materials, wastes, and petroleum products (most notably jet fuel) to be delivered, stored, used, and disposed of appropriately at Vance AFB.	No impacts would occur.

Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Safety			
Short-term, not significant, adverse impacts on contractor health and safety would occur during construction and renovation. No adverse impacts on the health and safety of military personnel or civilians would occur. Environmental health and safety risks would not disproportionately impact children. Long-term, not significant, adverse impacts on flight safety would occur from increased aircraft operations compared to current levels, which would result in an increased potential Bird/Wildlife Aircraft Strike Hazard (BASH) incidents and other mishaps. The clear zones (CZs) and accident potential zones (APZs) would remain unchanged.	The impacts on contractor health and safety would be the same as those described for Alternative 1. The impacts on flight safety from 25 percent greater aircraft operations would remain not significant but be slightly greater than those described for Alternative 1.	The impacts on contractor health and safety would be the same as those described for Alternative 1. The impacts on flight safety from 45 percent greater aircraft operations and the delivery of up to 31 additional aircraft would remain not significant but be slightly greater than those described for Alternatives 1 and 2.	No impacts would occur.
Water Resources			
Short- and long-term, not significant, indirect, adverse impacts on groundwater and surface water could occur. Construction would increase impervious surface area and decrease area for groundwater infiltration by approximately 34,700 ft^2 (0.79 acres), which could decrease groundwater recharge and increase stormwater runoff. Temporary increases in hazardous materials and petroleum product use would negligibly increase the potential for an accidental release to occur and for the contamination to reach nearby groundwater aquifers and surface water features. No direct impacts on wetlands would occur. The construction and renovation projects would not occur within wetlands or the 100- or 500-year floodplains.	Impacts would be similar to those described for Alternative 1. Increased aircraft operations would slightly increase the potential for an accidental release of hazardous materials or petroleum products to contaminate groundwater aquifers and surface water.	Impacts would be similar to those described for Alternative 2. Compared to Alternatives 1 and 2, the 31 additional aircraft to maintain would slightly increase the potential for an accidental release of hazardous materials or petroleum products to contaminate groundwater aquifers and surface water. The project to install sufficient shelters for all T-7A aircraft would occur on the Vance AFB aircraft parking ramp, which is an entirely existing impervious surface, and would result in no additional impervious surface area or impacts on water resources.	No impacts would occur.

2.6 Mitigation Measures

Alternatives 1, 2, and 3 and the No Action Alternative would all impose a long-term, significant, adverse impact on the noise environment around Vance AFB increasing lands and uses subject to noise levels that may be deemed incompatible. Recognizing that the operational characteristics of the T-7A aircraft are still in a preliminary stage, adaptive management approaches for addressing noise impacts (e.g., reduced power settings, anticipated afterburner requirements, etc.) may be implemented to reduce the ultimate noise contours and associated land use effects at Vance AFB. DAF would continue to evaluate flight characteristics for T-7A training to determine the safest, most efficient, and least intrusive operations considering both mission requirements and airspace effects.

The significant impacts on noise are due to the expansion of the 65 dB DNL that would include additional residences to the north of Vance AFB, which would be an incompatible land use. Mitigation measures to address significant impacts would include:

- Updating the AICUZ Study at an appropriate time to be determined and coordinating the results with local planners.
- Continued use of noise complaint procedures to track and respond to such complaints.
- Monitoring of noise complaint locations and times and potentially adjusting flight tracks as determined feasible.
- Evaluating and reducing power settings as feasible to decrease noise contours around Vance AFB.

DAF is committed to working with Garfield, Grant, and Alfalfa Counties; the cities of Enid and Waukomis; the Town of North Enid; Enid Public Schools; the Northern Oklahoma Development Authority; Vance Development Authority; and others to analyze compatible use surrounding Vance AFB for the ultimate T-7A operating conditions. As part of that commitment, DAF would continue to partner with local governments to perform the following tasks:

- Prepare an AICUZ update at an appropriate time to be determined to address any changes in land area within the greater than 65 dB DNL noise contours for Vance AFB.
- Coordinate with state and local agencies on compatible land use and potential encroachment concerns inside and outside of the DNL footprint and/or the Airfield Environs Overlay District, as applicable (i.e., large-scale developments, transportation projects that could encourage development, or tall structures such as cell towers that could penetrate airfield imaginary surfaces).
- Encourage municipalities to promote the most compatible land use by updating local zoning ordinances and building construction standards, especially for high-noise areas.

3. Affected Environment and Environmental Consequences

This section describes the affected environmental resources and current conditions. It also presents an analysis of the potential environmental consequences from the three action alternatives and the No Action Alternative.

This section also addresses mitigation measures and best management practices (BMPs) necessary to implement the Proposed Action. Mitigation measures are actions that avoid, minimize, or compensate for effects caused by a proposed action, and BMPs are existing policies, practices, and measures that reduce the environmental impacts of activities, functions, or processes. The mitigation measures required for the Proposed Action minimize significant, adverse noise and land use impacts and are described in **Sections 3.2.3** and **3.3.3**. The BMPs are described within each resource area in **Section 3**. None of the BMPs described herein are needed to bring an impact below the threshold of significance.

DAF used the scoping process to identify environmental issues to be carried forward for analysis and de-emphasize insignificant issues. The environmental resources analyzed in detail in this EIS are air quality, noise, land use, biological resources, cultural resources, hazardous materials and wastes, safety, and water resources. The environmental resources not analyzed in detail in this EIS are airspace, geological resources, infrastructure and transportation, and socioeconomics. The rationale explaining why those four resources were dismissed from detailed analysis in this EIS is provided below.

Airspace. SUA consists of defined-dimension airspace wherein activities must be confined because of their nature, limitations are imposed upon aircraft operations that are not a part of those activities, or both. SUA is defined by latitude and longitude, in terms of floor and ceiling altitudes, and by time for which the airspace is active. Descriptions of the SUA used for T-38C and proposed for T-7A training at Vance AFB are provided in **Appendix A**.

No changes to SUA configurations (e.g., shape, size, altitudes) or their active times are proposed for T-7A recapitalization. Should DAF desire to change the configurations of these SUA following T-7A recapitalization or as a result of new training practices with other aircraft, separate NEPA analysis would be performed in conjunction with the FAA when the scope of that effort is better understood.

Impacts on environmental resources within the SUA are analyzed, as appropriate, in those discussions (e.g., air quality, noise, biological resources). In **Appendix A**, the altitudes and time of use are provided because they are components of the air emissions estimates and noise modeling, and the counties are used to assess General Conformity applicability and listed species range.

Geological Resources. The Proposed Action would have no significant impacts on geological resources. No impacts on regional geology and local topography would occur. Construction would be small enough in scope (see **Table 2-5**) that it would not alter geological structures or features. The projects would occur on mostly flat land, and no appreciable changes to local topography would occur. Garfield County, Oklahoma, has a low potential for damaging earthquakes, with 4 to 10 damaging earthquakes expected per 10,000 years (USGS 2024). Therefore, seismic hazards would have no impact on new construction.

The soils within the footprint of the proposed project areas are Tabler silt loam, 0 to 1 percent slopes, and Pond Creek silt loam, 1 to 3 percent slopes (USDA NRCS 2024). The projects would occur within highly urbanized areas where these soil complexes have been disturbed from previous construction and landscaping and little natural soil structure remains. Appropriate geotechnical surveys would be completed during project design to ensure that soil limitations are identified and addressed, as necessary. Both Tabler silt loam and Pond Creek silt loam are classified as prime farmland soils, but the inherent mission of Vance AFB makes farming impracticable on the installation. Therefore, there would be no loss of farmable land from construction, and the Farmland Protection Policy Act is not applicable to the Proposed Action.

Construction projects would disturb soil, potentially resulting in the loss of structure, compaction, and erosion of soil as well as changes to local water infiltration and drainage patterns. Soil erosion and sediment control measures would be implemented, as appropriate, and could include installing silt fencing and sediment traps, applying water to disturbed soil to prevent wind erosion, and vegetating disturbed areas as soon as possible. Erosion and Sediment Control Plans would be prepared and implemented, as necessary, to reduce soil erosion and sedimentation. Stormwater control measures that favor infiltration would be implemented to minimize the potential for erosion and sediment production from storm events (see **Section 3.8** for water resources impacts).

Infrastructure and Transportation. No significant impacts on infrastructure components—such as airfield pavements and utilities (i.e., electrical, natural gas, liquid fuels, communications, water supply, wastewater, stormwater systems, and solid waste management)—and the transportation system and road network at Vance AFB would result from the Proposed Action. Airfield pavements at Vance AFB are in very good condition and would not require repairs for the Proposed Action. The Proposed Action may increase wear on the airfield pavement and reduce its service life slightly, but it would not appreciably degrade pavement quality to the point where it results in premature failure.

The liquid fuels system at Vance AFB is in good to excellent operational condition, and the installation is expected to have sufficient fuel storage and delivery capabilities to accommodate the Proposed Action. The utility systems at Vance AFB have the available capacity to support the construction and renovation projects and temporary increase in personnel on the installation. Construction contractors would recycle solid waste generated during construction and renovation in accordance with applicable federal, state, and installation policies to maximize landfill diversion rates and dispose of non-recyclable debris at a permitted waste facility.

Construction traffic would be temporary and compose a relatively small percentage of the installation's total traffic. The additional 100 personnel during the aircraft transition period and their dependents of driving age would increase traffic on installation and regional roads slightly through daily commutes and everyday vehicle movements. Traffic would return to current conditions following construction and the aircraft transition period.

Socioeconomics. The Proposed Action would have not significant socioeconomic impacts. As of July 2023, Garfield County, Oklahoma, is home to 62,023 people and experienced an approximately 1.3 percent negative population change between 2020 and 2023 (USCB 2024). The demand for housing, schools, health care, and other public services in Garfield County would slightly increase from 2032 to 2034 during the aircraft transition period from the addition of the estimated 100 personnel and their 190 dependents. This temporary and 0.5 percent would be negligible given the slight reduction in the population of Garfield County over the past few years and the overall size of the county's population relative to the number of new personnel and dependents. The temporary and slight increase in demand for housing, schools, health care, and other public services would be followed by a permanent return to approximately the same level of demand for these services after 2034 when the aircraft transition period ends. Therefore, the temporary addition of approximately 290 new residents (compared to current levels) would have not significant socioeconomic impacts.

Beneficial impacts on the local economy would occur from the sale of construction materials and employment of local construction workers for the construction and renovation projects. The increase in tax revenue and regional availability of building materials and labor would not be affected noticeably because of the limited scope and temporary duration of each project.

3.1 Air Quality

Criteria Pollutants, National Ambient Air Quality Standards, and the General Conformity Rule. Air quality is defined by the concentration of various pollutants in the atmosphere. The six pollutants that are the main indicators of air quality, called "criteria pollutants," are CO, sulfur dioxide, nitrogen dioxide (NO_2), ozone (O_3), suspended particulate matter (measured less than or equal to 10 microns in diameter [PM_{10}] and less than or equal to 2.5 microns in diameter [$PM_{2.5}$]), and lead. CO, sulfur oxides (SO_X), NO_X, lead, and some particulates are emitted directly into the atmosphere from emissions sources. NO_X, O_3, and some particulates are formed through atmospheric chemical reactions that are influenced by weather, ultraviolet light, and other atmospheric processes. Volatile organic compound (VOC) and NO_X emissions are precursors of O_3 and are used to represent O_3 generation.

Under the Clean Air Act (CAA) (42 USC Chapter 85), the U.S. Environmental Protection Agency (USEPA) established NAAQS (40 Code of Federal Regulations [CFR] Part 50) for criteria pollutants. The NAAQS were established to protect against acute and chronic adverse health and welfare effects from poor air quality. Each state has the authority to adopt air quality standards stricter than those established under the federal NAAQS. Oklahoma, Kansas, and Texas accept the federal NAAQS (Oklahoma Administrative Code 252:100; Kansas Administrative Regulations 28-19; 30 Texas Administrative Code Section 101).

Areas that are and have historically been in compliance with the NAAQS, or have not been evaluated for NAAQS compliance, are designated as attainment or unclassifiable areas. Areas that violate one or more federal air quality standards are designated as nonattainment areas. Areas that have transitioned from nonattainment to attainment are designated as maintenance areas. Nonattainment and maintenance areas are required to adhere to a State Implementation Plan to reach attainment or ensure continued attainment.

The USEPA General Conformity Rule applies to federal actions occurring in nonattainment or maintenance areas. A general conformity determination is required when nonattainment and maintenance pollutants (or their precursors) total emissions exceed specified thresholds, called *de minimis* level thresholds, that are specified at 40 CFR Section 93.153. The General Conformity Rule does not apply to federal actions occurring in attainment areas.

GHGs. GHGs are gas emissions that trap heat in the atmosphere and include water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), tropospheric O_3, and several fluorinated and chlorinated gaseous compounds. GHGs are expressed relative to a reference gas, CO_2, based on their ability to trap heat in the atmosphere, and the results are added to calculate the total equivalent CO_2 emissions (CO_2e).

USEPA implements the GHG Reporting Program, requiring certain facilities to report GHG emissions from stationary sources, if such emissions exceed 25,000 metric tons of CO_2e per year (40 CFR Part 98). Major source permitting requirements for GHGs are triggered when a facility exceeds the major threshold of 100,000 metric tpy for stationary source CO_2e emissions. For a facility that is already a major source of criteria pollutants under USEPA's Prevention of Significant Deterioration (PSD) program, major modification permitting requirements, including incorporating best available and economically feasible emissions controls for GHGs, would be triggered by a net change of 75,000 tpy for stationary source CO_2e emissions.

3.1.1 Affected Environment

The Proposed Action could impact air quality over a large spatial area, which has been broken down into two separate ROIs based on the physical distribution of the emissions sources associated with the Proposed Action. The two ROIs for the air quality analysis are the Vance AFB ROI, within which all Vance AFB airfield operations (i.e., takeoffs, landings, and closed patterns) and construction actions would occur, and the SUA ROI, which contains the Vance MOAs and MTRs within which T-7A operations would occur.

USEPA Region 6 regulates air quality in Oklahoma and Texas, and USEPA Region 7 regulates air quality in Kansas. State agencies regulating air quality within the ROIs include the Oklahoma Department of Environmental Quality (DEQ), Kansas Department of Health and Environment, and the Texas Commission on Environmental Quality.

Vance AFB is in Garfield County, Oklahoma, which is within the North Central Oklahoma Intrastate Air Quality Control Region (AQCR) (40 CFR Section 81.124). **Table 3-1** provides the most recent available annual emissions inventory (calendar year [CY] 2020) for Garfield County. In addition to Garfield County, the SUA ROI covers 19 counties in Oklahoma, Kansas, and Texas. The counties underlying the SUA ROI

span six AQCRs including the North Central Oklahoma AQCR (40 CFR Section 81.124), Southwest Kansas Intrastate AQCR (40 CFR Section 81.255), South Central Kansas Intrastate AQCR (40 CFR Section 81.253), Northwestern Oklahoma Intrastate AQCR (40 CFR Section 81.126), Central Oklahoma Intrastate AQCR (40 CFR Section 81.47), and Amarillo-Lubbock Intrastate AQCR (40 CFR Section 81.133). USEPA has designated all counties within the Vance AFB and SUA ROIs as in attainment or unclassified for all criteria pollutants (USEPA 2025a). As a result, the General Conformity Rule is not applicable to the Proposed Action.

Table 3-1. Annual Emissions Inventory for Garfield County (CY 2020)

VOC (tpy)	NO_X (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	CO_2e[1] (tpy)
11,182	5,552	16,497	13,813	11,701	2,911	0.25	3,578,772

Source: USEPA 2023
[1] To calculate the total CO_2e, all GHGs are multiplied by their heat-trapping ability, as published in 40 CFR Part 98 (revised April 2024) (CO_2 = 1; CH_4 = 28; N_2O = 265; sulfur hexafluoride = 23,500), and the results are added together.

Vance AFB is considered a true minor source of air emissions, which means the installation does not emit nor has the potential to emit pollutants exceeding major source thresholds, as defined by 40 CFR Part 70 and Oklahoma Administrative Code 252 Chapter 100:8 (i.e., 100 tpy for any criteria pollutant; and 10 tpy for a single hazardous air pollutant or 25 tpy for any combination of hazardous air pollutants). Therefore, Vance AFB is not subject to the Title V Operating Permit Program under the CAA. Vance AFB also is not subject to regulations imposed on stationary sources within 10 kilometers of Class I Federal Areas, as identified in 40 CFR Part 81, Subpart D, because no such areas are within 10 kilometers of the installation.

The installation's minor source operating permit covers stationary sources, which include external combustion engines (e.g., boilers), internal combustion engines (e.g., emergency generators), abrasive cleaning operations, storage tanks, chemical usage, jet engine testing (e.g., engine test cell), surface coating operations, and fire training (APIMS 2022). Oklahoma does not require permitting of mobile source emissions (e.g., aircraft and vehicle operations).

The primary sources of air emissions near the project areas and the flightline include burning of fossil fuels (e.g., diesel, jet fuel, natural gas) for aircraft engine testing and operations, vehicle operations, aerospace ground support equipment use, and fueling operations. Stationary sources of air emissions within the project areas include natural gas-fired boilers within Buildings 179, 183, 541, 542, 690, 199, and 672, and diesel-fired emergency generators at Buildings 179 and 672.

GHGs. In 2020, Garfield County produced 3,460,713 tons of GHGs (composed of CO_2, CH_4, and N_2O), equivalent to 3,578,772 tons of CO_2e. In that same year, Oklahoma produced approximately 94.5 million tons of CO_2e. Garfield County's CO_2e emissions comprised approximately 3.8 percent of the state's CO_2e emissions in 2020 (USEPA 2023). CO_2e emissions from stationary sources at Vance AFB do not exceed the USEPA GHG Reporting program's reporting threshold of 25,000 metric tpy; therefore, Vance AFB is not required to report annual CO_2e emissions to USEPA.

Weather Trends. Oklahoma is characterized by humid summers with temperatures often reaching 90 degrees Fahrenheit (°F) and above. Winters are mild with occasional snowfall. Temperatures in the spring and fall are moderate, although the spring months can bring severe weather including thunderstorms and tornadoes. Oklahoma experiences tornadoes due to its location, where warm, moist air from the Gulf of America meets cool, dry air from the Rockies and Canada, creating unstable atmospheric conditions, that, when combined with the flat terrain and strong wind patterns, create favorable conditions for tornadoes.

Weather trends in Oklahoma, including Garfield County, include higher temperatures and more frequent heat waves, more severe droughts, and a higher likelihood of extreme weather events including tornadoes and flooding, which can disrupt natural ecosystems and built infrastructure and lead to human-health effects. These weather trends at Vance AFB may affect installation ecosystems, including possible expansion of invasive species and more frequent instances of animal-borne diseases; increased infrastructure maintenance requirements due to increases in wind speed, drought, and dust accumulation; shifts in habitat quality for invasive species and native species; changes in seasonality related to outdoor recreation; and increased wildland fire activity (Vance AFB 2022b).

Garfield County has historically experienced an average of 46 days per year with a maximum temperature greater than 95°F, which is expected to increase to 77 days per year by 2065 and up to 87 days per year by the end of the century (CMRA 2025). High temperatures can cause adverse health effects, such as heat stroke and dehydration, and can affect cardiovascular and nervous systems, especially in vulnerable populations (i.e., children, elderly, sick, and low-income populations). Warmer air also can increase the formation of ground-level O_3, which has a variety of health effects, including aggravation of lung diseases and increased risk of death from heart or lung disease.

3.1.2 Environmental Consequences

Effects on air quality are evaluated by comparing the annual net change in emissions for each criteria pollutant against the General Conformity Rule *de minimis* level thresholds for nonattainment or maintenance pollutants, or against insignificance indicators as defined by the *Air Force Air Quality Environmental Impact Analysis Process Guide, Volume II – Advanced Assessments*, for attainment pollutants. Insignificance indicators are applied to emissions of pollutants designated as attainment or unclassified to provide an indication of the significance of potential impacts on air quality. The DAF insignificance indicator is the 250 tpy PSD major source threshold, as identified by USEPA, and is applied to all attainment/unclassified criteria pollutants emissions, except lead. The PSD insignificance indicator for lead is 25 tpy. The PSD thresholds do not denote a significant impact; however, they do provide a threshold to identify actions that have insignificant impacts on air quality. Any action with net criteria pollutant emissions below the insignificance indicators is considered so insignificant that the action will not cause or contribute to an exceedance of one or more NAAQS.

Separate assessments were performed for each ROI. The DAF Air Conformity Applicability Model (ACAM) was used to estimate the net annual air emissions from the Proposed Action. The potential for air quality impacts was assessed in accordance with DAF Manual 32-7002, *Environmental Compliance and Pollution Prevention* (DAF 2025d) and the General Conformity Rule (40 CFR Part 93 Subpart B), as applicable. The mixing zone is a three-dimensional vertical column of air generally up to 3,000 feet AGL where criteria pollutant emissions, due to atmospheric mixing and dispersion, have the greatest potential to directly impact human health and air quality. As such, emissions estimations for criteria pollutants that are shown throughout this analysis include only those that would occur within the mixing zone below 3,000 feet AGL.

DAF applies the PSD major modification GHG permitting threshold of 75,000 tpy (68,039 metric tpy) of CO_2e emissions as an insignificance indicator for GHG impacts. Any action with net GHG emissions below the insignificance indicator is considered too insignificant to warrant further analysis. The GHG analysis considers GHG emissions at all altitudes regardless of whether the emissions occur within the mixing zone. Per DAF guidance, the GHG analysis qualitatively assesses whether elements of the Proposed Action would be affected by weather trends.

Appendix B contains the ACAM record of air analysis reports for each ROI for all action alternatives. Additional air quality analysis supporting documentation, including the detailed ACAM reports containing the air emission calculations, can be downloaded from the project website at https://vance.t-7anepadocuments.com, and paper copies are available upon request.

3.1.2.1 Alternative 1

Alternative 1 would result in short- and long-term, not significant, adverse and beneficial impacts on air quality. The short-term (i.e., 2028 and 2029), adverse impacts would occur from construction in the Vance AFB ROI. The long-term (i.e., 2030 and later), adverse and beneficial impacts would occur from annual net changes in criteria pollutants and GHGs in the Vance AFB and SUA ROIs. The T-38C and T-7A aircraft engines emit individual air pollutants at different rates. As such, the aircraft replacement would result in a steady-state net increase of VOC, NO_X, SO_X, and CO_2e, and a net decrease of CO, PM_{10}, and $PM_{2.5}$ in both ROIs.

Table 3-2 shows the estimated net change in annual air emissions in the Vance AFB ROI from Alternative 1[1]. Emissions would occur from construction activities (2028 and 2029), operation of expanded facilities (2030 and later), increased personnel during the aircraft transition period (2032 through 2034), and T-7A airfield and maintenance operations (2032 and later). Removal of T-38C airfield and maintenance operations would cause a reduction of CO, PM_{10}, and $PM_{2.5}$ within the Vance AFB ROI. The net change in annual emissions within the Vance AFB ROI from Alternative 1 would not exceed the insignificance indicator of 250 tpy for any criteria pollutant; therefore,

[1] The Vance AFB ROI air emission estimates for all three action alternatives were recalculated after the Draft EIS was released for public comment to correct an overestimation in the time-in-mode values. The overestimation was identified through DAF review rather than public comment provided on the Draft EIS and was corrected by removing duplicate T-7A and T-38C closed patterns that also were counted in the landing and takeoff cycles. The revised air emissions are provided in the Final EIS and, in general, are less than those in the Draft EIS.

Alternative 1 would not result in significant impacts on air quality within the Vance AFB ROI.

Table 3-2. Vance AFB ROI – Estimated Net Annual Air Emissions from Alternative 1

Year	VOC (tpy)	NO_X (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	CO_2e (metric tpy)
2028 (construction)	3.154	8.038	12.364	0.019	4.595	0.234	0.000	1,942
2029 (construction)	0.406	3.306	4.983	0.008	0.103	0.095	0.000	831
2030 (operations)	0.001	0.014	0.012	<0.001	0.001	0.001	0.000	16
2031 (operations)	0.001	0.014	0.012	<0.001	0.001	0.001	0.000	16
2032 (operations)	17.696	47.423	129.739	2.811	2.620	2.366	0.000	7,769
2033 (operations)	61.611	179.194	118.024	8.502	0.236	0.198	0.000	23,304
2034 (operations)	57.536	194.710	-126.866	6.795	-5.824	-5.297	0.000	18,842
2035 and later (operations)	57.400	194.668	-128.611	6.794	-5.827	-5.300	0.000	18,661
Annual Maximum	61.611	194.710	129.739	8.502	4.595	2.366	0.000	23,304
Insignificance Indicator	250	250	250	250	250	250	25	68,039
Exceeds Insignificance Indicator?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

During construction, criteria pollutants and GHGs emissions would be directly produced from operation of heavy construction equipment, construction of and renovation of buildings and infrastructure, heavy-duty diesel vehicles hauling supplies and debris to and from the project areas, construction workers commuting daily to and from the project areas in their personal vehicles, and ground disturbance. All such emissions would be temporary in nature and produced only during the estimated 2-year construction period. As shown in **Table 3-2**, construction emissions would not exceed the insignificance indicators; therefore, the short-term, adverse impacts would not be significant. In addition, the estimated emissions from construction do not account for BMPs, which could reduce uncontrolled emissions. Construction contractors would employ BMPs, to the greatest extent practicable, as follows:

1. Electricity from the installation would be used preferentially over the use of generators. All generator use would be pre-approved by the installation air quality manager and adhere to applicable operating procedures.
2. All non-road diesel equipment would comply with the Federal Clean Air Non-road Diesel Rule, which regulates emissions from non-road diesel engines and sulfur content in non-road diesel fuel.
3. All stockpiles of excavated materials located within construction areas would be covered completely with tarping and weighed down sufficiently to prevent uncontrolled dust and material from entering the atmosphere.
4. Dust suppression techniques would be used during construction to reduce air pollution. Recommended methods include application of water, soil stabilizers, or vegetation; use of wind break enclosures; use of covers on soil stockpiles and dump truck loads; use of silt fences; and suspension of earth-movement activities during high-wind conditions (gusts exceeding 25 miles per hour).

5. Measures to reduce diesel emissions would be implemented to the greatest extent feasible. These measures could include switching to cleaner fuels, retrofitting current equipment with emission reduction technologies, repowering older equipment with modern engines, replacing older vehicles, and reducing idling through operator training and contracting policies.

An increase of 100 personnel is projected during the aircraft transition period from 2032 through 2034. During this period, an increase of emissions would be produced from additional personnel commuting daily to and from Vance AFB in their personal vehicles. These emissions are expected to be minimal and temporary, as staffing levels would return to current levels following the aircraft transition period.

Alternative 1 would result in no long-term, significant, adverse impacts on air quality within the Vance AFB ROI from operation of expanded facilities starting in 2030 and T-7A airfield and maintenance operations starting in 2032. Long-term, operational air emissions within the Vance AFB ROI, as shown in **Table 3-2**, would continue indefinitely. The pollutant of greatest concern from aircraft operations is NO_X, which is emitted when fuel is burned at high temperatures. The annual net change of NO_X emissions in the Vance AFB ROI in 2035 and later years would not exceed the 250 tpy insignificance indicator.

Projected NO_X emissions resulting from Alternative 1 were compared to the most recent comprehensive emissions inventory for Garfield County (i.e., CY 2020) to determine the relative magnitude of these emissions. The estimated increase of NO_X emissions in the Vance AFB ROI would represent approximately 3.5 percent of the total NO_X emissions generated in Garfield County in 2020 (194.668÷ 5,552 x 100 = 3.51 percent). The majority of operational NO_X emissions would result from aircraft operations to an altitude of 3,000 feet AGL and across several square miles that compose airspace overlying Vance AFB. At or higher than this altitude, the projected NO_X emissions would be dispersed through the atmosphere to the point where they would not result in substantial ground-level impacts on a localized area. Because Garfield County is in attainment for all criteria pollutants and the approximate 3.5 percent increase in annual NO_X emissions would be less than the 250 tpy insignificance indicator, the operational NO_X emissions from Alternative 1 would not be substantial enough to contribute to an exceedance of the NO_X NAAQS for the county.

Table 3-3 shows the estimated net change in annual air emissions for the SUA ROI for Alternative 1. Because the insignificance indicator would not be exceeded and emissions within the ROI are spread across 19 counties that are designated as attainment/unclassified over 6 AQCRs, Alternative 1 is unlikely to cause or contribute to an exceedance of one or more NAAQS in any air quality management area.

Table 3-2 and **Table 3-3** show that Alternative 1 would result in an annual net decrease of CO, PM_{10}, and $PM_{2.5}$ for both the Vance AFB and SUA ROIs. Any reduction of air emissions from operations would result in long-term, not significant, beneficial impacts on air quality.

Table 3-3. SUA ROI – Estimated Net Annual Air Emissions from Alternative 1

Year	VOC (tpy)	NO_X (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	CO_2e (metric tpy)[1]
2032	1.330	22.630	-10.034	0.364	-0.301	-0.271	<0.001	3,662
2033	8.218	134.290	-43.279	2.692	-1.197	-1.083	<0.001	17,685
2034 and later	10.485	172.112	-57.878	3.372	-1.622	-1.466	<0.001	23,975
Annual Maximum	10.485	172.112	-10.034	3.372	-0.301	-0.271	<0.001	23,975
Insignificance Indicator	250	250	250	250	250	250	25	68,039
Exceeds Insignificance Indicator?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

[1] Whereas criteria pollutants are calculated for aircraft operations that occur within the mixing zone (below 3,000 feet AGL), CO_2e is calculated for aircraft operations at all altitudes.

GHGs. As shown in **Table 3-2**, construction for Alternative 1 would produce a total of approximately 2,773 metric tons of CO_2e, which is the GHG footprint of 647 passenger vehicles driven for 1 year or 372 homes' energy use for 1 year (USEPA 2024a). During the highest CO_2e emissions year during construction, (i.e., 2028), approximately 1,942 metric tons of CO_2e would be produced, representing less than 0.06 percent of the 2020 annual CO_2e emissions in Garfield County and less than 0.003 percent of the 2020 annual CO_2e emissions in Oklahoma. Operations in the Vance AFB ROI for Alternative 1 would result in a steady-state net increase of annual CO_2e emissions by 18,661 metric tpy, which represents approximately 0.6 percent of annual CO_2e emissions in Garfield County, and less than 0.03 percent of annual CO_2e emissions in Oklahoma. By comparison, 18,661 metric tons of CO_2e is approximately the GHG footprint of 4,353 passenger vehicles driven for 1 year or 2,506 homes' energy use for 1 year (USEPA 2024a). The steady-state net increase in annual CO_2e emissions within the SUA ROI would be approximately 23,975 metric tpy (see **Table 3-3**), which is the GHG footprint of 5,592 passenger vehicles driven for 1 year or 3,220 homes' energy use for 1 year (USEPA 2024a).

As shown in **Table 3-2** and **Table 3-3**, the net change of GHG emissions from Alternative 1 in both ROIs for all years would not exceed the 68,039 metric tpy insignificance indicator for CO_2e. Therefore, net GHG emissions would be considered insignificant. **Table 3-4** provides a relative comparison of Alternative 1's net annual operational GHG emissions with Alternative 2, Alternative 3, United States, state, and county estimated emissions. When compared to the three action alternatives, Alternative 1 would result in the least amount of GHG emissions. Enhanced energy efficiency from renovation of buildings, lower GHG-emitting technology used in modern building systems, reduced embodied carbon in modern construction materials, and other sustainable building practices could result in lower energy demand when compared to existing conditions, and indirectly offset the predicted increases in operational CO_2e emissions from the Proposed Action.

Table 3-4. Relative Comparison of the Proposed Action and No Action Alternative's Estimated Net Annual Steady State GHG Emissions

Reference Scale	CO_2e (tpy)	Comparison to Reference Scale
Vance AFB ROI		
Global	46,451,390,000[1]	225,818,573.7%
United States	5,109,653,000[2]	24,840,043.6%
Oklahoma	94,531,090[2]	459,553.0%
Garfield County	3,578,772[2]	17,397.8%
Alternative 1 – Vance AFB ROI	20,570	100.0%
Alternative 2 – Vance AFB ROI	28,195	137.1%
Alternative 3 – Vance AFB ROI	36,394	176.9%
No Action Alternative – Vance AFB ROI	0	0.0%
SUA ROI		
Global	46,451,390,000[1]	175,766,441.7%
United States	5,109,653,000[2]	19,334,309.0%
Oklahoma, Texas, Kansas	724,169,787[2]	2,740,170.9%
Counties Underlying the SUA	9,480,121[2]	35,871.6%
Alternative 1 – SUA ROI	26,428	100.0%
Alternative 2 – SUA ROI	38,246	144.7%
Alternative 3 – SUA ROI	56,704	214.6%
No Action Alternative – SUA ROI	0	0.0%

Source: USEPA 2023
[1] Based on report that U.S. GHG emissions accounted for 11 percent of global GHG emissions in 2020 (Climate Watch 2023).
[2] To calculate the total CO_2e, all GHGs are multiplied by their heat-trapping ability, as published in 40 CFR Part 98 (revised April 2024) (CO_2 = 1; CH_4 = 28; N_2O = 265; sulfur hexafluoride = 23,500), and the results are added together.

Stationary source GHG emissions would increase from the added heating requirements for the 3,200 ft^2 addition to the egress shop. However, the increase in operational GHG emissions were estimated to be less than 20 metric tpy, which would not cause Vance AFB to exceed USEPA's annual 25,000 metric tpy reporting threshold. Therefore, Vance AFB would continue to be exempt from reporting annual GHG emissions to the USEPA.

Weather Trends. Weather trends in Oklahoma are described in **Section 3.1.1**. These trends are unlikely to affect DAF's ability to implement Alternative 1. **Table 3-5** outlines these trends and their effects on the Proposed Action, including Alternative 1. The weather trends with the greatest potential to affect the Proposed Action are higher temperatures, more extreme weather events, increased wind speed, and greater drought potential, which has the potential to damage infrastructure, and can cause aircraft to operate less efficiently, leading to greater fuel burn requirements. The Proposed Action is only indirectly dependent on any of the elements associated with these future weather trends (e.g., meteorological changes). At the time of this analysis, no future weather scenario would have significant effects on any element of the Proposed Action.

Table 3-5. Effects of Weather Trends on the Proposed Action

Weather Trends	Effects on the Proposed Action
Increased temperature with more frequent and intense heat waves	Minor
Changes in precipitation patterns, including more severe droughts	Minor
Higher likelihood of extreme weather events, including tornadoes and flooding	Minor
Disruption of natural ecosystems, shifts in habitat quality for invasive and native species	Negligible

3.1.2.2 Alternative 2

For Alternative 2, short-term, not significant, adverse impacts on air quality from construction and temporary personnel increases and long-term, not significant, adverse impacts on air quality from operation of expanded facilities would occur and be identical to those described for Alternative 1.

Annual operations for T-7A aircraft within the Vance AFB and SUA ROIs for Alternative 2 would be 25 percent greater than those described for Alternative 1. For Alternative 2, long-term (i.e., 2032 and later), adverse and beneficial impacts would occur from annual net changes in criteria pollutants and GHGs in the Vance AFB and SUA ROIs. The proposed aircraft replacement would result in a steady-state net increase of VOC, NO_X, SO_X, and CO_2e, and a net decrease of CO, PM_{10} and $PM_{2.5}$ in both ROIs.

Table 3-6 shows the estimated net change in annual air emissions in the Vance AFB ROI from Alternative 2. Emissions from T-7A airfield and maintenance operations (2032 and later) would be greater than those described for Alternative 1. As discussed in **Section 2.2.2.2** and shown in **Table 2-6**, the surge in pilot training for Alternative 2 would result in total T-38C and T-7A operations exceeding 84,000 in 2032 and 88,000 in 2033. CO emissions for Alternative 2 would temporarily exceed the insignificance indicator of 250 tpy in 2032 largely due to increased T-38C operations at the start of the aircraft transition period. The steady state (i.e., 2034 and later) annual net CO emissions would decrease by the end of the transition period, demonstrating a beneficial impact in the long-term.

As with Alternative 1, the pollutant of greatest concern from aircraft operations for Alternative 2 is NO_X. Projected NO_X emissions resulting from Alternative 2 were compared to the most recent comprehensive emissions inventory for Garfield County (i.e., CY 2020) to determine the relative magnitude of these emissions. The estimated increase of NO_X emissions in the Vance AFB ROI would represent approximately 4.1 percent of the total NO_X emissions generated in Garfield County in 2020 (228.514÷ 5,552 x 100 = 4.12 percent). Because these emissions would occur across several square miles that compose airspace overlying Vance AFB, Garfield County is in attainment for all criteria pollutants, and the increase in annual NO_X emissions would be less than the 250 tpy insignificance indicator, the estimated NO_X emissions from Alternative 2 would not be substantial enough to contribute to an exceedance of the NO_X NAAQS for the county.

Table 3-6. Vance AFB ROI – Estimated Net Annual Air Emissions from Alternative 2

Year	VOC (tpy)	NO_X (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	CO_2e (metric tpy)
2028 (construction)	3.154	8.038	12.364	0.019	4.595	0.234	0.000	1,942
2029 (construction)	0.406	3.306	4.983	0.008	0.103	0.095	0.000	831
2030 (operations)	0.001	0.014	0.012	<0.001	0.001	0.001	0.000	16
2031 (operations)	0.001	0.014	0.012	<0.001	0.001	0.001	0.000	16
2032 (operations)	32.936	54.773	280.039	4.534	6.136	5.531	0.000	12,445
2033 (operations)	84.234	207.057	198.616	10.883	1.653	1.471	0.000	29,777
2034 (operations)	82.165	228.556	-74.952	9.321	-5.371	-4.901	0.000	25,758
2035 and later (operations)	82.028	228.514	-76.697	9.320	-5.374	-4.904	0.000	25,578
Annual Maximum	84.234	228.556	280.039	10.883	6.136	5.531	0.000	29,777
Insignificance Indicator	250	250	250	250	250	250	25	68,039
Exceeds Insignificance Indicator?	**No**	**No**	**Yes**	**No**	**No**	**No**	**No**	**No**

Table 3-7 shows the estimated net change in annual air emissions for the SUA ROI for Alternative 2. Because the insignificance indicator would not be exceeded and emissions within the SUA ROI are spread across 19 counties and 6 AQCRs, Alternative 2 is unlikely to cause or contribute to an exceedance of one or more NAAQS in any air quality management area.

Table 3-7. SUA ROI – Estimated Net Annual Air Emissions from Alternative 2

Year	VOC (tpy)	NO_X (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	CO_2e (metric tpy)[1]
2032	2.075	29.375	4.368	1.040	0.240	0.212	<0.001	9,761
2033	10.684	168.917	-37.101	3.952	-0.877	-0.799	<0.001	26,942
2034 and later	13.523	216.279	-55.365	4.804	-1.408	-1.278	<0.001	34,696
Annual Maximum	13.523	216.279	4.368	4.804	0.240	0.212	<0.001	34,696
Insignificance Indicator	250	250	250	250	250	250	25	68,039
Exceeds Insignificance Indicator?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

[1] Whereas criteria pollutants are calculated for aircraft operations that occur within the mixing zone (below 3,000 feet AGL), CO_2e is calculated for aircraft operations at all altitudes.

GHGs. GHG emissions from construction and facility operations (i.e., 2028 through 2031) for Alternative 2 would be identical to those described for Alternative 1 and would be considered insignificant. As with Alternative 1, new stationary source GHG emissions would not cause Vance AFB to exceed USEPA's annual 25,000 metric tpy reporting threshold.

Operations in the Vance AFB ROI for Alternative 2 would result in a steady-state net increase of annual CO_2e emissions by 25,578 metric tpy (see **Table 3-6**), which represents approximately 0.8 percent of annual CO_2e emissions in Garfield County, and less than 0.03 percent of annual CO_2e emissions in Oklahoma. By comparison, 25,578 metric tons of CO_2e is approximately the GHG footprint of 5,966 passenger vehicles

driven for 1 year or 3,435 homes' energy use for 1 year (USEPA 2024a). The steady-state net increase in annual CO_2e emissions within the SUA ROI would be approximately 34,696 metric tpy (see **Table 3-7**), which is the GHG footprint of 8,093 passenger vehicles driven for 1 year or 4,660 homes' energy use for 1 year (USEPA 2024a).

As shown in **Table 3-6** and **Table 3-7**, the net change of GHG emissions from Alternative 2 in both ROIs for all years would not exceed the 68,039 metric tpy insignificance indicator for CO_2e. Therefore, net GHG emissions would be considered insignificant. As shown in **Table 3-4**, Alternative 2's GHG emissions in the Vance AFB and SUA ROIs would be 37.1 percent and 44.7 percent greater, respectively, than those from Alternative 1.

Weather Trends. Weather trends in Oklahoma, described in **Section 3.1.1**, are unlikely to affect the ability to implement Alternative 2. As outlined in **Table 3-5**, no future weather trends would have appreciable effects on any element of Alternative 2.

3.1.2.3 Alternative 3

As with Alternatives 1 and 2, Alternative 3 would result in short-term, not significant, adverse impacts on air quality from construction activities. Air emissions from construction for Alternative 3 would be slightly greater in 2029 than those estimated for Alternatives 1 and 2 due to the construction of sufficient shelters for the 31 additional T-7A aircraft beyond Alternatives 1 and 2. The net change in annual emissions within the Vance AFB ROI from construction for Alternative 3 would not exceed the insignificance indicator of 250 tpy for any criteria pollutant (25 tpy for lead); therefore, short-term, adverse impacts on air quality within the Vance AFB ROI would not be significant. As identified in **Section 3.1.2.1**, construction contractors would employ BMPs, to the greatest extent practicable, to reduce criteria pollutant emissions from construction activities. Short-term, not significant, adverse impacts on air quality from temporary personnel increases, and long-term, not significant, adverse impacts on air quality from operation of expanded facilities would be identical to those described for Alternative 1.

Annual operations for T-7A aircraft within the Vance AFB and SUA ROIs for Alternative 3 would be 45 percent greater than those described for Alternative 1. For Alternative 3, long-term (i.e., 2032 and later), adverse and beneficial impacts would occur from annual net changes in criteria pollutants and GHGs in the Vance AFB and SUA ROIs. The proposed aircraft replacement would result in a steady-state net increase of VOC, NO_X, SO_X, and CO_2e and a net decrease of PM_{10}, and $PM_{2.5}$ in both ROIs. Net CO emissions would increase in the Vance AFB ROI but decrease in the SUA ROI.

Table 3-8 shows the estimated net change in annual air emissions in the Vance AFB ROI from Alternative 3. Steady-state net annual emissions from T-7A airfield and maintenance operations (2035 and later) would be greater than those described for Alternatives 1 and 2 because annual operations in 2035 and later would be approximately 16 percent greater for Alternative 3 when compared to Alternative 2.

Table 3-8. Vance AFB ROI – Estimated Net Annual Air Emissions from Alternative 3

Year	VOC (tpy)	NO_X (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	CO_2e (metric tpy)
2028 (construction)	3.154	8.038	12.364	0.019	4.595	0.234	0.000	1,942
2029 (construction)	0.408	3.351	5.018	0.009	0.103	0.095	0.000	861
2030 (operations)	0.001	0.014	0.012	<0.001	0.001	0.001	0.000	16
2031 (operations)	0.001	0.014	0.012	<0.001	0.001	0.001	0.000	16
2032 (operations)	15.183	40.113	86.403	2.288	1.674	1.516	0.000	6,346
2033 (operations)	57.168	164.221	18.781	7.430	-1.938	-1.754	0.000	20,374
2034 (operations)	99.363	263.540	-8.246	11.539	-2.950	-2.637	0.000	31,363
2035 and later (operations)	105.752	272.510	3.761	12.209	-2.825	-2.528	0.000	33,016
Annual Maximum	105.752	272.510	86.403	12.209	4.595	1.516	0.000	33,016
Insignificance Indicator	250	250	250	250	250	250	25	68,039
Exceeds Insignificance Indicator?	**No**	**Yes**	**No**	**No**	**No**	**No**	**No**	**No**

As with Alternatives 1 and 2, the pollutant of greatest concern from aircraft operations for Alternative 3 is NO_X. The annual net change of NO_X emissions in the Vance AFB ROI in 2034 and later years would exceed the 250 tpy insignificance indicator by 22.51 tpy (9 percent of the insignificance indicator). Given this exceedance is relatively small, a significant impact is unlikely.

Projected NO_X emissions from Alternative 3 were compared to the most recent comprehensive emissions inventory for Garfield County (i.e., CY 2020) to determine the relative magnitude of these emissions. The net increase in NO_X emissions in the Vance AFB ROI would represent approximately 4.9 percent of the total NO_X emissions generated in Garfield County in 2020 (272.510 ÷ 5,552 x 100 = 4.91 percent). The majority of operational NO_X emissions would result from aircraft operations to an altitude of 3,000 feet AGL and across several square miles that compose airspace overlying Vance AFB. At or higher than this altitude, the projected NO_X emissions would be dispersed through the atmosphere to the point where they would not result in substantial ground-level impacts on a localized area.

Design values are metrics representing air pollution concentrations. These values are derived from monitoring sites within a county and are used to indicate compliance with the NAAQS based on 3-year averages, which is the basis for USEPA attainment/ nonattainment designations. Garfield County and its surrounding counties have been designated attainment/unclassified for NO_2, and as such, there are no monitoring sites or design values available for these areas. Design values from nearby areas with similar geographic and emission characteristics can be considered representative of conditions in Garfield County. **Table 3-9** summarizes the NO_2 design values in these areas and applicable NAAQS.

Table 3-9. NO_2 NAAQS and Design Values Representative of Garfield County

Criteria Pollutant	Averaging Period	NAAQS	2021 to 2023 Design Values		
			Oklahoma City[1]	Sumner[2]	Tulsa[3]
NO_2	1-hour	100 ppb	44 ppb	25 ppb	37 ppb
	Annual	53 ppb	12 ppb	3 ppb	6 ppb

Source: USEPA 2024b
ppb = parts per billion
[1] Air monitor located in Oklahoma City, Oklahoma, approximately 50 miles south of Vance AFB.
[2] Air monitor located in Sumner County, Kansas, approximately 70 miles north of Vance AFB.
[3] Air monitor located in Tulsa, Oklahoma, approximately 95 miles east of Vance AFB.

The NO_2 design values for the three representative areas are considered to be well below the corresponding NAAQS. The highest representative NO_2 design values are 44 parts per billion (ppb) for the 1-hour NAAQS and 12 ppb for the annual NAAQS in Oklahoma City, Oklahoma, demonstrating there is substantial headroom of 56 ppb (1-hour) and 41 ppb (annual) before the NO_2 NAAQS would be exceeded. In addition, there are no known violations or monitored exceedances of the NAAQS in Garfield County, surrounding counties, or within representative areas; therefore, the USEPA treats these areas as having adequate air quality.

Due to the elevated release height and large spatial dispersion of aircraft emissions occurring at altitudes up to 3,000 feet AGL, aircraft operations are not expected to result in significant increases in ground-level NO_X concentrations. For T-7A operations, more than 85 percent of NO_X emissions occur during flying operations, while the remaining NO_X emissions occur during ground operations (e.g., engine testing and maintenance). Emissions at flying altitudes disperse rapidly throughout the atmosphere and are generally not considered contributors to local exceedances of the 1-hour or annual NO_2 NAAQS, consistent with USEPA modeling guidance and practices for aviation-related projects.

Considering the NO_2 design values of representative nearby areas are well below the applicable NAAQS, the attainment/unclassified status of Garfield County and its surrounding counties, and the effective dispersion of air pollutants emitted at higher altitudes, the addition of approximately 272.5 tpy of NO_X from Alternative 3 is not expected to result in an exceedance of the NAAQS for NO_2.

O_3 is a secondary pollutant formed when NO_X and VOCs react in the presence of sunlight. All counties in Oklahoma have been designated as attainment or unclassified for O_3. Garfield County does not contain O_3 monitoring sites, and O_3 design values for the county are not available. **Table 3-10** presents design values for nearby counties.

Table 3-10. O_3 NAAQS and Design Values Near Garfield County

Criteria Pollutant	Averaging Period	NAAQS	2022 to 2024 Design Values						
			Oklahoma City				Seiling[5]	Wichita[6]	Tulsa[7]
O_3	8-hour	70 ppb	72 ppb[1]	71 ppb[2]	72 ppb[3]	73 ppb[4]	69 ppb	65 ppb	69 ppb

Source: USEPA 2025b
[1] Two air monitors located in Oklahoma County, Oklahoma, approximately 55 and 68 miles south of Vance AFB, respectively.
[2] Air monitor located in Canadian County, Oklahoma, approximately 58 miles south of Vance AFB.
[3] Air monitor located in Cleveland County, Oklahoma, approximately 73 miles south of Vance AFB.
[4] Air monitor located in McClain County, Oklahoma, approximately 95 miles south of Vance AFB.
[5] Air monitor located in Dewey County, Oklahoma, approximately 60 miles west of Vance AFB.
[6] Air monitor located in Sumner County, Kansas, approximately 85 miles north of Vance AFB.
[7] Air monitor located in Creek County, Oklahoma, approximately 95 miles east of Vance AFB.

Although several monitors in the Oklahoma City area reported design values above the 70 ppb NAAQS in 2024, Oklahoma, Canadian, and Cleveland Counties, as well as the rest of Oklahoma, remain designated as attainment or unclassified for O_3. Therefore, USEPA has not determined that these elevated values represent persistent, spatially representative violations sufficient to warrant a nonattainment designation. USEPA attainment decisions are informed by multi-year design value trends and regional analyses, and a single exceedance year at one or more monitors does not, by itself, indicate that an area will be designated nonattainment in the future. However, if measured concentrations of O_3 should continue to exceed the NAAQS at Oklahoma City or begin to exceed the NAAQS at other nearby monitors, USEPA may consider these near-nonattainment counties for nonattainment designation in the future.

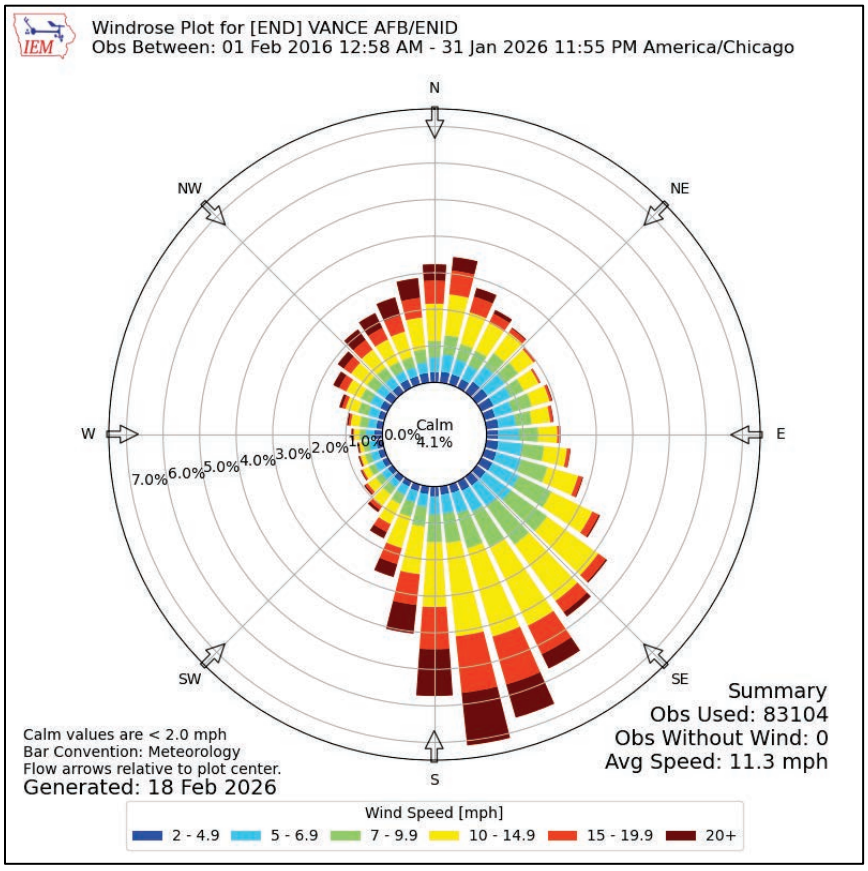
Although NO_X is a precursor to O_3, it has a relatively short atmospheric lifetime (ranging from hours to 1 day), particularly under summer conditions, due to increased temperatures and solar radiation, which accelerates the conversion of NO_X into nitric acid (Lange et al. 2022). Once converted to nitric acid, the molecule lacks the chemical reactivity needed to release the oxygen atoms required for O_3 formation. On the other hand, the same summer conditions can increase the photochemical reactions between the remaining NO_X with VOCs, leading to an increase in O_3 concentrations. In urban and industrial areas, such as Oklahoma City, O_3 formation is typically driven by the convergence of high-density NO_X from power plants and manufacturing industries alongside VOCs from mobile sources. The NO_X emissions shown in **Table 3-8** would occur entirely within Garfield County. Because O_3 is a regional pollutant formed by the mixing of multiple precursor streams, the potential for aircraft emissions from Vance AFB to contribute to a NAAQS exceedance would depend on its emissions plume intersecting with the emissions of these high-density urban and industrial sources.

NO_X emitted from aircraft operations at Vance AFB would disperse rapidly across a large spatial area covering a vertical column of 3,000 feet. These emissions would be subject to chemical transformation, including conversion to nitric acid, as well as particulate nitrate, which limits the amount of NO_X to participate in O_3-forming reactions at downwind locations.

Unlike on-road mobile sources, which lack plume rise and disperse at ground level, aircraft emissions, particularly emissions from jet engines, possess appreciable thermal buoyancy and momentum (Pandey et al. 2023). When released at altitudes up to

3,000 feet AGL, these emissions are effectively decoupled from ground-level activity. By the time the emissions plume from the aircraft has reached the near-nonattainment counties, between 55 and 95 miles away, the NO_X would have undergone substantial dispersion and, due to its short atmospheric lifetime, would have largely converted into inactive nitric acid.

Prevailing wind conditions at Vance AFB, as shown in **Figure 3-1**, are predominantly from the south to southeast with the strongest speeds coming from the south-southeast sector. Wind speeds are typically 10 to 20 miles per hour, with an average speed of 11.3 miles per hour. Calm wind conditions occur approximately 4 percent of the time (IEM 2026). These wind characteristics generally result in atmospheric net transport away from the Oklahoma City area and other near-nonattainment counties, such as Dewey and Creek Counties, further reducing the potential for Vance AFB's NO_X emissions to react with emissions from other industries and form O_3. Given the notable distance between Vance AFB and the near-nonattainment counties (55 to 95 miles), the NO_X supply would be effectively exhausted through chemical transformation long before reaching areas where elevated O_3 concentrations have been observed. As a result, NO_X emissions from Alternative 3 would not be expected to materially influence regional O_3 formation or monitored O_3 design values in surrounding counties.



Source: IEM 2026

Figure 3-1. Wind Rose for Vance AFB

In conclusion, Alternative 3 would result in NO_X emissions within the Vance AFB ROI that are approximately 19 percent greater than those for Alternative 2 and 9 percent greater than the 250 tpy insignificance indicator. These emissions are not expected to result in an exceedance of the NAAQS for NO_2. With respect to the NAAQS for O_3, the combination of meteorological isolation from predominant southeasterly winds, aircraft emissions plume behavior including vertical decoupling from the surface, wide spatial dispersion, the shortened atmospheric lifespan of NO_X, and the notable distance between Vance AFB and O_3 near-nonattainment areas makes these emissions unlikely to affect monitored O_3 concentrations or trigger a nonattainment designation. Therefore, significant impacts on air quality within the Vance AFB ROI from Alternative 3 would not occur.

Table 3-11 shows the estimated net change in annual air emissions for the SUA ROI for Alternative 3. All counties of the SUA ROI have been designated as attainment/unclassified. Within the SUA ROI, net annual NO_X emissions starting in 2035 would exceed the 250 tpy insignificance threshold by approximately 2.2 tpy. Because the ROI covers a large spatial area, it is unlikely that the 250 tpy insignificance threshold would be exceeded in any one county or AQCR. Therefore, Alternative 3 would be unlikely to cause or contribute to an exceedance of one or more NAAQS in any county or air quality management area.

Table 3-11. SUA ROI – Estimated Net Annual Air Emissions from Alternative 3

Year	VOC (tpy)	NO_X (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	CO_2e (metric tpy)[1]
2032	1.328	22.625	-10.115	0.361	-0.304	-0.274	<0.001	5,743
2033	8.385	136.731	-43.213	2.769	-1.188	-1.075	<0.001	22,209
2034	15.188	240.510	-54.050	5.587	-1.293	-1.178	<0.001	48,074
2035 and later	15.992	252.184	-53.385	5.966	-1.236	-1.128	<0.001	51,441
Annual Maximum	15.992	252.184	-10.115	5.966	-0.304	-0.274	<0.001	51,441
Insignificance Indicator	250	250	250	250	250	250	25	68,039
Exceeds Insignificance Indicator?	**No**	**Yes**	**No**	**No**	**No**	**No**	**No**	**No**

[1] Whereas criteria pollutants are calculated for aircraft operations that occur within the mixing zone (below 3,000 feet AGL), CO_2e is calculated for aircraft operations at all altitudes.

GHGs. Construction for Alternative 3 would produce a total of approximately 2,803 metric tons of CO_2e, which is 1 percent greater than the GHG emissions that would be produced from Alternatives 1 and 2 over the same construction period. As shown in **Table 3-8**, GHG emissions from construction would not exceed the significance indicator of 68,039 metric tpy and therefore would be considered insignificant. As with Alternatives 1 and 2, increased stationary source GHG emissions would not cause Vance AFB to exceed USEPA's annual 25,000 metric tpy reporting threshold.

Operations in the Vance AFB ROI for Alternative 3 would result in a net increase of 33,016 metric tpy of CO_2e (see **Table 3-8**), which represents approximately 1 percent of annual CO_2e emissions in Garfield County, and less than 0.04 percent of annual CO_2e emissions in Oklahoma. By comparison, 33,016 metric tons of CO_2e is approximately the GHG footprint of 7,701 passenger vehicles driven for 1 year or 4,434 homes' energy use for 1 year (USEPA 2024a). The net increase in annual CO_2e emissions within the

SUA ROI would be approximately 51,441 metric tpy (see **Table 3-11**), which is the GHG footprint of 11,999 passenger vehicles driven for 1 year or 6,908 homes' energy use for 1 year (USEPA 2024a).

As shown in **Table 3-8** and **Table 3-11**, the net change of GHG emissions from Alternative 3 in both ROIs for all years would not exceed the 68,039 metric tpy insignificance indicator for CO_2e. Therefore, net GHG emissions would be considered insignificant. As shown in **Table 3-4**, Alternative 3's GHG emissions in the Vance AFB and SUA ROIs would be 76.9 percent and 114.6 percent greater, respectively, than those from Alternative 1.

Weather Trends. Weather trends in Oklahoma, described in **Section 3.1.1**, are unlikely to affect the ability to implement Alternative 3. As outlined in **Table 3-5**, no future weather trends would have appreciable effects on any element of Alternative 3.

3.1.2.4 No Action Alternative

The No Action Alternative would not result in impacts on air quality at Vance AFB or within areas underlying the MTRs and MOAs. No construction would occur, and there would be no changes in aircraft operations. Air quality conditions, including ongoing GHG emissions, would remain unchanged compared to the existing conditions described in **Section 3.1.1**.

3.2 Noise

Sound is a physical phenomenon consisting of vibrations that travel through a medium, such as air, and are sensed by the human ear. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Human response to noise varies depending on the type and characteristics of the noise, distance between the noise source and the receptor, receptor sensitivity, and time of day. Noise is often generated by activities essential to a community's quality of life, such as aircraft operations, construction, or vehicular traffic.

Sound varies by intensity and frequency. Sound pressure level, described in dBs, is used to quantify sound intensity. The dB is a logarithmic unit that expresses the ratio of a sound pressure level to a standard reference level. Hertz are used to quantify sound frequency. The human ear responds differently to different frequencies. "A-weighting" of decibels, approximates a frequency response expressing humans' perception of sound. This EIS uses only A-weighted decibels (dBA), thus, for brevity, only "dB" is cited. Sounds encountered in daily life and their A-weighted sound levels are shown in **Table 3-12**.

Table 3-12. Common Sounds and Their Levels

Common Outdoor Sounds	Sound Level (dBA)	Common Indoor Sounds
Car horn at 3 feet	100	Rock band
Gas lawnmower at 3 feet	90	Food blender at 3 feet
Noisy urban environment	80	Garbage disposal
Busy highway at 50 feet	70	Vacuum cleaner at 10 feet
Commercial area	60	Normal speech at 3 feet
Quiet urban environment	50	Dishwasher in next room
Quiet rural environment	40	Theater, large conference room

Source: FAA 2022a

Aircraft noise events are seldom steady; therefore, noise metrics have been developed to describe exposure from single events and cumulative exposure from multiple events. Single-event metrics include:

- Maximum Sound Level (L_{max}) – L_{max} is the maximum sound level of an event in dBA.
- Sound Exposure Level (SEL) – SEL is a measure of the total energy of an acoustic event. It represents the level of a 1-second-long constant sound that would generate the same energy as the actual time-varying noise event, such as an aircraft overflight. SEL provides a measure of the net effect of a single acoustic event, but it does not directly represent the perceived sound level at any given time. SEL is typically presented in dBA.

