

FINDING OF NO SIGNIFICANT IMPACT  
FOR THE  
ENVIRONMENTAL ASSESSMENT  
ADDRESSING 21<sup>ST</sup> EXPLOSIVE ORDNANCE DISPOSAL  
WEAPONS OF MASS DESTRUCTION FACILITIES DEMOLITION  
AND EXPANSION  
AT  
KIRTLAND AIR FORCE BASE, NEW MEXICO



JULY 2011

# Report Documentation Page

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**FINDING OF NO SIGNIFICANT IMPACT**  
**21<sup>ST</sup> EXPLOSIVE ORDNANCE DISPOSAL WEAPONS OF MASS DESTRUCTION**  
**FACILITIES DEMOLITION AND EXPANSION**  
**KIRTLAND AIR FORCE BASE, NEW MEXICO**

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Pursuant to the Council on Environmental Quality (CEQ) regulations for implementing procedural provisions of the National Environmental Policy Act (NEPA), Title 40 of the Code of Federal Regulation (CFR), Parts § 1500-1508, Air Force Environmental Impact Analysis Process (EIAP) regulation, 32 CFR Part § 989, and Department of Defense Directive 6050.1, the Air Force has prepared an environmental assessment (EA) to identify and evaluate the potential impacts associated with demolition and expansion of the 21<sup>st</sup> Explosive Ordnance Disposal Weapons of Mass Destruction (21<sup>st</sup> EOD WMD) facilities at Kirtland Air Force Base, New Mexico.

**Purpose of and Need for the Proposed Action (EA Section 1.2, pages 1-1 to 1-3)**

The 21<sup>st</sup> EOD WMD Company is an Army organization located at Kirtland AFB. Their primary mission is to render safe weapons of mass destruction directed against the United States and its interests. To complete their mission, the 21<sup>st</sup> EOD WMD Company conducts classified worldwide assignments, trains on nuclear and radiological operations, and researches new ways to destroy enemies' weapons. In addition this unit works in a joint and interagency environment with the Department of Defense, the Department of Justice, and the Department of Energy.

Because of their increasing workload over the past decade, the authorized employee population for the 21<sup>st</sup> EOD WMD has increased from 31 persons to 50. In addition the types of highly specialized and unique equipment they train on and deploy with have expanded. Accommodations to house the unit's growing demands of personnel and specialized equipment can no longer fit within the existing compound site assigned by Kirtland AFB to the 21<sup>st</sup> EOD WMD.

A screening process was developed to determine the range of reasonable alternatives to carry forward for further analyses within this EA. Screening was based on meeting the 21<sup>st</sup> EOD WMD purpose and underlying need:

- Provide facilities that meet the requirements of the 21<sup>st</sup> EOD WMD's mission
- Provide flexibility for growth in the 21<sup>st</sup> EOD WMD mission requirements
- Provide a non-standard operations building, a rapid deployment center, and support buildings for the 21<sup>st</sup> EOD WMD
- Provide adequate facilities in a centralized location, which support the expanding needs of the 21<sup>st</sup> EOD WMD mission

- Provide adequate storage and protection for multi-million dollar, one-of-a-kind equipment used by the 21<sup>st</sup> EOD WMD

## **Description of Proposed Action and Alternatives**

### **Proposed Action (EA Section 2.1, pages 2-1 to 2-2)**

The 21<sup>st</sup> EOD WMD proposes to expand their current compound from 90 acres to approximately 470 acres to accommodate personnel growth and training requirements. The new operations complex would consist of an operations facility, rapid deployment center, and an assessment and selection site. Under the original Proposed Action, four new buildings would be constructed (operations facility, lock-down building, assessment and site selection administrative building, and rapid deployment center building), and three existing facilities would be demolished (Bldgs 29040, 29051, and 29099). Five septic tanks and an oil/water separator would be removed, and two water storage tanks would be installed. A Leadership Reaction Course would be constructed within the 29000 Area of Kirtland AFB along with two new concrete explosive shot pads (Refer to EA Figures 2 and 3, pages 2-3 to 2-4). As part of this expansion a chain-link security fence would be installed around the perimeter. Compound roads and parking areas would be improved to accommodate personnel growth and training requirements. The project would also involve removing, capping, and rerouting sewer, gas, water, and steam lines outside of the work areas (EA Figure 4, page 2-5). All buildings would be designed with antiterrorism/force protection measures and would be constructed using water conservation and energy efficient designs. The Proposed Action will include mitigation preventing demolition of Building 29051 due to its historic nature. It is anticipated the first project would begin in Fiscal Year 2011 and continue over the next five years.

### **Alternatives Considered but Eliminated (EA Section 2.2, pages 2-6 to 2-7)**

Three additional alternatives were considered and eliminated from further analysis based on not meeting the screening process. Alternative III proposed leasing facilities for the 21<sup>st</sup> EOD WMD off the existing compound; however, no other location at Kirtland AFB was zoned to support 21<sup>st</sup> EOD WMD requirement to train with explosives in a classified setting. With the proximity of the civilian and military runway, relocating operations to another location and establishing a new restricted airspace zone was not feasible as well. Alternative IV and V proposed renovating the existing buildings at the current compound or a combination of renovating/constructing new facilities. Both alternatives were rejected from further consideration for several reasons. The majority of the existing buildings are old and do not meet current building code. Large scale renovations are just not suitable or cost effective. Nor is there enough square footage available to adequately store and securely protect the multi-million dollar equipment used by the 21<sup>st</sup> EOD WMD.

### **No Action Alternative (EA Section 2.3, page 2-7)**

Under the No Action Alternative, the 21<sup>st</sup> EOD WMD Company would remain in their current location with no modifications made to their existing facilities. The No Action Alternative is the baseline for the rest of the analyses and helps determine the level of impact of each of the alternatives to the environment.

### **Environmental Consequences**

Based on the analyses presented in this EA, no adverse or significant impacts were identified. A description of each resource area is discussed below.

### **Topography, Geology, and Soils (EA Section 4.1, page 4-1)**

Under the Proposed Action, approximately 3.2 acres would be disturbed from demolition/construction activities. As a result of these activities, soils would be compacted and soil structure disturbed and/or altered. The loss of soil from vehicle traffic and new construction would alter drainage patterns. These short-term impacts would be minimized through the use of best management practices (BMPs), such as minimization of soil exposure through re-vegetation and installing storm water control measures that favor re-infiltration to minimize erosions and sediment production, which often occur during storm events. A local soil disturbance permit and fugitive dust permit issued by the city of Albuquerque will be required for this action since disturbance of ground is more than 0.75 acres. This will be the responsibility of 21st EOD WMD and their contractor. Once demolition/construction activities are completed, the area would be re-landscaped and planted with native grasses and other vegetation. There would be no long-term, significant impacts on topography, geology, and soils from implantation of the Proposed Action.

### **Water Resources (EA Section 4.2, pages 4-1 to 4-3)**

Because the Proposed Action would disturb approximately 3.2 acres, a National Pollutant Discharge Elimination System Construction General Permit is required to control storm water discharges from increase erosion potential and runoff during heavy precipitation events. The 21<sup>st</sup> EOD WMD contractor will be required to prepare a Notice of Intent (NOI) and a Storm Water Pollution Prevention Plan identifying BMPs to be used to reduce erosion and runoff from demolition/construction activities. This plan will be reviewed by 377 MSG/CEANC, who actively manages, tracks, and inspects construction sites throughout Kirtland AFB, prior to the NOI being submitted to U.S. EPA. Typical BMPs approved by U.S. EPA include installation of sediment traps, silt fencing, waddles around storm water drop inlets, storm water detention ponds, vegetation buffers as sediments controls, and designation of waste collection areas for solid waste, fuels, oils and lubricants where materials are stored in proper containers (i.e. containers with lids) and good housekeeping practices are in place. All disturbed areas would be

re-vegetation once demolition/construction activities are completed. By implementing these practices, impacts to storm water would be less than significant.

The Proposed Action is not located within any special flood hazard areas nor are there any wetland areas within the project site. Because the average depth to groundwater is between 450 and 550 feet, impacts to groundwater during construction are low.

