

**FINDING OF NO SIGNIFICANT IMPACT:
REPAIR AND RENOVATE AIRBORNE WARNING AND CONTROL SYSTEM
MAINTENANCE GROUP COMPLEX, BUILDING 230
TINKER AIR FORCE BASE
OKLAHOMA CITY, OKLAHOMA**

An Environmental Assessment (EA) has been prepared to assess the potential effects on the human and natural environment of improving and modernizing the interior building space of Building 230 (B230), the Maintenance Group (MXG) Complex, at Tinker Air Force Base (AFB) in Oklahoma City, Oklahoma. This action would remedy the current inadequacy of B230 to accommodate the full workload of current and future maintenance of E-3 Airborne Warning and Control System (AWACS) aircraft by the 552d Air Control Wing (ACW). At present, the 552d ACW is the sole AWACS wing in the United States.

This EA has been prepared pursuant to the Council on Environmental Quality's (CEQ's) regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA), codified at Title 40, Code of Federal Regulations Parts 1500-1508 (40 CFR 1500-1508). The Air Force regulations for Environmental Impact Analysis Process (EIAP) are codified at 32 CFR 989. The EA is incorporated by reference into this finding.

DESCRIPTION OF PROPOSED ACTION: The Proposed Action includes the repair, renovation, and modernization of B230, its four maintenance hangars, and associated administrative and shop areas to allow the 552d ACW to inspect, service, and maintain E-3 AWACS aircraft safely and effectively in a facility that would accommodate the 552d ACW's full current and future workload. Implementation of this action would enable the 552d ACW to maintain Tinker AFB's mission effectiveness and optimize the 552d ACW's sortie generation rates.

Implementing the Proposed Action would provide a modern space for the Maintenance Operations Squadron (MOS) and a portion of the Aircraft Maintenance Squadron and would consolidate the office functions of the 552d MXG, which are presently dispersed throughout the building. The renovated facility would also comply with the antiterrorism/force protection (AT/FP) requirements of the U.S. Department of Defense (DoD) and would incorporate sustainable, energy-efficient design principles.

IDENTIFIED ALTERNATIVES: Alternatives to the Proposed Action have been considered, and two were identified to be carried forward for further analysis, including the No-Action Alternative.

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Description of Alternative 1: Implementation of Alternative 1, the Preferred Alternative, would include renovating the interior of the 537,940-square-foot B230 to create an open industrial space similar to that of B3001, where similar operations are performed. Transfer of the Cable Shop from B230 to the Tinker Aerospace Complex (TACX) would free 40,000 square feet of swing space, allowing the facility's maintenance operations to continue during construction.

Renovation would take place in nine phases and would involve constructing a 32,000-square-foot mezzanine for administrative office space; collocating maintenance bays; installing piers in work areas and an elevator compliant with the Americans with Disabilities Act (ADA); correcting hallways and entryways to meet the requirements of the National Fire Protection Association (NFPA), Unified Facilities Criteria (UFC) No. 3-600-1, and the International Building Code; overhauling heating, ventilating, and air conditioning (HVAC) and other building utilities; and updating the fire detection and suppression systems to meet current code. A temporary staging area for construction would be sited in a portion of the B230 parking lot.

The proposed renovations would enable B230 to meet electrical and building code requirements and incorporate energy-efficient and sustainable design in support of the DoD's Leadership in Energy and Environmental Design (LEED) goals. B230 is individually eligible for the National Register of Historic Places (NRHP), and the Preferred Alternative would not involve significant changes to the interior or exterior of the building that would be inconsistent with the original architectural style of the building.

Description of Alternative 2: Under Alternative 2, the existing B230 would be demolished to make property available for construction of a new 537,940-square-foot facility that would incorporate LEED design principles for sustainability and energy efficiency and would be designed to be compliant with ADA, fire safety, AT/FP, NFPA and all other codes. This alternative would involve relocating the 552d ACW's maintenance operations to another facility on the base while the new facility is constructed; however, because no such facility exists along the flightline at Tinker AFB, maintenance operations would be adversely impacted during demolition of the old facility and construction of the new B230. Further, because the existing NRHP-eligible building would be demolished, Alternative 2 would have an adverse effect on cultural resources.

The demolition and construction costs of Alternative 2 are projected to reach \$1 billion, which is \$225 million to \$270 million greater than those of the Preferred Alternative; further, the funds to cover the cost of new construction for Alternative 2 are not guaranteed. Demolition and construction would be expected to take only five years as compared to the 20 to 40 years forecast for the Preferred Alternative. Under Alternative 2, construction staging would occupy a portion of the B230 parking area for the entire five-year period.

Description of No-Action Alternative: Under the No-Action Alternative, Tinker AFB would not implement the Proposed Action. Maintenance resources at B230 would continue to be unimproved; operations would continue to be inefficient and unsafe; the facility would remain in violation of the electrical, fire, and building codes; and AT/FP and ADA requirements would not be met. HVAC and other building utilities would continue to be outdated, inefficient, and partially abandoned and therefore wasteful of energy and costly to operate, maintain, and repair. LEED components would not be incorporated into the facility.

Under this alternative, B230 would continue to be unable to accommodate the 552d ACW's entire current and projected future workload for the maintenance of E-3 AWACS aircraft. This would constrain the mission effectiveness, safety, and sortie generation rates of the 552d ACW and would prevent it from achieving its full mission. Execution of the Proposed Action is critical to the future E-3 AWACS mission and is necessary to ensure that the 552d ACW remains war-ready throughout the expected service life of the E-3 AWACS and beyond.

Although the No-Action Alternative would not fulfill the purpose and need of the Proposed Action, it will be considered in the EA as required by the CEQ, which stipulates that the No-Action Alternative be evaluated as a baseline to assess environmental consequences that may occur if the Proposed Action is not implemented.

SUMMARY OF FINDINGS FOR ALL ALTERNATIVES CONSIDERED

Resource/Issue	Preferred Alternative	Alternative 2	No-Action Alternative
Air Quality	Temporary (short-term) negligible construction emissions (i.e., construction dust) generated during renovation activities. Temporary combustion emissions from vehicles and heavy-duty equipment used during renovation activities in B230. Long-term beneficial impacts on operational emissions from installation of energy-efficient utilities. Temporary impacts on indoor air quality (e.g., fugitive dust) during renovation activities. Long-term beneficial impacts on indoor air quality from installation of a new buildingwide ventilation system.	Temporary (short-term) construction emissions (i.e., fugitive dust emissions) generated during demolition, ground disturbance, and related site preparation activities. Temporary combustion emissions from vehicles and heavy-duty equipment used during demolition of B230 and construction of a new facility. Long-term beneficial impacts on operational emissions from implementation of energy-efficient utilities in the newly constructed LEED-certified building. Long-term beneficial impacts on indoor air quality from installation of a new buildingwide ventilation system.	Conditions would remain as described in Section 3.1, <i>Air Quality</i> .

SUMMARY OF FINDINGS FOR ALL ALTERNATIVES CONSIDERED (Continued)

Resource/Issue	Preferred Alternative	Alternative 2	No-Action Alternative
Cultural Resources	No adverse effect on cultural resources because there would be no significant change in the character-defining features of B230.	Adverse effects on cultural resources through demolition of NRHP-eligible B230.	Conditions would remain as described in Section 3.2, <i>Cultural Resources</i> .
Hazardous Materials and Wastes	No impacts on groundwater resources or resulting from groundwater contamination. No impacts on or resulting from stormwater runoff. Negligible impacts resulting from potential generation of regulated waste from asbestos-containing materials or lead-based paint. Regulated wastes would be contained and disposed of by a licensed contractor. No change in impacts related to the use of hazardous materials as part of 552d ACW operations. Relocation of hazardous materials storage sites or hazardous waste storage sites may occur during and following renovation activities, but this would not negatively impact those sites.	No impacts on groundwater resources or resulting from groundwater contamination. No impacts on or resulting from stormwater runoff. Negligible impacts resulting from potential generation of regulated waste from asbestos-containing materials or lead-based paint. Regulated wastes would be contained and disposed of by a licensed contractor. No change in impacts related to the use of hazardous materials as part of 552d ACW operations. Relocation of hazardous materials storage sites or hazardous waste storage sites would occur during demolition activities and construction of a new facility; however, relocation would not negatively impact those sites.	Conditions would remain as described in Section 3.3, <i>Hazardous Materials and Wastes</i> .
Safety	Long-term beneficial impacts on safety, including indoor air quality. No impacts on runway accident protection zones.	Long-term beneficial impacts on safety, including indoor air quality. No impacts on runway accident protection zones.	Conditions would remain as described in Section 3.4, <i>Safety</i> .

SUMMARY OF FINDINGS FOR ALL ALTERNATIVES CONSIDERED (Continued)

Resource/Issue	Preferred Alternative	Alternative 2	No-Action Alternative
Socioeconomics	Short-term beneficial impacts on regional construction employment as well as construction materials through the purchase of such materials. Potential short-term adverse impacts on civilian personnel employed by the OC-ALC Cable Shop if space is not available at TACX prior to commencement of Proposed Action implementation.	Significant short-term adverse impacts to personnel of the 552d ACW during demolition and new construction. Potential short-term adverse impacts on civilian personnel employed by the OC-ALC Cable Shop if space is not available at TACX prior to commencement of project implementation. Short-term beneficial impacts on regional construction employment as well as construction materials through the purchase of such materials.	Conditions would remain as described in Section 3.5, <i>Socioeconomics</i>.
Sustainability	Long-term beneficial impacts on sustainability.	Long-term beneficial impacts on sustainability.	Conditions would remain as described in Section 3.6, <i>Sustainability</i>.
Transportation and Circulation	Short-term negative impacts on parking during renovation activities. Potentially extended duration of activities (20 to 40 years). No permanent impacts on transportation and circulation during building operations.	Negative impacts on parking during construction activities (approximately five years). No permanent impacts on transportation and circulation during building operations.	Conditions would remain as described in Section 3.7, <i>Transportation and Circulation</i>.
Visual Resources	No adverse impacts on local or regional visual resources.	Negligible impacts on local or regional visual resources.	Conditions would remain as described in Section 3.8, <i>Visual Resources</i>.

SUMMARY OF FINDINGS FOR ALL ALTERNATIVES CONSIDERED (Continued)

Resource/Issue	Preferred Alternative	Alternative 2	No-Action Alternative
Biological Resources	Implementation of the Preferred Alternative would occur only within the interior of B230 and would not involve any ground-disturbing activities. Therefore, impacts on or from biological resources would not result, and conditions would remain unchanged from existing conditions. No further biological resources analysis was performed.	Implementation of Alternative 2 would require minimal grading of a previously disturbed area for construction of a new AWACS facility. Construction would occur on the site of the existing concrete building slab. There would be no change from the existing building footprint; therefore, impacts on or from biological resources would not result and conditions would remain unchanged from existing conditions. No further biological resources analysis was performed.	Conditions would remain the same as existing conditions.
Environmental Justice and Protection of Children	All impacts associated with the Preferred Alternative would be localized to the project site and would not directly or indirectly impact potential minority or low-income populations that may occur within the vicinity of Tinker AFB. Implementation of the Preferred Alternative would take place entirely within a controlled access area within the perimeter of Tinker AFB and would not extend to areas where children could be affected. Therefore, no further environmental justice analysis was performed.	For reasons similar to those associated with the Proposed Action, implementation of Alternative 2 would not impact minority or low-income populations or areas where children could be affected. Therefore, no further environmental justice analysis was performed.	The No Action Alternative would have neither beneficial nor adverse effects on environmental justice and protection of children. Conditions would remain the same as existing conditions.

SUMMARY OF FINDINGS FOR ALL ALTERNATIVES CONSIDERED (Continued)

Resource/Issue	Preferred Alternative	Alternative 2	No-Action Alternative
Geology and Soils	Implementation of the Preferred Alternative would not involve any ground-disturbing activities; therefore, impacts on or from geological resources would not result and conditions would remain unchanged from existing conditions. Cutting into the concrete building slab to install equipment piers would occur but would not impact geological resources. Cutting into the concrete slab is evaluated in <i>Hazardous Materials and Wastes</i> (Section 3.3). Therefore, no further geology and soils analysis was performed.	Implementation of Alternative 2 would require minimal grading and excavation in a previously disturbed area for construction of a new AWACS facility. Construction would occur on the site of the existing concrete building slab. Cutting into the existing concrete building slab to install equipment piers would occur but would not impact geological resources. Cutting into the concrete slab is evaluated in <i>Hazardous Materials and Wastes</i> (Section 3.3). Therefore, no further geology and soils analysis was performed.	Conditions would remain the same as existing conditions.
Land Use	Implementation of the Preferred Alternative would not result in any change in the land use designation of the proposed project area. Land use of the proposed project area would remain consistent with the <i>Tinker AFB General Plan</i> (Tinker 2005b). No new types of land use activities would be introduced onto Tinker AFB as a result of the Preferred Alternative. Therefore, impacts on or from land use would not result and conditions would remain unchanged from existing conditions. No further land use analysis was performed.	For reasons similar to the Preferred Alternative, implementation of Alternative 2 would not result in impacts to or from land use and conditions would remain unchanged from existing conditions. Therefore, no further land use analysis was performed.	Conditions would remain the same as existing conditions.

SUMMARY OF FINDINGS FOR ALL ALTERNATIVES CONSIDERED (Continued)

Resource/Issue	Preferred Alternative	Alternative 2	No-Action Alternative
Noise and Vibration	Implementation of the Preferred Alternative would include short-term construction noise. No change in long-term operation-related noise would occur because operations activities would remain the same as currently conducted within B230. B230 is located along the flightline and immediately north of the Tinker AFB airfield, which is in constant use. Noise generated during renovation activity would be similar to ambient noise levels at Tinker AFB. Therefore, ambient noise and vibrations at Tinker AFB would remain relatively unchanged from existing conditions, and no further noise and vibration analysis was performed.	For reasons similar to the Preferred Alternative, implementation of Alternative 2 would not result in impacts on noise and vibration. Therefore, no further noise and vibration analysis was performed.	Conditions would remain the same as existing conditions.
Water Resources	Implementation of the Preferred Alternative would occur only within the interior of B230 and would not alter the existing building footprint. Construction would occur on the site of the existing concrete building slab. No surface water resources (e.g., lakes, streams, wetlands) are in the immediate vicinity of B230, and because there would be no ground-disturbing activities, there would be no impacts on or from groundwater. Therefore, impacts on or from water resources would not result, and conditions would remain unchanged from existing conditions. No further water resources analysis was performed. (Potential impacts on or resulting from contaminated groundwater resulting from cutting into the concrete slab are addressed in Section 4.3, <i>Hazardous Materials and Wastes</i> , and are not covered under <i>Water Resources</i> .)	Implementation of Alternative 2 would require minimal grading of a previously disturbed area for construction of a new AWACS facility; however, there would be no change from the existing building footprint. Construction would occur on the site of the existing concrete building slab. No surface water resources (e.g., lakes, streams, wetlands) are in the immediate vicinity of B230, and due to the minimal ground-disturbing activities, no impacts on or from groundwater are anticipated. Therefore, no further water resources analysis was performed. (Potential impacts due to stormwater runoff or contaminated groundwater resulting from cutting into the concrete slab are addressed in Section 4.3, <i>Hazardous Materials and Wastes</i> , and are not included under <i>Water Resources</i> .)	Conditions would remain the same as existing conditions.

CUMULATIVE IMPACTS: The EA assessed the cumulative impacts of implementing the Preferred Alternative simultaneously with known current and future projects, and no significant effects were identified. Because of the potential 20- to 40-year duration of the B230 renovation, however, is it likely that as yet undefined and unscheduled projects will be undertaken in the future, potentially causing environmental impacts on air quality and traffic. Given that such future projects would be required to implement best management practices to mitigate any fugitive dust and reduce combustion emissions below significance thresholds, air quality impacts would still be considered to be negligible. Traffic impacts may occur during peak traffic hours if unidentified future projects result in increased travel by construction equipment and construction workers. However, construction activities would be temporary; therefore, cumulative impacts to transportation and circulation related to construction are expected to be less than significant.

PERMITS: Implementation of the Preferred Alternative would not require modification of current permits at Tinker AFB.

PUBLIC COMMENTS: A Notice of Availability for public review of the Draft EA was published in *The Oklahoman* and *Tinker Take Off* on 13 January 2012. The Draft EA was available for public review at the Midwest City Public Library. The public review period lasted for 15 days, and no public comments regarding the EA were received; therefore, no comments were incorporated as part of the Final EA.

DECISION:

I conclude that implementation of the Proposed Action through the Preferred Alternative will not have a significant impact on the natural or human environment. An environmental impact statement is not required for this action. This analysis fulfills the requirements of the NEPA, the President's Council on Environmental Quality, and 32 CFR 989.



STEVEN J. BLEYMAIER, Colonel, USAF
Commander

27 Apr 12
Date

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FINAL

**U.S. AIR FORCE
ENVIRONMENTAL ASSESSMENT
REPAIR AND RENOVATE
AIRBORNE WARNING AND CONTROL SYSTEM
MAINTENANCE GROUP COMPLEX, BUILDING 230

TINKER AIR FORCE BASE, OKLAHOMA**



**United States Air Force
Air Force Materiel Command

Tinker Air Force Base, Oklahoma**

February 2012

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FINAL

U.S. AIR FORCE

ENVIRONMENTAL ASSESSMENT

REPAIR AND RENOVATE

AIRBORNE WARNING AND CONTROL SYSTEM
MAINTENANCE GROUP COMPLEX, BUILDING 230

TINKER AIR FORCE BASE, OKLAHOMA



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LIST OF ACRONYMS

§	Section
°F	degrees Fahrenheit
ACM	asbestos-containing material
ACOG	Association of Central Oklahoma Governments
ACW	Air Control Wing
ADA	Americans with Disabilities Act
AFB	Air Force Base
AFI	Air Force Instruction
AGE	aerospace ground equipment
AGS	Air Guard Station
AP	accumulation point
APZ	accident potential zone
AT/FP	antiterrorism/force protection
AWACS	Airborne Warning and Control System
B	Building
BMP	best management practice
BRAC	Base Realignment and Closure
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFC	chlorofluorocarbon
CFR	Code of Federal Regulations
CG	consolidated groundwater
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	equivalent carbon dioxide
CRP	Compliance Restoration Program
CZ	clear zone
DEQ	Oklahoma Department of Environmental Quality
DET9	Detachment 9
DMRT	Depot Maintenance Re-engineering and Transformation
DoD	Department of Defense
EA	Environmental Assessment
ECAMP	Environmental Compliance and Management Program
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act
EO	Executive Order
EPA	US Environmental Protection Agency
ERP	Environmental Restoration Program
FY	fiscal year
GHG	greenhouse gas
GWMU	groundwater management units
HAP	hazardous air pollutant

LIST OF ACRONYMS (Continued)

HCFC	hydrochlorofluorocarbon
HFC	hydrofluorocarbon
HMMP	Hazardous Materials Management Program
HMMS	Hazardous Materials Management System
HVAC	heating, ventilation, and air conditioning
HWSF	hazardous waste storage facility
I-	Interstate
IAP	initial accumulation point
ICRMP	Integrated Cultural Resources Management Plan
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
IRA-O	interim remedial action – in operation
IRP	Installation Restoration Program
JP-	jet propellant
LEED	Leadership in Energy and Environmental Design
MILCON	military construction
MLRA	major land resource area
MOS	Maintenance Operations Squadron
Mogas	motor gasoline
MROTC	Maintenance, Repair, and Overhaul Technology Center
MSX	Maintenance Squadron
MXG	Maintenance Group
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFPA	National Fire Protection Association
NFRAP	no further remedial action planned
NHPA	National Historic Preservation Act
NO ₂	nitrogen dioxide
NRHP	National Register of Historic Places
OC-ALC	Oklahoma City Air Logistics Center
OCC	Oklahoma Corporation Commission
OSS	Operations Support Squadron
OT	other (restoration program site)
PF-	pulverized fuel
PFC	perfluorocarbon
PM ₁₀	particulate matter 10 microns in diameter
PM _{2.5}	particulate matter 2.5 microns in diameter
PSD	prevention of significant deterioration
R-	refueler vehicle
RA-O	remedial action – in operation
RCRA	Resource Conservation and Recovery Act
RFI	Resource Conservation and Recovery Act Facility Investigation
RI	remedial investigation
RW	radioactive waste
SE	southeast

LIST OF ACRONYMS (Continued)

sf	square foot (feet)
SF ₆	sulfur hexafluoride
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO ₂	sulfur dioxide
ST	storage tank
SWPPP	Stormwater Pollution Prevention Plan
TACX	Tinker Aerospace Complex
TCE	trichloroethene
tpy	tons per year
TSDF	treatment, storage, and disposal facility
UFC	Unified Facilities Criteria
US	United States
USAF	United States Air Force
USC	United States Code
UST	underground storage tank
VAV	variable air volume
VEP	Vacuum-enhanced pumping

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SECTION 1.0 OVERVIEW

1.1 Introduction

The mission of the 552d Air Control Wing (ACW) at Tinker Air Force Base (AFB) is to organize, train, equip, and maintain combat-ready forces, aircraft, and communications equipment for rapid deployment across the world, bringing flexible and responsive battle management capability to combatant commanders (Tinker AFB 2010a). The 552d ACW is responsible to the Commander of Air Force Combat Command for the operations, maintenance, logistics, training, and combat support of the E-3 Airborne Warning and Control System (AWACS) aircraft, and is currently the nation's sole AWACS wing (Tinker AFB 2010a). The 552d ACW comprises three groups: the 552d Operations Group, the 552d Maintenance Group (MXG) and the 552d Air Control Group.

The 552d ACW occupies facilities in two areas of Tinker AFB, referred to as the North and South 552d ACW campuses. The North 552d ACW Campus includes the following buildings and functions:

- Building (B) 202 Mission Training Center
- B215 Training Squadron
- B217 Training Facility
- B220 Aerospace Ground Equipment (AGE)
- B230 MXG Complex
- B255 Squadron Operations
- B280 552d Wing Headquarters
- B282 Squadron Operations
- B283 Operations Support Squadron
- B284 Communications Group and Legacy Mission Simulators
- B285 Future Air Control Group and Operations Group Standards and Evaluation Offices
- B289 Wash Rack
- B296 552d ACW Supply

Several facilities on the south portion of Tinker AFB are also used by the 552d ACW and comprise the South 552d ACW Campus:

- B976 Fuels Hangar
- B985 South AGE Building
- B986 Forward Operating Location for Operational Readiness Exercises and Operational Readiness Inspections
- B989 Former Alert Facility

B986 and B989 are currently occupied by the 966th Flying Training Squadron; however, B986 is also used at times by the 552d ACW (Tinker AFB 2008a).

The 552d ACW employs approximately 4,600 personnel, of which 1,800 work in maintenance operations. The majority of maintenance operations for the E-3 Sentry, an AWACS aircraft, is conducted in B230 (MXG Complex), part of the North 552d ACW Campus on Tinker AFB. Maintenance activities performed in B230 include unit-level maintenance such as routine inspections, servicing, and aircraft repairs. Maintenance operations in B230 currently follow a three-shift schedule and rely upon approximately 1,040 personnel to perform aircraft maintenance and related support functions. This team of 1,040 maintenance personnel services a fleet of 28 E-3 AWACS, which typically includes full pre- and post-flight maintenance and systems checks for sortie training and operations missions. A *sortie* represents an aircraft operation with a single takeoff and landing; the 552d ACW directs logistics support for and generates approximately 2,050 E-3 sorties annually.

B230 measures 537,940 square feet (sf) and contains four large maintenance hangars with supporting administrative and shop areas. The building is just north of the principal parking apron of the airfield, which gives aircraft easy access to the facility. To access the maintenance hangars, aircraft are towed directly from the principal parking apron of the Tinker AFB airfield (immediately south of B230) to the aircraft parking at B230.

B230 was constructed in 1942 to accommodate the production of B-25 bombers during World War II; the building is currently nearing the end of its useful life and needs to be replaced or modernized (Tinker AFB 2010b). B230 has been determined as individually eligible for listing on the National Register of Historic Places (NRHP). The overall structure and framework of B230 is in good condition; however, interior utilities and general interior layout are outdated and too inefficient to accommodate modern aircraft servicing needs and technological advances related to both building efficiency and aircraft maintenance requirements. Access to and within B230 is not in compliance with the Americans with Disabilities Act (ADA) and does not meet electrical, fire safety, or building codes or antiterrorism/force protection (AT/FP) requirements. Due to its location within a restricted access area, modifications to B230 to meet AT/FP compliance (e.g., parking or street set-backs) are not needed. Since its construction, the internal layout of B230 has changed to accommodate immediate need and has evolved into separate and distinct divisions using hard walls to divide areas. The outcome is a poorly designed layout of B230 that is inefficient for the current workload; separate work areas require the duplication of

equipment and multiple trips between work teams and projects. Inefficient work areas have also led to increased maintenance and systems check times, which may negatively impact the time required to prepare for each E-3 AWACS sortie and therefore decreases the potential for an optimal E-3 AWACS sortie generation rate of the 552d ACW.

Much of the existing heating, ventilation, and air conditioning (HVAC) system is nonoperational and has been abandoned in place (Tinker AFB 2008a). Due to the age and inefficient location of utilities, energy waste and energy inefficiencies are also a concern in B230 (Tinker AFB 2010b). The current facility has had utilities installed to work around the existing inadequacies (e.g., nonoperational HVAC in the attic space). Such piecemeal installations have been repeated throughout B230 to accommodate for utility inadequacies; this approach has resulted in wasteful use of energy resources. Inadequate and inefficient utilities can lead to reduced operating speed of equipment, machinery, and personnel, creating further inefficiencies in the workspace within B230. Numerous health and safety concerns also exist in B230 due to entryways and hallways with travel distances for egress beyond those dictated by the National Fire Protection Association (NFPA) 101 Life Safety Code. Most work areas in B230 also lack fire detection systems or alarms, and the existing aqueous firefighting foam fire suppression system does not meet code. The wet-pipe fire suppression sprinkler heads installed in the 1950s also no longer meet code.