The sound from multiple aircraft events is measured using the following metrics that describe a cumulative noise environment:

- Equivalent Sound Level (L_{eq}) – L_{eq} describes the constant sound level having the same acoustic energy as the time-varying sound over the same period. The period of interest is usually 24-hours ($L_{eq(24h)}$); in the case of the analysis in this EIS, a 7-hour school-day ($L_{eq(7h)}$). $L_{eq(24h)}$ is used to assess the potential for long-term hearing loss for individuals living on and adjacent to airfields. An outdoor $L_{eq(8h)}$ of 60 dB is used to screen for potential classroom learning interference.
- DNL – DNL is the average sound energy in a 24-hour period, with an adjustment added to the nighttime levels. DNL is equal to $L_{eq(24h)}$ for the same period, if there are no nighttime noise events. Due to their potential to be particularly intrusive, noise events occurring between 10 p.m. and 7 a.m. are assessed an additional 10 dB adjustment when calculating DNL. DNL is a useful descriptor for aircraft noise because it averages ongoing yet intermittent noise, and it measures total sound energy over a 24-hour period. DNL provides a measure of the overall acoustical environment, but similar to SEL, it does not directly represent the perceived sound level at any given time. For well-distributed sound, $L_{eq(24h)}$ is approximately 6.4 dB lower than DNL.
- Onset-Rate Adjusted Monthly Day-Night Average Sound Level (L_{dnmr}) for SUA operations – L_{dnmr} is identical to DNL but includes an onset-rate adjustment for high-speed, low-altitude aircraft events causing startle and assesses SUA operations over the average flying day during the busiest month to account for the sporadic nature of SUA events.
- Number of events (at or) above a specified threshold (NA) – As its name implies, the NA metric describes the number of events that meet or exceed a user-specified decibel threshold in the period of interest. L_{max} or SEL thresholds can be used with NA.
    - $NA75L_{max}$ is the total number of events that meet or exceed 75 dB L_{max}. $NA75L_{max}$ is used to assess the potential for outdoor daytime speech interference or school-day classroom learning interference.
    - NA90SEL is the total number of events that exceed 90 dB SEL. NA90SEL is used in assessing the potential for nighttime sleep disturbance.

- Time (at or) above a specified threshold (TA). As its name implies, the TA metric describes the time (in minutes) the specified threshold is met or exceeded in the period of interest. Only an L_{max} threshold can be used with TA.
    - o $TA75L_{max}$ is the total time that meets or exceeds 75 dB. $TA75L_{max}$ is typically used in assessing the potential for classroom learning interference, along with $NA75L_{max}$ and $L_{eq(8h)}$.

For DAF NEPA analysis, DNL is the primary aircraft noise metric. The DoW's guidelines for the use of supplemental metrics (DNWG 2009) were used to identify relevant supplemental metrics, other than SEL, L_{max}, and L_{eq}, used in this EIS. These metrics are provided in **Table 3-13** and are explained further in the following paragraphs.

Table 3-13. Guideline Values (Outdoor Values) for Supplemental Noise Metrics

Application	Metric	Unit	Time Period	Recommended Outdoor Thresholds for Reporting Purposes
Speech Interference	NA	Number of Events	15-hour day (DNL daytime; 7 a.m. to 10 p.m.)	75 dB L_{max}
Sleep Disturbance	NA	Number of Events	9-hour night (DNL nighttime; 10 p.m. to 7 a.m.)	90 dB SEL
Classroom Speech Interference	L_{eq}	Decibel	School hours (typically 8-hours)	60 dB (for screening)
Classroom Speech Interference	NA	Number of Events	School hours (typically 8-hours)	75 dB L_{max}
Classroom Speech Interference	TA	Time (minutes)	School hours (typically 8-hours)	75 dB L_{max}
Potential for Hearing Loss	PHL	Decibel	Yearly DNL (Average Annual Day)	80 dB (for screening)
Potential for Hearing Loss	PHL	Decibel	Yearly $L_{eq(24h)}$ (Average Annual Day)	80 dB $L_{eq(24h)}$
Wildlife Impacts	L_{max}	Decibel	Overall	(Species specific)

Source: DNWG 2009

Speech Interference. The threshold at which aircraft noise begins to interfere with speech intelligibility is 50 dB indoors, and speech interference is often described in terms of $NA75L_{max}$ to account for 25 dB of noise attenuation provided by buildings, such as houses and schools (DNWG 2009).

Sleep Disturbance. The number of awakenings or arousals is the easiest measurable effect from noise on human sleep. The potential for sleep disturbance in this EIS was assessed for residential areas only and used the NA90SEL metric.

Classroom Speech Interference. Classroom speech interference is assessed only for the hours of instruction. The classroom speech interference analysis assumed school day hours from 8:30 a.m. to 3:30 p.m., occurring entirely within the DNL daytime period. It was also assumed that schools are operational year-round. First, a screening analysis with the L_{eq} metric is applied to identify schools that may be impacted by speech interference. Schools with outdoor L_{eq} less than 60 dB are screened out and would not likely be affected. For schools with L_{eq} greater than or equal to 60 dB, NA and TA metrics are computed with an L_{max} threshold of 60 dB. All classroom speech interference analyses herein assume evenly distributed flight and runup operations throughout the day for whole hour increments. The school's operating hours were the surrogate for the hours of classroom instruction.

PHL. PHL applies to people living long-term (40 years) in high noise environments. The initial screening criterion for assessing PHL is people exposed to DNL greater than or equal to 80 dB. The threshold for assessing PHL is people exposed to an $L_{eq(24h)}$ of at least 80 dB. PHL is quantified by reporting the number of people exposed to $L_{eq(24h)}$ within 1-dB increments above 80 dB (i.e., 80 to 81 dB, etc.). Those 1-dB increments expressed in $L_{eq(24h)}$ are associated with average Noise Induced Permanent Threshold Shifts (NIPTS) and tenth percentile NIPTS, which describe a person's permanent change in hearing threshold or level. The tenth percentile NIPTS is the NIPTS exceeded by 10 percent of the population, and it is reserved for the most sensitive individuals (DNWG 2013). In addition, the Occupational Safety and Health Administration (OSHA) and DAF have adopted a 140-dB instantaneous noise level threshold as the threshold for short-term exposure that may induce hearing loss.

Wildlife Impacts. **Section 3.4** provides information on noise impacts to wildlife.

Damage to Structures. Noise from low-level aircraft overflights can cause buildings under their flight path to vibrate, which the occupants experience as the structure shaking and windows rattling. However, based on experimental data and models, noise and vibrations from subsonic aircraft overflights do not cause structural damage to buildings. An impulsive-type noise (i.e., blast noise or sonic boom) above 140 dB is required to generate sufficient energy to damage structures (Siskind et al. 1980 and Siskind et al. 1989).

Regulatory Review and Land Use Planning. The Noise Control Act of 1972 directs federal agencies to comply with applicable federal, state, and local noise control regulations. The Noise Control Act specifically exempts aircraft operations and military training activities from state and local noise ordinances. There are no federal, state, or local noise regulations applicable directly to the Proposed Action. Air Force Handbook (AFH) 32-7084, *AICUZ Program Manager's Guide*, denotes that land use guidelines for noise exposure at military airfields are provided in Department of Defense (DoD) Instruction 4165.57, *Air Installations Compatible Use Zones*, Appendix 3C. **Table 3-14** provides a general overview of recommended aircraft operations noise limits for land use planning purposes.

Table 3-14. Recommended Noise Limits for Land Use Planning

General Level of Noise	Aircraft Noise (DNL)	General Recommended Uses
Low	<65 dB	Noise sensitive land uses acceptable
Moderate	65 to 75 dB	Noise sensitive land uses normally not recommended
High	>75 dB	Noise sensitive land uses not recommended

Source: DAF 2017

***Noise Modeling*.** In support of this EIS, a Noise Model Operational Data Document (NMODD) was prepared in 2024 and finalized in February 2025 to obtain the most accurate noise exposures from current and anticipated aircraft operations. Development of the NMODD entailed a review of past AICUZ studies for Vance AFB and validation of annual operations, runway usages, flight tracks and profiles, utilization percentages, and maintenance practices at the installation. The NMODD modeled noise exposures for five scenarios, which are the 2023 Baseline; Alternatives 1, 2, and 3; and the No Action Alternative. The results of that modeling are presented in **Sections 3.2.1.1.1**, **3.2.2.1.1.2**, **3.2.2.2.1.2**, **3.2.2.3.1.2**, and **3.2.2.4**, respectively.

Noise exposure from aircraft operations were calculated using the NOISEMAP[2] suite of computer programs, which was developed and is used by DAF for this purpose. The legacy core program within the suite, NMAP Version 7.3, was used to calculate the noise exposure in terms of DNL for existing and proposed average annual daily aircraft flight and ground run-up operations at Vance AFB. MOA Range NOISEMAP Version 3.0, also part of the NOISEMAP suite, was used to calculate the noise exposure in terms of L_{dnmr} from average day aircraft operations during the busiest month for applicable SUA, such as MOAs and MTRs.

A component of NOISEMAP is NOISEFILE. NOISEFILE is a comprehensive database of measured military and civil aircraft noise data. The NOISEFILE version used for this EIS contained flight and ground run-up noise measurements that were recorded in August 2019 from a T-7A prototype.

Acreage and population within bands of cumulative noise exposure (typically DNL) were calculated for Vance AFB. In order to estimate the number of people residing within the noise contours, existing parcel boundary land use maps were overlain on 2020 U.S. Census Blocks that depict the smallest Census enumeration unit. "Populated Area" data polygons were then created by combining Census blocks with the residential land use concentrating population and housing unit values into the residential portion of the census block where people live. For example, the population in some areas is concentrated along a road rather than over several square miles of open or undeveloped land.

[2] The Department of the Navy submitted a report to Congress in November 2021 that addresses the accuracy of the NOISEMAP modeling results versus real-time aircraft sound monitoring. The report concluded that the DoW approved noise models operate as intended and provide an accurate prediction of noise exposure levels from aircraft operations for use in impact assessments and long-term land use planning (DON 2021). This report is available to view on the project website at https://vance.t-7anepadocuments.com.

Using Geographic Information System (GIS) tools, the noise contours were intersected with these "Residential/Census" data for each DNL contour interval. The resultant wholly or partially encompassed Residential/Census areas were identified, and the proportion of total area within the contour interval was calculated to determine the estimated residential population and housing unit counts ascribed to that interval.

3.2.1 Affected Environment

This section outlines current background noise, aircraft noise, and noise abatement procedures at Vance AFB and the associated SUA.

3.2.1.1 Vance AFB

3.2.1.1.1 Aircraft Noise

The current aircraft noise environment is herein referred to as the 2023 Baseline. It is derived from the 2022 AICUZ Study for Vance AFB (Vance AFB 2022a) because that AICUZ Study is the most recent public document that presents projected noise levels at Vance AFB. The 2023 Baseline was modeled using the same number of aircraft operations and flight tracks as the 2022 AICUZ Study but accounts for the 2023 closure of Runway 17C/35C by moving the center runway operations to other runways. That adjustment is the primary reason why the 2023 Baseline noise environment differs from the 2022 AICUZ Study (HMMH 2025).

The annual flight operations (i.e., single take-offs, landings, and patterns combined) reported in the 2022 AICUZ Study were validated during the NMODD development process and found to be accurate for CY 2023. All flight operations total 305,133 and are performed by both Vance AFB homebased and transient aircraft. Most of Vance AFB's annual flight operations (68 percent) are performed by the T-6 Texan II (single-engine turboprop) aircraft, which is homebased at Vance AFB. Homebased T-38C aircraft (twin-engine afterburning jet trainer, capable of supersonic flight) perform 64,677 annual operations, representing approximately 21 percent of the installation's total annual flight operations. The remaining annual flight operations are from the T-1 Jayhawk (twin-engine jet aircraft based on the Beechjet 400 business jet), and various transient aircraft types.

Approximately 2 percent of the overall annual flight operations at Vance AFB were nighttime flight operations (10 p.m. to 7 a.m.) performed by homebased aircraft. Approximately 2,900 T-38C operations occur during the DNL nighttime period (10 p.m. to 7 a.m.) annually. All T-38C departures use afterburners for their takeoff roll (HMMH 2025).

Figure 3-2 shows the DNL contours for the 2023 Baseline, which are plotted in 5-dB increments, ranging from 65 to 80 dB DNL. The 65 dB DNL contour extends approximately 2.7 miles in the northern direction and approximately 5 miles in the southern direction beyond the installation boundary. To the east and west of the Vance AFB boundary, the 65 dB DNL contour extends approximately 1 mile and 0.6 mile respectively. Aircraft DNL less than 65 dB is generally compatible with all land uses. The modeled DNL noise levels include homebased and transient aircraft flight operations; as well as, maintenance run-up activity by the three homebased aircraft types, including activity in the existing hush house (Vance AFB 2022).

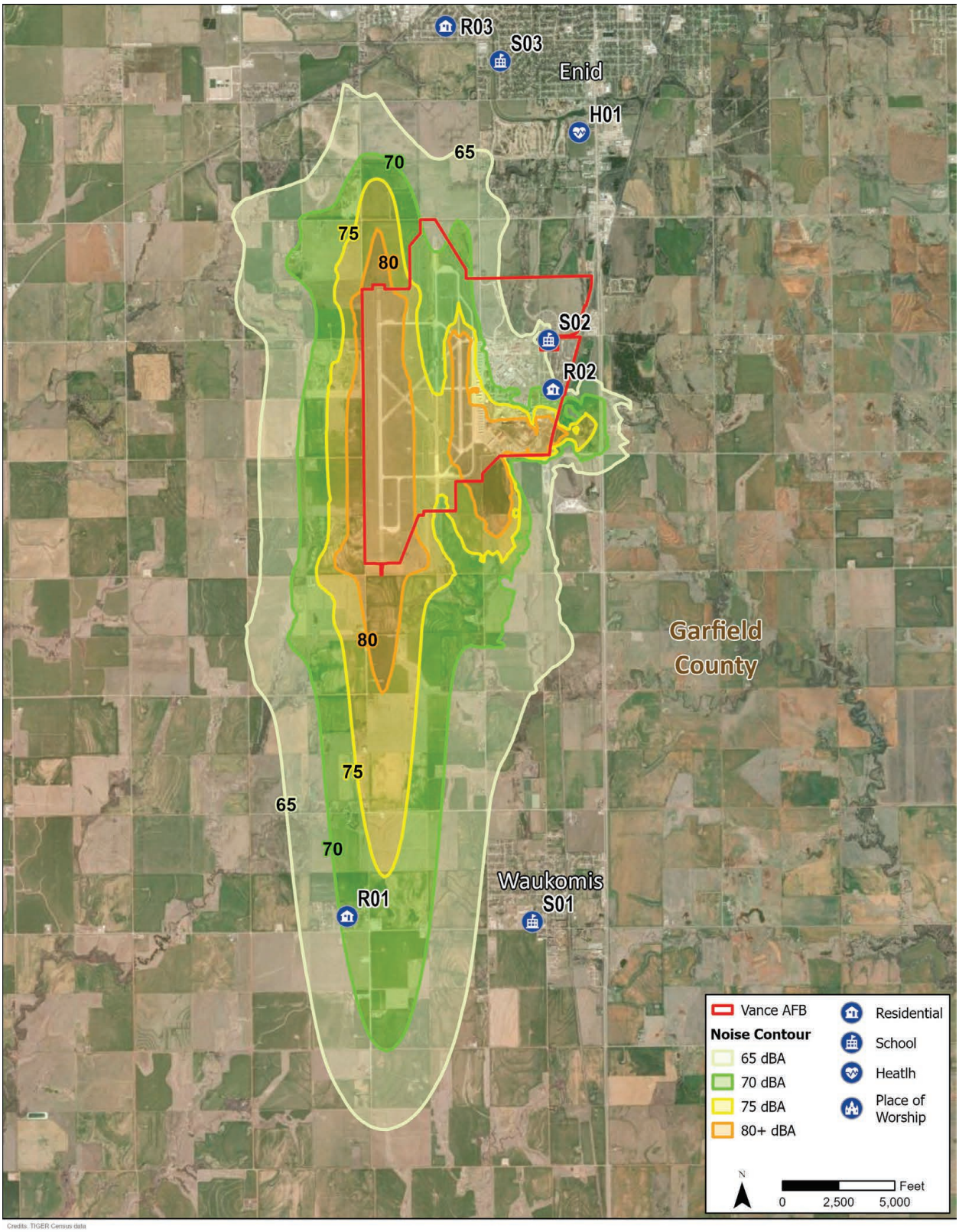


Figure 3-2. Aircraft Noise Contour Bands for the 2023 Baseline at Vance AFB

These noise levels, which are often shown graphically as contours on maps, are not discrete lines that sharply divide louder areas from land largely unaffected by noise. Instead, they are part of a planning tool that depicts the general noise environment around the installation based on typical aviation activities. Areas with DNL less than 65 dB can also experience levels of appreciable (single-event) noise, depending on number of operations or weather conditions. In addition, DNL contours may vary from year to year due to fluctuations in operational numbers due to unit deployments, funding levels, and other factors.

Table 3-15 and **Table 3-16** provide the 2023 Baseline land acreage and estimated population exposed to noise levels 65 dB DNL or greater, respectively. There are approximately 1,875 acres and 535 residents on installation and 8,833 acres and 299 residents off installation exposed to DNL at least 65 dB.

Table 3-15. Acreage within DNL Contour Bands for the 2023 Baseline at Vance AFB

DNL Contour Band (dB)	On-Installation (acres)	Off-Installation (acres)	Total (acres)
65 to 70	273	4,293	4,566
70 to 75	348	2,616	2,964
75 to 80	404	1,359	1,763
≥80	850	565	1,415
Total	**1,875**	**8,833**	**10,708**

Source: HMMH 2025
Note: DNL bands are exclusive of upper bounds.

Table 3-16. Estimated Population within DNL Contour Bands for the 2023 Baseline at Vance AFB

DNL Contour Band (dB)	On-Installation (persons)	Off-Installation (persons)	Total (persons)
65 to 70	327	200	527
70 to 75	109	87	196
75 to 80	91	12	103
≥80	8	0	8
Total	**535**	**299**	**834**

Source: HMMH 2025
Notes: 1. Estimated population based on area within individual census blocks.
2. DNL bands are exclusive of upper bounds.

The population exposed to a DNL of at least 80 dB have a PHL. The population estimation method yields eight people on installation and no people off installation exposed to DNL of at least 80 dB.

Noise-sensitive locations typically include residential areas, schools, places of worship, and hospitals. Based on data collected from Vance AFB personnel and a review of GIS data for schools in the area affected by the 60 dB DNL contour, 13 representative noise sensitive locations, also known as POIs, were identified. These POIs consist of six

schools, one hospital, five residential areas, and one place of worship. Centralized locations were identified within residential areas to represent adjacent residences and neighborhoods and are identified as Residential Areas 1 through 5 (POIs R01 through R05). The POIs are marked on the figures showing aircraft noise contour bands, if they are within the visual extent of the figure.

Table 3-17 provides the 2023 Baseline DNL for the 13 POI. Two of the five residential areas and one school were determined to be within a DNL greater than 65 dB and thus considered incompatible land uses. The other ten POI are within DNL less than 65 dB.

Table 3-17. Overall DNL at Representative Locations for the 2023 Baseline at Vance AFB

ID	On or Off Vance AFB?	Representative Location	Type	DNL (dB)
S01	Off	Waukomis Elementary-Middle School	School	61.0
S02	Off	Eisenhower Elementary School	School	**65.0**
S03	Off	Hayes Elementary School	School	57.5
S04	Off	Emmanuel Christian School	School	60.7
S05	Off	Pleasant Vale Elementary School	School	<45
S06	Off	Hoover Elementary School	School	59.9
H01	Off	INTEGRIS Bass Behavioral Health - Meadowlake	Hospital/ Polyclinic	59.4
R01	Off	Representative of residences west of Waukomis	Residential	**70.8**
R02	On	Representative of southern on-installation housing (Bass Drive)	Residential	**65.5**
R03	Off	Representative of residences on Indian Drive, Enid	Residential	60.8
R04	Off	Representative of residences on Lisa Lane, Enid	Residential	58.2
R05	Off	Representative of residences on West Maple Avenue, Enid	Residential	60.1
W01	Off	Emmanuel Baptist Church	Place of Worship	60.7

Source: HMMH 2025
Note: DNLs of at least 65 dB are shown in **bold**.

Supplemental noise metrics were not modeled for the 2022 AICUZ Study; therefore, they were not modeled for the 2023 Baseline. Supplemental noise metrics are provided for each action alternative and the No Action Alternative with the appropriate analysis and projection of the potential differences.

3.2.1.1.2 Existing Noise Abatement Procedures for Vance AFB

This section provides an overview of the existing noise abatement procedures and strategies that have been developed primarily through the installation's AICUZ program and the communities' Joint Land Use Study (JLUS).

3.2.1.1.2.1 AICUZ Program

Vance AFB has an active AICUZ program that informs the public about its aircraft noise environment and recommends specific actions for local jurisdictions with planning and zoning authority that can enhance the health, safety, and welfare of those living near the

installation. To implement the AICUZ program, the installation is required to take the following actions:

- Prepare periodic AICUZ Study updates to quantify aircraft noise zone areas and provide compatible land use recommendations to local municipalities.
- Coordinate with federal, state, and local agencies and community leaders to maintain public awareness of the AICUZ program.
- Promote encroachment partnering projects to achieve long-term encroachment protection.
- Use hush house and test cell buildings to suppress noise from high power maintenance engine runs.
- Minimize flight and maintenance operations during nighttime periods.

The current AICUZ Study for Vance AFB was published in June 2022 (Vance AFB 2022) and is considered a noise management measure that describes the DAF's planning perspective for compatible land use (DAF 2017). The noise exposures presented in the 2022 AICUZ Study do not represent the 2023 Baseline noise environment in the areas around Vance AFB because of the closure of Runway 17C/35C in 2023. In support of this EIS, the 2023 Baseline was modeled using the same number of aircraft operations and flight tracks as the 2022 AICUZ Study but moving the center runway operations to other runways. The resultant noise exposures are presented in **Section 3.2.1.1.1** as the 2023 Baseline.

As outlined in the 2022 AICUZ Study, DAF strives to be a good neighbor and actively pursues operational measures to control aircraft noise effectively. Noise abatement procedures apply to flight operations and engine run-up and maintenance operations conducted on the installation. To the greatest extent possible, flights are routed over sparsely populated areas to reduce exposure to noise. As part of DAF regulations, installation commanders are required to periodically review existing traffic patterns, instrument approaches, weather constrictions, and operating practices in relation to populated areas and other local situations.

3.2.1.1.2.2 Vance AFB JLUS

In 2018, the city of Enid, Oklahoma completed a JLUS in collaboration with DAF and the communities surrounding Vance AFB (City of Enid 2018). The JLUS adopted the noise contour footprint based on the 2014 Vance AFB AICUZ Study for local planning purposes. This EIS uses the JLUS footprint for assessment of land use impacts in **Section 3.3**; however, for assessment of aircraft noise impacts, the conditions described in **Section 3.2.2.4** are based on 2023 aircraft operations, tracks, and operating specifics (such as altitudes, power settings, and other related data) and represent the most accurate noise conditions currently being experienced within the community.

3.2.1.2 SUA

Airspaces assessed in this analysis include the flight areas within the SUA listed in **Section 1.2.1** (i.e., the Vance 1A, Vance 1C, and Vance 1E MOAs and MTRs IR-145, IR-171, IR-175, IR-181, and IR-185). Modeling was performed for the SUA used primarily by T-38C aircraft, while Vance 1B, Vance 1D, IR-182, IR-183 and VR-119 were not modeled due to no reported use by T-38C/T-7A aircraft from Vance AFB.

These airspaces are instead regularly used by T-6, T-1, or Tulsa-based Oklahoma Air National Guard F-16C aircraft at Vance AFB. Primarily, Vance AFB-homebased aircraft use the modeled SUA, but that does not preclude the possibility of occasional use by other DoW aviation assets in the region.

The Vance 1A and 1C MOAs have a floor of 8,000 feet above mean sea level (MSL), while Vance 1E has a floor of 500 feet AGL. The modeled MTRs extend to 500 feet AGL. **Table 3-18** provides the CY 2023 SUA usage by each homebased aircraft at Vance AFB. None of the existing condition sorties using SUA occur during the L_{dnmr} nighttime (10 p.m. to 7 a.m.).

Table 3-18. Modeled SUA and Sorties for the 2023 Baseline

SUA	Altitudes	Busiest Month (CY 2023)	T-38C Busiest Month Sorties	T-1 Busiest Month Sorties	Total Busiest Month Sorties
Vance 1A MOA	8,000 to 17,999 feet above MSL	Even[1]	252	11	263
Vance 1C MOA	8,000 to 17,999 feet above MSL	August	509	125	634
Vance 1E MOA	500 to 1,000 feet AGL	Even[1]	68	-	68
IR-145	500 to 6,000 feet above MSL	October	27	6	33
IR-171	500 to 6,000 feet above MSL	March	12	41	53
IR-175	500 to 6,000 feet above MSL	April/ October	16	-	16
IR-181	500 to 6,000 feet above MSL	March	15	19	34
IR-185	500 to 6,000 feet MSL	June	4	23	27

Source: HMMH 2025
Note: SUA data was collected for 2023 operations during the preparation of the NMODD for this EIS.
[1] Sorties in the MOAs 1A and 1E were evenly spread throughout the year.

The specific flight areas within the SUA analyzed for the Proposed Action are provided in **Table 3-18**. For the MOAs, the modeled flight areas consist primarily of sectors within each MOA (Vance 1A, 1C, and 1E) due to differences in airspace altitudes and usage. The entire lengths of the MTRs were modeled with their established route widths.

Noise levels from the SUA are below the reported limit of the noise model due to the limited number of operations. The existing L_{dnmr} for all areas are less than 65 dB and compatible with all land uses.

3.2.2 Environmental Consequences

This section discusses noise from construction, noise from aircraft, potential changes to land use compatibility, and potential noise effects to humans due to implementing the Proposed Action. The action alternatives are compared to the No Action Alternative noise environment to determine the changes and relative impacts from potential aircraft noise levels. Changes in noise would be considered significant if they would (1) lead to a violation of any federal, state, or local noise ordinance; (2) substantially increase

areas of incompatible land use outside the installations; or (3) have the potential to cause permanent hearing loss to nearby residents.

***Noise Modeling*.** As noted in **Section 2.2.2.1.2**, exact T-7A flight parameters, such as flight tracks, patterns, and altitudes, have not yet been developed and will not be known until DAF begins flying the T-7A for pilot training. Therefore, at this stage of the proposal, T-7A flight parameters are assumed to be similar to those flown by the T-38C for the No Action Alternative.

Current T-38C flight parameters were validated and updated, as necessary, as part of the NMODD data collection effort in 2024. That data collection effort determined that the flight tracks at Vance AFB were altered after the publication of the 2022 AICUZ Study. To ensure the latest and most accurate representation of flight operations at Vance AFB, the altered flight tracks were used in the modeling of the action alternatives and the No Action Alternative, but not in the modeling of the 2023 Baseline. Power settings for modeling purposes were calculated using a power converter workbook based on recent testing of the T-7A aircraft. Unlike the T-38C, the T-7A would use the afterburner for only 5 percent of its departures, compared to the T-38C's 100 percent of departures. For those T-7A afterburner departures, the T-7A would shut off its afterburners at approximately the same altitude and distance as the T-38C. The 2023 Baseline noise contours include the training operations associated with the T-1 aircraft reported in the 2022 AICUZ Study. DAF will remove the T-1 aircraft from service at Vance AFB prior to the implementation of each of the alternatives and is separate from the Proposed Action. Therefore, all action alternatives and the No Action Alternative have been modeled without the T-1 aircraft.

The T-7A aircraft has distinctly different operating characteristics than the T-38C, and, if the T-7A is introduced, DAF would determine the safest, most efficient, and least intrusive flight operations for T-7A training at Vance AFB. Once the T-7A aircraft begin to arrive at Vance AFB, DAF would (1) analyze and adjust T-7A flying patterns and operational settings as deemed necessary, (2) update the installation's AICUZ Study, and (3) support the community in updating a JLUS for the installation and surrounding community. These actions would allow DAF to continue its active AICUZ program at Vance AFB, which strives to pursue operational measures to effectively control aircraft noise and recommend specific actions for local jurisdictions to enhance the health, safety, and welfare of those living near the installation.

3.2.2.1 Alternative 1

Alternative 1 would result in short-term, not significant, and long-term, continued significant, adverse impacts on the noise environment. Short-term impacts would be due to noise generated by heavy equipment during construction and renovation. Long-term impacts would occur from the introduction of the T-7A aircraft. Long-term changes in operational noise would increase in areas of incompatible land use off installation and would increase the local population exposed to 65 dB DNL and greater.

3.2.2.1.1 Vance AFB

3.2.2.1.1.1 Construction Noise

Construction and renovation would require the use of heavy equipment that would generate short-term increases in noise near the project areas. Maximum noise levels associated with common construction equipment at 50 feet generally range from 73 dB

for a power generator to 101 dB for a pile driver[3]. With multiple types of equipment operating concurrently, noise levels can be higher within several hundred feet of active construction and demolition areas.

DoD Instruction 4715.13, *DoD Operational Noise Program*, does not indicate a threshold of significance for construction noise impacts (DoD 2020). This instruction does not reference other construction noise guidance; therefore, this analysis refers to Federal Highway Administration guidance for evaluating construction noise. Federal Highway Administration policy considers an hourly Equivalent Sound Level ($L_{eq(h)}$) of 67 dB or higher, an exterior impact for residential and recreational uses (23 CFR Part 772, Table 1).

Construction activities would include the laydown area for modular construction and general requirements for equipment access and material delivery; the storage of materials, equipment, and tools; employee access and vehicle parking; utility impairment requirements; and safety requirements. Nighttime and weekend work is not planned as a part of the construction schedule.

All construction and renovation in support of the Proposed Action would be within the Vance AFB boundary, be collocated with other existing noise-compatible activities, and end with the facility construction and modification phase.

Figure 2-1 shows the project area locations. The distance between the construction areas and the nearest off-installation POI (S02) would be approximately 3,300 feet. POI R02, on-installation housing, would be about 2,100 feet from the nearest construction site. The nearest off-installation POI residence would be about 3 miles away. There would be no anticipated noise impacts to on- or off-installation residents from construction activities.

Based on estimated equipment usage percentages, noise levels were calculated at 860, 1,000, and 1,300 feet from on-site construction and staging of construction vehicles, as shown in **Table 3-19**. Temporary construction noise is not expected to result in significant impacts on any POI. Project construction is anticipated to produce L_{max} of approximately 58 dB at 1,300 feet from the site. At these distances, the on-installation POI would still experience L_{max} related to construction activities below the 67 dB criterion. Routine BMPs, to include noise abatement components such as engine mufflers, enclosures, vibration isolators, or other sound dampening supplements, would be employed to reduce construction noise. BMPs may also include vehicle inspections and maintenance as well as defined hours of operation for construction equipment.

In addition, various facilities within the Vance AFB operations area, including flightline activity where routine daily activities contribute to a higher-than-normal ambient noise level, are within 2,000 feet of the construction areas. The $L_{eq(h)}$ would remain below the 67 dB criterion for a significant noise impact on residential or recreational facilities. Operation of the new facilities at Vance AFB is not expected to generate additional noise levels.

[3] 50 feet is the standard reference distance used in U.S. Department of Transportation, Federal Highway Administration guidance, including guidance for the evaluation of construction equipment noise (USDOT 2006).

Table 3-19. Estimated Noise Levels for Proposed Construction Equipment at Nearby Properties

Equipment Description	Equipment Usage (percent)[1]	Noise Level at 50 feet, L_{max} (dB)[2]	L_{max} at 1,300 feet from Construction Site (dB)	Hourly L_{eq} at 1,300 feet from Construction Site (dB)	L_{max} at 1,000 feet from Construction Site (dB)	Hourly L_{eq} at 1,000 feet from Construction Site (dB)	L_{max} at 860 feet from Construction Site (dB)	Hourly L_{eq} at 860 feet from Construction Site (dB)
Paver	50	77	51	46	51	48	53	50
Dump Truck	40	76	50	44	50	47	52	48
Pickup Truck	40	75	49	43	49	45	50	46
Roller	20	80	54	45	54	47	55	48
Bulldozer	40	82	56	49	56	52	57	53
Excavator	40	81	55	48	55	51	56	52
Chain Saw	20	84	58	48	58	51	59	52
Compactor (ground)	20	83	57	48	57	50	59	52
Concrete Saw	20	90	64	54	64	57	65	58
Crane	16	81	55	44	55	47	56	48
		Total	**64[3]**	**58[4]**	**64[3]**	**61[4]**	**65[3]**	**62[4]**

Key:
[1] Usage percentage is the amount of time that a piece of equipment is anticipated to be in operation during each hour of a 24-hour day.
[2] *Federal Highway Administration Roadway Construction Noise Model User's Guide*, Table 1 (USDOT 2006).
[3] Total L_{max} is the value for the loudest piece of equipment (i.e., concrete saw).
[4] Total L_{eq} is the combined average dB level of anticipated simultaneously operated equipment.
An hourly L_{eq} of at least 67 dB would result in a noise impact.

3.2.2.1.1.2 Aircraft Noise

For Alternative 1, approximately 278,700 total flight operations (i.e., single take-offs, landings, and patterns combined) would be performed at Vance AFB each year, with an average of almost 764 flight operations per day. Most of Vance AFB's annual flight operations (75 percent) would be performed by T-6 Texan II aircraft. T-7A aircraft (single-engine jet trainer; capable of supersonic flight) would represent approximately 25 percent of the annual flight operations. No T-38C aircraft would remain after the full complement of the T-7A aircraft is received and operational. T-1 aircraft from Vance AFB will be retired prior to the introduction of the T-7A aircraft at Vance AFB and are therefore not carried forward in the noise modeling for Alternative 1. The balance of aircraft operations at Vance AFB would be attributed to various transient aircraft types accounting for less than 1 percent of total annual flight operations. The current operational levels for T-6 and transient aircraft were used for the noise analysis.

All 3,306 annual nighttime flight operations at Vance AFB would be performed by the T-7A and T-6 aircraft homebased at the installation, and these nighttime flight operations represent approximately 1.2 percent of total annual daytime and nighttime flight operations at the installation. T-7A aircraft would perform 698 annual nighttime flight operations, which would represent approximately 21 percent of the total annual nighttime flight operations performed by all aircraft types at Vance AFB.

The T-7A aircraft are proposed for arrival and immediate use beginning in 2032. The increase in T-7A aircraft and associated training operations would be incremental through 2033. In 2034, the number of T-7A aircraft operations would stabilize. During the period from 2032 through 2033, area and population within the 65 dB DNL contour would increase incrementally.

On a per aircraft basis, T-7A aircraft would perform similar numbers of arrivals, departures, and closed patterns as current T-38C aircraft. Due to the increase from 63 T-38C aircraft to 68 T-7A aircraft, annual flight operations would increase to 69,810, which is nearly 8 percent greater than current levels.

Modeling for Alternative 1 noise exposure also includes maintenance run-up activity by the existing aircraft types homebased at the installation and the proposed T-7A, including activity in the proposed hush house. The Proposed Action would replace the existing hush house facility with a new facility approximately 200 feet southwest of the existing site located at the southeast end of the airfield aircraft parking area. The jet engine orientation while in the proposed hush house would remain the same as the existing T-38C hush house at a true heading of approximately 120 degrees. All flight and run-up activity data was taken into consideration during modeling of the noise contours (HMMH 2025).

Noise levels on and adjacent to Vance AFB with the proposed T-7A aircraft were calculated based on full implementation of Alternative 1 in 2034. **Figure 3-3** shows the modeled DNL contours for Alternative 1. With full implementation of Alternative 1 in 2034, the 65 dB DNL contour at Vance AFB would extend approximately 4 miles from the installation boundary along the centerline of Runway 17R/35L in the northern direction, 2.9 miles out from the centerline of Runway 17R/35L in the southern direction, approximately 2.0 miles west of Runway 17R/35L, and about 1.4 miles east of Runway 17L35R. Aircraft DNL less than 65 dB is generally compatible with all land uses.

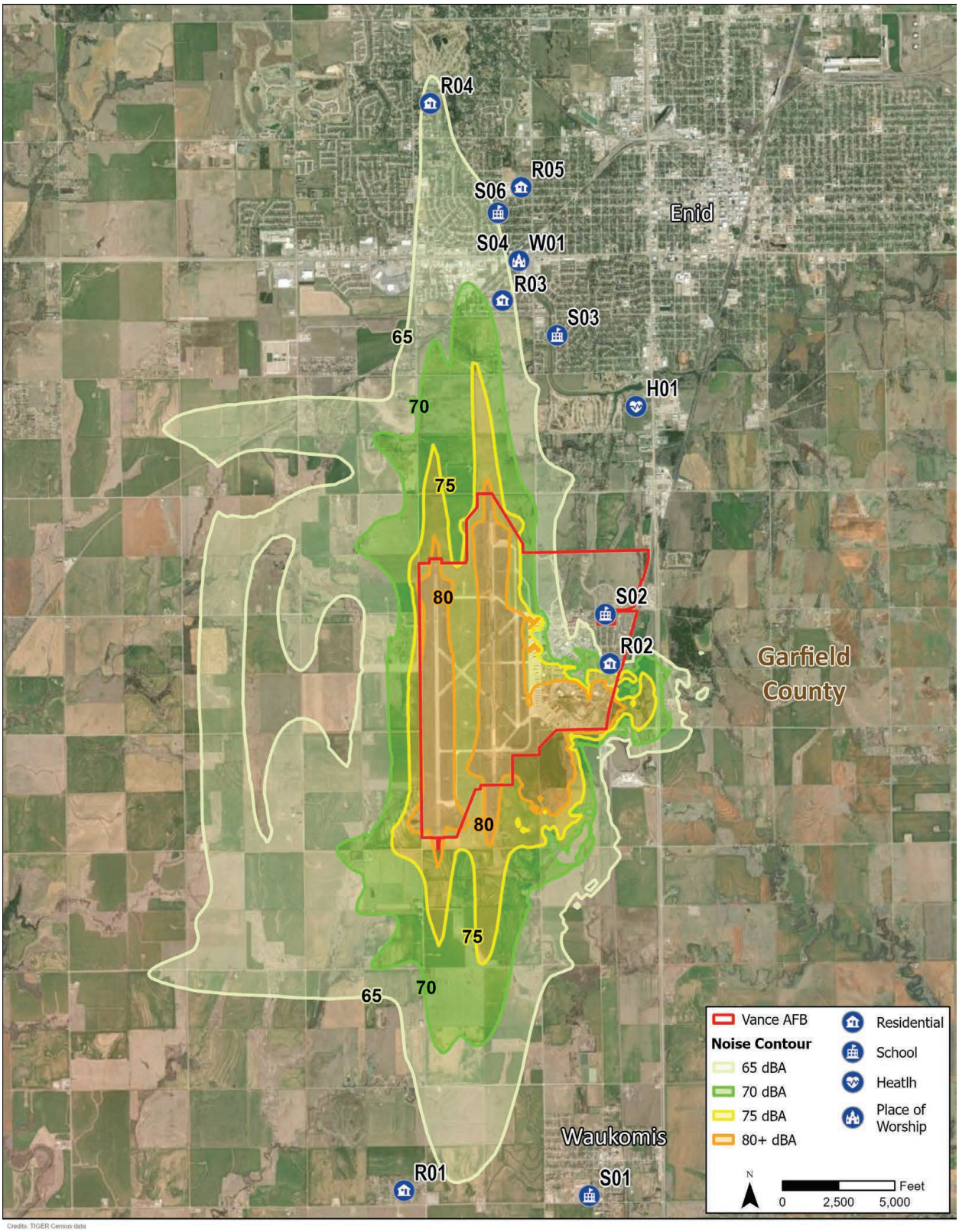


Figure 3-3. Aircraft Noise Contour Bands for Alternative 1 at Vance AFB

Table 3-20 and **Table 3-21** provide the land acreage and population exposed to DNL of at least 65 dB for Alternative 1 at Vance AFB, respectively. On- and off-installation acreage contained within the 65 dB DNL contour would be approximately 1,812 and 9,754 acres, respectively. This would amount to an increase of 2,581 acres off-installation within the 65 dB DNL as compared to the No Action Alternative. Alternative 1 as compared to the No Action Alternative would expose an estimated 3,276 people off-installation to DNL of at least 65 dB, an increase of 1,175 people. The majority of the increased population within the 65 dB DNL is to the north of the installation where denser residential areas are located.

Table 3-20. Acreage within DNL Contour Bands for Alternative 1 and Change in Acreage from No Action Alternative at Vance AFB

DNL Contour Band (dB)	On-Installation Acreage	Off-Installation Acreage	Total Acreage	Change in On-Installation Acreage	Change in Off-Installation Acreage	Change in Total Acreage
65 to 70	151	6,352	6,503	20	2,180	2,200
70 to 75	96	2,244	2,340	-29	223	194
75 to 80	488	919	1,407	-15	85	70
≥80	1,027	239	1,316	114	93	207
Total	**1,812**	**9,754**	**11,566**	**90**	**2,581**	**2,671**

Source: HMMH 2025
Note: DNL bands are exclusive of upper bounds.

Table 3-21. Estimated Population within DNL Contour Bands for Alternative 1 and Change in Population from No Action Alternative at Vance AFB

DNL Contour Band (dB)	On-Installation Population	Off-Installation Population	Total Population	Change in On-Installation Population	Change in Off-Installation Population	Change in Total Population
65 to 70	105	3,078	3,183	-37	1,134	1,097
70 to 75	97	195	292	47	48	95
75 to 80	77	3	80	71	-7	64
≥80	86	0	86	86	0	86
Total	**365**	**3,276**	**3,641**	**167**	**1,175**	**1,342**

Source: HMMH 2025
Notes: 1. Estimated population based on area within individual census blocks at full implementation of Alternative 1 with the full complement of T-7A aircraft.
2. DNL bands are exclusive of upper bounds.

Population exposed to DNL of at least 80 dB would have a PHL. The population estimation method described in **Section 3.2,** yields that no off-installation people would be exposed to DNL of at least 80 dB. Although the population estimation method results in eight on-installation residents that would be within the 80 or greater dB DNL contour, the noise contour map in **Figure 3-3** shows that none of the on-installation family housing is within the contour. See **Section 3.2.2.1.1.3** for further analysis on PHL.

Expansion of the DNL contours would be due to the introduction of the T-7A aircraft; increased aircraft operations; and modifications to the tracks associated with departures, arrivals, and closed loop patterns. The additional off-installation acreage and population impacted would constitute an expansion primarily on the west and north sides of the airfield and a reduction to the south of the airfield. These newly exposed areas encompass numerous land uses, including residential, commercial, undeveloped, and agricultural.

Table 3-22 provides the DNL for the 13 POI for Alternative 1 and the increases as compared to the No Action Alternative. Two of the five residential areas (POI R03 and R04) would be exposed to DNL greater than 65 dB, one of which (R03) is greater than 65 dB for the No Action Alternative. These two residential locations would be considered incompatible land uses. The other POI would be exposed to DNL less than 65 dB.

Table 3-22. Overall DNL at Representative Locations for Alternative 1 at Vance AFB

ID	Representative Location	No Action Alternative DNL (dB)	Alternative 1 DNL (dB)	Change in DNL (dB)
H01	INTEGRIS Bass Behavioral Health - Meadowlake	55.7	57.1	+1.4
R01	Representative of residences west of Waukomis	58.4	60.8	+2.4
R02	Representative of southern on-installation housing (Bass Drive)	59.2	62.5	+3.3
R03	Representative of residences on Indian Drive, Enid	**66.4**	**67.1**	+0.7
R04	Representative of residences on Lisa Lane, Enid	62.8	**65.6**	+2.8
R05	Representative of residences on West Maple Avenue, Enid	59.7	61.3	+1.6
S01	Waukomis Elementary-Middle School	56.0	57.4	+1.4
S02	Eisenhower Elementary School	59.1	60.2	+1.1
S03	Hayes Elementary School	58.3	59.6	+1.3
S04	Emmanuel Christian School	62.0	63.3	+1.3
S05	Pleasant Vale Elementary School	<45	<45	+0.1
S06	Hoover Elementary School	63.2	64.6	+1.4
W01	Emmanuel Baptist Church	62.0	63.3	+1.3

Source: HMMH 2025
Note: **Bold** values indicate DNL greater than or equal to 65 dB.

The five residential areas would be exposed to DNL increases between approximately 0.7 and 3.3 dB. Five of the six schools would be exposed to DNL increases between approximately 1.1 and 1.4 dB and the sixth school would have an increase of approximately 0.1 dB. The INTEGRIS Health facility would remain well below the 65 dB DNL and would experience an increase of approximately 1.4 dB. Emmanuel Baptist Church would experience the same increase as Emmanuel Christian School. The increases would be due to the introduction of the T-7A and its associated increases in departure and pattern training operations.

Figure 3-4 shows a comparison of the Vance AFB 65 dB DNL contours modeled for each scenario (i.e., 2023 Baseline; Alternatives 1, 2, and 3; and the No Action Alternative). Compared to the 2023 Baseline, Alternative 1 would result in a general expansion of the 65 dB DNL contour to the north along runway headings and to the west. Along the centerline of Runway 17R/35L, the 65 dB DNL contour for Alternative 1 would extend approximately 2.4 miles to the north and decrease by approximately 1.8 miles to the south, compared to its extents for the 2023 Baseline. The 65 dB DNL contour on the east side of the installation would be similar to that of the 2023 Baseline with only minor changes.

3.2.2.1.1.3 Supplemental Metrics Analyses

The supplemental metrics required analyses of potential noise exposure effects, including speech interference, classroom learning interference, sleep disturbance, and hearing loss. These analyses focus on specific POI in the vicinity of Vance AFB and are described in **Section 3.2.1.1.1**.

Speech Interference. **Table 3-23** provides the number of speech events per daytime hour for Alternative 1. Alternative 1 would result in up to approximately 1.5 additional speech-interfering events per hour across the relevant POI as compared to the No Action Alternative.

Table 3-23. Potential for Speech Interference for Alternative 1 at Vance AFB

ID	Representative Location	No Action Alternative Events per Daytime Hour	Alternative 1 Events per Daytime Hour	Change in Events per Daytime Hour
H01	INTEGRIS Bass Behavioral Health - Meadowlake	0.2	0.2	0
R01	Representative of residences west of Waukomis	1.5	1.9	+0.4
R02	Representative of southern on-installation housing (Bass Drive)	1.5	1.8	+0.3
R03	Representative of residences on Indian Drive, Enid	3.1	3.2	+0.1
R04	Representative of residences on Lisa Lane, Enid	2.4	3.6	+1.2
R05	Representative of residences on West Maple Avenue, Enid	3.0	3.3	+0.3
S01	Waukomis Elementary-Middle School	0.2	1.7	+1.5
S02	Eisenhower Elementary School	2.6	1.9	-0.7
S03	Hayes Elementary School	0.4	1.3	+0.9
S04	Emmanuel Christian School	3.0	3.2	+0.2
S05	Pleasant Vale Elementary School	0.2	0.2	0
S06	Hoover Elementary School	2.7	3.0	+0.3
W01	Emmanuel Baptist Church	3.0	3.2	+0.2

Source: HMMH 2025
Note: $NA75L_{max}$; POI assessed for daytime (7 a.m. to 10 p.m.).

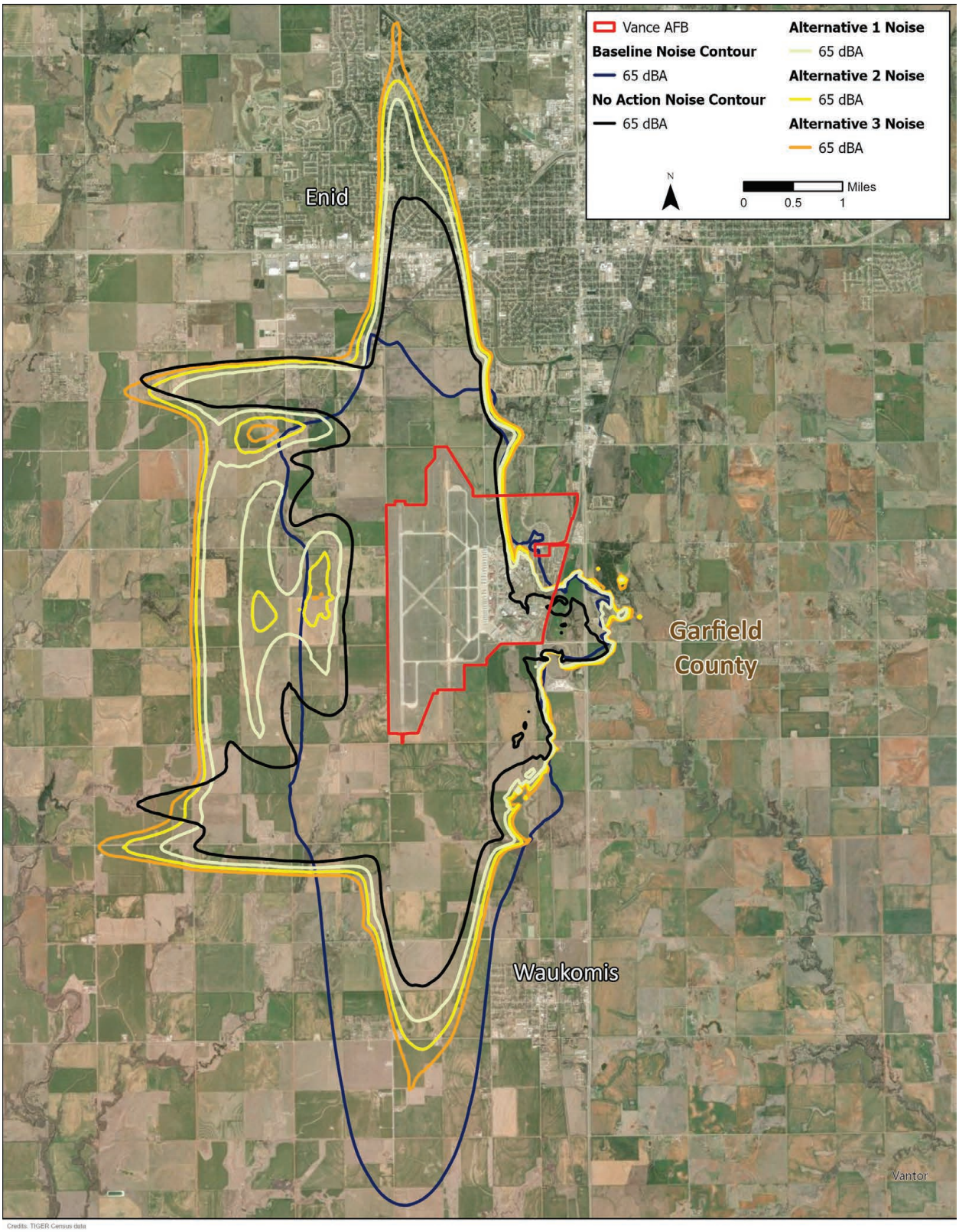


Figure 3-4. Comparison of the 65 dB DNL Contours for the Action Alternatives, 2023 Baseline, and No Action Alternative at Vance AFB

Classroom Learning Interference. The L_{eq} for the hours of classroom instruction assumes evenly distributed flight and run-up operations throughout the day for whole hour increments. A school's operating hours is used as the surrogate for the hours of classroom instruction. For the schools in this EIS, 7 hours of instruction was determined to be the most common, thus $L_{eq(7h)}$ or "school-day L_{eq}" is used to screen the school noise exposures and calculate the number of events per hour and seconds per hour of disturbance. The results for each school are presented in **Table 3-24**.

Table 3-24. Screening for Potential Classroom Speech Interference for Alternative 1 at Vance AFB

ID	Representative School	School-Day $L_{eq(7h)}$ (dB)
S01	Waukomis Elementary-Middle School	59.0
S02	Eisenhower Elementary School	**61.9**
S03	Hayes Elementary School	**61.2**
S04	Emmanuel Christian School	**64.8**
S05	Pleasant Vale Elementary School	41.2
S06	Hoover Elementary School	**66.2**

Source: HMMH 2025
Note: **Bold** values exceed the 60 dB $L_{eq(7h)}$ screening threshold.

Four schools, POI S02, S03, S04, and S06, would exceed the threshold of 60 dB and require additional analysis for the number of events and time of classroom speech interference. POIs S01 and S05 do not exceed the screening metric of 60 dB and therefore are not included in additional analysis for NA and TA. The metrics for the number of events and time at or above the specified thresholds for the affected schools are provided in **Table 3-25** and **Table 3-26**, respectively. The four schools would experience approximately 1.3 to 3.2 events per hour; three of the schools would experience an increase in average hourly events as compared to the No Action Alternative. These three schools would have an increase of about 20 seconds per hour in classroom disturbance (at or) above 75 dB L_{max}.

Table 3-25. Number of Events of Classroom Speech Interference for Alternative 1 at Vance AFB

ID	Representative School	No Action Alternative Conditions $NA75L_{max}$ (events/hour)	Alternative 1 $NA75L_{max}$ (events/hour)	Change in $NA75L_{max}$ (events/hour)
S02	Eisenhower Elementary School	2.59	1.85	-0.74
S03	Hayes Elementary School	0.40	1.33	+0.93
S04	Emmanuel Christian School	3.02	3.18	+0.16
S06	Hoover Elementary School	2.67	2.98	+0.31

Source: HMMH 2025
Note: **$NA75L_{max}$** is the number of events at or above the 75 dB L_{max} threshold.

Table 3-26. Time of Classroom Speech Interference for Alternative 1 at Vance AFB

ID	Representative School	No Action Alternative Conditions $TA75L_{max}$ (seconds/hour)	Alternative 1 $TA75L_{max}$ (seconds/hour)	Change in $TA75L_{max}$ (seconds/hour)
S02	Eisenhower Elementary School	51	21	-30
S03	Hayes Elementary School	3	23	+20
S04	Emmanuel Christian School	31	51	+20
S06	Hoover Elementary School	33	55	+22

Source: HMMH 2025
Note: **$TA75L_{max}$** is the time at or above the 75 dB L_{max} threshold.

Sleep Disturbance. **Table 3-27** provides the number of average annual hourly nighttime events that would meet or exceed 90 dB SEL at the five residential POI for Alternative 1. Alternative 1 would result in an increase of less than 0.1 potential sleep-disturbing events per hour, on average, across all residential POI, relative to the No Action Alternative.

Table 3-27. Potential for Sleep Disturbance for Alternative 1 at Vance AFB

ID	Name	No Action Alternative Conditions Average Hourly Nighttime Events (NA90SEL)	Alternative 1 Average Hourly Nighttime Events (NA90SEL)	Change in Average Hourly Nighttime Events (NA90SEL)
R01	Representative of residences west of Waukomis	0.1	<0.05	<-0.05
R02	Representative of southern on-installation housing (Bass Drive)	0	<0.05	<0.05
R03	Representative of residences on Indian Drive, Enid	0.1	0.1	0
R04	Representative of residences on Lisa Lane, Enid	0.2	0.1	-0.1
R05	Representative of residences on West Maple Avenue, Enid	0.1	0.1	0

Source: HMMH 2025
Note: **NA90SEL** is the number of events at or above the 90 dB SEL.

The specified average number of events noted would not likely occur in evenly spaced increments throughout the night, nor would they likely occur every night. Nighttime flights would occur as the training syllabus directs and would likely occur in “grouped” sessions, meaning that several overflights may occur during a short period of time on one specific night. It is not possible to forecast when nighttime events would occur due to scheduling changes, aircraft maintenance, weather, and other unpredictable events; therefore, this analysis portrays the impact with operations averaged throughout the night, for each night. Vance AFB would operate night flights in a manner to minimize nighttime aircraft noise to the community, to the maximum extent practicable.

PHL. No off-installation population would be exposed to a DNL of at least 80 dB; therefore, the PHL is not anticipated. As noted above, the noise contour map in **Figure 3-3** shows that none of the on-installation family housing is within the stated contour and PHL is not anticipated.

Damage to Structures. Individual aircraft events at Vance AFB would not generate impulsive-style aircraft noise levels above 140 dB; therefore, damage to structures from Alternative 1 would not likely occur.

3.2.2.1.2 SUA

For Alternative 1, sorties within the modeled MOAs and MTRs differ from the 2023 Baseline due to the replacement of T-38C aircraft with T-7A and cessation of T-1 operations at Vance AFB, but would remain similar to the No Action Alternative with a minor increase in sortie numbers for the T-7A aircraft. T-6 sorties would remain the same as current conditions. Due to current operational hours of the SUA, night operations would stay around the airfield and not enter the MOAs and MTRs.

The L_{dnmr} would be less than 65 dB for all MTRs and modeled results for each MTR are less than 55 dB for Alternative 1. Similarly, for Alternative 1 each of the MOAs were modeled with the highest L_{dnmr} for any SUA overlap between a MOA and MTR being 59.2 dB. Therefore, any increases in noise associated with SUA sorties would not introduce any incompatibilities and would not be significant.

3.2.2.2 Alternative 2

Alternative 2 would result in short-term, not significant, and long-term, continued significant, adverse impacts on the noise environment. Short-term impacts would be due to noise generated by heavy equipment during construction. Long-term impacts would occur from the introduction of the T-7A aircraft. The number of new T-7A aircraft would be the same as potentially received for Alternative 1, but the total number of T-7A aircraft operations would increase by 25 percent over that of Alternative 1. Long-term changes in operational noise would increase in areas of incompatible land use on and adjacent to Vance AFB.

3.2.2.2.1 Vance AFB

3.2.2.2.1.1 Construction Noise

Construction-related noise levels and impacts for Alternative 2 would be the same as those described for Alternative 1.

3.2.2.2.1.2 Aircraft Noise

For Alternative 2, approximately 296,183 total flight operations (i.e., single take-offs, landings, and patterns combined) would be performed at Vance AFB each year, with an average of almost 811 flight operations per day. Most of Vance AFB's annual flight operations (70 percent) would be performed by T-6 Texan II aircraft homebased at the installation. T-7A aircraft (single-engine jet trainer; capable of supersonic flight) would represent about 29 percent of the annual flight operations. No T-38C aircraft would remain after the full complement of T-7A aircraft is received and operational. T-1 aircraft from Vance AFB will be retired prior to the introduction of T-7A aircraft at Vance AFB and are therefore not carried forward in the noise modeling results for Alternative

2. The balance of aircraft operations at Vance AFB would be attributed to various transient aircraft types accounting for less than 1 percent of total annual flight operations. The current operational levels for T-6 and transient aircraft were used for the Alternative 2 noise analysis.

All 3,481 annual nighttime flight operations at Vance AFB would be performed by the T-7A and T-6 aircraft homebased at the installation, and these nighttime flight operations represent approximately 1.2 percent of total annual daytime and nighttime flight operations at the installation. The 873 annual nighttime T-7A flight operations would represent approximately 25 percent of the total annual nighttime flight operations performed by all aircraft types at Vance AFB.

The T-7A aircraft are proposed for arrival and immediate use beginning in 2032. The increase in T-7A aircraft and associated training operations would be incremental through 2033. In 2034, the number of T-7A aircraft operations would stabilize. During the period from 2032 through 2033, the area and population within the 65 dB DNL contour would increase incrementally.

On a per aircraft basis, T-7A aircraft would perform 25 percent more aircraft operations than Alternative 1 using the same number (68) of T-7A aircraft. The annual operations would total 87,264, or nearly 35 percent more the 2023 Baseline.

Like Alternative 1, all existing and proposed maintenance run-up activity was included in the noise modeling. Noise levels on and adjacent to Vance AFB were calculated based on full implementation of Alternative 2 in 2034. **Figure 3-5** shows the modeled DNL contours and bands for Alternative 2. With full implementation of Alternative 2 in 2034, the 65 dB DNL contour at Vance AFB would extend approximately 3.5 miles from the south end and 4.6 miles from the north end of Runway 17R/35L, 1.6 miles east of Runway 17L/35R, and about 2.5 miles west of Runway 17R/35L.

Table 3-28 and **Table 3-29** provide the land acreage and population exposed to DNL of at least 65 dB for Alternative 2 at Vance AFB, respectively. On- and off-installation acreage contained within the 65 and higher dB DNL contours would be approximately 1,832 and 11,637 acres, respectively. Alternative 2 would expose 378 people on installation and 3,946 people off installation to a DNL of at least 65 dB.

Table 3-28. Acreage within DNL Contour Bands for Alternative 2 and Change in Acreage from the No Action Alternative at Vance AFB

DNL Contour Band (dB)	On-Installation Acreage	Off-Installation Acreage	Total Acreage	Change in On-Installation Acreage	Change in Off-Installation Acreage	Change in Total Acreage
65 to 70	156	7,627	7,783	25	3,455	3,480
70 to 75	95	2,541	2,636	-30	520	490
75 to 80	405	1,142	1,547	-98	308	210
≥80	1,176	327	1,503	213	181	394
Total	**1,832**	**11,637**	**13,469**	**110**	**4,464**	**4,574**

Source: HMMH 2025
Note: DNL bands are exclusive of upper bounds.