#### **Air Quality and Noise (EA Section 4.3, pages 4-3 to 4-6)**

Under the Proposed Action, there would be temporary impacts to air quality from demolition/construction activities. The emission levels would be below *de minimus* thresholds and would fall off rapidly with distance from the project site. Therefore impacts to air quality from the proposed action are low.

The demolition/construction activities would result in temporary impacts on the noise environment; however, these impacts would be short-term and would last for the duration of the demolition/construction activities. By restricting these activities to normal business hours (7 a.m. to 5 p.m.) there would be no significant impacts to noise.

#### **Safety (EA Section 4.4, pages 4-6 to 4-7)**

Implementation of the Proposed Action would slightly increase the health and safety risk to contractors performing demolition/construction activities due to the inherent risk involved. Contractors would be required to establish and maintain health and safety programs for their employees. All personnel involved in the proposed building demolition would be trained for eliminating the potential exposure to, and release of asbestos and lead. Complying with Kirtland AFB's Asbestos Management Plan and Lead-Based Paint Management Plan would reduce asbestos and lead safety hazards to contractors working on demolition activities. No impacts are expected to military personnel or the public. There would be no impacts on explosives or munitions safety.

#### **Infrastructure (EA Section 4.5, pages 4-7 to 4-9)**

There would be no significant impact on electrical, natural gas, liquid fuel, water supply, wastewater, storm water, communications, and solid waste management services through implementation of the Proposed Action or operations after the Proposed Action. Temporary interruptions of services from these systems would be expected during demolition activities. There would be a beneficial effect on energy usage once construction is completed. The new buildings would be designed to meet LEED standards; therefore, energy consumption is expected to decrease. The Proposed Action would have a short-term, negative impact from demolition/construction activities on the potable water supply. However, Kirtland AFB's water

supply is capable of meeting this increase demand, which would return to normal once the project is completed.

**Land Use (EA Section 4.6, page 4-9)**

The Proposed Action would not require changes to the current land use designation and would comply with the *Kirtland AFB General Plan*. No impacts on existing land use viability or continued land occupation would be anticipated.

**Biological Resources (EA Section 4.7, pages 4-9 to 4-10)**

Implementation of the Proposed Action would not result in significant impacts on wildlife and vegetation species and their habitat. The Proposed Action would result in the loss of approximately 1.1 acres of vegetation on undeveloped land; however, the plant community is widespread and impacts are expected to be minimal. The only species of concern which could inhabit the project site are the burrowing owls and/or Gunnison's prairie dogs. Prior to demolition/construction, a pre-construction survey following the New Mexico Department of Game and Fish guidelines would be conducted for the burrowing owls and Gunnison's prairie dogs by Kirtland AFB Natural Resource biologist. If burrowing owls are present, construction activities would occur after the owls have migrated (after October 15 to March 15). Additionally, any burrowing owl burrows would be flagged and avoided during construction activities, so nesting sites would remain viable. Should Gunnison's prairie dogs be documented, live trapping efforts would be conducted before construction activities occur. Any impacts to these two species would be insignificant.

**Cultural Resources (EA Section 4.8, pages 4-10 to 4-11; Appendix E SHPO Letter)**

The proposed action lies within the 29000 Area, a district that has been determined eligible for the National Register of Historic Places. Originally, this area served as the field headquarters of the New Mexico Proving Ground and the New Mexico Experimental Range. During the early 1950s until 1998, this area hosted the Biophysics Operations Program.

Building 29051, which was proposed for demolition under this action, served as the Headquarters and is eligible for the National Register of Historic Places. During Section 106 Consultations with the New Mexico Historic Preservation Division, the Air Force and Army agreed to mitigate the impacts to this facility by not demolishing it. Additionally the Army agreed to continue occupying this facility. In accordance with the National Historic Preservation Act 1966 as amended (800.3 and 800.4), Kirtland sent a letter to the New Mexico Historic Preservation Division stating these mitigations have been incorporated into the proposed action and the Air Force recommends a no adverse effects to historic properties. A letter was sent to the New Mexico Historic Preservation Division on 22 Jun 11. The New Mexico Historic Preservation Division agreed via letter on 27 Jun 11 with the mitigations resulting in a no

adverse effects. The other two buildings, 29040 and 29099, have been determined not eligible to the National Historic Preservation Act 1966 as amended.

#### **Hazardous Materials and Waste (EA Section 4.9, pages 4-11 to 4-12)**

Implementation of the Proposed Action would not result in a significant impact on hazardous materials and waste. Buildings proposed for demolition may contain asbestos containing material (ACM), Lead-Based Paint (LBP), and Polychlorinated Biphenyls (PCBs). Sampling for ACMs and LBPs would take place prior to demolition and would be handled according to Kirtland AFB's Asbestos Management Plan and Kirtland AFB's Lead-Based Paint Management Plan. The fluorescent light ballasts in the existing buildings and pad-mounted transformers proposed for demolition may contain PCBs. All light fixtures would be removed prior to demolition and handled in accordance with Hazardous Waste Management Plan.

No significant impacts would be expected from the generation of hazardous waste during the demolition/construction activities. The Proposed Action would result in an increase in the generation of hazardous materials; however, all materials would be handled and disposed of appropriately. Best management practices would be in place to ensure contamination from a spill would not occur; however, if a spill does occur, the Kirtland Spill Prevention Control and Countermeasures Plan provide measures for spill situations. In addition, no new chemicals or toxic substances would be used or stored at the installation in conjunction with the Proposed Action. Therefore, no significant impacts are expected.

#### **Socio-economic Considerations (EA Section 4.10, pages 4-12 to 4-13)**

Under the Proposed Action, construction workers would be provided from the local supply, thus workers would commute to the work site, and, therefore, there would be no changes to local population and community services. The Proposed Action would have a short-term, beneficial impact on the socio-economic resources, because it would require a temporary increase of civilian contractors (i.e., construction workers) on Kirtland AFB, the purchase of construction materials from local companies, and pay roll tax revenues. The impacts on socioeconomic resources from temporary employment would be beneficial, but negligible compared to Kirtland AFB or Bernalillo County economy. The Proposed Action would not result in long-term change to socio-economic resources.

#### **Environmental Justice (EA Section 4.11, page 4-13)**

The project would not disrupt or displace any residential or commercial structures. The work has been reviewed for compliance and it has been determined that the Proposed Action would not adversely affect the health or environment of minority, children, or low-income populations. The Proposed Action would not negatively impact children, because construction and demolished materials would be disposed of at the construction and demolition landfill on Kirtland AFB and

access to the Proposed Action area would be restricted to authorized personnel. Indirect, disproportionate negative impacts on minority, children or low-income populations would not be expected as a result of the Proposed Action.

**Visual Resources (EA Section 4.12, pages 4-13 to 4-14)**

The building demolition and construction activities would temporarily impact Kirtland AFB's overall aesthetic appeal; however, the impacts would be temporary and therefore the impacts would be less than significant through implementation of the Proposed Action. Building demolition would enhance the overall visual resource conditions of the compound and would result in a beneficial impact on visual resources. Construction of new facilities would introduce new elements to the visual landscape, but these changes would not be visible from areas off Kirtland AFB and are consistent with the character of Kirtland AFB. Therefore, there would be no adverse visual or aesthetic impacts resulting from construction and operation of the Proposed Action.

**Indirect and Cumulative Impacts (EA Section 4.13, pages 4-14 to 4-20)**

Overall, the analysis for this EA indicates that the demolition and construction of the 21<sup>st</sup> EOD WMD facilities, as described under the Proposed Action, would not result in or contribute to significant negative cumulative or indirect impacts to the resources in the region.

**Public Review and Comment (EA Appendix B)**

The EA was available for public review and comment from February 6, 2011 through March 8, 2011 at the Central New Mexico Community College Campus and the Kirtland AFB Library. No public comments were received.

**FINDING OF NO SIGNIFICANT IMPACT**

Based upon my review of the facts and analyses contained in the attached EA and as summarized above, I find the proposed action to expand operations of the 21<sup>st</sup> EOD WMD Company on Kirtland AFB will not have a significant impact on the natural or human environment; therefore, an environmental impact statement is not required. This analysis fulfills the requirements of NEPA, the President's Council on Environment Quality 40 CFR § 1500-1508 and the Air Force EIAP regulation 32 CFR Part § 989.