Repair and renovation of B230 has been proposed to maintain Tinker AFB's mission effectiveness and optimize the sortie generation rates of the 552d ACW. The Proposed Action, the repair and renovation of B230, would enable Tinker AFB to meet mission requirements and fully utilize existing facilities and would provide the flexibility to accommodate current and future workload.

This Environmental Assessment (EA) addresses the potential impacts of the Proposed Action on the human and natural environment as required by the National Environmental Policy Act (NEPA) of 1969, as amended (Title 42, United States Code Sections 4321 through 4347 [42 USC §§4321-4347]), and in accordance with the Council on Environmental Quality (CEQ) regulations implementing the procedural provisions of NEPA (Title 40, Code of Federal Regulations Parts 1500 through 1508 [40 CFR 1500-1508]) and Air Force Instruction (AFI) 32-7061, entitled *Environmental Impact Analysis Process* (EIAP) (32 CFR 989).

1.2 Purpose and Need

The *purpose* of the Proposed Action is to improve and modernize the interior building space of B230 to accommodate the existing and future 552d ACW maintenance workload at Tinker AFB in an efficient, safe, maintenance-friendly, and energy-efficient manner. The Proposed Action would maintain Tinker AFB mission effectiveness and optimize sortie generation rates of the 552d ACW.

The *need* for the Proposed Action is that current facilities in B230 are outdated and inefficient and negatively impact the 552d ACW mission effectiveness and E-3 AWACS sortie generation rates. The current layout of B230 is poorly designed for the current workload; work areas are separated in a way that creates inefficiencies within work teams and projects resulting from multiple trips between work areas. Inefficient work areas result in increased maintenance and systems check times, which negatively impact the E-3 AWACS sortie generation rates of the 552d ACW. Numerous health and safety concerns exist in B230 due to improper ingress and egress through entryways and hallways, a lack of fire detection systems or alarms, electrical utilities building code violations, and a fire suppression system that does not meet current standards and code. Existing utilities are outdated, require constant maintenance, and present inefficient use of energy resources, resulting in increased facility operating costs. Because of these issues, a Fire Safety Deficiency 1¹ and a corrective action plan for health, fire, and safety issues are in the process of being finalized.

If the Proposed Action is not implemented, the ability to inspect, service, and repair aircraft systems in an expeditious fashion will not keep pace with the increasing mission objectives and training demands. As such, the ability for aircrews to mobilize safely, efficiently, and quickly for routine training, operation missions, or national emergencies would be jeopardized, limiting mission response effectiveness and capability. The outdated and inefficient facility hinders the mission effectiveness, safety, and sortie generation rates of the 552d ACW and negatively impacts mission accomplishment. Execution of the Proposed Action is critical to the future E-3 AWACS mission and is necessary to ensure the 552d ACW remains war ready throughout the expected E-3 AWACS service life and beyond.

1.3 Location, History and Current Mission

1.3.1 Tinker Air Force Base

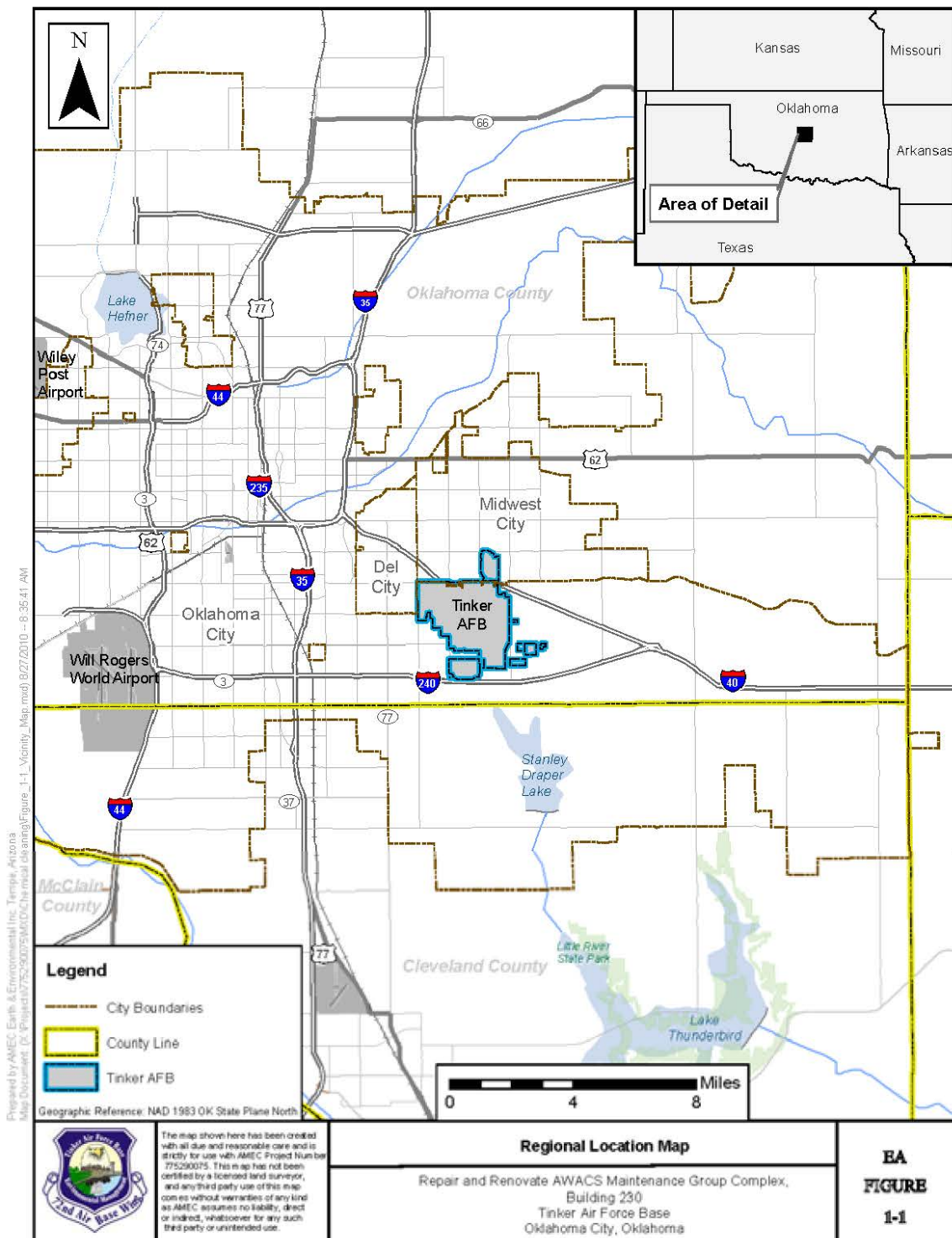
Tinker AFB is within the city limits of Oklahoma City, 5 miles east of downtown (Figure 1-1). The main portion of the base is bordered by Interstate 40 (I-40), Southeast (SE) 15th Street, and SE 29th Street on the north; Douglas Boulevard and Post Road on the east; I-240 on the south; and Sooner Road on the west (Figure 1-2). Midwest City and Del City are north and northwest of Tinker AFB, respectively.

Tinker AFB's largest organization is the Oklahoma City Air Logistics Center (OC-ALC). The OC-ALC is the largest of three air logistics centers in the United States Air Force (USAF) Materiel Command and provides depot maintenance, product support, services and supply chain

¹ A Fire Safety Deficiency 1 includes missing fire protection systems or missing National Fire Protection Association 101, *Life Safety Code*®, features in any building or process. National Fire Protection Association 101, *Life Safety Code*®, establishes the specific minimum fire protection feature requirements for existing buildings (AFI 32-10141, *Planning and Programming Fire Safety Deficiency Correction Projects*).

management, and information support for 31 weapon systems, 10 commands, 93 USAF bases, and 46 foreign nations (Tinker AFB 2010c). The OC-ALC is the worldwide manager for a wide range of aircraft, engines, missiles, software, and avionics and accessories components.

Currently, Tinker AFB encompasses approximately 5,460 acres and contains an airfield and other facilities that support various associated units at the base (Figure 1-2) (Tinker AFB 2006). Tinker AFB provides specialized logistics support, management, maintenance, and distribution to defense weapons systems worldwide. Tinker AFB is divided into seven architectural districts, each with specific land uses. The 72d Air Base Wing is the host command.





Associated units at the base include the OC-ALC, the 552d Air Control Wing, the 507th Air Refueling Wing, the United States (US) Navy Command Strategic Communications Wing One, the 3d Combat Communications Group, and the 38th Cyberspace Engineering Group. Approximately 27,000 personnel, plus additional visitors, access the base each day (Tinker AFB 2010c).

1.4 Summary of Environmental Study Requirements

The EIAP is the process by which federal agencies facilitate compliance with environmental regulations. NEPA is the primary legislation affecting these agencies' decision-making process. This act and other facets of the EIAP are described in the following sections.

1.4.1 National Environmental Policy Act

NEPA requires that federal agencies consider potential environmental consequences of proposed actions. The law's intent is to protect, restore, or enhance the environment through well-informed federal decisions. The CEQ was established under NEPA for the purpose of implementing and overseeing federal policies as they relate to this process. In 1978, the CEQ issued *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR 1500-1508 [CEQ 1978]). The Air Force developed its own procedural regulations for implementing NEPA, codified at 32 CFR 989. These regulations specify that an EA be prepared to accomplish the following:

- Briefly provide sufficient analysis and evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact
- Aid in an agency's compliance with NEPA when no EIS is necessary
- Facilitate preparation of an EIS when one is necessary

Further, to comply with other relevant environmental requirements (e.g., the Safe Drinking Water Act, Endangered Species Act and National Historic Preservation Act [NHPA]) and to assess potential environmental impacts, the EIAP and decision-making process for a proposed action involves a thorough examination of all environmental issues pertinent to the action. The decision-making process includes a study of environmental issues related to the proposed construction and operations changes at Tinker AFB.

1.4.2 Scope of the Environmental Assessment

This EA will address the full breadth of potential environmental, cultural, and socioeconomic impacts associated with the Proposed Action. The geographic area addressed will include the Proposed Action site and immediately surrounding environs. In addition to the Proposed Action, the EA will assess potential impacts associated with reasonable alternatives to the Proposed Action and actions associated with the Proposed Action.

Resources analyzed will include the standard required “critical elements of the human environment,” as defined by NEPA, as well as additional issues identified by Tinker AFB staff and the USAF. The scope of analyses is based on the requirements of CEQ and the additional resources identified by Tinker AFB staff.

1.4.3 Interagency and Intergovernmental Coordination for Environmental Planning

Public involvement is a useful component of the EA process; it includes both agencies and members of the public. Public involvement occurs primarily during the public comment period. Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) is a federally mandated process for informing and coordinating with other governmental agencies regarding proposed actions. As detailed in 40 CFR 1501.4(b), CEQ regulations require intergovernmental notifications prior to making any detailed statement of environmental impacts. Through the IICEP process (per AFI 32-7060, *Interagency and Intergovernmental Coordination for Environmental Planning*), the USAF notifies relevant federal, state, and local agencies and allows them sufficient time to make known their environmental concerns specific to a proposed action (see Appendix A). Comments and concerns submitted by these agencies during the IICEP process are subsequently incorporated into the analysis of potential environmental impacts conducted as part of the EA. No agency comments on the environmental analysis of the Proposed Action were received. NHPA Section 106 consultation was also conducted as part of the EA, due to the historic status of B230.

For the Proposed Action under consideration, a draft EA was issued, the document was sent directly to identified agencies, a notice of availability was published in *The Oklahoman* and *Tinker Take Off*, and copies of the draft EA were placed at the Midwest City Library (see Appendix A). Upon publication of the notice of availability and placement of the EA in the public library, the 15-day public comment period was commenced. During the public comment period, all interested individuals were able to request to view a copy of the draft EA at the selected library and were able to submit written comments. No public comments on the environmental analysis of the Proposed Action were received.

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SECTION 2.0

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 Introduction

The ability to inspect, service, and repair aircraft systems of advancing technology in an expeditious fashion both pre- and post-flight must keep pace with increasing mission and training demands in order to enable aircrews to mobilize safely, efficiently, and quickly for routine training, operation missions, or national emergencies and to maintain mission response effectiveness and capability. The USAF has determined that the 552d ACW mission includes as a primary component the safe, efficient, and combat-ready maintenance of the E-3 AWACS aircraft at Tinker AFB; therefore, repair and renovations to improve and update maintenance facilities for the 552d ACW are needed to meet this mission objective.

As required by NEPA, the potential impacts of the Proposed Action on the human and natural environment must be evaluated, and reasonable alternatives to the Proposed Action must be considered.

2.2 Proposed Action

The Proposed Action is to provide improved 552d ACW maintenance facilities, including collocated maintenance areas and a more efficient facility layout for B230 that would enable E-3 AWACS sorties to continue to be executed in a safe, maintenance-friendly manner. Implementation of the Proposed Action would provide improved and modernized space for the Maintenance Operations Squadron (MOS) and a portion of the Aircraft Maintenance Squadron, and would consolidate the 552d MXG office functions, which are currently dispersed throughout the B230. The Proposed Action would enable the facilities in B230 to accommodate existing and future workload in an efficient, safe, maintenance-friendly, and energy-efficient manner. Currently, 552d ACW maintenance activities operate in three shifts (i.e., aircraft modifications are performed up to 24 hours per day, 252 days per year). Implementation of the Proposed Action would not include a change in workload; therefore, no change in personnel is anticipated under the Proposed Action.

Proposed repairs and renovations of B230 would be conducted in compliance with the Unified Facilities Criteria (UFC) system issued by the Department of Defense (DoD) in 2002, including the DoD *Minimum Antiterrorism Standards for Buildings* (UFC 40-010-01), to minimize the possibility of mass casualties in buildings or portions of buildings owned, leased, privatized, or otherwise occupied, managed, or controlled by or for the DoD (DoD 2007). The standards provide appropriate, implementable, and enforceable measures to establish a level of protection against terrorist attacks. Construction activities performed under the Proposed Action would meet antiterrorism/force protection (AT/FP) requirements for construction sites and transportation to and from the construction site and other areas of the base. Sustainable principles will be integrated into the design, development, and construction of the project in accordance with Executive Order (EO) 13423, *Strengthening Federal Environmental, Energy, and*

Transportation Management, and other applicable laws and executive orders. The intent of these standards is achieved through prudent planning, real estate acquisition, and design and construction practices; these standards apply to new facilities and to existing facilities when undergoing major investments, conversion of use, building additions, or glazing replacement.

If the need for Proposed Action is not met, preparation of air crew personnel and equipment and the continuation of critical maintenance functions would be jeopardized, limiting emergency and wartime response. The outdated and inefficient facility hinders the mission effectiveness, safety, and sortie generation rates of the 552d ACW and negatively impacts mission accomplishment. Execution of the Proposed Action is critical to the future E-3 AWACS mission and is necessary to ensure the 552d ACW remains war ready throughout the expected E-3 service life and beyond.

2.3 Alternatives Selection Criteria

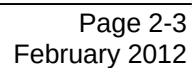
The range of reasonable alternatives considered in this Description of Proposed Action and Alternatives is limited to those alternatives that would satisfy the purpose and need for the Proposed Action as described in Section 1.2, *Purpose and Need*. Currently, the outdated and inefficient facility layout hinders the mission effectiveness, safety, and sortie generation rates of the 552d ACW and negatively impacts mission accomplishment. Reasonable alternatives would fulfill the goal of improving the facility layout and utilities and enable B230 to accommodate existing and future 552d ACW workload in a safe, maintenance-friendly, and energy-efficient manner. The range of reasonable alternatives must also meet essential technical, engineering, and economic threshold requirements to ensure that each alternative is environmentally sound, economically viable, and compliant with governing standards and regulations.

2.4 Alternatives

Alternative project approaches to implement the Proposed Action were identified and evaluated. Three alternatives were identified, including the No-Action Alternative (which is a required alternative under NEPA). Each alternative's adequacy for satisfying the project's objectives was evaluated, and a summary of those evaluations is provided below.

2.4.1 Alternative 1, Preferred Alternative: Repair and Renovate Existing Building 230

Alternative 1, the Preferred Alternative, entails the repair and renovation of B230, in which the maintenance operations of the 552d ACW are performed (Figure 2-1). The interior of B230 would be renovated to create an open industrial plan similar to the facility layout when originally constructed, and similar in appearance to B3001 on Tinker AFB. B3001 was chosen as a model for the B230 renovation due to its open, modern industrial design and the similarity of industrial operations performed in B3001 to those conducted at B230.



Also included in the Preferred Alternative are the following:

- Construction of a 32,000-sf mezzanine for administrative office space
- Updating utilities within the building
- Updating fire detection and suppression systems to meet current code
- Collocating maintenance bays
- Correcting entryways and hallways to meet egress requirements of NFPA, UFC No. 3-600-01, and International Building Code
- Cutting into the concrete building slab to install piers in work areas and an elevator compliant with ADA guidelines.
- A temporary staging area for equipment to be used for construction/renovation activities, to be located in a portion of the existing B230 parking lot

A key component of the renovation for B230 would be the provision of swing space, which would allow operations to continue during construction work. The recent acquisition of the General Motors facility by the Tinker Aerospace Complex (TACX) has enabled OC-ALC Cable Shop operations currently housed in the northwestern corner of B230 to move to TACX (Tinker AFB 2010b). Relocation of the Cable Shop from B230 would establish a vacant area of approximately 40,000 sf that can be used as swing space to accommodate various units during renovations (Tinker AFB 2010b).

Under implementation of the Preferred Alternative, repair and renovation of B230 would be completed in nine phases. The proposed phasing plan is summarized in Table 2-1.

Table 2-1. Phasing Plan for Building 230 Renovation

Phase	Project Title	Area (sf)	Fiscal Year (FY)
1	Demolish abandoned HVAC and miscellaneous building utilities in attic space; renovate four aircraft maintenance hangar dock spaces	230,000	2016
2	Repair HVAC and building utilities in attic space	230,000	2018
3	Renovate area for Aircraft Maintenance Squadron; construct mezzanine floor	30,000	2018
4	Renovate area for MSX; construct mezzanine floor	25,000	2020
5	Renovate area for MOS/MXS/AGS	29,000	2022
6	Renovate area for supply/swing area	20,000	2024
7	Renovate area for MXG/MOS/MXS	24,000	2026
8	Renovate area for DET9/MOS/MXS	24,000	2028
9	Renovate area for DET9/MXS/MOS	36,000	2030
10	Renovate area for DET9/MXS/MOS	24,000	2032
11	Renovate area for supply	43,000	2034
Notes: AGS – Air Guard Station MOS – Maintenance Operations Squadron MSX – Maintenance Squadron DET9 – Detachment 9			

The first two phases identified in Table 2-1 have already been initiated, and a Categorical Exclusion compliant with NEPA was prepared for those activities. Although an approximate timeline has been developed, the actual construction/renovation activities may occur on a protracted timeline (20 to 40 years) depending on availability of funds for each phase of the project.

The proposed renovations would enable B230 to meet electrical and building codes and incorporate energy-efficiency and sustainability goals in support of the DoD Leadership in Energy and Environmental Design (LEED) goals for new construction. It is USAF policy to apply sustainable development concepts in the planning, design, construction, environmental management, operation, maintenance, and disposal of facilities and infrastructure projects, consistent with budget and mission requirements. Many of the LEED goals and principles can be applied to the renovation of B230 to help reduce energy use and water consumption by using more efficient utility design and layout.

B230 is individually eligible for listing to the NRHP and is discussed in greater detail in Section 3.2, *Cultural Resources*. Implementation of the Proposed Action would not involve interior architectural features, would not significantly affect the exterior of the building, and would not result in replacement of architecturally significant features with new features inconsistent with the original architectural style of the building.

Implementation of the Preferred Alternative would provide updated, maintenance-friendly, safe, and energy-efficient facilities in B230 to accommodate existing and future workload. Construction activities related to repairs and renovations would also be conducted in accordance with AT/FP requirements. Because B230 is a historic building, NHPA Section 106 consultation will be required as part of the EA process. The cost of repair and renovation of B230 is anticipated to cost approximately \$225 to \$270 million less than the replacement cost of replacing the entire building and relocating the associated aircraft parking apron (Tinker AFB 2010b).

2.4.2 Alternative 2: New Construction

Under Alternative 2, improvements to the 552d ACW maintenance operations facility would be implemented through construction of a new 537,940 sf facility on Tinker AFB. LEED principles would be incorporated into the design, demolition, and construction involved in the project to create a more energy-efficient and sustainable facility. New construction would provide a modern, more efficient, maintenance-friendly layout to support the 552d ACW mission, including E-3 AWACS sortie generation, by including current and projected mission requirements in the building design. Implementation of Alternative 2 would ensure the facility would be in compliance with ADA, fire safety, and AT/FP codes due to requirements placed on new construction of facilities.

Under this alternative, new construction of the 552d ACW is proposed for the site of the existing B230; therefore, demolition of the existing B230 would be included as an element of Alternative 2. Construction and demolition costs of Alternative 2 are anticipated to reach \$1 billion, much greater than the cost anticipated for the Preferred Alternative. The demolition of B230 would require temporary relocation of the 552d ACW maintenance operations to another facility on Tinker AFB while the new facility was being constructed; however, no suitable facility exists along the flightline on Tinker AFB. Therefore, 552d ACW maintenance operations would be impacted throughout the duration of construction activities. Although new construction would not require a phased approach to accommodate workload and would therefore be of shorter duration than the phased approach of the Preferred Alternative, the availability of funds to cover the entire cost of new construction would not be guaranteed. Demolition and construction of Alternative 2 is anticipated to occur over a five-year period. Construction staging areas would be located in a portion of the existing parking area for B230 and would be occupied by construction equipment for the five-year period.

2.4.3 Alternative 3: No-Action Alternative

Under the No-Action Alternative, Tinker AFB would not implement the Proposed Action, and maintenance operations facilities for the 552d ACW would not be improved and would not assist in streamlining the flow of operations, improving safety, or better accommodating current and future workload. The existing utilities would remain as they currently are, continuing the wasteful use of energy resources and funds necessary to operate, maintain, and repair outdated and inefficient systems. The current facilities in B230 would remain outdated and inefficient; would constrain mission effectiveness, safety, and sortie generation rates of the 552d ACW; and would generally negatively impact mission accomplishment. Under the No-Action Alternative, B230 would not be updated to be ADA-compliant, and would not meet electrical code, fire safety, and building codes requirements. Execution of the Proposed Action – which would not occur under this alternative – is critical to the future E-3 AWACS mission and is necessary to ensure that the 552d ACW remains war ready throughout the expected E-3 service life and beyond.

Although this alternative would not fulfill the purpose and need of the Proposed Action, it will be carried forward for analysis as required by the CEQ. CEQ regulations for the implementation of NEPA stipulate that the No-Action Alternative must be considered to assess environmental consequences that may occur if the Proposed Action is not implemented.

2.5 Alternatives Considered but Not Carried Forward

Two additional alternatives were identified but eliminated from further consideration. An alternative entailing the relocation of the E-3 AWACS to a different facility at Tinker AFB was considered; however, this alternative was eliminated because no other facilities along the flightline at Tinker AFB have adequate facilities to support the mission and operations of the E-3 AWACS.

Another alternative entailing the construction of a new facility on Tinker AFB without the demolition of B230 was also considered; however, no available space along the flightline was suitable for construction of an adequately sized facility and associated aircraft parking apron.

2.6 Reasonably Foreseeable Concurrent Actions

Implementation of the Proposed Action and associated potential environmental impacts would be concurrent with other projects and developments proposed for Tinker AFB near B230. In addition to the Proposed Action, other projects occurring or planned for Tinker AFB include the following:

- Add to and Alter Existing Type III Hydrant Fueling System
- Repair by Replacement Jet Propellant (JP8) Fuel Transfer Line
- Construct Vehicle Fueling Station
- Replace B230 Hangar Doors, Docks 2 and 4
- Renovate of B201 West
- Widen Taxiway M
- Air Traffic Control Tower Construction
- T9 Test Cell Construction at TACX
- Renovate Chemical Cleaning Line in B3001
- Steam Plant Decentralization
- Demolition of B3108
- Physical Fitness Center Construction
- Child Development Center Construction on Air Depot Boulevard
- Consolidated Security Forces, South Forty Development
- Military Family Housing Privatization
- B3001 Renovation – Hangar Door and Two-story Lean-to
- Maintenance, Repair, and Overhaul Technology Center (MROTC) Lease
- TACX Acquisition

2.7 Summary of Potential Impacts

Potential impacts are evaluated and described in Section 4, *Environmental Consequences*. Table 2-2 summarizes the potential impacts for fully evaluated resource areas associated with the Preferred Alternative, Alternative 2, or the No-Action Alternative. Table 2-3 provides a summary of resource areas that were not fully evaluated because no impacts on those resources would result from implementation of the Preferred Alternative, Alternative 2, or the No-Action Alternative.