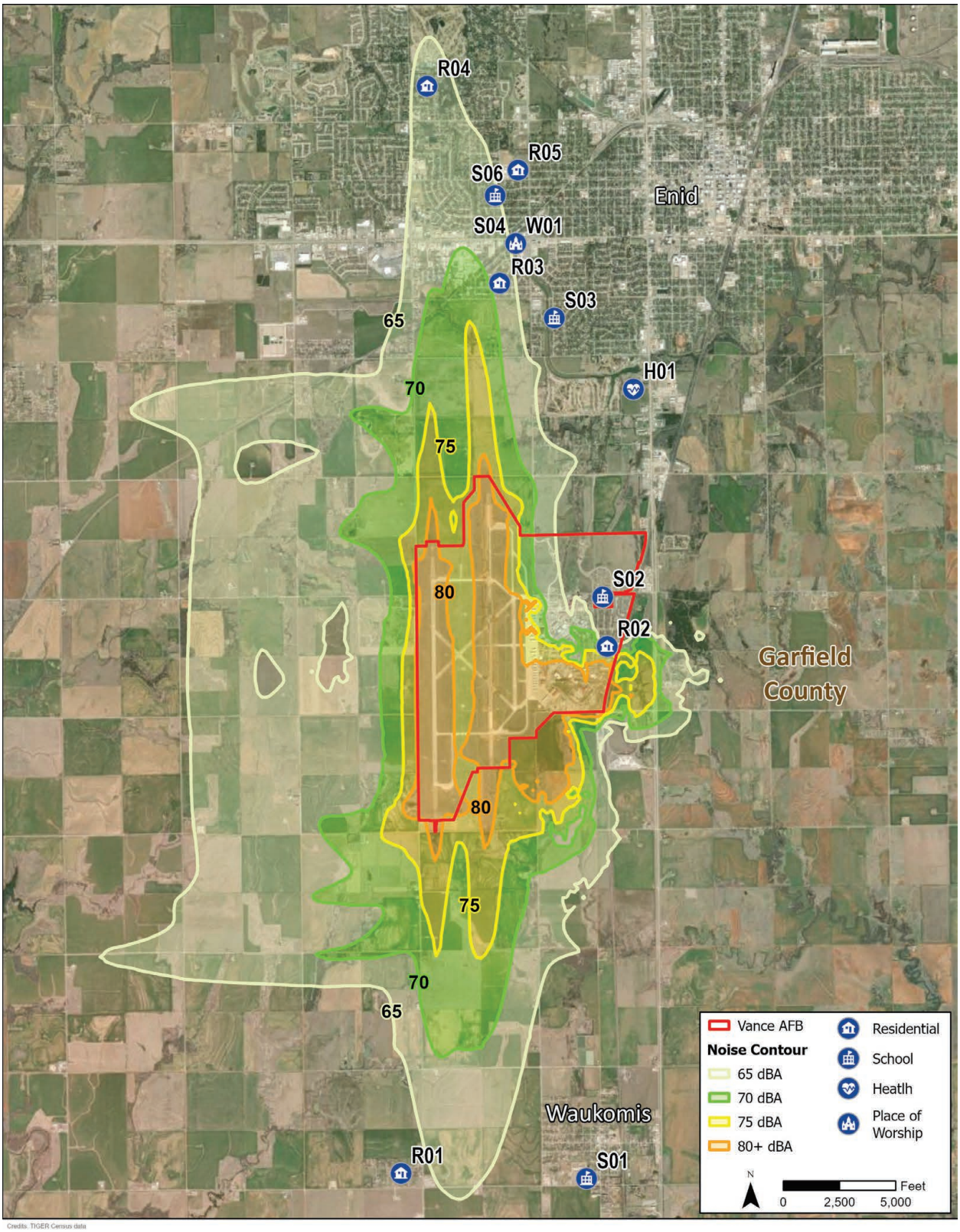


Figure 3-5. Aircraft Noise Contour Bands for Alternative 2 at Vance AFB

Table 3-29. Estimated Population within DNL Contour Bands for Alternative 2 and Change in Population from the No Action Alternative at Vance AFB

DNL Contour Band (dB)	On-Installation Population	Off-Installation Population	Total Population	Change in On-Installation Population	Change in Off-Installation Population	Change in Total Population
65 to 70	103	3,569	3,672	-39	1,625	1,586
70 to 75	89	366	455	39	219	258
75 to 80	81	11	92	75	1	76
≥80	105	0	105	105	0	105
Total	**378**	**3,946**	**4,324**	**180**	**1,845**	**2,025**

Source: HMMH 2025
Notes: 1. Estimated population based on area within individual census blocks at full implementation of Alternative 2 with the full complement of T-7A aircraft.
2. DNL bands are exclusive of upper bounds.

Population exposed to DNL of at least 80 dB would have a PHL. The population estimation method, described in **Section 3.2,** yields no people off-installation who would be exposed to DNL of at least 80 dB. Although the population estimation method results in 105 residents on-installation that would be within the 80 or greater dB DNL contour, the noise contour map in **Figure 3-5** shows that none of the on-installation family housing is within this contour. See **Section 3.2.2.1.1.3** for further analysis on PHL.

The additional 4,464 acres and 1,845 people off-installation would constitute an expansion primarily on the west and north sides of the airfield. These newly exposed areas encompass numerous land uses, including residential, commercial, undeveloped, and agricultural.

Table 3-30 provides the DNL for the 13 POI for Alternative 2. Two of the five residential areas, R03 and R04, would be exposed to DNL greater than 65 dB and would be considered incompatible land uses. The other 11 POI would be exposed to DNL less than 65 dB.

Table 3-30. Overall DNL at Representative Locations for Alternative 2 at Vance AFB

ID	Representative Location	No Action Alternative DNL (dB)	Alternative 2 DNL (dB)	Change in DNL (dB)
H01	INTEGRIS Bass Behavioral Health - Meadowlake	55.7	57.5	+1.8
R01	Representative of residences west of Waukomis	58.4	61.7	+3.3
R02	Representative of southern on-installation housing (Bass Drive)	59.2	63.2	+4.0
R03	Representative of residences on Indian Drive, Enid	**66.4**	**68.0**	+1.6
R04	Representative of residences on Lisa Lane, Enid	62.8	**66.6**	+3.8
R05	Representative of residences on West Maple Avenue, Enid	59.7	62.1	+2.4
S01	Waukomis Elementary-Middle School	56.0	57.9	+1.9
S02	Eisenhower Elementary School	59.1	60.8	+1.7
S03	Hayes Elementary School	58.3	60.2	+1.9
S04	Emmanuel Christian School	62.0	64.1	+2.1
S05	Pleasant Vale Elementary School	<45	<45	+0.1
S06	Hoover Elementary School	63.2	**65.5**	+2.3
W01	Emmanuel Baptist Church	62.0	64.1	+2.1

Source: HMMH 2025
Note: **Bold** values indicate DNL greater than or equal to 65 dB.

Figure 3-4 shows a comparison of the Vance AFB 65 dB DNL contours modeled for each scenario (i.e., 2023 Baseline; Alternatives 1, 2, and 3; and the No Action Alternative). Aircraft DNL less than 65 dB is generally compatible with all land uses. The Alternative 2 65 dB DNL contour would extend beyond the corresponding 2023 Baseline contour by 1.6 miles to the west, 2.5 miles to the north, and about 500 feet to the east. To the south, the 65 dB DNL contour would decrease by about 1.7 miles.

Based on the increased incompatible land use largely associated with the residential areas to the north of Vance AFB, between Alternative 2 and both the 2023 Baseline and the No Action Alternative contours, the implementation of Alternative 2 would result in a significant impact due to aircraft noise.

3.2.2.2.1.3 Supplemental Metrics Analyses

The supplemental metrics required analyses of noise exposure relating to potential noise effects, including speech interference, classroom learning interference, sleep disturbance, and hearing loss. These analyses focus on specific POI in the vicinity of Vance AFB that are described in **Section 3.2.2.1.1**.

Speech Interference. **Table 3-31** provides the number of speech interference events per daytime hour for Alternative 2. Alternative 2 would cause between 0 and 2.1 additional speech-interfering events per daytime hour across the relevant POI as compared to the No Action Alternative. The greatest number of events occurring would be 4.5 in the area around R04 representing residences on Lisa Lane in Enid.

Table 3-31. Potential for Speech Interference for Alternative 2 at Vance AFB

ID	Representative Location	No Action Alternative Events per Daytime Hour	Alternative 2 Events per Daytime Hour	Change in Events per Daytime Hour
H01	INTEGRIS Bass Behavioral Health - Meadowlake	0.2	0.3	+0.1
R01	Representative of residences west of Waukomis	1.5	2.4	+0.9
R02	Representative of southern on-installation housing (Bass Drive)	1.5	2.3	+0.8
R03	Representative of residences on Indian Drive, Enid	3.1	3.6	+0.5
R04	Representative of residences on Lisa Lane, Enid	2.4	4.5	+2.1
R05	Representative of residences on West Maple Avenue, Enid	3.0	3.8	+0.8
S01	Waukomis Elementary-Middle School	0.2	2.1	+1.9
S02	Eisenhower Elementary School	2.6	2.3	-0.3
S03	Hayes Elementary School	0.4	1.6	+1.2
S04	Emmanuel Christian School	3.0	3.6	+0.6
S05	Pleasant Vale Elementary School	0.2	0.2	0
S06	Hoover Elementary School	2.7	3.4	+0.7
W01	Emmanuel Baptist Church	3.0	3.6	+0.6

Source: HMMH 2025
Note: $NA75L_{max}$; POI assessed for daytime (7 a.m. to 10 p.m.).

Classroom Speech Interference. The L_{eq} for the hours of classroom instruction assumes evenly distributed flight and run-up operations throughout the day for whole hour increments. A school's operating hours is used as the surrogate for the hours of classroom instruction. For the schools identified for this project, 7 hours was determined to be most common, thus $L_{eq(7h)}$ or "school-day L_{eq}" is used to screen the school noise exposures and calculate number of events per hour and seconds per hour of disturbance. The results for each school for Alternative 2 are presented in **Table 3-32**.

Table 3-32. Screening for Potential Classroom Speech Interference for Alternative 2 at Vance AFB

ID	Representative School	School-Day $L_{eq(7h)}$ (dB)
S01	Waukomis Elementary-Middle School	59.5
S02	Eisenhower Elementary School	**62.5**
S03	Hayes Elementary School	**61.8**
S04	Emmanuel Christian School	**65.6**
S05	Pleasant Vale Elementary School	41.2
S06	Hoover Elementary School	**67.1**

Source: HMMH 2025
Note: **Bold** values exceed the 60 dB $L_{eq(7h)}$ screening threshold.

Four schools, POI S02, S03, S04, and S06, would exceed the threshold of 60 dB and require additional analysis for the number of events and time of classroom speech interference. POI S01 and S05 do not exceed the screening metric of 60 dB and therefore are not included in additional analysis for NA and TA. The metrics for the number of events and time at or above the specified thresholds for the affected schools are provided in **Table 3-33** and **Table 3-34**, respectively. The four schools (S02, S03, S04, and S06) would experience approximately 1.6 to 3.6 events per hour; three of the schools would experience an increase in average hourly events as compared to the No Action Alternative. The three schools would have an increase of about 30 seconds per hour in classroom disturbance (at or) above 75 dB L_{max}.

Table 3-33. Number of Events of Classroom Speech Interference for Alternative 2 at Vance AFB

ID	Representative School	No Action Alternative Conditions $NA75L_{max}$ (events/hour)	Alternative 2 $NA75L_{max}$ (events/hour)	Change in $NA75L_{max}$ (events/hour)
S02	Eisenhower Elementary School	2.59	2.31	-0.28
S03	Hayes Elementary School	0.40	1.61	+1.21
S04	Emmanuel Christian School	3.02	3.55	+0.53
S06	Hoover Elementary School	2.67	3.39	+0.72

Source: HMMH 2025
Note: **$NA75L_{max}$** is the number of events at or above the 75 dB L_{max} threshold.

Table 3-34. Time of Classroom Speech Interference for Alternative 2 at Vance AFB

ID	Representative School	No Action Alternative Conditions $TA75L_{max}$ (seconds/hour)	Alternative 2 $TA75L_{max}$ (seconds/hour)	Change in $TA75L_{max}$ (seconds/hour)
S02	Eisenhower Elementary School	51	26	-25
S03	Hayes Elementary School	3	29	+26
S04	Emmanuel Christian School	31	62	+31
S06	Hoover Elementary School	33	67	+34

Source: HMMH 2025
Note: **$TA75L_{max}$** is the time at or above the 75 dB L_{max} threshold.

Sleep Disturbance. **Table 3-35** provides the number of average annual hourly nighttime events that would meet or exceed 90 dB SEL at the five residential POI for Alternative 2. Alternative 2 would cause an increase of less than 0.1 potentially sleep disturbing events per hour, on average, across all residential POI, relative to the No Action Alternative.

Table 3-35. Potential for Sleep Disturbance for Alternative 2 at Vance AFB

ID	Name	No Action Alternative Conditions Average Hourly Nighttime Events (NA90SEL)	Alternative 2 Average Hourly Nighttime Events (NA90SEL)	Change in Average Hourly Nighttime Events (NA90SEL)
R01	Representative of residences west of Waukomis	0.1	<0.05	<-0.05
R02	Representative of southern on-installation housing (Bass Drive)	0	<0.05	<0.05
R03	Representative of residences on Indian Drive, Enid	0.1	0.1	0
R04	Representative of residences on Lisa Lane, Enid	0.2	0.1	-0.1
R05	Representative of residences on West Maple Avenue, Enid	0.1	0.1	0

Source: HMMH 2025
Note: **NA90SEL** is the number of events at or above the 90 dB SEL.

The specified average number of events noted would not likely occur in evenly spaced increments throughout the night, nor would they likely occur every night. Nighttime flights would occur as the training syllabus directs and would likely occur in “grouped” sessions, meaning that several overflights may occur during a short period of time on one specific night. It is not possible to forecast when nighttime events would occur due to scheduling changes, aircraft maintenance, weather, and other unpredictable events; therefore, this analysis portrays the impact with operations averaged throughout the night, for each night. Vance AFB would operate night flights in a manner to minimize nighttime aircraft noise to the community, to the maximum extent practicable.

PHL. No off-installation populations would be exposed to a DNL of at least 80 dB; therefore, the PHL is not anticipated. As noted above, the noise contour map in **Figure 3-5** shows that none of the on-installation family housing is within this contour and PHL is not anticipated.

Damage to Structures. Individual aircraft events at Vance AFB would not generate impulsive-style aircraft noise levels above 140 dB; therefore, damage to structures from Alternative 2 would not likely occur.

3.2.2.2.2 SUA

For Alternative 2, sorties within the modeled MOAs and MTRs differ from the 2023 Baseline due to the replacement of T-38C aircraft with T-7A aircraft, the cessation of T-1 operations at Vance AFB, and the increase in operations as compared to the No Action Alternative. T-6 sorties would remain the same as current conditions. Due to current operational hours of the SUA, night operations would stay around the airfield and not enter the MOAs and MTRs.

The L_{dnmr} would be less than 65 dB for all MTRs and modeled results for the for each MTR are less than 56 dB for Alternative 2. Similarly, for Alternative 2 each of the MOAs were modeled with the highest L_{dnmr} for any SUA overlap between a MOA and MTR being 69.3 dB. Therefore, any increases in noise associated with SUA sorties would not introduce any incompatibilities and would not be significant.

3.2.2.3 Alternative 3

Alternative 3 would result in short-term, not significant, and long-term, continued significant, adverse impacts on the noise environment. Short-term impacts would be due to noise generated by heavy equipment during construction. Long-term impacts would occur from the introduction of the T-7A aircraft. The number of new T-7A aircraft would be increased and the total number of operations would increase also, compared to Alternatives 1 and 2. Long-term changes in operational noise would increase in areas of incompatible land use on and adjacent to Vance AFB.

3.2.2.3.1 Vance AFB

3.2.2.3.1.1 Construction Noise

Construction noise levels and impacts for Alternative 3 would be the same as those described for Alternative 1. However, construction-related noise for Alternative 3 could last slightly longer than Alternative 1 due to the potential construction of additional T-7A shelters on the Vance AFB aircraft parking ramp to accommodate the larger number of T-7A aircraft.

3.2.2.3.1.2 Aircraft Noise

For Alternative 3, an estimated 310,554 total flight operations (i.e., single take-offs, landings, and patterns combined) would be performed at Vance AFB each year, with an average of about 850 flight operations per day. Most of Vance AFB's annual flight operations (67 percent) would be performed by T-6 Texan II aircraft homebased at the installation. T-7A aircraft would represent about 33 percent of the annual flight operations. No T-38C aircraft would remain after the full complement of T-7A aircraft is

received and operational. T-1 aircraft from Vance AFB will be retired prior to the introduction of T-7A aircraft at Vance AFB and are therefore not carried forward in the noise modeling results for Alternative 3. The balance of aircraft operations at Vance AFB would be attributed to various transient aircraft types accounting for less than 1 percent of total annual flight operations. The current operational levels for T-6 and transient aircraft were used for the Alternative 3 noise analysis.

All 3,624 annual nighttime flight operations at Vance AFB would be performed by the T-7A and T-6 aircraft homebased at the installation, and these nighttime flight operations represent approximately 1.2 percent of total annual daytime and nighttime flight operations at the installation. The 1,016 annual nighttime T-7A flight operations would represent approximately 28 percent of the total annual nighttime flight operations performed by all aircraft types at Vance AFB.

The T-7A aircraft are proposed for arrival and immediate use beginning in 2032. The increase in T-7A aircraft and associated training operations would be incremental through 2034. In 2035, the number of T-7A aircraft operations would stabilize to the full rate of Alternative 3 implementation. During the period from 2032 through 2034, the area and population within the 65 dB DNL contour would increase incrementally.

On a per aircraft basis, T-7A aircraft would perform similar numbers of arrivals, departures, and closed patterns as current T-38C aircraft. Due to the increase from 63 T-38C aircraft to 99 T-7A aircraft, annual flight operations would increase to 101,635, which is approximately 57 percent more than the 2023 Baseline.

Like Alternative 1, all existing and proposed maintenance run-up activity was included in the noise modeling. Noise levels on and adjacent to Vance AFB with the proposed T-7A aircraft were calculated based on full implementation of Alternative 3 in 2035. **Figure 3-6** shows the modeled DNL contours for Alternative 3. With full implementation of Alternative 3 in 2035, the 65 dB DNL contour at Vance AFB would extend approximately 3.6 miles from the south end and 4.9 miles from the north end of Runway 17C/35C, 3 miles east from the end of Runway 17L/35R, and almost 1.5 miles west of Runway 17R/35L. Aircraft DNL less than 65 dB is generally compatible with all land uses.

Table 3-36 and **Table 3-37** provide the land acreage and population exposed to DNL of at least 65 dB for Alternative 3 at Vance AFB, respectively. On- and off-installation acreage contained within the 65 dB DNL contour would be approximately 1,848 and 12,659 acres, respectively. Alternative 3 would expose 4,470 people off installation to DNL of at least 65 dB; 2,369 people more than the No Action Alternative.

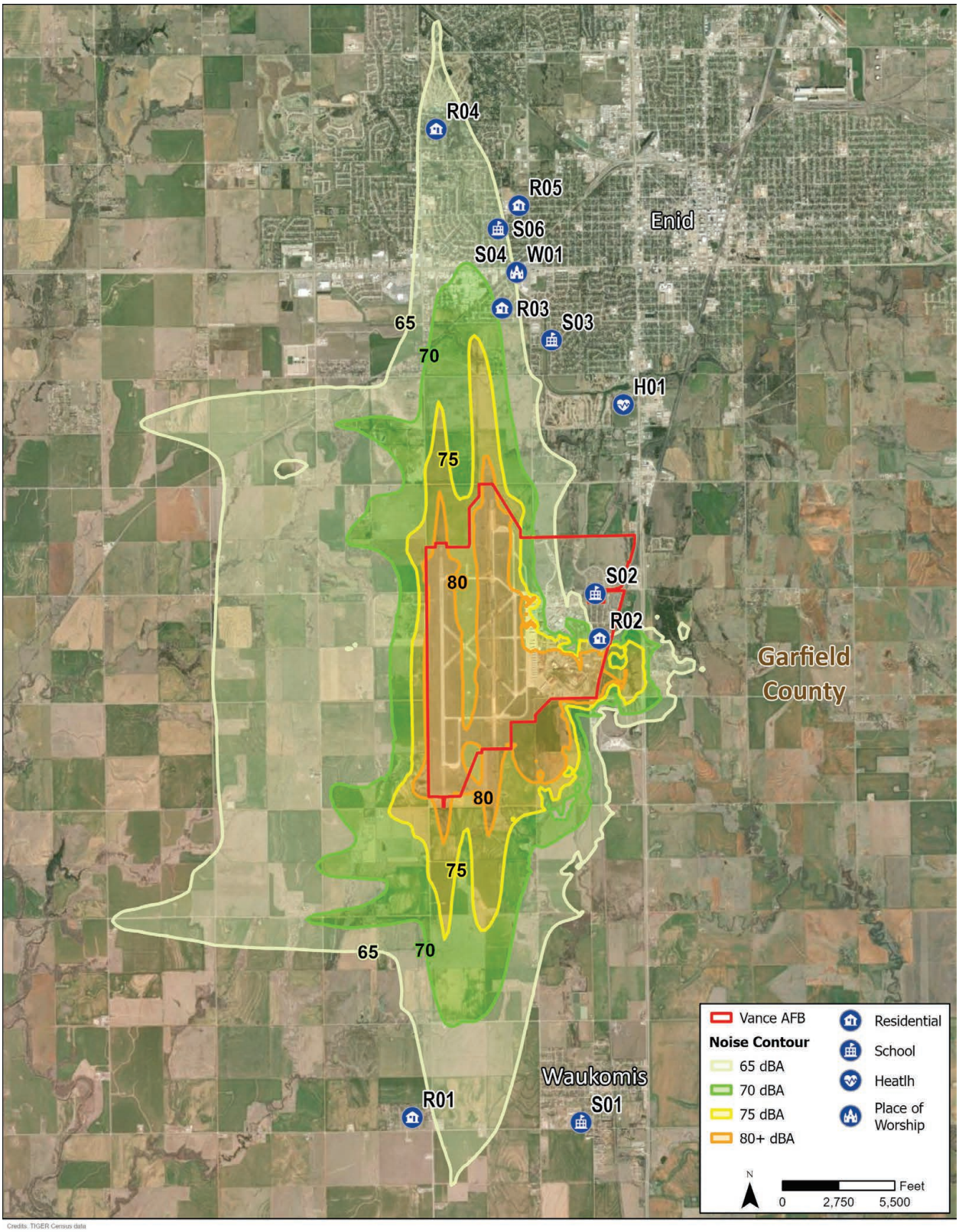


Figure 3-6. Aircraft Noise Contour Bands for Alternative 3 at Vance AFB

Table 3-36. Acreage within DNL Contour Bands for Alternative 3 and Change in Acreage from the No Action Alternative at Vance AFB

DNL Contour Band (dB)	On-Installation Acreage	Off-Installation Acreage	Total Acreage	Change in On-Installation Acreage	Change in Off-Installation Acreage	Change in Total Acreage
65 to 70	161	8,157	8,318	30	3,985	4,015
70 to 75	97	2,802	2,899	-28	781	753
75 to 80	348	1,286	1,634	-155	452	297
≥80	1,242	414	1,656	279	268	547
Total	**1,848**	**12,659**	**14,507**	**126**	**5,486**	**5,612**

Source: HMMH 2025
Note: DNL bands are exclusive of upper bounds.

Table 3-37. Estimated Population within DNL Contour Bands for Alternative 3 and Change in Population from the No Action Alternative at Vance AFB

DNL Contour Band (dB)	On-Installation Population	Off-Installation Population	Total Population	Change in On-Installation Population	Change in Off-Installation Population	Change in Total Population
65 to 70	104	3,906	4,010	-38	1,962	1,924
70 to 75	88	2	630	38	395	433
75 to 80	81	22	103	75	12	87
≥80	115	0	115	115	0	115
Total	**388**	**4,470**	**4,858**	**190**	**2,369**	**2,559**

Source: HMMH 2025
Notes: 1. Estimated population based on area within individual census blocks at full implementation of Alternative 3 with the full complement of T-7A aircraft.
2. DNL bands are exclusive of upper bounds.

Population exposed to DNL of at least 80 dB would have a PHL. The population estimation method, described in **Section 3.2,** yields no people off installation who would be exposed to DNL of at least 80 dB; however, 115 people on installation are estimated to be within the 80 dB DNL contour. However, the noise contour map in **Figure 3-6** shows that none of the on-installation family housing is within this contour. See **Section 3.2.2.1.1.3** for further analysis on PHL.

Table 3-38 provides the DNL for the 13 POI for Alternative 3. Two of the five residential areas would be exposed to DNL greater than 65 dB and would be considered incompatible land uses. The Hoover Elementary School (S06) would be exposed to DNL greater than 65 dB. The other 10 POIs would be exposed to DNL less than 65 dB.

Table 3-38. Overall DNL at Representative Locations for Alternative 3 at Vance AFB

ID	Representative Location	No Action Alternative DNL (dB)	Alternative 3 DNL (dB)	Change in DNL (dB)
H01	INTEGRIS Bass Behavioral Health - Meadowlake	55.7	57.8	+2.1
R01	Representative of residences west of Waukomis	58.4	62.4	+4.0
R02	Representative of southern on-installation housing (Bass Drive)	59.2	63.7	+4.5
R03	Representative of residences on Indian Drive, Enid	**66.4**	**68.6**	+2.2
R04	Representative of residences on Lisa Lane, Enid	62.8	**67.3**	+4.5
R05	Representative of residences on West Maple Avenue, Enid	59.7	62.6	+2.9
S01	Waukomis Elementary-Middle School	56.0	58.3	+2.3
S02	Eisenhower Elementary School	59.1	61.2	+2.1
S03	Hayes Elementary School	58.3	60.7	+2.4
S04	Emmanuel Christian School	62.0	64.6	+2.6
S05	Pleasant Vale Elementary School	<45	<45	+0.1
S06	Hoover Elementary School	63.2	**66.1**	+2.9
W01	Emmanuel Baptist Church	62.0	64.6	+2.6

Source: HMMH 2025
Note: **Bold** values indicate DNL greater than or equal to 65 dB.

The five residential areas would all be exposed to DNL increases between approximately 2.2 and 4.5 dB. The six schools would all be exposed to DNL increases between approximately 0.1 and 2.9 dB.

Figure 3-4 shows a comparison of the 65 dB DNL contours modeled for each scenario (i.e., 2023 Baseline; Alternatives 1, 2, and 3; and the No Action Alternative). Similar to the other action alternatives, the Alternative 3 noise contour would decrease in extent to the south of the installation but extend further north and west and include more residential area and population than shown in the 2022 AICUZ Study or current JLUS. This would result in a greater amount of incompatible land use due to aircraft noise.

3.2.2.3.1.3 Supplemental Metrics Analyses

The supplemental metrics required analyses of noise exposure relating to potential noise effects, including speech interference, classroom learning interference, sleep disturbance, and hearing loss. These analyses focus on specific POI in the vicinity of Vance AFB and are described in **Section 3.2.1.1.1**.

Speech Interference. **Table 3-39** provides the number of speech interference daytime events for Alternative 3. Alternative 3 would cause between 0.2 and 5.2 additional speech-interfering events per daytime hour across the relevant POI as compared to the No Action Alternative. The greatest number of events occurring would be 5.2 in the area around R04 representing residences on Lisa Lane in Enid.

Table 3-39. Potential for Speech Interference for Alternative 3 at Vance AFB

ID	Representative Location	No Action Alternative Events per Daytime Hour	Alternative 3 Events per Daytime Hour	Change in Events per Daytime Hour
H01	INTEGRIS Bass Behavioral Health - Meadowlake	0.2	0.3	+0.1
R01	Representative of residences west of Waukomis	1.5	2.8	+1.3
R02	Representative of southern on-installation housing (Bass Drive)	1.5	2.7	+1.2
R03	Representative of residences on Indian Drive, Enid	3.1	3.9	+0.8
R04	Representative of residences on Lisa Lane, Enid	2.4	5.2	+2.8
R05	Representative of residences on West Maple Avenue, Enid	3.0	4.1	+1.1
S01	Waukomis Elementary-Middle School	0.2	2.5	+2.3
S02	Eisenhower Elementary School	2.6	2.7	+0.1
S03	Hayes Elementary School	0.4	1.8	+1.4
S04	Emmanuel Christian School	3.0	3.9	+0.9
S05	Pleasant Vale Elementary School	0.2	0.2	0
S06	Hoover Elementary School	2.7	3.7	+1.0
W01	Emmanuel Baptist Church	3.0	3.9	+0.9

Source: HMMH 2025
Note: NA75L_{max}; POI assessed for daytime (7 a.m. to 10 p.m.).

Classroom Speech Interference. The L_{eq} for the hours of classroom instruction assumes evenly distributed flight and run-up operations throughout the day for whole hour increments. A school's operating hours are used as the surrogate for the hours of classroom instruction. For the schools identified for this project, 7 hours was determined to be most common, thus $L_{eq(7h)}$ or "school-day L_{eq}" is used to screen the school noise exposures and calculate number of events per hour and seconds per hour of disturbance. The results for each school for Alternative 3 are presented in **Table 3-40**.

Table 3-40. Screening for Potential Classroom Speech Interference for Alternative 3 at Vance AFB

ID	Representative School	School-Day $L_{eq(7h)}$ (dB)
S01	Waukomis Elementary-Middle School	59.8
S02	Eisenhower Elementary School	**62.9**
S03	Hayes Elementary School	**62.2**
S04	Emmanuel Christian School	**66.1**
S05	Pleasant Vale Elementary School	41.2
S06	Hoover Elementary School	**67.7**

Source: HMMH 2025
Note: **Bold** values exceed the 60 dB $L_{eq(7h)}$ screening threshold.

Four schools, POI S02, S03, S04, and S06, would exceed the threshold of 60 dB and require additional analysis for the number of events and time of classroom speech interference. POI S01 and S05 do not exceed the screening metric of 60 dB and therefore are not included in additional analysis for NA and TA. The metrics for the number of events and time at or above the specified thresholds for the affected schools are provided in **Table 3-41** and **Table 3-42**, respectively. The four affected schools would experience approximately 1.85 to 3.86 events per hour. The three schools would have an increase of about 30 to 50 seconds per hour in classroom disturbance (at or) above 75 dB L_{max}.

Table 3-41. Number of Events of Classroom Speech Interference for Alternative 3 at Vance AFB

ID	Representative School	No Action Alternative Conditions $NA75L_{max}$ (events/hour)	Alternative 3 $NA75L_{max}$ (events/hour)	Change in $NA75L_{max}$ (events/hour)
S02	Eisenhower Elementary School	2.59	2.69	+0.10
S03	Hayes Elementary School	0.40	1.85	+1.45
S04	Emmanuel Christian School	3.02	3.86	+0.84
S06	Hoover Elementary School	2.67	3.73	+1.06

Source: HMMH 2025
Note: **$NA75L_{max}$** is the number of events at or above the 75 dB L_{max} threshold.

Table 3-42. Time of Classroom Speech Interference for Alternative 3 at Vance AFB

ID	Representative School	No Action Alternative Conditions $TA75L_{max}$ (seconds/hour)	Alternative 3 $TA75L_{max}$ (seconds/hour)	Change in $TA75L_{max}$ (seconds/hour)
S02	Eisenhower Elementary School	51	29	-22
S03	Hayes Elementary School	3	33	+30
S04	Emmanuel Christian School	31	70	+39
S06	Hoover Elementary School	33	76	+43

Source: HMMH 2025
Note: **$TA75L_{max}$** is the time at or above the 75 dB L_{max} threshold.

Sleep Disturbance. **Table 3-43** provides the number of average annual hourly nighttime events that would meet or exceed 90 dB SEL at the five residential POI for Alternative 3. Alternative 3 would cause an increase of less than 0.1 potentially sleep disturbing events per hour, on average, across all residential POI, relative to the No Action Alternative.

Table 3-43. Potential for Sleep Disturbance for Alternative 3 at Vance AFB

ID	Name	No Action Alternative Conditions Average Hourly Nighttime Events (NA90SEL)	Alternative 3 Average Hourly Nighttime Events (NA90SEL)	Change in Average Hourly Nighttime Events (NA90SEL)
R01	Representative of residences west of Waukomis	0.1	<0.05	<-0.05
R02	Representative of southern on-installation housing (Bass Drive)	0	<0.05	<0.05
R03	Representative of residences on Indian Drive, Enid	0.1	0.1	0
R04	Representative of residences on Lisa Lane, Enid	0.2	0.1	-0.1
R05	Representative of residences on West Maple Avenue, Enid	0.1	0.1	0

Source: HMMH 2025
Note: **NA90SEL** is the number of events at or above the 90 dB SEL.

The specified average number of events noted would not likely occur in evenly spaced increments throughout the night, nor would they likely occur every night. Nighttime flights would occur as the training syllabus directs and would likely occur in "grouped" sessions, meaning that several overflights may occur during a short period of time on one specific night. It is not possible to forecast when nighttime events would occur due to scheduling changes, aircraft maintenance, weather, and other unpredictable events; therefore, this analysis portrays the impact with operations averaged throughout the night, for each night. Vance AFB would operate night flights in a manner to minimize nighttime aircraft noise to the community, to the maximum extent practicable.

PHL. No off-installation populations would be exposed to a DNL of a least 80 dB; therefore, the PHL is not anticipated. As noted above, the noise contour map in **Figure 3-6** shows that none of the on-installation family housing is within this contour and PHL is not anticipated.

Damage to Structures. Individual aircraft events at Vance AFB would not generate impulsive-style aircraft noise levels above 140 dB; therefore, damage to structures from Alternative 3 would not likely occur.

3.2.2.3.2 SUA

With Alternative 3, sorties within the modeled MOAs and MTRs differ from the 2023 Baseline due to the replacement of T-38C aircraft with T-7A aircraft, the cessation of T-1 operations at Vance AFB, and the increase in operations as compared to the No Action Alternative. T-6 sorties would remain the same as current levels. Due to current operational hours of the SUA, night operations would stay around the airfield and not enter the MOAs and MTRs.

The L_{dnmr} would be less than 65 dB for all MTRs and modeled results for the for each MTR are less than 57 dB for Alternative 3. Similarly, for Alternative 3 each of the MOAs were modeled with the highest L_{dnmr} for any SUA overlap between a MOA and MTR being 60.8 dB. Therefore, any increases in noise associated with SUA sorties would not introduce any incompatibilities and would not be significant.

3.2.2.4 No Action Alternative

No short-term noise impacts would occur because no facility construction would be implemented. As with the three action alternatives, the No Action Alternative also would result in long-term, significant, adverse noise impacts.

Ordinarily, the No Action Alternative would have identical aircraft noise exposures as the baseline noise environment presented in **Section 3.2.1**. However, as noted in **Section 3.2.2**, the NMODD data collection effort in 2024 determined that the flight tracks at Vance AFB were altered after publication of the 2022 AICUZ Study. Using the same T-38C aircraft operational numbers as presented in the 2022 AICUZ Study, updated noise contours were created for Vance AFB using the altered flight tracks. The updated noise contours generally represent the noise levels now being physically experienced in the vicinity of Vance AFB, although they also account for the divestment of T-1 aircraft from the installation, which is a reasonably foreseeable action. These noise contours best represent noise conditions for the No Action Alternative and would continue should T-7A recapitalization not occur.

As shown in **Table 3-44** and **Table 3-45**, the No Action Alternative noise exposure would decrease in off-installation areas compared to the 2023 Baseline described in **Section 3.2.1**; however, the off-installation estimated population exposed to noise levels of 65 dB DNL or greater would be approximately seven times greater. The changes in acreage and population are due to the recently altered flight tracks previously discussed, and the associated population increase leads to the conclusion that the No Action Alternative would have significant noise impacts. **Figure 3-7** shows the aircraft noise contours associated with the No Action Alternative. The extents of the No Action Alternative and 2023 Baseline contours are shown on **Figure 3-4**.

Table 3-44. Acreage within DNL Contour Bands for the No Action Alternative and Change in Acreage from the 2023 Baseline at Vance AFB

DNL Contour Band (dB)	On-Installation Acreage	Off-Installation Acreage	Total Acreage	Change in On-Installation Acreage	Change in Off-Installation Acreage	Change in Total Acreage
65 to 70	131	4,172	4,303	-142	-121	-263
70 to 75	125	2,021	2,146	-223	-595	-818
75 to 80	503	834	1,337	99	-525	-426
≥80	963	146	1,109	113	-419	-306
Total	**1,722**	**7,173**	**8,895**	**-153**	**-1,660**	**-1,813**

Source: HMMH 2025
Note: DNL bands are exclusive of upper bounds.

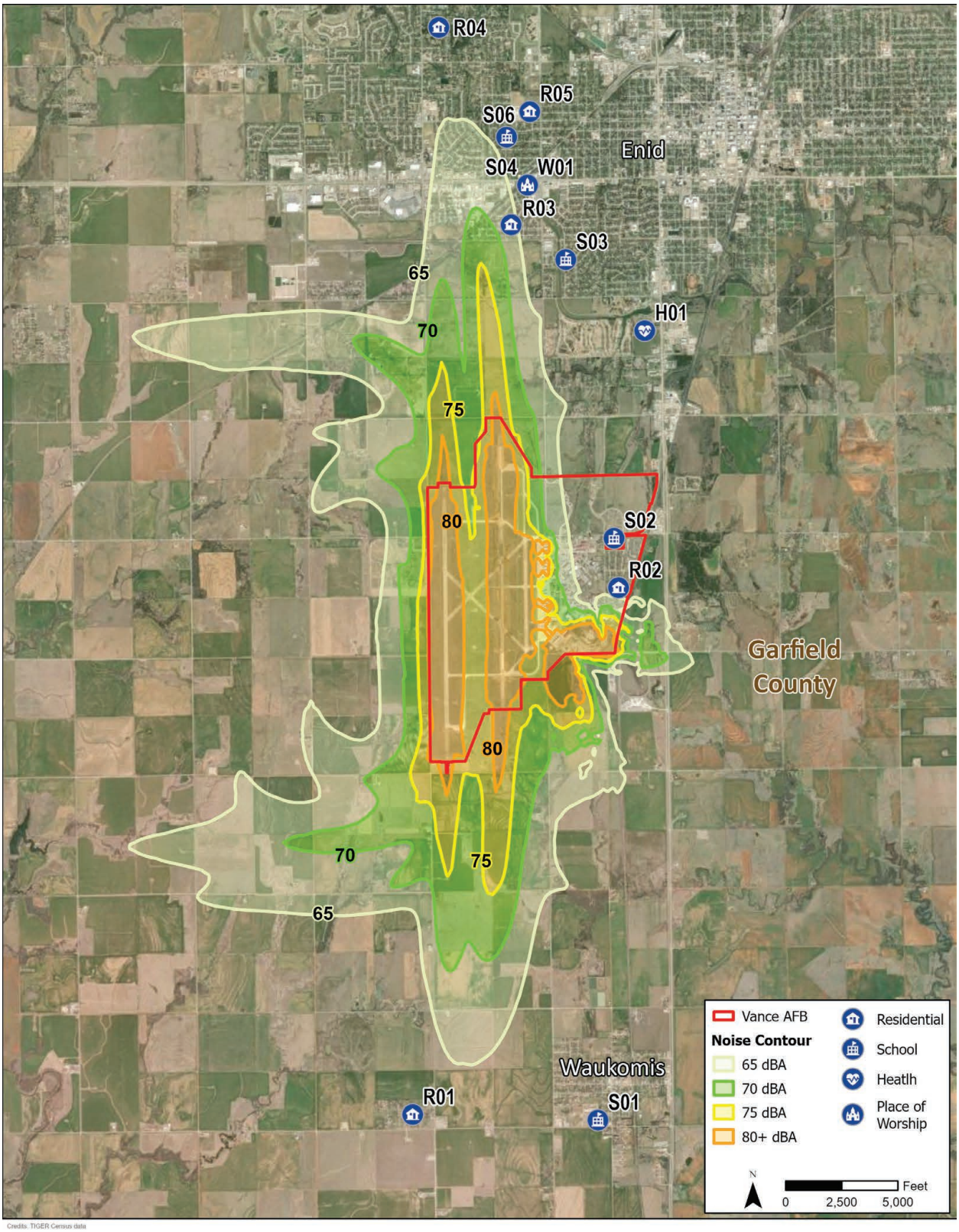


Figure 3-7. Aircraft Noise Contour Bands for the No Action Alternative at Vance AFB

Table 3-45. Estimated Population within DNL Contour Bands for the No Action Alternative and Change in Population from the 2023 Baseline at Vance AFB

DNL Contour Band (dB)	On-Installation Population	Off-Installation Population	Total Population	Change in On-Installation Population	Change in Off-Installation Population	Change in Total Population
65 to 70	142	1,944	2,086	-185	1,744	1,559
70 to 75	50	147	197	-59	60	1
75 to 80	6	10	16	-85	-2	-87
≥80	0	0	0	-8	0	-8
Total	**198**	**2,101**	**2,299**	**-337**	**1,802**	**1,465**

Source: HMMH 2025
Notes: 1. Estimated population based on area within individual census blocks with continued use of T-38C aircraft and no T-1 aircraft due to retirement.
2. DNL bands are exclusive of upper bounds.

The largest changes between the No Action Alternative and 2023 Baseline contours would be to the north and south of Vance AFB. The extents of the No Action Alternative 65 dB DNL contour would be more than 2.5 miles north of the installation boundary and a similar distance to the south. The area to the north would encompass residential land uses not previously within the 2023 Baseline 65 dB DNL band. The No Action Alternative noise contours east of Vance AFB would remain similar to the 2023 Baseline contours; however, to the west, two lobes would extend approximately 2.5 miles from the installation.

Table 3-46 provides the DNL for the 13 POI for the No Action Alternative. One of the five residential areas (R03 representing residences on Indian Drive in Enid) would be exposed to DNL greater than 65 dB and would be considered an incompatible land use. All other POI would be exposed to DNL less than 65 dB for the No Action Alternative.

Table 3-46. DNL at POI Locations for the No Action Alternative at Vance AFB

ID	On or Off Vance AFB?	Representative Location	No Action Alternative DNL (dB)
H01	Off	INTEGRIS Bass Behavioral Health - Meadowlake	55.7
R01	Off	Representative of residences West of Waukomis	58.4
R02	On	Representative of southern on-installation housing, Bass Drive	59.2
R03	Off	Representative of residences on Indian Drive, Enid	**66.4**
R04	Off	Representative of residences on Lisa Lane, Enid	62.8
R05	Off	Representative of residences on West Maple Avenue, Enid	59.7
S01	Off	Waukomis Elementary-Middle School	56.0
S02	Off	Eisenhower Elementary School	59.1
S03	Off	Hayes Elementary School	58.3
S04	Off	Emmanuel Christian School	62.0
S05	Off	Pleasant Vale Elementary School	<45
S06	Off	Hoover Elementary School	63.2
W1	Off	Emmanuel Baptist Church	62.0

Source: HMMH 2025
Note: **Bold** values indicate DNL greater than or equal to 65 dB.

3.2.2.4.1 Supplemental Metrics Analyses

Supplemental metrics exhibit noise exposure related to potential noise effects, including speech interference, classroom learning interference, sleep disturbance, and PHL. These analyses focus on specific POI in the vicinity of Vance AFB described in **Section 3.2.1.1**.

Speech Interference. **Table 3-47** provides the number of aircraft events greater than 75 dB L_{max} outdoors for relevant POI near Vance AFB that occur from 7 a.m. to 10 p.m. ($NA75L_{max,day}$).

Table 3-47. Potential for Outdoor Speech Interference for the No Action Alternative at Vance AFB

ID	Representative Location	Average Events Per Daytime Hour
H01	INTEGRIS Bass Behavioral Health - Meadowlake	0.2
R01	Representative of residences west of Waukomis	1.5
R02	Representative of southern on-installation housing (Bass Drive)	1.5
R03	Representative of residences on Indian Drive, Enid	3.1
R04	Representative of residences on Lisa Lane, Enid	2.4
R05	Representative of residences on West Maple Avenue, Enid	3.0
S01	Waukomis Elementary-Middle School	0.2
S02	Eisenhower Elementary School	2.6
S03	Hayes Elementary School	0.4
S04	Emmanuel Christian School	3.0
S05	Pleasant Vale Elementary School	0.2
S06	Hoover Elementary School	2.7
W01	Emmanuel Baptist Church	3.0

Source: HMMH 2025
Notes: $NA75L_{max}$; POI assessed for DNL daytime (7 a.m. to 10 p.m.).

Classroom Speech Interference. The L_{eq} for the hours of classroom instruction assumes evenly distributed flight and run-up operations throughout the day for whole hour increments. A school's operating hours is used as the surrogate for the hours of classroom instruction. For the schools identified for this project, 7 hours was determined to be most common, thus $L_{eq(7h)}$ or "school-day L_{eq}" is computed for screening. The results for each school are presented in **Table 3-48**.

Table 3-48. Screening for Potential Classroom Speech Interference for the No Action Alternative at Vance AFB

ID	Representative School	School-Day $L_{eq(7h)}$ (dB)
S01	Waukomis Elementary-Middle School	57.2
S02	Eisenhower Elementary School	**60.2**
S03	Hayes Elementary School	59.4
S04	Emmanuel Christian School	**62.8**
S05	Pleasant Vale Elementary School	41.1
S06	Hoover Elementary School	**63.8**

Source: HMMH 2025
Bold values exceed the 60 dB $L_{eq(7h)}$ screening threshold.

Three schools (S02, S04, and S06) would have $L_{eq(7h)}$ greater than 60 dB and warrant discussion of NA and TA. S03 also is included in the NA and TA analyses because its $L_{eq(7h)}$ would exceed 60 dB for the three action alternatives. The metrics for the number of events and time at or above the specified thresholds for the representative schools are provided in **Table 3-49.**

Table 3-49. Potential for Classroom Speech Interference for the No Action Alternative at Vance AFB

ID	Representative School	NA75L_{max} (events/hour)	TA75L_{max} (seconds/hour)
S02	Eisenhower Elementary School	2.59	51
S03	Hayes Elementary School	0.40	3
S04	Emmanuel Christian School	3.02	31
S06	Hoover Elementary School	2.67	33

Source: HMMH 2025
Notes: **NA75L_{max}** is the number of events at or above the 75 dB L_{max} threshold.
TA75L_{max} is the time at or above the 75 dB L_{max} threshold.

The duration of classroom learning interference would range from 3 seconds per hour at S03 to 51 seconds per hour at S02. Homebased T-38C departures would be the primary contributor to the interference events at each of the four schools analyzed.

Sleep Disturbance. The sleep disturbance analysis only includes the residential POI during nighttime hours (10 p.m. to 7 a.m.). Four of the five residential POI experience minor sleep disturbing events on average. Off-installation representative residential areas R01 and R03 would be exposed to 0.1 sleep disturbing events because they are underneath nighttime departure flight paths. Although on-installation POI R02 is closer to the airfield, most of its noise exposure would be from maintenance run-ups, which would not occur between 10 p.m. and 7 a.m. **Table 3-50** provides the average number of hourly nighttime sleep disturbing events.

Table 3-50. Potential for Sleep Disturbance for the No Action Alternative at Vance AFB

ID	Representative Location	Average Hourly Nighttime Events
R01	Representative of residences west of Waukomis	0.1
R02	Representative of southern on-installation housing (Bass Drive)	0
R03	Representative of residences on Indian Drive, Enid	0.1
R04	Representative of residences on Lisa Lane, Enid	0.2
R05	Representative of residences on West Maple Avenue, Enid	0.1

Source: HMMH 2025
Note: In **NA90SEL**, which is the number of events at or above the 90 dB SEL.

PHL. The 80 dB DNL contour extends beyond the boundaries of the installation but includes no residences or individuals (see **Table 3-50**); thus, an $L_{eq(24h)}$ analysis is not required for PHL, and there is no PHL for the existing conditions. Individual aircraft events at Vance AFB do not generate instantaneous noise levels above 140 dB for the off-installation population; thus, hearing damage is not anticipated from No Action Alternative conditions.

Damage to Structures. Individual aircraft events at Vance AFB do not generate impulsive-style noise levels above 140 dB; therefore, there is no potential damage to structures from aircraft noise.

3.2.2.4.2 SUA

The L_{dnmr} would be less than 65 dB for all MTRs and modeled results for the for each MTR are less than 45 dB for the No Action Alternative. Similarly, for the No Action Alternative each of the MOAs were modeled with the highest L_{dnmr} for any SUA overlap between a MOA and MTR being 47 dB.

3.2.3 Mitigation Measures

Alternatives 1, 2, and 3 and the No Action Alternative would all impose a long-term, significant, adverse impact on the noise environment around Vance AFB. The mitigation measures noted within this section would apply to each of the proposed alternatives. Recognizing that the operational characteristics of the T-7A aircraft are still in a preliminary stage, adaptive management approaches for addressing noise impacts (e.g., reduced power settings, anticipated afterburner requirements, etc.) may be implemented to reduce the ultimate noise contours and associated land use effects at Vance AFB. DAF would continue to evaluate flight characteristics for T-7A training to determine the safest, most efficient, and least intrusive operations considering both mission requirements and airspace effects.

The significant impact on noise is due to the expansion of the 65 dB DNL that would include additional residences to the north of Vance AFB, which would be an incompatible land use. Mitigation measures would include:

- Updating the AICUZ Study at an appropriate time to be determined and coordinating the results with local planners.
- Continued use of noise complaint procedures to track and respond to such complaints.
- Monitoring of noise complaint locations and times and potentially adjusting flight tracks as determined feasible.
- Evaluating and reducing power settings as feasible to decrease noise contours around Vance AFB.

3.3 Land Use

Land use refers to the human use or modification of lands for various purposes and the management of those uses. Land use classifications refer to real property descriptions that indicate either natural conditions or the types of human activity occurring on a land parcel.

Primary objectives of land use management and planning are to ensure orderly and appropriate growth and compatibility between uses among adjacent property parcels or areas. Various administrative tools (i.e., policy plans, zoning ordinances, easements, subdivision regulations, deed restrictions, and covenants) are typically used to manage the development of land and facilitate desired use patterns, including protection of specially designated or environmentally sensitive uses.

Land use classifications denote predominant uses and/or characteristics of real property to provide a basis for spatial analysis and comparisons. Natural conditions of property can be described or categorized as unimproved, undeveloped, conservation or preservation area, and natural or scenic area. Descriptive classifications for human development and activity include residential, commercial, industrial, military, agricultural, institutional, transportation, communications and utilities, and recreation.

The regulatory setting for land use includes federal, state, and local statutes, regulations, plans, policies, and programs applicable to land use management on installations and adjacent areas. Primary DAF directives and guidance applicable to the Proposed Action include the following:

Federal Interagency Committee on Urban Noise. In 1980, the Federal Interagency Committee on Urban Noise published guidelines (FICUN 1980) relating DNL to compatible land uses. This committee was composed of representatives from DoW; Transportation, Housing and Urban Development; USEPA; and the Veterans Administration. Since the issuance of these guidelines, federal agencies have generally adopted them for their noise analyses.

Following the lead of the committee, DoW and FAA adopted the concept of land use compatibility as the accepted measure of aircraft noise effect. FAA included the committee's guidelines in the Federal Aviation Regulations. Although these guidelines are not mandatory, they provide the best means for determining noise impacts in airport communities. In general, residential land uses normally are not compatible with outdoor DNL values above 65 dBA, and the extent of land areas and populations exposed to DNL of 65 dBA and higher provides the best means for assessing the noise impacts of alternative aircraft actions. In some cases, a change in noise level, rather than an absolute threshold, may be a more appropriate measure of impact.

DAF Instruction (DAFI) 32-1015, Integrated Installation Planning, and AFH 32-7084, AICUZ Program Manager's Guide. DAFI 32-1015 establishes the AICUZ discretionary program to promote compatible land use surrounding military airfields. The goal of the AICUZ program is to protect the health, safety, and welfare of people living near an airfield, while preserving the operational integrity of the defense flying mission. Components of the AICUZ program, as defined in AFH 32-7084, include CZs, APZs, hazards to air navigation (building height and obstruction criteria), and noise zones.

Installations use the AICUZ program to provide land use compatibility guidelines and recommendations to areas exposed to increased safety risks and noise near airfields. Aircraft noise zones, APZs, and height restrictions for nearby structures are usually identified in installation-specific AICUZ studies. These studies provide information on off-installation land uses and identify uses that are compatible, incompatible, or conditionally compatible (may require noise attenuation measures) with installation noise and accident zones. In accordance with AFI 32-1015, land use can be deemed incompatible with an installation if it adversely affects the utility of DAF training and readiness missions, thereby affecting the ability of an installation to fulfill its mission. Adoption or codification of AICUZ recommendations as planning measures is at the discretion of local authority.

DAFI 32-1015 also establishes the Comprehensive Planning Program, which is designed to establish a framework for land use decision making regarding development of DAF installations. The program incorporates operational, environmental, urban planning, and related considerations to identify and assess development alternatives and ensure compliance with applicable laws, regulations, and policies. Under DAFI 32-1015, all major installations are required to develop an IDP to guide land use management and decisions (DAF 2025e).

3.3.1 Affected Environment

Installation Land Use. Vance AFB completed a comprehensive IDP in 2016 to promote the installation leadership's strategic vision. The vision of the IDP is focused on the achievement of the goals and objectives for future development at the installation (Vance AFB 2016). The Proposed Action directly involves construction activities in the Flightline and Training Districts of the IDP. These areas include the airfield, taxiways, parking aprons and mission-related flightline facilities, as well as administration and training areas. Specifically, of the nine proposed projects shown on **Figure 2-1**, seven are located within the Flightline District, and two are within the Training District.

JLUS. The JLUS for Vance AFB was completed in December 2018. It included a policy committee and technical working group with representatives from the cities of Enid and Waukomis; Garfield, Grant, and Alfalfa Counties; Vance AFB; the Town of North Enid; Enid Public Schools; the Northern Oklahoma Development Authority; Vance Development Authority; and other stakeholders (City of Enid 2018).

Overall, the Vance AFB JLUS provides detailed descriptions of the types of tools that can be deployed, including advice as to when, where, and how to use them. It offers suggestions on how awareness and collaboration can be enhanced to the benefit of the communities surrounding Vance AFB and preserving the mission and capabilities of the installation. The cornerstone of the guidance provided in the study centers around the establishment of the JLUS Implementation Coordination Committee. This committee is tasked with continuing to address the issues presented in the JLUS with the involvement of Vance AFB and other stakeholders.

Some topic areas outlined in the JLUS that should be considered and require coordination in an effort to maintain a mutually beneficial relationship between the local municipalities and Vance AFB include Energy Development, Transportation, Land Use, Natural Resources, Building Codes, Public Services, Housing, Economic Development, Population Trends, Airfield/Flight Operations, and Noise.

***Vance AFB AICUZ Study*.** The most recent AICUZ study for Vance AFB was completed in June 2022 (Vance AFB 2022a), which identified off-installation land use within CZs, APZs, and the 65 dB DNL noise contour. The 2022 AICUZ Study was an update of the 2013 AICUZ Study Amendment for Vance AFB. It provided new noise contours with an updated description for the potential beddown of the T-7A aircraft.

As noted in **Section 3.2.1.1.2.1**, the noise exposures presented in the 2022 AICUZ Study do not represent the 2023 Baseline noise environment in the areas around Vance AFB because of the closure of Runway 17C/35C in 2023. In support of this EIS, the 2023 Baseline was modeled using the same number of aircraft operations and flight

tracks as the 2022 AICUZ Study but moving the center runway operations to other runways. The resultant noise exposures are presented in **Section 3.2.1.1.1** as the 2023 Baseline. Because there are no proposed changes to the CZ or APZs associated with Vance AFB as part of this action, those are not discussed within this section.

Airfield Environs Overlay District. Various land use and zoning stakeholders and governing bodies surround the installation, including the city of Enid as a prime stakeholder in establishing land use regulations and oversight. An Airfield Environs Overlay District was developed with a regulatory framework to support the mission of Vance AFB and protect the basic private property rights of surrounding landowners. Certain land uses are prohibited or restricted within this district to minimize noise and safety hazards. The Overlay District also specifies acceptable noise levels for various land uses. The Overlay District supplements the regulations of underlying zoning districts and prevails if there is a conflict between the two.

***2023 Baseline Noise Contours*.** The 2023 Baseline noise contours developed for this EIS (presented in **Section 3.2.1.1**) are shown along with existing land uses in **Figure 3-8**. Land use data was obtained from the city of Enid for parcels within the noise contours for this analysis. The off-installation land uses covered by the 2023 Baseline noise contours are presented in **Table 3-51**. The largest land use covered by the 65 db DNL noise contour is the Open/Recreation/Agriculture/Low-Density Residential land use at over 94 percent, and the Residential land use accounts for 4.4 percent of the off-installation land area.

Overall, the 2023 Baseline noise contours, which cover a total of 8,790 acres off-installation, covers less area than the 2022 AICUZ noise contours, which encompassed 10,829 acres (Vance AFB 2022a). The two sets of noise contours also cover different areas surrounding the installation. **Table 3-16** provides the estimated on- and off-installation population within the 65 dB DNL and greater noise zones. Approximately 834 on- and off-installation people are exposed to a DNL of 65 dB or greater.

Table 3-51. Vance AFB Off-Installation Land Uses within the 2023 Baseline Noise Contours

Category	Noise Zones (acres)				
	65 to 70 dB DNL	70 to 75 dB DNL	75 to 80 dB DNL	Greater than 80 dB DNL	Total Acreage
Residential	169.6	173.4	45.3	0.0	**388.3**
Commercial	51.8	15.8	4.6	0.0	**72.2**
Open/Recreation/Agriculture/Low-Density Residential	4,027.1	2,403.0	1,306.0	559.7	**8,295.8**
Exempt	7.5	0.3	0.6	2.2	**10.6**
Other	9.7	13.8	<0.1	0.0	**23.5**
Total	**4,265.7**	**2,606.3**	**1,356.5**	**561.9**	**8,790.4**

Sources: HMMH 2025, City of Enid 2025
Note: The 2023 Baseline noise contour acreage presented in this table with a total of 8,790 acres over various land use categories differs slightly from the 8,833 acres noted in the Final NMODD (HMMH 2025); however, this may be due to different layers used and how water features and other land use elements are categorized. For the purpose of understanding the predominant land uses in the noise contours, this difference does not affect the results or conclusions.

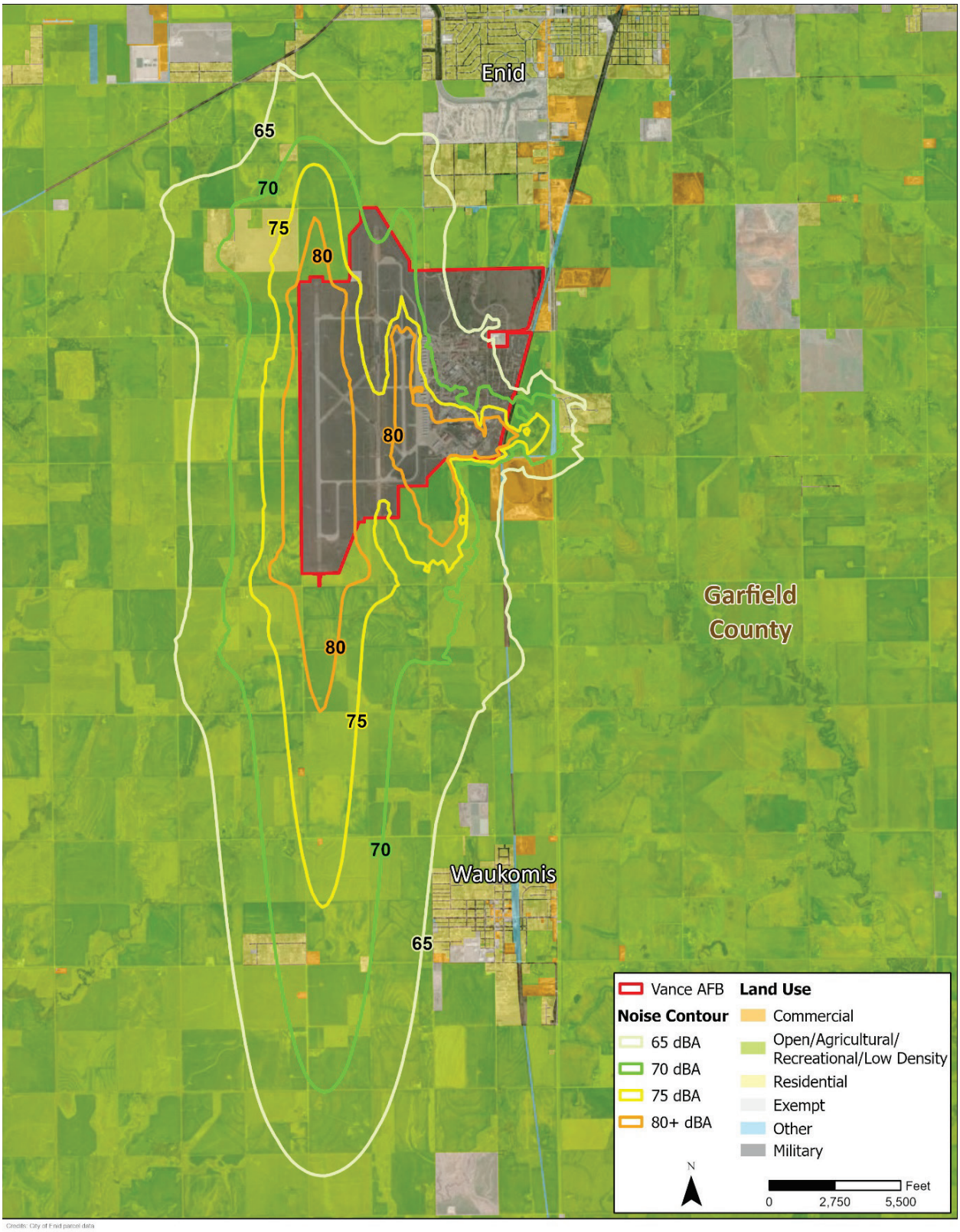


Figure 3-8. 2023 Baseline Condition Noise Contours and Land Use for Vance AFB

3.3.2 Environmental Consequences

Land use impacts would be considered significant if the effect was any of the following:

1. Inconsistent or noncompliant with land use management plans or policies
2. Precluded the viability of existing land use
3. Precluded continued use or occupation of an area
4. Incompatible with adjacent land use to the extent public health or safety is threatened
5. Conflicted with planning criteria established to ensure the safety and protection of human life.

For each action alternative (i.e., Alternatives 1, 2, and 3) discussed within this section, a quantitative comparison to the No Action Alternative and a qualitative comparison to the 2023 Baseline are provided for land area within the noise contours. Both comparisons are provided due to the different areas geographically covered between the No Action Alternative and the 2023 Baseline. For instance, the 2023 Baseline noise contours are predominately to the south of Vance AFB, while the No Action Alternative and the various action alternatives analyzed are more centered around the installation and cover more land area to the north, including the city of Enid.

3.3.2.1 Alternative 1

Construction Compatibility. Alternative 1 would involve on-installation construction and renovation projects at Vance AFB. These projects would be largely compatible and consistent with applicable land use plans and regulations and would have no significant impact on land use. According to the 2016 IDP, Vance AFB has 12 different existing and future land uses on the installation, and the construction and renovation projects would primarily occur in four of these land uses. The four land uses include the Airfield Clearance, Aircraft Operations and Maintenance, Airfield Pavement, and Open Space/Buffer Zone land use areas and development of the construction and renovation projects would be compatible development within such categories. For all proposed facilities being constructed, the precise site layout plan is still being developed; however, each project would be sited, designed, and constructed consistent with the installation's IDP and would have no significant impacts on land use.

Airspace Compatibility. No changes in SUA configurations or boundaries are proposed; therefore, Alternative 1 would meet FAA regulations specific to minimum altitude and avoidance distances. No impacts on land use beneath the SUA are expected. The CZs and APZs for Vance AFB would remain unchanged.