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DATE: 13 July 2011

FINAL ENVIRONMENTAL ASSESSMENT  
ADDRESSING 21<sup>ST</sup> EXPLOSIVE ORDNANCE DISPOSAL  
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JULY 2011

## ACRONYMS AND ABBREVIATIONS

21 <sup>st</sup> EOD WMD	21 <sup>st</sup> Explosive Ordnance Disposal Weapons of Mass Destruction
377 MSG/CEANC	377 <sup>th</sup> Mission Support Group/Civil Engineer Division
ACM	asbestos-containing material
AFB	Air Force Base
APE	Area of Potential Effect
AQCB	Air Quality Control Board
AQCR	Air Quality Control Region
BMP	Best management practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	Carbon monoxide
CO <sub>2</sub>	Carbon Dioxide
CWA	Clean Water Act
dBA	A-weighted decibel
DNL	Day-night average sound level
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
EA	Environmental Assessment
EISA	Energy Independence and Security Act
EO	Executive Order
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
FY	Fiscal Year
HABS	Historic American Building Survey
HAP	Hazardous Air Pollutant
HCPI	Historic Cultural Properties Inventory
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
LBP	Lead-based paint
µg/m <sup>3</sup>	Micrograms per cubic meter
mg/ m <sup>3</sup>	Milligrams per cubic meter
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMDGF	New Mexico Department of Game and Fish
NOA	Notice of Availability
NOI	Notice of Intent
NO <sub>2</sub>	Nitrogen Dioxide
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OSHA	Occupational Safety and Health
PAN	Percussion-Actuated Nonelectric
Pb	Lead

PM <sub>2.5</sub>	particulate matter equal to or less than 2.5 microns in diameter
PM <sub>10</sub>	particulate matter equal to or less than 10 microns in diameter
ppm	parts per million
QD	Quantity-Distance
RCRA	Resource Conservation and Recovery Act
SHPO	State Historic Preservation Office
SO <sub>2</sub>	Sulfur dioxide
SPCC	Spill Prevention Control and Countermeasures
SWMU	Solid Waste Management Unit
SWPPP	Storm Water Pollution Prevention Plan
TPY	Tons per Year
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOC	Volatile Organic Compounds

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KIRTLAND AIR FORCE BASE, NEW MEXICO

**21<sup>st</sup> EOD WMD**  
**Kirtland Air Force Base, New Mexico**

**JULY 2011**

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Cover Sheet

**FINAL ENVIRONMENTAL ASSESSMENT ADDRESSING 21<sup>ST</sup> EXPLOSIVE ORDNANCE DISPOSAL  
WEAPONS OF MASS DESTRUCTION FACILITIES DEMOLITION AND EXPANSION AT KIRTLAND  
AIR FORCE BASE, NEW MEXICO**

**Proposed Action:** The 21<sup>st</sup> Explosive Ordnance Disposal Weapons of Mass Destruction (EOD WMD) proposes to construct four new buildings, demolish three existing buildings, construct two new shot pads, and expand their training area to 470 acres on Kirtland Air Force Base (Kirtland AFB).

**Report Designation:** Environmental Assessment (EA)

**Responsible Agency:** U.S. Air Force, 21<sup>st</sup> EOD WMD, Kirtland AFB

**Affected Location:** Kirtland AFB, New Mexico

**Abstract:** The 21<sup>st</sup> EOD WMD proposes to demolish three current buildings, construct four new facilities, and construct two new shot pads with berms. All of the buildings proposed for demolition are currently unoccupied or used by personnel. The 21<sup>st</sup> EOD WMD would also expand the current compound from 90 acres to approximately 470 acres to accommodate personnel growth and training requirements. This expansion would accommodate the two new shot pads and an assessment and selection site, which would include a Leadership Reaction Course, ¼ mile running track, and obstacle course. The analysis in this EA addresses the Proposed Action, the No Action Alternative, and alternatives considered but eliminated from detailed analysis. The EA will help determine whether a Finding of No Significant Impact (FONSI) can be prepared or whether an Environmental Impact Statement is needed.

**For additional information** on this EA contact Kirtland AFB National Environmental Policy Act (NEPA) Program Manager by mail at 377 MSG/CEANQ, 2050 Wyoming Boulevard SE, Suite 125, Kirtland Air Force Base, NM 87117-5270, or by email at [nepa@kirtland.af.mil](mailto:nepa@kirtland.af.mil).

**FINAL ENVIRONMENTAL ASSESSMENT  
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MASS DESTRUCTION FACILITIES DEMOLITION AND EXPANSION  
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# 1. PURPOSE AND NEED FOR ACTION

## 1.1 Introduction

This section describes the purpose and need for the Proposed Action at the 21<sup>st</sup> Explosive Ordnance Disposal Weapons of Mass Destruction (EOD WMD) Compound at Kirtland Air Force Base (AFB), provides a summary of the environmental review process and the applicable regulatory requirements, and presents an overview of how this document is organized.

Federal agencies are required to consider the environmental consequences of a proposed action in the decision-making process under the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [U.S.C.] Sections 4321 to 4370d) and the Council on Environmental Quality's (CEQ) implementing regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508). This Environmental Assessment (EA) for the 21<sup>st</sup> EOD WMD Facilities Demolition and Expansion at Kirtland AFB was prepared in accordance with NEPA. This EA evaluates the potential environmental impacts associated with the demolition of three current buildings, the construction and operation of an operations complex three new facilities and associated supporting utilities, and construction of two new shot pads.

The 21<sup>st</sup> EOD WMD Company currently operates on a 90 acre compound leased by the army within Kirtland AFB, Bernalillo County, New Mexico (Figure 1-1). Kirtland AFB is located southeast of Albuquerque, New Mexico at the foot of the Monzano Mountains and has an average elevation of 5,400 feet above mean sea level. Land use for areas adjacent to the 21<sup>st</sup> EOD WMD Compound includes Cibola National Forest lands to the east, Isleta Pueblo Reservation to the south, and Kirtland AFB to the west and north.

The 21<sup>st</sup> EOD WMD Company's primary mission is "rendering safe weapons of mass destruction directed against the United States and its interests." The 21<sup>st</sup> EOD WMD Company conducts classified world-wide missions, conducts training on nuclear and radiological operations, and conducts research and development. The 21<sup>st</sup> EOD WMD Company works in a joint and interagency environment with the Department of Defense, Department of Justice, and the Department of Energy. The 21<sup>st</sup> EOD WMD Company responds to counter weapons of mass destruction in the United States.

This EA is organized into 7 sections and appendices. **Section 1** states the purpose, need, scope, and public involvement efforts for the Proposed Action. **Section 2** contains a detailed description of the Proposed Action and the alternatives considered. **Section 3** describes the existing conditions of the potentially affected environment. **Section 4** identifies the environmental consequences of implementing all reasonable alternatives, including direct, indirect, and cumulative impacts. **Section 5** provides the names of those persons and agencies consulted and the list of preparers for this EA. **Section 6** lists the references used to support the analyses.

## 1.2 Purpose and Need for the Proposed Action

The purpose of the Proposed Action is to remove three out-dated, deficient buildings and to construct an operations complex and expand the existing 21<sup>st</sup> EOD WMD Compound (compound) boundary to meet the 21<sup>st</sup> EOD WMD Company's unique and expanding mission. The current facilities include single-story, residentially scaled buildings constructed in the late 1940's during and shortly after World War II, which do not meet current building codes and standards, detract from overall installation appearance, and have high maintenance and operations costs. The current structures built in the 1940's may contain

asbestos and lead based paint. To the extent possible, these materials would be removed and properly disposed of before demolition could take place.