Table 2-2. Summary of Impacts for Fully Evaluated Resources

Resource/Issue	Preferred Alternative	Alternative 2	No-Action Alternative
Air Quality	Temporary (short-term) negligible construction emissions (i.e., construction dust) generated during renovation activities. Temporary combustion emissions from vehicles and heavy-duty equipment used during renovation activities in B230. Long-term beneficial impacts on operational emissions from installation of energy-efficient utilities. Temporary impacts on indoor air quality (e.g., fugitive dust) during renovation activities. Long-term beneficial impacts on indoor air quality from installation of a new buildingwide ventilation system.	Temporary (short-term) construction emissions (i.e., fugitive dust emissions) generated during demolition, ground disturbance, and related site preparation activities. Temporary combustion emissions from vehicles and heavy-duty equipment used during demolition of B230 and construction of a new facility. Long-term beneficial impacts on operational emissions from implementation of energy-efficient utilities in the newly constructed LEED-certified building. Long-term beneficial impacts on indoor air quality from installation of a new buildingwide ventilation system.	Conditions would remain as described in Section 3.1, <i>Air Quality</i>.
Cultural Resources	No adverse effect on cultural resources because there would be no significant change in the character-defining features of B230.	Adverse effects on cultural resources through demolition of NRHP-eligible B230.	Conditions would remain as described in Section 3.2, <i>Cultural Resources</i>.
Hazardous Materials and Wastes	No impacts on groundwater resources or resulting from groundwater contamination. No impacts on or resulting from stormwater runoff. Negligible impacts resulting from potential generation of regulated waste from asbestos-containing materials or lead-based paint. Regulated wastes would be contained and disposed of by a licensed contractor. No change in impacts related to the use of hazardous materials as part of 552d ACW operations. Relocation of hazardous materials storage sites or hazardous waste storage sites may occur during and following renovation activities, but this would not negatively impact those sites.	No impacts on groundwater resources or resulting from groundwater contamination. No impacts on or resulting from stormwater runoff. Negligible impacts resulting from potential generation of regulated waste from asbestos-containing materials or lead-based paint. Regulated wastes would be contained and disposed of by a licensed contractor. No change in impacts related to the use of hazardous materials as part of 552d ACW operations. Relocation of hazardous materials storage sites or hazardous waste storage sites would occur during demolition activities and construction of a new facility; however, relocation would not negatively impact those sites.	Conditions would remain as described in Section 3.3, <i>Hazardous Materials and Wastes</i>.

Table 2-2. Summary of Impacts for Fully Evaluated Resources (Continued)

Resource/Issue	Preferred Alternative	Alternative 2	No-Action Alternative
Safety	Long-term beneficial impacts on safety, including indoor air quality. No impacts on runway accident protection zones.	Long-term beneficial impacts on safety, including indoor air quality. No impacts on runway accident protection zones.	Conditions would remain as described in Section 3.4, <i>Safety</i> .
Socioeconomics	Short-term beneficial impacts on regional construction employment as well as construction materials through the purchase of such materials. Potential short-term adverse impacts on civilian personnel employed by the OC-ALC Cable Shop if space is not available at TACX prior to commencement of Proposed Action implementation.	Significant short-term adverse impacts to personnel of the 552d ACW during demolition and new construction. Potential short-term adverse impacts on civilian personnel employed by the OC-ALC Cable Shop if space is not available at TACX prior to commencement of project implementation. Short-term beneficial impacts on regional construction employment as well as construction materials through the purchase of such materials.	Conditions would remain as described in Section 3.5, <i>Socioeconomics</i> .
Sustainability	Long-term beneficial impacts on sustainability.	Long-term beneficial impacts on sustainability.	Conditions would remain as described in Section 3.6, <i>Sustainability</i> .
Transportation and Circulation	Short-term negative impacts on parking during renovation activities. Potentially extended duration of activities (20 to 40 years). No permanent impacts on transportation and circulation during building operations.	Negative impacts on parking during construction activities (approximately five years). No permanent impacts on transportation and circulation during building operations.	Conditions would remain as described in Section 3.7, <i>Transportation and Circulation</i> .
Visual Resources	No adverse impacts on local or regional visual resources.	Negligible impacts on local or regional visual resources.	Conditions would remain as described in Section 3.8, <i>Visual Resources</i> .

Table 2-3. Summary of No Impact for Resources not Evaluated Further

Resource/Issue	Preferred Alternative	Alternative 2	No-Action Alternative
Biological Resources	Implementation of the Preferred Alternative would occur only within the interior of B230 and would not involve any ground-disturbing activities. Therefore, impacts on or from biological resources would not result, and conditions would remain unchanged from existing conditions. No further biological resources analysis was performed.	Implementation of Alternative 2 would require minimal grading of a previously disturbed area for construction of a new AWACS facility. Construction would occur on the site of the existing concrete building slab. There would be no change from the existing building footprint; therefore, impacts on or from biological resources would not result and conditions would remain unchanged from existing conditions. No further biological resources analysis was performed.	Conditions would remain the same as existing conditions.
Environmental Justice and Protection of Children	All impacts associated with the Preferred Alternative would be localized to the project site and would not directly or indirectly impact potential minority or low-income populations that may occur within the vicinity of Tinker AFB. Implementation of the Preferred Alternative would take place entirely within a controlled access area within the perimeter of Tinker AFB and would not extend to areas where children could be affected. Therefore, no further environmental justice analysis was performed.	For reasons similar to those associated with the Proposed Action, implementation of Alternative 2 would not impact minority or low-income populations or areas where children could be affected. Therefore, no further environmental justice analysis was performed.	The No Action Alternative would have neither beneficial nor adverse effects on environmental justice and protection of children. Conditions would remain the same as existing conditions.
Geology and Soils	Implementation of the Preferred Alternative would not involve any ground-disturbing activities; therefore, impacts on or from geological resources would not result and conditions would remain unchanged from existing conditions. Cutting into the concrete building slab to install equipment piers would occur but would not impact geological resources. Cutting into the concrete slab is evaluated in <i>Hazardous Materials and Wastes</i> (Section 3.3). Therefore, no further geology and soils analysis was performed.	Implementation of Alternative 2 would require minimal grading and excavation in a previously disturbed area for construction of a new AWACS facility. Construction would occur on the site of the existing concrete building slab. Cutting into the existing concrete building slab to install equipment piers would occur but would not impact geological resources. Cutting into the concrete slab is evaluated in <i>Hazardous Materials and Wastes</i> (Section 3.3). Therefore, no further geology and soils analysis was performed.	Conditions would remain the same as existing conditions.

Table 2.3 Summary of No Impact for Resources not Evaluated Further (Continued)

Resource/Issue	Preferred Alternative	Alternative 2	No-Action Alternative
Land Use	Implementation of the Preferred Alternative would not result in any change in the land use designation of the proposed project area. Land use of the proposed project area would remain consistent with the Tinker AFB <i>General Plan</i> (Tinker 2005b). No new types of land use activities would be introduced onto Tinker AFB as a result of the Preferred Alternative. Therefore, impacts on or from land use would not result and conditions would remain unchanged from existing conditions. No further land use analysis was performed.	For reasons similar to the Preferred Alternative, implementation of Alternative 2 would not result in impacts to or from land use and conditions would remain unchanged from existing conditions. Therefore, no further land use analysis was performed.	Conditions would remain the same as existing conditions.
Noise and Vibration	Implementation of the Preferred Alternative would include short-term construction noise. No change in long-term operation-related noise would occur because operations activities would remain the same as currently conducted within B230. B230 is located along the flightline and immediately north of the Tinker AFB airfield, which is in constant use. Noise generated during renovation activity would be similar to ambient noise levels at Tinker AFB. Therefore, ambient noise and vibrations at Tinker AFB would remain relatively unchanged from existing conditions, and no further noise and vibration analysis was performed.	For reasons similar to the Preferred Alternative, implementation of Alternative 2 would not result in impacts on noise and vibration. Therefore, no further noise and vibration analysis was performed.	Conditions would remain the same as existing conditions.

Table 2.3 Summary of No Impact for Resources not Evaluated Further (Continued)

Resource/Issue	Preferred Alternative	Alternative 2	No-Action Alternative
Water Resources	Implementation of the Preferred Alternative would occur only within the interior of B230 and would not alter the existing building footprint. Construction would occur on the site of the existing concrete building slab. No surface water resources (e.g., lakes, streams, wetlands) are in the immediate vicinity of B230, and because there would be no ground-disturbing activities, there would be no impacts on or from groundwater. Therefore, impacts on or from water resources would not result, and conditions would remain unchanged from existing conditions. No further water resources analysis was performed. (Potential impacts on or resulting from contaminated groundwater resulting from cutting into the concrete slab are addressed in Section 4.3, <i>Hazardous Materials and Wastes</i> , and are not covered under <i>Water Resources</i> .)	Implementation of Alternative 2 would require minimal grading of a previously disturbed area for construction of a new AWACS facility; however, there would be no change from the existing building footprint. Construction would occur on the site of the existing concrete building slab. No surface water resources (e.g., lakes, streams, wetlands) are in the immediate vicinity of B230, and due to the minimal ground-disturbing activities, no impacts on or from groundwater are anticipated. Therefore, no further water resources analysis was performed. (Potential impacts due to stormwater runoff or contaminated groundwater resulting from cutting into the concrete slab are addressed in Section 4.3, <i>Hazardous Materials and Wastes</i> , and are not included under <i>Water Resources</i> .)	Conditions would remain the same as existing conditions.

SECTION 3.0

AFFECTED ENVIRONMENT

This section describes relevant, existing environmental conditions for resources potentially affected by implementation of the Proposed Action. In compliance with NEPA, CEQ regulations, and 32 CFR 989, the description of the affected environment focuses on only those aspects potentially subject to impacts.

Due to the nature of the Proposed Action, the description of the affected environment is limited primarily to Tinker AFB and surrounding areas within Oklahoma County. Resource areas that clearly would not be affected by the Proposed Action are omitted from discussion and include the following: biological resources, environmental justice and protection of children, geology and soils, land use, noise and vibration, and water resources. Resource descriptions focus on the following areas: air quality, cultural resources, hazardous materials and wastes, safety, socioeconomics, sustainability, transportation and circulation, and visual resources.

3.1 Air Quality

3.1.1 Definition of Resource

Air quality in a given location is determined by the concentration of various pollutants in the atmosphere. National Ambient Air Quality Standards (NAAQS) are established by the United States Environmental Protection Agency (EPA) under the Clean Air Act (CAA) for criteria pollutants, including ozone, carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter equal to or less than 10 microns in diameter (PM₁₀), particulate matter equal to or less than 2.5 microns in diameter (PM_{2.5}), and lead. The primary NAAQS set limits to protect public health, including sensitive populations such as children, the elderly, and individuals suffering from respiratory disease, with an adequate margin of safety. The secondary NAAQS set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

Air quality management at USAF installations is established in AFI 32-7040, *Air Quality Compliance*. AFI 32-7040 requires installations to achieve and maintain compliance with all applicable federal, state, and local standards.

EO 13514 also introduced new greenhouse gas (GHG) emission management requirements for the federal government. The EO requires agencies to establish reduction targets for GHG emissions as well as to develop an inventory of GHG emissions. The principal GHGs that enter the atmosphere because of human activities include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and fluorinated gases.

3.1.1.1 Criteria Pollutants

Air quality is affected by emissions from stationary sources (e.g., industrial development), area of fugitive sources (e.g., emissions from wind-blown dust), and mobile sources (e.g., motor

vehicles). Air quality at a given location is a function of several factors, including the quantity and type of pollutants emitted locally and regionally, and the dispersion rates of pollutants in the region. Factors affecting pollutant dispersion include wind speed, wind direction, atmospheric stability, temperature, the presence or absence of inversions, and topography.

Ozone. Ground-level (i.e., terrestrial) ozone is typically formed as a result of complex photochemical reactions in the atmosphere involving volatile organic compounds and nitrogen oxides in the presence of sunlight, mainly in the stratosphere. Ozone is a highly reactive gas that damages lung tissue, reduces lung function and sensitizes the lung to other irritants. Although stratospheric ozone shields the earth from damaging ultraviolet radiation, ground-level ozone is a highly damaging air pollutant and is the primary source of smog. As of March 2008, the EPA published a new standard for 8-hour ozone, revising the 1-hour NAAQS for ozone. The 8-hour standard is more protective of public health and more stringent than the 1-hour standard, and nonattainment areas for the 8-hour ozone standard have now been established. On 19 January 2010, the EPA published in the *Federal Register*, RIN 2060–AP98, Volume 75, Number 11, a proposed new rule revising the NAAQS for ground-level ozone. The commenting period regarding the proposed revisions to the ozone standard ended on 22 March 2010, and the EPA is obtaining additional data. **Carbon Monoxide.** CO is a colorless, odorless, poisonous gas produced by incomplete burning of carbon in fuel. The health threat from CO is most serious for those who suffer from cardiovascular disease, particularly those with angina and peripheral vascular disease.

Nitrogen Dioxide. NO₂ is a highly reactive gas that can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections. Repeated exposure to high concentrations of NO₂ may cause acute respiratory disease in children. Because NO₂ is an important precursor in the formation of ozone, or smog, control of NO₂ emissions is an important component of overall pollution reduction strategies. The two primary sources of NO₂ in the United States are fuel combustion and transportation emissions. On 22 January 2010, the EPA strengthened the health-based NAAQS for NO₂. This action set a new 1-hour standard that defines the maximum allowable concentration observed in any monitoring area. The new NAAQS for NO₂ was published in the *Federal Register* on 9 February 2010, RIN 2060–AO19, Volume 75, Number 26.

Sulfur Dioxide. SO₂ is emitted primarily from stationary source coal and oil combustion, steel mills, refineries, pulp and paper mills, and nonferrous smelters. High concentrations of SO₂ may aggravate existing respiratory and cardiovascular disease; asthmatics and those with emphysema or bronchitis are the most sensitive to SO₂ exposure. SO₂ also contributes to acid rain, which can lead to the acidification of lakes and streams and damage trees. On 2 June 2010, the EPA strengthened the primary NAAQS for SO₂. The new NAAQS for SO₂ established a new 1-hour standard to protect the public from high short-term exposures to SO₂. Additionally, the EPA is revoking the existing annual and 24-hour standards due to insufficient evidence linking long-term exposure to SO₂ and health effects. The secondary SO₂ NAAQS 3-hour standard of 0.5 parts per million, established to protect the public welfare—including effects on soil, water,

visibility, wildlife, crops, vegetation, national monuments and buildings—will remain in effect, but the EPA is assessing the need for a change to the standard under a separate review.

Particulate Matter (PM₁₀ and PM_{2.5}). Particulate matter is a mixture of tiny particles that varies greatly in shape, size, and chemical composition and can comprise metals, soot, soil, and dust. PM₁₀ includes large, coarse particles, whereas PM_{2.5} includes small, fine particles. Sources of coarse particles include crushing or grinding operations and dust from paved or unpaved roads. Sources of fine particles include all types of combustion activities (e.g., motor vehicles, power plants, wood burning) and certain industrial processes. Exposure to PM₁₀ and PM_{2.5} levels exceeding current standards can result in increased lung- and heart-related respiratory illnesses. The EPA has concluded that finer particles (less than 2.5 microns in diameter) are more likely to contribute to long-term health problems than those particles greater than 10 microns in diameter, which typically result in short-term health problems.

Airborne Lead. Airborne lead can be inhaled directly or ingested indirectly by consuming lead-contaminated food, water, or nonfood materials such as dust or soil. Fetuses, infants and children are most sensitive to lead exposure, which has been identified as a factor in high blood pressure and heart disease. Exposure to lead has declined dramatically in the last few decades as a result of the reduction of lead in gasoline and paint, and the elimination of lead from soldered cans.

3.1.1.2 Greenhouse Gases

GHGs are measured by the global warming potential a given type of GHG may cause. The functionally equivalent amount or concentration of CO₂ is used as the reference for measuring global warming potential. Equivalent carbon dioxide (CO₂e) is a unit of measurement for describing GHG concentration. The principal GHGs that enter the atmosphere because of human activities are described below.

Carbon Dioxide. CO₂ is a GHG that enters the atmosphere through the burning of fossil fuels (e.g., oil, natural gas, coal), solid waste decay, trees and wood products and also as a result of chemical reactions (e.g., manufacture of cement). The two primary sources of CO₂ in the US are fuel combustion including transportation emissions. CO₂ can be removed from the atmosphere (or “sequestered”) when it is absorbed by plants as part of the photosynthesis process and biological carbon cycle. (Simply put, a plant takes in CO₂ molecules and combines them with water molecules to make a sugar that feeds the plant, excess oxygen splits from the CO₂ molecules—sunlight provides the energy for this process to occur—and is released back into the atmosphere.) However, in areas where CO₂ concentration ratios may exceed the intake capabilities by plants this gas contributes negatively to GHG effects.

Methane. CH₄ is a GHG that is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.

Nitrous Oxide. N₂O is a GHG that is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.

Fluorinated Gases. Hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF₆), chlorofluorocarbons (CFCs), and hydrochlorofluorocarbons (HCFC) are synthetic, GHGs with high CO₂e factors that are emitted from a variety of industrial processes. HFCs, PFCs, and SF₆ are sometimes used as substitutes for ozone-depleting fluorinated gases (i.e., CFCs, HCFCs, and halons). HFCs, PFCs, and SF₆ are typically emitted in smaller quantities and, while these substances do not deplete ozone, they are potent GHGs and referred to as *high global warming potential gases*.

3.1.1.3 Clean Air Act Amendments

The Clean Air Act Amendments (CAAA) of 1990 place most of the responsibility to achieve compliance with NAAQS on individual states. Areas not in compliance with any of the NAAQS can be declared *nonattainment* areas by the EPA or the appropriate state or local agency. Nonattainment areas are declared for each individual specific pollutant addressed by the NAAQS. To this end, once the EPA declares an area of *nonattainment* status the EPA requires each state to prepare a State Implementation Plan (SIP). A SIP is a compilation of goals, strategies, schedules and enforcement actions that will lead the state into compliance with the NAAQS. To be redesignated to *attainment*, the area must show through monitoring and modeling that the NAAQS are consistently meeting the standards and have been maintained for a period of 10 consecutive years. During this period of time, the declared area is in transitional attainment, or better known as a *maintenance area*.

Under 40 CFR 93, the EPA issued conformity regulations that mandate the federal government not engage, support, or provide financial assistance for licensing or permitting, or approval of any activity that does not conform to an approved SIP or federal implementation plan. This rule applies to all federal actions except for those projects requiring funding or approval from the Department of Transportation, the Federal Highway Administration, the Federal Transit Administration, or the Metropolitan Planning Organization; these projects must instead comply with the conformity rules established by the Department of Transportation. The General Conformity Rule establishes conformity as a process in which economic, environmental, and social aspects of transportation and air quality planning are considered. This rule applies to any federal action that results in direct or indirect emissions of criteria pollutants that exceed the rates specified in 40 CFR 93.153(b)(1) and (2) in a *nonattainment or maintenance area*.

3.1.1.4 Regulatory Changes

Air quality regulatory standards are periodically reviewed by the EPA. Both the Oklahoma Department of Environmental Quality (DEQ) Air Quality Division and the EPA are planning for review of major environmental laws that will likely result in more stringent standards for the criteria pollutants and the determination of Prevention of Significant Deterioration (PSD) rules. The changes that are expected to have the greatest impact on the proposed action are changes to the NAAQS.

The EPA's Fall 2009 Regulatory Plan and Semiannual Regulatory Agenda identifies the agency's plans to reexamine NAAQS for particulate matter, SO₂, ozone and NO₂ and to determine the PSD implications of declaring CO₂ as an air quality pollutant. The anticipated revision of the NAAQS for ground-level ozone to an estimated range of 60 to 70 parts per billion would place Oklahoma County in nonattainment status for ozone (EPA 2010a, 2010b). In 2010 the EPA strengthened the SO₂ and NO₂ standards and has received comments regarding the proposed revisions to ground-level ozone. As of the date of this report proposed revisions for a new ground-level ozone standard have not been published or established in the *Federal Register*.

On 13 May 2010, the EPA issued the final rule on addressing GHG emissions from stationary sources under the CAA. This final rule, also known as the Tailoring Rule, establishes a schedule of CAA permitting programs to define which facilities will be required to obtain PSD and Title V permits. The first scheduled phase began on 2 January 2011, establishing a GHG permitting program for large GHG emitters, such as power plants, refineries, and cement production facilities subject to PSD permitting. Under this new rule, any newly constructed facility or existing facility modified in a way that substantially increases emissions of pollutant other than GHGs will be subject to permitting requirements for GHG emissions under PSD. For these projects, only GHG emissions above 75,000 tons per year (tpy), on a CO₂e basis, will be required to undergo a best available control technology analysis. Similarly under the operating permit program, only sources subject to the program (i.e., newly constructed or existing major sources for pollutants other than GHGs) will be subject to a Title V requirements for GHG (EPA 2010c).

Phase 2 of this rule began in July 2011 and will continue through June 2013. This phase will involve sources subject to PSD permitting requirements for new construction projects that emit GHG emissions of at least 100,000 tpy even if they do not exceed PSD permitting thresholds for any other pollutant. Modifications to existing facilities that increase GHG emissions by at least 75,000 tpy will be subject to permitting requirements, even if they do not significantly increase emissions of any other pollutant. Additionally, operating permit requirements will, for the first time, apply to sources based on their GHG emissions even if they do not apply based on emissions of other pollutants. Facilities emitting at least 100,000 tpy CO₂e will be subject to Title V permitting requirements (EPA 2010c).

3.1.1.5 Indoor Air Quality

Indoor air quality is a term referring to the air quality within and around buildings and structures, especially as it relates to the health and comfort of building occupants. Indoor pollution sources that release gases or particles into the air are the primary source of indoor air quality problems within buildings. Indoor air pollution sources are various and may include combustion sources (e.g., oil, coal, gas), building materials (e.g., asbestos-containing insulation, carpet, wood cabinetry), cleaning products, or heating, ventilation, and cooling systems (EPA 2008). Exposure to indoor air pollution can result in health problems such as sore eyes, headaches, fatigue, respiratory illness, cancer, or heart disease (EPA 2008). Indoor air quality is monitored by the EPA, National Institute for Occupational Safety and Health, as well as at the state level through

the Oklahoma State Department of Health. Indoor air quality monitoring and testing were also performed by the Tinker AFB Bioenvironmental Engineering office, and no hazardous exposure levels were recorded (Tinker AFB 2008b).

3.1.2 Existing Conditions

3.1.2.1 Climate

Oklahoma County is in the Interior Lowlands physiographic region. The county has two major land resource areas (MLRA): the eastern half of the county is in the Northern Cross Timbers MLRA, and the western half is in the Central Rolling Red Prairies MLRA (US Department of Agriculture 2003). In winter, the average daily temperature is 38.6 degrees Fahrenheit (°F), and the average daily minimum temperature is 27.8°F. In summer the average temperature is 80°F, and the average daily maximum temperature is 91.1°F. The average annual precipitation is 33.35 inches. Most precipitation, 74 percent, usually falls from April through October; the average seasonal snowfall is 9.1 inches. Prevailing winds blow from the south, with the average speed of 14 miles per hour in March and April (U.S. Department of Agriculture 2003).

3.1.2.2 Local Air Quality

Oklahoma County is currently designated by the EPA as an *attainment* area for CO, SO₂, NO₂, and particulate matter (PM₁₀ and PM_{2.5}). A five-year Ozone Early Action Compact for Oklahoma City was initiated and was completed in December 2007. During that time, Oklahoma City never required a nonattainment deferral from the EPA. In June 2008, the Association of Central Oklahoma Governments (ACOG) developed an 8-hour ozone flex plan for Oklahoma City for the successive five years, similar to the Ozone Early Action Compact (ACOG 2008). This voluntary plan identified strategies that would reduce transportation-related emissions by improving traffic flow and reducing congestion throughout the region. Typical control strategies included intersection improvements, traffic signal modifications, signal coordination efforts, intelligent transportation techniques and travel reduction programs (ACOG 2008).

Eleven air quality monitoring stations are located within Oklahoma County, including one CO monitoring station, one PM₁₀ monitoring station, three PM_{2.5} monitoring stations, one SO₂ monitoring station, three ozone monitoring stations, and two NO₂ monitoring stations. According to EPA AirData, ambient level concentrations for PM₁₀, PM_{2.5}, NO₂ and CO within Oklahoma County have not exceeded the primary NAAQS from 1998 to 2008; however, concentrations of ozone have exceeded the 8-hour NAAQS within the same period (EPA 2010d).

3.1.2.3 Tinker AFB and Proposed Project Site

The DEQ, which publishes regulations for air quality and permitting for all counties in Oklahoma, has jurisdiction over and regulates air emissions associated with Tinker AFB. Under the CAAA, the Title V Operating Permit Program imposes requirements for air quality permitting on air emission sources. Also under the CAAA, the National Emission Standards for

Hazardous Air Pollutants (NESHAP) program specifies various provisions for regulated sources, including limits on hazardous air pollutant (HAP) emissions, compliance demonstrations and performance testing, monitoring, recordkeeping, and reporting. Tinker AFB is categorized as a major source under the Title V program and is also regulated under the NESHAP since its potential emissions from stationary sources exceed 100 tons per year (tpy) of any of the criteria pollutants, or 10 tpy of any single HAP, or 25 tpy of any combination of HAPs. Tinker AFB maintains a Title V Air Permit (DEQ, Air Quality Division 2010). The following are the primary onsite emission sources at Tinker AFB:

- Stationary combustion sources (e.g., boilers, water heaters, furnaces, gasoline and diesel-fueled generators, engine test cells).
- Operational sources (e.g., chemical usage, paints, degreasers, abrasive blasting, welding operations, fuel cell maintenance, wastewater treatment, small arms firing range).
- Fuel-storage/transfer operations (e.g., horizontal tanks, internal floating roof tanks).
- Mobile sources (e.g., vehicle operations, aircraft operations, trim and power checks, aerospace ground equipment). Mobile sources are not regulated under the Title V program.

Proposed Project Site

B230 measures 537,940 sf and includes four large maintenance hangars with supporting administrative and shop areas. The building is north of the principal parking apron of the airfield, which provides aircraft easy access to the facility. Major activities conducted in B230 that contribute to air quality emissions include engine run-ups and engine maintenance operations, as well as aircraft sorties generated by the 552d ACW. The air quality impacts of the Proposed Action are further evaluated in Section 4.1, *Air Quality*.