Noise Compatibility. The primary impact of Alternative 1 on land use would be associated with noise generated by T-7A aircraft operations in the vicinity of Vance AFB, particularly takeoff and landing operations, because the T-7A aircraft feature louder operating characteristics compared to T-38C aircraft.

NOISEMAP was used to complete the noise analysis and develop estimated areas and population within the noise contours. **Figure 3-9** presents the noise contours and associated land uses for Alternative 1. Residential is considered incompatible with any noise zone above 65 dB DNL. Although local conditions regarding the need for housing may require continued residential use in these zones, residential use is discouraged in DNL 65 to 70 dB and strongly discouraged in DNL 70 to 75 dB. Existing residential development is considered a pre-existing, non-conforming land use.

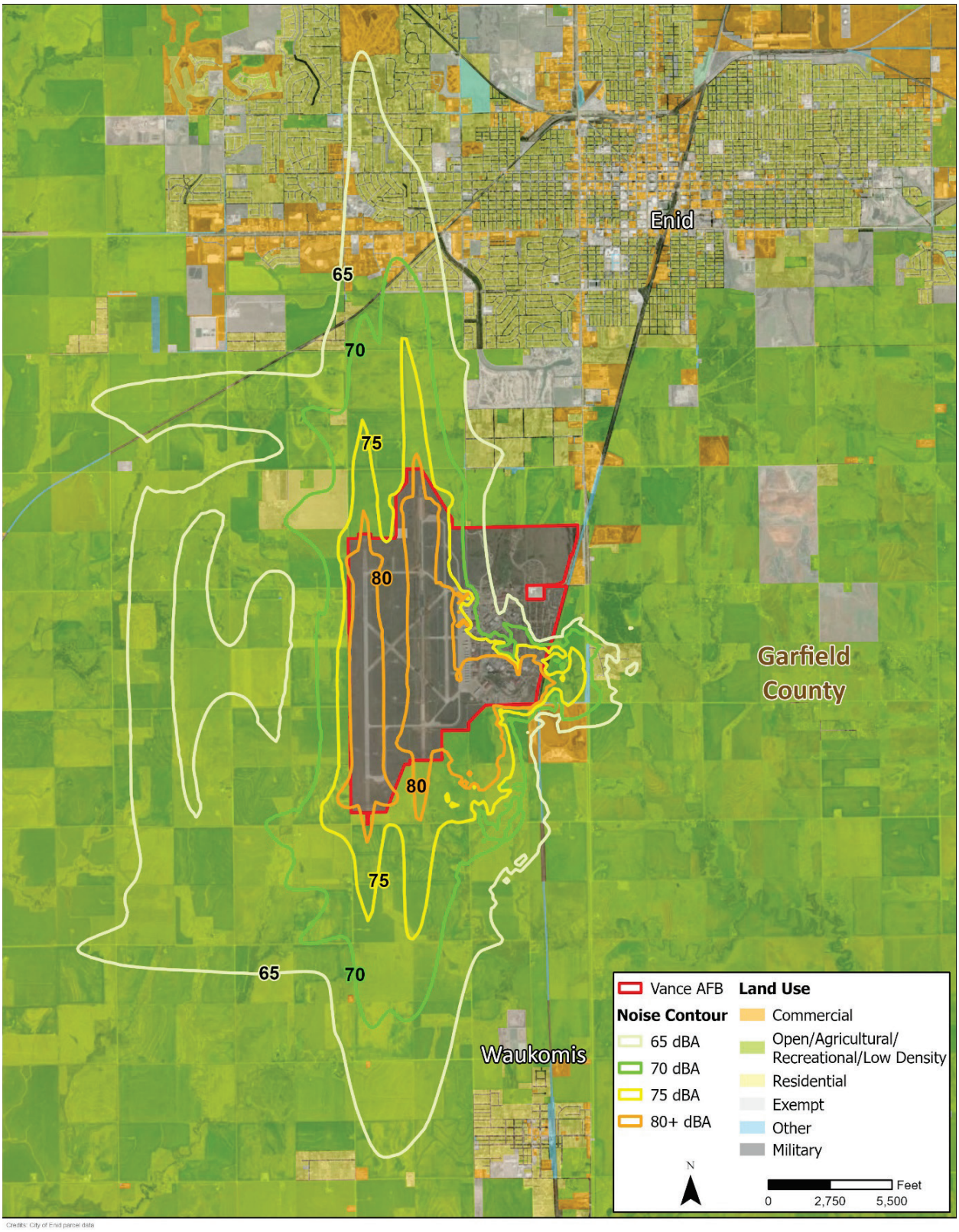


Figure 3-9. Alternative 1 Noise Contours and Land Uses for Vance AFB

Table 3-21 provides the estimated on- and off-installation population within the 65 dB DNL and greater for Alternative 1 and the change in population from the No Action Alternative. Alternative 1 would expose approximately 1,342 additional on- and off-installation people to a DNL of 65 dB or greater.

Table 3-52 provides the estimated changes in acreage for the noise bands at Vance AFB for Alternative 1 in comparison to the No Action Alternative. Overall, there would be an increase of approximately 2,581 acres off-installation within the 65 dBA or greater DNL, which is an increase of approximately 36 percent when compared to the No Action Alternative. The highest acreage increase off-installation is in the 65 to 70 dB DNL noise contour (2,180 acres), but the largest percentage increase is in the 80 dB DNL or greater noise contour (which increased by only 93 acres but represented a 63.7 percent increase over the No Action Alternative). The majority of land uses surrounding Vance AFB are considered Open/Recreation/Agriculture/Low-Density Residential.

Table 3-52. Change in Acreage within the Alternative 1 Noise Bands as Compared to the No Action Alternative

Noise Contour	Change in Areas within Noise Contours (acres)			
	On-Installation	Percent Change	Off-Installation	Percent Change
65 to 70 dB DNL	20	15.3%	2,180	52.3%
70 to 75 dB DNL	-29	-23.2%	223	11.0%
75 to 80 dB DNL	-15	-3.0%	85	10.2%
Greater than 80 dB DNL	114	11.8%	93	63.7%
Total	**90**	**5.2%**	**2,581**	**36.0%**

Source: HMMH 2025

Although it represents less than 5 percent of the total off-installation land uses for the No Action Alternative and less than 6 percent for Alternative 1, the 65 dB DNL noise contour covers areas of the city of Enid that are residential. As a result, there would be an increase in incompatible land uses and the number of individuals living within the Alternative 1 noise zones. In addition, the overall increase in the off-installation acreage within the 65 dB DNL noise contour is more than 2,500 acres (or 36 percent). Therefore, due to these factors, Alternative 1 would result in a significant impact on land uses and land use compatibility. Vance AFB would work with the local municipalities to continue to encourage compatible land uses within the noise contours, as discussed in **Section 3.3.3**.

As noted in **Section 3.3.1** and depicted in **Figure 3-8**, the 2023 Baseline noise contours covering Vance AFB and the off-installation land area impacted is primarily to the south of the installation. Therefore, Alternative 1 would not only increase the overall acreage of off-installation area impacted from approximately 8,790 acres for the 2023 Baseline to 9,754 acres but also cover more land area to the north of Vance AFB that includes more development (see **Figure 3-9**). The Alternative 1 65 dB DNL noise contour impacts areas of the city of Enid that were not formerly impacted by the 2023 Baseline noise contour; therefore, this would be considered a significant impact on land use compatibility.

3.3.2.2 Alternative 2

***Construction Compatibility*.** Impacts on installation land use from construction and renovation for Alternative 2 would be identical to those impacts for Alternative 1.

Airspace Compatibility. No changes in SUA configurations or boundaries are proposed; therefore, Alternative 2 would meet FAA regulations specific to minimum altitude and avoidance distances. The CZs and APZs for Vance AFB would remain unchanged.

Noise Compatibility. Like Alternative 1, the primary impact of Alternative 2 implementation on land use would be associated with noise generated by T-7A aircraft operations, because the T-7A aircraft feature louder operating characteristics compared to T-38C aircraft. **Figure 3-10** shows the noise contours and associated land uses for Alternative 2.

Table 3-29 provides the estimated population exposed to a DNL of at least 65 dB for Alternative 2. Alternative 2 would expose approximately 2,025 additional on- and off-installation people to a DNL of 65 dB or greater as compared to the No Action Alternative.

The noise impacts on land uses surrounding the installation for Alternative 2 would be slightly greater than those described for Alternative 1 (see **Table 3-53**). Overall, there would be an increase of approximately 4,464 acres of off-installation land compared to the No Action Alternative, with the largest acreage increase being in the 65 to 70 dB DNL noise contour (3,455 acres). The largest percentage increase would be in the 80 dB DNL or greater noise contour (181 acres, which is a 124 percent increase over the No Action Alternative).

Table 3-53. Change in Acreage within the Alternative 2 Noise Contours as Compared to the No Action Alternative

Noise Contour	Change in Areas within Noise Contours (acres)			
	On-Installation	Percent Change	Off-Installation	Percent Change
65 to 70 dB DNL	25	19.1%	3,455	82.8%
70 to 75 dB DNL	-30	-24.0%	520	25.7%
75 to 80 dB DNL	-98	-19.5%	308	36.9%
Greater than 80 dB DNL	213	22.1%	181	124.0%
Total	**110**	**6.4%**	**4,464**	**62.2%**

Source: HMMH 2025

Although it represents approximately 6 percent of the total off-installation land uses for Alternative 2, the 65 dB DNL noise contour covers areas of the city of Enid that are residential. As a result, there would be an increase in incompatible land uses and the number of individuals living within the Alternative 2 noise zones. In addition, the overall increase in off-installation acreage within the 65 dB DNL noise contour is nearly 4,500 acres (or 62 percent). Therefore, due to these factors, Alternative 2 would result in a significant impact on land uses and land use compatibility. Vance AFB would work with the local municipalities to continue to encourage compatible land uses within the noise contours, as discussed in **Section 3.3.3**.

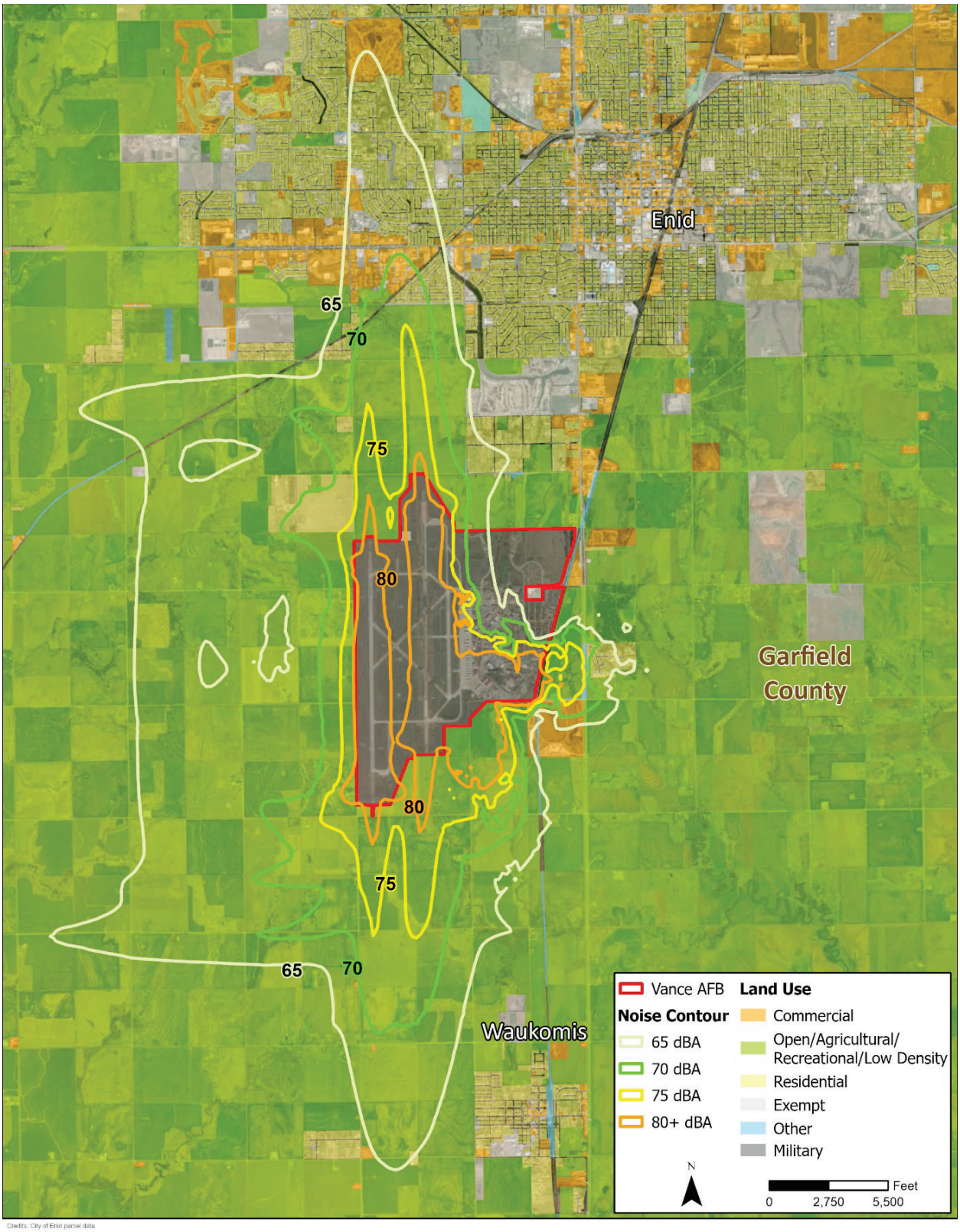


Figure 3-10. Alternative 2 Noise Contours and Land Uses for Vance AFB

As noted in **Section 3.3.1** and depicted in **Figure 3-8**, the 2023 Baseline noise contours covering Vance AFB and the off-installation land area impacted is primarily to the south of the installation. Therefore, Alternative 2 would not only increase the overall acreage of off-installation area impacted from approximately 8,790 acres (2023 Baseline) to 11,637 acres (Alternative 2) but also cover more land area to the north of Vance AFB that includes more development. The Alternative 2 65 dB DNL noise contour impacts areas of the city of Enid that were not formerly impacted by the 2023 Baseline noise contour; therefore, this would be considered a significant impact on land use compatibility.

3.3.2.3 Alternative 3

***Construction Compatibility*.** Impacts on installation land use from construction and renovation for Alternative 3 would be identical to those impacts for Alternative 1.

Airspace Compatibility. No changes in SUA configurations or boundaries are proposed; therefore, Alternative 3 would meet FAA regulations specific to minimum altitude and avoidance distances. The CZs and APZs for Vance AFB would remain unchanged.

Noise Compatibility. **Figure 3-11** shows the noise contours and associated land uses for Alternative 3. **Table 3-37** provides the estimated on- and off-installation population within the 65 dB DNL and greater for Alternative 3 and the change in population from the No Action Alternative. Alternative 3 would expose approximately 2,559 additional on- and off-installation people to a DNL of 65 dB or greater as compared to the No Action Alternative.

The noise impacts on land uses surrounding the installation for Alternative 3 would be slightly greater than those described for Alternative 2 (see **Table 3-54**). Overall, there would be an increase of approximately 5,486 acres of off-installation land as compared to the No Action Alternative, with the largest acreage increase being in the 65 to 70 dB DNL noise contour (3,985 acres). The largest percentage increase would be in the 80 dB DNL or greater noise contour (268 acres, which is a 183.6 percent increase over the No Action Alternative).

Table 3-54. Change in Acreage within the Alternative 3 Noise Contours as Compared to the No Action Alternative

Noise Contour	Change in Areas within Noise Contours (acres)			
	On-Installation	Percent Change	Off-Installation	Percent Change
65 to 70 dB DNL	30	22.9%	3,985	95.5%
70 to 75 dB DNL	-28	-22.4%	781	38.6%
75 to 80 dB DNL	-155	-30.8%	452	54.2%
Greater than 80 dB DNL	279	29.0%	268	183.6%
Total	**126**	**7.3%**	**5,486**	**76.5%**

Source: HMMH 2025

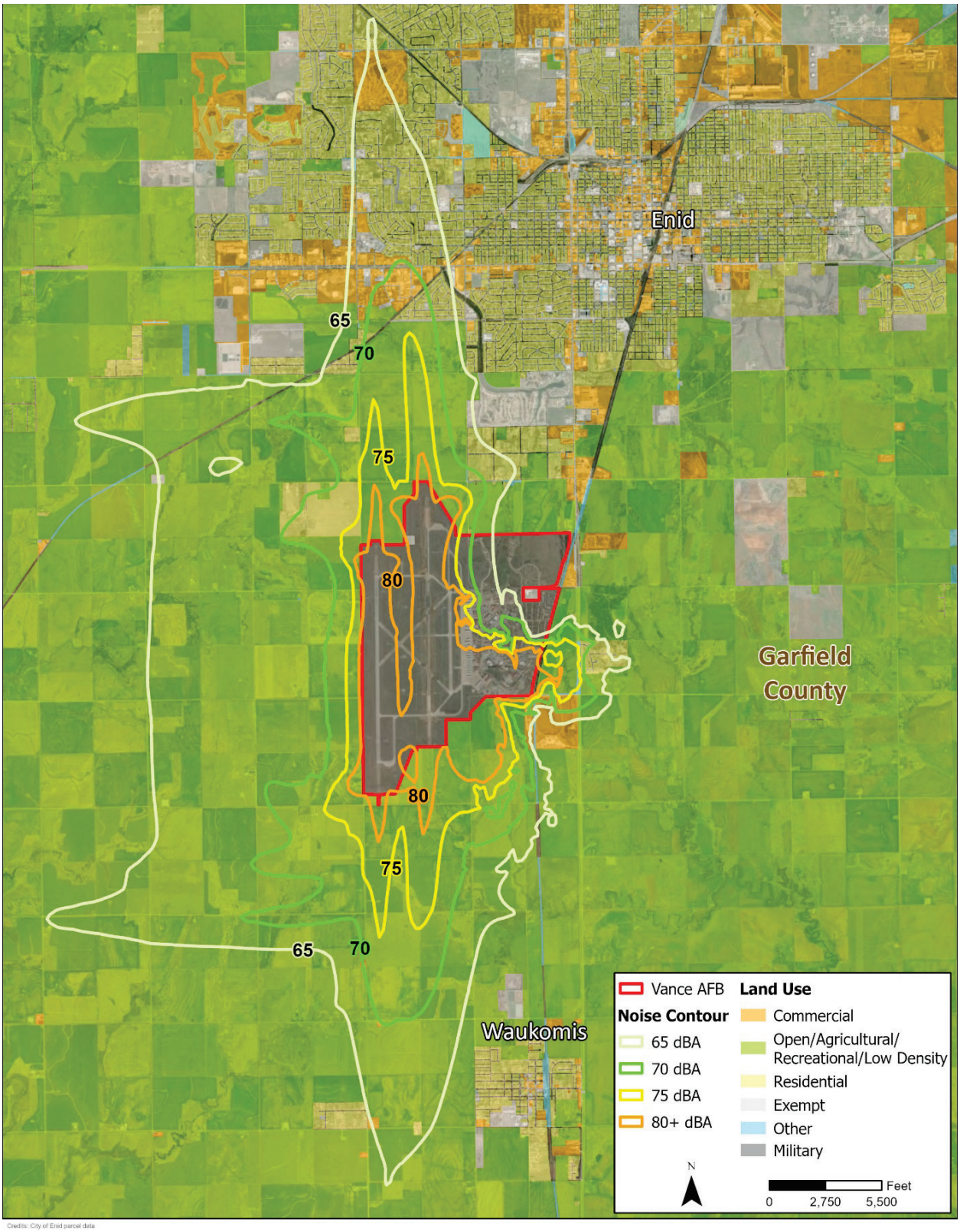


Figure 3-11. Alternative 3 Noise Contours and Land Uses for Vance AFB

Although it represents approximately 6.5 percent of the total off-installation land uses for Alternative 3, the 65 dB DNL noise contour covers areas of the city of Enid that are residential. As a result, there would be an increase in incompatible land uses and the number of individuals living within the Alternative 3 noise zones. In addition, the overall increase in off-installation acreage within the 65 dB DNL noise contour is nearly 5,500 acres (or 77 percent). Therefore, due to these factors, Alternative 3 would result in a significant impact on land uses and land use compatibility. Alternative 3 has the largest increase in off-installation acreage impact and the highest potential for increasing incompatible development around the installation. Vance AFB would work with the local municipalities to continue to encourage compatible land uses within the noise contours as discussed in **Section 3.3.3**.

As noted in **Section 3.3.1** and depicted in **Figure 3-8**, the 2023 Baseline noise contours covering Vance AFB and the off-installation land area impacted is primarily to the south of the installation. Therefore, Alternative 3 would not only increase the overall acreage of off-installation area impacted from approximately 8,790 acres (2023 Baseline) to 12,659 acres (Alternative 3) but also cover more land area to the north of Vance AFB that includes more development. The Alternative 3 65 dB DNL noise contour impacts areas of the city of Enid that were not formerly impacted by the 2023 Baseline noise contour; therefore, this would be considered a significant impact on land use compatibility.

3.3.2.4 No Action Alternative

The No Action Alternative would not result in any changes in on-installation land use. The proposed construction and renovation projects at Vance AFB would not be completed and no related advancement on the IDP would occur.

Figure 3-12 shows the noise contours and associated land uses for the No Action Alternative. There would be no changes in aircraft operations; however, the noise conditions differ from the 2023 Baseline due to reasons discussed in **Section 3.2.2.4**. The resulting noise contours for the No Action Alternative would cover 8,895 acres (with 1,722 acres being on-installation and 7,173 being off-installation) (see **Table 3-55**). The overall size of the off-installation noise contours would be less than those for the 2023 Baseline and cover different areas surrounding Vance AFB including more land areas to the west and to the north over the city of Enid. The No Action Alternative provides the conditions with which to compare the action alternatives within this analysis to understand levels of significance with respect to land use impacts.

Table 3-55. Acreage within the No Action Alternative Noise Contours

Noise Contour	Areas within Noise Contours (acres)	
	On-Installation	Off-Installation
65 to 70 dB DNL	131	4,172
70 to 75 dB DNL	125	2,021
75 to 80 dB DNL	503	834
Greater than 80 dB DNL	963	146
Total	**1,722**	**7,173**

Source: HMMH 2025

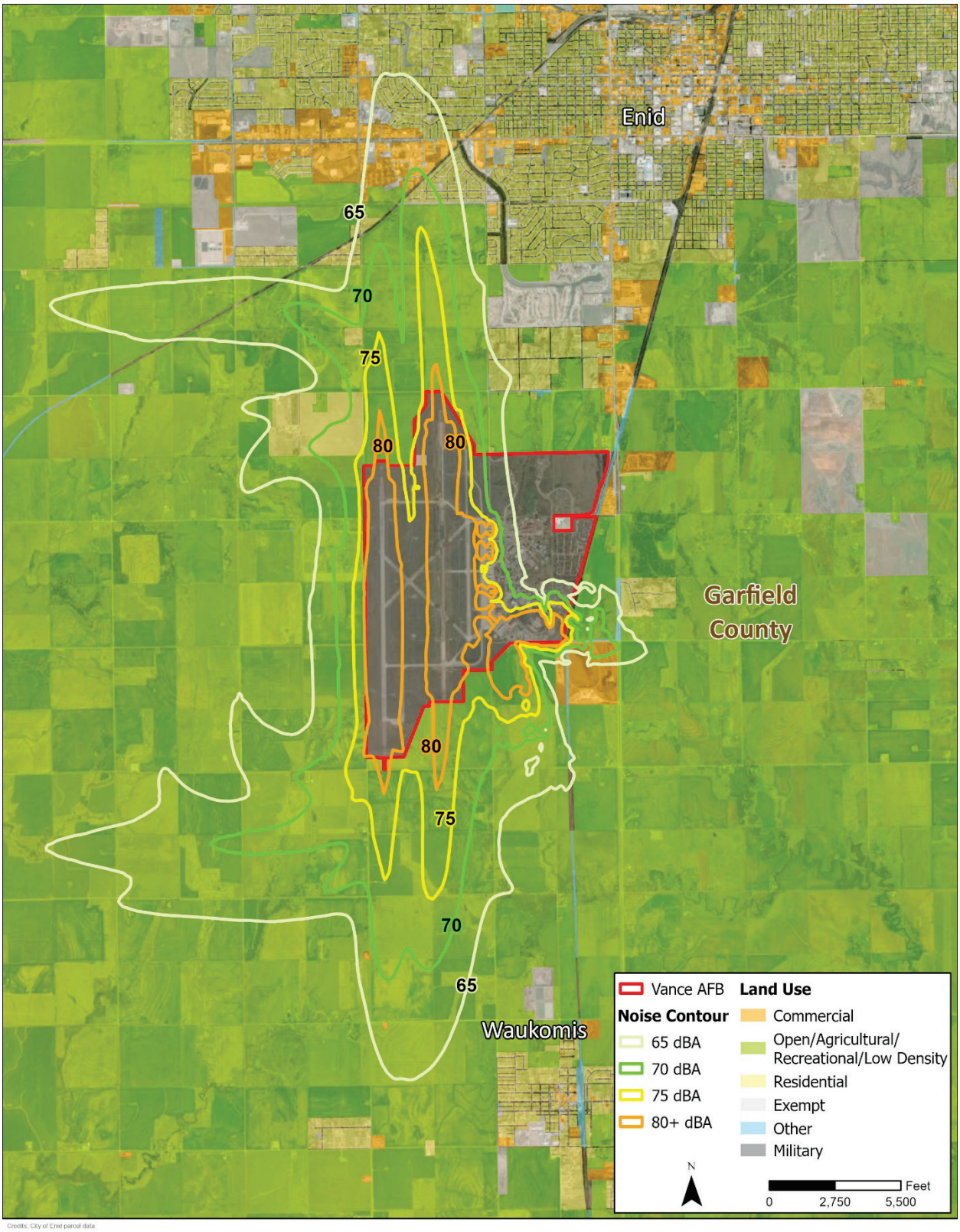


Figure 3-12. No Action Alternative Noise Contours and Land Use for Vance AFB

In addition, the mix of land use types within the noise contours would be different than what is represented in the 2022 Vance AFB AICUZ Study. **Table 3-56** presents the mix of land use types for the No Action Alternative, with the vast majority being in the Open/Recreation/Agriculture/Low-Density Residential category (over 90 percent), followed by the Residential land use category (less than 6 percent) and then Commercial (less than 3 percent).

Table 3-56. Vance AFB Off-Installation Land Uses within the No Action Alternative Noise Contours

Category	Noise Zones (acres)				
	65 to 70 dB DNL	70 to 75 dB DNL	75 to 80 dB DNL	Greater than 80 dB DNL	Total Acreage
Residential	303.5	105.0	0.7	0.0	**409.2**
Commercial	154.6	28.8	1.9	1.9	**186.2**
Open/Recreation/Agriculture/Low-Density Residential	3,565.3	1,867.9	827.9	142.5	**6,403.8**
Exempt	31.2	3.8	0.8	2.1	**37.9**
Other	11.7	2.6	0.4	0.0	**14.7**
Total	**4,066.4**	**2,008.0**	**831.0**	**145.2**	**7,050.6**

Sources: HMMH 2025, City of Enid 2025
The No Action Alternative noise contour acreage presented in this table with a total of 7,050 acres over various land use categories differs slightly from the 7,173 acres noted in the Final NMODD (HMMH 2025); however, this may be due to different layers used and how water features and other land use elements are categorized. For the purpose of understanding the predominant land uses within the noise contours, this difference does not affect the results or conclusions.

3.3.3 Mitigation Measures

Noise. As noted in **Section 3.3.2**, Alternatives 1, 2, and 3 would significantly expand noise contours and increase lands and uses subject to noise levels that may be deemed incompatible. Recognizing that the operational characteristics of the T-7A aircraft are still in a preliminary stage, adaptive management approaches for addressing noise impacts (e.g., reduced power settings, anticipated afterburner requirements, etc.) may be implemented to reduce the ultimate noise contours and associated land use effects at Vance AFB. DAF would continue to evaluate flight characteristics for T-7A training to determine the safest, most efficient, and least intrusive operations considering both mission requirements and airspace effects. Applying the mitigation discussed in **Section 3.2.3** for aircraft noise by reducing power settings would result in a smaller set of noise contours around Vance AFB for each of the alternatives.

***Other Planning Actions*.** DAF is committed to working with Garfield, Grant, and Alfalfa Counties; the cities of Enid and Waukomis; the Town of North Enid; Enid Public Schools; the Northern Oklahoma Development Authority; Vance Development Authority; and others to analyze compatible use surrounding Vance AFB for the ultimate T-7A operating conditions. As part of that commitment, DAF would continue to partner with local governments to perform the following tasks:

- Prepare an AICUZ update at an appropriate time to be determined to address any changes in land area within the greater than 65 dBA DNL noise contours for Vance AFB.

- Coordinate with state and local agencies on compatible land use and potential encroachment concerns inside and outside of the DNL footprint and/or the Airfield Environs Overlay District, as applicable (i.e., large-scale developments, transportation projects that could encourage development, or tall structures such as cell towers that could penetrate airfield imaginary surfaces).
- Encourage municipalities to promote the most compatible land use by updating local zoning ordinances and building construction standards, especially for high-noise areas.

3.4 Biological Resources

Biological resources addresses plants and animals and the habitats in which they exist. Special status species include Endangered Species Act (ESA) listed species (threatened or endangered) as well as those that are proposed or candidates for ESA-listing, as designated by the U.S. Fish and Wildlife Service (USFWS) for terrestrial and freshwater organisms. Migratory birds are protected under the Migratory Bird Treaty Act (MBTA), and the bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) are protected under the Bald and Golden Eagle Protection Act (BGEPA).

ESA. The ESA (16 USC Sections 1531 et seq.) established a federal program to protect and recover imperiled species and the ecosystems upon which they depend. The ESA requires federal agencies, in consultation with USFWS, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species.

MBTA. The MBTA of 1918 (16 USC Sections 703–712), as amended, and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, require federal agencies to minimize or avoid impacts on migratory birds. Section 315 of the Authorization Act for Fiscal Year 2003 (Public Law 107-314, 116 Stat. 2458) exempts military readiness activities carried out in accordance with 50 CFR Section 21.15 from the prohibition against the incidental taking of migratory birds. Military readiness activities include all training and operations of the U.S. 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.

BGEPA. Bald and golden eagles are protected under the BGEPA (16 USC Sections 668–668c), which prohibits the “take” of bald or golden eagles in the United States without a permit.

3.4.1 Affected Environment

The ROI for biological resources consists of the proposed construction and renovation areas on Vance AFB and the airspace where the T-7A would perform aircraft operations at Vance AFB and the SUA (see **Appendix A**).

Vegetation. Vance AFB is located within the southwest boundary of the Interior Lowlands Physiographic Province in north-central Oklahoma. According to ecosystem classification, Vance AFB falls within the Dry Domain, Temperate Steppe Division, Great Plains Steppe Province, and South-Central Great Plains Section. The area surrounding Vance AFB features flat to very gently rolling topography and was historically characterized by a mix of tallgrass prairie, mixed grass prairie, and scattered

blackjack-post oak forest. Much of this prairie has been converted to grazing and crops fields (Vance AFB 2022b). The interior portions of Vance AFB, where the construction projects would occur, have been developed with buildings, streets, and runways to support the installation's missions. Most vegetative cover in the project areas consists of regularly maintained, nonnative bermudagrass (*Cynodon dactylon*), and native grasses including blue grama *(Bouteloua gracilis*), sideoats grama (*B. curtipendula*), and sand dropseed (*Sporobolus cryptandrus*) (Vance AFB 2022b). Commonly observed tree species within the region include the eastern red cedar (*Juniperus virginiana*), American elm (*Ulmus americana*), and oaks (*Quercus* spp.) (iNaturalist 2025). The on-installation tree population is relatively low, and there are no trees within the proposed construction areas.

Wildlife. No wildlife or biological surveys have been published documenting species occurrences on Vance AFB. The following paragraphs describe species with the potential to occur within and surrounding Vance AFB based on habitat preference and distribution of the species.

Common mammals occurring within the region include the white-tailed deer (*Odocoileus virginianus*), house mouse (*Mus musculus*), and muskrat (*Ondatra zibethicus*) (iNaturalist 2025). Additionally, seven bat species have been documented in the county, including the big brown bat (*Eptesicus fuscus*) and big free-tailed bat (*Nyctinomops macrotis*) (ODWC 2013). Numerous amphibians, aquatic species, and reptiles have been observed in riparian and riverine systems in Garfield County, including species such as the Great Plains toad (*Anaxyrus cognatus*), pond slider (*Trachemys scripta*), barred tiger salamander (*Ambystoma mavortium*), the western ratsnake (*Pantherophis obsoletus*), and DeKay's brownsnake (*Storeria dekayi*) (iNaturalist 2025).

T-38C BASH data for Vance AFB recorded between March 2020 and September 2024 documented 60 avian species on or around the installation (Vance AFB 2024a). The Vance AFB Flight Safety Office holds a U.S. Department of Agriculture contract and employs a certified wildlife specialist to manage the removal of birds and other animals, reducing the potential for wildlife presence (Vance AFB 2022b).

Special Status Species. The Vance AFB Integrated Natural Resources Management Plan (INRMP) (Vance AFB 2022b) and the USFWS Information for Planning and Consultation (IPaC) reports for Vance AFB and associated SUA (USFWS 2025a, USFWS 2025b) were reviewed to determine if any federally listed, proposed, or candidate species, or their habitats, could occur on the installation or within the SUA. The INRMP and IPaC reports indicate that eight such species have the potential to occur on Vance AFB or within the SUA. They are two endangered species: whooping crane (*Grus americana*) and peppered chub (*Macrhybopsis tetranema*); four threatened species: lesser prairie-chicken (*Tympanuchus pallidicinctus*), piping plover (*Charadrius melodus*), rufa red knot (*Calidris canutus rufa*), and Arkansas River shiner (*Notropis girardi*); one proposed endangered species: tricolored bat (*Perimyotis subflavus*); and one proposed threatened species: monarch butterfly (*Danaus plexippus*) that could be listed within the timeframe of the Proposed Action. No proposed or designated critical habitat for listed threatened and endangered species is present at Vance AFB (USFWS 2025a).

Of the eight special status species, the tricolored bat is the only one to have been documented (acoustically) on the installation (USFWS 2024). Suitable habitat for the tricolored bat is not present on or around the construction and renovation project areas. While the tricolored bat does not typically forage at high altitudes, it could be present in the SUA.

The whooping crane typically inhabits and nests in poorly drained wetlands, inland marshes, and prairie potholes in Canada's Northwest Territories during summer and coastal marshes and prairies in Texas and Arkansas during winter. During migration, whooping cranes pass through Oklahoma in both spring and fall, occasionally being sighted along rivers, in grain fields, or in shallow wetlands. A 2024 study that compiled whooping crane telemetry data obtained between 2017 and 2022 determined that an average of 42 percent of the 91 marked whooping crane individuals passed through Vance AFB airspace or stopped near the installation during autumn migrations and an average of 32 percent of marked individuals were documented during spring migrations. The closest whooping crane documented on the ground was approximately 4 miles south of Vance AFB (Brandt & Pearse 2024). Vance AFB does not have critical or suitable stopover habitat for the whooping crane, and no observations of the species have been reported on the installation. The whooping crane has been documented in flight up to 5,900 feet, so it could be present within the SUA (Vance AFB 2022b, USFWS 2025a).

The monarch butterfly is found in fields, roadside areas, open areas, wet areas, and urban gardens, and milkweed and flowering plants are necessary for monarch habitat and life cycle. Zizotes milkweed (*Asclepias oenotheroides*) has been observed at the airfield but not within the construction project areas. No monarch butterflies have been documented on the installation. The monarch butterfly has been documented in flight up to 11,000 feet, so it could be present within the SUA.

The piping plover and rufa red knot do not have habitat on or around the installation. Both species have been documented in flight up to 900 feet, so they could be present within the SUA. The lesser prairie-chicken also does not have habitat on or around the installation and is a low-flying species that would not be found in the SUA (USFWS 2025a, USFWS 2025b).

The Arkansas River shiner and peppered chub are found exclusively in aquatic habitat, and the Proposed Action entails no activities within aquatic resources. Designated critical habitats for both the Arkansas River shiner and peppered chub are wholly or partially under the established SUA (USFWS 2025b), but no impacts on hydrological features or critical habitat would occur from the continued use of the SUA or potential increase in aircraft operations.

According to the IPaC reports, there is the potential for 19 MBTA-protected birds and 2 BGEPA- and MTBA-protected species on or around Vance AFB (USFWS 2025a, USFWS 2025b). T-38C BASH data recorded between March 2020 and September 2024 documented approximately 300 strike incidents with 52 MBTA-protected species (Vance AFB 2024a). There were no documented BASH occurrences with federally protected or proposed species. The most frequently documented species from the BASH data include American kestrel (*Falco sparverius*), barn swallow (*Hirunda rustica*),

cliff swallow (*Petrochelidon pyrrhonota*), eastern meadowlark (*Sturnella magna*), horned lark (*Eremophila alpestris*), Lapland longspur (*Calcarius lapponicus*), mourning dove (*Zenaida macroura*), and Mississippi kite (*Ictinia mississippiensis*) (Vance AFB 2024a). Only the Mississippi kite has been documented nesting at Vance AFB between spring and summer, with migration resuming once the young have fledged in August (Vance AFB 2022b).

3.4.2 Environmental Consequences

The biological resources analysis discusses impacts on vegetation, wildlife, and special status species from the Proposed Action's construction and renovation projects and aircraft operations. Evaluation of impacts on biological resources is based on whether the action would cause habitat displacement resulting in reduced feeding or reproduction, survival, and/or behavioral avoidance of available habitat as a result of noise or human disturbance. Impacts on biological resources would be considered significant if species or special habitats would be adversely affected over large areas, or disturbances would cause reductions in population size or distribution of a species of special concern.

3.4.2.1 Alternative 1

***Vegetation*.** Some of the construction projects would require the temporary or permanent removal of vegetation, which would result in short- and long-term, not significant, adverse impacts on vegetation at Vance AFB. No trees would be removed for construction, and most of the construction projects would be situated within highly urban areas or on already impervious surfaces, resulting in minimal vegetation loss and not significant impacts on vegetation. Construction would create approximately 34,700 ft^2 (0.79 acres) of new permanent impervious surface (see **Table 2-5**), centrally located between the existing runway and the current hangars and buildings. Much of this area is already maintained regularly and dominated by nonnative bermudagrass. Vegetation within the footprint of new construction would be permanently lost. Once construction activities are complete, exposed soil surrounding new construction would be reseeded with native vegetation to the maximum extent possible as part of restoration efforts. Vegetation would be planted as soon as possible following construction to minimize the potential for erosion and would use seed mixtures suitable for the local climate and in accordance with the installation's INRMP. Vegetation maintenance techniques, timing, and duration would not change due to the Proposed Action.

No impacts on vegetation beneath the SUA are expected. The phased delivery of T-7A aircraft and removal of T-38C aircraft, operations from these aircraft, and the personnel changes associated with Alternative 1 would have no impacts on vegetation.

***Wildlife*.** Short- and long-term, not significant, adverse impacts on wildlife at Vance AFB would occur from the construction and renovation projects. Wildlife that could occur near the project areas would avoid these areas temporarily during construction due to intermittent increases in noise from heavy equipment and construction personnel. As a result, direct injury to individuals would be unlikely. Many of the wildlife species on Vance AFB are urban-adapted and would likely return to normal behavior once construction is complete and the proposed facilities and infrastructure are

operational. The proposed hush house pad, addition to the egress shop, antenna farm, and munitions storage pad would be sited on managed grasslands and would require the permanent removal and modification of the existing nonnative grassland. Wildlife species, such as small mammals and grassland birds, may use these areas for foraging and possibly nesting. These areas would be altered permanently and experience more frequent, year-round maintenance resulting in displacement from, and avoidance of these areas by individual wildlife that may move to adjacent available habitat. Because the proposed facilities would not affect large populations of wildlife and because wildlife on Vance AFB are habituated to noise, personnel, and activity, the impacts on wildlife from construction and renovation would not be significant.

The highly developed nature of the proposed construction areas results in a not significant impact on wildlife habitat. These areas are primarily confined to the airfield, adjacent hangars, and airfield pavement, which offer few opportunities to support birds and small mammals. The proposed construction and renovation projects would occur on either impervious cover, existing structures, or maintained, nonnative grasslands and lawns.

No activities are proposed in aquatic or semi-aquatic environments where such species, including amphibians, are common. Therefore, no impacts on amphibians are expected.

During construction, measures would be implemented to protect wildlife and avoid or minimize habitat reduction, deterrence, or depredation. Such measures may include placing fencing around construction sites, minimizing vegetation removal, and allowing motile wildlife to relocate. After construction is complete, reclamation or landscaping designs would be implemented as a BMP in accordance with the installation's INRMP (Vance AFB 2022b). Post-construction erosion control measures to avoid or minimize effects on wildlife, nesting habitat, or foraging habitat would be stipulated in the erosion and sedimentation control plan required as part of the construction effort.

Long-term, not significant, adverse impacts on wildlife from aircraft strikes and noise may occur from aircraft operations. If necessary, DAF would update the installation's BASH Plan to include the proposed aircraft operations at Vance AFB. Measures would be followed, as described in the installation's BASH Plan, to reduce the potential for bird and bat strikes. Aircrews operating in the MOAs would have access to data from the Avian Hazard Advisory System and Bird Avoidance Model systems, which helps them avoid high-risk areas. Bird-aircraft strikes would be reported and processed in accordance with the Vance AFB BASH Plan.

Nighttime operations occur at Vance AFB with the T-38C and other types of aircraft. As shown in **Table 2-2**, approximately 75 percent fewer nighttime operations are proposed with the T-7A compared to the T-38C's current nighttime operations by 2034 and later, which would reduce the potential for bat strikes. To further minimize impacts on bats leaving and entering roosting sites at dusk and dawn, DAF would follow the installation's BASH Plan (Vance AFB 2021a) and FAA Order JO 7110.65, *Air Traffic Control*.

Appendix 4 to Annex C of the BASH Plan identifies current high bird concentrations at Vance AFB, including raptors, blackbirds, horned larks, and meadowlarks (Vance AFB 2021a). Raptors can be particularly hazardous to aircraft because of their size and

widespread distribution over installations and low-level areas. Raptors, particularly vultures, use thermals to their advantage to search for prey. Vultures are the greatest concern, because they tend to soar at altitudes from the surface to 2,000 feet and loiter for long periods. Early morning and evening roosts are typically on transmission and communication towers. They take flight early to mid-morning from their roost in search of food (i.e., dead animals). During their "social soaring" behavior that normally occurs in the mid-afternoon, a large number of vultures congregate at altitudes coinciding with normal aircraft operating altitudes. Raptors can be controlled by removing dead land animals from the airfield, proper management of landfills, rodent control, removal of dead trees and other perching sites on the airfield, live-trap and relocation, and the use of pyrotechnics.

Annex F of the BASH Plan identifies species that have historically posed a higher threat to pilots at Vance AFB and respond poorly to traditional harassment measures, including the horned lark, eastern meadowlark, western meadowlark (*Sturnella neglecta*), barn swallow, cliff swallow, mourning dove, American robin (*Turdus migratorius*), and chimney swift (*Chaetura pelagica*). Deterrent measures mentioned in the BASH Plan include, but are not limited to, bioacoustics, propane cannons, and depredation. Habitat management is the primary and preferred solution to the BASH threat at Vance AFB. Grass control along the runways is also used to reduce these species' numbers. Mammals such as deer, coyotes, and rodents pose threats to flight operations. Although less of a hazard compared to birds, trapping, hunting, vegetation management, fence management, rodenticides, and insecticides may be implemented as control measures for these species (Vance AFB 2021a).

Annex A of the BASH Plan provides ways to combat bird and wildlife hazards to flight operations through a variety of procedures and techniques. Although not specifically identified as current hazards in the BASH Plan, broad categories of birds and mammals identified at the installation and measures that could be employed to reduce the likelihood of strikes, include the following:

- Maintain a uniform grass height between 7 to 14 inches per DAFI 91-212, *Bird/Wildlife Aircraft Strike Hazard (BASH) Management Program*. Do not permit grass to exceed 14 inches, as high grass attracts some wildlife species and rodents. This in turn can attract raptors (birds of prey). Airfields with a variety of vegetation species may have a fast-growing strain, which reaches 14 inches sooner than the rest of the airfield. Mow when the average vegetation height reaches 14 inches. Obtain assistance in herbicide selection for weed control, appropriate grass seed selection, fertilization and erosion control vegetation from the U.S. Soil Conservation Service or the Agricultural Extension Service, as needed.
- Keep broad-leaved weeds to a minimum on the airfield. Use authorized herbicides to control all weed growth to permit the normal growth of grass.
- Remove dead vegetation, plant bare areas with grasses, fertilize grasses, reduce edge effects, maintain a level landscape, employ erosion control vegetation, eliminate standing water, and maintain drainage ditches.

- Remove dead wildlife, eliminate roosting sites, bird-proof buildings and hangars, and implement trapping, fencing, and hunting for larger mammals, as appropriate.

Annex A of the BASH Plan delineates tasks and responsibilities for organizations to execute the plan. Implementation of these tasks and responsibilities would continue to reduce the potential for strikes around the installation's airfield and vicinity, although the potential cannot be eliminated entirely.

The phased delivery of T-7A aircraft and removal of T-38C aircraft and the personnel changes associated with Alternative 1 are not expected to impact wildlife.

Special Status Species. Alternative 1 would increase airfield operations and usage of the SUA by approximately 8 percent compared to current T-38C operations. These added operations would increase the potential for interactions with transiting special status species, including the tricolored bat, piping plover, rufa red knot, whooping crane, monarch butterfly, and BGEPA- and MBTA-protected species. To address increased potential for incidental aircraft strikes, two USFWS consultations were performed outside of the scope of this project. These consultations are described as follows:

1. A Programmatic Biological Opinion and Conference Opinion (09E30000-2023-0090495-S7) that analyzed flight operations at 32 DAF installations, including Vance AFB, using aircraft strike modeling was issued in December 2024. This Programmatic Biological Opinion and Conference Opinion provides an Incidental Take Statement for the next 5 years based on DAF-provided model outputs. The Incidental Take Statement allows for mortality of up to three piping plovers, two rufa red knots, and one whooping crane. It also allows for mortality of up to eight tricolored bats, should the proposed listing rule for that species be finalized (USFWS 2024).
2. On September 8, 2025, USFWS concurred with DAF's determination of *may affect, but is not likely to adversely affect* whooping crane populations for a proposal to obtain new permanent low-altitude MOA for the 71 FTW (Project Code: 2025-0034229). DAF agreed to coordinate with USFWS Salt Plains National Wildlife Refuge staff during whooping crane spring and fall migration periods (March and April and October to December) and implement additional measures to minimize impacts on protected species (e.g., avoid flying during evening hours especially from December to January, use radar or pilot-reported observations to identify potential bird hazards, not schedule flights during known periods of peak bird activity) (DAF 2025c, Vance AFB 2025).

Continued adherence to the Vance AFB BASH Plan would help avoid and minimize the potential for strikes in the event of an incidental occurrence of a federally listed or proposed for ESA-listing species. If determined to be necessary, new measures would be developed to reduce the potential for impacts to occur, and the BASH Plan would be updated accordingly.

In conclusion, based on the lack of documented BASH occurrences with federally protected or proposed species, the Incidental Take Statement allowances, the species impact determination for the low-altitude MOA proposal, and the continued adherence

of the Vance AFB BASH Plan, DAF has concluded that long-term, not significant, adverse impacts would occur on the tricolored bat, piping plover, rufa red knot, whooping crane, monarch butterfly, and BGEPA- and MBTA-protected species from Alternative 1. No impacts on the lesser prairie-chicken would occur because this low-flying species would not be found within the SUA, and no impacts on the Arkansas River shiner and peppered chub would occur because the Proposed Action would entail no activities within aquatic resources or impact hydrological features or critical habitat.

DAF performed informal consultation under Section 7 of the ESA with the USFWS Tulsa Ecological Services Field Office for the Proposed Action. DAF determined the Proposed Action *may affect, but is not likely to adversely affect* the tricolored bat, piping plover, rufa red knot, whooping crane, and monarch butterfly and would have *no effect* on the lesser prairie-chicken, Arkansas River shiner, and peppered chub. USFWS concurred with DAF's determinations on November 18, 2025. A copy of the USFWS consultation letter and concurrence is included in **Appendix C**.

3.4.2.2 Alternative 2

Impacts for Alternative 2 would be similar to those described for Alternative 1. T-7A operations would be 25 percent greater than Alternative 1 and approximately 35 percent greater than current T-38C operations, which would slightly raise the potential for BASH incidents but result in a similar overall impact as Alternative 1. The BMPs described for Alternative 1 would be implemented to minimize the potential for bird and bat strikes. Ground disturbance activities would be the same as Alternative 1 resulting in the same impacts on vegetation and wildlife.

3.4.2.3 Alternative 3

Impacts for Alternative 3 would be similar to those described for Alternative 1. T-7A operations would be approximately 45 percent greater than Alternative 1 and approximately 58 percent greater than current T-38C operations, which would further raise the potential for BASH incidents but result in a similar overall impact as Alternative 1. The BMPs described for Alternative 1 would be implemented to minimize the potential for bird and bat strikes.

Although installing sufficient shelters for the 31 additional T-7A aircraft of Alternative 3 would disturb more ground than Alternative 1, the disturbance area would be on the existing Vance AFB aircraft parking ramp, which is an impervious surface devoid of vegetation and wildlife habitat. As a result, ground disturbance activities for Alternative 3 would result in the same impacts on vegetation and wildlife as those described for Alternative 1.

3.4.2.4 No Action Alternative

The No Action Alternative would not contribute to new or additional impacts on biological resources. No facility construction would occur, and there would be no changes in aircraft operations. Vegetation removal would not occur, and no impacts would occur on wildlife or special status species. Biological resources conditions at Vance AFB would remain unchanged compared to the existing conditions described in **Section 3.4.1**.

3.5 Cultural Resources

Cultural resources are historic districts, sites, buildings, structures, or objects considered important to a culture, subculture, or community for scientific, traditional, religious, or other purposes. Depending on the retention of original characteristics and historic use, such resources might provide insight into the cultural practices of previous civilizations, or they might retain cultural and religious significance for modern groups. Cultural resources are typically subdivided into archaeological resources, architectural resources, and resources of traditional or religious significance. Archaeological resources are areas where human activity has measurably altered the earth or deposits of physical remains are found (e.g., projectile points and bottles) but standing structures do not remain. Architectural resources include standing buildings, structures, objects, and designed landscapes of historic significance. Resources of traditional or religious significance are known as traditional cultural properties (TCPs) and can include archaeological resources, sacred sites, structures, districts, prominent topographic features, habitats, plants, animals, or minerals considered essential for the preservation of traditional culture.

Several federal laws and regulations govern the protection of cultural resources, including the National Historic Preservation Act (NHPA) (1966), the Archeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (1978), the Archaeological Resources Protection Act (1979), and the Native American Graves Protection and Repatriation Act (1990). Vance AFB is required to comply with DAF regulations and instructions regarding cultural resources, including DAF Manual 32-7003, *Environmental Conservation* (DAF 2024a). DAF consults with federally recognized tribes in accordance with the laws and regulations listed previously; DoD Instruction 4710.02, *DoD Interactions with Federally Recognized Tribes*; and DAFI 90-2002, *Interactions with Federally Recognized Tribes*.

NHPA authorized the Secretary of the Interior to expand and maintain the criteria for assessing the significance of cultural resources. Resources that are listed or eligible for listing in the National Register of Historic Places (NRHP) are termed “historic properties.” Cultural resources must be 50 years or older to warrant consideration for the NRHP. More recent resources might warrant listing if they are of exceptional importance and have attained significance within the past 50 years. Section 106 of the NHPA directs federal agencies to seek ways to avoid, minimize, or mitigate impacts on historic properties through consultation with the appropriate SHPO and federally recognized tribes.

Area of Potential Effect (APE). Federal agencies assess the potential impact of their undertakings on historic properties located within an APE. DAF has defined this undertaking as the Proposed Action and has defined the APE as the potential impact area from all activities, including all areas of potential direct and indirect effects. Direct effects include, but are not limited to, ground disturbance, vibration, building modification and new construction, and staging and equipment storage. Indirect effects include, but are not limited to, noise and aesthetic interference. For this undertaking, the APE is defined as the footprint of all buildings proposed for interior and exterior alteration, all areas of new construction and additions, all landscape features (such as airfield markings) that are proposed for alteration, all new roads and parking lots, and a

50-foot buffer around those areas to account for construction staging and temporary physical impacts from ground disturbing activity. The APE captures all anticipated direct and indirect effects because all new building construction is anticipated to be one-story and not exceed 40 feet in total building height. The only vertical incursion planned is the antenna farm, which would be located adjacent to the proposed UMT facility and would stand approximately 50 feet tall. The APE totals 117 acres and is shown in **Figure 3-13**.

The APE for this undertaking does not include the takeoff and landing approaches at Vance AFB or the SUA where the T-7A aircraft would perform operations (see **Appendix A**) because these areas already are used for such operations with the T-38C aircraft, and this undertaking would not change the configuration (e.g., shape, size, altitudes) or active times of this SUA. As noted in **Section 3.2.2**, SUA noise modeling of the proposed T-7A operations indicates that noise levels would not result in a L_{dnmr} greater than 65 dBA in any SUA for all of the alternatives. Therefore, T-7A flight training would have no potential to affect historic properties—including adobe structures and TCPs—beneath any SUA, and the SUA does not warrant inclusion in the APE for this undertaking.

Approval of the APE for this undertaking was received from the Oklahoma SHPO on November 5, 2024 (see **Appendix C**).

3.5.1 Affected Environment

In 2006, AETC approved a waiver exempting Vance AFB from the requirement to complete an Integrated Cultural Resources Management Plan. The waiver was based on the lack of archaeological resources, the presence of high levels of disturbance, and the absence of historic buildings and structures that have been determined eligible for listing on the NRHP (AETC 2006, DAF 2024b).

Archaeological Resources. 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 ground disturbance and the low potential for archaeological resources on the installation (DAF 2024b).

In response to a recent project at Vance AFB that partially overlaps with the APE for the Proposed Action, the installation received a letter on May 10, 2023, from OAS confirming that no sites had been identified in that project area and that no archaeological materials were likely to be encountered (DAF 2024b). OAS provided identical confirmation that no archaeological resources were present or likely to be encountered for the APE of the Proposed Action in a letter dated January 30, 2025 (see **Appendix C**).

Figure 3-13. Cultural Resources Area of Potential Effect

Architectural Resources. No buildings or structures on Vance AFB have been determined eligible for listing on the NRHP. A 2003 survey of Cold War-era buildings and structures on Vance AFB identified no resources eligible for listing in the NRHP (AETC 2003). In 2013 and 2014, 18 buildings were reevaluated for potential historical significance because they had reached 50 years of age. All 18 reevaluated buildings were determined not eligible for listing on the NRHP with Oklahoma SHPO concurrence (Oklahoma Historical Society 2013, Oklahoma Historical Society 2014).

Of the buildings and structures proposed for modification in this Proposed Action, Buildings 179 (constructed 1969), 183 (constructed 1967), 541 (constructed 1963), 542 (constructed 1990), 672 (constructed 1978), and 690 (constructed 1978) were evaluated for NRHP eligibility in the 2003 survey, and Building 183 was reevaluated in 2013, and all were determined not eligible as mentioned above. The remaining buildings and structures—including the existing hush house pad, T-38C shelters, airfield pavement proposed for modification, and Building 199—were constructed after 1990.

Resources of Traditional or Religious Significance. No Native American cemeteries, burials, sacred sites, or other areas considered a TCP have been identified during surveys at Vance AFB. In response to a recent project at Vance AFB that partially overlaps with the APE for this Proposed Action, the installation received a letter on May 17, 2023, from the U.S. Department of the Interior, Bureau of Indian Affairs confirming that there were no tribal or individual Indian trust lands within or in the project vicinity (AETC 2006, DAF 2024b).

Fifteen federally recognized tribes have an expressed or potential interest in cultural resources at Vance AFB and the SUA. These tribes are the Apache Tribe of Oklahoma, Cherokee Nation, Cheyenne and Arapaho Tribes, Comanche Nation, Iowa Tribe of Oklahoma, Jicarilla Apache Nation, Kaw Nation, Kiowa Indian Tribe of Oklahoma, Osage Nation, Otoe-Missouria Tribe of Oklahoma, Ponca Tribe of Indians of Oklahoma, Quapaw Tribe of Indians, Tonkawa Tribe of Oklahoma, United Keetoowah Band of Cherokee Indians in Oklahoma, and Wichita and Affiliated Tribes. DAF consults with tribes on issues related to cultural resource management, the unanticipated discovery of human remains and cultural items under the Native American Graves Protection and Repatriation Act, and on project specific effects under Section 106 of the NHPA.

3.5.2 Environmental Consequences

Impacts on cultural resources result from actions that change culturally valued elements of a resource or restrict access to cultural resources. Impacts on cultural resources may be short- or long-term and direct or indirect. Direct impacts can result from physically altering, damaging, or destroying all or part of a resource. Indirect impacts can occur from alterations to characteristics of the surrounding environment that contribute to the importance of the resource. This includes introducing visual, atmospheric, or audible elements that are out of character with the property or that alter its setting or feeling. Under Section 106 of the NHPA, DAF must determine if the Proposed Action would result in an “adverse effect” on historic properties and must avoid, minimize, or mitigate such effects if they would occur. For the purposes of Section 106, an adverse effect is one that changes elements or characteristics of a historic property that make the property eligible for listing in the NRHP. This analysis

focuses on cultural resources that are listed in or eligible for listing in the NRHP and incorporates DAF findings of effect under Section 106 of the NHPA.

3.5.2.1 Alternative 1

A change in the type of aircraft flown or the timing (e.g., daytime or nighttime) and frequency of flight operations would generally have no potential to impact historic properties. As noted in **Section 3.2.2.1.1.2**, T-7A operations at Vance AFB would increase noise levels at POI in the region between 0.1 and 3.3 dBA DNL. A noise level increase of such a minimal magnitude would not be anticipated to impact any historic properties. A temporary increase in personnel at Vance AFB would also have no potential to impact historic properties. The only aspects of Alternative 1 that have the potential to impact historic properties are the construction and renovation projects proposed at the installation. **Table 3-57** lists those projects and summarizes their impacts on historic properties.

Archaeological Resources. Construction of the proposed hush house pad, addition to the egress shop, antenna farm, and munitions storage pad would involve ground disturbance. The potential for archaeological resources to occur within these project areas is low due to extensive land disturbance and the low potential for archaeological resources based on prior survey (DAF 2024b). The proposed hush house pad would be installed adjacent to the existing hush house pad (constructed in 1992) within a partially paved and grass area that was last disturbed in 2010. The egress shop was constructed in 1990, and the proposed addition would be constructed on a grassy area last disturbed in that same year. The antenna farm would be installed near Building 199, adjacent to existing antennas, within a partially paved and grass area last disturbed in 2023. The munitions storage pad would be constructed north of the existing parking apron within a grassy area last disturbed in 2008. The remaining projects would have no potential to impact archaeological resources as they would entail no ground disturbance.

Alternative 1 would have no effect on archaeological sites because no archaeological resources are known to be present on Vance AFB. In accordance with federal and DAF regulations, should any archaeological artifacts be exposed during construction or any other activities, those activities would cease until an investigation is completed (AETC 2006).

Architectural Resources. All but two projects would have no potential to impact standing resources because they entail no modifications of historic-age resources. The existing hush house pad dates to 1992, the T-38C shelters and CASS modules were installed between 2005 and 2007, and the egress shop (Building 542) dates to 1990. The airfield pavement proposed for reconfiguration and jet blast deflectors was originally completed circa 2008. The antenna farm would be located in a partially paved and grass area containing no standing resources, and the munitions storage pad would occur within a previously disturbed grassy area with no standing resources. The proposed UMT facility would occur in Building 199, which is proposed for interior renovation and modification to the exterior hangar doors. Building 199 currently is used as an existing T-1 maintenance facility and was constructed in 2004.

Table 3-57. Cultural Resources Components of the Proposed Action and Impact on Historic Properties

Building Name/Number	Project Component	NRHP Status	Date Constructed	Assessment of Effect
Hush House Pad	Construct a new hush house pad (approximately 27,500 ft^2) southwest of the existing hush house. Approach pavements and supporting utilities would be extended to the proposed hush house pad.	N/A – New construction Existing hush house pad is non-historic	1992	No effect on historic properties
T-7A Shelters	Construct new shelters (sunshades) on the existing aircraft parking apron and remove existing non-historic T-38C prefabricated shelters. Electrical utilities, proper lighting, and tie-downs/grounding points would be installed for each shelter.	N/A – New construction Existing T-38C shelters are non-historic	2005 to 2007	No effect on historic properties
Addition to Egress Shop (Building 542)	Construct an addition (approximately 3,200 ft^2) to Building 542 (constructed 1990).	N/A – Building 542 is non-historic	1990	No effect on historic properties
Jet Blast Deflectors	Install jet blast deflectors on airfield. Final placement dependent on ramp layout design.	N/A – Attached to non-historic pavement	Non-historic pavement	No effect on historic properties
Airfield Reconfiguration	Remark, reconfigure, and install new moorings and anchor rods on the ramp. Compass rose and trim pad would be moved slightly due to the siting of the new hush house.	N/A – Pavement, compass rose, and trim pad are non-historic	Circa 2008	No effect on historic properties
Renovate Squadron Operations Buildings	Renovate interior of Squadron Operations Building. Facility options being considered include Building 179 (constructed 1969), Building 183 (constructed 1967), Building 541 (constructed 1963), and Building 690 (constructed 1978).	N/A – Interior renovation only	1969, 1967, 1963, and 1978	No effect on historic properties
Modify Hangar	Modify the hangar doors of Building 199, which currently houses T-1 maintenance functions (constructed 2004).	N/A –Non-historic	2004	No effect on historic properties
Antenna Farm	Construct an additional antenna-yard area near Building 199. The antenna would be a maximum of 50 feet tall.	N/A – New construction	N/A – Vacant land	No effect on historic properties

Building Name/Number	Project Component	NRHP Status	Date Constructed	Assessment of Effect
Remove Aboveground CASS Service Modules	Remove T-38C CASS modules, which are electrical equipment panels attached to existing T-38C shelters. CASS lines to the rows would be cut and capped, and vaults would be filled with concrete.	N/A – Equipment being removed from existing T-38C shelters (non-historic)	2005 to 2007	No effect on historic properties
Munitions Storage Pad	Installation of a concrete pad (approximately 3,600 ft^2).	N/A – New construction	N/A – Vacant land	No effect on historic properties
GBTS Renovation	Renovate interior of GBTS building (Building 672, constructed 1978).	N/A – Interior renovation only	1978	No effect on historic properties
UMT Facility	Renovate interior of Building 199 (constructed 2004) to accommodate the proposed UMT facility.	N/A – Interior renovation only/non-historic	2004	No effect on historic properties

The two projects with potential to impact historic-age resources are the proposed renovation of the squadron operations buildings and the GBTS building. Renovation options are still being considered but would be limited to the building interiors. The squadron operations buildings that could be renovated are any of the following existing buildings: Building 179 (constructed 1969), Building 183 (constructed 1967), Building 541 (constructed 1963), and Building 690 (constructed 1978). The existing GBTS facility (Building 672) was constructed in 1978.