The need for the Proposed Action is to enable the 21<sup>st</sup> EOD WMD Company to fulfill its mission of “rendering safe weapons of mass destruction directed against the United States and its interests;” to accommodate the authorized employee population growth from 31 to 50 people; and to ensure the safety of personnel and equipment through new facilities with modern technology. The 21<sup>st</sup> EOD WMD Company is the only WMD EOD unit in the entire Department of Defense. Currently, the compound occupies 90 acres of land with seven buildings in use in the 29000 Area of Kirtland AFB, New Mexico. In order to carry out their mission and to accommodate personnel growth and training requirements, the 21<sup>st</sup> EOD WMD Company requires new and modern facilities which include a lock-down building, operations facility, rapid deployment center building, assessment and selection site, and two shot pads, in addition to expansion of the current compound to approximately 470 acres. The assessment and selection site would include a Leadership Reaction Course (LRC). The Proposed Action would consolidate the operations and training and streamline the unit operations. The new facilities would allow the 21<sup>st</sup> EOD WMD Company to conduct its mission efficiently and safely while maintaining a safe environment for the unit to train and store the multi- million dollar, 1-of-a-kind equipment. Inadequate facilities will adversely affect readiness, retention, and morale.

The buildings currently being used were constructed as temporary facilities during the 1940’s for the testing of munitions to support World War II efforts. All buildings show exposed electrical wiring and structural wear and tear. These buildings also lack reinforced concrete walls, fire suppression systems, and heating, ventilating, and air condition (HVAC) technology. These facilities do not meet current safety and construction standards, and no longer provide adequate space for growth of additional personnel. In addition, these facilities house multi-million dollar equipment and specialized tools, of which there are only four sets in the world.

There is not an LRC on the existing compound or Kirtland AFB. The 21<sup>st</sup> EOD WMD is required to travel to Camp Bullis, Texas, Fort Bliss, Texas, and Eglin AFB, Florida to utilize their LRCs for testing purposes. The proposed LRC would serve as a testing facility for the Command Group to assess a soldier's physical and mental abilities to determine their suitability for assignment to the 21<sup>st</sup> EOD WMD, and would eliminate the need to travel to other military installations equipped with an LRC. The 21<sup>st</sup> EOD WMD Company has the privilege to select only the most qualified soldiers to serve in their unit, and the LRC is a critical component used during the evaluation process.

The current Upper and Lower explosive shot pads would eventually cease explosive operations to allow for a proposed Unspecified Minor Military Construction, Army (UMMCA) project and Military Construction (MILCON) projects. Two new explosive shot pads would be constructed, licensed, and sited going east from the present shot pads. Relocation of the two explosive shot pads to the eastern portion of the compound would be required, because the current blast arc of 1,250 feet does not allow for the proposed UMMCA and MILCON construction to occur. Operations at the shot pads would involve detonations of explosives not to exceed 10 pounds net explosive weight. The shot pads purpose would be to enhance and maintain the skills of the 21<sup>st</sup> EOD WMD soldiers.

In summary, the following objectives would be met with this project:

- Provide facilities that meet the requirements of the 21<sup>st</sup> EOD WMD’s mission.
- Provide flexibility for growth in the 21<sup>st</sup> EOD WMD mission requirements.
- Provide a non-standard operations building, a rapid deployment center, and supporting buildings for the 21<sup>st</sup> EOD WMD at Kirtland AFB, New Mexico.

- Provide adequate facilities in a centralized location that support the expanding needs of the 21<sup>st</sup> EOD WMD mission.
- Provide adequate storage and protection for multi-million dollar, 1-of-a-kind equipment used by the 21<sup>st</sup> EOD WMD.

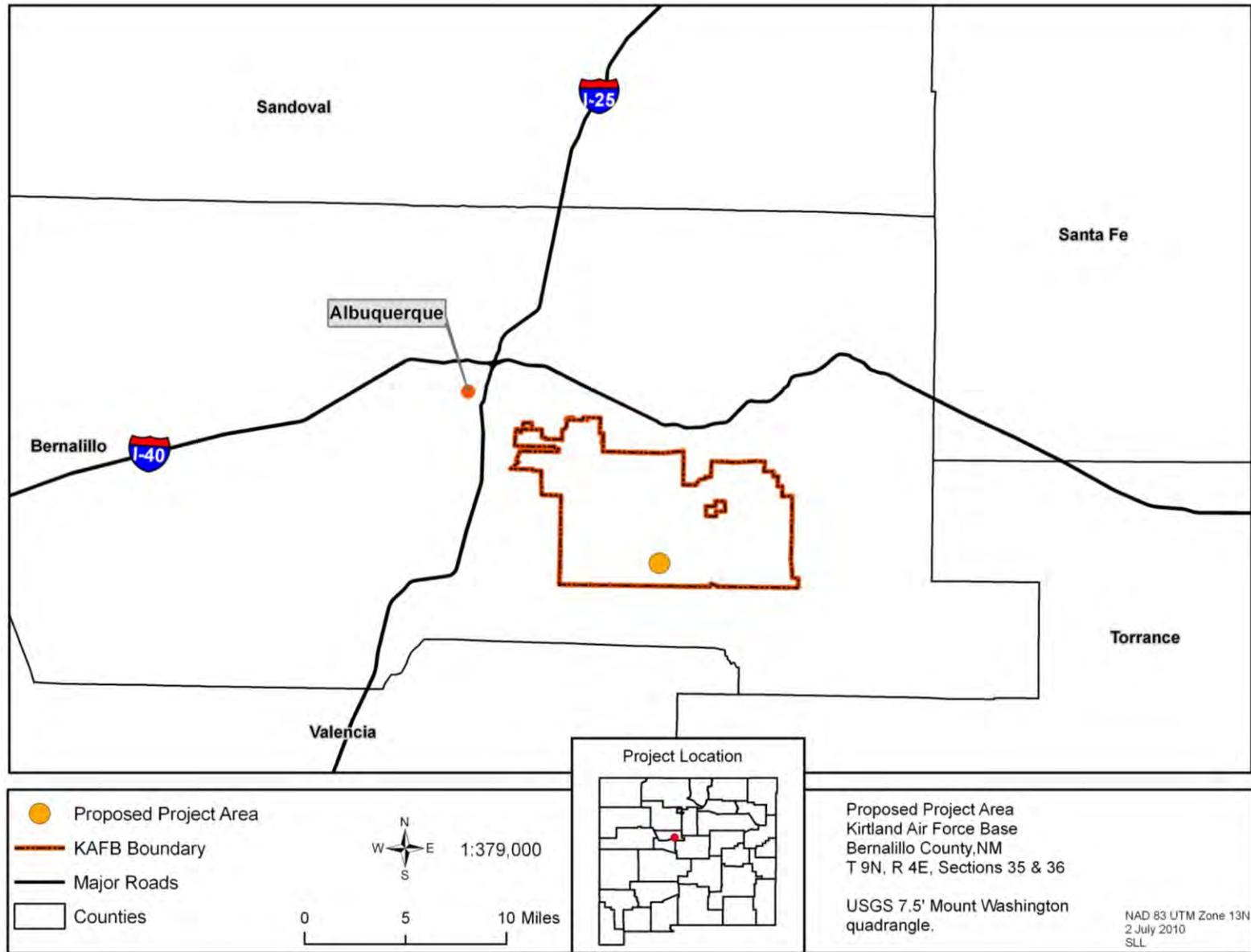
### 1.3 Scope of the Environmental Assessment

Federal agencies are required to consider the environmental consequences of a proposed action in the decision-making process under the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [U.S.C.] Sections 4321 to 4370d) and the Council on Environmental Quality's (CEQ) implementing regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508). The Air Force environmental impact analysis process is accomplished through adherence to the procedures set forth in 32 CFR 989. The environmental impact evaluation is designed to provide decision makers with an understanding of the potential environmental impacts of a proposed action. This EA examines the environmental impacts of the Proposed Action and reasonable alternatives on the following resource areas: Topography, geology, and soils; water resources; air quality and noise; safety; infrastructure; land use; biological resources; cultural resources; hazardous materials and waste; socio-economic; environmental justice; and visual resources.