3.1.2.4 Indoor Air Quality at B230

Much of the existing ventilation system in B230 is nonoperational and has been abandoned in place (Tinker AFB 2008). The ventilation systems in the building have been installed piecemeal over the years and do not fully accommodate the entire building. Due to the age and inefficient location of these systems, indoor air quality in B230 has been impacted by poor ventilation. Adequate building ventilation also assists in dispersing and ventilating out fumes and pollutants generated during 552d ACW maintenance operations. Maintenance operations conducted in B230 include the use of volatile substances (e.g., fuels, solvents) and operation of aircraft engines, resulting in the emission of air pollutants and worker exposure to jet blast fumes. Additionally, grinding and sanding activities may release particles into the air. Without proper ventilation systems within the building, these airborne fumes and pollutants remain and potentially concentrate within the building's indoor air environment. Personnel wear protection equipment and follow USAF guidelines; however, personnel within the building are still exposed to inhalation of these fumes and pollutants, presenting potential health risks to workers and other

visitors to the facility. Jet fumes from engine run-ups create a nuisance to workers; however, indoor air quality monitoring and testing performed by the Tinker AFB Bioenvironmental Engineering office showed no exposure levels that exceed occupational exposure limits (Tinker AFB 2008b). In addition to emissions generated by maintenance operations within the building, B230 is located above groundwater contamination sites and utilizes a soil vapor extraction system to protect personnel within the building from exposure to soil vapors. Soil vapor and the soil vapor extraction system are described in further detail in Section 3.3.2.4, *Environmental Restoration Program*.

3.2 Cultural Resources

3.2.1 Definition of Resource

Cultural resources represent and document activities, accomplishments, and traditions of previous civilizations and link current and former inhabitants of an area. Depending on their conditions and historic use, these resources may provide insight to living conditions in previous civilizations and may retain cultural and religious significance to modern groups.

Archaeological resources include areas where prehistoric or historic activity measurably altered the environment or deposits of physical remains (e.g., arrowheads, bottles) discovered therein. Architectural resources include standing buildings, districts, bridges, dams, and other structures of historic or aesthetic significance. *Architectural resources* generally must be more than 50 years old to be considered for inclusion in the NRHP, an inventory of culturally significant resources identified in the United States; however, more recent structures, such as Cold War-era resources, may warrant protection if they have the potential to gain significance in the future. *Traditional cultural resources* can include archaeological resources, structures, neighborhoods, prominent topographic features, habitats, plants, animals, and minerals that Native Americans or other groups consider essential for the persistence of traditional culture.

The principal federal law addressing cultural resources is the NHPA of 1966, as amended (16 USC §470), and its implementing regulations (36 CFR 800). The regulations, commonly referred to as the Section 106 process, describe the procedures for identifying and evaluating historic properties, assessing the effects of federal actions on historic properties, and consulting to avoid, reduce, or minimize adverse effects. As part of the Section 106 process, agencies are required to consult with the State Historic Preservation Office (SHPO).

The term *historic properties* refers to cultural resources that meet specific criteria for eligibility for listing on the NRHP; historic properties need not be formally listed on the NRHP. Section 106 does not require the preservation of historic properties but ensures that the decisions of federal agencies concerning the treatment of these places result from meaningful considerations of cultural and historic values and of the options available to protect the properties. The Proposed Action is an undertaking as defined by 36 CFR 800.3 and is subject to requirements outlined in Section 106.

The DoD's American Indian and Alaska Native Policy governs the department's interactions with federally recognized tribes. The policy outlines the DoD's trust obligations, communication procedures with tribes on a government-to-government basis, consultation protocols, and actions to recognize and respect the significance that tribes ascribe to certain natural resources and properties of traditional cultural or religious importance. The policy requires consultation with federally recognized tribes for proposed activities that could significantly affect tribal resources or interests.

3.2.2 Existing Conditions

3.2.2.1 Regional History

Inhabited by plains tribes and sold to the United States by France as a part of the 1803 Louisiana Purchase, much of what is now Oklahoma was subsequently designated as Indian Territory. As such, it was intended to provide a new home for tribes forced by the federal government to abandon their ancestral lands in the southeastern United States. Many of those forced to relocate in the 1830s were from what were called the Five Civilized Tribes—Cherokee, Choctaw, Chickasaw, Creek, and Seminole—who set up independent nations in the new territory. After the Civil War, the pressure of westward expansion brought railroads into the Indian Territory, where the US government began to declare some land available for settlement. Prairie land surrounding a Santa Fe railroad boxcar station was designated as a townsite when presidential proclamation opened the central portion of the Indian Territory to claim stakers in 1889.

That settlement (now Oklahoma City) attained official status in 1890, just a few weeks after the western half of the Indian Territory was redesignated Oklahoma Territory. Railroad connections to the city helped make it a center for trade, milling, and meat packing (Oklahoma City Convention and Visitors Bureau 2010).

3.2.2.2 Tinker AFB and the Proposed Project Site

Tinker AFB has implemented an Integrated Cultural Resources Management Plan (ICRMP), which is designed to assist the installation in continuing to maintain and operate existing facilities, and in developing new facilities, as needed, in compliance with federal and state legislation protecting cultural resources (Tinker AFB 2005a). Cultural resources are protected under the NHPA of 1966, as amended. Both significant archaeological and historic architectural resources that have not been evaluated must be considered eligible for the NRHP until they have been appropriately evaluated and SHPO concurrence has been documented (Tinker AFB 2005a).

The entirety of Tinker AFB has been surveyed for archeological resources, and four archaeological sites have been identified at the base (Tinker AFB 2005b). Three sites have been determined to be eligible for listing in the NRHP, and one site has been determined to be ineligible for listing in the NRHP. None of these archaeological sites are within any of the project areas.

Two historic property types have been identified at Tinker AFB: facilities associated with aircraft construction and modification, 1942 through 1946; and facilities associated with the Cuban Missile Crisis, 1962. Tinker AFB has six buildings individually eligible for listing in the NRHP and one historic district with seven contributing buildings that are eligible for listing in the NRHP. Modification of one of these buildings, B230, is included in the Proposed Action.

Tinker AFB has consulted with three Native American tribes: Seminole Nation, Osage Nation, and Muskogee Nation. These tribes have verbally commented that they have no Native American Graves Protection and Repatriation Act or American Indian Religious Freedom Act concerns about Tinker AFB property. Additionally, they have communicated that Tinker AFB property is not suitable for religious or burial sites (Tinker AFB 2005a).

Proposed Project Site

B230, formerly known as the Airplane Repair Building, was constructed in 1942 to be used as a military aircraft repair and maintenance facility during World War II. The building is considered to be an excellent example of the Moderne architectural style, exhibiting arched roofs over the hangar bays, corner concrete stair towers with vertical banding, sling hangar doors, and horizontal industrial windows. B230 has a high degree of military significance for its role in World War II wartime efforts and has been determined as individually eligible for NRHP listing for its association with aircraft construction (1942 through 1946) and its architectural style (Tinker AFB 2005a). In 1952, approximately 95 percent of the original structure was burned in a fire. Character-defining features of B230 include the following (Tinker AFB 2005a):

- *Design.* Moderne design with four large hangar bays separated by administration and support facilities.
- *Roof.* Arched roofs over hangar bays; flat roofs throughout other areas.
- *Distinctive Ornamentation.* Corner concrete stair towers with vertical banding.
- *Doors.* Four large sliding hangar doors at each hangar.
- *Windows.* Two bands of horizontally oriented industrial windows, painted shut, on the northern façade of building.
- *Entrances.* Projected entrances on northern façade.
- *Distinctive Ornamentation.* Projected concrete foundation water table (an architectural feature designed to deflect rainwater away from the building foundation).

The site of the Preferred Alternative and Alternative 2 (the existing B230) is within the Tinker AFB Airfield and contains no known archaeological sites. Further, the site of the Preferred Alternative and Alternative 2 contains no known or suspected traditional cultural properties.

3.3 Hazardous Materials and Wastes

3.3.1 Definition of Resource

Hazardous materials are defined as substances with strong physical properties of ignitability, corrosivity, reactivity, or toxicity that may cause an increase in mortality, a serious irreversible illness or incapacitating reversible illness, or pose a substantial threat to human health or the environment. Hazardous wastes are defined as any solid, liquid, contained gaseous or semisolid waste, or any combination of wastes that pose a substantial present or potential hazard to human health or the environment.

Issues associated with hazardous materials and wastes typically focus on underground storage tanks (USTs); aboveground storage tanks (ASTs); and the storage, transport, and use of pesticides, bulk fuel, petroleum, oils and lubricants. When such resources are improperly used, they can threaten the health and well-being of wildlife species, botanical habitats, soil systems, water resources, and people.

To protect habitats and people from inadvertent and potentially harmful releases of hazardous substances, the DoD has dictated that all facilities develop and implement Hazardous Waste Management Plans or Spill Prevention and Response Plans. Also, the DoD has developed the Environmental Restoration Program (ERP), intended to facilitate thorough investigation and cleanup of contaminated sites at military installations. These plans and programs, in addition to established legislation (e.g., Comprehensive Environmental Response, Compensation, and Liability Act [CERCLA] and Resource Conservation and Recovery Act [RCRA]) effectively form the “safety net” intended to protect the ecosystems on which most living organisms depend.

Some building components may contain hazardous building materials such as asbestos (e.g., flooring, insulation wrap, siding) or lead-based paint (e.g., piping). These substances are hazardous to human health. Consequently, demolition or removal of such components may result in the generation of regulated waste. Regulated waste should be transported off site by a licensed contractor for appropriate disposal.

3.3.2 Existing Conditions

3.3.2.1 Hazardous Materials

Hazardous materials are utilized to perform the mission of Tinker AFB. The Hazardous Materials Management Program (HMMP) manages the procurement and use of hazardous materials at the base. The HMMP functions through the Hazardous Materials Pharmacy, which consists of a decentralized Hazardous Materials Pharmacy Cell and a hazardous materials electronic tracking system, the Hazardous Materials Management System (HMMS). The HMMS database management system performs the following automated functions:

- Tracks training, exposure, inventory, and personal protective equipment

- Dispenses hazardous materials according to units of use
- Serves as the central issue point for just-in-time control and issue
- Creates online Material Safety Data Sheets
- Maintains hazardous materials control by authorized user, zone and task

The tracking system provides the data necessary to meet reporting requirements, assess processes for pollution prevention opportunities and measure success in minimizing hazardous materials usage (Tinker AFB 2009).

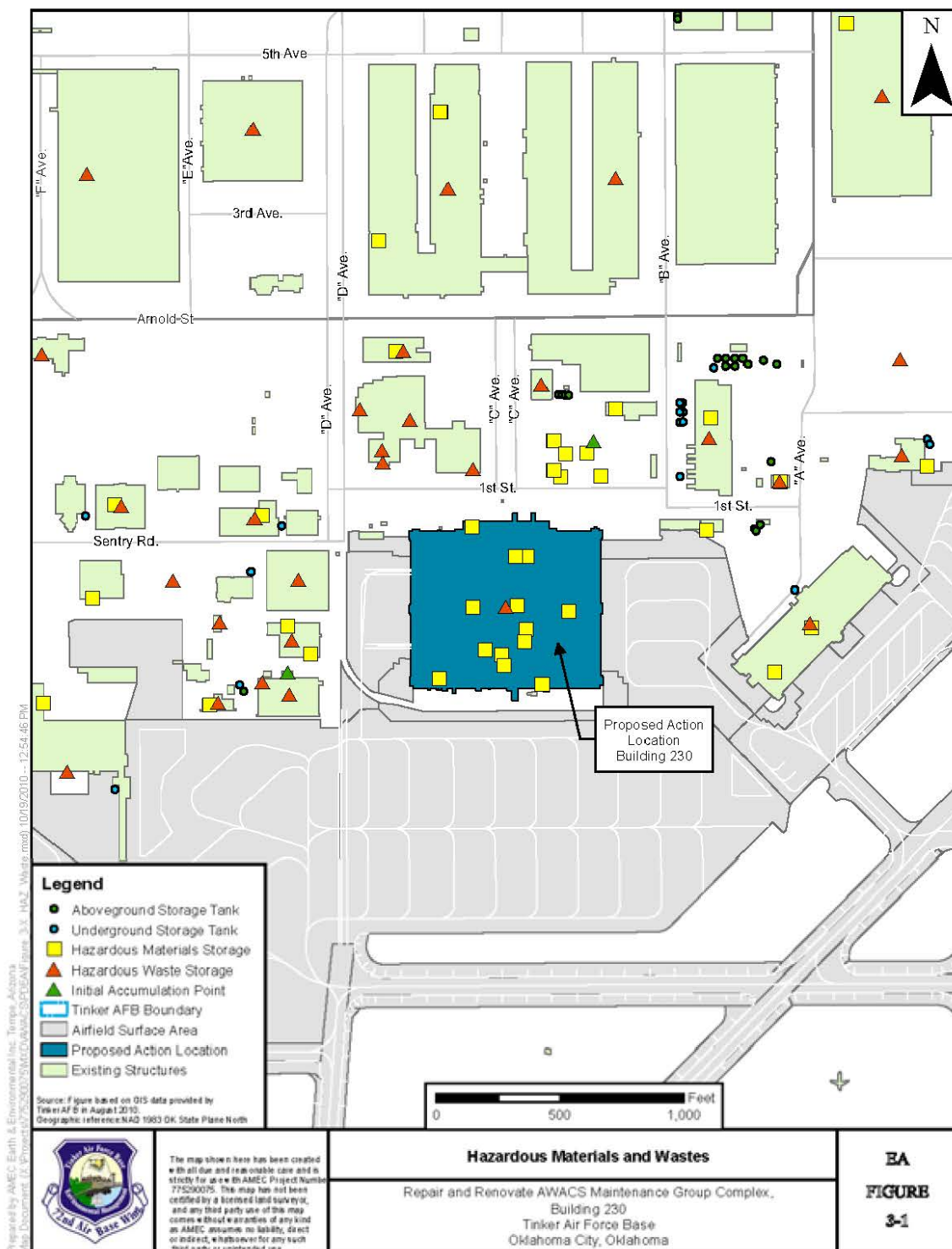
Tinker AFB's OC-ALC Plan 19-2, *Spill Prevention and Emergency Response Plan for Hazardous and Extremely Hazardous Material and Spill Prevention Control and Countermeasures Plan* (Tinker AFB 2004), presents specific procedures for preparing for and responding to inadvertent discharges of oil or releases of hazardous substances at the base. In 2002, Tinker AFB developed a Storm Water Pollution Prevention Plan (SWPPP) to comply with the conditions of the Multi-Section General Permit for Storm Water Discharges Associated with Industrial Activities (Permit Number GP-00-01) (Tinker AFB 2002). The SWPPP is noted as a supporting plan in OC-ALC Plan 19-2. The SWPPP provides basewide and facility-specific best management practices (BMPs) to reduce pollutants in storm water discharges from the base. BMPs for Tinker AFB include the following:

- Source controls
- Management practices
- Preventive maintenance
- Spill prevention and response
- Erosion and sediment controls
- Identification of storm water pollution prevention personnel

In addition, the DoD has implemented storm water requirements under Section 438 (42 USC §17094) of the Energy Independence and Security Act (EISA) to maintain the hydrologic functions of a site and mitigate the adverse impacts of storm water runoff from DoD construction projects. Section 438 requires federal facility projects exceeding 5,000 sf to “maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow” (DoD 2010).

Proposed Project Site

Maintenance operations conducted in B230 include the use of volatile substances (e.g., fuels, solvents) and operation of aircraft engines, resulting in worker exposure to hazardous materials (e.g., fuels, jet blast fumes, solvents). Operations conducted in B230 follow all standard procedures outlined by the HMMP and HMMS for hazardous materials. Several hazardous materials storage sites are within B230 (Figure 3-1).



3.3.2.2 Hazardous Waste Generation and Accumulation

Tinker AFB is permitted as a large-quantity hazardous waste generator and holds a Part B permit for its hazardous waste storage facility (HWSF, located in B810) (Tinker AFB 2009). The HWSF permit was issued by DEQ with an effective date of July 2001 (Tinker AFB 2009). DEQ serves as the primary oversight agency for RCRA compliance in Oklahoma. Hazardous wastes at the base are managed in accordance with the most recent hazardous waste management instruction guidelines (Tinker AFB Instruction 32-7004). Compliance with the provisions, regulations and mandates put forth in Tinker AFB Instruction 32-7004 is mandatory for actions relating to hazardous waste on the installation. The purpose of the guidelines is to ensure safe and effective collection, handling, and disposal of hazardous waste on the installation in a manner that complies with applicable DoD and USAF regulations and federal and state laws (Tinker AFB 2005b).

The largest volume of hazardous waste at the base is generated by aircraft and jet engine maintenance and overhaul activities (including activities conducted in B230). These activities include the following:

- Preparation of aircraft skins and structural members
- Paint removal and application, degreasing, metal etching and carbon removal of engines
- Abrasive blasting

Conducting these activities requires the use of large volumes of solvents and the generation of dust and liquid wastes. Other hazardous wastes contributing to this waste stream include petroleum products and waste, hydraulic fluid, antifreeze, and mercury-containing light bulbs and ballasts. Disposal of mercury-containing light bulbs must be conducted in accordance with the Universal Waste Rule (40 CFR 273); this rule specifies procedures for proper disposal and storage of used mercury-containing light bulbs and ballasts. The Hazardous Wastes Management program at Tinker AFB has prepared a plan for the replacement of such light bulbs and ballasts and should be contacted prior renovation or demolition activities to ensure that appropriate measures are implemented to adhere to established guidelines.

Another large hazardous waste stream generated at Tinker AFB results from RCRA corrective actions on past contaminated sites and remediation of a National Priorities List site on the base. These wastes consist of solvent, hydrocarbon, and metal-contaminated soil and debris removed during remediation projects. Other hazardous waste at Tinker AFB is generated from remodeling or demolition of older buildings. Due to the age of certain buildings on base, there is a potential for building materials to contain hazardous substances such as asbestos and lead-based paint. Operational activities including vehicle building, grounds maintenance, and wastewater treatment also generate hazardous waste.

According to the Fiscal Year (FY) 2009 *Internal Environmental Compliance Assessment and Management Program [ECAMP] Final Report for Tinker AFB*, approximately 345 organizations on the base generate hazardous waste. Hazardous wastes are accumulated at the site of generation in initial accumulation points (IAPs; an IAP refers to the container for collecting hazardous wastes) located throughout the base (Tinker AFB 2009). In some areas, waste collection sites (e.g., hazardous waste storage; see Figure 3-1) are used to accumulate wastes during work shifts; wastes are then transferred to an appropriate IAP at the end of the work shift (Tinker AFB 2009). Waste staging areas are used for some locations where wastes from multiple IAPs are staged for pickup and transfer to one of two accumulation points (APs), located in B809 and B2125 (Tinker AFB 2009). These containers are tracked from the issue of an empty container through disposal of the container using the HMMS. B809 is the largest of the APs and processes the majority of containerized hazardous waste from the IAPs for transfer to the treatment, storage, and disposal facility (TSDF). The TSDF is in B810 and is operated by the Defense Reutilization and Marketing Office. The role of the TSDF is limited to conforming storage (Tinker AFB 2009). B810 and B811 temporarily house hazardous waste for up to one year (Tinker AFB 2005b). Serialized accumulation containers for nonbulk hazardous waste are issued to waste generators and picked up when full (Tinker AFB 2009). Profiling is completed using either generator knowledge or laboratory analysis to identify and quantify the chemical constituents of the waste for proper treatment and disposal. Containers are then shipped off site for disposal.

There are three areas on Tinker AFB where noncontainerized waste is accumulated in APs. The industrial wastewater treatment plant accumulates dewatered hazardous waste sludge in a roll-off bin that is picked up directly by a contractor and taken to an appropriate TSDF (Tinker AFB 2009). B3125 contains an AP where drums are rinsed and crushed, aerosol cans are punctured and crushed, and blast media wastes are accumulated (Tinker AFB 2009). The chemical cleaning line in B3001 includes hazardous waste tanks, which are only used when there is a malfunction in the process line (Tinker AFB 2009).

Proposed Project Site

In the 1990s, much of the known asbestos-containing material was removed from B230. However, friable asbestos-containing material (ACM) remains in B230 in the form of pipe insulation, air handling unit duct insulation; non-friable ACM present in the form of floor tile and mastic, transite siding, and roofing materials. Lead-based paint has been found on the building's structural steel, fire suppression equipment and piping, hangar doors, and interior wood ceiling materials (Mark Patterson, AFMC 72 ABW/CEAN, personal communication, 9 December 2011). B230 also contains several hazardous materials storage sites and 18 active waste collection sites for the collection and storage of hazardous waste materials generated during maintenance and testing operations in B230; there are no IAPs in B230 (Tinker AFB 2004; personal communication, James Dawson, 22 February 2011) (Figure 3-1). According to the HMMS, AWACS uses 16 waste collection sites in B230 and the 76 Maintenance Wing/Commodities Maintenance Group uses two waste collection sites in B230.

3.3.2.3 Fuel Storage

The fuels and materials stored and handled in bulk at the base include jet propellant 5 (JP-5), JP-8, and pulverized fuel 1 (PF-1) (aviation fuels), JP-10 (missile fuel), motor gasoline (Mogas; automotive gasoline), diesel fuel, biodiesel fuel, No. 2 heating oil, PD-680 (solvent), and deicing fluid. Conoco supplies JP-8 fuel to Tinker AFB through a 6-inch-diameter supply line that enters the northern section of the base and continues to the main tank farm (Tinker AFB 2005b). Tanker trucks are used as a backup to deliver JP-8, which is dispensed to aircraft either from one of the 11 refueler vehicles (R-11s) or directly through hydrants located on the aprons on the western, southern, and eastern sides of the base (Tinker AFB 2009).

Various fuels at the base are also stored in ASTs and USTs. Releases from ASTs and USTs (i.e., spills, overfill, and leaks) can cause fires or explosions that threaten human safety and can contaminate soil and groundwater that threaten human health. The main goal of the base's storage tank program is to protect groundwater and soil from contamination by ensuring that the following:

- All ASTs meet applicable requirements, including requirements for leak testing and preventing, responding to, reporting, and cleaning up spills.
- New USTs (including piping) are designed and constructed to provide corrosion protection, release detection, spill and overfill prevention, proper installation, and secondary containment.
- All existing USTs (any regulated UST installed before 22 December 1988) are upgraded to meet the standards for new USTs (Tinker AFB 2005b).

An aggressive investigation of abandoned and active USTs at Tinker AFB began in September 1985. Eighty-eight active tanks and 38 abandoned tanks were identified and located. Most of those tanks were found in the vicinity of B3001 and in the north-central portion of the base near B201, B210, and the B290 Fuel Farm.

In coordination with the Oklahoma Corporation Commission (OCC), Tinker AFB began release investigations at 26 UST sites beginning on 31 July 1999. Tinker AFB has completed most of the investigations and has determined the nature and extent of contamination at each UST site; several of those sites are in active remediation. Currently, 15 of the sites have been closed or deactivated in accordance with OCC regulations that were in effect prior to 1 September 1996. The previous rules categorized UST sites for remediation based on generic contaminant levels in soils and groundwater. On 1 July 1996, the OCC issued new rules that classify sites for remediation based on risk to human health and the environment. The new process is referred to as the Oklahoma Risk-Based Corrective Action Program. Eleven sites are still open and are in remediation or have been recommended for case closure. In addition, two UST removals were performed in 1998, and tank closure reports were submitted to the OCC in December 1998 for each site. According to the FY 2009 *Internal ECAMP Final Report*, Tinker AFB currently maintains 36 active USTs and 90 active ASTs (Tinker AFB 2009).

Proposed Project Site

No USTs or ASTs are known to have been installed at the proposed project site (Figure 3-1) (Tinker AFB 2004; personal communication, Jason Flaming, 22 February 2011). Two remote fueling stations, one for Mogas and one for diesel fuel, are adjacent to B230 (Tinker AFB 2004).

3.3.2.4 Groundwater Contamination

Tinker AFB

Tinker AFB has established a basewide groundwater sampling program to obtain depth-to-water and depth-to-product measurements semiannually from approximately 1,300 monitoring wells, pumping wells, and piezometers (a small-diameter observation well used to measure groundwater pressure). The groundwater contamination characterized to date is generally limited to the base boundaries. Groundwater at Tinker AFB is evaluated and monitored in areas where solvents or other hazardous materials may have been disposed and have impacted groundwater. Three consolidated groundwater management units (GWMU) – Northwest, East and Southwest GWMUs – are located at Tinker AFB (Tinker AFB 2010d). The purpose of the GWMUs is to define areas to investigate and monitor groundwater for contaminants, principally solvents, metals and fuel that may come from a variety of localized sources. The sources include several Installation Restoration Program (IRP) sites and non-IRP sites at Tinker AFB. Remedies in place include pump and treat systems, monitored natural attenuation and interim controls.

Soil vapor at Tinker AFB results from the evaporation of petroleum products, solvents, or other hazardous materials remaining in the unsaturated soils found below the ground surface (above groundwater level). Vapor intrusion assessments were performed to assess the potential for soil vapor intrusion of subsurface contaminants volatilized from soil and/or groundwater into overlying buildings at various areas across Tinker AFB. The assessment preparers determined that the following buildings have a potential for vapor intrusion condition to exist: 200, 220, 240, 255, 267, 296, 2210, 2211, 3001, 3105, 3117, 3123, 3125, 3221, 3225, 3228, 3234, 3307, 3703, 3706, 3707, 3708, and 3761 (Tinker AFB 2011). However, the assessment concluded that vapor intrusion is likely to be a rare occurrence at Tinker AFB because of the clay-rich soils underlying most of the buildings (Tinker AFB 2011).

Proposed Project Site

B230 is located in an area overlying the Northwest GWMU and groundwater contamination plumes. The principal chemicals of concern include chlorinated solvents, including trichloroethene (TCE). According to 2007 groundwater sampling information, TCE concentrations exist in the upper and lower saturated zones under the following buildings: 200, 201, 202, 220, 230, 240, 255, 260, 267, 268, 283, 289, and 296 in the CSP 208 area (Tinker AFB 2010d).

3.3.2.5 Environmental Restoration Program

The Secretary of Defense established the Defense ERP in 1981 to investigate and remediate hazardous waste sites at DoD facilities. The USAF subsequently established its ERP to locate and investigate hazardous waste sites on its installations (i.e., IRP sites). Fully restored and remediated IRP sites present few constraints to future on-base development; however, the implementation of land use controls may be required. Land use controls are physical, legal, or administrative mechanisms that restrict or limit access to contaminated property to promote beneficial land uses and to protect human health and the environment.