Building 183 was evaluated for NRHP eligibility and found ineligible in 2013 (Oklahoma Historical Society 2013). The other four historic-age resources with potential for interior modifications have not been evaluated for listing in the NRHP since reaching 50 years of age, and they were not of historic age during the 2003 survey (AETC 2003). Because the only alterations proposed for the historic-age resources would be limited to building interiors, the alterations would have no potential to impact those resources.

An adverse effect is one that changes elements or characteristics of a historic property that make the property eligible for listing in the NRHP. DAF applied the Criteria of Adverse Effect and determined that the Proposed Action would have no effect on historic properties. DAF consulted with the Oklahoma SHPO, who concurred with DAF's finding of no effect on historic properties in a letter dated November 5, 2024 (see **Appendix C**).

Resources of Traditional or Religious Significance. No Native American TCPs, cemeteries, burials, or sacred sites have been identified at Vance AFB, so no impacts on these types of cultural resources would occur. If an inadvertent discovery of culturally significant items (e.g., Native American human remains) occurs during construction, all work activity would cease until an investigation is completed, and DAF would consult with potentially affected Native American tribes to determine a course of action.

For this Proposed Action, DAF consulted with the 15 Native American tribes with interest in Vance AFB and the SUA (see **Section 3.5.1** for a list of those tribes) to confirm no relevant sacred sites or TCPs are present. Each tribe was initially contacted in June 2024 as part of the EIS public scoping process. Only the Osage Nation, Quapaw Tribe of Indians, and Cherokee Nation responded to the scoping contact. The Osage Nation acknowledged receipt of the hard copy scoping notice and requested it be sent via email on June 17, 2024. DAF provided the electronic scoping notice to the Osage Nation later that same day. The Quapaw Tribe of Indians responded on June 19, 2024, by declining to comment and requesting to be removed from further contact because the project is not within their area of interest. On July 17, 2024, the Cherokee Nation responded by stating they found no instances where the Proposed Action intersects or adjoins tribal resources and do not foresee an impact on tribal resources. They requested to be only contacted again if items of significance are discovered during the life of the project. No further consultation with the Quapaw Tribe of Indians and Cherokee Nation is necessary for this undertaking.

DAF mailed a second government-to-government consultation letter in October 2024 to 12 of the 15 tribes with an interest in Vance AFB and the SUA. The three tribes not mailed the consultation letter were the Osage Nation, who was emailed the consultation

letter in November 2024, and the Quapaw Tribe of Indians and Cherokee Nation, who require no further consultation for this undertaking. The October 2024 consultation letters requested assistance in identifying relevant historic properties of religious and cultural significance to tribal nations. The Comanche Nation was the only tribe to respond to the consultation letter. In a letter dated December 5, 2024, the Comanche Nation stated they cross referenced the project location with tribal site files and determined "no properties" have been identified. **Appendix C** contains copies of the consultation letters.

3.5.2.2 Alternative 2

Impacts on cultural resources from T-7A operations that are 25 percent greater than Alternative 1 would be the same as those described for Alternative 1 because the proposed increase in flight operations would have no potential to impact historic properties. Thus, similar to Alternative 1, no effect on historic properties would occur from Alternative 2.

3.5.2.3 Alternative 3

Impacts on cultural resources from T-7A operations that are 45 percent greater than Alternative 1 and the delivery of up to 31 additional T-7A aircraft would be the same as those described for Alternatives 1 and 2. No impacts on historic properties would occur from the installation of sufficient shelters for all T-7A aircraft of Alternative 3 because all shelters would be constructed on the existing, non-historic ramp. Thus, similar to Alternatives 1 and 2, no effect on historic properties would occur from Alternative 3.

3.5.2.4 No Action Alternative

The No Action Alternative would not impact historic properties. No facility construction would occur, and there would be no changes in aircraft operations. Cultural resources at Vance AFB would remain unchanged when compared to the existing conditions described in **Section 3.5.1**.

3.6 Hazardous Materials and Wastes

Hazardous Materials, Hazardous Wastes, and Petroleum Products. Hazardous materials are hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table in 49 CFR Section 172.101, and materials that meet the defining criteria for hazard classes and divisions in 49 CFR Part 173. Hazardous wastes are a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed, or otherwise managed (42 United States Code [USC] Section 6903(5)). Petroleum products include crude oil or any derivative thereof, such as gasoline, diesel, or propane.

Toxic Substances. Toxic substances are asbestos-containing material (ACM), lead-based paint (LBP), and polychlorinated biphenyls (PCBs), all of which are typically found in older buildings and utilities infrastructure. USEPA has the authority to regulate these substances through the Toxic Substances Control Act (15 USC Chapter 53).

Material containing more than 1 percent asbestos by weight is considered an ACM. Several bans on various ACMs have occurred between 1973 and 1990, so ACMs are most likely to be found in buildings constructed before 1990. ACMs are generally found in building materials such as floor tiles, mastic, roofing materials, pipe wrap, and wall plaster. LBP was used commonly prior to its ban in 1978; therefore, any building constructed prior to 1978 may contain LBP. PCBs are human-made chemicals that persist in the environment and were widely used in building materials (e.g., caulk) and electrical products prior to 1979. Structures constructed prior to 1979 potentially include PCB-containing building materials.

Legacy Environmental Contamination. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) governs the response or cleanup actions to address hazardous substance, pollutant, and contaminant releases into the environment, and the Defense Environmental Restoration Program provides for the cleanup of DoW property. Two restoration programs under the Defense Environmental Restoration Program are the Installation Restoration Program (IRP) and the Military Munitions Response Program (MMRP). IRP addresses contaminated sites, while MMRP addresses nonoperational military ranges and other sites suspected or known to contain unexploded ordnance, discarded military munitions, or munitions constituents. Each site is investigated, and appropriate remedial actions are taken under the supervision of applicable federal and state regulatory programs. When no further remedial action is granted for a given site, it is closed and no longer represents a threat to human health.

***Polyfluoroalkyl Substances*.** DAF is currently investigating potential effects related to chemicals known as per- and polyfluoroalkyl substances (PFAS). This family of chemicals was developed in the 1940s and includes perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA). Aqueous film forming foam (AFFF) containing PFAS was developed in the early 1960s and used at U.S. airports, municipal fire stations, and petroleum facilities to extinguish hydrocarbon-based fires effectively. Fire fighters at military installations used AFFF regularly in emergencies or trained with AFFF in an unconfined manner. The latest regulations established by the USEPA designate PFOA and PFOS as hazardous substances under CERCLA. Maximum Contaminant Levels have been established for six PFAS in drinking water (USEPA 2024c).

Radon. Radon is a naturally occurring, odorless, and colorless radioactive gas found in soils and rocks that can lead to the development of lung cancer. Radon tends to accumulate in enclosed spaces, usually those that are below ground and poorly ventilated (e.g., basements). USEPA established a guidance radon level of 4 picocuries per liter (pCi/L) in indoor air for residences, and radon levels above this amount are considered a health risk to occupants.

3.6.1 Affected Environment

Hazardous Materials, Hazardous Wastes, and Petroleum Products. DAF uses hazardous materials and petroleum products such as liquid fuels, pesticides, and solvents for everyday operations at Vance AFB. The use of these materials results in the generation and storage of hazardous waste and used petroleum products on the

installation. DAF installations manage hazardous materials through DAF Manual 32-7002 (DAF 2025d). Hazardous materials are managed and procured in accordance with the installation's Hazardous Materials Management Process (HMMP) Charter through the Enterprise Environmental, Safety, and Occupational Health Management Information System. Use and application of pesticides on Vance AFB are conducted in accordance with the installation's Integrated Pest Management Plan and in compliance with the Federal Insecticide, Fungicide, and Rodenticide Act.

Vance AFB is a Resource Conservation and Recovery Act Small Quantity Generator and a Small Quantity Universal Waste Handler. Hazardous waste generating activities on Vance AFB include aircraft, automotive, and building and grounds maintenance, as well as processes including metal fabrication, bead blasting, painting, parts washing, and parts cleanup. Hazardous wastes generated include blast dust media, absorbents, paint-related material, paint, solvents, adhesives, sealants, and lead debris (Vance AFB 2021b). Universal wastes generated include used or spent lamps and batteries (Vance AFB 2016).

Vance AFB has implemented an installation-wide Spill Prevention, Control, and Countermeasure (SPCC) Plan; Integrated Solid Waste Management Plan (ISWMP); HMMP Charter; and Hazardous Waste Management Plan (HWMP). These plans define roles and responsibilities, address record keeping requirements, and provide spill contingency and response requirements.

Of the facilities subject to renovation by the Proposed Action, hazardous materials, hazardous wastes, and petroleum products are most likely to be stored, used, and generated at Buildings 199 and 542.

Toxic Substances. ACM on Vance AFB is managed in accordance with the installation's Asbestos Management Plan (Vance AFB 2022c). Of the facilities proposed for renovation, Buildings 179, 183, 541, 672, and 690 were constructed prior to 1990 and have the greatest potential to contain ACM. Buildings 199 and 542 were constructed in 2004 and 1990, respectively, and are less likely to contain ACM (Vance AFB 2024b).

The location of any LBP in facilities is communicated to appropriate personnel in order to identify potential hazards and avoid disturbance of affected building materials. Of the facilities proposed for renovation, Buildings 179, 183, and 541 were constructed prior to 1978 and have potential to contain LBP (Vance AFB 2024b).

Of the facilities proposed for renovation, Buildings 179, 183, 541, 672, and 690 were constructed prior to 1979 and have a potential to contain PCBs (Vance AFB 2024b). Older electrical infrastructure within these buildings, such as light fixtures and surge protectors, might also contain PCBs.

Legacy Environmental Contamination. There are 11 active IRP sites and no active MMRP sites on Vance AFB. This EIS focuses only on the open sites that have the potential to impact or be impacted by the Proposed Action. Sites granted no further action, that do not directly coincide with the construction and renovation projects, or that would not be impacted by the proposed work activities are not discussed further in this

EIS. While none of the active IRP sites directly coincide with the construction and renovation projects, six sites (i.e., DP005, FT002, SS024, SS025, SS047, and ST012) are adjacent to some of the proposed projects (see **Figure 3-14**), and the groundwater plumes associated with these sites could underlie some of the projects. Groundwater is approximately 12 to 24 feet below ground surface (bgs), and there are several groundwater monitoring wells in the vicinity of the Proposed Action. A brief summary of these six IRP sites follows:

- **DP005**, Tank Sludge Disposal Area. Soil and groundwater were contaminated with cleaning solvents and fuel-related compounds. Remediation activities are ongoing, and sediment, surface water, and groundwater samples are taken annually (AFCEC 2024a).
- **FT002**, Fire Training Area (FTA). Soil and groundwater were contaminated from burning petroleum-based products for firefighting training purposes. Remediation actions for legacy contaminants were completed and groundwater samples are taken annually. Site FT002 was identified as a possible PFAS contamination site in 2017. PFAS investigations performed on Vance AFB and the installation's plans to address PFAS contamination under the CERCLA process are discussed further below (AFCEC 2024a).
- **SS024**, Jet Engine Cleaning Shop. Groundwater was contaminated from spills of hazardous materials being transferred from Building 187. Remediation activities are ongoing, and groundwater samples are taken annually (AFCEC 2024a).
- **SS025**, Contractor Operated and Maintained Base Supply Warehouse. Groundwater was contaminated with trichloroethylene. Remediation activities are ongoing, and groundwater samples are taken annually (AFCEC 2024a).
- **SS047**, Spill Site Jet Engine Test Cell, Building 47. Soil and groundwater were contaminated with fuel components. The site was initially part of the voluntary cleanup program and was designated as an IRP site in July 2024. Remediation activities are ongoing, and groundwater samples are taken annually (AFCEC 2024b).
- **ST012**, Paint Stripping Equalization Tank. Groundwater was contaminated with methylene chloride, trichloroethylene, and other VOCs from paint stripping operations. Remediation activities are ongoing, and groundwater samples are taken annually (AFCEC 2024a).

Polyfluoroalkyl Substances. Vance AFB formerly used AFFF containing PFAS during firefighter training and emergency response at aircraft crash sites. In 2017, a Site Inspection (SI) was conducted at Vance AFB to determine whether a release of PFAS had occurred. The SI evaluated six potential AFFF release areas on the installation comparing analytical results to screening values for soil, groundwater, and sediment. None of these sites directly coincide with the construction projects but one site is adjacent (see **Figure 3-14**), and its groundwater plume could underlie some of the projects. IRP Site FT002 is listed as AFFF Area 1 and is described as follows.

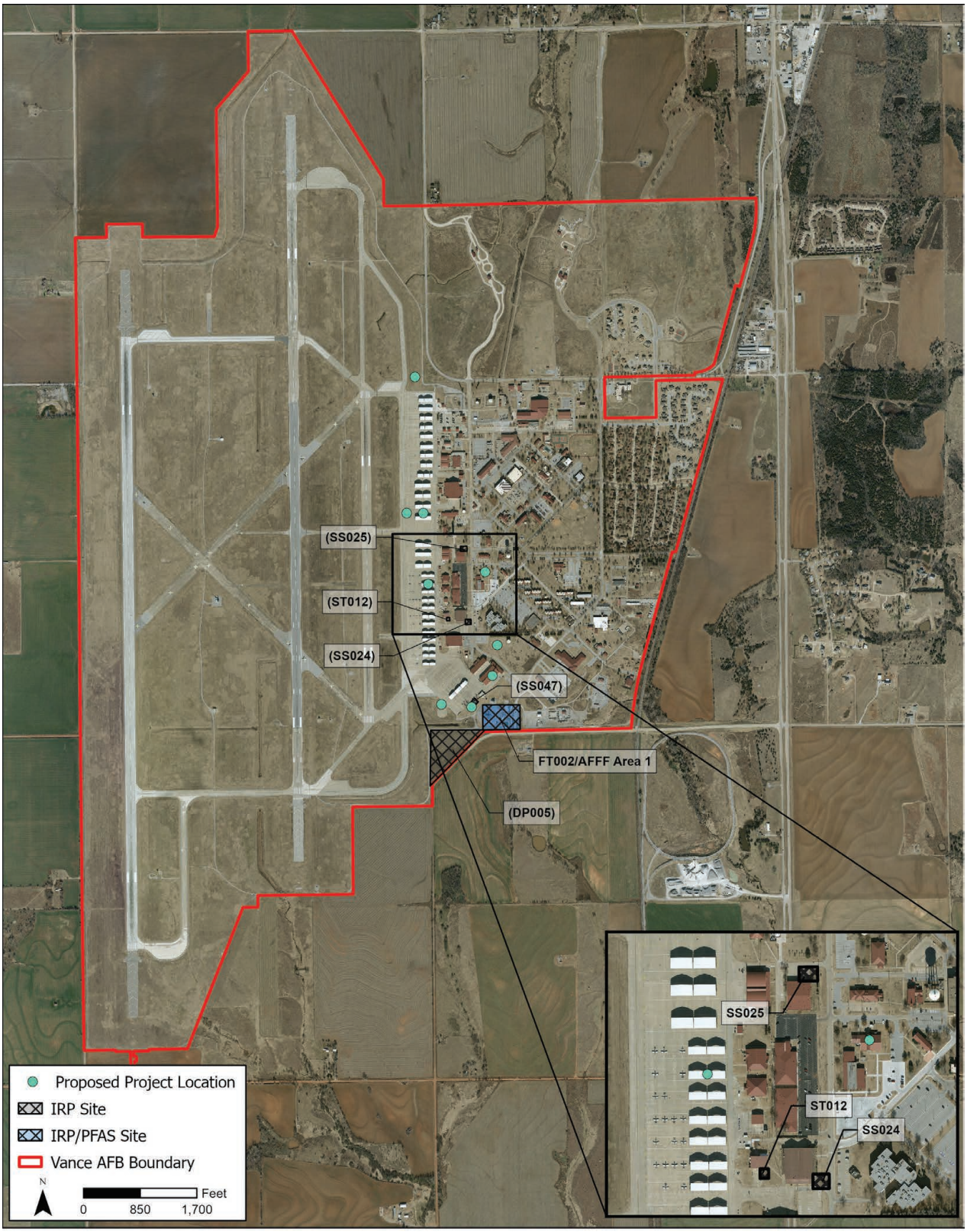


Figure 3-14. Location of Relevant IRP and PFAS Sites

The FTA was used from approximately 1953 until 2000 and an estimated 800 gallons of AFFF were used annually for firefighting training and refractory testing. Draining from the FTA was directed via underground lines to an oil/water separator that drained either northeast to the sanitary sewer or south/southeast to the Flightline Drainage Ditch. During the SI, two surface and subsurface soil samples were collected from two borings and three groundwater samples were collected from three groundwater monitoring wells. Groundwater in this area is approximately 20 feet bgs. Several PFAS were detected in the surface and subsurface soil and groundwater samples exceeding the USEPA calculated Regional Screening Level (AFCEC 2024c, AFCEC 2018). The 2018 SI recommended AFFF Area 1 be advanced for Remedial Investigation, which would be accomplished under the CERCLA process.

Radon. USEPA rates Garfield County, Oklahoma, as radon zone 3. Counties in zone 3 have a predicted average indoor radon screening level less than 2 pCi/L (USEPA 2024d).

3.6.2 Environmental Consequences

Impacts on or from hazardous materials and wastes would be considered significant if a proposed action would result in noncompliance with applicable federal or state regulations or increase the amounts generated or procured beyond current management procedures, permits, and capacities. Impacts on contaminated sites would be considered significant if a proposed action would disturb or create contaminated sites resulting in negative impacts on human health or the environment, or if a proposed action would make it substantially more difficult or costly to remediate existing contaminated sites.

3.6.2.1 Alternative 1

Hazardous Materials, Hazardous Wastes, and Petroleum Products. Short- and long-term, not significant, adverse impacts would occur from the use of hazardous and petroleum products and the generation of hazardous wastes during construction and renovation, operation and maintenance of the new facilities, and flight operations. Hazardous materials that could be used include paints, welding gases, solvents, preservatives, and sealants. Additionally, hydraulic fluids and petroleum products, such as diesel and gasoline, would be used in vehicles and equipment supporting facility construction. Construction would generate minimal quantities of hazardous wastes. Contractors would be responsible for the disposal of hazardous wastes in accordance with BMPs outlined in the Vance AFB SPCC Plan and HWMP and federal and state laws. All hazardous materials, petroleum products, and hazardous wastes used or generated during construction would be contained, stored, and managed appropriately (e.g., secondary containment, inspections, spill kits) in accordance with applicable regulations to minimize the potential for releases. All construction equipment would be maintained according to the manufacturer's specifications and drip mats would be placed under parked equipment, as needed. Hazardous materials, hazardous wastes, and petroleum products currently within the affected portions of Buildings 199 and 542 would be relocated within the facilities or to similar facilities as required to accommodate the proposed renovation of these buildings.

New hazardous materials storage and hazardous waste collection points would be established, as necessary, based on anticipated building functions and hazardous waste streams. They would most likely be sited in the proposed UMT facility; Hush House; and Buildings 199 and 542. The installation's SPCC Plan, ISWMP, HMMP Charter, and HWMP would be amended, as needed, for any changes to hazardous material, hazardous waste, or petroleum product capabilities. These plans and federal and state laws and regulations would continue to be followed to lessen the potential for a release. Use and application of pesticides would continue to be conducted in accordance with the installation's Integrated Pest Management Plan and in compliance with the Federal Insecticide, Fungicide, and Rodenticide Act.

Short-term, not significant, adverse impacts would occur from a temporary increase in the use of hazardous materials and petroleum products and generation of hazardous wastes during the aircraft transition period. As the total number of aircraft on Vance AFB would increase during the transition period, additional quantities of hazardous materials, petroleum products, and hazardous wastes would need to be delivered, stored, used, and disposed of appropriately at Vance AFB from the maintenance of two types of aircraft. Vance AFB is anticipated to have enough delivery, storage, and disposal capacity to accommodate the increased hazardous material, petroleum product, and hazardous waste requirements. The quantities of hazardous materials, petroleum products, and hazardous wastes required for maintenance of individual T-7A aircraft would be similar and proportional to those required for T-38C aircraft. No long-term, adverse impacts would occur because by 2034 the number of T-7A aircraft to maintain at Vance AFB would be only five more than the current number of T-38C aircraft. As such, the use of hazardous materials and petroleum products and the generation of hazardous wastes from routine aircraft maintenance would return to similar levels as current conditions.

Annual flight operations with the T-7A would be slightly greater than current levels with the T-38C. Therefore, additional quantities of jet fuel may need to be delivered, stored, and used at Vance AFB. Vance AFB is anticipated to have enough delivery and storage capacity to accommodate this increase. The installation's SPCC Plan, ISWMP, HMMP Charter, and HWMP would continue to be followed to reduce the potential for a release.

Toxic Substances. Short-term, not significant, adverse impacts from toxic substances could occur from the renovation of Buildings 179, 183, 541, 672, and 690, which potentially contain ACMs, LBP, or PCBs. Surveys for these substances would be completed, as necessary, by a certified contractor prior to work activities to ensure that appropriate measures are taken to reduce the potential exposure to, and release of, these substances. Contractors would wear appropriate personal protective equipment (PPE) and would be required to adhere to all federal, state, and local regulations, as well as the installation's management plans for toxic substances. All ACM- and LBP-contaminated debris would be disposed of at a USEPA-approved landfill. New building construction is not likely to include the use of these substances because federal policies and laws limit their use in building construction applications. Long-term, not significant, beneficial impacts would occur from renovation of these buildings by reducing the

potential for future human exposure and reducing the amount of ACMs, LBP, and PCBs to be maintained at Vance AFB.

Legacy Environmental Contamination. No impacts on or from Vance AFB's legacy environmental contamination sites would occur. As stated in **Section 3.6.1**, IRP Sites DP005, FT002, SS024, SS025, SS047, and ST012 are adjacent to some of the proposed construction projects. Ground disturbance associated with the proposed construction projects would be planned to avoid known soil contamination. Groundwater plumes could underlie some of the projects, but construction would not require excavation to the depth of groundwater (i.e., 12 to 24 feet bgs). Therefore, it is not anticipated that the proposed construction projects would encounter any soil or groundwater contamination. Construction would not impact the ability to remediate, investigate, or monitor IRP sites, and project planning would include protection of groundwater monitoring wells.

Contractors performing construction could encounter undocumented soil or groundwater contamination. If soil or groundwater that is believed to be contaminated were discovered, the contractor would be required to stop work immediately, report the discovery to the installation, and implement appropriate safety measures. The contractor would be responsible for management and disposal of all contaminated media. Contaminated media would be containerized, pending analysis, and disposed of according to the appropriate disposal facility's requirements. Work activities would resume when the issue is resolved.

Polyfluoroalkyl Substances. No impacts from PFAS are anticipated. None of the construction projects would be sited within the footprint of an AFFF area; therefore, no potentially PFAS-contaminated soil would be disturbed. One proposed project area immediately west of the current FTA would occur immediately adjacent to AFFF Area 1. Although shallow (i.e., approximately 20 feet bgs), potentially PFAS-contaminated groundwater flows to the northwest from AFFF Area 1 toward the project area, construction would not require excavation to the depth of groundwater. Construction would not impact the ability to remediate, investigate, or monitor this site, and project planning would include protection of groundwater monitoring wells. No other project areas have the potential to impact, or be impacted by, PFAS.

Radon. No impacts from radon would occur because buildings in Garfield County, Oklahoma, are typically found to have a predicted average indoor radon level less than 2 pCi/L. Therefore, radon levels above 4 pCi/L are unlikely to be encountered inside of the proposed or renovated buildings.

3.6.2.2 Alternative 2

Impacts on hazardous materials and wastes from T-7A operations that are 25 percent greater than Alternative 1 would be slightly greater than those described for Alternative 1. Compared to Alternative 1, the increase in aircraft operations would require additional quantities of hazardous materials, hazardous wastes, and petroleum products (most notably jet fuel) to be delivered, stored, used, and disposed of appropriately at Vance AFB. Vance AFB is anticipated to have enough delivery, storage, and disposal capacity to accommodate the increased hazardous materials, petroleum products, and hazardous wastes requirements. The Vance AFB SPCC Plan, ISWMP, HMMP Charter,

and HWMP would continue to be followed to lessen the potential for a release to the environment.

3.6.2.3 Alternative 3

Impacts on hazardous materials and wastes from T-7A operations that are approximately 45 percent greater than Alternative 1 and the delivery of up to 31 additional T-7A aircraft would be greater than those described for Alternative 2. Compared to Alternative 2, the increase in aircraft operations and the additional aircraft to maintain would require additional quantities of hazardous materials, hazardous wastes, and petroleum products (most notably jet fuel) to be delivered, stored, used, and disposed of appropriately at Vance AFB. Vance AFB is anticipated to have enough delivery, storage, and disposal capacity to accommodate the increased hazardous materials, petroleum products, and hazardous wastes requirements. The installation's SPCC Plan, ISWMP, HMMP Charter, and HWMP would continue to be followed to lessen the potential for a release to the environment. The installation of sufficient shelters for all T-7A aircraft of Alternative 3 would have no additional impacts on hazardous materials and wastes.

3.6.2.4 No Action Alternative

The No Action Alternative would not impact hazardous materials and wastes. No facility construction would occur, and there would be no changes in aircraft operations. Additional quantities of hazardous materials, petroleum products, and hazardous wastes would not be used, stored, or generated, and the management of hazardous materials, petroleum products, and hazardous wastes would not change. Toxic substances would remain and continue to require maintenance by DAF personnel. No impacts on or from legacy environmental contamination, PFAS, or radon would occur. Hazardous materials and wastes conditions at Vance AFB would remain unchanged compared to the existing conditions described in **Section 3.6.1**.

3.7 Safety

Safety addresses the well-being, safety, and health of members of the public, contractors, and DAF personnel during the various aspects of the Proposed Action. A safe environment is one in which there is no (or an optimally reduced) potential for serious bodily injury or illness, death, or property damage. Safety and accident hazards can often be identified and reduced or eliminated. Necessary elements for an accident-prone situation or environment include the presence of the hazard itself together with the exposed (and possibly susceptible) population. The degree of exposure depends primarily on the hazard's proximity to the population. Safety hazards relevant to this Proposed Action include construction, mission, and flight activities.

3.7.1 Affected Environment

Construction Safety. Contractors performing construction activities on Vance AFB are responsible for following federal OSHA regulations and are required to conduct these activities in a manner that does not increase risk to workers or the public. OSHA regulations address the health and safety of people at work and cover potential exposure to a range of chemical, physical, and biological hazards, and ergonomic stressors. The regulations are designed to control these hazards by eliminating

exposure via administrative or engineering controls, substitution, use of PPE, and availability of Safety Data Sheets.

Construction contractors are responsible for reviewing potentially hazardous workplace conditions; monitoring worker exposure to workplace chemical (e.g., asbestos, lead, hazardous substances), physical (e.g., noise propagation, falls), and biological (e.g., infectious waste, wildlife, poisonous plants) agents and ergonomic stressors; and recommending and evaluating controls (e.g., prevention, administrative, engineering, PPE) to ensure exposure to personnel is eliminated or adequately controlled. Additionally, employers are responsible for providing occupational health physicals for workers using respiratory protection; engaged in work with hazardous waste, asbestos, or lead; or otherwise requiring medical monitoring.

Mission Safety. Mission safety on DAF installations is maintained through adherence to DoW and DAF safety policies and plans. DAF safety programs ensure the safety of personnel and the public on the installation by regulating mission activities. DAFI 91-202, *The Department of the Air Force (DAF) Mishap Prevention Program*, implements DAF Policy Directive 91-2, *Safety Programs*, and provides guidance for implementing the safety program for all activities that occur on DAF installations.

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 impact 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." Activities occurring near areas that could have higher concentrations of children during any given time, such as schools and childcare facilities, might further intensify potential impacts on children.

Vance AFB is a secure military installation and access is limited to military personnel, civilian employees, military dependents, and approved visitors. Aircraft operations and maintenance activities performed on Vance AFB, including those done currently for the T-38C, are accomplished in accordance with applicable DAF safety regulations, published DAF Technical Orders, and standards prescribed by DAF occupational safety and health requirements. Adherence to industrial-type safety procedures and directives ensures safe working conditions.

Explosive Safety Quantity Distance (ESQD) arcs are buffers around facilities that contain high-explosive munitions or flammable elements. The size and shape of an ESQD arc depends on the facility and the net explosive weight of the munitions being housed. Separations set by ESQD arcs establish the minimum distances necessary to prevent the exposure of DAF personnel and the public to potential explosive safety hazards. ESQD arcs cover approximately 13 acres of Vance AFB. Incompatible development is restricted within the ESQD arcs to reduce safety risks and protect mission requirements (Vance AFB 2016).

Flight Safety. The primary safety concern regarding military flights is the potential for aircraft mishaps (i.e., crashes or crash landings), including those caused by adverse weather events and wildlife strikes. DAFI 91-202 establishes mishap prevention

program requirements (including those for BASH incidents), assigns responsibilities for program elements, and contains program management information.

Land use restrictions are intended to protect the public from exposure to aircraft operation hazards. The AICUZ program is used to protect public and DAF personnel health and safety, as it relates to aircraft noise, accident potential, and the intersection with land use. Each DAF installation's AICUZ Study identifies CZs and APZs to protect the public from aircraft mishaps. Of the safety zones, the CZ has the highest accident potential. The majority of Vance AFB CZs are on installation property. Approximately 540 acres of the CZs fall outside of the installation boundary with no population within these areas (Vance AFB 2022a).

APZ I is less critical than the CZ, but still possesses a substantial risk factor. Within APZ I and II, higher density uses (e.g., schools, apartments, churches) and more intense uses (e.g., office buildings, strip malls) should be limited. The city of Enid has established land use compatibility guidelines that delineate land use and density limitations within each type of safety zone. The CZ and APZ I areas north and south of the runways are almost entirely undeveloped agricultural lands, except for a handful of homes underlying APZ I that existed prior to the city enacting AICUZ-related land use restrictions in these areas (see **Figure 3-15**). APZ II begins at the outer edge of and is less critical than APZ I but still possesses the potential for accidents. There are some developed areas underlying APZ II north of the installation that consist of multi-family residential areas and commercial retail, to include the Oakwood Mall property. These areas also existed before the city enacted AICUZ-related land use restrictions (Vance AFB 2016, Vance AFB 2022a).

Each runway end at Vance AFB has a CZ and two APZs (see **Figure 3-15**). The CZs measure 3,000 feet wide (i.e., 1,500 feet on either side of the runway centerline) and 3,000 feet long. Because the centerlines for the runways are less than 1,500 feet apart, the CZs and APZs for the three runways overlap. APZ I extends 5,000 feet from the CZ and is 3,000 feet wide. APZ II extends an additional 7,000 feet from APZ I and is also 3,000 feet wide. The CZ and APZs at Vance AFB cover approximately 4,165 acres of off-installation land. There are 4 persons living within APZ I and 2,715 persons living within APZ II (Vance AFB 2022a).

3.7.2 Environmental Consequences

Any increase in safety risks is considered an adverse impact on safety. Significant impacts on safety would occur if a proposed action did either of the following:

- Substantially increased risks associated with the safety of DAF personnel or the general public
- Introduced a new safety risk for which DAF is not prepared or does not have adequate management and response plans in place.

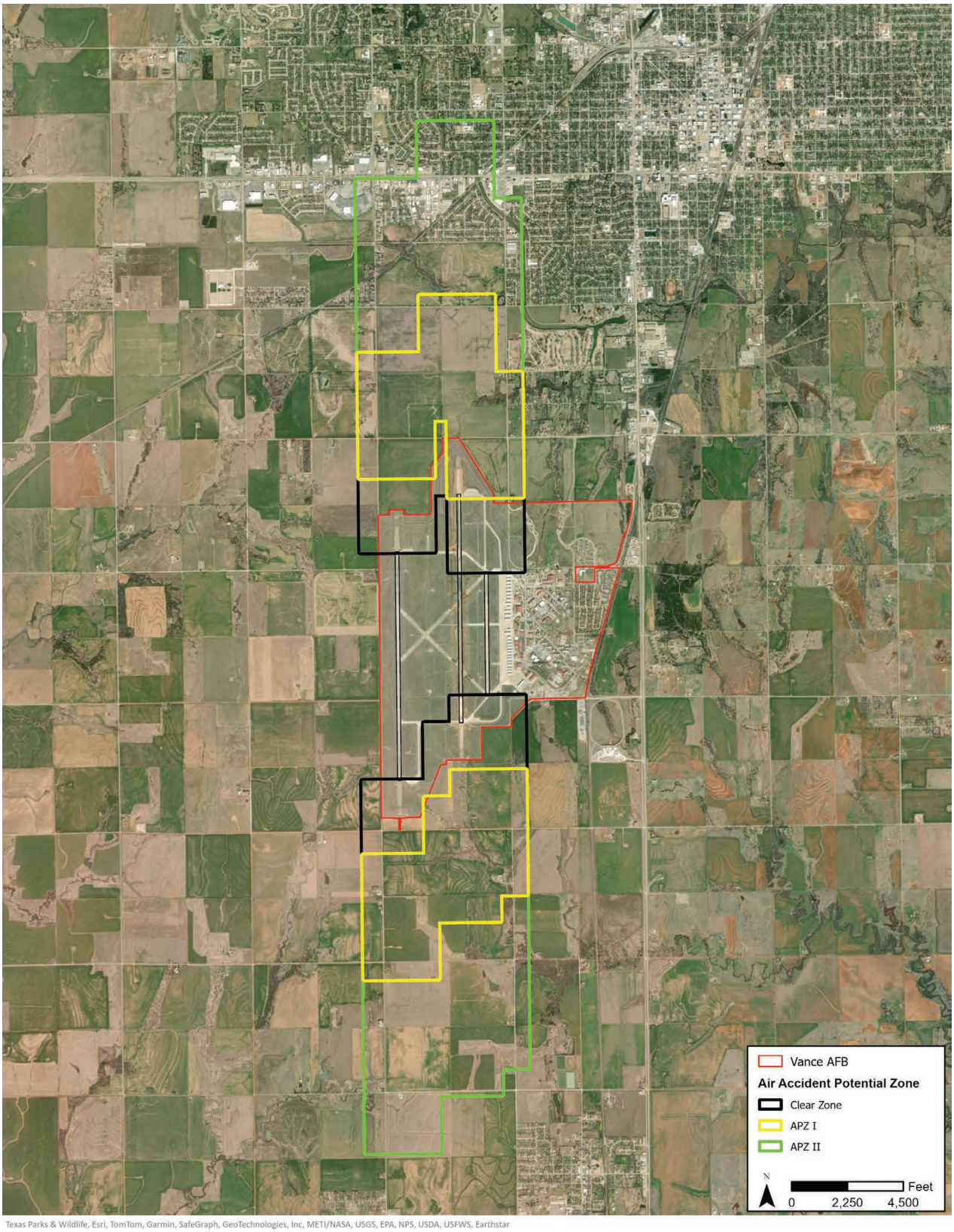


Figure 3-15. CZs and APZs at Vance AFB

3.7.2.1 Alternative 1

Construction Safety. Short-term, not significant, adverse impacts on contractor health and safety would occur during construction and renovation. Construction activities are inherently hazardous because personnel are potentially exposed to health and safety hazards from heavy equipment operation; hazardous materials and chemical use; and working in confined, poorly ventilated, and noisy environments. Therefore, contractors performing construction work would be exposed to an environment containing slightly greater health and safety risks that a non-construction environment.

To minimize health and safety risks, construction contractors would be required to use appropriate PPE and establish and maintain site-specific health and safety programs for their employees. Contractor health and safety programs would follow all applicable federal OSHA regulations and would be reviewed by Vance AFB personnel prior to work beginning to ensure that appropriate measures are taken to reduce the potential for exposure of workers and installation personnel to health and safety risks. OSHA requirements for excavations, specified in 29 CFR Section 1926 Subpart P, would be followed for excavation and trenching activities.

Mission Safety. No adverse impacts on the health and safety of military personnel would occur. All mission-related activities for Alternative 1 would be carried out in accordance with DoW and DAF safety policies and plans. Aircraft maintenance activities would be accomplished similar to those performed for the T-38C and in accordance with applicable DAF safety regulations, published DAF Technical Orders, and standards prescribed by DAF occupational safety and health requirements. Adherence to industrial-type safety procedures and directives would ensure safe working conditions.

No adverse impacts on the health and safety of civilians would occur. As previously noted, Vance AFB is a secure military installation and access is limited to military personnel, civilian employees, military dependents, and approved visitors. No construction or mission activities would occur within facilities frequented by children, and the environmental health and safety risks from construction and mission activities would not disproportionately impact children more than other populations.

None of the construction projects would be sited within Vance AFB's existing ESQD arcs, and the dimensions of these arcs would be unchanged. A new ESQD arc would be established around the proposed munitions storage pad, as necessary, to ensure the safety of nearby populations from the explosive hazard of T-7A ejection seat explosive components. The proposed munitions storage pad is planned for north of the existing parking apron within a grassy area away from other development; therefore, establishment of an ESQD arc in this location would not conflict with any existing buildings or functions.

Flight Safety. DAF evaluated the T-7A's airworthiness and certified its compliance to fly. Therefore, T-7A operations would not be expected to increase the potential for mishaps, and individuals within APZs I and II would not be at an additional risk.

Long-term, not significant, adverse impacts on flight safety would occur from increased T-7A operations at Vance AFB compared to current levels. The increased operations

would result in an increased potential for BASH incidents and other mishaps. The overall potential for BASH incidents and other mishaps is not expected to be significantly greater than current levels because all flight safety guidelines and regulations currently in place, including the BASH program, would continue to be followed. The greatest potential for a BASH incident would occur during takeoff and landing operations. FAA estimates that approximately 97 percent of bird or wildlife aircraft strikes occur at that stage of flight. The remaining approximately 3 percent occur in the cruise phase of flight (FAA 2022b). All aircraft operations would continue to be performed in accordance with standard flight rules and local operating procedures and policies. The CZs and APZs would remain unchanged.

3.7.2.2 Alternative 2

Impacts on safety from T-7A operations that are 25 percent greater than Alternative 1 would be slightly greater than those described for Alternative 1 but still not significant. The 25 percent increase in operations would increase the potential for BASH incidents and other mishaps associated with greater airfield use, compared to Alternative 1. The overall potential for BASH incidents and other mishaps is not expected to be significantly greater than Alternative 1 because all safety programs in place for existing aircraft operations, including the BASH program, would continue to be followed. As a result, the proposed increase in operations would not be expected to increase the potential for mishaps, and individuals living within APZs I and II would not be at an additional risk. The CZs and APZs would remain unchanged.

3.7.2.3 Alternative 3

Impacts on safety from T-7A operations that are 45 percent greater than Alternative 1 and the delivery and maintenance of up to 31 additional T-7A aircraft would be greater than those described for Alternatives 1 and 2 but still not significant. The additional operations would increase the potential for BASH incidents and other mishaps associated with greater airfield use, compared to Alternative 2. Like Alternative 2, the overall potential for BASH incidents and other mishaps is not expected to be significantly greater than Alternatives 1 and 2 because all safety programs in place for existing aircraft operations, including the BASH program, would continue to be followed. As a result, the proposed increase in aircraft and operations would not be expected to increase the potential for mishaps, and individuals living within APZs I and II would not be at an additional risk. The CZs and APZs would remain unchanged. The installation of sufficient shelters for all T-7A aircraft of Alternative 3 would have no additional impacts on safety.

3.7.2.4 No Action Alternative

For the No Action Alternative, no impacts on safety would occur. No facility construction would occur, and aircraft operations would not change. Construction, mission, and flight safety conditions at Vance AFB would remain unchanged compared to the existing conditions described in **Section 3.7.1**.

3.8 Water Resources

The water resources relevant to the Proposed Action are groundwater, surface water, wetlands, and floodplains at Vance AFB. No impacts on water resources beneath the SUA would occur; therefore, water resources in the SUA are not discussed further in this EIS.

Groundwater. Groundwater is water that collects or flows beneath the Earth's surface, filling the porous spaces in soil, sediment, and rocks. Groundwater originates from precipitation, percolates through the ground surface, and is often used for potable water consumption, agricultural irrigation, and industrial applications.

Surface Water. Surface water includes natural, modified, and constructed water confinement and conveyance features above groundwater. These features are generally classified as streams, springs, wetlands, natural and artificial impoundments (e.g., ponds, lakes), and constructed drainage canals and ditches. Stormwater is surface water generated by precipitation events that may percolate into permeable surficial sediments or flow across the top of impervious or saturated surficial areas, which is a condition known as runoff. High proportions of impervious surfaces associated with buildings, roads, and parking lots can exacerbate stormwater runoff. Stormwater management systems reduce sediments and other contaminants that would otherwise flow directly into surface waters.

The Clean Water Act (CWA) (33 USC Sections 1251 et seq., as amended) establishes federal limits, through the National Pollutant Discharge Elimination System (NPDES), on the amount of specific pollutants that are discharged to surface waters to restore and maintain the water's chemical, physical, and biological integrity. The Oklahoma DEQ issues NPDES permits in the state.

The NPDES stormwater program requires construction site operators engaged in activities that disturb 1 acre or more to obtain coverage for their stormwater discharges under a General Permit for Stormwater Discharge from Large and Small Construction Activities. An applicant applies to the Oklahoma DEQ for coverage under a Construction General Permit, under which their construction activities would be covered. The applicant is required to prepare NOI to discharge stormwater and a Stormwater Pollution Prevention Plan (SWPPP) that is implemented during work activities. The permit mandates use of BMPs to ensure that soil disturbance does not pollute water bodies.

Section 438 of the Energy Independence and Security Act (EISA) (42 USC Section 17094) establishes stormwater design requirements for federal construction projects that disturb a footprint greater than 5,000 ft^2. Additional guidance is provided in the USEPA's Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the EISA. DoW's Unified Facilities Criteria (UFC) 3-210-10, *Low Impact Development*, also provides technical criteria, technical requirements, and references for the planning and design of applicable DoW projects to comply with stormwater requirements under EISA Section 438. Per these requirements, any increase in surface water runoff, resulting from construction, would be attenuated using temporary and/or permanent drainage management features. The

integration of low impact development design concepts into site design and the use of stormwater management to maintain the site's pre-development runoff rates and volumes would minimize further potential adverse impacts associated with increases in impervious surface area.

Wetlands. Wetlands are defined at 33 CFR Section 328.3(c)(1). EO 11990, *Protection of Wetlands* (May 24, 1977), directs agencies to consider alternatives to avoid adverse impacts and incompatible development in wetlands. Federal agencies are to avoid new construction in wetlands unless the agency finds there is no practicable alternative and the proposed construction incorporates all possible measures to limit harm to the wetland.

Floodplains. Floodplains are low-level areas along rivers, stream channels, large wetlands, or coastal waters that might be subject to periodic or infrequent inundation due to rain or melting snow. Flood potential is evaluated by the Federal Emergency Management Agency (FEMA) or site-specific study, which defines 100- and 500-year floodplains. The 100-year floodplain is an area that has a 1 percent chance of inundation by a flood event in a given year, while the 500-year floodplain has a 0.2 percent chance of inundation in a given year. Federal, state, and local regulations often limit floodplain development to recreational and preservation activities to reduce the risks to human health and safety.

EO 11988, *Floodplain Management*, requires federal agencies to determine whether a proposed action would occur within a floodplain. This determination typically involves review of FEMA Flood Insurance Rate Maps, which contain enough general information to determine the relationship of the project area to nearby floodplains. Federal agencies are directed to avoid floodplains unless the agency determines that no practicable alternative exists. Where the only practicable alternative is to site in a floodplain, the agency should develop measures to reduce and mitigate unavoidable impacts.

3.8.1 Affected Environment

Groundwater. Vance AFB is located above the Enid Isolated Terrace Aquifer, which is in north central Oklahoma. The aquifer consists of Quaternary-age alluvial and terrace deposits that are underlain by Permian-age clays, shales, and sandstones. The saturated thickness of this aquifer system is 0 to 65 feet. The area of greatest saturated thickness is to the north and northwest of the city of Enid with a saturated thickness value of 65 feet (OWRB 2014).

There are no functional groundwater wells on Vance AFB. The installation purchases potable water obtained from a series of production wells from the Enid Isolated Terrace aquifer owned by the city of Enid. Groundwater from bedrock aquifers in this region are known to typically be of poor quality (Vance AFB 2016).

Section 3.6.1 describes contamination in groundwater in the vicinity of the Proposed Action. This contamination was caused by past releases of hazardous substances, including PFAS. Monitoring of this contamination occurs annually. Groundwater is approximately 12 to 24 feet bgs in the vicinity of the Proposed Action.

Surface Water. Vance AFB is divided into 13 drainage areas that empty into 11 outfalls. The outfalls are grouped by their relative locations as either north or south.

The south outfalls receive stormwater from their contributing drainage areas and flow into Hackberry Creek, which then flows into Skeleton Creek. Skeleton Creek flows into the Cimarron River, and then into the Arkansas River. The north outfalls follow the same path except their contributing drainage areas flow into Boggy Creek, which then flows to Skeleton Creek. Boggy Creek runs along the installation's northwestern boundary. Runoff from most of the installation drains to the north toward Boggy Creek tributaries (see **Figure 3-16**) (Vance AFB 2022d, Vance AFB 2016).

Under CWA Section 303(d), Oklahoma is required to identify and develop a list of surface waterbodies or segments that are impaired based on their intended use. Oklahoma has not identified any impaired waterbodies on Vance AFB or within 2 miles of the installation. Hackberry Creek and Boggy Creek have not been evaluated for impairment, and the portion of Skeleton Creek immediately downstream of the installation is not impaired (USEPA 2022).

Vance AFB has coverage under the General Industrial Stormwater Permit issued by the state of Oklahoma Pollutant Discharge Elimination System for authorization for stormwater discharge at the installation (Vance AFB 2016).

Wetlands. There are no jurisdictional or non-jurisdictional wetlands on Vance AFB, and no potential wetlands are present within or near the construction or renovation project locations. The nearest potential wetland to a construction area occurs more than 0.25 miles away, near the southeastern boundary of the installation (see **Figure 3-16**) (Vance AFB 2016, Vance AFB 2022b, USFWS NWI 2024).

Floodplains. Small portions of Vance AFB lie within the FEMA-designated 100-year floodplain and 500-year floodplain. These areas are at the northwest extent of the installation—west of Gott Road, west of Pride Drive, and north of West Fox Drive. None of the construction or renovation projects would occur within or near the FEMA-designated 100- or 500-year floodplains (see **Figure 3-16**; FEMA 2019).

The Center for Environmental Management of Military Lands at Colorado State University (CSU) performed a floodplain study and modeled the 100- and 500-year floodplains at Vance AFB in 2022. That study indicates that three of the proposed construction and renovation projects would occur close to the CSU-modeled 100- and 500-year floodplains (see **Figure 3-16**; CEMML & CSU 2022).

3.8.2 Environmental Consequences

A proposed action could have significant impacts with respect to water resources if any of the following were to occur:

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

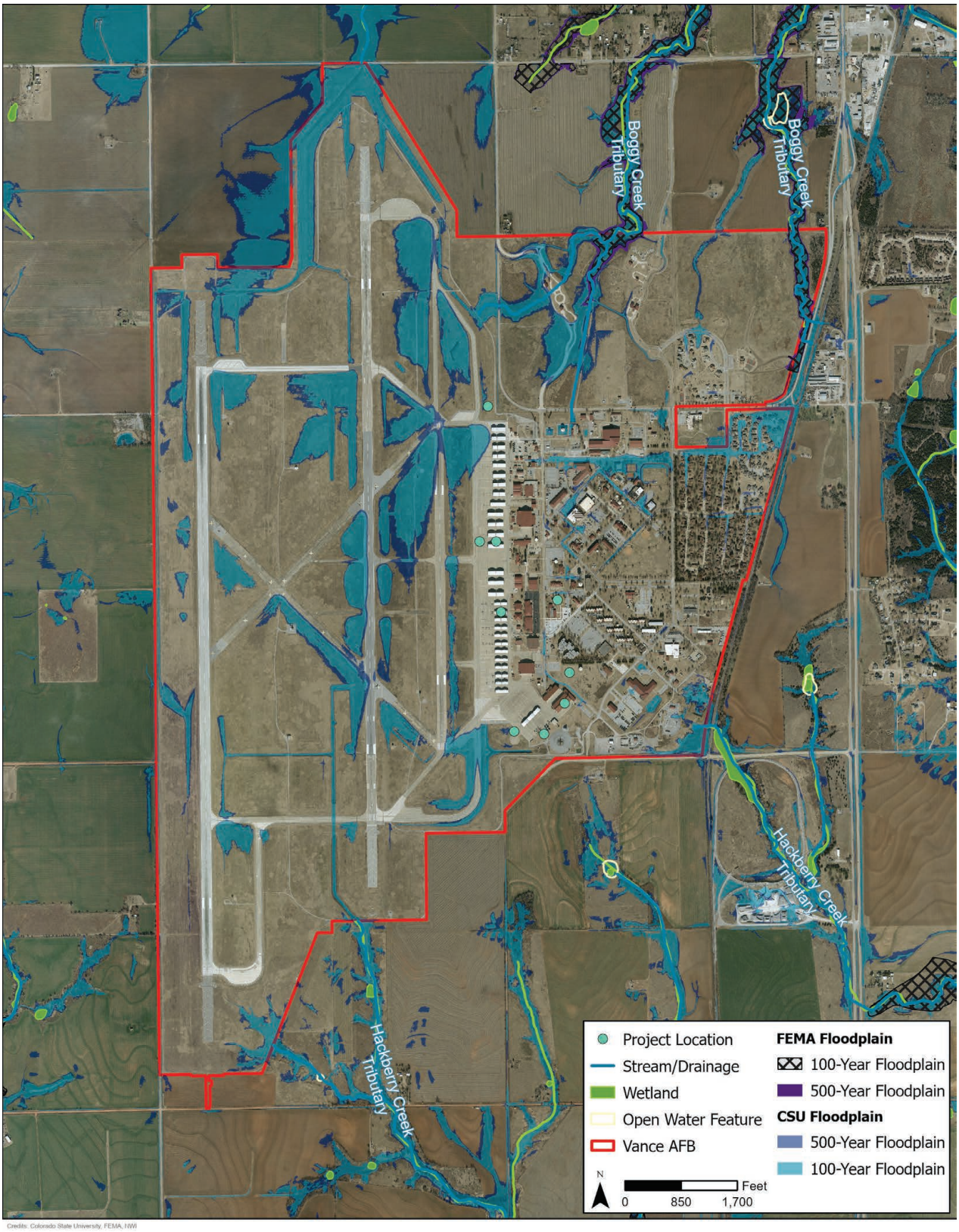


Figure 3-16. Water Resources at Vance AFB

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

3.8.2.1 Alternative 1

***Groundwater and Surface Water*.** No direct impacts on groundwater and surface water would occur. None of the proposed construction activities would occur at a depth that would reach the water table, which is approximately 12 to 24 feet bgs in the vicinity of the Proposed Action. Additionally, no construction would occur within the footprint of any surface water areas.

Short- and long-term, not significant, indirect, adverse impacts on groundwater and surface water could occur. Construction could potentially inhibit stormwater from reaching existing inlets or streams or could result in higher velocity stormwater flows because of temporarily unvegetated surfaces. These potential adverse impacts would be minimized through the implementation of BMPs, which could include installing temporary stormwater controls (e.g., silt fences, straw bales, and swales) to minimize the volume and velocity of stormwater flow. Following construction, the amount of impervious surfaces would increase at the installation by approximately 34,700 ft^2 (0.79 acres) (see **Table 2-5**), which could potentially decrease groundwater recharge and increase stormwater runoff into nearby surface water bodies. Federally required design principles (e.g., UFC 1-200-02, *High Performance and Sustainable Building Requirements*; UFC 3-210-10; and Section 438 of the EISA) would be followed to maintain or restore, to the maximum extent practicable, the predevelopment hydrology of the collective project sites with respect to flow rate, volume, and duration.

In accordance with the NPDES stormwater program, it is not anticipated that the installation would need to seek coverage under a Construction General Permit from Oklahoma DEQ because no project, either individually or as part of the common plan, would disturb 1 or more acres (see **Table 2-5**). Construction would be governed by SWPPPs, which would contain BMPs to manage stormwater. Standard erosion control measures to prevent stormwater pollution (including temporary retention basins, silt fences, straw bales, etc.) would be implemented during construction activities to minimize soil disturbance and prevent erosion and sedimentation at the work site.

As noted in **Section 3.6.2**, the concurrent operation of two types of aircraft during the T-38C to T-7A transition period may require additional quantities of hazardous materials, hazardous wastes, and petroleum products to be delivered, stored, used, and disposed of at Vance AFB. This temporary increase would negligibly increase the potential risk for an accidental release to occur and for the contamination to reach nearby groundwater aquifers and surface water features. The installation's SPCC Plan, ISWMP, HMMP Charter, and HWMP would continue to be followed to lessen the potential for a release to contaminate water resources.

Implementation of the BMPs as well as adherence to the management plans identified would minimize adverse impacts on downstream waterbodies. Alternative 1 would not appreciably degrade water quality in any downstream waterbody or cause Hackberry Creek, Boggy Creek, or Skeleton Creek to become impaired.

Wetlands. As noted in **Section 3.8.1**, there are no jurisdictional or non-jurisdictional wetlands on Vance AFB, and the construction and renovation projects would not occur near any potential wetlands. As such, no direct impacts on wetlands would occur, and the requirements of EO 11990 are not applicable to the Proposed Action. The construction BMPs described in the Groundwater and Surface Water subsection would be implemented to minimize the potential for indirect impacts on downstream wetlands.

Floodplains. The construction and renovation projects would not occur within the 100- or 500-year FEMA or CSU floodplains; therefore, no impacts on floodplains would occur, and the requirements of EO 11988 are not applicable to the Proposed Action.

DAF coordinated with FEMA and the Garfield County Floodplain Administrator throughout the preparation of this EIS. DAF notified FEMA Region 6 and the Garfield County Floodplain Administrator during the public scoping period in June 2024. FEMA provided a scoping comment, which is summarized in **Appendix D** with the feedback received from the stakeholders.

3.8.2.2 Alternative 2

Impacts on water resources would be slightly greater than those described for Alternative 1 but still not significant (see **Section 3.8.2.1**). Compared to Alternative 1, the 25 percent increase in operations would slightly increase the potential for an accidental release of hazardous materials or petroleum products to contaminate groundwater aquifers and surface waters. The overall potential for a release and contamination of water resources, however, would not be substantially greater than Alternative 1. The Vance AFB SPCC Plan, ISWMP, HMMP Charter, and HWMP would continue to be followed to lessen the potential for a release to contaminate water resources.

3.8.2.3 Alternative 3

Impacts on water resources would be slightly greater than those described for Alternative 1 and 2 but still not significant (see **Sections 3.8.2.1** and **3.8.2.2**). Compared to Alternatives 1 and 2, the 45 percent increase in operations and the 31 additional aircraft to maintain would slightly increase the potential for an accidental release of hazardous materials or petroleum products to contaminate groundwater aquifers and surface waters. The overall potential for a release and contamination of water resources, however, would not be substantially greater than Alternatives 1 and 2. The Vance AFB SPCC Plan, ISWMP, HMMP Charter, and HWMP would continue to be followed to lessen the potential for a release to contaminate water resources. The project to install sufficient shelters for all T-7A aircraft of Alternative 3 would occur on the Vance AFB aircraft parking ramp, which is an entirely existing impervious surface, and would result in no additional impervious surface area or impacts on water resources.

3.8.2.4 No Action Alternative

The No Action Alternative would not impact water resources. No facility construction would occur, and there would be no changes in aircraft operations or maintenance. The amount of impervious surfaces on the installation would not change, and no impacts on groundwater recharge or surface water runoff would occur. The potential for groundwater or surface water contamination would not change. There would also be no impacts on wetlands or floodplains. Water resources conditions at Vance AFB would remain unchanged compared to the existing conditions described in **Section 3.8.1**.

3.9 Reasonably Foreseeable Actions and Effects

T-7A recapitalization at Vance AFB is not expected to cause any reasonably foreseeable actions or adverse effects, beyond those already described for the Proposed Action in this EIS. DAF reviewed reasonably foreseeable actions planned for the installation and contacted the city of Enid and Garfield County in 2024 to identify any reasonably foreseeable actions within the vicinity of Vance AFB. The actions identified from that review are described and analyzed, as appropriate, in the following paragraphs.

T-1 Divestment. As noted in **Section 3.2.2**, DAF plans to remove the T-1 aircraft from service at Vance AFB. Divestment of T-1 aircraft from Vance AFB is a reasonably foreseeable action, but it does not have a reasonably close causal relationship to the Proposed Action because it would occur before the first T-7A aircraft would arrive at the installation and irrespective of T-7A recapitalization. Nevertheless, because some environmental effects from T-1 divestment and T-7A recapitalization have a reasonably close relationship, the combined effects of these two actions are presented in the following paragraph.

Long-term, beneficial effects would occur from T-1 divestment by reducing the number of aircraft operations that contribute noise, air emissions, and BASH potential at and surrounding Vance AFB. The noise exposures presented in **Section 3.2.2** for all three action alternatives and the No Action Alternative reflect noise conditions after T-1 divestment from the installation; therefore, the long-term, beneficial noise effects from T-1 divestment are already accounted for in the noise exposures of the Proposed Action and No Action Alternative. **Sections 3.1.2** and **3.4.2** state that not significant, adverse air quality effects and increased BASH potential would result from the proposed T-7A flight operations. T-1 divestment would reduce the installation's total flight and maintenance operations, potentially lessening the installation's cumulative air emissions and BASH potential. No other environmental resources would experience combined effects from T-1 divestment and T-7A recapitalization.

Low-Altitude MOA. DAF proposes to obtain additional low-altitude SUA to support 71 FTW pilot training requirements of the FBF syllabus. The proposed low-altitude MOA would have a floor of 500 feet AGL and a ceiling of up to 7,999 feet MSL under portions of the existing Vance 1A, 1C, and 1D MOAs. Training would primarily consist of low-altitude air-to-ground training, which would occur between 500 feet AGL and 3,000 feet MSL. Most aircraft operations would be performed by 71 FTW pilots flying T-38C aircraft and Oklahoma Air National Guard pilots flying F-16C aircraft, as 71 FTW scheduling and operational requirements allow. No flight operations would be performed in the proposed MOA during nighttime hours or on federal holidays.

As noted in **Section 2.2.2.1.2**, exact T-7A flight parameters, such as flight tracks, patterns, and altitudes, have not yet been developed and will not be known until DAF begins flying the T-7A for pilot training. Therefore, at this stage of the proposal, T-7A flight parameters are assumed to be similar to those flown by the T-38C for the No Action Alternative, which does not include the proposed low-altitude SUA. The low-altitude MOA proposal is a reasonably foreseeable action, but it does not have a reasonably close causal relationship to the Proposed Action because, if implemented, it would occur irrespective of T-7A recapitalization.

An EA was prepared in 2025 for the low-altitude MOA proposal. The EA concluded noise on the ground from aircraft operations within the proposed low-altitude MOA would be brief and unlikely to cause annoyance or disrupt common activities any more than typical everyday noise events (e.g., automobile traffic, lawn mowing, other civil aircraft flyovers) and would not exceed exposure limits that could result in hearing loss. Furthermore, the low-altitude MOA proposal would have no potential to require temporary or permanent changes to existing or proposed land uses or result in incompatibilities within existing or planned land uses, plans, or policies. The EA resulted in a Finding of No Significant Impact (DAF 2025c).

Woodring Municipal Airport. In scoping correspondence, the city of Enid reported they were in the final stages of completing enhancements at Woodring Municipal Airport, which includes constructing a second joint use hangar, new approach lighting, and upgrades to ramps and taxiways. Woodring Municipal Airport would not be used for regular T-7A operations; therefore, these enhancements do not have a reasonably close causal relationship to the Proposed Action and any effects would not have a reasonably close relationship with T-7A recapitalization.

3.10 Other Environmental Considerations

3.10.1 Irreversible and Irretrievable Commitment of Resources

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

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

Energy Resources. The energy resources, including petroleum-based products (e.g., gasoline, diesel, aviation fuel), used for the Proposed Action would be irretrievably lost. During construction, gasoline and diesel would be used for the operation of vehicles and construction equipment. Additionally, operation of the T-7A aircraft would require the consumption of aviation fuel. The volume of aviation fuel consumed for the

T-7A aircraft would not be appreciably different from that consumed by the T-38C. Consumption of these energy resources would not place a significant demand on their availability in the region. Therefore, no significant impacts would occur.

Biological Resources. The Proposed Action would result in an insignificant loss of vegetation and wildlife habitat. Most of the losses would be lower quality vegetation and habitat on the airfield or in developed portions of the installation and would not include water features. Temporarily disturbed sites would be revegetated with native species to support the native plant community in the long term.

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

3.10.2 Unavoidable Adverse Impacts

Unavoidable adverse impacts would result from the Proposed Action and are summarized as follows.

Air Quality. Criteria pollutant and GHG emissions would be produced during construction and renovation on the installation and would be unavoidable. New, unavoidable air emissions would be produced from operation and heating of expanded facilities and flight and maintenance operations.