### 1.4 Regulatory Framework

This EA was prepared in accordance with NEPA, the CEQ regulations implementing NEPA (40 CFR §§ 1500-1508), and the Department of the Air Force "Environmental Impact Analysis Process" (Air Force Instruction [AFI] 32-7061 as promulgated by 32 CFR Part 989). Other environmental regulatory requirements relevant to the Proposed Action include, but are not limited to the following:

- Archaeological Resources Protection Act of 1979 (16 U.S.C. 470)
- Clean Air Act of 1972, as amended (42 U.S.C. 7401 *et seq.*)
- Clean Water Act of 1972 and Amendments of 1977 (CWA) (33 U.S.C. 1251 *et seq.*)
- Executive Order 11988, Floodplain Management
- Endangered Species Act of 1973, (ESA) as amended (16 U.S.C. 1531 *et seq.*)
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, 1994
- Migratory Bird Treaty Act of 1918 (16 U.S.C. 703 *et seq.*)
- Federal Weed Act of 1974 (Public Law 93-269; 7 U.S.C. 2801 *et seq.*)
- Fish and Wildlife Coordination Act of 1980 (16 U.S.C. 661 *et seq.*)
- National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 *et seq.*)
- Noise Control Act of 1972 (42 U.S.C. 4901 *et seq.*)
- Occupational Safety and Health Act (29 U.S.C. 651 *et seq.*)
- Comprehensive Environmental Response Compensation and Liability Act (CERCLA) of 1980, amended by Superfund Amendments and Reauthorization Act (SARA) in 1986 (42 U.S.C. 9601 *et seq.*)
- Pollution Prevention Act of 1990 (42 U.S.C. 13101 *et seq.*)
- Resource Conservation and Recovery Act (RCRA) of 1976, amended by Hazardous and Solid Waste Amendments in 1984 (42 U.S.C. 6901 *et seq.*)
- Toxic Substances Control Act of 1976 (15 U.S.C. 2601 *et seq.*)
- National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 *et seq.*)
- Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500 *et seq.*)
- U.S. Army Procedures for Implementing NEPA (33 CFR 651)
- Section 438 of Energy Independence and Security Act



**Figure 1-1. Vicinity Map of the Proposed Action Area for the 21st EOD WMD Company.**

- Albuquerque Environmental Health Department- Applicable Air Quality Permits

The following Executive Orders (EO) are applicable to the Proposed Action as described in this EA:

- EO 11988, *Floodplain Management*
- EO 11990, *Protection of Wetlands*
- EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*
- EO 13045, *Protection of Children from Environmental Health Risks and Safety Risk*

This Environmental Assessment also reflects compliance with all applicable state of New Mexico and local regulations, statutes, policies, and standards of environmental stewardship of water and air quality, endangered plants and animals, and cultural resources.

As required in 40 CFR 1500.2(c), this EA contains a list of federal permits, licenses, and coordination that would be required in implementing the Proposed Action or alternatives. Migratory Bird Treaty Act coordination will be required with the U.S. Fish and Wildlife Service. A National Pollutant Discharge Elimination System (NPDES) permit will be obtained from the U.S. Environmental Protection Agency. Applicable air quality permits will be obtained from the City of Albuquerque Environmental Health Department Air Quality Division. National Historic Preservation Act Section 106 consultation will be undertaken by Kirtland AFB with the New Mexico Historic Preservation Division.

#### **1.4.1 Compliance Requirements**

Under the Proposed Action, the following permits would be required for compliance with applicable regulations:

- National Pollutant Discharge Elimination System Construction General Permit and stormwater pollution prevention plan (SWPPP) for ground disturbance of more than 1 acre during construction and demolition activities.
- City of Albuquerque Environmental Health Department Air Quality Division, Surface Disturbance Permit and Fugitive Dust Permit for ground disturbance of more than 0.75 acre during construction and demolition activities.
- City of Albuquerque Environmental Health Department Air Quality Division, Fugitive Dust Control Construction Permit and Asbestos Notification requirements in accordance with Title 40 CFR Subpart M, National Emission Standards for Asbestos §61.145 for demolition; Inspection, notification requirements, and asbestos removal in accordance with 20.11.20.22 NMAC, Demolition and Renovation Activities.
- Albuquerque/Bernalillo County Air Quality Control Board (AQCB) and city of Albuquerque, Air Quality Division, Authority to Construct, Operation Permit, or Source Registration for stationary sources (heaters/boilers, etc.) used for dormitory and supporting facilities, unless these types of equipment are exempt under NMAC Title 20, Chapter 11.
- New Mexico State Historic Preservation Office, NHPA Section 106 consultation for excavation or removal of archaeological resources from public lands or American Indian lands, and performing activities associated with such excavation or removal.

### **1.5 Interagency Coordination and Public Involvement**

NEPA requirements help ensure that environmental information is made available to the public during the decision making process and prior to actions being taken. The premise of NEPA is that the quality of federal decisions would be enhanced if proponents provide information to the public and involve the public in the planning process. The Intergovernmental Coordination Act and EO 12372, Intergovernmental Review of Federal Programs, require federal agencies to cooperate with and consider

state and local views in implementing a federal proposal. Air Force Instruction (AFI) 32-7060, Interagency and Intergovernmental Coordination for Environmental Planning (IICEP), requires the USAF to implement an agency coordination process, which is used for the purpose of facilitating and receiving agency input coordination and implements scoping requirements.

Through the IICEP process, Kirtland AFB made the Draft EA available to relevant federal, state, and local agencies to share the analyses of the Proposed Action and alternatives and provide them sufficient time to make known their environmental concerns specific to the action. The IICEP process also provided Kirtland AFB the opportunity to cooperate with and consider state and local views in implementing the federal proposal. IICEP materials related to this EA are included in Appendix A. The agencies and tribes contacted during the IICEP process are included in Appendix A.

A Notice of Availability (NOA) for the Draft EA was published in *The Albuquerque Journal* on February 6, 2011. The publication of the NOA initiated the 30-day public review period. At the end of the 30-day review period, no comments were received from the general public. Three comments were received from state agencies (i.e., New Mexico Department of Game and Fish, Bernalillo County Public Works, City of Albuquerque), and their comments were incorporated into the analysis of potential environmental impacts performed as part of this EA, where applicable. The letters can be found in Appendix A.

## **2. DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES**

This section describes the Proposed Action, the site selection process, and the alternatives. The No Action Alternative is carried forward for analysis as a baseline to which all other alternatives are compared in accordance with NEPA Part 1502.14(d). Alternatives considered but eliminated from further analysis are also addressed.

### **2.1 Proposed Action**

The Proposed Action includes construction of an operations complex for the 21<sup>st</sup> EOD WMD. The operations complex would include an operations facility, rapid deployment center, and an assessment and selection site. The new operations complex would require four new buildings: operations facility, lock-down building, assessment and site selection administrative building, and rapid deployment center building; demolition of three current buildings: 29040, 29051, and 29099; addition of two water storage tanks; construction of a Leadership Reaction Course within the 29000 Area of Kirtland AFB in New Mexico (Figure 2); and construction of two new concrete explosive shot pads (Figure 3). In addition to construction of new facilities, the proposed action would include expanding the current compound area from 90 acres to 470 acres and building a chain-link security fence around the perimeter. All of the buildings proposed for demolition are currently unoccupied or used by personnel. The project would also involve removing, capping, and rerouting sewer, gas, water, and steam lines outside of the work areas (Figure 4). All buildings would be designed with antiterrorism/force protection measures, which include standoff distance, laminated glass, and security lighting; incorporate sustainable design features in accordance with the Sustainable Design and Development Policy Act of 2005; have mass notification system, intrusion detection system, and fire detection system and sprinklers installed throughout the buildings; energy monitoring control systems connected to the installations central system; and have self contained heating systems. All buildings would be constructed using water conservation and energy efficient designs.

The first permanent building to be constructed within the compound would be a lock-down building. This facility is proposed for Fiscal Year (FY) 2011 as an UMMCA project. The lock-down building would be approximately 6,000 square feet and would serve the function of housing 21<sup>st</sup> EOD WMD soldiers who have been assigned to deploy to a specific incident anywhere in the world. Due to the nature of these assignments, the duration of lock-down can range from a few hours to a few months. Upon being alerted to an assignment, soldiers are required to remain in the lock-down facility until they depart or the mission is cancelled. The purpose of the lock-down facility is to serve as a home-unit equipped with kitchen area, sleeping quarters, planning rooms, day room, fitness room, and equipment storage to expedite the departure process.