A total of 40 IRP sites including National Priorities List sites (operable units), landfills, industrial waste pits, fire training areas, radioactive waste disposal sites, disposal areas, and groundwater contamination sites have been identified on Tinker AFB. Of the 40 IRP sites, 24 have reached site closeout with regulating authorities while the remaining 16 sites have a remedy in place (Scott Bowen, personal communication February 2011). Of these 16 remaining sites, 3 sites are within the jurisdiction of EPA Region 6 and managed under CERCLA, and 13 sites are under the jurisdiction of the DEQ and managed under RCRA. Ten of the closed IRP sites and nine of the active IRP sites are RCRA solid waste management units. Although 24 of the IRP sites have reached site closeout, three of the RCRA sites have only completed case closures for fuel releases from UST releases regulated by the Oklahoma Corporation Commission (OCC) Petroleum Storage Tank Division (Tinker AFB 2010d).

In addition to the IRP sites, thirteen Compliance Restoration Program (CRP) sites are located on Tinker AFB. The CRP sites will require additional site investigations and studies before remedial responses can be proposed and implemented (Tinker AFB 2010d).

Proposed Project Site

In total, four IRP sites and four CRP sites are in the vicinity of the Preferred Alternative and Alternative 2 project areas (Figure 3-2). The IRP and CRP sites and their status are listed in the Tinker AFB 2010 *Community Relations Plan* and Table 3-1 (Tinker AFB 2010d). One CRP site, Other (OT) 062 B230, is of particular importance to the proposed project. An extensive network of industrial wastewater lines under B230 has released chemicals to the environment through leaks in the wastewater drain lines and sumps. These chemical releases have impacted the underlying soil and groundwater, and soil vapors have accumulated beneath the floor slab of B230 from contaminant sources. Site OT062 consists of a vacuum-enhanced pumping (VEP) system that was installed as an interim corrective measure to mitigate the potential risk posed by subsurface contaminants along the north and west sides of B230. The VEP system has been in continuous operation since startup in May 2005 and uses groundwater extraction wells and horizontal soil vapor extraction screens to remove contaminated groundwater gas and soil gas that is then directed to a treatment plant constructed specifically for this cleanup action (Tinker AFB 2010d). This site was placed in the CRP in 2010; currently there is no scheduled shut-off date for the VEP interim corrective measure.

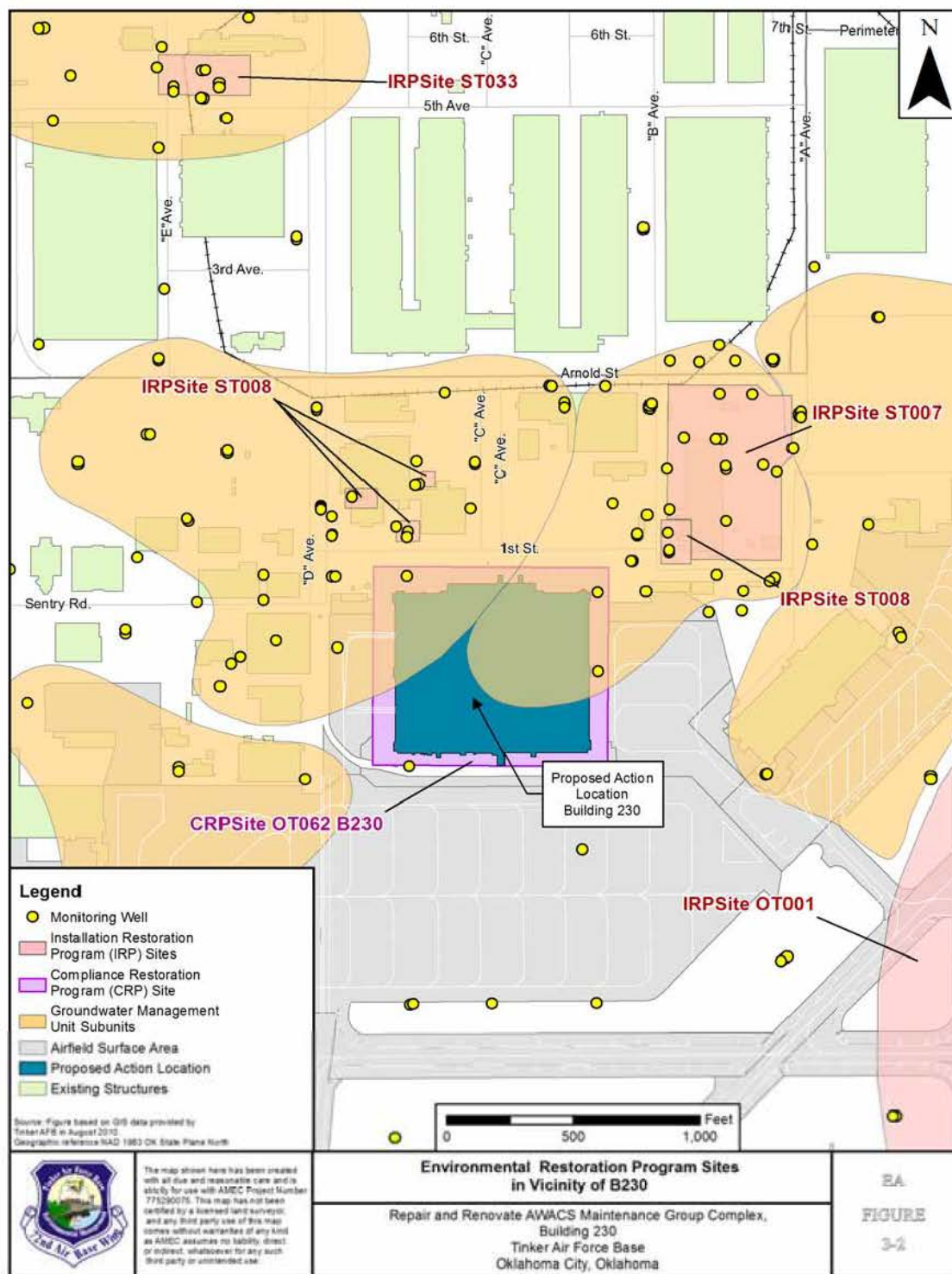


Table 3-1. IRP and CRP Sites in the Vicinity of the Proposed Action

Site Type	Status
IRP Sites Located in the Vicinity of the Preferred Alternative and Alternative 2 Project Areas	
Storage Tanks (ST) 008 Four Fuels Site	Remedial Action – in Operation (RA-O)
Radioactive Waste (RW) 026 Radioactive Waste Disposal Site 201S	No Further Remedial Action Planned (NFRAP)
ST033 Area A Service Station	NFRAP
Consolidated Groundwater (CG) Management Unit 037 Northwest GWMU	RA-O
CRP Sites Located in the Vicinity of the Preferred Alternative and Alternative 2 Project Areas	
Other (OT) 062 B230	Interim Remedial Action in Operation (IRA-O)
OT063 B240	Remedial Investigation (RI) as a RCRA Facility Investigation (RFI)
OT064 B210	RI as an RFI, IRA-O
OT065 B283, B284 and B296	Discovery/Notification

Source: Tinker AFB 2010d

3.4 Safety

3.4.1 Definition of Resource

Human health and safety is defined as the conditions, risks, and preventative measures associated with a facility and its ability to potentially affect the health and safety of facility personnel or the general public. The Occupational Safety and Health Administration, EPA, and NFPA issue standards regarding personnel training, preventative controls, and other occupational health and safety matters. The USAF determines quantity-distance arcs to protect against exposure to blasts, thermal hazards, and shrapnel from explosives.

The primary safety concern with regard to military aircraft activity is the potential for aircraft mishaps (i.e., crashes), which may be caused by mid-air collisions with other aircraft or objects, weather difficulties, or on-ground collisions between aircraft. In addition, the occupational safety of personnel working in B230 is a concern. The facility must have adequate space for operations and maintenance activities equipment storage and operations. B230 also must have adequate environmental controls and fire safety and suppression systems installation and operation.

3.4.2 Existing Conditions

3.4.2.1 B230 at Tinker AFB

The existing AWACS Maintenance Group Complex, B230, was designed and built in 1942 to accommodate production of B-25 bombers and aircraft repairs. The interior of B230 has been periodically renovated to accommodate evolving operational needs; numerous remodeling efforts have resulted in inefficient and wasted use of interior space and unsafe interior work areas,

hallways, and ingress/egress of the building. Due to some deficiencies listed below, the building has been assessed as deficient from a fire safety standpoint. The following are several deficiencies in B230 that are associated with occupational health and safety:

- Due in part to the age of the facility, B230 is not current with the NFPA's Life and Safety Code, NFPA 101.
- Numerous entry ways and hallways exit into egress hallways with improper door swings and egress travel distances beyond those listed by NFPA 101.
- Several egresses lead into one of the maintenance hangar docks, which is also in violation of NFPA 101.
- Most work areas in B230 also lack fire detection systems or alarms, and the aqueous firefighting foam fire suppression system does not meet code.
- The wet-pipe fire suppression sprinkler heads installed in the 1950s also no longer meet code.
- Existing utilities in the attic area are outdated, undersized, and do not meet current electrical code.
- The catwalk in the attic area is considered unsafe due to the lack of hand rails, and there are numerous tripping hazards that could cause a person to fall off the catwalk and through the first floor ceiling below.
- The facility does not have a consolidated compliant fire alarm system.
- Overhead projectors have power cords running through ceiling.
- Not all areas have automatic fire protection sprinkler systems installed, as required by NFPA 13 1-6.1.
- The sprinkler alarm valve trim piping on the automatic fire protection systems in docks 2, 3, and 4 was corroded.
- The manual discharge pull stations for the AFFF system in the hangar areas of the facility did not meet the requirements of ETL 98-8
- No separation between docks when maintenance was being performed on fueled aircraft.

Several building code violations involving electrical utilities in B230 have been identified; the primary concern is exposed electrical connections:

- Several 12-kilovolt connectors are located outside the building and are exposed to the weather; under the right conditions, rain could disrupt two of the electrical substations that provide power to the flightline and cause damage to the central electrical vault in B230.

- A ladder provides personnel access to an electrical vault in the attic area above the first floor; several exposed 12-kilovolt connectors are within a few feet of the top of a personnel ladder, exposing personnel to risk of electrocution. This is a substantial life safety hazard.
- Several abandoned circuits near the catwalk in the attic area above the first floor are energized and have exposed wiring, posing additional electrocution risks to personnel or fire hazards above the first floor ceiling. This is a substantial life safety hazard.

Maintenance operations conducted in B230 include the use of volatile substances (e.g., fuels, solvents) and operation of aircraft engines, resulting in the emission of air pollutants. As mentioned in Section 3.1.1.4, *Indoor Air Quality*, and Section 3.3.2.4, *Environmental Restoration Program*, B230 is located above groundwater contamination sites and uses a soil vapor extraction system to protect personnel within the building from exposure to soil vapors. Proper indoor air ventilation systems assist in removing fumes and pollutants from operations within B230; however, ventilation systems within B230 are not contiguous and do not service the entire facility, potentially placing personnel at risk of unregulated exposure to indoor air pollutants.

Construction activities performed under the Proposed Action would meet AT/FP requirements for construction sites and transportation to and from the construction site and other areas of the base. Additionally, B230 is outside of any quantity-distance arcs.

3.4.2.2 Runway Protection Zones

Accident potential zones (APZs) and clear zones (CZs) are rectangular zones extending outward from the ends of active military airfields that delineate areas recognized as having the greatest risk of aircraft mishaps, most of which occur during takeoff or landing. Three zones are identified for each runway: the CZ, APZ I, and APZ II. Each end of Runways 17/35 and 12/30 at Tinker AFB has a 3,000-foot-by-3,000-foot CZ, a 3,000-foot-by-5,000-foot APZ I, and a 3,000-foot-by-7,000-foot APZ II (Tinker AFB 2006).

Clear Zones

The CZ has the highest accident potential of the three zones, as 27 percent of accidents studied occurred in this area. As stated previously, it is USAF policy to request that Congress authorize and appropriate funds to purchase the real property interests in this area to prevent incompatible land uses. Currently at Tinker AFB, all land use with CZs would be considered compatible (Tinker AFB 2006).

Accident Potential Zones I and II

APZ I possesses somewhat less accident potential than the CZ, with 10 percent of the accidents studied occurring in this zone. APZ II has less accident potential than APZ I, with 6 percent of the accidents studied occurring in this zone. While the potential for aircraft accidents in APZs I

and II does not warrant land acquisition by the USAF, land use planning and controls are strongly encouraged in these areas for the protection of the public (Tinker AFB 2006).

APZ I is 3,000 feet wide by 5,000 feet long and has land use compatibility guidelines that are sufficiently flexible to allow reasonable economic use of the land, such as industrial/manufacturing, transportation, communication/utilities, wholesale trade, open space, recreation, and agriculture. APZ II is 3,000 feet wide by 7,000 feet long, extending 15,000 feet from the runway threshold. Acceptable uses include those of APZ I, as well as low-density, single-family residential, and those personal and business services and commercial/retail trade uses of low-intensity or low-scale operations. High-density functions such as multistory buildings, places of assembly (e.g., theaters, churches, schools, restaurants, etc.), and high-density office uses are not considered appropriate (Tinker AFB 2006).

Incompatible land use is currently established within APZs associated with the airfield at Tinker AFB and is summarized in Table 3-2. APZs I and II located off Runways 17/35 and 12/30 contain commercial and sensitive receptors (i.e., residences, schools, libraries, etc.), respectively.

**Table 3-2. Acres of Incompatible Land Use within Clear Zones,
Accident Potential Zones I and II Associated with Runways 12/30 and 17/35**

Land Use	Acres of Incompatible Land Use		
	CZ	APZ I	APZ II
Residential	0	4	408
Commercial	0	41	0
Industrial	0	0	0
Public/Quasi-Public	0	4	121
Recreational/Open Space/Agricultural/Low Density	0	0	0
Total	0	49	529

Source: Tinker AFB 2006

Proposed Project Site

The proposed project site is located along the flightline but does not lie within either CZs or APZs for Runways 17/35 or 12/30 (Figure 3-3).

3.5 Socioeconomics

3.5.1 Definition of Resource

Socioeconomics can generally be described as the interrelationship between the basic attributes and resources associated with the human environment, particularly population and economic activity. Human population is affected by regional birth rates, death rates, and overall migration. Economic activity includes factors related to the supply of and demand for goods and services, such as employment, personal income, and commercial and industrial growth. Impacts on these two fundamental socioeconomic indicators can influence other socioeconomic components such as housing availability and the provision of public services. Socioeconomic data in this section are presented for the Oklahoma City region to provide a brief summary the workforce that would be affected by the Proposed Action.



3.5.2 Existing Conditions

Oklahoma City

Oklahoma City is the largest city in the state of Oklahoma, with a 2008 estimated population of 544,147 (US Census Bureau 2008). According to the US Census Bureau, Oklahoma County had an estimated total labor force of approximately 334,205 individuals 16 years of age and older in 2008 (US Census Bureau 2008). Oklahoma County has a fairly diverse employment sector, resulting in various occupational categories as top employers. In 2008, the leading occupational categories included *educational services, health care, and social assistance* (69,713), *retail trade* (37,691), *professional, scientific, and technical* (35,485), *arts, entertainment, recreation, accommodation, and food services* (29,737), and *finance, insurance, real estate, rental, and leasing* (26,539) (US Census Bureau 2008). The USAF is a major contributor to the economy of Oklahoma City. The top five employers in the Oklahoma City Area include State of Oklahoma,

Tinker AFB, Oklahoma University – Norman Campus, INTEGRIS Health, and Federal Aviation Administration Mike Monroney Aeronautical Center (Greater Oklahoma City Chamber of Commerce 2010). For the employed population of Oklahoma County, approximately 16 percent are employed by the government (US Census Bureau 2008). US Bureau of Labor Statistics Local Area Unemployment Statistics data for Oklahoma City show an increase in unemployment between 2008 and 2009, from 3.7 to 5.9 percent (US Bureau of Labor Statistics 2010).

Tinker AFB

Today, with approximately 27,000 military and civilian employees, Tinker AFB is the largest single-site employer in Oklahoma (Tinker AFB 2010c). The installation has an annual statewide economic impact of \$3.4 billion, creating an estimated 30,865 secondary jobs (Tinker AFB 2010c).

552d ACW

Approximately 4,700 personnel are employed by the 552d ACW, 100 of whom are civilian. Approximately 1,800 of the 4,700 personnel work in maintenance operations. Most maintenance of the E-3 AWACS is conducted in B230 (Maintenance Group Complex), part of the North 552d ACW Campus, on Tinker AFB. A team of 1,040 maintenance personnel service a fleet of 28 E-3 AWACS, which typically includes full pre- and post-flight maintenance and systems checks for sortie training and operations missions.

3.6 Sustainability

3.6.1 Definition of Resource

EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, was issued on 4 October 2009, to focus the attention of federal agencies on promoting the establishment of an integrated system of development that promotes environmental sustainability by the federal government and emphasizes the reduction of GHG emissions. GHG emissions

were discussed in Section 3.1, *Air Quality*. The federal government is taking actions to reduce GHGs through means such as streamlining infrastructure to minimize vehicle use and vehicle emissions (i.e., idling), and reducing facility consumption of energy by implementing energy conservation projects.

The US Green Building Council has developed the LEED program to provide building owners and operators a concise framework for identifying and implementing practical and measurable green building design, construction, operations, and maintenance solutions (US Green Building Council 2010). The US Green Building Council's LEED is a third-party certification program and the nationally accepted benchmark for the design, construction, and operation of high-performance green buildings (US Green Building Council 2010). The USAF has taken LEED guidelines into account during the design and planning of the proposed project to assist in meeting recommendations outlined by EO 13514, as well as to benefit from reduced operating costs, increased asset value, reduced waste sent to landfills, conservation of energy and water, healthier and safer facilities for occupants, and reduction of GHG emissions. The proposed project will also serve as a demonstration of the USAF's commitment to environmental stewardship and social responsibility.

3.6.2 Existing Conditions at B230

B230 was originally constructed in 1942 and does not meet any sustainability goals that have been identified since 1942. In addition, the decrepit state of the building results in operations that waste resources such as electricity, water, and gas. B230 currently requires continual and repeated maintenance on the supporting utility systems and mechanical systems, which are outdated and inefficient. Currently, the old air conditioning system has been abandoned and left in place in the attic space above the first floor and has been replaced in part with smaller units throughout the building to cool certain work areas, resulting in inefficient energy use and a lack of central cooling for the building (Tinker AFB 2010b). Demolition of the old air conditioning system has already been initiated, as mentioned in Section 2.4.1, *Alternative 1, Preferred Alternative* "Repair and Renovate Existing Building 230, but a new buildingwide system has not yet been installed. Due to the changes in interior layout of B230 over time, other utilities such as electrical, heating, and water systems are not currently laid out in an effective, efficient manner. These utilities are functional, but some have redundant parts such as piping or ineffective blower units that are unable to disperse heating and ventilation evenly throughout the building.

3.7 Transportation and Circulation

3.7.1 Definition of Resource

Transportation and circulation refer to the movement of vehicles and pedestrians throughout a road and highway network. Under highway functional classification guidance by Oklahoma Department of Transportation Planning and Research Division, principal arterials are interstates, other freeways, expressways and other principal arterials that serve major traffic movements,

provide continuity for rural arterials and operate under full, partial or no controlled access. Minor arterial roads provide a lower level of mobility than principal arterials and serve moderate-length trips. Other roadway facilities are collector street systems and local street systems that provide higher access and lower traffic mobility.

3.7.2 Existing Conditions

3.7.2.1 Regional and Local Circulation

Tinker AFB is within the city limits of Oklahoma City, approximately 9 miles southeast of downtown by surface roads. Oklahoma City is served by a network of interstates and local and regional arterial roads. Four interstates—I-40, I-35, I-240 and I-44—pass through Oklahoma City and provide regional access to the base.

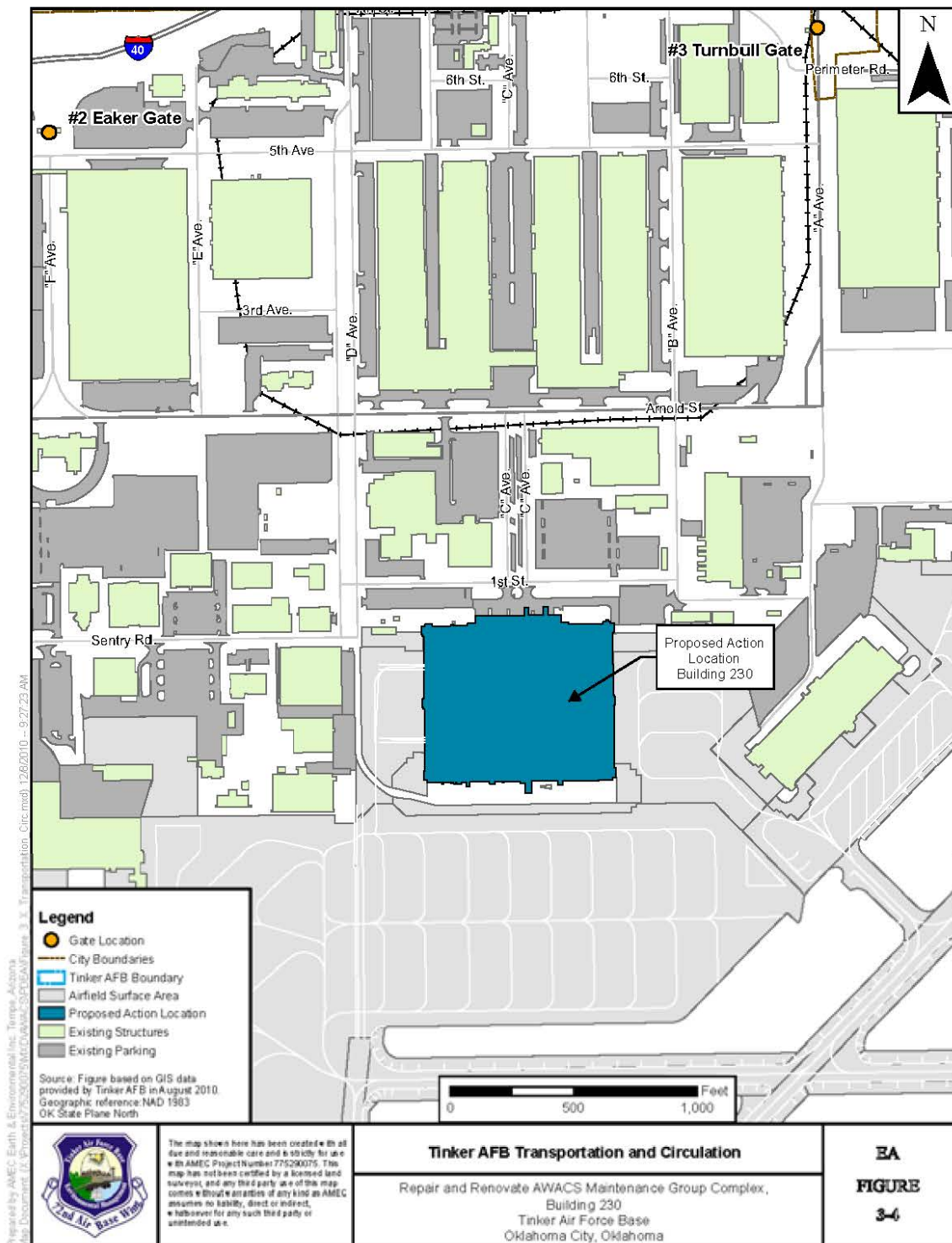
Three arterial roads, including Sooner Road, SE 29th Street, and Douglas Boulevard, and two interstates, I-40 and I-240, provide access to Tinker AFB (Figure 3-4). Sooner Road is a north-south, four-lane arterial that forms part of the western border of the base. SE 29th Street is an east-west arterial that, along with I-40, forms the northern boundary of the base. SE 29th Street is recognized as having east-west section-line roads with some of the highest traffic volumes in the Southeast Sector (Oklahoma City 2007). Douglas Boulevard is a four-lane, north-south arterial that forms the eastern boundary of the base and provides access to the base through the Lancer Gate. I-40 runs along the northern boundary of the base and provides access to the base via Air Depot Boulevard/Tinker Gate and Eaker Gate. I-240, an east-west arterial located south of the base, provides access to the base by Sooner Road (via Vance Gate), Air Depot Boulevard (Gott Gate), and Douglas Boulevard (Figure 3-4).

3.7.2.2 Circulation at Tinker AFB and at the Proposed Project Site

A network of arterial, collector, and local roads serves Tinker AFB. A system of local roads supports the majority of the traffic on the base.

Air Depot Boulevard, East Drive, Arnold Avenue and Patrol Road are the major collector roads, which are supported by a network of minor collector road and local streets. McNarney Avenue, Reserve Road and Mitchell Avenue are the primary local roads. Arnold Avenue is the only east-west major collector road near the proposed project location (Figure 3-4). It connects Vance Gate on the west with Turnbull Gate on the east. Other collector roads such as Air Depot Boulevard and Patrol Road provide north-south connectivity on the base.

Thirteen gates are located on the perimeter of Tinker AFB. Tinker Gate, Hruskocy Gate, and Truck Gate are open 24 hours per day, seven days per week (Tinker AFB 2010e). As of August 2010, Lancer Gate has been temporarily closed due to construction and other reasons (Tinker AFB 2010e).



The open gates nearest to the proposed project location are Turnbull Gate and Eaker Gate (Figure 3-4). Midwest Boulevard Gate, where improvements are currently being conducted, is under consideration to become the truck entry gate. Parking for B230 personnel is located immediately north of the building, south of 1st Street (Figure 3-4).

3.8 Visual Resources

3.8.1 Definition of Resource

Visual resources are defined as the natural and manufactured features that form the aesthetic qualities of an area. These features create the overall impressions that an observer receives of an area or the character of its landscape. Landforms, water surfaces, vegetation, and manufactured features are considered characteristic of an area if they are inherent to the structure and function of a landscape.