Noise and Land Use. The proposed flight operations would increase on- and off-installation land acreage and population exposed to a DNL of at least 65 dB, and this increase would be considered significant and unavoidable. These newly exposed areas encompass numerous land uses including residential, commercial, undeveloped, and agricultural. Residential use is considered incompatible with any noise zone above 65 dB DNL. Newly exposed areas of the city of Enid that were not formerly impacted by the 65 dB DNL would experience a significant and unavoidable land use compatibility impact.

Biological Resources. Ground-disturbing activities associated with construction would result in some unavoidable permanent loss of vegetation and wildlife habitat.

***Energy*.** The construction projects and aircraft operations would require the use of fossil fuels, which are nonrenewable natural resources. The use of nonrenewable resources is an unavoidable occurrence, although not considered significant.

Hazardous Materials and Wastes. The use and generation of hazardous materials and wastes from construction projects and the maintenance of aircraft would be unavoidable.

3.10.3 Relationship between Short-term Uses and Long-term Productivity

Short-term uses of the biophysical components of the human environment include direct, project-related disturbances and direct impacts associated with an increase in population and activity that occurs over less than 5 years. Long-term uses of the human environment include those impacts occurring over more than 5 years, including permanent resource loss.

Construction for the Proposed Action would not require short-term resource uses that would result in long-term productivity compromises. Although implementation of these projects would represent new development, most projects would occur within previously developed or disturbed areas. Therefore, it is not anticipated that the Proposed Action would result in any adverse effects on long-term productivity.

3.10.4 Compatibility with Existing Plans and Policies

The proposed construction and long-term operations associated with the Proposed Action would not differ from the current activities occurring at Vance AFB. DAF would continue to follow all requirements related to development and would therefore be consistent with current federal, regional, state, and local land use policies and controls described in **Section 3.3**. The Proposed Action would follow all applicable permitting, building, and safety requirements described in **Sections 3.3** and **3.7**. After the arrival of the T-7A aircraft at Vance AFB and the commencement of T-7A training operations, DAF would update the installation's AICUZ Study. DAF would coordinate with local, county, and city land use planners to update current planning documents.

4. References

Air Education and Training Command (AETC). 2003. *United States Air Force Air Education and Training Command Cold War Context Series Reports of Investigations Number 11 – Management Summary.* September 2003.

AETC. 2006. Memorandum for 71 MSG/CC. Waiver from Integrated Cultural Resources Management Program Requirement.

AETC. 2022. Spreadsheet providing Vance AFB T-7A Project List. Provided to HDR on July 5, 2022. June 2, 2022.

AETC. 2023. PowerPoint providing Vance AFB T-7A Project List and Project Locations. Provided to HDR on November 29, 2023. November 2023.

AETC. 2024a. Email from Christopher Garcia, AETC/A8PB Project Manager, to Chinling Chen, AFCEC/CIE Program Manager, Subject: Vance and Sheppard DOPAA numbers and O-6 review. March 25, 2024.

AETC. 2024b. Email from John DeYarmon, AETC/A8PB Project Manager, to Chinling Chen, AFCEC/CIE Program Manager, Subject: Vance Airspace Data. February 5, 2024.

Air Force Civil Engineer Center (AFCEC). 2018. *Draft Final Site Inspection Report Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas Environmental Programs Worldwide Vance Air Force Base/Kegelman Auxiliary Field Oklahoma*. July 2018.

AFCEC. 2024a. *Draft Final Vance Air Force Base 2023 Annual Groundwater Compliance Monitoring Report*. February 2024.

AFCEC. 2024b. Email from AFCEC/CZRA to AFCEC/CZO regarding the completion of site validation for IRP Site SS047 at Vance AFB. July 9, 2024.

AFCEC. 2024c. *Relative Risk Site Evaluation Vance AFB/Kegelman Aux Field, Garfield County, OK*. June 21, 2024.

AFCEC NEPA Division (AFCEC/CZN). 2021. Email from Christopher Moore, AFCEC/CZN Program Manager, to Darrell Molzan, HDR Project Manager, regarding T-7A supersonic training. June 22, 2021.

Air Program Information Management System (APIMS). 2022. Criteria Pollutant Emissions 2021/01/01 to 2021/12/31 Comprehensive Stationary AEI, Vance Air Force Base. April 14, 2022.

Brandt, D.A., and Pearse, A.T. 2024. *Migrating Whooping Crane Activity Near U.S. Air Force Bases and Airfields in Oklahoma.* U.S. Geological Survey Open-File Report 2024–1056, 23 p. Available online: <https://doi.org/10.3133/ofr20241056>.

Center for Environmental Management of Military Lands and Colorado State University (CEMML & CSU). 2022. Vance AFB Floodplain Comparison. May 2, 2022.

City of Enid. 2018. *Vance Air Force Base Joint Land Use Study*. December 2018.

City of Enid. 2025. GIS data from the City of Enid. *Parcel Land Use 2025*. Provided via data transfer on January 23, 2025, in coordination with City of Enid GIS Staff.

Climate Watch. 2023. Historical GHG Emissions 1990–2021. Available online: <https://www.climatewatchdata.org/ghg-emissions?end_year=2021&start_year=1990>. Accessed January 17, 2025.

Climate Mapping for Resilience and Adaptation (CMRA). 2025. Climate Report for Garfield County, Oklahoma. Available online: <https://livingatlas.arcgis.com/assessment-tool/explore/details>. Accessed March 3, 2025.

Department of the Air Force (DAF). 2014. "T-38 Talon." Published on September 23, 2005, and current as of January 2014. Available online: <https://www.af.mil/About-Us/Fact-Sheets/Display/Article/104569/t-38-talon/>. Accessed October 5, 2021.

DAF. 2017. Air Force Handbook 32-7084, *AICUZ Program Manager's Guide*. November 2, 2017.

DAF. 2018. Memorandum for Record. Strategic Basing Decision – Advance Pilot Training (T-X). February 16, 2018.

DAF. 2021a. Memorandum for Record. Basing Decision, T-7A Bases 2–5 Preferred Locations (Sequencing). March 9, 2021.

DAF. 2021b. Table A29-1, Dependents Per Military Sponsor for Fiscal Year 2020 of Air Force Instruction 65-503, *Financial Management*, Table 3.2, Personnel Factors. Table A29-1 provided to HDR on August 21, 2021.

DAF. 2024a. Department of the Air Force Manual 32-7003, *Environmental Conservation*. June 26, 2024.

DAF. 2024b. *Final Environmental Assessment for Construction of a Fire Crash/Rescue Station and Enlisted Unaccompanied Housing Facility at Vance Air Force Base, Oklahoma*. January 2024.

DAF. 2025a. DAF policy memorandum *Rescinded Executive Orders (EO) and Regulatory Changes relevant to the Department of the Air Force (DAF) Environmental Impact Analysis Process (EIAP)*. February 26, 2025.

DAF. 2025b. DAF policy memorandum *Initial Department of the Air Force (DAF) Policy for Implementation of the National Environmental Policy Act (NEPA).* July 7, 2025.

DAF. 2025c. *Final Environmental Assessment for Vance Air Force Base Low Military Operations Area Special Use Airspace*. September 2025.

DAF. 2025d. Department of the Air Force Manual 32-7002, *Environmental Compliance and Pollution Prevention*. June 13, 2025.

DAF. 2025e. Department of the Air Force Instruction 32-1015, *Integrated Installation Planning*. April 11, 2025.

Department of Defense (DoD). 2020. DoD Instruction 4715.13, *DoD Operational Noise Program*. January 28, 2020.

DoD. 2025. *Department of Defense National Environmental Policy Act Implementing Procedures*. June 30, 2025. Available online: <https://www.denix.osd.mil/nepa/denix-files/sites/55/2025/06/DoD-NEPA-Procedures-FINAL.pdf>.

Department of Defense Noise Working Group (DNWG). 2009. *Technical Bulletin – Using Supplemental Noise Metrics and Analysis Tools*. December 2009.

DNWG. 2013. *Technical Bulletin: Noise – Induced Hearing Impairment*. December 2013.

Department of the Navy (DON). 2021. Report to Congress. *Real-Time Aircraft Sound Monitoring Final Report*. November 30, 2021.

Federal Aviation Administration (FAA). 2022a. *Fundamentals of Noise and Sound*. Last updated March 29, 2022. Available online: <https://www.faa.gov/regulations_policies/policy_guidance/noise/basics#metrics>.

FAA. 2022b. "Frequently Asked Questions and Answers" for airport safety and wildlife. Last updated August 3, 2022. Available online: <https://www.faa.gov/airports/airport_safety/wildlife/faq>. Accessed on September 13, 2024.

Federal Emergency Management Agency (FEMA). 2019. National Flood Hazard Layer [Interactive Mapper]. Last revised June 7, 2019. Available online: <https://www.fema.gov/flood-maps/national-flood-hazard-layer>. Accessed on July 19, 2024.

Federal Interagency Committee on Urban Noise (FICUN). 1980. *Guidelines for Considering Noise in Land Use Planning and Control*. June 1980.

Harris Miller Miller & Hanson, Inc. (HMMH). 2025. *Noise Model Operational Data Document (100%) for Vance AFB, OK, Environmental Impact Statement for T-7A Recapitalization*, HMMH Report No. 23-0281A. February 2025.

iNaturalist. 2025. Database search for species observations in Enid, Oklahoma. Available online: <https://www.inaturalist.org/observations?nelat=36.467034&nelng=-97.764872&swlat=36.318376&swlng=-97.97948199999999&view=species>.

Iowa Environmental Mesonet (IEM). 2026. Custom Wind Rose Plot for [END] Vance AFB Between: 01 Feb 2016 12:58 AM – 31 Jan 2026 11:55 PM America/Chicago. February 2026. Available online: <https://mesonet.agron.iastate.edu/>. Accessed February 18, 2026.

Lange, Kezia, A. Richter, and J.P. Burrows. 2022. *Variability or nitrogen oxide emission fluxes and lifetimes estimated from Sentinel-5P TROPOMI observations*. March 1, 2022.

Oklahoma Department of Wildlife Conservation (ODWC). 2013. *Bats of Oklahoma Field Guide*. Available online: <https://www.wildlifedepartment.com/magazine/batfieldguide/?utm_source=OOJ&utm_medium=website&utm_campaign=OKBatGuide>.

Oklahoma Historical Society. 2013. File #1649013; Evaluation of Eligibility of 14 Buildings at Vance Air Force Base. June 21, 2013.

Oklahoma Historical Society. 2014. File #2082-14; Vance AFB Determination of Eligibility for Four Properties; Buildings #195, #197, #423, & #723. October 13, 2014.

Oklahoma Water Resources Board (OWRB). 2014. *Hydrologic Investigation Update of the Enid Isolated Terrace Aquifer in North-Central Oklahoma.* Available online: <https://oklahoma.gov/content/dam/ok/en/owrb/documents/science-and-research/hydrologic-investigations/enid-isolated-terrace-2014.pdf>. Accessed on July 19, 2024.

Pandey, Gavendra, A. Venkatram, S. Arunachalam. 2023. *Accounting for plume rise of aircraft emissions in AERMOD*. September 18, 2023.

Siskind, D.E.; Stagg, M.S.; Kopp, J.W.; and Dowding, C.H. 1980. *Structure Response and Damage Produced by Ground Vibration From Surface Mine Blasting*. Report of Investigations 8507. U.S. Department of the Interior, Bureau of Mines.

Siskind, D.E.; Crum, S.V.; Otterness, R.E.; and Kopp, J.W. 1989. *Comparative Study of Blasting Vibrations from Indiana Surface Coal Mines*. Report of Investigations 9226. U.S. Department of the Interior, Bureau of Mines.

U.S. Census Bureau (USCB). 2024. QuickFacts Garfield County, Oklahoma; United States. Available online: <https://www.census.gov/quickfacts/fact/table/garfieldcountyoklahoma,US>. Accessed August 1, 2024.

U.S. Department of Agriculture Natural Resources Conservation Service (USDA NRCS). 2024. Web Soil Survey. Available online: <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>. Generated June 6, 2023.

U.S. Department of Transportation (USDOT). 2006. *FHWA Roadway Construction Noise Model User' Guide*. Table 1, page 3. January 2006. Available online: <https://www.fhwa.dot.gov/environment/noise/construction_noise/rcnm/rcnm.pdf>.

U.S. Environmental Protection Agency (USEPA). 2022. *How's My Waterway*. Available online: <https://mywaterway.epa.gov/community/Vance%20AFB,%20OK/aquatic-life>. Accessed November 17, 2025.

USEPA. 2023. *2020 NEI Data Retrieval Tool: 2020 County-Level Process Data for Mobile and Nonpoint Emissions and 2020 Facility-Level Data for Point Emissions for United States, Oklahoma, Kansas, Texas, and select counties*. March 2023. Available online: <https://www.epa.gov/air-emissions-inventories/2020-air-emissions-data>. Accessed March 3, 2025.

USEPA. 2024a. *Greenhouse Gas Equivalencies Calculator*. November 2024. Available online: <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>. Accessed March 10, 2025, and March 3, 2026.

USEPA. 2024b. *2023 Design Value Reports: Nitrogen Dioxide Design Values, 2023.* Updated May 7, 2024. Available online: <https://www.epa.gov/air-trends/air-quality-design-values#report>. Accessed April 21, 2025.

USEPA. 2024c. *Key EPA Actions to Address PFAS*. May 7, 2024.

USEPA. 2024d. Radon Zones-Spreadsheet. July 15, 2024.

USEPA. 2025a. Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants, for Oklahoma, Kansas, and Texas. As of February 28, 2025. Available online: <https://www3.epa.gov/airquality/greenbook/anayo_ak.html>. Accessed March 10, 2025.

USEPA. 2025b. *2024 Design Value Reports: Ozone Design Values, 2024.* Updated May 28, 2025. Available online: <https://epa.gov/air-trends/air-quality-design-values#report>. Accessed February 19, 2026.

U.S. Fish and Wildlife Service (USFWS). 2024. *Informal Consultation, Conference Opinion & Biological Opinion Department of the Air Force Flight Operations at 32 Installations across the contiguous United States*. December 18, 2024.

USFWS. 2025a. Official Information for Planning and Consultation Report for Vance AFB. Project Code: *2025-0149754*. Report generated September 15, 2025.

USFWS. 2025b. Official Information for Planning and Consultation Report for Vance AFB SUA. Project Code: *2025-0149400*. Report generated September 15, 2025.

U.S. Fish and Wildlife Service National Wetlands Inventory (USFWS NWI). 2024. Surface Waters and Wetlands [Interactive Mapper]. Available online: <https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/>. Accessed on July 19, 2024.

U.S. Geological Service (USGS). 2024. *Frequency of Damaging Earthquake Shaking Around the U.S.* Available online: <https://www.usgs.gov/media/images/frequency-damaging-earthquake-shaking-around-us>. Accessed June 6, 2024.

Vance Air Force Base (AFB). 2016. *Installation Development Plan Vance Air Force Base, Oklahoma*. December 2016.

Vance AFB. 2021a. *Vance Air Force Base 91-2, Bird/Wildlife Strike Hazard Plan*. February 11, 2021.

Vance AFB. 2021b. *Hazardous Waste Management Plan, Vance Air Force Base*. Revised September 2021.

Vance AFB. 2022a. *Final Air Installations Compatible Use Zones Study, Vance Air Force Base Oklahoma*. June 2022.

Vance AFB. 2022b. *U.S. Air Force Integrated Natural Resources Management Plan Vance Air Force Base*. April 8, 2022.

Vance AFB. 2022c. *Vance AFB Asbestos Management Plan*. March 2022.

Vance AFB. 2022d. *Storm Water Pollution Prevention Plan*, *Vance Air Force Base*. Revised February 23, 2022.

Vance AFB. 2023. Email from Brooke Burnett, Vance AFB Engineering Flight, to Darrell Molzan, HDR Project Manager. Subject: Vance AFB – T-7A project descriptions. November 21, 2023.

Vance AFB. 2024a. BASH Flight Incidents 2020–2024.

Vance AFB. 2024b. Email communication between Mark Buthman, Vance AFB NEPA Program Manager, and Darrell Molzan, HDR Project Manager, providing the year of construction for the buildings proposed for renovation.

Vance AFB. 2025. *Email correspondence between USFWS and Vance AFB on informal Section 7 concurrence for Vance AFB Low MOA EA / Project Code: 2025-0034229.* September 8, 2025.

A

Special Use Airspace Descriptions

Special Use Airspace (SUA) for T-38C and T-7A Training at Vance Air Force Base

SUA Designation	Type of SUA	Short Description[1]
Vance 1A	Military Operating Area (MOA)	Located in portions of Alfalfa, Blaine, Dewey, Garfield, Kingfisher, Major, and Woods Counties in Oklahoma. Altitudes are from 8,000 to 18,000 feet above mean sea level (MSL). Time of use is from 1 hour before sunrise to 1 hour after sunset, Monday through Friday, and other times by Notice to Air Missions (NOTAM).
Vance 1C	MOA	Located in portions of Barber, Clark, and Comanche Counties in Kansas and Dewey, Ellis, Harper, Major, Roger Mills, Woods, and Woodward Counties in Oklahoma. Altitudes are from 8,000 to 18,000 feet above MSL. Time of use is from 1 hour before sunrise to 1 hour after sunset, Monday through Friday, and other times by NOTAM.
Vance 1E	MOA	Located in portions of Barber and Harper Counties in Kansas and Alfalfa and Woods Counties in Oklahoma. Altitudes are from 500 to 1,000 feet above ground level (AGL). Time of use is from 1 hour before sunrise to 1 hour after sunset, Monday through Friday, and other times by NOTAM.
Instrument Route (IR)-145	Military Training Route (MTR)	Located in portions of Blaine, Custer, Dewey, Ellis, Kingfisher, Major, Roger Mills, Woods, and Woodward Counties in Oklahoma and Hemphill and Lipscomb Counties in Texas. Altitudes are from 500 feet AGL to 6,000 feet above MSL. Time of use is from 30 minutes after sunrise and 30 minutes before sunset and active days per local directives.
IR-171	MTR	Located in portions of Alfalfa, Blaine, Custer, Dewey, Ellis, Major, Roger Mills, Woods, and Woodward Counties in Oklahoma and Hemphill County in Texas. Altitudes are from 500 feet AGL to 6,000 feet above MSL. Time of use is from 30 minutes after sunrise to 30 minutes before sunset and active days per local directives.
IR-175	MTR	Located in portions of Barber, Clark, and Comanche Counties in Kansas and Alfalfa, Beaver, Ellis, Harper, Major, Woods, and Woodward Counties in Oklahoma. Altitudes are from 500 feet AGL to 6,000 feet above MSL. Time of use is from 30 minutes after sunrise to 30 minutes before sunset and active days per local directives.
IR-181	MTR	Located in portions of Alfalfa, Blaine, Custer, Dewey, Ellis, Major, Roger Mills, Woods, and Woodward Counties in Oklahoma and Hemphill County in Texas. Altitudes are from 500 feet AGL to 6,000 feet above MSL. Time of use is from 30 minutes after sunrise to 30 minutes before sunset and active days per local directives.
IR-185	MTR	Located in portions of Barber, Clark, and Comanche Counties in Kansas and Alfalfa, Beaver, Ellis, Harper, Major, Woods, and Woodward Counties in Oklahoma. Altitudes are from 500 feet AGL to 6,000 feet above MSL. Time of use is from 30 minutes after sunrise to 30 minutes before sunset and active days per local directives.

Sources: DoD 2024a, DoD 2024b, HMMH 2025

[1] The MTRs include several parts or "legs" that are designated by specific coordinates. Some legs within the same MTR have differing properties, such as minimum/maximum altitudes, times of operation, speeds, etc. The short description provided in this table is a general overview of the MTR. A complete description of the MTRs and their respective legs is available in the Department of Defense Flight Information Publication *AP/1B, Area Planning Military Training Routes, North and South America*.

References

U.S. Department of Defense (DoD). 2024a. *AP/1A, Area Planning Special Use Airspace, North and South America.* September 2024.

DoD. 2024b. *AP/1B, Area Planning Military Training Routes, North and South America*. Last updated March 21, 2024.

Harris Miller Miller & Hanson, Inc. (HMMH). 2025. *Noise Model Operational Data Document (100%) for Vance AFB, OK, Environmental Impact Statement for T-7A Recapitalization*, HMMH Report No. 23-0281A. February 2025.

B

Record of Air Quality Analysis Reports[1]

[1] The Vance AFB region of influence air emission estimates for all three action alternatives were recalculated after the Draft EIS was released for public comment to correct an overestimation in the time-in-mode values. The overestimation was identified through DAF review rather than public comment provided on the Draft EIS and was corrected by removing duplicate T-7A and T-38C closed patterns that also were counted in the landing and takeoff cycles. The revised air emissions are provided in the Final EIS and, in general, are less than those in the Draft EIS.

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

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

Report generated with ACAM version: 5.0.24a

a. Action Location:

Base: VANCE AFB
State: Oklahoma
County(s): Garfield
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: T-7A Recapitalization at Vance AFB - Alternative 1

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2028

e. Action Description:

The Proposed Action is recapitalization of the T-38C flight training program at Vance AFB with T-7A aircraft. Recapitalization entails replacement of all T-38C aircraft assigned to Vance with T-7A aircraft; transition of aircraft operations at Vance AFB and associated SUA from the T-38C to the T-7A; temporary changes to the number of personnel and dependents in the Vance AFB region; and construction of and upgrades to operations, support, and maintenance facilities to support pilot training and aircraft operation and maintenance.

For Alternative 1, Vance AFB would receive up to 68 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in up to 68 T-7A aircraft being delivered to Vance AFB; however, T-7A operations would be performed at an operational tempo approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Vance AFB would receive up to 99 T-7A aircraft and T-7A operations would be approximately 45 percent greater than aircraft operations for Alternative 1. The No Action Alternative would not implement T-7A recapitalization at Vance AFB.

The analysis for all construction and operation actions assumes the following: (1) MILCON/UMMC projects would occur over a period of 2 years and FSRM projects would occur over a period of 1 year; (2) during construction, no materials would be required to be hauled on- or off-site as excavated spoils will be used on-site; (3) no new emergency generators, or if any were needed for new facilities, their emissions would be offset by removing generators that were supporting T-38C operations; and (4) T-7A fuel cell maintenance, composite repair, NDI testing, and fuel storage/dispensing operations/emissions would be equally offset by eliminating those corresponding operations/emissions supporting the T-38C operations.

f. Point of Contact:

Name: Carolyn Hein
Title: Contractor
Organization: HDR
Email:
Phone Number:

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

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

____ applicable
__X__ not applicable

Total reasonably foreseeable net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving “steady state” (cCba.e., no net gain/loss in emission stabilized and the action is fully implemented) emissions. The ACAM analysis uses the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the *USAF Air Emissions Guide for Air Force Stationary Sources*, the *USAF Air Emissions Guide for Air Force Mobile Sources*, and the *USAF Air Emissions Guide for Air Force Transitory Sources.*

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of the proposed Action’s potential impacts to local air quality. The insignificance indicators are trivial (de minimis) rate thresholds that have been demonstrated to have little to no impact to air quality. These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold and 25 ton/yr for lead for actions occurring in areas that are "Attainment" (cCba.e., not exceeding any National Ambient Air Quality Standard (NAAQS)). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutants is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQS. For further detail on insignificance indicators, refer to *Level II, Air Quality Quantitative Assessment, Insignificance Indicators*.

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

Analysis Summary:

2028

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	3.154	250	No
NOx	8.038	250	No
CO	12.364	250	No
SOx	0.019	250	No
PM 10	4.595	250	No
PM 2.5	0.234	250	No
Pb	0.000	25	No
NH3	0.026	250	No

2029

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.406	250	No
NOx	3.306	250	No
CO	4.983	250	No
SOx	0.008	250	No
PM 10	0.103	250	No
PM 2.5	0.095	250	No
Pb	0.000	25	No
NH3	0.012	250	No

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

2030

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.001	250	No
NOx	0.014	250	No
CO	0.012	250	No
SOx	0.000	250	No
PM 10	0.001	250	No
PM 2.5	0.001	250	No
Pb	0.000	25	No
NH3	0.000	250	No

2031

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.001	250	No
NOx	0.014	250	No
CO	0.012	250	No
SOx	0.000	250	No
PM 10	0.001	250	No
PM 2.5	0.001	250	No
Pb	0.000	25	No
NH3	0.000	250	No

2032

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	17.696	250	No
NOx	47.423	250	No
CO	129.739	250	No
SOx	2.811	250	No
PM 10	2.620	250	No
PM 2.5	2.366	250	No
Pb	0.000	25	No
NH3	0.022	250	No

2033

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	61.611	250	No
NOx	179.194	250	No
CO	118.024	250	No
SOx	8.502	250	No
PM 10	0.236	250	No
PM 2.5	0.198	250	No
Pb	0.000	25	No
NH3	0.022	250	No

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

2034

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	57.536	250	No
NOx	194.710	250	No
CO	-126.866	250	No
SOx	6.795	250	No
PM 10	-5.824	250	No
PM 2.5	-5.297	250	No
Pb	0.000	25	No
NH3	0.022	250	No

2035 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	57.400	250	No
NOx	194.668	250	No
CO	-128.611	250	No
SOx	6.794	250	No
PM 10	-5.827	250	No
PM 2.5	-5.300	250	No
Pb	0.000	25	No
NH3	0.000	250	No

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

Carolyn Hein, Contractor — March 4, 2026

Name, Title — **Date**

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

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

Report generated with ACAM version: 5.0.24a

a. Action Location:

Base: VANCE AFB
State: Oklahoma
County(s): Garfield
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: T-7A Recapitalization at Vance AFB - Alternative 2

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2028

e. Action Description:

The Proposed Action is recapitalization of the T-38C flight training program at Vance AFB with T-7A aircraft. Recapitalization entails replacement of all T-38C aircraft assigned to Vance with T-7A aircraft; transition of aircraft operations at Vance AFB and associated SUA from the T-38C to the T-7A; temporary changes to the number of personnel and dependents in the Vance AFB region; and construction of and upgrades to operations, support, and maintenance facilities to support pilot training and aircraft operation and maintenance.

For Alternative 1, Vance AFB would receive up to 68 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in up to 68 T-7A aircraft being delivered to Vance AFB; however, T-7A operations would be performed at an operational tempo approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Vance AFB would receive up to 99 T-7A aircraft and T-7A operations would be approximately 45 percent greater than aircraft operations for Alternative 1. The No Action Alternative would not implement T-7A recapitalization at Vance AFB.

The analysis for all construction and operation actions assumes the following: (1) MILCON/UMMC projects would occur over a period of 2 years and FSRM projects would occur over a period of 1 year; (2) during construction, no materials would be required to be hauled on- or off-site as excavated spoils will be used on-site; (3) no new emergency generators, or if any were needed for new facilities, their emissions would be offset by removing generators that were supporting T-38C operations; and (4) T-7A fuel cell maintenance, composite repair, NDI testing, and fuel storage/dispensing operations/emissions would be equally offset by eliminating those corresponding operations/emissions supporting the T-38C operations.

f. Point of Contact:

Name: Carolyn Hein
Title: Contractor
Organization: HDR
Email:
Phone Number:

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

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

____ applicable
__X__ not applicable

Total reasonably foreseeable net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving “steady state” (cCba.e., no net gain/loss in emission stabilized and the action is fully implemented) emissions. The ACAM analysis uses the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the *USAF Air Emissions Guide for Air Force Stationary Sources*, the *USAF Air Emissions Guide for Air Force Mobile Sources*, and the *USAF Air Emissions Guide for Air Force Transitory Sources.*

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of the proposed Action’s potential impacts to local air quality. The insignificance indicators are trivial (de minimis) rate thresholds that have been demonstrated to have little to no impact to air quality. These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold and 25 ton/yr for lead for actions occurring in areas that are "Attainment" (cCba.e., not exceeding any National Ambient Air Quality Standard (NAAQS)). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutants is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQS. For further detail on insignificance indicators, refer to *Level II, Air Quality Quantitative Assessment, Insignificance Indicators*.

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

Analysis Summary:

2028

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	3.154	250	No
NOx	8.038	250	No
CO	12.364	250	No
SOx	0.019	250	No
PM 10	4.595	250	No
PM 2.5	0.234	250	No
Pb	0.000	25	No
NH3	0.026	250	No

2029

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.406	250	No
NOx	3.306	250	No
CO	4.983	250	No
SOx	0.008	250	No
PM 10	0.103	250	No
PM 2.5	0.095	250	No
Pb	0.000	25	No
NH3	0.012	250	No

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

2030

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.001	250	No
NOx	0.014	250	No
CO	0.012	250	No
SOx	0.000	250	No
PM 10	0.001	250	No
PM 2.5	0.001	250	No
Pb	0.000	25	No
NH3	0.000	250	No

2031

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.001	250	No
NOx	0.014	250	No
CO	0.012	250	No
SOx	0.000	250	No
PM 10	0.001	250	No
PM 2.5	0.001	250	No
Pb	0.000	25	No
NH3	0.000	250	No

2032

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	32.936	250	No
NOx	54.773	250	No
CO	280.039	250	Yes
SOx	4.534	250	No
PM 10	6.136	250	No
PM 2.5	5.531	250	No
Pb	0.000	25	No
NH3	0.022	250	No

2033

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	84.234	250	No
NOx	207.057	250	No
CO	198.616	250	No
SOx	10.883	250	No
PM 10	1.653	250	No
PM 2.5	1.471	250	No
Pb	0.000	25	No
NH3	0.022	250	No

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

2034

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	82.165	250	No
NOx	228.556	250	No
CO	-74.952	250	No
SOx	9.321	250	No
PM 10	-5.371	250	No
PM 2.5	-4.901	250	No
Pb	0.000	25	No
NH3	0.022	250	No

2035 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	82.028	250	No
NOx	228.514	250	No
CO	-76.697	250	No
SOx	9.320	250	No
PM 10	-5.374	250	No
PM 2.5	-4.904	250	No
Pb	0.000	25	No
NH3	0.000	250	No

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

Carolyn Hein, Contractor — March 4, 2026

Name, Title — **Date**

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

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

Report generated with ACAM version: 5.0.24a

a. Action Location:

Base: VANCE AFB
State: Oklahoma
County(s): Garfield
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: T-7A Recapitalization at Vance AFB - Alternative 3

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2028

e. Action Description:

The Proposed Action is recapitalization of the T-38C flight training program at Vance AFB with T-7A aircraft. Recapitalization entails replacement of all T-38C aircraft assigned to Vance with T-7A aircraft; transition of aircraft operations at Vance AFB and associated SUA from the T-38C to the T-7A; temporary changes to the number of personnel and dependents in the Vance AFB region; and construction of and upgrades to operations, support, and maintenance facilities to support pilot training and aircraft operation and maintenance.

For Alternative 1, Vance AFB would receive up to 68 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in up to 68 T-7A aircraft being delivered to Vance AFB; however, T-7A operations would be performed at an operational tempo approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Vance AFB would receive up to 99 T-7A aircraft and T-7A operations would be approximately 45 percent greater than aircraft operations for Alternative 1. The No Action Alternative would not implement T-7A recapitalization at Vance AFB.

The analysis for all construction and operation actions assumes the following: (1) MILCON/UMMC projects would occur over a period of 2 years and FSRM projects would occur over a period of 1 year; (2) during construction, no materials would be required to be hauled on- or off-site as excavated spoils will be used on-site; (3) no new emergency generators, or if any were needed for new facilities, their emissions would be offset by removing generators that were supporting T-38C operations; and (4) T-7A fuel cell maintenance, composite repair, NDI testing, and fuel storage/dispensing operations/emissions would be equally offset by eliminating those corresponding operations/emissions supporting the T-38C operations.

f. Point of Contact:

Name: Carolyn Hein
Title: Contractor
Organization: HDR
Email:
Phone Number:

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

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

____ applicable
__X__ not applicable

Total reasonably foreseeable net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving “steady state” (cCba.e., no net gain/loss in emission stabilized and the action is fully implemented) emissions. The ACAM analysis uses the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the *USAF Air Emissions Guide for Air Force Stationary Sources*, the *USAF Air Emissions Guide for Air Force Mobile Sources*, and the *USAF Air Emissions Guide for Air Force Transitory Sources.*

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of the proposed Action’s potential impacts to local air quality. The insignificance indicators are trivial (de minimis) rate thresholds that have been demonstrated to have little to no impact to air quality. These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold and 25 ton/yr for lead for actions occurring in areas that are "Attainment" (cCba.e., not exceeding any National Ambient Air Quality Standard (NAAQS)). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutants is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQS. For further detail on insignificance indicators, refer to *Level II, Air Quality Quantitative Assessment, Insignificance Indicators*.

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

Analysis Summary:

2028

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	3.154	250	No
NOx	8.038	250	No
CO	12.364	250	No
SOx	0.019	250	No
PM 10	4.595	250	No
PM 2.5	0.234	250	No
Pb	0.000	25	No
NH3	0.026	250	No

2029

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.408	250	No
NOx	3.351	250	No
CO	5.018	250	No
SOx	0.009	250	No
PM 10	0.103	250	No
PM 2.5	0.095	250	No
Pb	0.000	25	No
NH3	0.014	250	No

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

2030

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.001	250	No
NOx	0.014	250	No
CO	0.012	250	No
SOx	0.000	250	No
PM 10	0.001	250	No
PM 2.5	0.001	250	No
Pb	0.000	25	No
NH3	0.000	250	No

2031

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.001	250	No
NOx	0.014	250	No
CO	0.012	250	No
SOx	0.000	250	No
PM 10	0.001	250	No
PM 2.5	0.001	250	No
Pb	0.000	25	No
NH3	0.000	250	No

2032

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	15.183	250	No
NOx	40.113	250	No
CO	86.403	250	No
SOx	2.288	250	No
PM 10	1.674	250	No
PM 2.5	1.516	250	No
Pb	0.000	25	No
NH3	0.022	250	No

2033

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	57.168	250	No
NOx	164.221	250	No
CO	18.781	250	No
SOx	7.430	250	No
PM 10	-1.938	250	No
PM 2.5	-1.754	250	No
Pb	0.000	25	No
NH3	0.022	250	No

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

2034

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	99.363	250	No
NOx	263.540	250	Yes
CO	-8.246	250	No
SOx	11.539	250	No
PM 10	-2.950	250	No
PM 2.5	-2.637	250	No
Pb	0.000	25	No
NH3	0.022	250	No

2035

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	105.752	250	No
NOx	272.510	250	Yes
CO	3.761	250	No
SOx	12.209	250	No
PM 10	-2.825	250	No
PM 2.5	-2.528	250	No
Pb	0.000	25	No
NH3	0.000	250	No

2036 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	105.752	250	No
NOx	272.510	250	Yes
CO	3.761	250	No
SOx	12.209	250	No
PM 10	-2.825	250	No
PM 2.5	-2.528	250	No
Pb	0.000	25	No
NH3	0.000	250	No

The steady state estimated annual net emissions associated with this action exceed the insignificance indicators, indicating a potential for a significant impact to air quality. Therefore, the ACAM analysis is inconclusive and further air quality impact assessment is needed.

Carolyn Hein, Contractor — March 5, 2026

Name, Title — **Date**

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

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

Report generated with ACAM version: 5.0.23a

a. Action Location:

Base: VANCE AFB
State: Oklahoma
County(s): Barber, KS; Clark, KS; Comanche, KS; Harper, KS; Alfalfa, OK; Beaver, OK; Blaine, OK; Custer, OK; Dewey, OK; Ellis, OK; Garfield, OK; Harper, OK; Kingfisher, OK; Major, OK; Roger Mills, OK; Woods, OK; Woodward, OK; Hemphill, TX; Lipscomb, TX; Wheeler, TX
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Vance AFB T-7A EIS: Alternative 1, SUA Low Flight Pattern

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2032

e. Action Description:

The Proposed Action is recapitalization of the T-38C flight training program at Vance AFB with T-7A aircraft. Recapitalization entails replacement of all T-38C aircraft assigned to Vance with T-7A aircraft; transition of aircraft operations at Vance AFB and associated SUA from the T-38C to the T-7A; temporary changes to the number of personnel and dependents in the Vance AFB region; and construction of and upgrades to operations, support, and maintenance facilities to support pilot training and aircraft operation and maintenance.

For Alternative 1, Vance AFB would receive up to 68 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in up to 68 T-7A aircraft being delivered to Vance AFB; however, T-7A operations would be performed at an operational tempo approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Vance AFB would receive up to 99 T-7A aircraft and T-7A operations would be approximately 45 percent greater than aircraft operations for Alternative 1. The No Action Alternative would not implement T-7A recapitalization at Vance AFB.

f. Point of Contact:

Name: Carolyn Hein
Title: Contractor
Organization: HDR
Email:
Phone Number:

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

____ applicable
_X_ not applicable

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

Total reasonably foreseeable net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (hsba.e., no net gain/loss in emission stabilized and the action is fully implemented) emissions. The ACAM analysis uses the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the *USAF Air Emissions Guide for Air Force Stationary Sources*, the *USAF Air Emissions Guide for Air Force Mobile Sources*, and the *USAF Air Emissions Guide for Air Force Transitory Sources.*

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of the proposed Action's potential impacts on local air quality. The insignificance indicators are trivial (*de minimis*) rate thresholds that have been demonstrated to have little to no impact on air quality. These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold and 25 ton/yr for lead for actions occurring in areas that are "Attainment" (hsba.e., not exceeding any National Ambient Air Quality Standard (NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutants is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQS. For further detail on insignificance indicators, refer to *Level II, Air Quality Quantitative Assessment, Insignificance Indicators*.

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

Analysis Summary:

2032

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	1.330	250	No
NOx	22.630	250	No
CO	-10.034	250	No
SOx	0.364	250	No
PM 10	-0.301	250	No
PM 2.5	-0.271	250	No
Pb	0.000	25	No
NH3	0.000	250	No

2033

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	8.218	250	No
NOx	134.290	250	No
CO	-43.279	250	No
SOx	2.692	250	No
PM 10	-1.197	250	No
PM 2.5	-1.083	250	No
Pb	0.000	25	No
NH3	0.000	250	No

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

2034

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	10.485	250	No
NOx	172.112	250	No
CO	-57.878	250	No
SOx	3.372	250	No
PM 10	-1.622	250	No
PM 2.5	-1.466	250	No
Pb	0.000	25	No
NH3	0.000	250	No

2035 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	10.485	250	No
NOx	172.112	250	No
CO	-57.878	250	No
SOx	3.372	250	No
PM 10	-1.622	250	No
PM 2.5	-1.466	250	No
Pb	0.000	25	No
NH3	0.000	250	No

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

Carolyn Hein, Contractor — March 19, 2025

Name, Title — **Date**

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

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

Report generated with ACAM version: 5.0.23a

a. Action Location:

Base: VANCE AFB
State: Oklahoma
County(s): Barber, KS; Clark, KS; Comanche, KS; Harper, KS; Alfalfa, OK; Beaver, OK; Blaine, OK; Custer, OK; Dewey, OK; Ellis, OK; Garfield, OK; Harper, OK; Kingfisher, OK; Major, OK; Roger Mills, OK; Woods, OK; Woodward, OK; Hemphill, TX; Lipscomb, TX; Wheeler, TX
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Vance AFB T-7A EIS: Alternative 2, SUA Low Flight Pattern

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2032

e. Action Description:

The Proposed Action is recapitalization of the T-38C flight training program at Vance AFB with T-7A aircraft. Recapitalization entails replacement of all T-38C aircraft assigned to Vance with T-7A aircraft; transition of aircraft operations at Vance AFB and associated SUA from the T-38C to the T-7A; temporary changes to the number of personnel and dependents in the Vance AFB region; and construction of and upgrades to operations, support, and maintenance facilities to support pilot training and aircraft operation and maintenance.

For Alternative 1, Vance AFB would receive up to 68 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in up to 68 T-7A aircraft being delivered to Vance AFB; however, T-7A operations would be performed at an operational tempo approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Vance AFB would receive up to 99 T-7A aircraft and T-7A operations would be approximately 45 percent greater than aircraft operations for Alternative 1. The No Action Alternative would not implement T-7A recapitalization at Vance AFB.

f. Point of Contact:

Name: Carolyn Hein
Title: Contractor
Organization: HDR
Email:
Phone Number:

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

____ applicable
_X_ not applicable

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

Total reasonably foreseeable net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (hsba.e., no net gain/loss in emission stabilized and the action is fully implemented) emissions. The ACAM analysis uses the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the *USAF Air Emissions Guide for Air Force Stationary Sources*, the *USAF Air Emissions Guide for Air Force Mobile Sources,* and the *USAF Air Emissions Guide for Air Force Transitory Sources.*

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of the proposed Action's potential impacts on local air quality. The insignificance indicators are trivial (*de minimis*) rate thresholds that have been demonstrated to have little to no impact on air quality. These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold and 25 ton/yr for lead for actions occurring in areas that are "Attainment" (hsba.e., not exceeding any National Ambient Air Quality Standard (NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutants is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQS. For further detail on insignificance indicators, refer to *Level II, Air Quality Quantitative Assessment, Insignificance Indicators*.

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

Analysis Summary:

2032

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	2.075	250	No
NOx	29.375	250	No
CO	4.368	250	No
SOx	1.040	250	No
PM 10	0.240	250	No
PM 2.5	0.212	250	No
Pb	0.000	25	No
NH3	0.000	250	No

2033

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	10.684	250	No
NOx	168.917	250	No
CO	-37.101	250	No
SOx	3.952	250	No
PM 10	-0.877	250	No
PM 2.5	-0.799	250	No
Pb	0.000	25	No
NH3	0.000	250	No

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

2034

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	13.523	250	No
NOx	216.279	250	No
CO	-55.365	250	No
SOx	4.804	250	No
PM 10	-1.408	250	No
PM 2.5	-1.278	250	No
Pb	0.000	25	No
NH3	0.000	250	No

2035 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	13.523	250	No
NOx	216.279	250	No
CO	-55.365	250	No
SOx	4.804	250	No
PM 10	-1.408	250	No
PM 2.5	-1.278	250	No
Pb	0.000	25	No
NH3	0.000	250	No

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

Carolyn Hein, Contractor — March 19, 2025

Name, Title — **Date**

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

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

Report generated with ACAM version: 5.0.23a

a. Action Location:

Base: VANCE AFB
State: Oklahoma
County(s): Barber, KS; Clark, KS; Comanche, KS; Harper, KS; Alfalfa, OK; Beaver, OK; Blaine, OK; Custer, OK; Dewey, OK; Ellis, OK; Garfield, OK; Harper, OK; Kingfisher, OK; Major, OK; Roger Mills, OK; Woods, OK; Woodward, OK; Hemphill, TX; Lipscomb, TX; Wheeler, TX
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Vance AFB T-7A EIS: Alternative 3, SUA Low Flight Pattern

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2032

e. Action Description:

The Proposed Action is recapitalization of the T-38C flight training program at Vance AFB with T-7A aircraft. Recapitalization entails replacement of all T-38C aircraft assigned to Vance with T-7A aircraft; transition of aircraft operations at Vance AFB and associated SUA from the T-38C to the T-7A; temporary changes to the number of personnel and dependents in the Vance AFB region; and construction of and upgrades to operations, support, and maintenance facilities to support pilot training and aircraft operation and maintenance.

For Alternative 1, Vance AFB would receive up to 68 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in up to 68 T 7A aircraft being delivered to Vance AFB; however, T-7A operations would be performed at an operational tempo approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Vance AFB would receive up to 99 T-7A aircraft and T-7A operations would be approximately 45 percent greater than aircraft operations for Alternative 1. The No Action Alternative would not implement T-7A recapitalization at Vance AFB.

f. Point of Contact:

Name: Carolyn Hein
Title: Contractor
Organization: HDR
Email:
Phone Number:

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

____ applicable
_X_ not applicable

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

Total reasonably foreseeable net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (hsba.e., no net gain/loss in emission stabilized and the action is fully implemented) emissions. The ACAM analysis uses the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the *USAF Air Emissions Guide for Air Force Stationary Sources*, the *USAF Air Emissions Guide for Air Force Mobile Sources,* and the *USAF Air Emissions Guide for Air Force Transitory Sources.*

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of the proposed Action's potential impacts on local air quality. The insignificance indicators are trivial (*de minimis*) rate thresholds that have been demonstrated to have little to no impact on air quality. These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold and 25 ton/yr for lead for actions occurring in areas that are "Attainment" (hsba.e., not exceeding any National Ambient Air Quality Standard (NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutants is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQS. For further detail on insignificance indicators, refer to *Level II, Air Quality Quantitative Assessment, Insignificance Indicators*.

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

Analysis Summary:

2032

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	1.328	250	No
NOx	22.625	250	No
CO	-10.115	250	No
SOx	0.361	250	No
PM 10	-0.304	250	No
PM 2.5	-0.274	250	No
Pb	0.000	25	No
NH3	0.000	250	No

2033

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	8.385	250	No
NOx	136.731	250	No
CO	-43.213	250	No
SOx	2.769	250	No
PM 10	-1.188	250	No
PM 2.5	-1.075	250	No
Pb	0.000	25	No
NH3	0.000	250	No

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

2034

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	15.188	250	No
NOx	240.510	250	No
CO	-54.050	250	No
SOx	5.587	250	No
PM 10	-1.293	250	No
PM 2.5	-1.178	250	No
Pb	0.000	25	No
NH3	0.000	250	No

2035

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	15.992	250	No
NOx	252.184	250	Yes
CO	-53.385	250	No
SOx	5.966	250	No
PM 10	-1.236	250	No
PM 2.5	-1.128	250	No
Pb	0.000	25	No
NH3	0.000	250	No

2036 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	15.992	250	No
NOx	252.184	250	Yes
CO	-53.385	250	No
SOx	5.966	250	No
PM 10	-1.236	250	No
PM 2.5	-1.128	250	No
Pb	0.000	25	No
NH3	0.000	250	No

The steady state estimated annual net emissions associated with this action exceed the insignificance indicators, indicating a potential for a significant impact on air quality. Therefore, the ACAM analysis is inconclusive and further air quality impact assessment is needed.

Carolyn Hein, Contractor — March 19, 2025

Name, Title — **Date**

C

Agency Consultation

Section 7 of the Endangered Species Act Consultation

The Department of the Air Force (DAF) consulted with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act for the Proposed Action. **Section 3.4** contains further information regarding the outcome of the consultation with USFWS. A copy of the consultation letter is on the following pages.

Consultation letter sent to USFWS (emailed November 14 and 18, 2025)

DEPARTMENT OF THE AIR FORCE
71ST FLYING TRAINING WING
VANCE AIR FORCE BASE OKLAHOMA

5 November 2025

Colonel Joshua D. Lundeby
Commander, 71st Flying Training Wing
246 Brown Parkway, Suite 224
Vance AFB OK 73705-5015

Mr. John Hendrix
ES Project Lead
U.S. Fish and Wildlife Service
9014 East 21st Street
Tulsa, OK 74129

Dear Mr. Hendrix

Thank you for your office's feedback provided by email on 5 and 8 September 2025 in response to our 31 March 2025 consultation letter for T-7A recapitalization at Vance Air Force Base (AFB), Oklahoma. We have considered your feedback, incorporated the two recently completed prior consultations for Vance AFB, and revised our finding of effect accordingly. Pursuant to Section 7 of the Endangered Species Act of 1973 (16 USC 1531–1544), the United States Department of the Air Force (DAF) has determined that T-7A recapitalization at Vance AFB *may affect but is not likely to adversely affect* three federally listed and two species proposed for federal listing, and will have *no effect* on three federally listed species (**Attachment 1**).

Proposed Action

DAF proposes to recapitalize its T-38C "Talon" flight training program at Vance AFB, Oklahoma, with newer and more capable T--7A "Red Hawk" aircraft. DAF is preparing an Environmental Impact Statement under the National Environmental Policy Act to evaluate potential environmental impacts associated with that proposal.

The Proposed Action entails the phased introduction of T-7A aircraft and phased reduction of T-38C aircraft currently operating from Vance AFB and new intensities of flight operations. From 2032 to 2034, Vance AFB would receive up to 99 T-7A aircraft to replace all 63 T-38C aircraft currently assigned to the installation. On a per aircraft basis, the T-7A would perform the same number of flight operations (i.e., takeoffs, landings, and touch-and-goes) as the current T-38C; however, on an installation-wide basis, the total annual T-7A operations in 2035 and later could be as much as 36,900 or 58 percent greater than current T-38C operations due to the additional aircraft. After departing from Vance AFB, T-7A sorties would occur within established Special Use Airspace (SUA) currently used for T-38C operations, and no changes to established SUA configurations (i.e., size, shape, or location) would occur under this action. **Attachment 2, Figure 1** shows the existing SUA proposed for T-7A sorties.

Several construction and renovation projects potentially would occur at Vance AFB to provide modern facilities and infrastructure to support T-7A aircraft maintenance, training, and operational requirements. These projects would occur in or near previously disturbed or highly developed areas of Vance AFB. Most vegetative cover in the areas of proposed construction consists of regularly maintained nonnative grass species including bermudagrass (*Cynodon dactylon*) as well as the native blue grama (*Bouteloua gracilis*), sideoats grama (*B. curtipendula*), sand dropseed (*Sporobolus cryptandrus*), sand bluestem (*Andropogon hallii*), and buffalo grass (*Buchloe dactyloides*). There are no wetlands on Vance AFB and no potential wetlands within the project areas. **Attachment 2, Figure 2** shows the approximate locations for the project areas.

Prior Consultations

A Programmatic Biological Opinion (PBO) and conference opinion (09E30000-2023-0090495-S7) that analyzed flight operations at 32 DAF installations, including Vance AFB, using aircraft strike modeling was issued in December 2024. This PBO is evaluated every five years. The 2024 PBO provides an Incidental Take Statement (ITS) for the next five years based on DAF-provided model outputs, allowing for mortality of up to:

- three piping plovers (*Charadrius melodus*)
- two rufa red knots (*Calidris canatus rufa*)
- one whooping crane (*Grus americana*)
- eight tricolored bats (*Perimyotis subflavus*) (USFWS 2024).

On 23 April 2025, DAF initiated informal consultation with the U.S. Fish and Wildlife Service (USFWS) for a proposal to obtain new permanent low-altitude airspace for the 71st Flying Training Wing at Vance AFB (Project Code: 2025-0034229). On 8 September 2025, USFWS concurred that that proposal *may affect but is not likely to adversely affect* federally protected species. DAF agreed to coordinate with USFWS Salt Plains National Wildlife Refuge staff during whooping crane spring and fall migration periods (March and April and October to December) and implement additional measures to minimize impacts to protected species (e.g., avoid flying during evening hours especially from December to January, use radar or pilot-reported observations to identify potential bird hazards, not schedule flights during known periods of peak bird activity) (Vance AFB 2025).

Threatened, Endangered, and Proposed Species and Critical Habitat

The 2022 Vance AFB Integrated Natural Resources Management Plan (INRMP) and the USFWS Information for Planning and Consultation (IPaC) System reports for the Vance AFB installation (**Attachment 3**) and associated SUA (**Attachment 4**) were reviewed to determine if any federally listed, proposed, or candidate species or their habitats could occur on the installation or within the SUA. The INRMP and IPaC reports indicate that eight such species have the potential to occur on Vance AFB or within the SUA. They are two endangered species: whooping crane and peppered chub (*Macrhybopsis tetranema*); four threatened species: lesser prairie-chicken (*Tympanuchus pallidicinctus*), piping plover, rufa red knot, and Arkansas River shiner (*Notropis girardi*); one proposed endangered species: tricolored bat; and one proposed threatened species: monarch butterfly (*Danaus plexippus*) (Vance AFB 2022, USFWS 2025a, USFWS 2025b).

No critical habitats are documented on Vance AFB; however, there is designated critical habitats for both the Arkansas River shiner and peppered chub, that are wholly or partially under the established SUA (USFWS 2025b). No impacts on hydrological features or critical habitat would occur from continued usage of the SUA or potential increase of aircraft operations.

Of the eight species, five have the potential to be impacted by the Proposed Action: the tricolored bat, piping plover, rufa red knot, whooping crane, and monarch butterfly. These five species could potentially be impacted by the proposed construction and renovation projects; aircraft landings, takeoffs, and touch-and-goes at the Vance AFB airfield; increased noise levels on and near the installation; and potential increase in aircraft operations within the SUA.

Incidental aircraft strikes with the tricolored bat, piping plover, rufa red knot, whooping crane, and monarch butterfly could occur during takeoffs, landings, and touch-and-goes at the Vance AFB airfield. Only the tricolored bat has been documented (acoustically) on the installation; however, there is habitat for the monarch butterfly around the airfield, and whooping cranes have been documented in the surrounding Vance AFB airspace and on the ground south of the installation. A 2024 study that compiled whooping crane telemetry data obtained between 2017 and 2022 determined that an average of 42 percent of the 91 marked whooping cranes individuals passed through Vance AFB airspace or stopped near the installation during autumn migrations and an average of 32 percent of marked individuals were documented during spring migrations. The closest whooping crane documented on the ground was approximately 4 miles south of Vance AFB (Brandt & Pearse 2024). DAF reviewed T-38C bird/wildlife aircraft strike hazard (BASH) data for Vance AFB from March 2020 through September 2024. More than 300 strike incidents were recorded during this 4-year span, and no federally listed or proposed species were documented in the BASH data.

The Proposed Action could increase airfield operations and usage of the SUA by up to 58 percent, which could increase potential interactions with species transiting through the SUA, particularly the whooping crane and tricolored bat. As noted above, to date there have been no documented BASH occurrences and the 2024 PBO and Conference Opinion provides an ITS for the tricolored bat and whooping crane as well as the piping plover and rufa red knot. Coordination with USFWS Salt Plains Refuge staff during known spring and fall migration periods and continued adherence of the Vance AFB BASH Plan would help avoid and minimize the potential for strikes to federally listed or proposed species. Additionally, if determined necessary, new measures would be developed in coordination with USFWS to reduce the potential for impacts and the BASH Plan would be updated accordingly. Therefore, T-7A recapitalization at Vance AFB *may affect but is not likely to adversely affect* the tricolored bat, piping plover, rufa red knot, whooping crane, and monarch butterfly.

The two fish species, the Arkansas River shiner and peppered chub, are found exclusively in aquatic habitat, and no activities are proposed to affect aquatic resources. The proposed construction and renovation projects occur on either impervious cover, existing structures, or maintained, nonnative grasslands and lawns that do not provide suitable habitat for these species. Additionally, there is no habitat for the lesser prairie-chicken on the installation, and this low-flying species would not be expected to be present in the SUA. Therefore, T-7A recapitalization at Vance AFB *will have no effect* on the Arkansas River shiner, peppered chub, and lesser prairie-chicken.

We request written concurrence with our determination as part of the informal consultation process. If you have any questions or concerns, please contact Ms. Chinling Chen at chinling.chen@us.af.mil. Thank you in advance for your assistance in this effort.

Sincerely,

JOSHUA D. LUNDEBY, Colonel, USAF
Commander

5 Attachments:
1. Federally Listed, Proposed, or Candidate Species with Potential to Occur on Vance AFB or within the SUA and Effects Determination
2. Figures
3. Vance AFB IPaC Report (Project Code: 2025-0149754)
4. SUA IPaC Report (Project Code: 2025-0149400)
5. References

Attachment 1: Federally Listed, Proposed, or Candidate Species with Potential to Occur on Vance AFB or within the SUA and Effects Determination

Common Name	Scientific Name	Federal Status	Habitat Description and Distribution	Effect Determination and Justification
Mammal				
Tricolored bat	*Perimyotis subflavus*	Proposed Endangered	Depending on the season, tricolored bats can be found in caves and abandoned mines, roosting in road-associated culverts. They can also be found in forested habitats (trees, Spanish moss, and occasionally human structures).	**May affect but is not likely to adversely affect** – Suitable habitat is not present on or around the construction and renovation project areas. No confirmed BASH occurrences have been documented since 2020. While this bat species does not typically forage at high-altitudes, it could be present in the SUA. With the potential increase in aircraft operations, this bat may be more at risk for aircraft strikes. The 2024 PBO provides an ITS for the tricolored bat, should the proposed listing rule for the species be finalized.
Birds				
Lesser prairie-chicken	*Tympanuchus pallidicinctus*	Threatened	This species prefers native, treeless prairies and grasslands and prairies in the southern Great Plains with a mix of short and tall native grasses, low-lying shrubs and forbs.	**No effect** – There is no habitat for this species on or around the installation, and it has not been documented on Vance AFB. This low-flying species would not be found in the SUA.
Piping plover	*Charadrius melodus*	Threatened	The piping plover is a migratory shorebird and many reservoirs throughout Oklahoma serve as brief stopover sites for piping plovers. The Northern Great Plains population typically visits the state between March to May and July to September, selecting mudflats and sandbars to forage for invertebrates.	**May affect but is not likely to adversely affect** – Suitable habitat is not present on or around the construction and renovation project areas. This species has not been documented on the installation, and no confirmed BASH occurrences have been documented since 2020. This species has been documented up to 945 feet, so it could be present in the SUA. With the potential increase in aircraft operations, this bird may be more at risk for aircraft strikes. The 2024 PBO provides an ITS for the piping plover.

Common Name	Scientific Name	Federal Status	Habitat Description and Distribution	Effect Determination and Justification
Rufa red knot	*Calidris canutus rufa*	Threatened	The rufa red knot is a migratory shorebird that migrates primarily along the Atlantic coastline; a small population migrates through the Great Plains to the Gulf Coast. It uses broad shorelines of rivers and lakes as stopover habitat during migration.	**May affect but is not likely to adversely affect** – Suitable habitat is not present on or around the construction and renovation project areas. This species has not been documented on the installation, and no confirmed BASH occurrences have been documented since 2020. This species has been documented up to 900 feet, so it could be present in the SUA. With the potential increase in aircraft operations, this bird may be more at risk for aircraft strikes. The 2024 PBO provides an ITS for the rufa red knot.
Whooping crane	*Grus americana*	Endangered	The whooping crane breeds, migrates, winters, and forages in a variety of habitats, including coastal marshes and estuaries, inland marshes, lakes, open ponds, shallow bays, salt marsh and sand or tidal flats, upland swales, wet meadows and rivers, pastures, and agricultural fields. During migration, whooping cranes pass through Oklahoma in both spring and fall.	**May affect but is not likely to adversely affect** – Suitable habitat is not present on or around the construction and renovation project areas. This species has not been documented on the installation, and no confirmed BASH occurrences have been documented over the last 4 years. This species has been documented up to 5,900 feet, so it could be present in the SUA. With the potential increase in aircraft operations, this bird may be more at risk for aircraft strikes. The 2024 PBO provides an ITS for the whooping crane.
Fishes				
Peppered chub	*Macrhybopsis tetranema*	Endangered	A freshwater ray-finned minnow found in Kansas and in the Canadian River. This species inhabits shallow, relatively wide, and braided channels where the current flows over sand.	**No effect** – No impacts on hydrological features would occur under the Proposed Action.
Arkansas River shiner	*Notropis girardi*	Threatened	A small, robust minnow native to the Arkansas River Basin. The shiner is known to occur only in the South Canadian River.	**No effect** – No impacts on hydrological features would occur under the Proposed Action.

Common Name	Scientific Name	Federal Status	Habitat Description and Distribution	Effect Determination and Justification
Insect				
Monarch butterfly	*Danaus plexippus*	Proposed Threatened	The monarch butterfly is found in fields, roadside areas, and open areas; milkweed (*Asclepias* sp.) and flowering plants are needed for monarch habitat and breeding. Migrations for this species occur in October and in February or March.	**May affect but is not likely to adversely affect** – Milkweed species have been observed at Vance AFB near the airfield; however, it is not within the construction and renovation project areas. This species has not been documented on the installation, and no confirmed BASH occurrences have been documented since 2020. This butterfly has been documented up to 11,000 feet, so it could be present in the SUA. With the potential increase in aircraft operations, this butterfly may be more at risk for aircraft strikes.

Sources: Vance AFB 2022, USFWS 2025a, USFWS 2025b.