The operations facility, rapid deployment center, and assessment and selection site are proposed for FY 2012-2018 MILCON. The operations facility would be approximately 14,000 square feet and would include administrative space, conference rooms, briefing/training room, platoon rooms, operations and training room, nuclear support team room, sensitive compartmented information facility, supply office, fitness center, copier room, arms room, break room, latrines with showers, loading dock, and storage space. Soldiers would perform day-to-day operations in the operations facility that support the 21<sup>st</sup> EOD WMD mission and prepare for future operations.

The rapid deployment center would be approximately 20,000 square feet and would include a pallet storage area, drive through bays for vehicle loading, platoon ready rooms, and maintenance tech room.

The deployment building would serve as the primary maintenance facility and storage area of the mission equipment. The unit's deployment vehicles, trailers, and equipment would be housed in this facility and kept in standby condition in the event the unit receives an alert to move to a specific site.

The assessment and selection site would include an administrative building, bed-down facility, LRC, running track, and obstacle course. The assessment and selection site would be located in the southwestern area of the new compound boundary. The LRC would occupy 100 feet by 300 feet area with a chain-link security fence built to enclose the facility for security and safety purposes. The LRC would serve as a testing facility for the Command Group to assess a soldier's physical and mental abilities to determine their suitability for assignment to the 21<sup>st</sup> EOD WMD, and would eliminate the need to travel to other military installations equipped with an LRC. The 21<sup>st</sup> EOD WMD Company has the privilege to select only the most qualified soldiers to serve in their unit, and the LRC is a critical component used during the evaluation process. The obstacle course and running track would serve as training facilities to enhance and maintain the skills of the 21<sup>st</sup> EOD WMD soldiers.

During FY 13-18, compound roads would be improved and parking areas constructed in order to support these structures. After completion of the four new, permanent facilities, buildings 29040, 29051, and 29099 would be leveled to provide space for a parking area. This site would be landscaped. The existing five septic tanks would be removed and sanitary services would be tied into existing Department of Energy sewer lines. Domestic water service would be upgraded, and the older lines would be replaced and connected to existing Department of Energy main lines running along Lovelace and Mortar Range roads. Fire suppression would be provided by two large water tanks feeding sprinklers and hydrants (Figure 2).

The current Upper and Lower explosive shot pads would eventually cease explosive operations to allow for these UMMCA and MILCON projects. High-energy radiography and containment foaming operations would continue on these two shot pads, as well as Percussion-Actuated Nonelectric (PAN) tool disruption training. These types of operations would not interfere with construction activities.

Two new explosive shot pads would be constructed, licensed, and sited going east from the present shot pads. The first shot pad would be approximately 1,300 feet in an east southeast direction along the trail leading from the back gate of the compound. The second shot pad would be located east southeast of the first shot pad. Relocation of the two explosive shot pads to the eastern portion of the compound would be required because the current blast arc of 1,250 feet does not allow for construction to occur. The relocation of these shot pads would occur prior to the start of new construction for the FY13-18 MILCON projects.

The shot pads would be constructed from reinforced slab concrete in the shape of a circle with a diameter up to 100 feet. An eight-foot berm would be constructed of sand and dirt and encircle each explosive shot pad. Operations at the shot pads would involve detonations of bare explosives not to exceed 10 pounds net explosive weight. The shot pads purpose would be to enhance and maintain the skills of the 21<sup>st</sup> EOD WMD soldiers. These shot pads would also be used for high-energy radiation and containment foaming operations.

A chain-link security fence would be constructed in conjunction with the FY 13-18 MILCON projects and would encompass the 470-acre compound perimeter in order to facilitate access control to all the facilities and maintain operational security for the mission. "Explosive Demolition Area" signs and RESTRICTED AREA signs would be placed at mandated intervals around the entire compound to provide warning for the explosives area. The main access point for the explosive pads would be via the back gate of the compound. The access point would be marked as such and would be annotated in the 21<sup>st</sup> EOD WMD standard operation procedures with maps and drawings. This gated access point would provide the only access point for the compound due to security considerations.

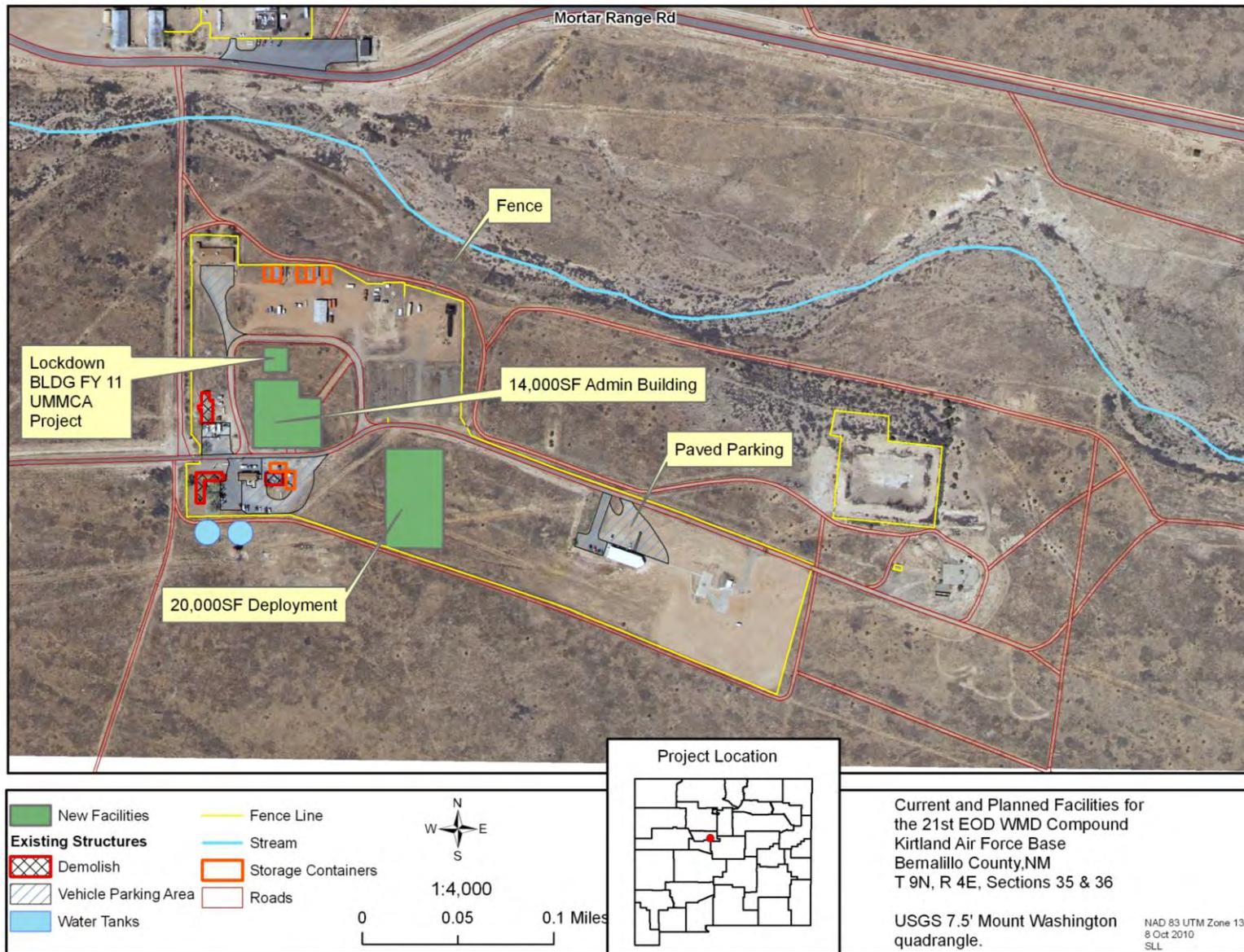
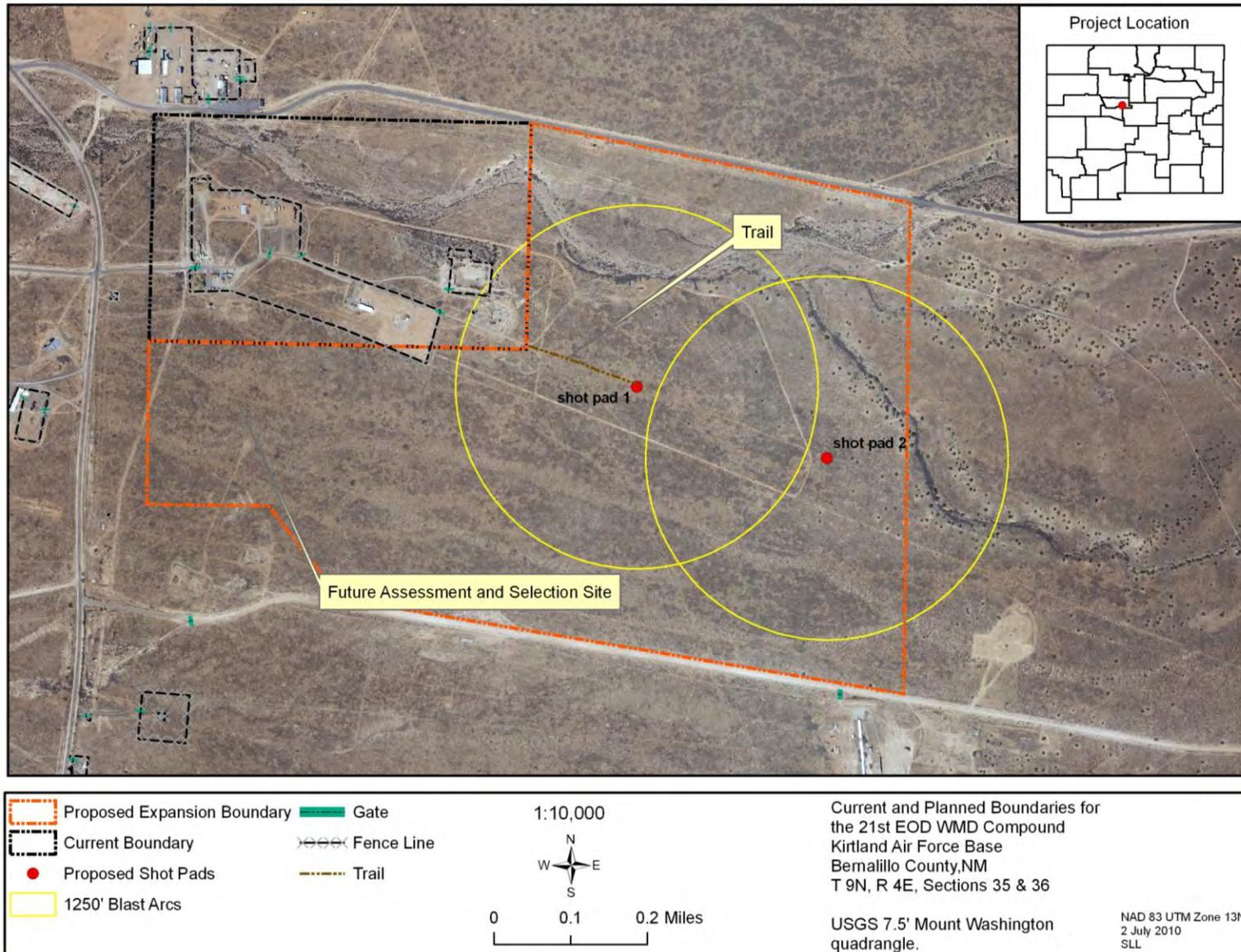