3.8.2 Existing Conditions

3.8.2.1 Regional Visual Character

Tinker AFB is in the Central Red Bed Plains section of Oklahoma. Topography of this section of Oklahoma is characterized by gently rolling to nearly level uplands. Tinker AFB is situated on a broad area of uplands that forms a watershed divide. The visual characters of the Oklahoma City area are consistent with other cities in the central United States, ranging from tall buildings in the Oklahoma City downtown area to large agricultural and residential properties in more rural areas. Properties adjacent to Tinker AFB vary widely and include, but are not limited to, commercial, industrial, residential, and vacant properties.

3.8.2.2 Tinker AFB and Proposed Project Site

Tinker AFB has a visual character typical of a military aviation complex with a mixture of large industrial facilities and hangars, as well as smaller structures for administrative and support functions. A network of roadways and sidewalks provide routes for vehicle and pedestrian traffic. Various outdoor recreation areas are available for the base's population, including the Urban Greenway, which consists of a 110-acre wildlife and nature corridor, a golf course, athletic fields, bicycle paths, and other facilities. Tinker AFB utilizes the USAF *Architectural Compatibility Guide* developed in 2003 to guide the planning and design of facilities at the base to ensure building materials, design, signage, and landscape components are incorporated into new facilities and site improvements to present a cohesive and visually pleasing image (Tinker AFB 2005b).

Facilities within the base's seven architectural districts vary in character as a result of land use and function. The landscape of Tinker AFB primarily comprises ornamental trees, shrubs, and turf grass and varies from areas with large mature trees and shrubs to areas with little or no landscaping depending on the function of the area. Areas of the natural landscape, including such

resources as wetlands, greenways, and riparian corridors, have been preserved for their ecological significance as well as to enhance the attractiveness of the base.

Proposed Project Site

The site for both the Preferred Alternative and Alternative 2 is in a developed portion of Tinker AFB along the flightline, surrounded by existing buildings and the airfield. Visual resources at the project site can be considered characteristic of an active military airfield. In addition, B230 is a historic building and is eligible for listing to the NRHP, as discussed in Section 3.2, *Cultural Resources*.

SECTION 4.0

ENVIRONMENTAL CONSEQUENCES

This section evaluates the potential environmental consequences resulting from implementation of the Proposed Action or alternatives. Analyses are presented by resource area, as presented in Section 3, *Affected Environment*.

4.1 Air Quality

4.1.1 Approach to Analysis

The 1990 CAAA require that federal agency activities conform to the SIP with respect to achieving and maintaining attainment of NAAQS and addressing air quality impacts. The EPA General Conformity Rule requires that a conformity analysis be performed that demonstrates that a Proposed Action does not: (1) cause or contribute to any new violation of any NAAQS in the area, (2) interfere with provisions in the SIP for maintenance or attainment of any NAAQS, (3) increase the frequency or severity of any existing violation of any NAAQS, or (4) delay timely attainment of any NAAQS, any interim emission reduction, goals, or other milestones included in the SIP for air quality. A conformity review must be performed when a federal action generates air pollutants in a region that has been designated a *nonattainment* or *maintenance* area for one or more NAAQS. *Nonattainment* areas are geographic regions where the air quality fails to meet the NAAQS. *Maintenance* areas are regions where NAAQS were exceeded in the past and are subject to restrictions specified in a SIP-approved maintenance plan to preserve and maintain the newly regained attainment status. Provisions in the General Conformity Rule allow for exemptions from performing a conformity determination if the total net increase in emissions of individual nonattainment or maintenance area pollutants resulting from implementation of the Proposed Action fall below the significant (*de minimis*) threshold values established in 40 CFR 93.153 (b) (1) and (2).

As of 19 January 2011, the state of Oklahoma does not have any nonattainment areas for the NAAQS pollutants (EPA 2011). Additionally, the state of Oklahoma does not currently have a SIP in place for the Oklahoma City area. Therefore, an air conformity analysis will not be required for this proposed action.

The air quality analysis presented in this section describes impacts based on current regulations. If regulations change prior to implementation of the Preferred Alternative, Alternative 2, or the No-Action Alternative, air quality impacts should be reevaluated against any new standards.

4.1.2 Impacts

4.1.2.1 Preferred Alternative

Pollutant emissions associated with implementation of the Preferred Alternative Action at Tinker AFB would include:

- construction emissions (i.e., fugitive dust emissions) generated during renovation activities
- combustion emissions from construction-related vehicles and heavy equipment used during the renovation of B230
- operational emissions associated with the combustion by products resulting from engine run-ups and engine maintenance operations, as well as aircraft sorties generated by the 552d ACW

Construction-related emissions would be temporary and would not occur beyond completion of renovation activities. Under the Proposed Action, construction emissions would be limited to interior renovation activities only. At this time there are no exterior renovations are proposed under the Preferred Alternative. It is anticipated that the emissions resulting from construction activities would have little to no impact on the ambient air quality concentrations because minimal dust would be generated, emissions would be encapsulated within the building, and BMPs would be implemented to minimize dust emissions into the environment.

Construction Emissions

Dust Emissions

Under implementation of the Preferred Alternative, construction dust emissions (i.e., PM₁₀, a criteria pollutant) generated during the repair and renovation of B230 would be negligible. The repair and renovation of the B230 would involve only the interior of the building; no exterior renovations are planned. Construction dust emissions can vary substantially daily depending on levels of activity, specific operations, and prevailing meteorological conditions; however construction under the Preferred Alternative would be confined to the interior of the B230 and construction dust emissions into the environment are expected to be negligible. The existing building is surrounded by paved areas including the flightline, aircraft taxiways, and parking lots. No unpaved areas are anticipated to be disturbed during construction activities and these paved areas would be routinely cleaned to minimize the accumulation of debris and dust that could become airborne; therefore, negligible fugitive dust emissions would be generated. PM₁₀ emissions resulting from repair and renovation construction activities associated with the Preferred Alternative would be negligible and would be restricted to the interior portion of the building; therefore PM₁₀ emissions would not be significant.

Combustion Emissions

Combustion emissions associated with construction-related vehicles would be minimal because the project would be divided into nine separate phases occurring over a 15-20 year period. The number of construction-related vehicles traveling to the site during each phase would be minimal, would meet vehicle emissions standards, and would remain parked at the site during construction activities thereby eliminating daily truck travel or vehicle trips and associated vehicle emissions. The California Air Resources Board's Urbemis2007 emission estimating software predicted combustions emissions to be approximately 3 tons per year or approximately a total of 63 tons for the duration of the project. Emissions generated by construction-related vehicles would only occur during demolition and construction activities. Therefore, the associated combustion emissions would be negligible and expected to be well below the *de minimis* levels.

It is anticipated that GHG emissions would increase during construction activities due to increased use of construction-related vehicles and equipment. GHG emissions associated with construction-related vehicles and equipment are estimated to increase by 6,048 tons over the duration of construction activities. The GHG emissions were estimated using the Urbemis2007 emission estimating software, which provides default numbers and types of construction-related vehicles and equipment based on the estimated acreage disturbed during a project. However, the increase in GHG emissions is directly related to the construction activities associated with the Preferred Alternative and would only occur during construction activities. The GHG emissions that result from construction-related activities would be negligible and would result in minimal impacts.

Indoor Air Quality

B230 may have asbestos-containing materials, including friable asbestos, which could present a risk of exposure to personnel within the building during renovation activities. Consequently, the alteration of any such materials may result in the generation of regulated waste. The Occupational Safety and Health Administration prohibits occupation of a work area without respiratory protection if either of the following occur:

- The eight-hour average asbestos fiber concentration exceeds 0.1 fibers per millimeter.
- A 30-minute asbestos fiber concentration exceeds 1.0 fibers per millimeter.

Neither of these levels is likely to be exceeded during normal building occupation unless heavy damage is inflicted to an asbestos-containing material. Asbestos-containing materials are discussed further in Section 4.3, *Hazardous Materials and Wastes*. Regulated waste would be handled and transported offsite by a licensed contractor for disposal; therefore, impacts on indoor air quality would be temporary during renovation activities and no long-term impacts to indoor air quality would occur. As required when asbestos-containing materials are present, an air inventory and management plan would be performed and prepared.

Operational Emissions

Emissions generated by day-to-day operations of B230 would decrease from current levels following completion of the proposed modifications as described under the Preferred Alternative. During implementation of construction activities, a 40,000 sf area of B230 would be used as a swing space so daily operations could continue during construction work. As part of the operational planning for the Preferred Alternative, the OC-ALC operations would be relocated to the TACX to create vacant space within B230 to accommodate various units during the renovations. The relocation of OC-ALC to the TACX and rearrangement of other units within B230 would not result in new operations or generate new operational emissions.

At this time, no new daily operations would be implemented as a result of this repair and renovation of B230; therefore, operational emissions are expected to remain the same or below *de minimis* levels for air pollutants. Because the renovation of the facility would not generate any new industrial or manufacturing activities, emissions are expected to be limited to those that result from existing sources. The improved operational efficiency of B230 would include the application of sustainable development concepts in the planning, design, construction, environmental management, operation maintenance, and disposal of facilities and infrastructure projects, consistent with the USAF policy pertaining to LEED goals and principles. The resulting efficiency would create a beneficial impact on air quality and reduce energy and water consumption through a more efficient utility design and layout. In addition, the same beneficial impact would be anticipated for GHG emissions, since GHG emissions are expected to decrease due to improved operational efficiency of B230.

Indoor Air Quality

Maintenance operations conducted in B230 would not change following implementation of the Proposed Action; therefore, existing emission sources would remain the same over long-term operations. Under the Preferred Alternative, however, worker exposure to jet blast fumes would be reduced following renovations due primarily to the improved buildingwide ventilation system. Therefore, long-term beneficial impacts on indoor air quality would result from the improved building utilities because of improved air ventilation systems buildingwide and better air filtration.

4.1.2.2 Alternative 2: New Construction

Pollutant emissions associated with implementation of Alternative 2 would include construction emissions (i.e., fugitive dust emissions and combustion emissions from construction vehicles and heavy equipment). Construction emissions would be limited to those associated with the demolition of the existing facility and construction of a new facility. It is anticipated that the emissions resulting from the demolition and construction activities would have little to no impact on the ambient air quality concentrations. Operational emissions would remain the same as current levels during construction activities and would decrease from current levels following completion of construction.

Construction Emissions

Dust Emissions

Under implementation of Alternative 2, dust (PM₁₀) would be generated during the construction activities, namely demolition of B230 and construction of the new building. Dust emissions can vary substantially daily depending on levels of activity, specific operations and prevailing meteorological conditions. No grading activities are anticipated under implementation of Alternative 2. The existing footprint of the building would be used during the construction of the new facility; construction would occur on top of the existing concrete pad and would utilize existing utility infrastructure. It is anticipated that the concrete may need to be cut to update the existing infrastructure, but wet saws would be used thereby minimizing fugitive emissions. The existing building is surrounded by paved areas, including the flightline, aircraft taxiways, and parking lots. No unpaved areas are anticipated to be disturbed during the demolition and construction activities and these paved areas would be routinely cleaned in order to minimize accumulation of debris and dust that could become airborne.

The California Air Resources Board's Urbemis2007 emission estimating software was used to estimate emissions associated with implementation of Alternative 2. The Urbemis2007 software is currently considered the best tool available and uses standard calculation methods and emission factors to estimate emissions. Assuming no more than 12 acres of surface area would be disturbed during demolition and construction activities and a total project period of five years, the total estimated PM₁₀ emissions due to fugitive dust would be approximately 4.5 pounds per day. If demolition activities were to take place five days per week for a period of one year, total estimated emissions would be 1,172 pounds, or conservatively, 0.6 tpy. The 12-acre estimate was based on the square footage of the footprint of the existing building. It is anticipated that the demolition activities under this alternative would involve all 12 acres for a period of one year, and therefore would generate a greater amount of fugitive dust emissions than the Preferred Alternative.

A calculated total of 2.93 tons of fugitive dust emissions would be generated over the life of the project resulting from demolition and construction activities. Demolition activities would account for 90 percent of the total emissions generated during implementation of Alternative 2. If additional dust minimization practices were to be implemented during the demolition phase of the project, the dust emissions would be further reduced, lowering the impacts on local air quality. Increased PM₁₀ emissions resulting from proposed demolition and construction activities would be negligible and would not significantly impact local air quality. After initial site preparation and grading activities are completed, dust emissions associated with ongoing construction activities would be less, and once operational, long-term dust emissions from developed facilities would be negligible.

Combustion Emissions

Combustion emissions from construction-related vehicles would be minimal because vehicles would be parked at the site during construction activities, and would have a less-than-significant impact. The California Air Resources Board's Urbemis2007 emission estimating software predicted combustions emissions to be approximately 3 tons per year or a total of approximately 15 tons for the five-year duration of the project. The number of construction-related heavy equipment vehicles traveling to the site would be minimal. The combustion emissions generated during the life of demolition and construction activities associated with Alternative 2 would be negligible or at *de minimis* levels. Further, as is the case with construction dust emissions, emissions generated by construction-related vehicles would be temporary and would only occur for the duration of the project.

It is anticipated that GHG emissions would increase during construction activities due to increased use of construction-related vehicles and equipment. GHG emissions associated with construction-related vehicles and equipment are estimated to increase by 1,702 tons over the duration of construction activities. The GHG emissions were estimated using the Urbemis2007 emission estimating software, which provides default numbers and types of construction-related vehicles and equipment based on the estimated acreage disturbed during a project. However, the increase in GHG emissions is directly related to the construction activities associated with Alternative 2 and would be temporary. The GHG emissions that result from construction-related activities would be negligible and would result in minimal impacts.

Indoor Air Quality

Similar to the Preferred Alternative, asbestos-containing materials may be encountered during demolition of B230, which may therefore result in the generation of regulated waste. However, because Alternative 2 proposed demolition of the entire building, there would be no occupants other than construction workers in the building at risk of asbestos exposure. If asbestos-containing materials are known to occur, a safety plan would be prepared and implemented by construction staff to minimize risk of asbestos exposure. Asbestos-containing materials are discussed further in Section 4.3, *Hazardous Materials and Wastes*. Regulated waste would be transported off site by a licensed contractor for disposal; therefore, no long-term demolition or construction-related impacts on air quality would occur.

Operational Emissions

Emissions generated by day-to-day operations of B230 would decrease from current levels following completion of the proposed modifications as described under Alternative 2. During construction activities for a new facility, 552d ACW maintenance operations would be relocated to another facility along the flightline. At this time, no new daily operations would be implemented as a result of constructing a new facility; therefore, upon completion of the new building and relocation of all 552d ACW maintenance operations to the new building, operational emissions would be expected to remain the same or below *de minimis* levels for air pollutants. Because the new facility would not house any new industrial or manufacturing activities, emissions are expected to be limited to those that result from existing sources.

New construction would provide a modern, more efficient, maintenance-friendly layout to support the mission requirements of the 552d ACW, further assisting in reducing operational emissions. The new facility would include the application of sustainable development concepts in the planning, design, construction, environmental management, operation maintenance, and disposal of facilities and infrastructure, consistent with the USAF policy pertaining to LEED goals and principles. The new facility configuration and infrastructure would result in beneficial impacts on air quality and would reduce energy consumption through a more efficient utility design and layout. Additionally, the same beneficial impacts are anticipated for GHG emissions, since they are expected to decrease due to improved operational efficiency of B230.

Indoor Air Quality

For reasons similar to the Preferred Alternative, existing emission sources would remain the same; however, worker exposure to jet blast fumes would be reduced following facility reconstruction due primarily to the improved buildingwide ventilation system. Therefore, long-term beneficial impacts on indoor air quality would result from the improved building utilities.

4.1.2.3 Alternative 3: No-Action Alternative

Construction Emissions

If the No-Action Alternative were selected, no action would be taken; therefore, there would be no construction emissions. Air Quality would remain as described in Section 3.1, *Air Quality*, and no construction-related impacts would occur.

Operation Emissions

If the No-Action Alternative were selected, no action would be taken and Tinker AFB would not implement the Proposed Action. Impacts on indoor air quality would continue due to the continued operation of inadequate ventilation systems. Therefore, impacts on operational emissions would remain as described in Section 3.1, *Air Quality*, and no operations-related impacts would occur.

4.2 Cultural Resources

4.2.1 Approach to Analysis

Cultural resources are subject to review under both federal and state laws and regulations. Section 106 of the NHPA of 1966 empowers the Advisory Council on Historic Preservation to comment on federally initiated, licensed, or permitted projects affecting cultural sites listed or eligible for inclusion on the NRHP.

Once cultural resources have been identified, significance evaluation is the process by which resources are assessed relative to significance criteria for scientific or historic research, for the general public, and for traditional cultural groups. Only cultural resources determined to be significant (i.e., eligible for the NRHP) are protected under the NHPA.

Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may occur by (1) physically altering, damaging, or destroying all or part of a resource; (2) altering characteristics of the surrounding environment that contribute to resource significance; (3) introducing visual, audible, or atmospheric elements that are out of character with the property or alter its setting; or (4) neglecting the resource to the extent that it deteriorates or is destroyed.

Direct impacts can be assessed by identifying the types and locations of Proposed Actions and determining the exact locations of cultural resources that could be affected. Indirect impacts primarily result from the effects of project-induced population increases and the resultant need to develop new housing areas, utility services, and other support functions necessary to accommodate population growth. These activities and the facilities' subsequent use can disturb or destroy cultural resources.

4.2.2 Impacts

The Proposed Action involves the repair and renovation of B230, the Airplane Repair Building, which has been determined eligible for the NRHP for its association with aircraft construction (1942 through 1946) and its architectural style (Tinker AFB 2005a).

Although the likelihood of discovering significant cultural resources such as archeological deposits would be unlikely during proposed construction since little to no ground disturbance is proposed, any such inadvertent discoveries would be processed under Tinker AFB ICRMP Section E.7.3, *Inadvertent Discoveries*, and the provisions of applicable law(s) such as NHPA Section 106 (36 CFR 800.13).

4.2.2.1 Preferred Alternative

The Preferred Alternative would involve the repair and renovation of the interior structure of the building, and new glass and windows would be installed to meet AT/FP requirements. Character-defining features of B230 include the following (Tinker AFB 2005a):

- *Design.* Moderne design with four large hangar bays separated by administration and support facilities.
- *Roof.* Arched roofs over hangar bays; flat roofs throughout other areas.
- *Distinctive Ornamentation.* Corner concrete stair towers with vertical banding.
- *Doors.* Four large sliding hangar doors at each hangar.
- *Windows.* Two bands of horizontally oriented industrial windows, painted shut, on the northern façade of building.
- *Entrances.* Projected entrances on northern façade.
- *Distinctive Ornamentation.* Projected concrete foundation water table (an architectural feature designed to deflect rainwater away from the building foundation).

In accordance with the ICRMP (Tinker AFB 2005a), if an action does not involve “significant interior architectural features and the rehabilitation will not affect the exterior of the building,” the action is considered to have no adverse effect on cultural resources. The ICRMP states that, the replacement of significant features, such as windows or doors, with new equipment that is architecturally consistent with the original equipment, would result in a “no adverse effect” (Tinker AFB 2005a). None of the proposed activities would either 1) affect the exteriors or 2) significant interior features of NRHP-eligible buildings or impact character-defining features of NRHP-eligible buildings. To ensure no adverse effect, the replacement of windows would follow the *Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings* which include, but are not limited to, replacing in kind an entire window using the same sash and pane configuration and other design details (National Park Service 2011). In order to meet AT/FP requirements, using the same kind of material may not be feasible and a compatible substitute material should be considered. Window replacements should convey the same visual appearance as the original windows.

As proposed, no element of the Proposed Action would trigger an “adverse effect,” as defined in the ICRMP, to the character-defining features of B230. Therefore, the Preferred Alternative would result in “no adverse effect.”

4.2.2.2 Alternative 2: New Construction

Alternative 2, New Construction, would involve the demolition of the NRHP-eligible B230 and, as such, would be considered a high-level impact project, resulting in an adverse effect on the NRHP-eligible property. In accordance with the ICRMP (Tinker AFB 2005a), implementation of Alternative 2 would require the following:

- Consultation with the Oklahoma SHPO and Oklahoma Archaeological Survey
- Notice to the Advisory Council on Historic Preservation of the beginning of consultation and notice to relevant outside parties and the public
- Development of an agreement with consulting parties for mitigation of the affected resource
- Preparation and submittal of a mitigation agreement to the Advisory Council on Historic Preservation for a 30-day review and comment period

The proposed new construction would result in a new facility that is visually consistent with the surrounding environment and architecturally complementary to the surrounding buildings.

4.2.2.3 Alternative 3: No-Action Alternative

Under the No-Action Alternative, repair and renovation of the interior of B230 would not occur; however, cultural resources could still be impacted under implementation of this alternative. The No-Action Alternative may allow the building to be subject to alterations in order to facilitate its continued use, which may result in an adverse effect to character-defining features of the historic

building. Per the ICRMP (Tinker AFB 2005), as long as these alterations “do not radically change, obscure, or destroy any character-defining spaces, materials, features, or finishes” they would have no adverse effect on the historic building.

4.3 Hazardous Materials and Wastes

4.3.1 Approach to Analysis

Numerous local, state, and federal laws regulate the storage, handling, disposal, and transportation of hazardous materials and wastes; the primary purpose of these laws is to protect public health and the environment. The significance of potential impacts associated with hazardous substances is based on their toxicity, ignitability, and corrosivity. Impacts associated with hazardous materials and wastes would be significant if the storage, use, transportation, or disposal of hazardous substances substantially increases the human health risk or environmental exposure.

4.3.2 Impacts

4.3.2.1 Preferred Alternative

Construction-Related Impacts

The Preferred Alternative site is in the vicinity of known groundwater contamination areas (see Figure 4-1). No renovation activities would entail work in or around groundwater resources; therefore, it is unlikely that groundwater quality would be affected by implementing the proposed renovations at B230. However, there are known soil vapor concerns at B230 from the known groundwater contamination beneath B230. Cutting into the concrete building slab is proposed under this alternative for the installation of piers in work areas as well as a 30-foot-by-30-foot area for the installation of an elevator compliant with ADA guidelines. All required controls on the handling of hazardous materials, soil vapor, and for spill prevention and cleanup would be implemented to protect groundwater and to protect workers from exposure to soil vapor. While encountering contaminated soil is not anticipated during proposed renovations, any excavated soils must be characterized for disposal and a Waste Management Plan for the soils must be approved and coordinated through 72ABW/CEPR. During excavation, if there is any concern that the material may be contaminated, work must be stopped immediately and 72ABW/CEPR must be called. On-site workers must have hazardous waste operations training and a Health and Safety Plan that addresses the potential for hazardous vapors and mitigation efforts to be taken. No construction activities are proposed that would alter or impact the soil vapor extraction system at B230. Therefore, under implementation of the Preferred Alternative, there would be no impacts on or resulting from groundwater contamination.

Implementation of the Preferred Alternative would not involve any new construction and would involve only renovations of the interior of B230; therefore, there would be no change in the impermeable surface area of the project site. Construction contractors would adhere to the Tinker

AFB SWPPP and BMPs during construction activities to eliminate potential impacts from stormwater runoff (e.g., pollutants in stormwater discharges).

Some building components in B230 may contain asbestos (e.g., flooring, insulation wrap, siding) or lead-based paint (e.g., piping). Consequently, demolition or removal of such components may result in the generation of regulated waste. Building materials should be sampled by a certified Asbestos Hazard Emergency Response Act Building Inspector prior to renovation activities. Personnel involved in the demolition, removal, and abatement of asbestos must be properly trained and certified under the EPA *Asbestos Model Accreditation Plan*, and a certificate of compliance would be required. The building materials should be analyzed for asbestos by a laboratory certified by the National Voluntary Laboratory Accreditation Program. Regulated waste would be transported off site by a licensed contractor for disposal. In addition, a USAF Form 813 would be prepared and submitted to the Tinker AFB 72 ABW/CEAN.

The Occupational Safety and Health Administration prohibits occupation of a work area (without respiratory protection) if either of the following occur:

- The 8-hour average asbestos fiber concentration exceeds 0.1 fiber per millimeter.
- A 30-minute asbestos fiber concentration exceeds 1.0 fiber per millimeter.

Neither of these levels is likely to be exceeded during normal building occupation unless heavy damage is inflicted to an asbestos-containing material. Because regulated waste would be contained and disposed of according to all applicable standards by a licensed contractor, only negligible impacts related to the exposure to hazardous materials from renovation activities are anticipated. Further, mercury-containing light bulbs, ballasts, and mercury-containing thermostats would be disposed properly and recycled in accordance with the Tinker AFB Hazardous Wastes Management program.

Operations-Related Impacts

Some hazardous materials are required as part of maintenance operations (e.g., fuels, solvents). Implementation of the Preferred Alternative would not result in a change from existing operations; therefore, long-term impacts related to use of hazardous materials would remain the same as current conditions, as the use of some hazardous materials is included in maintenance operations currently conducted in B230. Existing standard operating procedures would not change from following renovation activities.

B230 currently has several hazardous materials storage sites as well as one hazardous waste storage site (Figure 4-1); implementation of the Preferred Alternative would not result in a change in the amount of these materials generated, but may result in relocation of these sites within the building. Relocation of these sites would be conducted in accordance with the ECAMP at Tinker AFB. No USTs/ASTs are in the project area, and the remote fueling locations are located off of B230; therefore, implementation of the Preferred Alternative would have no impact on hazardous materials and waste storage sites, USTs or ASTs, or remote fueling locations.