Attachment 2: Figures

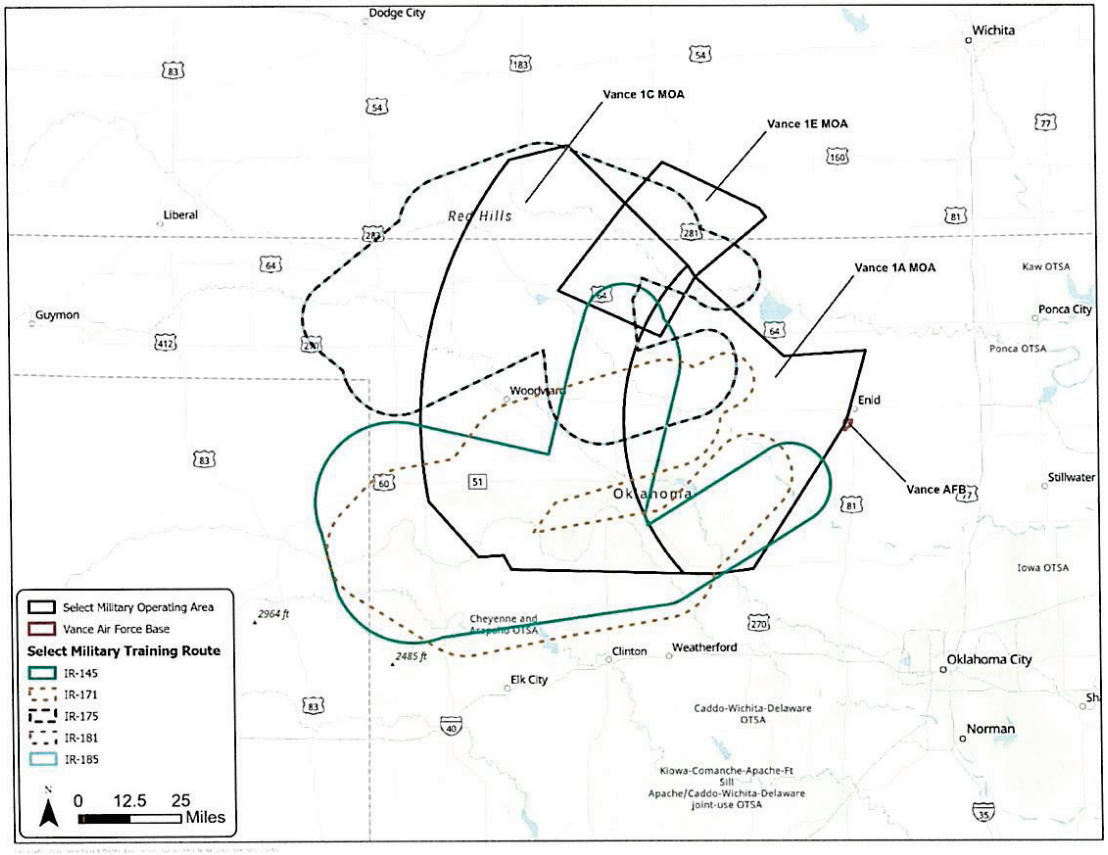


Figure 1. Vance AFB and Associated SUA for T-7A Operations

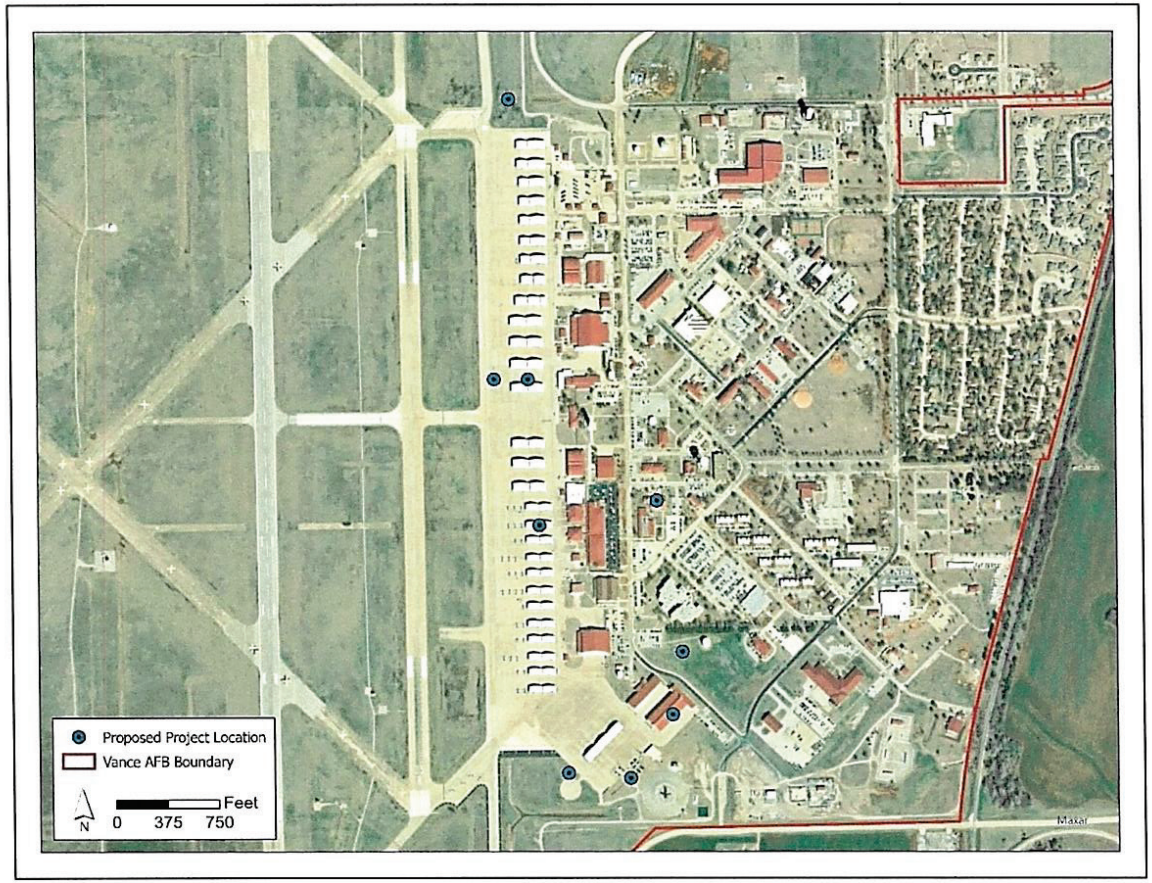


Figure 2. Construction and Renovation Project Locations

Attachment 3: Vance AFB IPaC Report (Project Code: 2025-0149754)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Oklahoma Ecological Services Field Office
9014 East 21st Street
Tulsa, OK 74129-1428
Phone: (918) 581-7458 Fax: (918) 581-7467

In Reply Refer To: 09/15/2025 20:52:33 UTC
Project Code: 2025-0149754
Project Name: T-7A Recapitalization at Vance Air Force Base, Oklahoma EIS

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

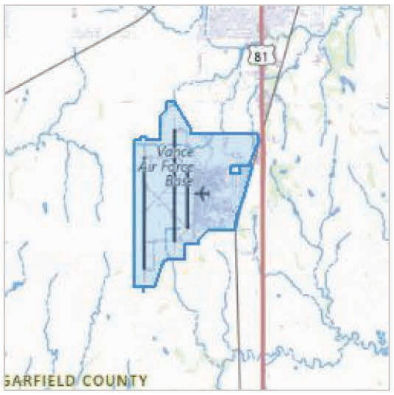
Oklahoma Ecological Services Field Office
9014 East 21st Street
Tulsa, OK 74129-1428
(918) 581-7458

PROJECT SUMMARY

Project Code: 2025-0149754
Project Name: T-7A Recapitalization at Vance Air Force Base, Oklahoma EIS
Project Type: Military Development
Project Description: DAF has prepared this EIS to address a proposal to recapitalize the T-38C Talon flight training program at Vance AFB with T-7A Red Hawk aircraft.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@36.34008715,-97.91056999793126,14z



Counties: Garfield County, Oklahoma

ENDANGERED SPECIES ACT SPECIES

There is a total of 6 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

BIRDS

NAME	STATUS
Piping Plover *Charadrius melodus* Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Rufa Red Knot *Calidris canutus rufa* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened
Whooping Crane *Grus americana* Population: Wherever found, except where listed as an experimental population There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/758	Endangered

FISHES

NAME	STATUS
Arkansas River Shiner *Notropis girardi* Population: Arkansas River Basin (AR, KS, NM, OK, TX) There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4364	Threatened
Peppered Chub *Macrhybopsis tetranema* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/532	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

---

1. The Bald and Golden Eagle Protection Act of 1940.
2. The Migratory Birds Treaty Act of 1918.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are Bald Eagles and/or Golden Eagles in your project area.

Measures for Proactively Minimizing Eagle Impacts
For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the National Bald Eagle Management Guidelines. You may employ the timing and activity-specific distance recommendations in this document when designing your project/ activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to Bald Eagle Nesting and Sensitivity to Human Activity.

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

If disturbance or take of eagles cannot be avoided, an incidental take permit may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the Do I Need A Permit Tool. For assistance making this determination for golden eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

Ensure Your Eagle List is Accurate and Complete
If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information

on Migratory Birds and Eagles, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Jul 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

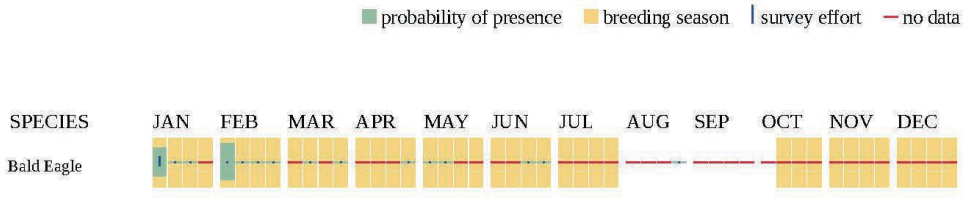
Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.



Non-BCC
Vulnerable

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

MIGRATORY BIRDS

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Golden-plover *Pluvialis dominica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10561	Breeds elsewhere
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Jul 31

NAME	BREEDING SEASON
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9454	Breeds May 20 to Jul 31
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9406	Breeds Mar 15 to Aug 25
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9398	Breeds May 10 to Sep 10
Willet *Tringa semipalmata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10669	Breeds Apr 20 to Aug 5

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (▪)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (▪)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

WETLANDS

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

RIVERINE

- R5UBF
- R5UBFx
- R4SBC

FRESHWATER EMERGENT WETLAND

- PEM1Ax

IPAC USER CONTACT INFORMATION

Agency: Air Force
Name: Isha Alexander
Address: 8735 153rd Ave SE
City: Tenino
State: WA
Zip: 98589
Email isha.alexander@hdrinc.com
Phone: 3602208669

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Air Force

Attachment 4: SUA IPaC Report (Project Code: 2025-0149400)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Oklahoma Ecological Services Field Office
9014 East 21st Street
Tulsa, OK 74129-1428
Phone: (918) 581-7458 Fax: (918) 581-7467

In Reply Refer To: 09/15/2025 16:27:12 UTC
Project Code: 2025-0149400
Project Name: T-7A Recapitalization at Vance Air Force Base, Oklahoma EIS

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Note: IPaC has provided all available attachments because this project is in multiple field office jurisdictions.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Oklahoma Ecological Services Field Office
9014 East 21st Street
Tulsa, OK 74129-1428
(918) 581-7458

This project's location is within the jurisdiction of multiple offices. However, only one species list document will be provided for all offices. The species and critical habitats in this document reflect the aggregation of those that fall in each of the affiliated office's jurisdiction. Other offices affiliated with the project:

Arlington Ecological Services Field Office
17629 El Camino Real, Suite 211
Houston, TX 77058-3051
(817) 277-1100

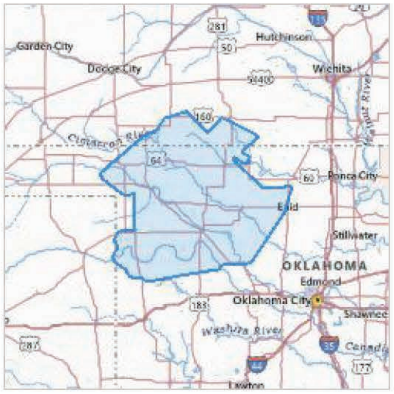
Kansas Ecological Services Field Office
2609 Anderson Avenue
Manhattan, KS 66502-2801
(785) 539-3474

PROJECT SUMMARY

Project Code: 2025-0149400
Project Name: T-7A Recapitalization at Vance Air Force Base, Oklahoma EIS
Project Type: Military Development
Project Description: DAF has prepared this EIS to address a proposal to recapitalize the T-38C Talon flight training program at Vance AFB with T-7A Red Hawk aircraft. For Alternative 1, Vance AFB would receive up to 68 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in up to 68 T-7A aircraft being delivered to Vance AFB; however, operations would be performed at an operational tempo approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Vance AFB would receive up to 99 T-7A aircraft, and T-7A operations would be approximately 45 percent greater than those for Alternative 1.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@36.490767149999996,-98.81695379372229,14z



Counties: Kansas, Oklahoma, and Texas

ENDANGERED SPECIES ACT SPECIES

There is a total of 8 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

BIRDS

NAME	STATUS
Lesser Prairie-chicken *Tympanuchus pallidicinctus* Population: Northern DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1924	Threatened
Piping Plover *Charadrius melodus* Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Rufa Red Knot *Calidris canutus rufa* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened
Whooping Crane *Grus americana* Population: Wherever found, except where listed as an experimental population There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/758	Endangered

FISHES

NAME	STATUS
Arkansas River Shiner *Notropis girardi* Population: Arkansas River Basin (AR, KS, NM, OK, TX) There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4364	Threatened
Peppered Chub *Macrhybopsis tetranema* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/532	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

CRITICAL HABITATS

There are 2 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Arkansas River Shiner *Notropis girardi* https://ecos.fws.gov/ecp/species/4364#crithab	Final
Peppered Chub *Macrhybopsis tetranema* https://ecos.fws.gov/ecp/species/532#crithab	Final

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

1. The Bald and Golden Eagle Protection Act of 1940.
2. The Migratory Birds Treaty Act of 1918.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are Bald Eagles and/or Golden Eagles in your project area.

Measures for Proactively Minimizing Eagle Impacts

For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the National Bald Eagle Management Guidelines. You may employ the timing and activity-specific distance recommendations in this document when designing your project/ activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to Bald Eagle Nesting and Sensitivity to Human Activity.

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

If disturbance or take of eagles cannot be avoided, an incidental take permit may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the Do I Need A Permit Tool. For assistance making this determination for golden eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

Ensure Your Eagle List is Accurate and Complete
If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Jul 31
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

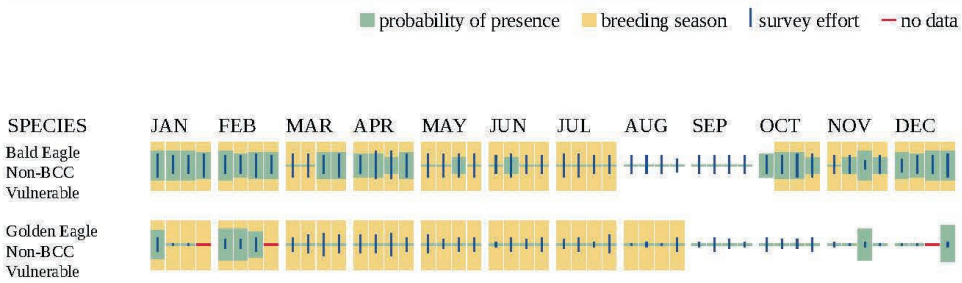
Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

MIGRATORY BIRDS

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Golden-plover *Pluvialis dominica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10561	Breeds elsewhere
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Jul 31
Black Tern *Chlidonias niger surinamenisis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3093	Breeds May 15 to Aug 20
Black-billed Cuckoo *Coccyzus erythropthalmus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Black-capped Vireo *Vireo atricapilla* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5716	Breeds Apr 1 to Sep 15
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9454	Breeds May 20 to Jul 31
Chestnut-collared Longspur *Calcarius ornatus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9437	Breeds elsewhere
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9406	Breeds Mar 15 to Aug 25
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31
Hudsonian Godwit *Limosa haemastica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9482	Breeds elsewhere

NAME	BREEDING SEASON
King Rail *Rallus elegans* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8936	Breeds May 1 to Sep 5
Lark Bunting *Calamospiza melanocorys* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9451	Breeds May 10 to Aug 15
Least Tern *Sternula antillarum antillarum* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/11919	Breeds Apr 25 to Sep 5
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Pectoral Sandpiper *Calidris melanotos* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9561	Breeds elsewhere
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9398	Breeds May 10 to Sep 10
Sprague's Pipit *Anthus spragueii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8964	Breeds elsewhere
Thick-billed Longspur *Rhynchophanes mccownii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/11901	Breeds elsewhere
Western Grebe *aechmophorus occidentalis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/6743	Breeds Jun 1 to Aug 31
Whimbrel *Numenius phaeopus hudsonicus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/11991	Breeds elsewhere

NAME	BREEDING SEASON
Willet *Tringa semipalmata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10669	Breeds Apr 20 to Aug 5

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

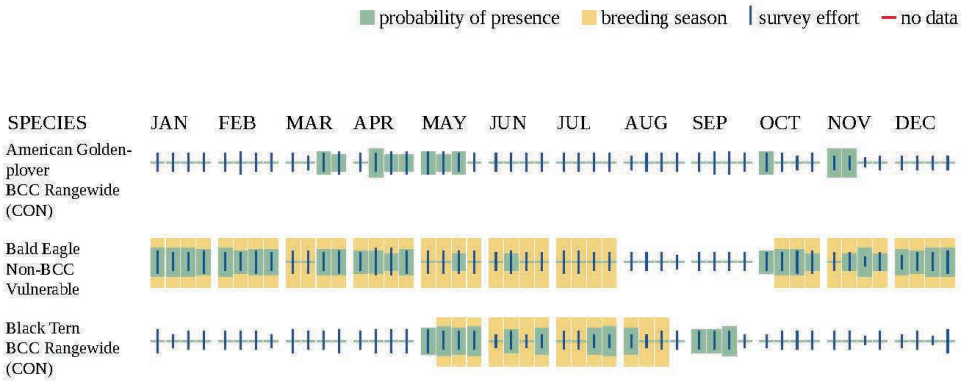
Probability of Presence (■)

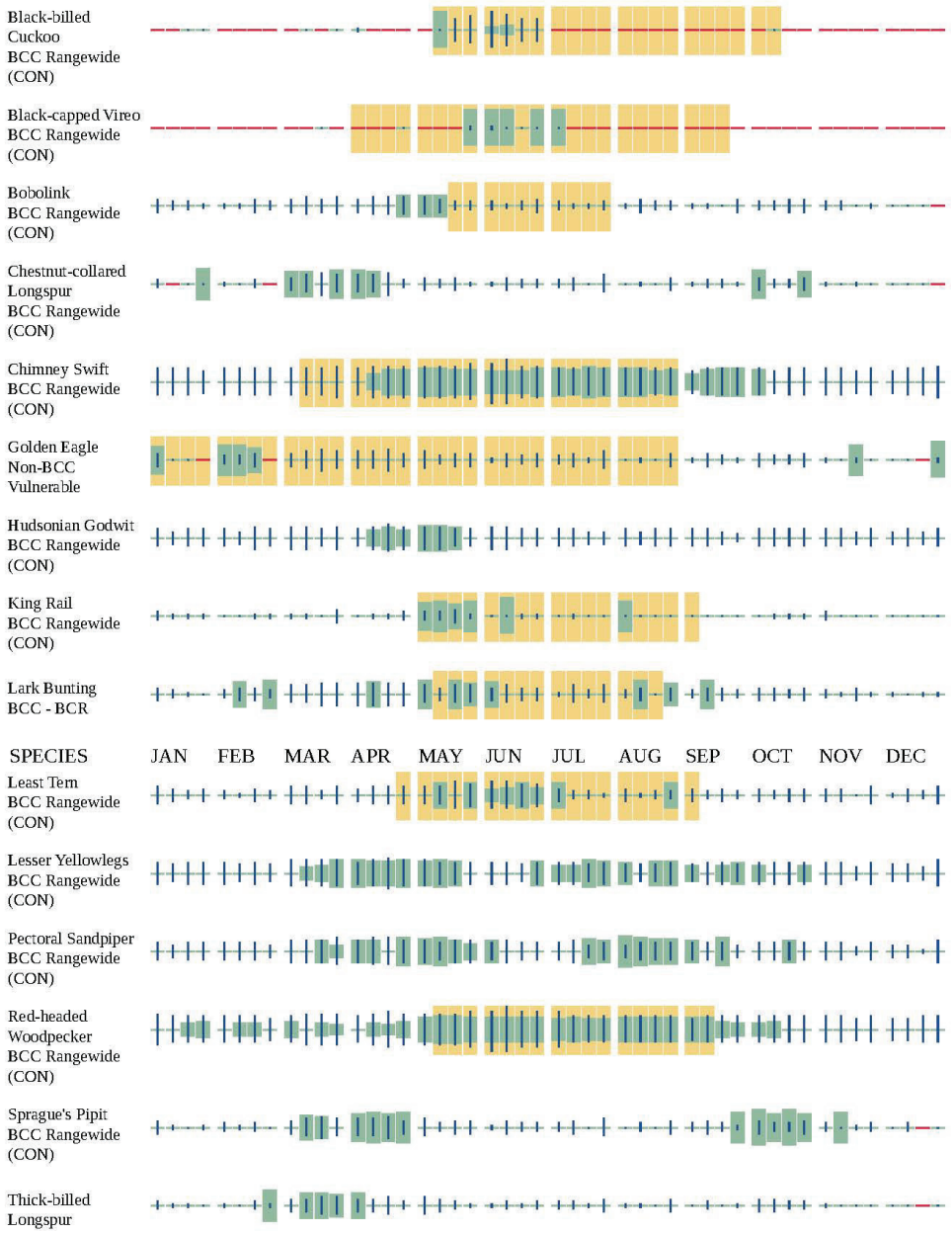
Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

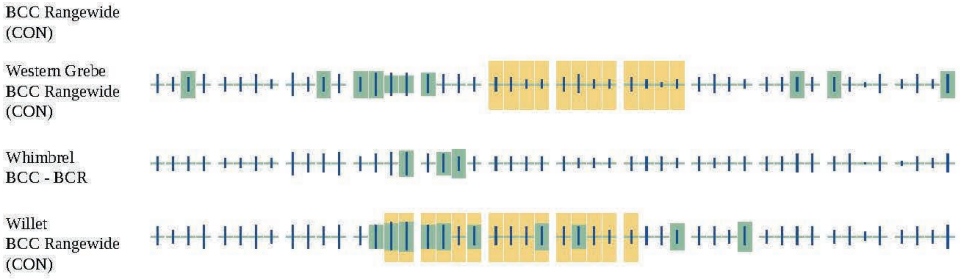
Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.




Black-billed Cuckoo BCC Rangewide (CON)
Black-capped Vireo BCC Rangewide (CON)
Bobolink BCC Rangewide (CON)
Chestnut-collared Longspur BCC Rangewide (CON)
Chimney Swift BCC Rangewide (CON)
Golden Eagle Non-BCC Vulnerable
Hudsonian Godwit BCC Rangewide (CON)
King Rail BCC Rangewide (CON)
Lark Bunting BCC - BCR
SPECIES
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
Least Tern BCC Rangewide (CON)
Lesser Yellowlegs BCC Rangewide (CON)
Pectoral Sandpiper BCC Rangewide (CON)
Red-headed Woodpecker BCC Rangewide (CON)
Sprague's Pipit BCC Rangewide (CON)
Thick-billed Longspur



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

WETLANDS

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

Due to your project's size, the list below may be incomplete, or the acreages reported may be inaccurate. For a full list, please contact the local U.S. Fish and Wildlife office or visit https://www.fws.gov/wetlands/data/mapper.HTML

FRESHWATER EMERGENT WETLAND

- PEM1/SS1C
- PEM1Ah
- PEM1/FO1Ah
- PEM1/SS2A
- PEM1/FO1Ch
- PEM1A

- PEM1/FO1F
- PEM1/SS1Cx
- PEM1/SS1Ah
- PEM1/SS1F
- PEM1/SS2C
- PEM1/FO1C
- PEM1/SS1A
- PEM1/FO1A
- PEM1/SS1Ch
- PEM1/SS1Ax
- PEM1Af

LAKE

- L2USCx
- L2UBFx
- L1UBHh
- L1UBH
- L2USCh
- L2UBFh

FRESHWATER POND

- PAB2F
- PAB4Hh
- PAB4F
- PAB4Fh
- PAB3Fh
- PAB4Fx
- PABFh

IPAC USER CONTACT INFORMATION

Agency: Army
Name: Isha Alexander
Address: 8735 153rd Ave SE
City: Tenino
State: WA
Zip: 98589
Email isha.alexander@hdrinc.com
Phone: 3602208669

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Air Force

Attachment 5: References

Brandt & Pearse 2024	Brandt, D.A., and Pearse, A.T. 2024. *Migrating whooping crane activity near U.S. Air Force bases and airfields in Oklahoma: U.S. Geological Survey Open-File Report 2024–1056, 23 p.*, https://doi.org/ 10.3133/ ofr20241056.
USFWS 2024	United States Fish and Wildlife Service (USFWS). 2024. *Informal Consultation, Conference Opinion & Biological Opinion for Department of the Air Force Flight Operations at 32 Installations across the Contiguous United States. FWS Log #: 09E30000-2023-0090495-S7.* December 18, 2024.
USFWS 2025a	USFWS. 2025. *Official Information for Planning and Consultation Report for T-7A Recapitalization at Vance Air Force Base, Oklahoma. Project Code: 2025-0149754.* Report generated September 15, 2025.
USFWS 2025b	USFWS. 2025. *Official Information for Planning and Consultation Report for T-7A Recapitalization at Vance Air Force Base, Oklahoma. Project Code: 2025-0149400.* Report generated September 15, 2025.
Vance AFB 2022	Vance Air Force Base (AFB). 2022. *U.S. Air Force Integrated Natural Resources Management Plan Vance Air Force Base*. April 8, 2022.
Vance AFB 2025	Vance AFB. 2025. *Email correspondence between USFWS and Vance AFB on informal Section 7 concurrence for Vance AFB Low MOA EA / Project Code: 2025-0034229.* September 8, 2025.

Concurrence from USFWS

From: Stubbs, Kevin <kevin_stubbs@fws.gov>
Sent: Tuesday, November 18, 2025 2:18 PM
To: Fullerton, Matthew R <matthew_fullerton@fws.gov>; CHEN, CHINLING CIV USAF AFMC AFCEC/CIEE <chinling.chen@us.af.mil>
Cc: Fenner, Daniel <daniel_fenner@fws.gov>; Kasson, Shane <shane_kasson@fws.gov>; McAbee, Kevin <Kevin_McAbee@fws.gov>; Riggs, Georgia J <georgia_riggs@fws.gov>; Echo-Hawk, Patricia <Patricia_Echo-Hawk@fws.gov>; Martinez, Jonathan (Jon) <jonathan_martinez@fws.gov>; BUTHMAN, MARK H CTR USAF AETC AFFS/CEV <mark.buthman.ctr@us.af.mil>
Subject: [Non-DoD Source] Re: [EXTERNAL] RE: Recapitalization to T-7A “Red Hawk” aircraft (Vance AFB)

Hi Chinling,

We can concur with your revised determinations for the proposed actions at Vance AFB. As Matt pointed out the TCB is not currently listed and the 2024 PBO would provide incidental take if the proposed listing is finalized. The monarch is also proposed for listing and your action is not likely to jeopardize this species but we recommend you initiate consultation if the proposed rule is finalized. We do not see any practical ways to completely avoid incidental take for this species and the 2024 PBO does not include any incidental take for monarchs.

Let me know if you have any questions.

Kevin

918-695-6769

Section 106 of the National Historic Preservation Act Consultation

DAF consulted with the Oklahoma Historical Society (i.e., the Oklahoma State Historical Preservation Officer [SHPO]) under Section 106 of the National Historic Preservation Act for the Proposed Action. **Section 3.5** contains further information regarding the outcome of the consultation with the Oklahoma SHPO. A copy of the consultation letter and the SHPO's response is on the following pages.

Consultation letter sent to the Oklahoma Historical Society (sent October 29, 2024)

DEPARTMENT OF THE AIR FORCE
71ST FLYING TRAINING WING
VANCE AIR FORCE BASE OKLAHOMA

26 September 2024

Colonel Charles D. Throckmorton IV
Commander, 71st Flying Training Wing
246 Brown Parkway, Suite 224
Vance AFB OK 73705-5015

Ms. Lynda Ozan
Deputy State Historic Preservation Officer
State Historic Preservation Office
Oklahoma Historical Society
800 Nazih Zuhdi Drive
Oklahoma City OK 73105

Dear Ms. Ozan

The United States Department of the Air Force (DAF) is proposing to recapitalize its flight training program at Vance Air Force Base (AFB), Oklahoma, with newer and more capable T-7A "Red Hawk" aircraft. Recapitalization is the phased acquisition of the new aircraft and upgrade of specific facilities to support the training, operation, and maintenance of the T-7A aircraft. DAF is preparing an Environmental Impact Statement under the National Environmental Policy Act (NEPA) to evaluate potential environmental impacts associated with T-7A recapitalization at Vance AFB. To consider various environmental effects, DAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking.

Per 54 U.S.C. 306108 and Section 106 of the National Historic Preservation Act and its implementing regulations at 36 CFR Part 800, DAF is initiating consultation for this proposed undertaking that has the potential to affect historic properties.

The undertaking will entail the phased introduction of T-7A aircraft and phased reduction of the T-38C aircraft currently operating at Vance AFB; new intensities of flight operations; and temporary changes to the number of personnel assigned to Vance AFB. T-7A operations would occur within established Special Use Airspace (SUA) currently used for T-38C operations (**Attachment 1**), and no changes to SUA configurations (i.e., size, shape, or location) would be necessary to support the proposed operations of the T-7A. Additionally, multiple construction and modernization projects of existing facilities would occur at Vance AFB to provide modern and upgraded facilities and infrastructure. The potential to impact historic properties and details individual assessment of effect can be found in **Attachment 2**.

DELIVER, DEVELOP, DEPLOY, DEMONSTRATE

The Area of Potential Effect (APE) as the potential impact area from all types of activities was defined. Effects include, but are not limited to, ground disturbance, vibration, building modification, and staging and equipment storage, as well as noise and aesthetic interference. For this undertaking, the APE is defined as the footprint of all buildings proposed for exterior alteration, all areas of new construction and additions, all landscape features (such as airfield markings) that are proposed for alteration, all new roads and parking lots, and buffers around those areas to account for construction staging and temporary physical impacts from ground disturbing activity. The APE captures all anticipated effects as new building construction is anticipated to be one story and not exceed 40 feet in total building height. There are no National Register of Historic Places (NRHP)-listed or eligible historic districts, sites, buildings, structures, or objects that would be visually or audibly affected by the proposed undertaking. In addition, the only vertical components planned are the antennas that would be located adjacent to the existing Unit Maintenance Training Facility (UMT) and existing antennas that would stand approximately 50 feet high. The APE totals approximately 116.75 acres and is shown in **Attachment 3**. There is no change to the SUA, and therefore, the APE for this undertaking does not include the SUA where the T-7A aircraft would perform operations (**Attachment 1**).

Following issuance of Vance AFB's scoping notice, 13 Tribes were identified as potentially being affected by the Proposed Action. Vance AFB is continuing consultation with those Tribes and has invited them to consult on the proposed undertaking and to confirm that no sacred sites or traditional cultural properties are present in the APE.

Affected Environment

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 or historic resources on Vance AFB and concluded that no further surveys were required due to extensive ground disturbance and the low potential for archaeological resources. In response to a separate project recently completed at Vance AFB immediately adjacent to and partially overlapping with the APE for the Proposed Action, the installation received a letter from the Oklahoma Archeological Survey dated 10 May 2023 confirming that no sites had been identified in that project area and no archaeological materials were likely to be encountered (**Attachment 4**). Similarly, the installation received a letter from the U.S. Department of the Interior, Bureau of Indian Affairs dated 17 May 2023 confirming that there were no tribal or individual Indian trust lands within or in the project vicinity (**Attachment 5**). In addition, no Native American cemeteries, burials, sacred sites, or areas considered a Traditional Cultural Property (TCP) have been identified during surveys at Vance AFB.

A 2003 architectural resources survey identified 41 potential Cold War-era buildings and structures that warranted further investigation as to their potential historic significance. The Oklahoma State Historic Preservation Office (SHPO) determined that the buildings and structures were not eligible for listing in the NRHP. By 2014, the SHPO had reviewed another 18 buildings for potential historical significance and determined that they were not eligible for

listing on the NRHP (**Attachments 6 and 7**). To date, no buildings or structures on Vance AFB have been determined eligible for listing in the NRHP.

Environmental Consequences

Archaeological Resources: Four projects for T-7A would involve ground disturbance (list below). The potential for archaeological resources to occur within these construction areas is low due to extensive land disturbance and the low potential for archaeological resources based on prior survey.

- The **Hush House Pad** would be installed adjacent to the existing Hush House Pad, installed in 1992, within a partially paved/partially grass area last disturbed ca. 2010.
- The addition to the **Egress Shop**, constructed in 1990, would be constructed adjacent to the existing building in a grassy area last disturbed in 1990.
- The **Antenna Farm Pad** would be installed between the existing Ground Based Training System (GBTS) and T-1 facilities adjacent to existing antennas within a partially paved/partially grass area last disturbed ca. 2023.
- The **Munitions Storage** would be constructed immediately north of the existing parking apron within a grassy area last disturbed ca. 2008.

The remaining projects would have no potential to impact archaeological resources as they would entail no ground disturbance.

The Proposed Undertaking is anticipated to have no effect on archaeological sites because no archaeological resources are known to be present 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. No Native American TCPs, cemeteries, burials, or sacred sites have been identified at Vance AFB and no impacts to these cultural resources are anticipated to occur from implementation of the Proposed Undertaking. 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.

Historical Age Resources: All but two of the projects would have no potential to impact standing resources as they entail no modifications of historic-age resources.

No effects (no modifications of historic-age resources): The existing Hush House Pad dates to 1992, the existing T-38C shelters and aircraft parking apron date to 2005-2007, the Egress Shop (Building 542) dates to 1990, and the Jet Blast Deflectors would be installed on the parking apron completed 2005-2007. The Airfield Reconfiguration would occur on existing, non-historic pavement; the Antenna Farm would be located in a partially paved/partially grass area containing no standing resources; removal of the CASS modules (equipment attached to the existing 2005-2007 T-38C shelters) would not impact any historic-age resources; the Munitions Storage would occur within a previously disturbed grassy area; and the UMT would be located within a previous T-1 facility constructed ca. 2004.

Two projects have the potential to impact historic-age resources: Renovation of Squad Operations and the GBTS Renovation. The renovation of Squad Operations would occur on the building interior only and could involve any of the following existing buildings: Building 179 (constructed 1969), Building 183 (constructed 1967), Building 541 (constructed 1963), and Building 690 (constructed 1978). Facility renovation options are still being considered; however, alterations would be limited to the interior. Lastly, renovation of the existing GBTS facility (constructed in 1978) would be limited to the interior.

No buildings or structures on Vance AFB have been determined eligible for listing in the NRHP. As the only alterations to historic-age resources would be limited to building interiors, the alterations would have no potential to impact those resources. The historic-age resources with potential interior modifications were not previously evaluated for listing in the NRHP as they were not of historic age during the 2003 survey (AETC 2003).

A change in the type of aircraft flown or the timing (e.g., daytime or nighttime) and frequency of flight operations would have no potential to impact historic properties. Changes to noise levels are also not anticipated to impact any historic properties. Lastly, a temporary increase in personnel at Vance AFB would also have no potential to impact historic properties.

Pursuant to 36 CFR §800.4(d), DAF has determined that no historic properties would be affected by the T-7A Recapitalization at Vance AFB. Attached for your review are copies of relevant documents supporting DAF's findings and determinations. We request your comment or concurrence on the finding of *No Historic Properties Affected.* If we do not receive your comments or concurrence within the required 30 days, we will assume concurrence and proceed with the undertaking as described.

Please contact Ms. Chinling Chen at chinling.chen@us.af.mil if you have any questions.

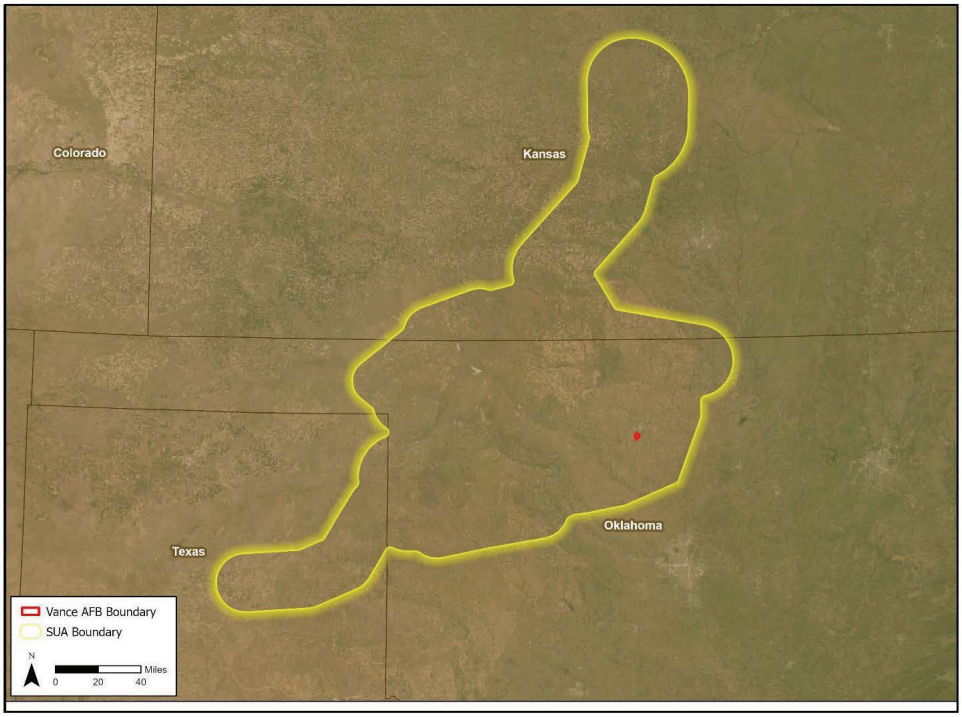
Sincerely

CHARLES D. THROCKMORTON IV, Col, USAF
Commander

7 Attachments:
1. Map of Special Use Airspace used for T-38C
2. Project Descriptions and Effect
3. Map of APE for Vance AFB T-7A Recapitalization Proposed Undertaking
4. Oklahoma Archeological Survey Letter Dated 10 May 2023
5. U.S. Department of the Interior, Bureau of Indian Affairs Letter Dated 17 May 2023
6. SHPO Letter Regarding 2013 Survey
7. SHPO Letter Regarding 2014 Survey

DELIVER, DEVELOP, DEPLOY, DEMONSTRATE

Attachment 1. Map of Special Use Airspace used for T-38C Operations



Attachment 2. Project Descriptions and Effect

Building Name/Number	Project Component	NRHP Status	Date Constructed	Assessment of Effect
Hush House Pad	Construct a new hush house pad southwest of the existing hush house. Includes a reinforced concrete pad (approximately 27,500 ft²), thick edges and paved shoulders, and an anchor block in the center. Approach pavements and supporting utilities would be extended to the proposed hush house pad.	N/A – New construction Existing Hush House Pad is non-historic	1992	**No effect on historic properties**
T-7A Shelters	Construct new shelters (sunshades) on the existing T-38C aircraft parking apron to protect T-7A aircraft from adverse weather. Existing T-38C shelters would be removed, and T-7A shelters would be placed on existing pavement. Taxi lines would be removed and repainted. Electrical utilities, proper lighting, and tie-downs/grounding points would be installed for each shelter.	N/A – New construction Existing T-38C shelters are non-historic	2005-2007	**No effect on historic properties**
Addition to Egress Shop (Building 542)	Construct an addition to Building 542. The addition would be approximately 3,200 ft² and constructed with a reinforced concrete foundation, concrete floor slab, structural steel frame, and standing seam metal roof and exterior.	N/A - Building 542 is non-historic	1990	**No effect on historic properties**
Jet Blast Deflectors	Install jet blast deflectors on airfield. Final placement dependent on final design. The deflectors would likely be situated between aircraft parking rows and the apron.	N/A – Attached to non-historic pavement	Non-historic pavement	**No effect on historic properties**
Airfield Reconfiguration	This project would include airfield markings, airfield reconfiguration, and installation of mooring and anchor rods. Airfield markings would include repainting any changes to parking layout to accommodate the T-7A beddown. The	N/A - Pavement, compass rose and trim pad non-historic	Circa 2008	**No effect on historic properties**

Building Name/Number	Project Component	NRHP Status	Date Constructed	Assessment of Effect
	mooring and anchor rods would be installed in the new T-7A parking area. Compass rose and trim pad would be moved slightly due to the siting of the new hush house.			
Antenna Farm	This project would provide an additional antenna-yard area near the UMT facility to assist with sending signals between the facility and the airfield.	N/A - New construction	N/A – Vacant land	**No effect on historic properties**
Remove Aboveground Service Modules of the Centralized Aircraft Support System (CASS)	Remove T-38C CASS modules (electrical equipment panels attached to existing T-38C shelters) where T-7A aircraft would be located within existing T-38C shelters. CASS lines to the rows would be cut and capped, and vaults would be filled in with concrete	N/A – Equipment being removed from existing T-38C shelters (non-historic)	2005-2007	**No effect on historic properties**
Modify Hangar	This project would provide interior modifications at facility 199 and potentially replace hangar doors. Facility currently houses T-1 maintenance.	N/A – Building 199 is non-historic, renovations likely to be only interior.	2004	**No effect on historic properties**
Munitions Storage for T-7A	Installation of a concrete pad estimated to be 3,600 ft².	N/A - New construction	N/A - Vacant land	**No effect on historic properties**
Unit Maintenance Training Facility (UMT)	Renovate interior of previous T-1 facility to accommodate the UMT.	N/A – Interior Renovation only/non-historic	2004	**No effect on historic properties**
Renovate Squad	Interior renovation to support the squadrons	N/A –	1969, 1967,	**No effect on**

Building Name/Number	Project Component	NRHP Status	Date Constructed	Assessment of Effect
Operations	associated with the T-7A program. Facility options being considered include Buildings 179, 183, 541, and 690.	Interior Renovation only	1963, and 1978	**historic properties**
Ground Based Training System (GBTS) Renovation	Current GBTS will have interior renovation to accommodate the incoming T-7A training devices.	N/A – Interior Renovation only	1978	**No effect on historic properties**

Key: N/A = Not applicable

Attachment 3. Map of APE for Vance AFB T-7A Recapitalization Undertaking

8

Attachment 4. Oklahoma Archeological Survey Letter Dated 10 May 2023

Oklahoma Archeological Survey

THE UNIVERSITY OF OKLAHOMA

May 10, 2023

Attn: Mark Buthman
ASRC AFFS
400 Young Road, Suite 229
Vance Air Force Base, OK 73705-5508

Re: OAS FY23-1509 US Air Force Proposed Construction of a Fire Crash/Rescue Facility and Enlisted Unaccompanied Housing (UH) Facility on Vance Air Force Base (AFB).
Legal Description: NW ¼ Section 36, T22N, R7W, Garfield County, Oklahoma.

Dear Mr. Buthman:

The Community Assistance Program staff of the Oklahoma Archeological Survey has reviewed the above referenced project to identify areas that may potentially contain prehistoric or historic archeological materials (historic properties). The location of your project has been crosschecked with the state site files containing approximately 27,000 archaeological sites, which are currently recorded for the state of Oklahoma. No Sites are listed as occurring within your project area, and based on the topographic and hydrologic setting, no archaeological materials are likely to be encountered. Thus, an archaeological field inspection is not considered necessary. Please contact this office at (405) 325-7211 if buried archaeological materials such as chipped stone tools, pottery, bone, historic crockery, glass, metal items or building materials are exposed during construction activities.

This environmental review and evaluation are done in cooperation with the State Historic Preservation Office, Oklahoma Historical Society. The responsible federal agency or their official delegate must also have a letter from that office to document consultation pursuant to Section 106 of the National Historic Preservation Act.

In addition to our review comments, under 36CFR Part 800.3 you are reminded of your responsibility to consult with the appropriate Native American tribe/groups to identify any concerns they may have pertaining to this undertaking and potential impacts to properties of traditional and/or ceremonial value.

Sincerely,

Ella M. Brewer-Jensen

Ella Brewer-Jensen
Staff Archaeologist

Kary L. Stackelbeck, Ph.D.
State Archaeologist

: dkg
cc: SHPO

111 Chesapeake, Room 102, Norman, Oklahoma 73019-5111 PHONE: (405) 325-7211 FAX: (405) 325-7604
A UNIT OF ARTS AND SCIENCES SERVING THE PEOPLE OF OKLAHOMA

Attachment 5. U.S. Department of the Interior, Bureau of Indian Affairs Letter Dated 17 May 2023

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
Southern Plains Regional Office
P.O. Box 368
Anadarko, OK 73005

IN REPLY REFER TO:
NATURAL RESOURCES (405) 247-6673

MAY 17 2023

Mr. Mark Buthman
ASRC AFFS
400 Young Rd, Suite 229
Vance AFB, OK 73705-5508

Dear Mr. Buthman:

Thank you for the opportunity to comment on the proposal to construct an fire crash/rescue facility and enlisted unaccompanied housing facility on Vance AFB. A review of maps of the Bureau of Indian Affairs (BIA), Southern Plains Region, indicates that there are no tribal or individual Indian trust lands in the vicinity of the proposed improvement area. The Southern Plains Region has no concerns that the proposed project will impact Indian trust lands within the Southern Plains Region's jurisdiction.

If any additional information is required, please contact David Anderson, Regional Environmental Scientist, at (405) 247-1532.

Sincerely,

ACTING Regional Director

cc: Regional Archeologist
Regional Director's Files

10

Attachment 6. SHPO Letter Regarding 2013 Survey

Oklahoma Historical Society *Founded May 27, 1893*
State Historic Preservation Office
Oklahoma History Center • 800 Nazih Zuhdi Drive • Oklahoma City, OK 73105-7917
(405) 521-6249 • Fax (405) 522-0816 • www.okhistory.org/shpo/shpom.htm

June 21, 2013

Colonel Darren James
Commander, 71st Flying Training Wing
246 Brown Parkway, Suite 224
Vance AFB, OK 73705

RE: File #1659-13; Evaluation of Eligibility of 14 Buildings at Vance Air Force Base (Listed on the Attachment to this Letter)

Dear Colonel James:

We have received and reviewed the documentation concerning National Register eligibility for the 14 referenced properties (listed on the attachment) in Garfield County. Additionally, we have examined the information contained in the Oklahoma Landmarks Inventory (OLI) files and other materials on historic resources available in our office. We concur with your opinion that the referenced properties are not eligible for the National Register of Historic Places.

Should further correspondence pertaining to this property be necessary, please reference the above underlined file number. If you have any questions, please contact Ms. Lynda Schwan Ozan, Architectural Historian, at 405/522-4478. Thank you.

Sincerely,

Melvena Heisch
Deputy State Historic
Preservation Officer

MH:pm

Attachment

FILE #	LIST OF PROPERTIES
1659-13	VANCE AFB DETERMINATION OF ELIGIBILITY, GARFIELD COUNTY

BUILDINGS:
1. #125
2. #126
3. #140
4. #154
5. #183
6. #187
7. #192
8. #312
9. #316
10. #522
11. #795
12. #824
13. #826
14. #907

11

Attachment 7. SHPO Letter Regarding 2014 Survey

Oklahoma Historical Society *Founded May 27, 1893*
State Historic Preservation Office
Oklahoma History Center • 800 Nazih Zuhdi Drive • Oklahoma City, OK 73105-7917
(405) 521-6249 • Fax (405) 522-0816 • www.okhistory.org/shpo/shpom.htm

October 13, 2014

Colonel Clark Quinn
Department of the Air Force
PD/CEV
140 Channel Street, Suite 231
Vance AFB, OK 73705

RE: File #2082-14: Vance AFB Determination of Eligibility for Four Properties: Buildings #195, #197, #423 & #723

Dear Colonel Quinn:

We have received and reviewed the documentation concerning the referenced project in Garfield County. Additionally, we have examined the information contained in the Oklahoma Landmarks Inventory (OLI) files and other materials on historic resources available in our office. We find that there are no historic properties affected by the referenced project.

In the future, CDs are not acceptable for submitting information. We ask that you supply a completed Historic Preservation Resource Identification Form and appropriate photographs for each of the structures to be affected by the project. Please note that, if these properties are less than 45 years old, Historic Preservation Resource Identification Forms and photos are not required. However, your review request must include the address and date (or year) of construction of each property.

Thank you for the opportunity to comment on this project. We look forward to working with you in the future.

Should further correspondence pertaining to this project be necessary, please reference the above underlined file number. If you have any questions, please contact Ms. Lynda Schwan Ozan, Architectural Historian, at 405/522-4478. Thank you.

Sincerely,

Melvena Heisch
Deputy State Historic
Preservation Officer

MH:pm

12

Response from the Oklahoma Historical Society

Oklahoma Historical Society
State Historic Preservation Office

November 5, 2024

Colonel Charles Throckmorton IV
Commander, 71stst Flying Training Wing
Dept. of the Air Force, Vance AFB
246 Brown Parkway, Suite 224
Vance AFB, OK 73705-5015

RE: File #0176-25; DAF Proposed New T-7A "Red Hawk" Flight Training Program, Vance Air Force Base, including Buildings #179, #183, #541, & #690, Garfield County, Oklahoma

Dear Colonel Throckmorton:

We have received and reviewed the documentation submitted on the referenced project. Additionally, we have examined the information contained in the Oklahoma Landmarks Inventory (OLI) files and other materials on historic resources available in our office. We find that there are no known historic properties affected within the referenced project's area of potential effect.

In addition to our review, you must contact the Oklahoma Archeological Survey (OAS), 111 East Chesapeake, #102, Norman OK 73019-5111 (#405-325-7211, FAX #405-325-7604), to obtain a determination about the presence of prehistoric resources that may be eligible for the National Register of Historic Places. Should the OAS conclude that there are no prehistoric archaeological sites or other types of "historic properties," as defined in 36 CFR Part 800.16(l), which are eligible for inclusion in the National Register of Historic Places within the project area and that such sites are unlikely to occur, we concur with that opinion.

The OAS may conclude that an on-site investigation of all or part of the project impact area is necessary to determine the presence of archaeological resources. In the event that such an investigation reveals the presence of prehistoric archaeological sites, we will defer to the judgment of the OAS concerning whether or not any of the resources should be considered "historic properties" under the Section 106 review process. If sites dating from the historic period are identified during the survey or are encountered during implementation of the project, additional assessments by the State Historic Preservation Office will be necessary.

Should further correspondence pertaining to this project be necessary, please reference the above underlined file number. If you have any questions, please contact Kristina Wyckoff, Historical Archaeologist, at 405-521-6381. Thank you.

Sincerely,

Lynda Ozan
Deputy State Historic
Preservation Officer

LO:pm

800 Nazih Zuhdi Drive, Oklahoma City, OK 73105-7917
405-521-6249 | Fax 405-522-0816 | www.okhistory.org/shpo

OKLAHOMA

Consultation letter sent to the Oklahoma Archaeological Survey (sent December 23, 2024)

DEPARTMENT OF THE AIR FORCE
71ST FLYING TRAINING WING
VANCE AIR FORCE BASE OKLAHOMA

20 December 2024

Colonel Charles D. Throckmorton IV
Commander, 71st Flying Training Wing
246 Brown Parkway, Suite 224
Vance AFB, OK 73705-5015

Ms. Amanda Regnier
Director
Oklahoma Archaeological Survey
111 East Chesapeake, #102
Norman, OK 73019-5111

Dear Ms. Regnier

The United States Department of the Air Force (DAF) is proposing to recapitalize its flight training program at Vance Air Force Base (AFB), Oklahoma, with newer and more capable T-7A "Red Hawk" aircraft. Recapitalization is the phased acquisition of the new aircraft and upgrade of specific facilities to support the training, operation, and maintenance of the T-7A aircraft. DAF is preparing an Environmental Impact Statement under the National Environmental Policy Act (NEPA) to evaluate potential environmental impacts associated with T-7A recapitalization at Vance AFB. To consider various environmental effects, DAF is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking.

Per 54 U.S.C. 306108 and Section 106 of the National Historic Preservation Act and its implementing regulations at 36 CFR Part 800, DAF is initiating consultation for this proposed undertaking that has the potential to affect historic properties.

The undertaking will entail the phased introduction of T-7A aircraft and phased reduction of the T-38C aircraft currently operating at Vance AFB, new intensities of flight operations, and temporary changes to the number of personnel assigned to Vance AFB. T-7A operations would occur within established Special Use Airspace (SUA) currently used for T-38C operations (**Attachment 1**), and no changes to SUA configurations (i.e., size, shape, or location) would be necessary to support the proposed operations of the T-7A. Additionally, multiple construction and modernization projects of existing facilities would occur at Vance AFB to provide modern and upgraded facilities and infrastructure. The potential to impact historic properties and details individual assessment of effect can be found in **Attachment 2**.

DELIVER, DEVELOP, DEPLOY, DEMONSTRATE

The Area of Potential Effect (APE) as the potential impact area from all types of activities was defined. Effects include, but are not limited to, ground disturbance, vibration, building modification, and staging and equipment storage, as well as noise and aesthetic interference. For this undertaking, the APE is defined as the footprint of all buildings proposed for exterior alteration, all areas of new construction and additions, all landscape features (such as airfield markings) that are proposed for alteration, all new roads and parking lots, and buffers around those areas to account for construction staging and temporary physical impacts from ground disturbing activity. The APE captures all anticipated effects as new building construction is anticipated to be one story and not exceed 40 feet in total building height. There are no National Register of Historic Places (NRHP)-listed or eligible historic districts, sites, buildings, structures, or objects that would be visually or audibly affected by the proposed undertaking. In addition, the only vertical components planned are the antennas that would be located adjacent to the existing Unit Maintenance Training Facility (UMT) and existing antennas that would stand approximately 50 feet high. The APE totals approximately 116.75 acres and is shown in **Attachment 3**. There is no change to the SUA, and therefore, the APE for this undertaking does not include the SUA where the T-7A aircraft would perform operations (**Attachment 1**).

Following issuance of Vance AFB's scoping notice, 13 Tribes were identified as potentially being affected by the Proposed Action. Vance AFB is continuing consultation with those Tribes and has invited them to consult on the proposed undertaking and to confirm that no sacred sites or traditional cultural properties are present in the APE.

Affected Environment

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 or historic resources on Vance AFB and concluded that no further surveys were required due to extensive ground disturbance and the low potential for archaeological resources. In response to a separate project recently completed at Vance AFB immediately adjacent to and partially overlapping with the APE for the Proposed Action, the installation received a letter from the Oklahoma Archeological Survey dated 10 May 2023 confirming that no sites had been identified in that project area and no archaeological materials were likely to be encountered (**Attachment 4**). Similarly, the installation received a letter from the U.S. Department of the Interior, Bureau of Indian Affairs dated 17 May 2023 confirming that there were no tribal or individual Indian trust lands within or in the project vicinity (**Attachment 5**). In addition, no Native American cemeteries, burials, sacred sites, or areas considered a Traditional Cultural Property (TCP) have been identified during surveys at Vance AFB.

A 2003 architectural resources survey identified 41 potential Cold War-era buildings and structures that warranted further investigation as to their potential historic significance. The Oklahoma State Historic Preservation Office (SHPO) determined that the buildings and structures were not eligible for listing in the NRHP. By 2014, the SHPO had reviewed another 18 buildings for potential historical significance and determined that they were not eligible for

listing on the NRHP (**Attachments 6 and 7**). To date, no buildings or structures on Vance AFB have been determined eligible for listing in the NRHP.

Environmental Consequences

Archaeological Resources: Four projects for T-7A would involve ground disturbance (list below). The potential for archaeological resources to occur within these construction areas is low due to extensive land disturbance and the low potential for archaeological resources based on prior survey.

- The **Hush House Pad** would be installed adjacent to the existing Hush House Pad, installed in 1992, within a partially paved/partially grass area last disturbed ca. 2010.
- The addition to the **Egress Shop**, constructed in 1990, would be constructed adjacent to the existing building in a grassy area last disturbed in 1990.
- The **Antenna Farm Pad** would be installed between the existing Ground Based Training System (GBTS) and T-1 facilities adjacent to existing antennas within a partially paved/partially grass area last disturbed ca. 2023.
- The **Munitions Storage** would be constructed immediately north of the existing parking apron within a grassy area last disturbed ca. 2008.

The remaining projects would have no potential to impact archaeological resources as they would entail no ground disturbance.

The Proposed Undertaking is anticipated to have no effect on archaeological sites because no archaeological resources are known to be present 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. No Native American TCPs, cemeteries, burials, or sacred sites have been identified at Vance AFB and no impacts to these cultural resources are anticipated to occur from implementation of the Proposed Undertaking. 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.

Historical Age Resources: All but two of the projects would have no potential to impact standing resources as they entail no modifications of historic-age resources.

No effects (no modifications of historic-age resources): The existing Hush House Pad dates to 1992, the existing T-38C shelters and aircraft parking apron date to 2005-2007, the Egress Shop (Building 542) dates to 1990, and the Jet Blast Deflectors would be installed on the parking apron completed 2005-2007. The Airfield Reconfiguration would occur on existing, non-historic pavement; the Antenna Farm would be located in a partially paved/partially grass area containing no standing resources; removal of the CASS modules (equipment attached to the existing 2005-2007 T-38C shelters) would not impact any historic-age resources; the Munitions Storage would occur within a previously disturbed grassy area; and the UMT would be located within a previous T-1 facility constructed ca. 2004.

Two projects have the potential to impact historic-age resources: Renovation of Squad Operations and the GBTS Renovation. The renovation of Squad Operations would occur on the building interior only and could involve any of the following existing buildings: Building 179 (constructed 1969), Building 183 (constructed 1967), Building 541 (constructed 1963), and Building 690 (constructed 1978). Facility renovation options are still being considered; however, alterations would be limited to the interior. Lastly, renovation of the existing GBTS facility (constructed in 1978) would be limited to the interior.

No buildings or structures on Vance AFB have been determined eligible for listing in the NRHP. As the only alterations to historic-age resources would be limited to building interiors, the alterations would have no potential to impact those resources. The historic-age resources with potential interior modifications were not previously evaluated for listing in the NRHP as they were not of historic age during the 2003 survey (AETC 2003).

A change in the type of aircraft flown or the timing (e.g., daytime or nighttime) and frequency of flight operations would have no potential to impact historic properties. Changes to noise levels are also not anticipated to impact any historic properties. Lastly, a temporary increase in personnel at Vance AFB would also have no potential to impact historic properties.

Pursuant to 36 CFR §800.4(d), DAF has determined that no historic properties would be affected by the T-7A Recapitalization at Vance AFB. Attached for your review are copies of relevant documents supporting DAF's findings and determinations. We request your comment or concurrence on the finding of *No Historic Properties Affected*. If we do not receive your comments or concurrence within the required 30 days, we will assume concurrence and proceed with the undertaking as described.

Please contact Ms. Chinling Chen at chinling.chen@us.af.mil if you have any questions.

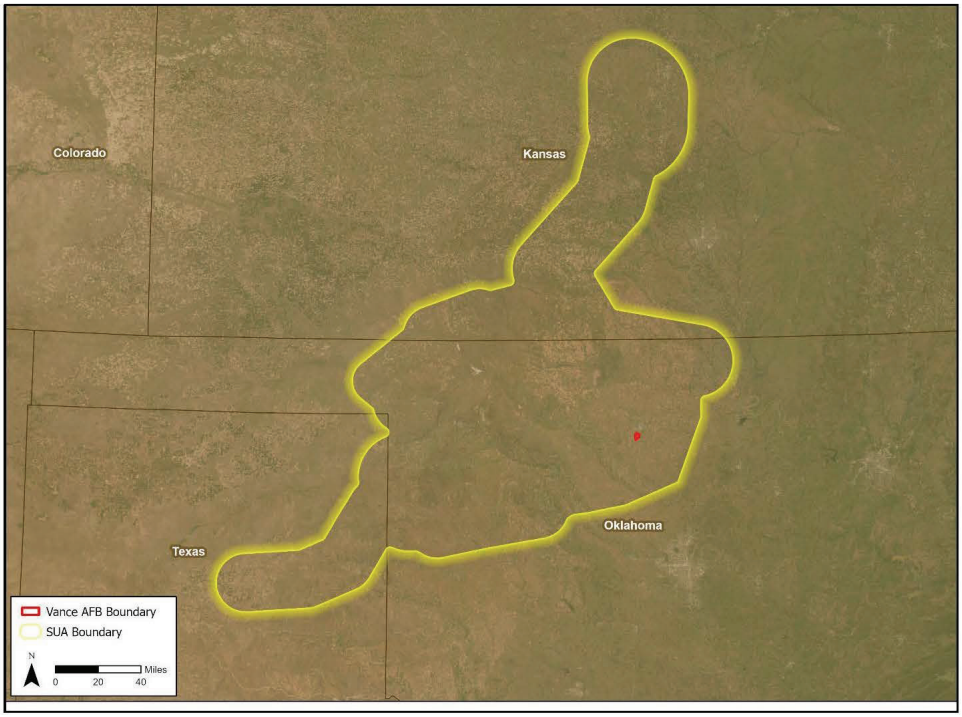
Sincerely

CHARLES D. THROCKMORTON IV, Col, USAF
Commander

7 Attachments:
1. Map of Special Use Airspace used for T-38C
2. Project Descriptions and Effect
3. Map of APE for Vance AFB T-7A Recapitalization Proposed Undertaking
4. Oklahoma Archeological Survey Letter Dated 10 May 2023
5. U.S. Department of the Interior, Bureau of Indian Affairs Letter Dated 17 May 2023
6. SHPO Letter Regarding 2013 Survey
7. SHPO Letter Regarding 2014 Survey

DELIVER, DEVELOP, DEPLOY, DEMONSTRATE

Attachment 1. Map of Special Use Airspace used for T-38C Operations



Attachment 2. Project Descriptions and Effect

Building Name/Number	Project Component	NRHP Status	Date Constructed	Assessment of Effect
Hush House Pad	Construct a new hush house pad southwest of the existing hush house. Includes a reinforced concrete pad (approximately 27,500 ft²), thick edges and paved shoulders, and an anchor block in the center. Approach pavements and supporting utilities would be extended to the proposed hush house pad.	N/A – New construction Existing Hush House Pad is non-historic	1992	**No effect on historic properties**
T-7A Shelters	Construct new shelters (sunshades) on the existing T-38C aircraft parking apron to protect T-7A aircraft from adverse weather. Existing T-38C shelters would be removed, and T-7A shelters would be placed on existing pavement. Taxi lines would be removed and repainted. Electrical utilities, proper lighting, and tie-downs/grounding points would be installed for each shelter.	N/A – New construction Existing T-38C shelters are non-historic	2005-2007	**No effect on historic properties**
Addition to Egress Shop (Building 542)	Construct an addition to Building 542. The addition would be approximately 3,200 ft² and constructed with a reinforced concrete foundation, concrete floor slab, structural steel frame, and standing seam metal roof and exterior.	N/A - Building 542 is non-historic	1990	**No effect on historic properties**
Jet Blast Deflectors	Install jet blast deflectors on airfield. Final placement dependent on final design. The deflectors would likely be situated between aircraft parking rows and the apron.	N/A – Attached to non-historic pavement	Non-historic pavement	**No effect on historic properties**
Airfield Reconfiguration	This project would include airfield markings, airfield reconfiguration, and installation of mooring and anchor rods. Airfield markings would include repainting any changes to parking layout to accommodate the T-7A beddown. The	N/A - Pavement, compass rose and trim pad non-historic	Circa 2008	**No effect on historic properties**

Building Name/Number	Project Component	NRHP Status	Date Constructed	Assessment of Effect
	mooring and anchor rods would be installed in the new T-7A parking area. Compass rose and trim pad would be moved slightly due to the siting of the new hush house.			
Antenna Farm	This project would provide an additional antenna-yard area near the UMT facility to assist with sending signals between the facility and the airfield.	N/A - New construction	N/A – Vacant land	**No effect on historic properties**
Remove Aboveground Service Modules of the Centralized Aircraft Support System (CASS)	Remove T-38C CASS modules (electrical equipment panels attached to existing T-38C shelters) where T-7A aircraft would be located within existing T-38C shelters. CASS lines to the rows would be cut and capped, and vaults would be filled in with concrete	N/A – Equipment being removed from existing T-38C shelters (non-historic)	2005-2007	**No effect on historic properties**
Modify Hangar	This project would provide interior modifications at facility 199 and potentially replace hangar doors. Facility currently houses T-1 maintenance.	N/A – Building 199 is non-historic, renovations likely to be only interior.	2004	**No effect on historic properties**
Munitions Storage for T-7A	Installation of a concrete pad estimated to be 3,600 ft².	N/A - New construction	N/A - Vacant land	**No effect on historic properties**
Unit Maintenance Training Facility (UMT)	Renovate interior of previous T-1 facility to accommodate the UMT.	N/A – Interior Renovation only/non-historic	2004	**No effect on historic properties**
Renovate Squad	Interior renovation to support the squadrons	N/A –	1969, 1967,	**No effect on**

Building Name/Number	Project Component	NRHP Status	Date Constructed	Assessment of Effect
Operations	associated with the T-7A program. Facility options being considered include Buildings 179, 183, 541, and 690.	Interior Renovation only	1963, and 1978	**historic properties**
Ground Based Training System (GBTS) Renovation	Current GBTS will have interior renovation to accommodate the incoming T-7A training devices.	N/A – Interior Renovation only	1978	**No effect on historic properties**

Key: N/A = Not applicable

Attachment 3. Map of APE for Vance AFB T-7A Recapitalization Undertaking

8

Attachment 4. Oklahoma Archeological Survey Letter Dated 10 May 2023

Oklahoma Archeological Survey

THE UNIVERSITY OF OKLAHOMA

May 10, 2023

Attn: Mark Buthman
ASRC AFFS
400 Young Road, Suite 229
Vance Air Force Base, OK 73705-5508

Re: OAS FY23-1509 US Air Force Proposed Construction of a Fire Crash/Rescue Facility and Enlisted Unaccompanied Housing (UH) Facility on Vance Air Force Base (AFB).
Legal Description: NW ¼ Section 36, T22N, R7W, Garfield County, Oklahoma.