Figure 2. Current and planned facilities for the 21st EOD WMD Compound.



**Figure 3. Proposed land expansion of present-day 90 acre 21st EOD WMD Compound to 470 acres.**

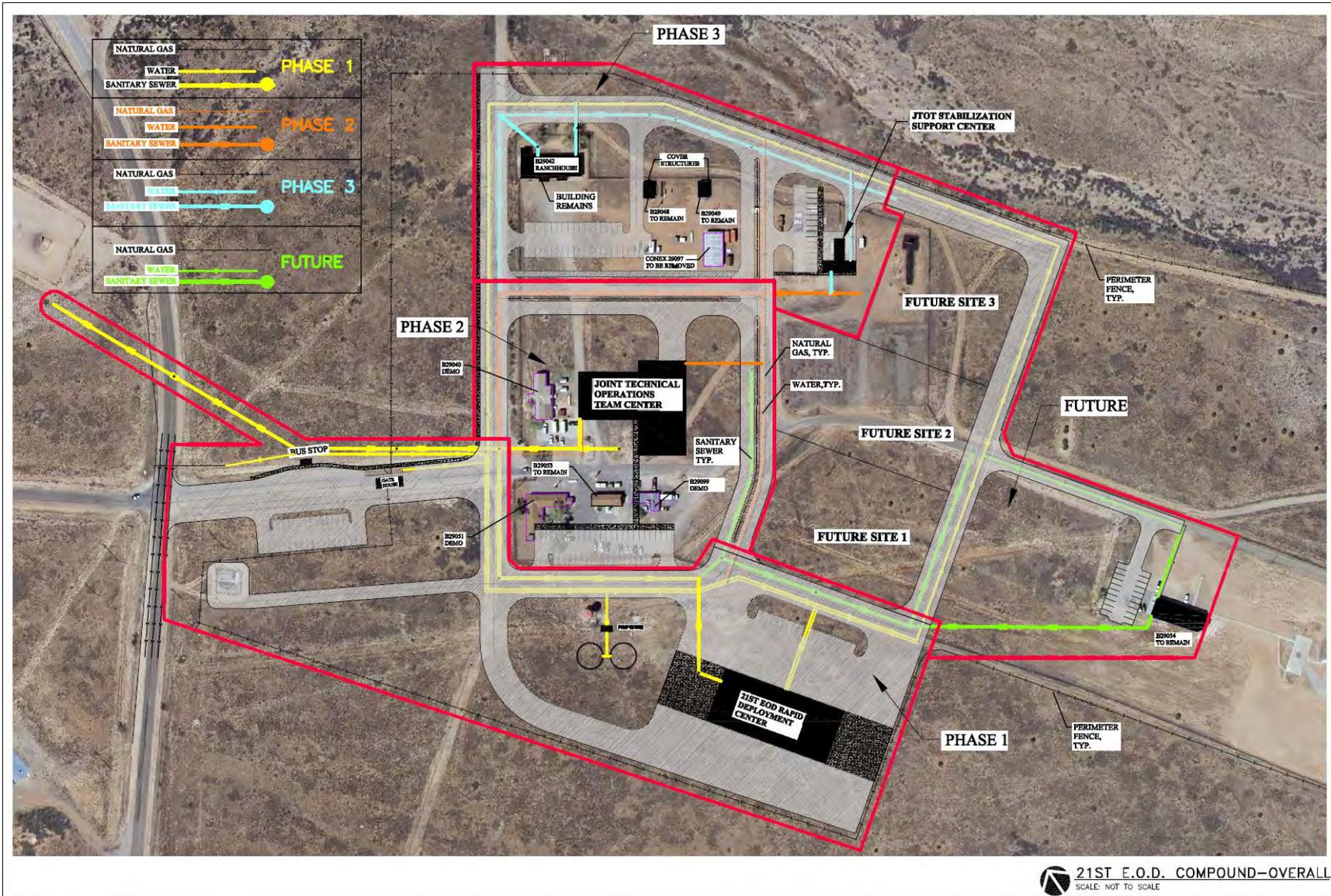


Figure 4. Proposed Utility Line Work.

### **2.1.1 Planning Approach and Criteria**

The 21<sup>st</sup> EOD WMD reviewed their existing facilities, infrastructure, land use, and constraints development, and compared those to their development vision and goal, future development needs, and long-term investment strategies. The 21<sup>st</sup> EOD WMD's current facilities include single-story; residentially scaled buildings constructed in the late 1940's, metal storage sheds, concrete pads, and transportable shipping containers. The current facilities are undersized, deteriorating, and are poorly suited to fulfill the mission needs. The following objectives were considered by project planners and developers:

- Provide facilities that meet the requirements of the 21<sup>st</sup> EOD WMD's mission.
- Provide flexibility for growth in the 21<sup>st</sup> EOD WMD mission requirements.
- Provide a non-standard operations building, a rapid deployment center, and supporting buildings for the 21<sup>st</sup> EOD WMD at Kirtland AFB, New Mexico.
- Provide adequate facilities in a centralized location that support the expanding needs of the 21<sup>st</sup> EOD WMD mission.
- Provide adequate storage and protection for multi-million dollar, 1-of-a-kind equipment used by the 21<sup>st</sup> EOD WMD.