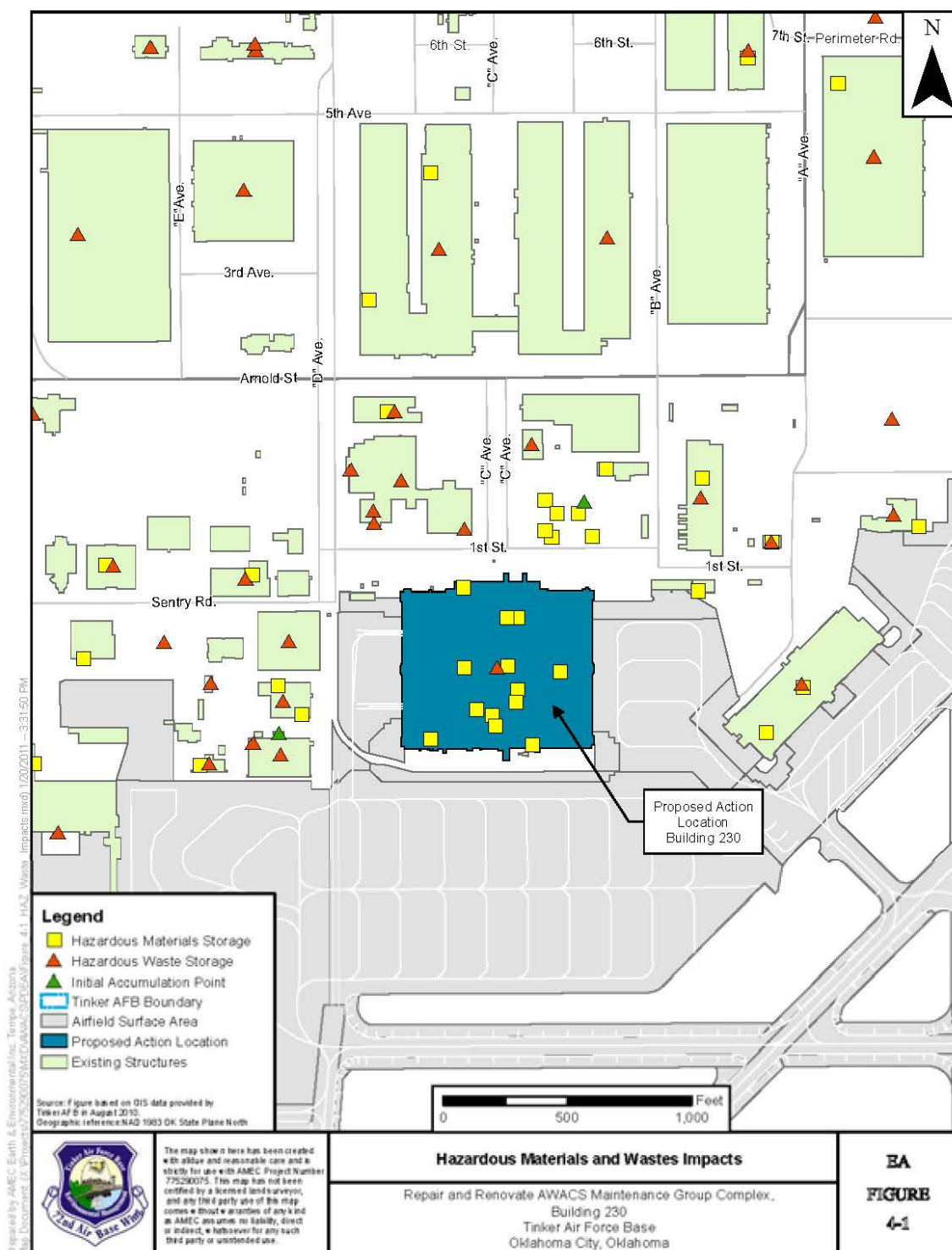
4.3.2.2 Alternative 2: New Construction

Construction-Related Impacts

Because the Alternative 2 site is the same as that for the Preferred Alternative, impacts on groundwater quality and impacts from soil vapor and hazardous materials resulting from groundwater contamination would be the same as those for the Preferred Alternative. The existing concrete building slab would remain in place to support new construction; however, similar to the Preferred Alternative, cutting into the concrete building slab is proposed for installation of piers in work areas and a 30-foot-by-30-foot area for the installation of an ADA-compliant elevator. All required controls on the handling of hazardous materials, soil vapor, and spill prevention and cleanup would be implemented to protect groundwater and to protect workers from exposure to soil vapor. No construction activities are proposed that would alter or impact the soil vapor extraction system at B230. Therefore, under implementation of the Preferred Alternative, there would be no impacts to or resulting from groundwater contamination.

Implementation of Alternative 2 would involve construction of a new building at the site of the existing B230. There would be no change to the existing building footprint; consequently, there would be no change to the impermeable surface area of the project site. The Tinker AFB SWPPP and BMPs would be adhered to during construction activities to eliminate potential impacts from stormwater runoff (e.g., pollutants in stormwater discharges).

Similar to the Preferred Alternative, demolition and removal of asbestos-containing materials may occur and may result in the generation of regulated waste. Regulated waste would be transported offsite by a licensed contractor for disposal. Because regulated waste would be contained and disposed according to all applicable regulations by a licensed contractor, no hazardous materials exposure impacts would result. Further, mercury-containing light bulbs, ballasts, and mercury-containing thermostats would be disposed properly and recycled in accordance with the Tinker AFB Hazardous Wastes Management program.



Operations-Related Impacts

Implementation of Alternative 2 would not result in a change in existing operations and the use of hazardous materials; therefore, operational impacts related to use of hazardous materials would remain the same as existing conditions.

B230 currently has several hazardous materials storage sites as well as one hazardous waste storage site (Figure 4-1). Operations in B230 would be completely shutdown during demolition and construction activities because no other facilities on Tinker AFB are capable of accommodating 552d ACW operations currently conducted in B230. Hazardous materials and wastes storage sites would be cleared in accordance to procedures in the ECAMP prior to commencement of demolition activities.

Implementation of Alternative 2 would not result in a change in the amount of these materials generated, but would result in relocation of these sites within the building following reconstruction of the facility. Relocation of these sites would be conducted in accordance with the ECAMP at Tinker AFB. No USTs or ASTs are in the project area, and the remote fueling locations are outside of B230. Implementation of Alternative 2 would not involve work outside of the existing building footprint; therefore, implementation of Alternative 2 would have no impact on USTs, ASTs, or remote fueling locations.

4.3.2.3 Alternative 3: No-Action Alternative

If the No-Action Alternative were selected, Tinker AFB would not implement the Proposed Action. Therefore, conditions would remain as described in Section 3.3, *Hazardous Materials and Wastes*.

4.4 Safety**4.4.1 Approach to Analysis**

Human health and safety is defined as the conditions, risks, and preventative measures associated with a facility and their ability to potentially affect the health and safety of facility personnel or the general public. If implementation of the Proposed Action would substantially increase the risks associated with aircraft mishap potential or flight safety relevant to the public or the environment, it would represent a significant impact. For example, if an action involved an increase in aircraft operations such that mishap potential would increase significantly, air safety would be compromised; conversely, beneficial impacts would be those reducing aircraft mishap potential.

In addition, if implementation of the Proposed Action would substantially increase the risks to occupational safety of the staff in B230, it would represent a significant impact. Beneficial impacts would include those reducing the risk of occupational safety hazards to building occupants.

Further, if implementation of the Proposed Action would result in incompatible land use with regard to safety criteria such as CZs or APZs, impacts would be significant. Beneficial impacts would include those reducing incompatible land use within CZs or APZs. Siting facilities within established quantity-distance arcs would be considered adverse due to the risk of exposure to explosives including those resulting from blasts, fragments, or thermal hazards.

4.4.2 Impacts

4.4.2.1 Preferred Alternative

B230 is located within the secure area of the flightline; therefore, AT/FP considerations are not required. Nevertheless, all new exterior windows and glass that may be installed during renovation should meet AT/FP requirements for glazing and blast resistance according to UFC 4-010-01 *DoD Minimum Antiterrorism Standards for Buildings*.

Air Safety

The Preferred Alternative involves the renovation of the interior of the existing B230; no renovation or construction activities would occur to the external structure of B230. As such, implementation of the Preferred Alternative would not affect air safety.

Occupational Safety

Under the Preferred Alternative, the existing outdated fire protection system would be replaced with an automatic wet-pipe fire sprinkler system capable of suppressing potential fire spread throughout the building; the new fire suppression system would be in compliance with NFPA 101 and UFC 3-600-01, *Fire Protection Engineering for Facilities*. Electrical utilities within B230 will be reconfigured to remove existing exposed high-voltage energy sources (e.g., connectors, terminals). Also included in the Preferred Alternative is the reconfiguration of B230 facilities to be accessible to and usable by persons with disabilities according to the requirements of the *ADA Architectural Guidelines and the Uniform Federal Accessibility Standards*. An ADA-compliant elevator would be installed to provide access to the newly constructed second-floor mezzanine. As a result, implementation of the Preferred Alternative would result in beneficial long-term impacts on safety and accessibility for building occupants.

Included in the Preferred Alternative is replacement of the existing partial ventilation system with a new buildingwide system adequately sized to disperse and ventilate B230. Therefore, implementation of the Preferred Alternative would result in beneficial impacts on human health and safety through improvement of indoor air quality.

Accident Potential Zones

All proposed construction activities identified in the Preferred Alternative have been designed and sited to comply with all airfield safety criteria and are consistent with guidelines established in the base's *General Plan* (Tinker AFB 2005b). No facilities development is proposed within airfield CZs or APZs; further, implementation of the Preferred Alternative would not result in a change in shape or shift in location of established CZs or APZs. Current land use

incompatibilities exist within APZs I and II off Runways 17 and 12, respectively; however, no new incompatible land use would be introduced as a result of implementation of the Preferred Alternative. Therefore, no adverse impacts to airfield safety would result from implementation of the Preferred Alternative.

4.4.2.2 Alternative 2: New Construction

The existing B230 is considered to be within a controlled access area; therefore, AT/FP considerations are not required for the proposed construction of a new facility at the same site. It is recommended, however, that all new exterior building materials meet AT/FP requirements for blast resistance according to UFC 4-010-01. The new facility would also be constructed to be ADA compliant.

Air Safety

Alternative 2 involves the demolition of the existing B230 and construction of a new facility within the B230 footprint. All activities identified in Alternative 2 would be designed and sited to comply with all airfield safety criteria and are consistent with guidelines established in the Tinker AFB *General Plan* (Tinker 2005b).

Occupational Safety

Similar to the Preferred Alternative, Alternative 2 would result in a facility with updated buildingwide fire suppression systems compliant with NFPA 101 and UFC 3-600-01. The existing risk of exposure of exposed electrical utilities to the elements (e.g., rain) or accidental exposure to staff (e.g., exposed activated electrical connectors) would be eliminated through the proper installation of updated electrical utilities. Implementation of Alternative 2 would include installation of a buildingwide system adequately sized to disperse and ventilate B230. Therefore, implementation of Alternative 2 would result in beneficial impacts on safety through improvement of indoor air quality.

Accident Potential Zones

All proposed construction activities identified in Alternative 2 have been designed and sited to comply with all airfield safety criteria and are consistent with guidelines established in the Tinker AFB *General Plan* (Tinker 2005b). No facilities development is proposed within airfield CZs or APZs; further, implementation of Alternative 2 would not result in a change in shape or a shift in location of established CZs or APZs. Current land use incompatibilities exist within APZs I and II off Runways 17 and 12, respectively; however, no new incompatible land use would be introduced as a result of implementation of Alternative 2. Therefore, no adverse impacts on airfield safety would result from implementation of Alternative 2.

4.4.2.3 Alternative 3: No-Action Alternative

If the No-Action Alternative were selected, Tinker AFB would not implement the Proposed Action. The No-Action Alternative would result in the continued operation of a building with

aged infrastructure (B230) that contains within it multiple safety hazards and high maintenance needs. Conditions would remain as described in Section 3.4, *Safety*, and would result in adverse impacts on personnel because of the safety hazards present in B230.

4.5 Socioeconomics

4.5.1 Approach to Analysis

Determination of the significant of impacts to socioeconomic conditions is based on the overall impacts on population, economic activity, and other socioeconomic attributes in the vicinity of the project site and the surrounding region (for this project, the workforce population at Tinker AFB was identified as the surrounding region). For example, potentially beneficial impacts on socioeconomic conditions could result from an action that increases short-term or long-range employment; adverse impacts would result from an action that displaces a large number of people or reduces work productivity with regard to the 552d ACW mission. The following sections discuss potential socioeconomic consequences of the evaluated alternatives.

4.5.2 Impacts

4.5.2.1 Preferred Alternative

Implementation of the Preferred Alternative would involve renovation of the interior of B230 to improve the layout of work functions conducted in support of the 552d ACW mission. As addressed in Section 3.5, *Socioeconomics*, the current layout of B230 is such that team interaction and maintenance and systems check times are hindered, negatively impacting E-3 AWACS sortie rates.

Included in the Preferred Alternative is a phased approach to renovations, which would maintain productivity by eliminating the need for complete shutdown of work activities. Renovation activities may occur along a 20- to 40-year timeline, which may introduce some inconveniences to work activities; however, construction phasing, workaround options, and swing space accommodations have been defined in the *B230 Renovation Master Plan* within the *552 Air Control Wing North Campus Development* long-range planning document prepared by the USAF and dated 7 April 2008 (Tinker AFB 2008). No gain or loss of Tinker AFB personnel is included in the Proposed Action; therefore there would be no net change in staff due to implementation of the Preferred Alternative. The proposed swing space provided by relocation of the OC-ALC Cable Shop from B230 to TACX is reliant upon the availability of space at TACX for Cable Shop operations. If space at TACX is not available by the time that swing space in B230 is needed for renovations, then the 100 civilian personnel employed by the OC-ALC at the Cable Shop may be impacted by relocation or shut-down of Cable Shop operations until space is available at TACX. If relocation of the Cable Shop to TACX were delayed, then civilian personnel employed at the Cable Shop may be negatively impacted under the Preferred Alternative until space at the TACX became available to accommodate Cable Shop operations.

The proposed renovations would result in a temporary increase in local employment through construction jobs and local spending for construction materials. No long-term change in spending would occur once complete, B230 operations costs would be lower than current costs due to reduced energy and fuel consumption. Given the size of the Oklahoma City area economy as discussed in Section 3.5, *Socioeconomics*, the beneficial impacts from temporary construction employment and spending would be minor in comparison with the regional economy.

4.5.2.2 Alternative 2: New Construction

Similar to the Preferred Alternative, Alternative 2 would provide the 552d ACW with a more efficient workspace in order to accommodate workload and maintain mission readiness. Under Alternative 2, the proposed improvements to the AWACS Maintenance Complex would be completed through the demolition of the existing B230 and construction of a new facility at the site. A complete shutdown of 552d ACW activities in B230 would be required during construction, as no other facilities on Tinker AFB can accommodate the AWACS workload, resulting in significant adverse impacts on the 552d ACW during construction of new facilities. Similar to the Preferred Alternative, if relocation of the Cable Shop to TACX were delayed, then civilian personnel employed at the Cable Shop may also be negatively impacted under Alternative 2 until space at the TACX became available to accommodate Cable Shop operations. Shutdown of work activities could result in lost work for hourly employees or furloughs for salary employees.

Under Alternative 2, construction activities would occur on a much shorter timeline than the Preferred Alternative, and would likely be completed during a period of five years. No long-term net change in personnel is included under Alternative 2; however, construction activities would provide short-term jobs for off-base personnel. Construction activities would result in temporary increased spending on local materials; however, materials spending would constitute a minor portion of the regional economy. Therefore, implementation of Alternative 2 would result in short-term beneficial impacts on off-base personnel; long-term beneficial impacts on personnel within the 552d ACW would be anticipated through the provision of more efficient, healthy, and sustainable working conditions.

4.5.2.3 Alternative 3: No-Action Alternative

Under the No-Action Alternative, the proposed renovations to B230 would not occur and the 552d ACW workforce employed in B230 would continue to be adversely impacted by the inefficient layout of work areas and work teams within the building. Inefficient work areas have led to increased maintenance and systems check times, which may negatively impact the time required to prepare for each E-3 AWACS sortie; continuation of these conditions could result in continued adverse impacts on the E-3 AWACS sortie generation rate of the 552d ACW.

If the No-Action Alternative were selected, Tinker AFB would not implement the Proposed Action. Therefore, conditions would remain as described in Section 3.5, *Socioeconomics*.

4.6 Sustainability

4.6.1 Approach to Analysis

To comply with EO 13514, the project has been evaluated for its impact on the federal government's goal to reduce GHG emissions by reducing energy consumption through strategic sustainable development, energy-efficient building design, and environmentally friendly building material selection. The project alternatives have been evaluated for their adherence to the EO and the *Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding* referenced within the EO, as it pertains to identifying energy-reduction opportunities and siting considerations.

This project has also been evaluated based on the level of proposed design elements and daily operations engaged to strengthen the management of environmental, energy, and human resources. The determination of significance is based on the proposed design of facility construction components, including building materials, mechanical and electrical systems, and overall energy use. Impacts to sustainability and greening would occur if proposed operations did not incorporate facility design and operational measures intended to conform to EO 13514, or did not incorporate LEED recommendations. The following sections discuss potential environmental consequences of the evaluated alternatives.

4.6.2 Impacts

4.6.2.1 Preferred Alternative

The proposed renovations under the Preferred Alternative would be designed with an emphasis on sustainable design concepts and principles. The LEED Green Building Rating System would be used with the goal of achieving a LEED Silver certified rating. Under the Preferred Alternative, renovation of B230 would incorporate sustainable design concepts and materials including the following:

- Gypsum wallboard
- Carpet containing recycled content certified by the Carpet and Rug Institute
- Interior paints, adhesives, sealants, coatings, flooring systems, and other products with low levels of volatile organic compounds
- Wood doors containing certified wood products in accordance with the Forest Stewardship Council's principles and criteria for wooden building components
- Miniblinds and blackout drapes to prevent overexposure and heating from sunlight
- Storage and collection of recyclables within the facility
- Reuse of building components (e.g., existing walls, floors, roof) where possible
- Ultra-low-flow water fixtures

The Preferred Alternative would also include upgrading the building's mechanical and electrical systems to provide maintenance-friendly and energy-efficient central systems designed to serve the entire building, reducing the long-term costs of utilities and maintenance. Replacement of the existing chilled water piping system would add a new chiller, condenser water pump, chilled water pump, and a new cooling tower to provide cooling to the entire building via a chilled water loop. The existing piping would be utilized with new piping added as needed. Heating would be provided by gas-fired boiler system, and heat would be circulated through the building in a manner similar to the chilled water system, utilizing existing piping where possible and adding new piping where needed. Currently, B230 uses two large air handlers in the attic space above the ground floor; these would be removed during installation of the second-floor mezzanine and would be replaced by a variable air volume (VAV) air handler system consisting of multiple VAV terminal units installed throughout the building. The VAV system would provide individual temperature control for each room area, provide flexibility for spatial arrangements, and provide overall energy savings. Based on these attributes, implementation of the Preferred Alternative would result in beneficial impacts on sustainability regarding building materials and utilities.

The Preferred Alternative would also provide beneficial impacts on sustainability when viewed through a human resources perspective. The proposed renovations would result in a layout that collocates work units requiring high degrees of interaction as well as complementary work activities, providing a work area more conducive to completing work in an efficient, effective manner. The resultant streamlined work layout would improve overall productivity, cost savings by reducing redundant trips between work areas, and benefits personnel through a safer, healthier, work- and maintenance-friendly facility. Therefore, the Preferred Alternative would result in beneficial long-term impacts on overall sustainability.

4.6.2.2 Alternative 2: New Construction

As with the Preferred Alternative, Alternative 2 would include sustainable design concepts and materials in the proposed construction of a new AWACS Maintenance Group facility. The new facility would include mechanical and electrical systems to provide maintenance-friendly and energy-efficient central systems designed to serve the entire building with lower operating costs than those incurred by the existing B230. Under implementation of Alternative 2, there would be less reuse of existing building materials and infrastructure than in the Preferred Alternative. However, new construction may increase the range of choices in sustainable building materials and allow more freedom in design of the facility to better incorporate sustainability principles and improve the arrangement of utilities and work space.

The proposed construction under Alternative 2 would also provide an improved work area layout similar to the Preferred Alternative, resulting in improve overall productivity, cost savings by reducing redundant trips between work areas, and benefits personnel through a safer, healthier, work- and maintenance-friendly facility. Therefore, Alternative 2 would result in beneficial long-term impacts on overall sustainability.

4.6.2.3 Alternative 3: No-Action Alternative

If the No-Action Alternative were selected, The USAF would not implement the Proposed Action. The No-Action Alternative would result in the continued operation of an aged building (B230) that is costly to operate and maintain and represents a wasteful, energy-usage-intensive facility with high maintenance needs, resulting in adverse impacts on sustainability.

4.7 Transportation and Circulation

4.7.1 Approach to Analysis

Potential impacts on transportation and circulation are assessed with respect to anticipated disruption or improvement of current transportation patterns and systems, deterioration or improvement of existing levels of service; and changes in existing levels of transportation safety. Beneficial or adverse impacts may arise from the physical changes to circulation (e.g., closing, rerouting, or creating roads), construction activity, introduction of construction-related traffic on local roads, or changes in daily or peak-hour traffic volumes created by installation workforce or population changes. Adverse impacts on roadway capacities would be significant if roads with no history of exceeding capacity were forced to operate at or above their full design capacity.

4.7.2 Impacts

4.7.2.1 Preferred Alternative

Construction-Related Impacts

Implementation of the Preferred Alternative would require delivery of materials and construction-related equipment and vehicles to the site. However, construction traffic would make up only a small portion of the total existing traffic volume on base, and many of the construction vehicles would be driven to and kept on site or at the staging area (within the existing parking area for B230) for the duration of renovation activities, resulting in very few increased trips. No changes in traffic circulation or layout are proposed during construction activities under the Preferred Alternative. Further, increases in traffic volumes associated with refurbishment activity would only occur during renovation; upon completion of construction, no long-term impacts on transportation systems would result. However, the overall renovation activities may occur on a timeline up to 20 to 40 years; therefore, adverse impacts on parking due to construction-related activities would be less intense than if all construction occurred in a shorter timeframe yet would occur over a period of up to 40 years in duration.

Operation-Related Impacts

The Preferred Alternative would continue to operate with three work shifts, staffed with existing Tinker AFB personnel. No new personnel are anticipated with the Proposed Action; therefore, no additional parking would be required. No changes in traffic circulation, layout, or parking

facilities would occur or be required under the Preferred Alternative; therefore, there would be no operation-related impacts on transportation and circulation.

4.7.2.2 Alternative 2: New Construction

Construction-Related Impacts

Similar to the Preferred Alternative, Alternative 2 would require delivery of materials and construction-related equipment and vehicles to the site, and would require use of a portion of the existing parking area as an equipment staging area. No changes to traffic circulation or layout are proposed during construction activities under Alternative 2. Any increases in traffic volumes associated with construction activities would only occur during construction; upon completion of construction, no long-term impacts to transportation systems would result. The proposed construction activities would be completed within approximately five years. Therefore, the negative impacts due to construction-related activities would last five years.

Operation-Related Impacts

Implementation of Alternative 2 would have negligible operation-related impacts. Under Alternative 2, the new facility would continue to operate with three work shifts, staffed with existing Tinker AFB personnel. No new personnel are anticipated with the Proposed Action, and construction activities would be limited to the existing building footprint; therefore, no new parking facilities would be required. No changes in traffic circulation, layout, or parking facilities would occur or be required under Alternative 2; therefore, there would be no operation-related impacts on transportation and circulation.

4.7.2.3 Alternative 3: No-Action Alternative

If the No-Action Alternative were selected, Tinker AFB would not implement the Proposed Action and conditions would remain as described in Section 3.7, *Traffic and Circulation*.

4.8 Visual Resources

4.8.1 Approach to Analysis

Determination of the significance of impacts on visual resources is based on the level of visual sensitivity in the area. Visual sensitivity is defined as the degree of public interest in a visual resource and concern over adverse changes in the quality of that resource. In general, an impact to a visual resource is significant if implementation of the Proposed Action would result in substantial alteration to an existing sensitive visual setting.

4.8.2 Impacts

4.8.2.1 Preferred Alternative

B230 is characterized by significant historical architectural features and the Proposed Action would not affect these features. The proposed renovations of B230 would occur entirely within the interior of the building only and would include the installation of architecturally compatible windows on the new second story. B230 has been determined to be eligible for listing on the NRHP. Given that the visual environment of Tinker AFB does not constitute a unique or sensitive viewshed, and the existing building is visually consistent with existing structures and activities at the installation and in the vicinity of the proposed project site, no detrimental impact on regional visual resources would occur upon implementation of the Proposed Action.

4.8.2.2 Alternative 2: New Construction

If this alternative were selected, the new building would be constructed at the site of the existing B230 and would be visually consistent with existing structures and activities in the vicinity of the installation and proposed project site. Overall visual characteristics at the installation and views from off-site areas would not be affected with implementation of this alternative. The visual environment of Tinker AFB does not constitute a unique or sensitive viewshed; therefore, impacts on regional visual resources would be negligible under Alternative 2.

4.8.2.3 Alternative 3: No-Action Alternative

No impacts on existing visual resources at or in the vicinity of Tinker AFB would occur if the No-Action Alternative were selected and visual resources conditions would remain as described in Section 3.8, *Visual Resources*.

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SECTION 5.0 CUMULATIVE IMPACTS

Cumulative impacts on environmental resources result from incremental impacts of the Preferred Alternative when combined with other past, present, and reasonably foreseeable future projects in an affected area. Cumulative impacts can result from minor but collectively substantial actions undertaken over a period of time by various agencies (federal, state, or local) or persons. In accordance with NEPA, the cumulative impacts resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the near future are discussed below.

Projects occurring at Tinker AFB in the vicinity of B230 are included in Table 5-1.