Dear Mr. Buthman:

The Community Assistance Program staff of the Oklahoma Archeological Survey has reviewed the above referenced project to identify areas that may potentially contain prehistoric or historic archeological materials (historic properties). The location of your project has been crosschecked with the state site files containing approximately 27,000 archaeological sites, which are currently recorded for the state of Oklahoma. No Sites are listed as occurring within your project area, and based on the topographic and hydrologic setting, no archaeological materials are likely to be encountered. Thus, an archaeological field inspection is not considered necessary. Please contact this office at (405) 325-7211 if buried archaeological materials such as chipped stone tools, pottery, bone, historic crockery, glass, metal items or building materials are exposed during construction activities.

This environmental review and evaluation are done in cooperation with the State Historic Preservation Office, Oklahoma Historical Society. The responsible federal agency or their official delegate must also have a letter from that office to document consultation pursuant to Section 106 of the National Historic Preservation Act.

In addition to our review comments, under 36CFR Part 800.3 you are reminded of your responsibility to consult with the appropriate Native American tribe/groups to identify any concerns they may have pertaining to this undertaking and potential impacts to properties of traditional and/or ceremonial value.

Sincerely,

Ella M. Brewer-Jensen

Ella Brewer-Jensen
Staff Archaeologist

Kary L. Stackelbeck, Ph.D.
State Archaeologist

: dkg
cc: SHPO

111 Chesapeake, Room 102, Norman, Oklahoma 73019-5111 PHONE: (405) 325-7211 FAX: (405) 325-7604
A UNIT OF ARTS AND SCIENCES SERVING THE PEOPLE OF OKLAHOMA

Attachment 5. U.S. Department of the Interior, Bureau of Indian Affairs Letter Dated 17 May 2023

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
Southern Plains Regional Office
P.O. Box 368
Anadarko, OK 73005

IN REPLY REFER TO:
NATURAL RESOURCES (405) 247-6673

MAY 17 2023

Mr. Mark Buthman
ASRC AFFS
400 Young Rd, Suite 229
Vance AFB, OK 73705-5508

Dear Mr. Buthman:

Thank you for the opportunity to comment on the proposal to construct an fire crash/rescue facility and enlisted unaccompanied housing facility on Vance AFB. A review of maps of the Bureau of Indian Affairs (BIA), Southern Plains Region, indicates that there are no tribal or individual Indian trust lands in the vicinity of the proposed improvement area. The Southern Plains Region has no concerns that the proposed project will impact Indian trust lands within the Southern Plains Region's jurisdiction.

If any additional information is required, please contact David Anderson, Regional Environmental Scientist, at (405) 247-1532.

Sincerely,

ACTING Regional Director

cc: Regional Archeologist
Regional Director's Files

10

Attachment 6. SHPO Letter Regarding 2013 Survey

Oklahoma Historical Society *Founded May 27, 1893*
State Historic Preservation Office
Oklahoma History Center • 800 Nazih Zuhdi Drive • Oklahoma City, OK 73105-7917
(405) 521-6249 • Fax (405) 522-0816 • www.okhistory.org/shpo/shpom.htm

June 21, 2013

Colonel Darren James
Commander, 71st Flying Training Wing
246 Brown Parkway, Suite 224
Vance AFB, OK 73705

RE: File #1659-13; Evaluation of Eligibility of 14 Buildings at Vance Air Force Base (Listed on the Attachment to this Letter)

Dear Colonel James:

We have received and reviewed the documentation concerning National Register eligibility for the 14 referenced properties (listed on the attachment) in Garfield County. Additionally, we have examined the information contained in the Oklahoma Landmarks Inventory (OLI) files and other materials on historic resources available in our office. We concur with your opinion that the referenced properties are not eligible for the National Register of Historic Places.

Should further correspondence pertaining to this property be necessary, please reference the above underlined file number. If you have any questions, please contact Ms. Lynda Schwan Ozan, Architectural Historian, at 405/522-4478. Thank you.

Sincerely,

Melvena Heisch
Deputy State Historic
Preservation Officer

MH:pm

Attachment

FILE #	LIST OF PROPERTIES
1659-13	VANCE AFB DETERMINATION OF ELIGIBILITY, GARFIELD COUNTY

BUILDINGS:
1. #125
2. #126
3. #140
4. #154
5. #183
6. #187
7. #192
8. #312
9. #316
10. #522
11. #795
12. #824
13. #826
14. #907

11

Attachment 7. SHPO Letter Regarding 2014 Survey

Oklahoma Historical Society *Founded May 27, 1893*
State Historic Preservation Office
Oklahoma History Center • 800 Nazih Zuhdi Drive • Oklahoma City, OK 73105-7917
(405) 521-6249 • Fax (405) 522-0816 • www.okhistory.org/shpo/shpom.htm

October 13, 2014

Colonel Clark Quinn
Department of the Air Force
PD/CEV
140 Channel Street, Suite 231
Vance AFB, OK 73705

RE: File #2082-14: Vance AFB Determination of Eligibility for Four Properties: Buildings #195, #197, #423 & #723

Dear Colonel Quinn:

We have received and reviewed the documentation concerning the referenced project in Garfield County. Additionally, we have examined the information contained in the Oklahoma Landmarks Inventory (OLI) files and other materials on historic resources available in our office. We find that there are no historic properties affected by the referenced project.

In the future, CDs are not acceptable for submitting information. We ask that you supply a completed Historic Preservation Resource Identification Form and appropriate photographs for each of the structures to be affected by the project. Please note that, if these properties are less than 45 years old, Historic Preservation Resource Identification Forms and photos are not required. However, your review request must include the address and date (or year) of construction of each property.

Thank you for the opportunity to comment on this project. We look forward to working with you in the future.

Should further correspondence pertaining to this project be necessary, please reference the above underlined file number. If you have any questions, please contact Ms. Lynda Schwan Ozan, Architectural Historian, at 405/522-4478. Thank you.

Sincerely,

Melvena Heisch
Deputy State Historic
Preservation Officer

MH:pm

12

Response from the Oklahoma Archaeological Survey

Oklahoma Archeological Survey

THE UNIVERSITY OF OKLAHOMA

January 30, 2025

Department of the Air Force
71st Flying Training Wing
Vance Air Force Base
Attn: Colonel Charles D. Throckmorton IV
Commander
246 Brown Parkway, Suite 224
Vance AFB, OK 73705-5015

Re: OAS FY25-0554 Vance Air Force Base Proposed Recapitalize of Flight Training Program: T-7A Red Hawk Aircraft.
Legal Description: Sections 35-36, T20N, R7W, Garfield County, Oklahoma.

Dear Colonel Throckmorton:

The Community Assistance Program staff of the Oklahoma Archeological Survey has reviewed the above referenced project to identify areas that may potentially contain prehistoric or historic archeological materials (historic properties). The location of your project has been crosschecked with the state site files containing approximately 27,000 archaeological sites, which are currently recorded for the state of Oklahoma. No Sites are listed as occurring within your project area, and based on the topographic and hydrologic setting, no archaeological materials are likely to be encountered. Thus, an archaeological field inspection is not considered necessary. Please contact this office at (405) 325-7211 if buried archaeological materials such as chipped stone tools, pottery, bone, historic crockery, glass, metal items or building materials are exposed during construction activities.

This environmental review and evaluation are done in cooperation with the State Historic Preservation Office, Oklahoma Historical Society. The responsible federal agency or their official delegate must also have a letter from that office to document consultation pursuant to Section 106 of the National Historic Preservation Act.

In addition to our review comments, under 36CFR Part 800.3 you are reminded of your responsibility to consult with the appropriate Native American tribe/groups to identify any concerns they may have pertaining to this undertaking and potential impacts to properties of traditional and/or ceremonial value.

Sincerely,

Isabella Rosinko
Staff Archaeologist

Kary L. Stackelbeck, Ph.D.
State Archaeologist

: dkg
cc: SHPO

111 Chesapeake, Room 102, Norman, Oklahoma 73019-5111 PHONE: (405) 325-7211 FAX: (405) 325-7604
A UNIT OF ARTS AND SCIENCES SERVING THE PEOPLE OF OKLAHOMA

Native American Tribal Nation Consultation

DAF consulted under Section 106 of the National Historic Preservation Act with the following 15 Native American Tribes with an expressed or potential interest in cultural resources at Vance AFB and the special use airspace (SUA):

- Apache Tribe of Oklahoma
- Cherokee Nation
- Cheyenne and Arapaho Tribes
- Comanche Nation
- Iowa Tribe of Oklahoma
- Jicarilla Apache Nation
- Kaw Nation
- Kiowa Indian Tribe of Oklahoma
- Osage Nation
- Otoe-Missouria Tribe of Oklahoma
- Ponca Tribe of Indians of Oklahoma
- Quapaw Tribe of Indians
- Tonkawa Tribe of Oklahoma
- United Keetoowah Band of Cherokee Indians in Oklahoma
- Wichita and Affiliated Tribes

Section 3.5 contains further information regarding the outcome of the consultation with the Native American Tribes. A copy of the consultation letters and responses are on the following pages.

Example of DAF's first consultation letter (sent June 5, 2024) to the Native American tribes

Each of the 15 tribes received an identical letter. A copy of each tribe's letter has been retained in the project's administrative record.

DEPARTMENT OF THE AIR FORCE
71ST FLYING TRAINING WING
VANCE AIR FORCE BASE OKLAHOMA

10 May 2024

Colonel Charles D. Throckmorton IV
Commander, 71st Flying Training Wing
246 Brown Parkway, Suite 224
Vance AFB OK 73705-5015

Chairman Durell Cooper
Apache Tribe of Oklahoma
PO Box 1330
Anadarko OK 73005

Dear Chairman Cooper

The United States Department of the Air Force (DAF) is preparing an Environmental Impact Statement (EIS) under the National Environmental Policy Act to evaluate potential environmental impacts associated with T-7A Recapitalization at Vance Air Force Base (AFB), Oklahoma. Recapitalization is the phased acquisition of the new generation T-7A aircraft and construction and upgrade of specific facilities to support the training, operation, and maintenance of the T-7A aircraft. Per Section 306108 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 CFR Part 800, DAF is accounting for various environmental concerns and engaging early with tribal governments as it initiates the undertaking.

The undertaking would entail the phased introduction of T-7A aircraft and phased reduction of the T-38C aircraft currently operating from Vance AFB; new intensities of flight operations at Vance AFB; and temporary changes to the number of personnel assigned to Vance AFB during the aircraft replacement period. T-7A operations would occur at a relatively high altitude within the same lateral military airspace boundaries currently used for T-38C operations. No changes to these boundaries would be necessary to support the proposed operations of the T-7A. Additionally, to provide modern facilities and infrastructure to support the T-7A aircrafts' maintenance, training, and operational requirements, new construction or existing facility modification projects would occur at Vance AFB. **Attachment 1** shows the locations of the proposed projects.

In accordance with the NHPA, DAF would like to initiate government-to-government consultation regarding the proposed T-7A Recapitalization at Vance AFB. DAF requests your input in identifying any issues or areas of concern you feel should be addressed in the environmental analysis. Additionally, please let us know if you believe this undertaking might adversely affect any historic properties of religious and cultural significance to the Apache Tribe of Oklahoma.

DELIVER, DEVELOP, DEPLOY, DEMONSTRATE

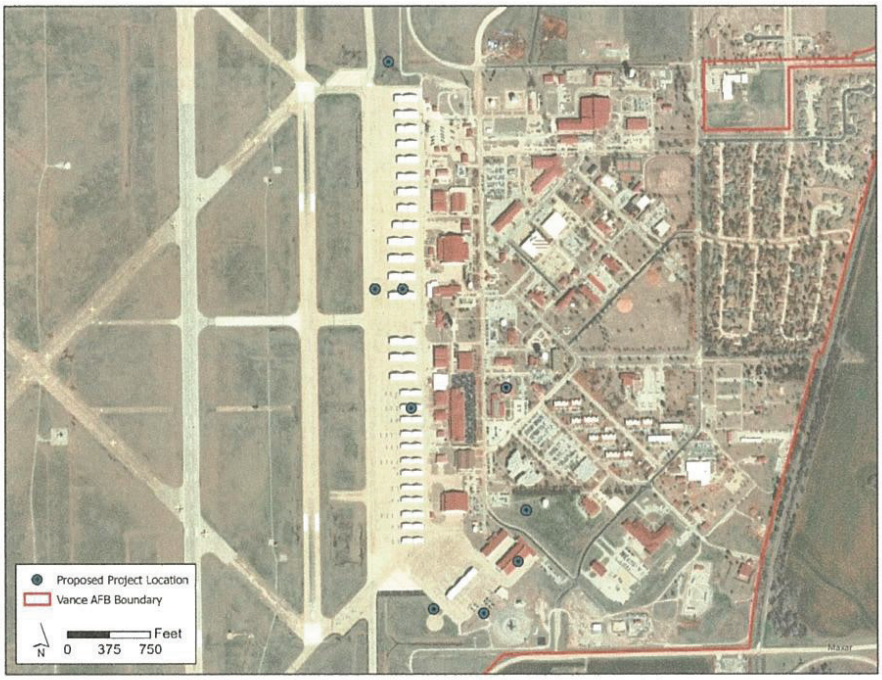
If you have any questions, please contact Ms. Chinling Chen via email at chinling.chen@us.af.mil or mail at AFCEC/CIE, Attn: Vance AFB T-7A Recapitalization EIS, 2261 Hughes Avenue, Suite 155, JBSA-Lackland, TX 78236-9853. Thank you in advance for your assistance in this effort.

Sincerely

CHARLES D. THROCKMORTON IV, Col, USAF
Commander

Attachment:
1. Project Locations at Vance AFB for T-7A Recapitalization

Attachment 1 - Project Locations at Vance AFB for T-7A Recapitalization



Response from the Quapaw Tribe of Indians regarding DAF's first consultation letter

From: Julia Pebeahsy <Julia.Pebeahsy@quapawnation.com>
Sent: Wednesday, June 19, 2024 10:18 AM
To: CHEN, CHINLING CIV USAF AFMC AFCEC/CIEE <chinling.chen@us.af.mil>
Cc: section 106 <section.106@quapawnation.com>
Subject: [Non-DoD Source] Response to T-7A Recapitalization Garfield County, Oklahoma

Wednesday, June 19, 2024

Attn: Colonel Charles D. Throckmorton IV
AFCEC/CIE, Attn: Vance AFB T-7A Recapitalization EIS,
226liughes Avenue, Suite 155, JBSA-Lackland, TX 78236-9853

Re: T-7A Recapitalization Garfield County, Oklahoma

Dear Mr. Charles D. Throckmorton,

The Quapaw Nation Historic Preservation Program (QNHPP) has received and reviewed the information provided for the proposed T-7A Recapitalization Garfield County, Oklahoma.

After reviewing this project, we have determined that it is not located within our tribal area of interest; therefore, we decline comment on this project. We also request that we be removed from your agencies' list of tribes that wish to consult on undertakings for this particular county.

Thank you for updating your records and for contacting the Quapaw Nation. Should you have any questions or need any additional information, please feel free to contact Julia Pebeahsy at Julia.pebeahsy@quapawnation.com , please copy section106@quapawnation.com to ensure additional information requests are reviewed in a timely manner. Thank you for consulting with the Quapaw Nation on this matter.

Sincerely,

Julia Pebeahsy
On behalf of
-Ms. Billie Burtrum
Preservation Officer/ QNHPP Director Quapaw Nation
P.O. Box 765
Quapaw, OK 74363
(w) 918-238-3100
(f) 918-674-2456

Response from the Cherokee Nation regarding DAF's first consultation letter

ᏣᎳᎩ ᎠᏰᎵ
CHEROKEE NATION®
P.O. Box 948 • Tahlequah, OK 74465-0948
918-453-5000 • www.cherokee.org

Chuck Hoskin Jr.
Principal Chief
ᏣᎵ ᎰᏍᎵ ᏕᏂᏕ
ᎤᎬᏫᏳᎯ

Bryan Warner
Deputy Principal Chief
ᏕᏃᎯᎵᏙᎯ
ᏩᎵᏂ ᎠᏞᏧᏂ ᎤᎬᏫᏳᎯ

July 17, 2024

Chinling Chen
United States Department of the Air Force
Vance AFB T-7A Recapitalization EIS
2261 Hughes Avenue, Suite 155
JBSA-Lackland, TX 78236-9853

Re: T-7A Recapitalization at Vance Air Force Base, Garfield County, TX

Ms. Chinling Chen:

The Cherokee Nation (Nation) is in receipt of your correspondence about **T-7A Recapitalization at Vance Air Force Base**, and appreciates the opportunity to provide comment upon this project. This communication is intended for government-to-government consultation with a sovereign federally recognized Tribal Nation. Information received in consultation will be deemed confidential unless explicit consent is provided by the Nation.

The Nation maintains databases and records of cultural, historic, and pre-historic resources in this area. Our Historic Preservation Office (Office) reviewed this project, cross referenced the project's legal description against our information, and found no instances where this project intersects or adjoins such resources. Thus, the Nation does not foresee this project imparting impacts to Cherokee cultural resources at this time.

However, the Nation requests that the United States Department of the Air Force (DAF) halt all project activities immediately and re-contact our Office for further consultation if items of cultural significance are discovered during the course of this project. Additionally, the Nation requests that the DAF conduct appropriate inquiries with other pertinent Historic Preservation Offices regarding historic and prehistoric resources not included in the Nation's databases or records.

If you require additional information or have any questions, please contact me at your convenience. Thank you for your time and attention to this matter.

Wado,

Elizabeth Toombs

Elizabeth Toombs, Tribal Historic Preservation Officer
Cherokee Nation Tribal Historic Preservation Office
elizabeth-toombs@cherokee.org
918.453.5389

Response from the Osage Nation regarding DAF's first consultation letter

From: Courtney Neff <cneff@osagenation-nsn.gov>
Sent: Monday, June 17, 2024 11:35 AM
To: Courtney Neff <cneff@osagenation-nsn.gov>
Subject: [Non-DoD Source] ONHPO Section 106 Procedures

You don't often get email from cneff@osagenation-nsn.gov. Learn why this is important

Good morning,

The Osage Nation Historic Preservation Office recently received physical mail from you for consultation with the Osage Nation. Please note that as of October 1, 2022 the Osage Nation has only accepted emailed Section 106 notifications, surveys, and information to S106@osagenation-nsn.gov .

Please resend all physically mailed notifications to the S106 email so that it can be properly processed and review. If you have any questions please let me know.

Thank you,

Courtney Neff
Osage Nation Historic Preservation Office
Section 106 Coordinator
627 Grandview Avenue, Pawhuska, OK 74056
Office: 918-287-9741 | Fax: 918-287-5376
Email | Website

Starting October 1, 2022 the Osage Nation Historic Preservation Office is changing the project notification process. **All project notifications and reports must be emailed to s106@osagenation-nsn.gov** Include the Lead Agency, Project Name and Number, and TCNS Number (if available) on the subject line.

Example of DAF's second consultation letter sent on October 29, 2024 to the Native American tribes

This letter was sent to 13 of the 15 tribes with an interest in Vance AFB and the SUA. The two tribes not sent the consultation letter were the Quapaw Tribe of Indians and Cherokee Nation, who require no further consultation for this undertaking. A copy of each tribe's letter has been retained in the project's administrative record.

DEPARTMENT OF THE AIR FORCE
71ST FLYING TRAINING WING
VANCE AIR FORCE BASE OKLAHOMA

26 September 2024

Colonel Charles D. Throckmorton IV
Commander, 71st Flying Training Wing
246 Brown Parkway, Suite 224
Vance AFB OK 73705-5015

Chairman Durell Cooper
Apache Tribe of Oklahoma
PO Box 1330
Anadarko OK 73005

Dear Chairman Cooper

The United States Department of the Air Force (DAF) previously contacted your tribe with a letter dated 10 May 2024 regarding the Environmental Impact Statement (EIS) being prepared under the National Environmental Policy Act to evaluate potential environmental impacts associated with T-7A Recapitalization at Vance Air Force Base (AFB), Oklahoma. Recapitalization is the phased acquisition of the new generation T-7A aircraft and construction and upgrade of specific facilities to support the training, operation, and maintenance of the T-7A aircraft. As a follow-up to our 10 May 2024 letter, and in accordance with Section 106 of the National Historic Preservation Act (NHPA) (54 U.S.C. 306108) and its implementing regulations at 36 CFR Part 800, DAF would like to initiate government-to-government consultation regarding the proposed recapitalization and requests that you identify any historic properties of religious or cultural significance that may be present.

The undertaking will entail the phased introduction of T-7A aircraft and phased reduction of the T-38C aircraft currently operating at Vance AFB; new intensities of flight operations; and temporary changes to the number of personnel assigned to Vance AFB. T-7A operations would occur within established Special Use Airspace (SUA) currently used for T-38C operations (**Attachment 1**), and no changes to SUA configurations (i.e., size, shape, or location) would be necessary to support the proposed operations of the T-7A. Additionally, multiple construction and modernization projects of existing facilities would occur at Vance AFB to provide modern and upgraded facilities and infrastructure. The potential to impact historic properties and details individual assessment of effect can be found in **Attachment 2**.

The Area of Potential Effect (APE) as the potential impact area from all types of activities was defined. Effects include, but are not limited to, ground disturbance, vibration, building modification, and staging and equipment storage, as well as noise and aesthetic interference. For this undertaking, the APE is defined as the footprint of all buildings proposed for exterior alteration, all areas of new construction and additions, all landscape features (such as airfield markings) that are proposed for alteration, all new roads and parking lots, and buffers around those areas to account for construction staging and temporary physical impacts from ground disturbing activity. The APE captures all anticipated effects as new building construction is anticipated to be one story and not exceed 40 feet in total building height. There are no National Register of Historic Places (NRHP)-listed or eligible historic districts, sites, buildings, structures, or objects that would be visually or audibly affected by the proposed undertaking. In addition, the only vertical components planned are the antennas that would be located adjacent to the existing Unit Maintenance Training Facility (UMT) and existing antennas that would stand approximately 50 feet high. The APE totals approximately 116.75 acres and is shown in **Attachment 3**. There is no change to the SUA, and therefore, the APE for this undertaking does not include the SUA where the T-7A aircraft would perform operations (**Attachment 1**).

DELIVER, DEVELOP, DEPLOY, DEMONSTRATE

Following issuance of Vance AFB's scoping notice, 13 Tribes were identified as potentially being affected by the Proposed Action. Vance AFB is continuing consultation with those Tribes and has invited them to consult on the proposed undertaking and to confirm that no sacred sites or traditional cultural properties are present in the APE.

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 or historic resources on Vance AFB and concluded that no further surveys were required due to extensive ground disturbance and the low potential for archaeological resources. In response to a separate project recently completed at Vance AFB immediately adjacent to and partially overlapping with the APE for the Proposed Action, the installation received a letter from the Oklahoma Archeological Survey dated 10 May 2023 confirming that no sites had been identified in that project area and no archaeological materials were likely to be encountered (**Attachment 4**). Similarly, the installation received a letter from the U.S. Department of the Interior, Bureau of Indian Affairs dated 17 May 2023 confirming that there were no tribal or individual Indian trust lands within or in the project vicinity (**Attachment 5**). In addition, no Native American cemeteries, burials, sacred sites, or areas considered a Traditional Cultural Property (TCP) have been identified during surveys at Vance AFB.

A 2003 architectural resources survey identified 41 potential Cold War-era buildings and structures that warranted further investigation as to their potential historic significance. The Oklahoma State Historic Preservation Office (SHPO) determined that the buildings and structures were not eligible for listing in the NRHP. By 2014, the SHPO had reviewed another 18 buildings for potential historical significance and determined that they were not eligible for listing on the NRHP (**Attachments 6 and 7**). To date, no buildings or structures on Vance AFB have been determined eligible for listing in the NRHP.

Please contact Ms. Chinling Chen via email at chinling.chen@us.af.mil if you have any questions.

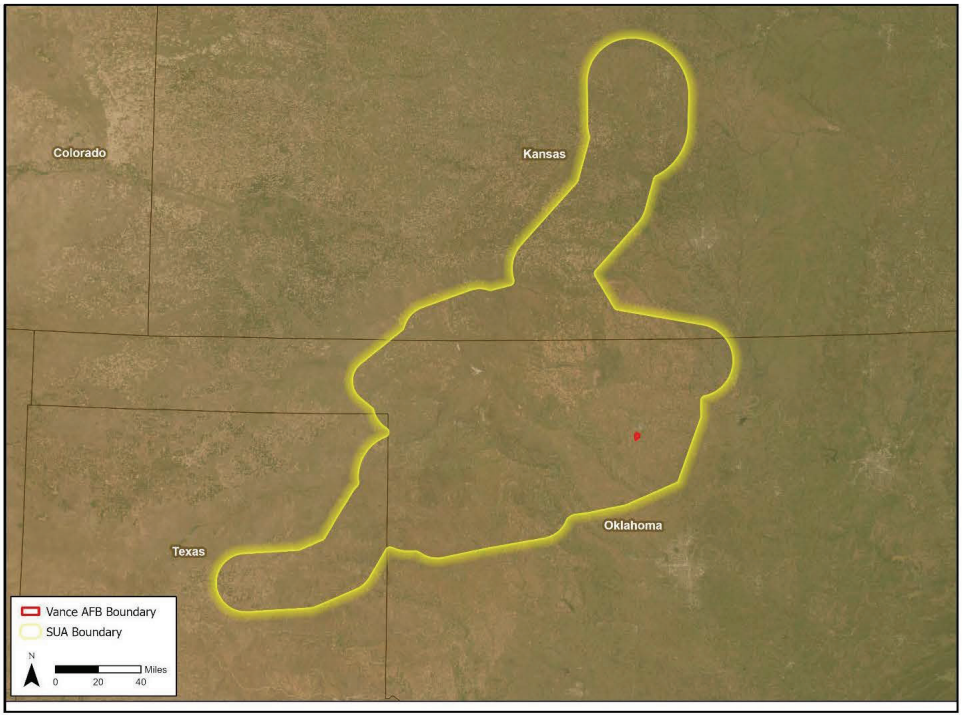
Sincerely

C. D. Throckmorton IV

CHARLES D. THROCKMORTON IV, Col, USAF
Commander

7 Attachments:
1. Map of Special Use Airspace used for T-38C
2. Project Descriptions and Effect
3. Map of APE for Vance AFB T-7A Recapitalization Proposed Undertaking
4. Oklahoma Archeological Survey Letter Dated 10 May 2023
5. U.S. Department of the Interior, Bureau of Indian Affairs Letter Dated 17 May 2023
6. SHPO Letter Regarding 2013 Survey
7. SHPO Letter Regarding 2014 Survey

Attachment 1. Map of Special Use Airspace used for T-38C Operations



Attachment 2. Project Descriptions and Effect

Building Name/Number	Project Component	NRHP Status	Date Constructed	Assessment of Effect
Hush House Pad	Construct a new hush house pad southwest of the existing hush house. Includes a reinforced concrete pad (approximately 27,500 ft²), thick edges and paved shoulders, and an anchor block in the center. Approach pavements and supporting utilities would be extended to the proposed hush house pad.	N/A – New construction Existing Hush House Pad is non-historic	1992	**No effect on historic properties**
T-7A Shelters	Construct new shelters (sunshades) on the existing T-38C aircraft parking apron to protect T-7A aircraft from adverse weather. Existing T-38C shelters would be removed, and T-7A shelters would be placed on existing pavement. Taxi lines would be removed and repainted. Electrical utilities, proper lighting, and tie-downs/grounding points would be installed for each shelter.	N/A – New construction Existing T-38C shelters are non-historic	2005-2007	**No effect on historic properties**
Addition to Egress Shop (Building 542)	Construct an addition to Building 542. The addition would be approximately 3,200 ft² and constructed with a reinforced concrete foundation, concrete floor slab, structural steel frame, and standing seam metal roof and exterior.	N/A - Building 542 is non-historic	1990	**No effect on historic properties**
Jet Blast Deflectors	Install jet blast deflectors on airfield. Final placement dependent on final design. The deflectors would likely be situated between aircraft parking rows and the apron.	N/A – Attached to non-historic pavement	Non-historic pavement	**No effect on historic properties**
Airfield Reconfiguration	This project would include airfield markings, airfield reconfiguration, and installation of mooring and anchor rods. Airfield markings would include repainting any changes to parking layout to accommodate the T-7A beddown. The	N/A - Pavement, compass rose and trim pad non-historic	Circa 2008	**No effect on historic properties**

Building Name/Number	Project Component	NRHP Status	Date Constructed	Assessment of Effect
	mooring and anchor rods would be installed in the new T-7A parking area. Compass rose and trim pad would be moved slightly due to the siting of the new hush house.			
Antenna Farm	This project would provide an additional antenna-yard area near the UMT facility to assist with sending signals between the facility and the airfield.	N/A - New construction	N/A – Vacant land	**No effect on historic properties**
Remove Aboveground Service Modules of the Centralized Aircraft Support System (CASS)	Remove T-38C CASS modules (electrical equipment panels attached to existing T-38C shelters) where T-7A aircraft would be located within existing T-38C shelters. CASS lines to the rows would be cut and capped, and vaults would be filled in with concrete	N/A – Equipment being removed from existing T-38C shelters (non-historic)	2005-2007	**No effect on historic properties**
Modify Hangar	This project would provide interior modifications at facility 199 and potentially replace hangar doors. Facility currently houses T-1 maintenance.	N/A – Building 199 is non-historic, renovations likely to be only interior.	2004	**No effect on historic properties**
Munitions Storage for T-7A	Installation of a concrete pad estimated to be 3,600 ft².	N/A - New construction	N/A - Vacant land	**No effect on historic properties**
Unit Maintenance Training Facility (UMT)	Renovate interior of previous T-1 facility to accommodate the UMT.	N/A – Interior Renovation only/non-historic	2004	**No effect on historic properties**
Renovate Squad	Interior renovation to support the squadrons	N/A –	1969, 1967,	**No effect on**

Building Name/Number	Project Component	NRHP Status	Date Constructed	Assessment of Effect
Operations	associated with the T-7A program. Facility options being considered include Buildings 179, 183, 541, and 690.	Interior Renovation only	1963, and 1978	**historic properties**
Ground Based Training System (GBTS) Renovation	Current GBTS will have interior renovation to accommodate the incoming T-7A training devices.	N/A – Interior Renovation only	1978	**No effect on historic properties**

Key: N/A = Not applicable

Attachment 3. Map of APE for Vance AFB T-7A Recapitalization Undertaking

8

Attachment 4. Oklahoma Archeological Survey Letter Dated 10 May 2023

Oklahoma Archeological Survey

THE UNIVERSITY OF OKLAHOMA

May 10, 2023

Attn: Mark Buthman
ASRC AFFS
400 Young Road, Suite 229
Vance Air Force Base, OK 73705-5508

Re: OAS FY23-1509 US Air Force Proposed Construction of a Fire Crash/Rescue Facility and Enlisted Unaccompanied Housing (UH) Facility on Vance Air Force Base (AFB).
Legal Description: NW ¼ Section 36, T22N, R7W, Garfield County, Oklahoma.

Dear Mr. Buthman:

The Community Assistance Program staff of the Oklahoma Archeological Survey has reviewed the above referenced project to identify areas that may potentially contain prehistoric or historic archeological materials (historic properties). The location of your project has been crosschecked with the state site files containing approximately 27,000 archaeological sites, which are currently recorded for the state of Oklahoma. No Sites are listed as occurring within your project area, and based on the topographic and hydrologic setting, no archaeological materials are likely to be encountered. Thus, an archaeological field inspection is not considered necessary. Please contact this office at (405) 325-7211 if buried archaeological materials such as chipped stone tools, pottery, bone, historic crockery, glass, metal items or building materials are exposed during construction activities.

This environmental review and evaluation are done in cooperation with the State Historic Preservation Office, Oklahoma Historical Society. The responsible federal agency or their official delegate must also have a letter from that office to document consultation pursuant to Section 106 of the National Historic Preservation Act.

In addition to our review comments, under 36CFR Part 800.3 you are reminded of your responsibility to consult with the appropriate Native American tribe/groups to identify any concerns they may have pertaining to this undertaking and potential impacts to properties of traditional and/or ceremonial value.

Sincerely,

Ella M. Brewer-Jensen

Ella Brewer-Jensen
Staff Archaeologist

Kary L. Stackelbeck, Ph.D.
State Archaeologist

: dkg
cc: SHPO

111 Chesapeake, Room 102, Norman, Oklahoma 73019-5111 PHONE: (405) 325-7211 FAX: (405) 325-7604
A UNIT OF ARTS AND SCIENCES SERVING THE PEOPLE OF OKLAHOMA

Attachment 5. U.S. Department of the Interior, Bureau of Indian Affairs Letter Dated 17 May 2023

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
Southern Plains Regional Office
P.O. Box 368
Anadarko, OK 73005

IN REPLY REFER TO:
NATURAL RESOURCES (405) 247-6673

MAY 17 2023

Mr. Mark Buthman
ASRC AFFS
400 Young Rd, Suite 229
Vance AFB, OK 73705-5508

Dear Mr. Buthman:

Thank you for the opportunity to comment on the proposal to construct an fire crash/rescue facility and enlisted unaccompanied housing facility on Vance AFB. A review of maps of the Bureau of Indian Affairs (BIA), Southern Plains Region, indicates that there are no tribal or individual Indian trust lands in the vicinity of the proposed improvement area. The Southern Plains Region has no concerns that the proposed project will impact Indian trust lands within the Southern Plains Region's jurisdiction.

If any additional information is required, please contact David Anderson, Regional Environmental Scientist, at (405) 247-1532.

Sincerely,

ACTING Regional Director

cc: Regional Archeologist
Regional Director's Files

10

Attachment 6. SHPO Letter Regarding 2013 Survey

Oklahoma Historical Society *Founded May 27, 1893*
State Historic Preservation Office
Oklahoma History Center • 800 Nazih Zuhdi Drive • Oklahoma City, OK 73105-7917
(405) 521-6249 • Fax (405) 522-0816 • www.okhistory.org/shpo/shpom.htm

June 21, 2013

Colonel Darren James
Commander, 71st Flying Training Wing
246 Brown Parkway, Suite 224
Vance AFB, OK 73705

RE: File #1659-13; Evaluation of Eligibility of 14 Buildings at Vance Air Force Base (Listed on the Attachment to this Letter)

Dear Colonel James:

We have received and reviewed the documentation concerning National Register eligibility for the 14 referenced properties (listed on the attachment) in Garfield County. Additionally, we have examined the information contained in the Oklahoma Landmarks Inventory (OLI) files and other materials on historic resources available in our office. We concur with your opinion that the referenced properties are not eligible for the National Register of Historic Places.

Should further correspondence pertaining to this property be necessary, please reference the above underlined file number. If you have any questions, please contact Ms. Lynda Schwan Ozan, Architectural Historian, at 405/522-4478. Thank you.

Sincerely,

Melvena Heisch
Deputy State Historic
Preservation Officer

MH:pm

Attachment

FILE #	LIST OF PROPERTIES
1659-13	VANCE AFB DETERMINATION OF ELIGIBILITY, GARFIELD COUNTY

BUILDINGS:
1. #125
2. #126
3. #140
4. #154
5. #183
6. #187
7. #192
8. #312
9. #316
10. #522
11. #795
12. #824
13. #826
14. #907

11

Attachment 7. SHPO Letter Regarding 2014 Survey

Oklahoma Historical Society *Founded May 27, 1893*
State Historic Preservation Office
Oklahoma History Center • 800 Nazih Zuhdi Drive • Oklahoma City, OK 73105-7917
(405) 521-6249 • Fax (405) 522-0816 • www.okhistory.org/shpo/shpom.htm

October 13, 2014

Colonel Clark Quinn
Department of the Air Force
PD/CEV
140 Channel Street, Suite 231
Vance AFB, OK 73705

RE: File #2082-14: Vance AFB Determination of Eligibility for Four Properties: Buildings #195, #197, #423 & #723

Dear Colonel Quinn:

We have received and reviewed the documentation concerning the referenced project in Garfield County. Additionally, we have examined the information contained in the Oklahoma Landmarks Inventory (OLI) files and other materials on historic resources available in our office. We find that there are no historic properties affected by the referenced project.

In the future, CDs are not acceptable for submitting information. We ask that you supply a completed Historic Preservation Resource Identification Form and appropriate photographs for each of the structures to be affected by the project. Please note that, if these properties are less than 45 years old, Historic Preservation Resource Identification Forms and photos are not required. However, your review request must include the address and date (or year) of construction of each property.

Thank you for the opportunity to comment on this project. We look forward to working with you in the future.

Should further correspondence pertaining to this project be necessary, please reference the above underlined file number. If you have any questions, please contact Ms. Lynda Schwan Ozan, Architectural Historian, at 405/522-4478. Thank you.

Sincerely,

Melvena Heisch
Deputy State Historic
Preservation Officer

MH:pm

12

Response from the Comanche Nation regarding DAF's second consultation letter

COMANCHE NATION

71st Flying Training Wing
Vance Air Force Base Oklahoma
Attn: Ms. Chinling Chen
246 Parkway, Suite 224
Oklahoma 73705-5015

December 5, 2024

Re: The United States Department of the Air Force (DAF) previously contacted your Tribe with a letter dated 10 may 2024 regarding the Environmental Impact statement (EIS) being prepared under the National Environmental Policy Act to evaluate potential environmental impacts associated with T-7A Recapitalization at Vance Air Force Base (AFB), Oklahoma

Dear Ms. Chen:

In response to your request, the above reference project has been reviewed by staff of this office to identify areas that may potentially contain prehistoric or historic archeological materials. The location of your project has been cross referenced with the Comanche Nation site files, where an indication of ***"No Properties"*** have been identified. (IAW 36 CFR 800.4(d)(1)).

Please contact this office at (580) 492-1153) if you require additional information on this project.

This review is performed in order to identify and preserve the Comanche Nation and State cultural heritage, in conjunction with the State Historic Preservation Office.

Regards

Comanche Nation Historic Preservation Office
Theodore E. Villicana , Technician
#6 SW "D" Avenue, Suite C
Lawton, OK. 73502

COMANCHE NATION P.O. BOX 908 / LAWTON, OK 73502
PHONE: 580-492-4988 TOLL FREE:1-877-492-4988

D

Scoping and Draft EIS Public Comments

Table D-1. Summary of Public Scoping Comments Received and Department of the Air Force (DAF) Responses

Source	Summary of Comment Correspondence	Addressed in EIS? If Yes, Location in EIS. If No, Rationale.
Federal Agencies		
Federal Emergency Management Agency – Email	Requested the Community Floodplain Administrator for Garfield County, Oklahoma, be contacted for the review and possible permit requirements for the proposal. Requested if federally funded, the project be in compliance with Executive Orders (EOs) 11988 and 11990.	Yes. The Garfield County Community Floodplain Administrator was contacted during scoping and will be notified of the availability of the Draft and Final Environmental Impact Statement (EIS). **Section 3.8** addresses the Proposed Action's compliance with EOs 11988 and 11990.
U.S. Geological Survey – Email	Reported the agency has no comment at this time.	No. This comment required no action.
U.S. Environmental Protection Agency (USEPA) – Website	Requested the following topics be considered in the EIS: 1. Potential direct, indirect, and cumulative impacts of solid and hazardous waste from the Proposed Action and operation/maintenance of the new facilities. 2. Estimates of solid and hazardous waste amounts and types produced from the Proposed Action's construction and operation, including the expected storage, disposal, and management plans for said waste. 3. Response plan for an accidental release of hazardous material. 4. How state and federal hazardous waste management regulations would be applied in the construction and operation of the proposed facilities.	Yes. These topics are addressed in **Section 3.6**.

Source	Summary of Comment Correspondence	Addressed in EIS? If Yes, Location in EIS. If No, Rationale.
USEPA, Region 6 Office – Email	Offered comments on the following topics: 1. Air Quality. Requested the EIS provide a detailed discussion of ambient air conditions, National Ambient Air Quality Standards (NAAQS) and non-NAAQS pollutants, criteria pollutant nonattainment areas, and potential air quality impacts of the Proposed Action. Such an evaluation is necessary to understand the potential impacts from temporary, long-term, or cumulative air quality degradation. Recommended the EIS describe and estimate air emissions from construction, maintenance, and operational activities as well as propose mitigation measures to minimize those emissions. Recommended the EIS consider air quality and visibility impacts to Class I Federal Areas identified in 40 Code of Federal Regulations Part 81, Subpart D. Recommended the EIS specify all emission sources (i.e., mobile, stationary, fugitive emissions, area sources, and ground disturbance) by pollutant and use this information to identify appropriate mitigation measures. Recommended the EIS include a Construction Emissions Mitigation Plan and adopt this plan into the Record of Decision. Include all applicable local, state, or federal requirements in this plan in order to reduce impacts associated with construction-related activities. 2. National Pollutant Discharge Elimination System (NPDES) Permitting. Noted NPDES regulations, which authorize discharge of stormwater from construction activities. Noted DAF would be required to obtain Construction General Permit or other NPDES permitting coverage from the Oklahoma Department of Environmental Quality (DEQ) prior to beginning construction activities if a project would disturb 1 acre or greater individually or, as part of a common plan of smaller projects, ultimately disturbs 1 acre or greater. Provided the definition of and examples of construction activities potentially subject to and exempt from Construction General Permit coverage.	Yes. Impacts on air quality and the requested topics are provided in **Section 3.1**. The applicability of NPDES stormwater permits is provided in **Section 3.8**.

Source	Summary of Comment Correspondence	Addressed in EIS? If Yes, Location in EIS. If No, Rationale.
USEPA, Region 6 Office – Email (Continued)	3. Environmental Justice. Recommended DAF analyze impacts on environmental justice populations and review the Proposed Action to ensure it complies with applicable environmental and safety regulations and EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* and EO 14096, *Revitalizing Our Nation's Commitment to Environmental Justice for All*. Recommended DAF determine whether the Proposed Action would have disproportionate and adverse human health and environmental effects on minority and low-income populations and communities of environmental justice concern. Requested DAF send an electronic copy of the EIS to their office when it is filed with the Office of Federal Activities.	President Donald Trump issued EO 14148, *Initial Rescissions of Harmful Executive Orders and Actions*, and EO 14173, *Ending Illegal Discrimination and Restoring Merit-Based Opportunity* on January 20 and 21, 2025. EO 14148 revoked EO 14096, and EO 14173 revoked EO 12898. As a result, an environmental justice analysis is not included in this EIS, per DAF policy memorandum dated February 26, 2025. Impacts on health and safety are provided in **Section 3.7**. The USEPA, Region 6 office was notified of the availability of the Draft and Final EIS.
State Agencies		
Oklahoma DEQ – Email	Identified no adverse environmental impacts on resources under Oklahoma DEQ jurisdiction. Noted that prior to beginning any construction activity disturbing more than 1 acre, DAF must submit a Notice of Intent and obtain authorization under OKR10, construction stormwater. Noted that for future projects, DAF should include coordinates in decimal degrees and the street addresses, section/ township/range, or other location information. Future requests should be submitted via their online contact portal or email.	Yes. The applicability of stormwater permits is provided in **Section 3.8**.
Oklahoma Natural Heritage Inventory – Email	Reviewed occurrence information on federal and state threatened, endangered, or candidate species currently in the Oklahoma Natural Heritage Inventory database for the project location. Noted that one occurrence of a relevant species, the whooping crane, was found within the vicinity of the project location.	Yes. The whooping crane is included in the discussion and analysis of protected species in **Section 3.4**.

Source	Summary of Comment Correspondence	Addressed in EIS? If Yes, Location in EIS. If No, Rationale.
Local Government and Agencies		
City of Enid, Assistant City Manager – Email	Provided a supportive comment in favor of the proposal. Stated their commitment remains to provide services, facility space, and usage of the runway at Woodring Municipal Airport. Advised that the city is in the final stages of completing enhancements, including a second joint use hangar, new approach lighting, and upgrade to ramps and taxiways.	Yes. Information on projects at Woodring Municipal Airport have been incorporated into **Section 3.9**.
City of Enid, City Manager – Email	Provided a supportive comment in favor of the proposal. Noted available resources in Enid to support the Vance AFB mission.	No. Comment was an opinion that required no incorporation into the EIS.
City of Enid, Mayor – Email	Provided a supportive comment in favor of the proposal. Noted available resources in Enid to support the Vance AFB mission.	No. Comment was an opinion that required no incorporation into the EIS.
Greater Enid Chamber of Commerce – Website	Provided a supportive comment in favor of the proposal.	No. Comment was an opinion that required no incorporation into the EIS.
Vance Development Authority – Email	Provided a supportive comment in favor of the proposal.	No. Comment was an opinion that required no incorporation into the EIS.
Vance Development Authority – Website	Provided a supportive comment in favor of the proposal.	No. Comment was an opinion that required no incorporation into the EIS.

Source	Summary of Comment Correspondence	Addressed in EIS? If Yes, Location in EIS. If No, Rationale.
Tribal Nations		
Cherokee Nation – Email	Found no instances where the Proposed Action intersects or adjoins tribal resources and does not foresee the project impacting tribal resources. Requested to halt project activities and be contacted if items of significance are discovered during the life of the project. Requested consultation continue with other tribal nations.	Yes. **Section 3.5.2.1** describes the procedures for inadvertent discoveries of culturally significant items and the tribal consultation efforts undertaken for this Proposed Action.
Osage Nation – Email	Requested that all physically mailed notifications be resent to an email address so that it can be properly processed and reviewed.	No. The scoping notice was sent to the Osage Nation-provided email address, as requested. No further correspondence occurred.
Quapaw Nation – Email	Determined the Proposed Action is not located within the Quapaw Nation's tribal area of interest; therefore, decline to provide comment. Requested to be removed from the list of tribes that wish to consult on undertakings for this particular county.	No. The Quapaw Nation has been removed from further correspondence.
Citizens		
Citizen 1 (initials M.R.) – Email	Provided a supportive comment in favor of the proposal.	No. Comment was an opinion that required no incorporation into the EIS.
Citizen 2 (initials D.R.) – Email	Provided a supportive comment in favor of the proposal.	No. Comment was an opinion that required no incorporation into the EIS.
Citizen 3 (initials G.P.) – Email	Provided a supportive comment in favor of the proposal.	No. Comment was an opinion that required no incorporation into the EIS.
Citizen 4 (initials M.G.) – Written at Public Scoping Meeting	Provided a supportive comment in favor of the proposal.	No. Comment was an opinion that required no incorporation into the EIS.

Table D-2. Summary of Public Comments Received During the Draft EIS Public Comment Period and DAF Responses

Source	Summary of Comment Correspondence	Addressed in EIS? If Yes, Location in EIS. If No, Rationale.
Federal Agencies and Elected Officials		
U.S. Army Corps of Engineers, Tulsa District – Email	Assigned project to Regulatory Project Manager Rob Hoffmann and entered it into their regulatory system as project SWT-2024-00300. Requested the project number be referenced in future correspondence.	No. This comment was an acknowledgement of receiving the Draft EIS.
USEPA, Region 6 – Email	Recommended including impairment status and pollutant cause information, if applicable, using data from the USEPA's *How's My Waterway* application and Oklahoma's Integrated Report. Recommended listing assessment unit IDs instead of common names in **Figure 3-15** to improve the public's understanding.	Yes. **Section 3.8.1** discusses impaired surface waters (or lack thereof) within the vicinity of Vance AFB. Common names for waterbodies, rather than listing assessment unit IDs, are used on **Figure 3-15** because these are better understood by the public.
The Honorable Frank D. Lucas, Congressman for Oklahoma's 3rd Congressional District – Website	Provided a supportive comment in favor of the proposal. Noted the community's long history of supporting DAF missions at Vance AFB. Highlighted the benefits of the installation's civilian contractor workforce and SUA available for flight training.	Yes. **Section 2.2.2.1.3** describes the change in personnel resulting from the Proposed Action. **Appendix A** describes the SUA proposed for use with the T-7A.
Department of Interior (DOI), Office of Environmental Policy and Compliance – Email	On November 17, 2025, after the 45-day public comment period had ended, DOI asked if DAF would accept late comments on the Draft EIS because the partial federal government shutdown may have impacted their ability to submit comments by the October 14 deadline. DAF answered that DOI comments would be accepted until close of business on November 25. DOI replied they had no comments.	No. No comment was provided.

Source	Summary of Comment Correspondence	Addressed in EIS? If Yes, Location in EIS. If No, Rationale.
State Agencies		
Oklahoma Department of Wildlife Conservation (ODWC) – Email	Identified ODWC as a local conservation stakeholder operating the Drummond Flats Wildlife Management Area. Expressed appreciation for the opportunity to review the Draft EIS and provide comments. Noted ODWC has a strong partnership with Vance AFB and supports the installation's mission while respecting its consideration for minimizing impacts to local wildlife resources. Stated ODWC remains supportive of the training mission at Vance AFB, after careful review of the Draft EIS. Concluded future training with the T-7A is not likely to cause greater impacts to wildlife than the current disturbances occurring with the T-38C. Noted the Draft EIS addresses aircraft bird strikes, bat strikes, strike avoidance measures, and how those dangers are mitigated. Concluded appropriate thought and consideration for reducing negative impacts on wildlife resources have been included in the Draft EIS.	Yes. **Section 3.4.2** discusses the anticipated impacts on wildlife under the Proposed Action and provides measures for minimizing Bird/Wildlife Aircraft Strike Hazard incidents.
Oklahoma Natural Heritage Inventory – Email	Stated a search of the Oklahoma Natural Heritage Inventory database found no occurrences of endangered species or other elements of biological significance within the project area or 1 mile of the project boundary. Cautioned that the database does not contain sufficient data to say with certainty whether a given site harbors rare species or ecological communities.	Yes. **Section 3.4.1** identifies the federally listed, proposed, and candidate species and their habitats that could occur on the installation or within the SUA, and **Section 3.4.2.1** provides a determination of effect for these species.

Source	Summary of Comment Correspondence	Addressed in EIS? If Yes, Location in EIS. If No, Rationale.
Oklahoma DEQ – Email	Stated the Oklahoma DEQ completed a general environmental impact review for the project. Identified no adverse environmental impacts under Oklahoma DEQ jurisdiction. Recommended DAF refer to Oklahoma DEQ Land Protection GIS data layers available online for download. Provided three regulatory considerations: 1. Stated that if construction would disturb more than 1 acre, then a Notice of Intent must be submitted and authorization under OKR10 (construction general permit) must be obtained. 2. Noted some water and wastewater infrastructure projects require a construction permit from the Oklahoma DEQ's Water Quality Division. 3. Noted that if the U.S. Army Corps of Engineers determines a Section 404 permit is required, then a Section 401 Water Quality Certification must be obtained from the Oklahoma DEQ.	Yes. Oklahoma DEQ Land Protection GIS data layers were consulted during the development of the EIS and incorporated where necessary. The applicability of stormwater and wetland permits are provided in **Section 3.8.2.1**. The Proposed Action would not modify water and wastewater infrastructure, so a construction permit would not be necessary.
Local Government and Agencies		
Vance Development Authority – Website	Provided a supportive comment in favor of the proposal and expressed preference for Alternative 3. Noted the community's long history of supporting DAF missions at Vance AFB. Highlighted the benefits of the installation's civilian contractor workforce and large SUA available for flight training. Noted a new elementary school is being constructed on Vance AFB that will have capacity to educate additional students and the runway at Woodring Municipal Airport has been expanded for military use.	Yes. **Section 2.2.2.1.3** describes the change in personnel resulting from the Proposed Action. **Appendix A** describes the SUA proposed for use with the T-7A. Information on expansion projects at Woodring Municipal Airport has been incorporated into **Section 3.9**.
Greater Enid Chamber of Commerce – Website	Provided a supportive comment in favor of the proposal. Noted the community's long history of supporting DAF missions at Vance AFB. Highlighted the benefits of the installation's civilian contractor workforce and large SUA available for flight training.	Yes. **Section 2.2.2.1.3** describes the change in personnel resulting from the Proposed Action. **Appendix A** describes the SUA proposed for use with the T-7A.

Source	Summary of Comment Correspondence	Addressed in EIS? If Yes, Location in EIS. If No, Rationale.
City of Enid, Mayor – Website	Provided a supportive comment in favor of the proposal. Noted the community's long history of supporting DAF missions at Vance AFB. Emphasized that the installation's SUA provides direct access to high-quality airspace.	Yes. **Appendix A** describes the SUA proposed for use with the T-7A.
Citizens		
Citizen 5 (initials D.C.) – Website	Expressed preference for Alternative 2 because it allows for slightly more operations but also stays close to the current number of operations, for which residents are accustomed to the noise.	Yes. The number of operations for each alternative are described in **Section 2.2**. **Section 3.2** presents the noise exposures for the 2023 Baseline; Alternatives 1, 2, and 3; and the No Action Alternative, and **Section 3.3** describes the resulting land use compatibility.
Citizen 6 (initials T.S.) – Website	Expressed preference for Alternative 3. Stated they enjoy the sound of jet aircraft and offered no objections to the noise produced.	Yes. **Section 3.2** presents the noise exposures for the 2023 Baseline; Alternatives 1, 2, and 3; and the No Action Alternative, and **Section 3.3** describes the resulting land use compatibility.
Citizen 7 (initials R.M.) – Website	Provided a supportive comment in favor of the proposal.	No. Comment was an opinion that required no incorporation into the EIS.
Citizen 8 (initials P.M.) – Website	Provided a supportive comment in favor of the proposal. Felt the EIS was a lot of writing to simply say, "We're replacing T-38s with a more modern craft."	Yes. The EIS conforms with NEPA and the NEPA implementing procedures and guidance identified in **Section 1.1**, which governs EIS length and content.

Source	Summary of Comment Correspondence	Addressed in EIS? If Yes, Location in EIS. If No, Rationale.
Citizen 9 (initials R.H.) – Website	Provided a supportive comment in favor of the proposal. Stated noise from aircraft operations has been part of life in Enid since the World War II era.	Yes. **Section 3.2** presents the noise exposures for the 2023 Baseline; Alternatives 1, 2, and 3; and the No Action Alternative, and **Section 3.3** describes the resulting land use compatibility.
Citizen 10 (initials E.P.) – Website	Stated "the new plane is MUCH louder than the last one." Noted they have lived in the Vance AFB flight pattern for touch-and-goes for the last 9.5 years, and the new airplane is the loudest one the installation has flown.	Yes. **Section 3.2** presents the noise exposures for the 2023 Baseline; Alternatives 1, 2, and 3; and the No Action Alternative, and **Section 3.3** describes the resulting land use compatibility.
Citizen 11 (initials K.F.) – Website	Expressed concern for public health from increased noise. Felt with continuous day and night T-7A flights, the public would be unable to sleep or rest with the constant loud noise. Noted the loud noise would cause heart problems for the public. Requested DAF reconsider its position to implement the Proposed Action.	Yes. **Section 3.2.2** presents the noise impacts from the Proposed Action and specifically addresses noise and its relationship with sleep disturbance. Although recent research points toward a possible link between aircraft noise and adverse cardiovascular effects, the findings are not conclusive, and there is no quantitative relationship between aircraft noise and cardiovascular effects.

Source	Summary of Comment Correspondence	Addressed in EIS? If Yes, Location in EIS. If No, Rationale.
Citizen 12 (initials E.J.) – Website	Requested the following items be included in the Proposed Action to conserve energy: solar energy panels, electric battery storage units, and electric vehicle charging stations.	Yes. **Section 2.2.2.1.4** states each renovated building potentially would incorporate cost-effective designs and technologies that minimize energy consumption for heating, cooling, lighting, and appliances. Examples of possible designs and technologies include use of insulation, energy-efficient windows, smart thermostats, and LED lighting, among others. The Proposed Action does not entail installation of solar energy panels, electric battery storage units, or electric vehicle charging stations.
Citizen 13 (initials S.B.) – Email	Provided a supportive comment in favor of the proposal. Noted they hear the airplanes at the installation and noise reminds them of the commitment of the U.S. to provide protection.	Yes. **Section 3.2** presents the noise exposures for the 2023 Baseline; Alternatives 1, 2, and 3; and the No Action Alternative, and **Section 3.3** describes the resulting land use compatibility.
Citizen 14 (initials J.A.) – Website	Provided a supportive comment in favor of the proposal. Noted the community's commitment to support DAF. Noted recent projects have been undertaken at Woodring Municipal Airport to expand the runway and add new hangars. Noted Vance AFB offers large SUA for flight training.	Yes. Information on expansion projects at Woodring Municipal Airport has been incorporated into **Section 3.9**. **Appendix A** describes the SUA proposed for use with the T-7A.

Source	Summary of Comment Correspondence	Addressed in EIS? If Yes, Location in EIS. If No, Rationale.
Citizen 15 (initials J.F.) – Email	Stated it is their understanding the T-7A would be much louder than the T-38C. Asked if noise levels have been quantified and what patterns the T-7A would fly near the city of Enid and Vance AFB.	Yes. **Section 3.2** presents the noise exposures for the 2023 Baseline; Alternatives 1, 2, and 3; and the No Action Alternative, and **Section 3.3** describes the resulting land use compatibility. **Section 2.2.2.1.2** states exact T-7A flight tracks, patterns, and altitudes have not yet been developed and will not be known until DAF begins flying the T-7A for pilot training. Therefore, at this stage of the proposal, T-7A flight parameters are assumed to be similar to those flown by the T-38C for the No Action Alternative. **Appendix A** describes the SUA proposed for use with the T-7A.
Citizen 16 (initials D.H.) – Website	Provided a supportive comment in favor of the proposal. Stated the noise emanating from the installation is comforting to them. Noted Vance AFB offers large SUA for flight training and recent projects have been undertaken at Woodring Municipal Airport to expand the runway and add new hangars.	Yes. **Section 3.2** presents the noise exposures for the 2023 Baseline; Alternatives 1, 2, and 3; and the No Action Alternative, and **Section 3.3** describes the resulting land use compatibility. **Appendix A** describes the SUA proposed for use with the T-7A. Information on expansion projects at Woodring Municipal Airport has been incorporated into **Section 3.9**.

E

List of Preparers

The EIS was prepared by HDR, Inc. (HDR) and its subcontractors—Harris Miller Miller & Hanson, Inc. (HMMH) and Prospect Hill Consulting LLC (PHC)—under the direction of Air Force Civil Engineer Center–NEPA Division, Vance AFB, AETC, and U.S. Army Corps of Engineers–Tulsa District staff. The individuals who contributed to the preparation of this EIS are listed below:

Kelly Albery, HDR
B.S. Wildlife Conservation and Management
Years of Experience: 14

Isha Alexander, HDR
M.S. Biology
M.A. Organizational Psychology
B.A. Psychology
Years of Experience: 20

Michelle Bare, HDR
General Studies
Years of Experience: 34

Daniel Botto, HMMH
B.S. Aviation Business Administration
Years of Experience: 25

Matthew Butwin, PHC
B.S. Applied Economics/Business Management
Years of Experience: 26

Joseph Czech, HMMH
B.S. Aerospace Engineering
Years of Experience: 36

Timothy Didlake, HDR
B.S. Earth Sciences
Years of Experience: 18

Travis Gahm, HDR
B.S. Biology
Years of Experience: 16

Leesa Gratreak, HDR
M.S. Historic Preservation
B.A. Architectural History
Years of Experience: 11

Carolyn Hein, HDR
B.S. Environmental Science
Years of Experience: 6

Shoshana Jones, JD, HDR
M.A. Public History
B.A. English Literature
Years of Experience: 11

Sean Kane, PHC
B.A. Political Science
Years of Experience: 1

Paul Krusell, HMMH
B.S. Electrical and Computer Engineering
Years of Experience: 3

Jenny Mogavero, PHC
M.A. Geography
B.S. Environmental/Physical Geography
Years of Experience: 24

Darrell Molzan, PE, HDR
B.S. Civil Engineering
Years of Experience: 38

Benjamin Patterson, HDR
B.S., Geography – Resource and Environmental Studies
Years of Experience: 20

Avery Pecci, HMMH
M.S. Geo-Information Science
Years of Experience: 3

Amberlyn Rodarte, HDR
Bachelors General Studies
Years of Experience: 4

Hannah Smith, HDR
B.A. Geography
Years of Experience: 3

Patrick Solomon, HDR
M.S. Geography
B.A. Geography
Years of Experience: 31

Dylan Wake, HDR
B.S. Environmental Science
Years of Experience: 2