Table 5-1. Projects Occurring at or near Tinker AFB

Demolition of B3108	B3108 is scheduled for demolition in plans currently under development. The demolition will take place over the course of a 5- to 10-year period.
Construct Air Traffic Control Tower	Construct a new 11-story air traffic control tower. Construction would include reinforced concrete piers, a control tower cab with tinted double glazing, an elevator, a flight command and administrative area, and a supervision and simulation training area as well as fire protection, utilities, backup power, lighting protection, access road, and any other necessary support for a complete and useable facility. Project to include minimum DoD AT/FP requirements and demolition of existing control tower and access road.
Add to and Alter Existing Type III Hydrant Fueling System	Additions and alterations of the existing Type III hydrant fueling system is proposed to increase the efficiency of fueling the 552d ACW E-3 aircraft in support of the AWACS mission. Proposed actions would include: addition of 10 fuel hydrant outlets, replacement of 13 existing fuel hydrant outlets, refurbishment of fuel storage tanks, replacement of a Type III pump house to include five fuel pumps and filter separators, and addition of a product recovery system, control system, and associated components to the system as a whole.
Repair by Replacement of JP8 Fuel Transfer Line	Removal and replacement of the existing fiberglass fuel line that runs from B273 to B995. Fiberglass fuel line would be replaced with interior coated carbon steel pipe suitable for jet propellant (JP) 8 fuel. The existing line has had leaks identified and repaired along portions of the line. Soil remediation and site restoration would be performed as needed.
Construct Vehicle Fueling Station	Construct Base Military Service Station to include two covered islands with fuel dispensers, four 12,000 gallon above-ground storage tanks equipped with automatic tank gauging and a secondary containment system. Compressed air and water station, emergency eye wash station, and associated utilities and paved areas are included in the proposed project. Demolition of an existing controls building and removal of existing tanks, piping, and dispensers would be included. Tinker AFB does not currently have a base service station to suppose the mission. This project would provide a vehicle fueling station for government vehicles and equipment.
Renovate B201 West	Renovate existing B201 administrative areas (45,000 sf) to include ceilings, walls, floor coverings, electrical, mechanical, lighting, and water and sewer piping; restrooms, conference areas, aisles, classroom spaces, and general administrative and instructor areas would also be included. Renovations would enable consolidation of the 966th Flying Training Squadron, providing needed capacity and savings associated from reduced travel.

Table 5-1. Projects Occurring at or near Tinker AFB (Continued)

TACX Acquisition	TACX, formerly the Oklahoma City General Motors Assembly Plant was acquired through a lease transaction with Oklahoma County in September 2008. Approximately 3.8 million square feet of facilities were acquired and construction occurred for perimeter security, gate access, road construction and extension of existing roads as well as the construction of a T-9 Test Cell. The lease transaction allowed for the relocation of commodity shops consisting of sheet metal production, composites production, machining/manufacturing and cleanroom space as well as additional production lines. The Software group moved five of their squadrons to TACX to provide software support for the weapon systems serviced at Tinker AFB. The Propulsion, Maintenance, Defense Logistics Agency, and other mission support activities have also been moved to TAC.
Demolish Fitness Center	The fitness center in the 552d Air Control Wing (ACW) north campus is scheduled for demolition. Construction of new surface parking to accommodate 24 vehicles would take place over the demolition site.
Construct Physical Fitness Center	Construction of a 90,900-sf facility in the vicinity of Vance Gate along the western side of the base. The facility would consist of a physical fitness center, which would include a health and wellness center to include cardiovascular room, equipment and free weight room, exercise rooms, racquetball rooms, indoor track, Olympic size pool, children's play area, two full-court basketball courts, locker rooms, and men's and women's restrooms. This project will also include demolition of B5922, B5937, B5927, B5916, B5915, B5924, B5920, B6004, and B216.
Construct Child Development Center on Air Depot Road	Construction of a new child development center in the southwestern portion of the Base, north of SE 59th Street and northwest of Gott Gate in the South Forty Area. The size of the facility would be approximately 32,877 sf. The Preferred Alternative would be located approximately 375 feet west of Air Depot Road and approximately 100 feet north of the base fence line. Approximately 130 feet of the Urban Greenway Multiuse Trail would be removed and rerouted as a result. The new child development center will provide for the care and training of dependent children of both military and civilian personnel assigned to the base. The building will contain areas for child activities, staff support, facility support, core administration, and maintenance. A total of 2.1 acres of land will be required surrounding the facility.
Consolidated Security Forces, South Forty Development	Construction of a 64,000-sf facility on the southern side of the base. This project is to construct a new facility to relocate and consolidate key Security Police operations at a single facility. One centralized facility will reduce the response time to react to various situations.
Replace B230 Hangar Doors, Docks 2 and 4	Replacement of dock doors to provide a reliable means to allow the opening and closing of hangar doors for E-3 maintenance. Proposed work activities would include replacement of electrical motors, gear boxes, and associated equipment. The existing system is a World War II-era system and repair parts are no longer available; parts have to be specially made for this application, resulting in extensive downtime due to repair delay. Failure of hangar door mechanisms presents unnecessary risks for personnel, safety hazards, and potential damage to aircraft and equipment in the hangar.
Closure of Sentry Road	Sentry Road is scheduled to be permanently closed to meet AT/FP guidelines. A pedestrian walkway to the Maintenance Group Complex is scheduled for construction in its place.
40/45 Block Reconfiguration in B296	B296 is scheduled for renovation to provide an interior addition for trainers.

Table 5-1. Projects Occurring at or near Tinker AFB (Continued)

Aerospace Ground Equipment (AGE) Covered Storage Canopy, B220	This minor construction project would add a canopy over the existing storage yard adjacent to B220 to create covered storage for AGE equipment. When completed, existing AGE equipment at the Airborne Warning and Control System South Campus requiring covered storage can be relocated to this space on the North Campus.
MROTC Lease	Leasing the MROTC is proposed in order to secure workload capacity for the 76 Aircraft Maintenance Group (AMXG) aircraft maintenance and modification operations. The MROTC is located east of Tinker AFB and is bordered by Douglas Boulevard on the west and SE 59th Street on the south.
Military Family Housing Privatization	Air Force implementation of the privatization initiative which involves leasing of all housing areas to a private developer for 50 years. The Air Force also will convey all 694 existing military units to the developer and depending on the alternative selected the developer would implement a combination of demolition, renovation, and /or construction of housing units to meet the end-state requirement of 660 housing units. Once privatization is implemented, the developer will own, operate, and manager all housing units on the installation while leasing the land underlying the housing communities (approximately 224 acres) for a period of 50 years. Depending on the developer, there will be a combination of demolition, renovation, and new construction distributed throughout the military family housing areas. Included will be alternatives to desired community features such as a sound protection buffer along Sooner Rd., lighted tennis and basketball courts, and an outdoor fitness area.
Construct T9 Test Cell at TACX	Construction of a new T9 noise suppression system (test cell) is required to be constructed at the TACX. This project would include a T-9 style engine testing facility, jet engine fuel storage and delivery system, utilities, building, and access driveways and parking. These facilities would allow continuous support of military jet engine repair performed at TACX, as well as provide the 76 MXW and 76 Propulsion Maintenance Group capabilities to meet mission requirements of delivering engines on time and on cost. The T9 Test Cell would also provide temporary backup facilities in case of failure of other engine testing facilities on Tinker AFB.
Renovate Chemical Cleaning Line in B3001	Renovations are proposed for the chemical cleaning line in B3001 to replace the existing aging cleaning line with an improved, energy-efficient, cleaning line system capable of accommodating larger engine parts in addition to current workload. Proposed renovations would also result in a cleaning line that is safer to operate, produces less chemical waste and generates less water to be treated by the industrial wastewater treatment plant on base. The proposed improvements are anticipated to yield an annual savings of \$2.76 million in utility costs.
Steam Plant Decentralization	This project consists of decentralizing and optimizing the operation of four central steam plants in separate buildings on Tinker AFB. These four steam plants are connected to 71 buildings that comprise 9,090,704 sf, representing approximately 48 percent of total building area at Tinker AFB. This project would improve efficiency, operations, and maintenance of the central steam distribution system on Tinker AFB to help meet mandated energy reduction goals, reduce utility costs, and provide maintenance-friendly service.
Widen Taxiway M	Widening of Taxiway M is proposed to meet current Tinker AFB mission aircraft needs (e.g., E-3, KC-135, E-6, and B-52) requiring wider taxiways. Proposed activities would include replacement of the existing center 50-foot keel portion and increasing the width to 75 feet; replacing existing 25-foot wide asphalt shoulders and widen to 50 feet; replacement of taxiway lighting.

Table 5-1. Projects Occurring at or near Tinker AFB (Continued)

B3001 Renovation – Hangar Door and Two-Story Lean-to	Design and construction of a hangar door addition along the west side of the south wing of B3001 to accommodate KC-135 aircraft. The hangar door would be a horizontal sliding hangar door and the accompanying supporting structure. In addition, demolition of an existing single-story lean-to and two-story brick administrative lean-to would be performed to provide space for a new two-story administrative lean-to approximately 10,800 sf. The new lean-to would provide space for restrooms, open office space, utility space, and ADA-compliant elevator. The lean-to would be constructed of brick veneer and standing seam metal roof.
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The projects listed above are planned for construction at roughly the same time that implementation of the Preferred Alternative would occur. Because renovation activities associated with the Preferred Alternative may last for up to 40 years, additional projects would likely occur during implementation of the Preferred Alternative, but are not yet defined or scheduled. Consequently, the potential exists for cumulative environmental impacts to occur with regard to air quality and traffic. Cumulative air quality impacts are expected to be negligible since all projects would be required to implement BMPs to reduce air emissions below significance thresholds.

With regard to traffic and circulation, if the construction projects described above occur concurrently with the Preferred Alternative on Tinker AFB, impacts on traffic caused by additional construction equipment and construction workers traveling along surrounding roadways could potentially cause an adverse cumulative impact during peak traffic hours. Parking could be impacted if staging areas for this project and the demolition of B208 occur in the same parking lot over the same time period. However, construction activities would be temporary; therefore, cumulative impacts to transportation and circulation related to construction are expected to be less than significant.

Regionally, the former General Motors plant south of Tinker AFB recently closed. The plant property has been leased to Tinker AFB and is now known as TACX.

No significant cumulative impacts from implementation of the Preferred Alternative are anticipated to occur.

SECTION 6.0 REFERENCES

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SECTION 7.0

LIST OF PREPARERS

This report was prepared for, and under the direction of, the Air Force Center for Engineering and the Environment by AMEC Earth & Environmental, Inc. Members of the professional staff are listed below:

Project Management

Aaron Goldschmidt, Program Manager

M.A. Geography

Marcie Martin, RPES, Project Manager

M.S. Environmental Management and Industrial Hygiene

Technical Analysts

Theresa Price, Environmental Planner

M.S. Applied Biological Sciences (Botany & GIS)

Crystal Gerrity, CEP, Environmental Planner

M.S. Environmental Science

Joe Pisano, Air Quality & Compliance Specialist

B.S. Environmental Science

Steve Ochs, Chemical and Air Quality Engineer

M.S. Chemical Engineering

David Larsen, RPA, Environmental Planner

M.A. Archaeology and Heritage

Serelle Laine, Historic Preservation Specialist/Archaeologist

M.A. Organizational Management, B.A. Anthropology

Laura Menken, Hydrogeologist

M.S. Hydrology

Tim Ostapuk, Environmental Management and Industrial Hygiene Specialist

M.S. Environmental Management

Production

Paul Barbera, GIS Analyst

M.S. Geology

Maggie Fulton, Technical Editor

B.A. English

Kristen Knutson, Document Specialist

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APPENDIX A

PUBLIC AND AGENCY SCOPING

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 72D AIR BASE WING (AFMC)
TINKER AIR FORCE BASE OKLAHOMA

MEMORANDUM FOR: SEE DISTRIBUTION

JAN 23 2012

FROM: 72 ABW/CEANO
7535 Fifth Street, Building 400
Tinker Air Force Base, Oklahoma 73145

SUBJECT: Environmental Assessments (EAs), Repair and Renovation of the Airborne Warning and Control System at the Maintenance (AWACS) Group Complex in Building 230, Replacement of the Chemical Cleaning Line, and Construction of an Addition to Building 820, Tinker Air Force Base (TAFB)

1. TAFB has prepared three EAs in accordance with the National Environmental Policy Act and placed these documents for public review and comment. These EAs analyze the potential environmental and socioeconomic impacts associated with the three individual projects to Renovate Building 230, Replace the Chemical Cleaning Line in Building 3001, and to Construct an Addition to Building 820. We request your participation in the environmental impact analysis process, and we solicit any particular concerns or recommendations that you may have regarding any aspect of these projects.

2. Repairing and Renovating Building 230 involves the improvement and modernization of the interior space of the 552nd Air Control Wing (ACW) Maintenance Group Complex at Tinker Air Force Base. This project would remedy the current inadequacy of Building 230 to accommodate the full workload of current and future maintenance of AWACS aircraft by the 552d ACW. Included in the Proposed Action is the repair, renovation and modernization of B230, its four maintenance hangars, associated administrative and shop areas to allow the 552d ACW to inspect, service, and maintain AWACS aircraft safely and effectively. The renovated facility would also comply with the antiterrorism/force protection requirements of the U.S. Department of Defense and would incorporate sustainable energy-efficient design principles.

The EA prepared for the Chemical Cleaning Line evaluated the environmental effects associated with replacing the existing Cleaning Line in Building 3001. Replacement of the existing line would provide a more energy-efficient operation that would reduce water and chemical usage, generate cost savings for overall cleaning line system operations and accommodate larger engine parts.

The EA prepared for the Addition to Hangar Building 820 evaluated the environmental impacts associated with the construction of a Type II aircraft maintenance hangar addition to Building 820. Included with the Proposed Action is the construction of associated aircraft access and parking aprons. The proposed single bay hangar would be constructed as an addition to and located at the west end of B820. The hangar would be designed for fuel cell maintenance operations and would provide maintenance, crew, equipment and other support space for the US Navy Strategic Communications Wing One's E-6B Mercury aircraft squadrons.

3. No significant environmental impacts were identified for any of the EAs and the investigations resulted in Findings of No Significant Impacts for all three projects.

4. The draft EAs are available at the Tinker Information Repository in the Midwest City Public Library at 8143 East Reno Avenue, Midwest City, Oklahoma. Hours of operations are 9:00 a.m. to 9:00 p.m., Monday through Thursday; 9:00 a.m. to 6:00 p.m., Friday; 9:00 a.m. to 5:00 p.m., Saturday; and 1:00 to 6:00 p.m. on Sunday.

5. Thank you for your assistance with this matter and we look forward to your involvement with these projects. If you would prefer that we send an electronic copy to your office please e-mail or direct any questions to Ms. Cynthia Garrett, cynthia.garrett@tinker.af.mil, (405) 734-2097.

A handwritten signature in blue ink that reads "Trudi Logan". The signature is fluid and cursive, with a long horizontal line extending from the end of the name.

TRUDI LOGAN, Chief
Environmental Operations, Engineering Section
Environmental Management Division

Distribution List:

Association of Central Oklahoma Governments
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Oklahoma Geologic Survey
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Oklahoma Wildlife Federation
Sierra Club, Oklahoma Chapter
State Historic Preservation Office (SHPO) (Oklahoma)
The Osage Nation
The Muscogee (Creek) Nation
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U.S. Department of Agriculture, Natural Resources Conservation Service
U.S. Fish and Wildlife Service, Division of Ecological Services

Coachella festival unveils expanded lineup

BY TODD MARTENS
Los Angeles Times

LOS ANGELES — Rapper Dr. Dre will close the 2012 edition of the Coachella Valley Music & Arts Festival, set for the first time over two consecutive weeks in mid-April. Headliners for the multi-weekend, six-day affair include rock acts the Black Keys, Radiohead and the Shins, as well as hip-hop and dance acts Snoop Dogg, the Swedish House Mafia and Kaskade, among others.

Stillwater-based orchestral pop-rock quartet Other Lives, which is touring with Radiohead in February and March, is on the lineup for the first Friday of the event, April 13 and 20.

The festival will host a number of artists on the reunion circuit. Brit-pop band Pulp, hard-core Swedish punk band Refused, Mike Watt's post-Manic Street Preachers band FIRE-HOSE and experimental Texas rockers At the Drive-In are among those on the comeback trail.

The headliner each Sunday night is Dr. Dre, something of a revival act himself. Though he's stayed in the public eye via his branding efforts and production work, the

Compton, Calif.-raised artist has not released an album since 1999 and has spent much of the last decade working on his long-rumored "Detox."

Coachella, run by AEG-owned concert promoter Goldenvoice, will take place over two consecutive weekends, the first on April 13-15 and the second on April 20-22. Each weekend is a separate ticket, priced at \$235 and on sale Friday. Paul Tollett, who heads Goldenvoice and has organized the festival since its 1999 inception, said last year that the expansion was in reaction to the increased demand for tickets.

"The thought of this selling out super quick, and the only people who get to go are the people who bought the first run of tickets for more than they sold for, that didn't seem great to us," Tollett said. "We didn't want to go with more people and ruin the experience. We can't add a midnight show, and we didn't want to add another city or raise the ticket price. So we decided to add another weekend."

The lineup was unveiled Monday on the Goldenvoice and Coachella Facebook pages. Tickets were initially sold

for the 2012 festival nearly a year in advance of the event. In previous years, tickets were not sold until the lineup had been revealed, and were sold via Ticketmaster. Tickets were again priced at \$235, not including service fees.

Coachella will close with Dr. Dre and Snoop Dogg on the two Sunday evenings, while rock acts will get top billing the other nights. The Black Keys will anchor a Friday that will also feature singer-songwriter Cat Power, reggae legend Jimmy Cliff

and psychedelic electronic act M83. Radiohead will close the festival's Saturday evenings, with indie star Ben Folds and reclusive rocker Jeff Mangum also on the bill.

Coachella is coming off its second consecutive

sellout year, hosting about 100,000 people per day. The event, held at the Empire Polo Grounds in Indio, Calif., is considered the unofficial kickoff to the summer festival season.

LOS ANGELES TIMES/STAFF

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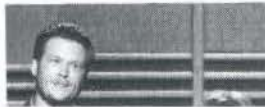
Tinker Air Force Base Invites Public Comment On Three Draft Environmental Assessments (EAs) for Repair and Renovation Building 230 Replacement of Chemical Cleaning Lines Construction of Hangar Addition to Building 820

Tinker Air Force Base has prepared three Environmental Assessments (EAs) which are available for public review and comment. Pursuant to the Council on Environmental Quality (CEQ) regulations and in accordance with the National Environmental Policy Act, EAs have been prepared to evaluate the potential effects on the human and natural environment associated with three proposed actions. Repair and Renovation of Building 230 involves the improvement and modernization of the interior space of the 152nd Air Control Wing (ACW) of current and future maintenance of E-3 Sentry Airborne Warning and Control System (AWACS) aircraft by the 552nd ACW. Included in the Proposed Action is the repair, renovation and modernization of B230, its four maintenance hangars, associated administrative and shop areas to allow the 552nd ACW to support, service, and maintain E-3 Sentry aircraft safely and effectively. The renovated facility would also comply with the environmental protection requirements of the U.S. Department of Defense and would incorporate sustainable energy efficient design principles. The EA prepared for the Chemical Cleaning Line evaluated the environmental effects associated with replacing the existing Cleaning Line in Building 3891. Replacement of the existing line would provide a more energy efficient operation that would reduce water and chemical usage, generate less waste, and avoid cleaning line system operations and associated larger engine parts. The EA prepared for the Addition to Hangar Building 820 evaluated the environmental impacts associated with the construction of a Type II aircraft maintenance hangar addition to Building 820 at Tinker AFB. Included with the Proposed Action is the construction of associated aircraft and parking aprons. The proposed single bay hangar would be constructed as an addition to and located at the west end of 8805. The hangar would be designed for fuel oil maintenance operations and would provide maintenance, crew, equipment and other support space for the US Navy Strategic Communications Wing One's E-49 Mercury aircraft operations. No significant environmental impacts were identified for any of the EAs and the investigations resulted in Findings of No Significant Impacts for all three projects.

The public is invited to review any or all of the draft EAs and make comments. Written comments and questions on any EA can be submitted before close of business on January 27, 2012. The draft EA is available to the public at the Tinker Information Repository in the Midwest City Public Library at 2143 East Reno Avenue, Midwest City, Oklahoma. Hours of operation are 9:00 a.m. to 5:00 p.m., Monday through Thursday; 9:00 a.m. to 6:00 p.m., Friday; 9:00 a.m. to 6:00 p.m., Saturday; and 1:00 to 4:00 p.m. on Sunday.

The public may submit written comments, identifying the EA in question, to the address below.

720 Air Base Wing Public Affairs Office
Brian Ockenfels
7450 Arnold Ave., Suite 127
Tinker Air Force Base, Oklahoma 73145
Phone: 405-739-2027/26
E-mail: brian.ockenfels@tinker.af.mil



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COUNTY OF OKLAHOMA }

Affidavit of Publication

Gina Calame, of lawful age, being first duly sworn, upon oath deposes and says that he is the rep of The Oklahoma Publishing Company, a corporation, which is the publisher of the The Oklahoman which is a daily newspaper of general circulation in the State of Oklahoma, and which is a daily newspaper published in Oklahoma County and having paid general circulation therein; that said newspaper has been continuously and uninterruptedly published in said county and state for a period of more than one hundred and four consecutive weeks next prior to the first publication of the notice attached hereto, and that said notice was published in the following issues of said newspaper, namely:

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Subscribed and sworn to before me this 13

day of January, 20 12

Roya A. Parkhurst

Notary Public

My commission expires 07/24/12



Gina Calame

PUBLIC NOTICE

Tinker Air Force Base Invites Public Comment On Three Draft Environmental Assessments (EAs) for Repair and Renovation Building 230 Replacement of Chemical Cleaning Lines Construction of Hangar Addition to Building 820

Tinker Air Force Base has prepared three Environmental Assessments (EAs) which are available for public review and comment.

Pursuant to the Council on Environmental Quality (CEQ) regulations and in accordance with the National Environmental Policy Act, EAs have been performed to evaluate the potential effects on the human and natural environment associated with three Proposed Actions.

Repairing and Renovation of Building 230 involves the improvement and modernization of the interior space of the 552nd Air Control Wing (ACW) Maintenance Group Complex at Tinker Air Force Base. This project would remedy the current inadequacy of Building 230 to accommodate the full workload of current and future maintenance of E-3 Sentry Airborne Warning and Control System (AWACS) aircraft by the 552nd ACW. Included in the Proposed Action is the repair, renovation and modernization of Building 230, its four maintenance hangars, associated administrative and shop areas to allow the 552nd ACW to inspect, service, and maintain E-3 Sentry aircraft safely and effectively. The renovated facility would also comply with the antiterrorism/force protection requirements of the U.S. Department of Defense and would incorporate sustainable energy-efficient design principles.

The EA prepared for the Chemical Cleaning Line evaluated the environmental effects associated with replacing the existing Cleaning Line in Building 3001. Replacement of the existing line would provide a more energy-efficient operation that would reduce water and chemical usage, generate cost savings for overall cleaning line system operations and accommodate larger engine parts.

The EA prepared for the Addition to Hangar Building 820 evaluated the environmental impacts associated with the construction of a Type II aircraft maintenance hangar addition to Building 820 at Tinker AFB. Included with the Proposed Action is the construction of associated aircraft access and parking aprons. The proposed single bay hangar would be constructed as an addition to and located at the west end of Building 820. The hangar would be designed for fuel cell maintenance operations and would provide maintenance, crew, equipment and other support space for the US Navy Strategic Communications Wing One's E-6B Mercury aircraft squadrons.

No significant environmental impacts were identified for any of the EAs and the investigations resulted in Findings of No Significant Impacts for all three projects.

The public is invited to review any or all of the draft EAs and make comments. Written comments and questions on any EA can be submitted before close of business on January 27, 2012.

The draft EA is available to the public at the Tinker Information Repository in the Midwest City Public Library at 8143 East Reno Avenue, Midwest City, Oklahoma. Hours of operations are 9 a.m. to 9 p.m. Monday through Thursday; 9 a.m. to 6 p.m., Friday; 9 a.m. to 5 p.m. Saturday; and 1 to 6 p.m. Sunday.

The public may submit written comments, identifying the EA in question, to the address below:

72d Air Base Wing Public Affairs Office

Brion Ockenfels

7460 Arnold Ave., Suite 127

Tinker Air Force Base, OK 73145

Phone: 405-739-2027/26 • E-mail: brion.ockenfels@tinker.af.mil

PUBLIC NOTICE

Munitions Response Site Prioritization Protocol (MRSP) Tinker AFB, Oklahoma City, OK

WHY YOU ARE BEING NOTIFIED: For decades, the Department of Defense (DOD) has used military munitions in training and testing to ensure force readiness. Munitions contamination remaining from past DOD activities may present explosive, chemical agent, human health and environmental hazards. Whenever a former range or disposal site is put to another use, actions must be taken to ensure cleanup of any remaining hazards. Therefore, Congress directed DOD to identify and prioritize all Historic, out of service Munitions Response Sites in their inventory, thus establishing the Military Munitions Response Program. The Munitions Response Site Prioritization Protocol was established to assign each former munitions site a relative priority for response activities based on the overall condition at each location. There are three modules that make up the protocol: the Explosive Hazard Evaluation, the Chemical Weapons Material Hazard Evaluation and the Health Hazard Evaluation. Each module is scored using specific criteria and the module with the highest ranking determines the priority for the site.

At Tinker AFB, five former training areas were evaluated under the MRSP: Skeet Range #1 (MM90), Skeet Range #2 (MM93), Firing-In Buttress #2 (MM92), Ordnance Disposal Area (WP51), and 38th EIG Small Arms Range (MM94). The United States Air Force is seeking public participation, review and comment on this evaluation.

WHERE YOU CAN FIND FURTHER INFORMATION: A copy of the MRSP determination for these sites at Tinker AFB is available to the public at the Midwest City Public Library, 8143 E. Reno, Midwest City, OK 73110-7589. The evaluation criteria are available for public review until February 13, 2012. Members of the public can address written comments on the MRSP scoring to: Mr. Brion Ockenfels, 72 ABW/PA 7460 Arnold St, Ste. 127, Tinker AFB, OK 73145, phone (405) 739-2026