Construction constraints to future development were comprehensively addressed during project planning. Constraints include airfield clearances, noise considerations, quantity-distance (QD) explosive safety zones, and potential historic sites.

The Proposed Action is designed to guide renovation or replacement of 21<sup>st</sup> EOD WMD infrastructure and facility improvement over the next seven years. These improvements would better support current missions, provide flexibility for new missions, and provide flexibility for growth. Continuing mission development is expected. As missions evolve, the 21<sup>st</sup> EOD WMD continues to balance mission requirements and support facilities.

## **2.2 Alternatives Considered, But Eliminated**

Three additional alternatives (Alternatives III – V) were considered and eliminated from further analysis based on not meeting the project objectives. The alternatives considered, but eliminated are discussed in more detail below.

Alternative III proposed leasing facilities for the 21<sup>st</sup> EOD WMD off the existing compound. Existing buildings on Kirtland AFB were considered for construction of the proposed operations complex for the 21<sup>st</sup> EOD WMD. However, no other locations on Kirtland AFB provide the ability to train with explosives in a classified setting in order to conduct the unit's mission. Other proposed sites were in close proximity to existing infrastructure that could be damaged by explosives training. In addition, moving the operations of the 21<sup>st</sup> EOD WMD to another location on Kirtland AFB would require the base to establish another restricted flying zone for aircraft. With the proximity of the runway for civilian and military traffic, moving the facilities and operations to another location and establishing a new restricted airspace zone is not feasible. This alternative was rejected from further consideration, because there were no facilities off post that could be leased and meet the requirements of the 21<sup>st</sup> EOD WMD's mission.

Alternative IV proposed renovating the existing buildings on the current compound. The existing buildings are small in size and scattered across the compound. In addition, the existing buildings do not meet current building codes and are not suitable for large scale renovations. Future land use for the 29000 Area is designated as industrial in the *Draft Kirtland AFB General Plan* and supports the continued use of the 29000 Area to accomplish the mission of the 21<sup>st</sup> Company. This alternative was rejected from further

consideration, because there were no existing buildings on the current compound that could be renovated to meet the requirements of the 21<sup>st</sup> EOD WMD's mission; provide adequate storage and protection for multi-million dollar, 1-of-a-kind equipment used by the 21<sup>st</sup> EOD WMD; or provide a non-standard operations building, a rapid deployment center, and supporting buildings for the 21<sup>st</sup> EOD WMD.

Alternative V proposed a mixture of renovating existing buildings and constructing additions to existing buildings. The space provided for the 21<sup>st</sup> EOD WMD's mission will remain in the current location on Kirtland AFB. The existing buildings are not suitable for large scale renovations or expansions. This alternative was rejected from further consideration, because there were no existing buildings on the current compound that could be renovated or expanded to meet the requirements of the 21<sup>st</sup> EOD WMD's mission; provide adequate storage and protection for the multi-million dollar, 1-of-a-kind equipment used by the 21<sup>st</sup> EOD WMD; or provide a non-standard operations building, a rapid deployment center, and supporting buildings for the 21<sup>st</sup> EOD WMD.

### 2.3 No Action Alternative

The CEQ Regulations implementing the NEPA require that a No Action alternative be evaluated (40 CFR 1502.14). The No Action Alternative is analyzed to provide a baseline of the existing conditions against which the potential environmental, social, and economic impacts of the Proposed Action and alternative actions can be compared. Under the No Action Alternative, there would be continued use of the existing compound, which is located in the 29000 Area of Kirtland AFB. This facility contains seven buildings, roads, utilities, and training areas. Selection of this alternative would result in continued deterioration of the facilities, continued safety issues due to the presence and use of unsafe buildings, and would not provide adequate space to meet the needs of the 21<sup>st</sup> EOD WMD Company. The cost of maintaining these current facilities would continue to rise and selection of this alternative would result in continued deterioration of the facilities and would not provide adequate operational space available for personnel and the multi-million dollar, 1-of-a-kind equipment.

### 2.4 Comparison of Alternatives

Table 1 summarizes the potential environmental consequences of the Proposed Action and No-Action Alternative, based on the detailed impact analyses presented in Chapter 4.

**Table 1. Summary of Environmental Impacts**

<b>Resource</b>	<b>Proposed Action</b>	<b>No Action</b>
Topography, Geology, and Soils	Soils would be disturbed. Landscaping techniques and replanting the areas with native grasses and other vegetation would negate these short-term impacts	Topography, Geology, and soils would remain the same; no impact expected
Water Resources	Temporary increases in stormwater runoff would occur. A stormwater pollution prevention plan would be developed to identify and implement Best Management Practices to reduce erosion and runoff	Water resources would remain the same; no impact expected.
Air Quality	Demolition and fugitive dust emissions would produce localized, short-term elevated air pollutant concentrations which would not result in any long-term impacts on air quality	Air quality would remain the same; no impact expected
Noise	Construction and demolition would not increase ambient noise beyond the	Noise would remain the same; no impact expected

	installation boundary. The Proposed Action area is located within a remote area where few individuals would be exposed to the temporary noise	
Safety	All personnel involved in the proposed building demolition would be trained for eliminating the potential exposure to, and release of asbestos and lead. Complying with Kirtland AFB's Asbestos Management Plan and Lead-Based Paint Management Plan would reduce asbestos and lead safety hazards to contractors working on demolition activities.; no impact expected	The existing facilities would continue to deteriorate and pose safety concerns with not meeting safety and construction codes (i.e., exposed electrical wirings, lack of fire suppression systems, no reinforced concrete walls).
Infrastructure	Infrastructure improved with new buildings; no adverse impact expected	Infrastructure remains the same; buildings continue to deteriorate
Land Use	Proposed construction projects compatible with base planning; no impact expected	No change to land use; no impact expected
Biological Resources	Most of the Proposed Action area is previously disturbed; native vegetation to be used for landscaping or restoration of disturbed areas; no impact expected	Biological resources would remain the same; no impact expected
Cultural Resources	A building district eligible for listing on the National Historic Register would be demolished. The Historic American Buildings Survey/Historic American Engineering Records documentation of the building on April 2010 will mitigate the adverse impact.	Cultural resources remain the same; no impact expected
Hazardous Materials and Waste	It is anticipated that the amount of hazardous wastes generated during the proposed demolition activities would be negligible. Contractors would be responsible for the disposal of hazardous wastes in accordance with Federal and state laws and regulations, and in accordance with Kirtland AFB's Hazardous Waste Management Plan; no impact expected	Hazardous materials and waste remain the same; no impact expected
Socio-Economic Considerations	No change in base employment or expenditures. Construction and demolition jobs will be created and could benefit the local economy; no impact expected	No change in base employment or expenditures; no impact expected
Environmental Justice	No change in minority or children population; no impact expected	No change in minority or children population; no impact expected

### 3.0 AFFECTED ENVIRONMENT

This section describes the existing natural and human environment that may be impacted by the implementation of the Proposed Action or the No Action Alternative.

#### 3.1 Topography, Geology, and Soils

The Rio Grande follows a well-defined geologic feature called the Rio Grande graben. The Rio Grande graben contains several thousand feet of poorly consolidated sediment of the Santa Fe Group of the middle Miocene to Pleistocene age.

The terrain in the Proposed Action area is fairly level and ranges from 5,700 to 5,800 feet elevation. The surface geology consists of quaternary piedmont alluvial deposits of the Holocene to lower Pleistocene age, which includes deposits of higher gradient tributaries bordering major stream valleys, alluvial veneers of the piedmont slope, and alluvial fans (New Mexico Bureau of Geology and Mineral Resources 2003). The general soil conditions are deep, nearly level, well-drained soils that are formed in alluvium derived from decomposed granitic rocks on old alluvial fans.

The major soil series within the Proposed Action area are described in the following discussions. The information in this section was obtained from the soil survey for Bernalillo County and parts of Sandoval and Valencia Counties (USDA 1977).

##### Tijeras gravelly fine sandy loam

This nearly level to gently sloping soil is on old alluvial fans. It has a profile similar to that described as representative of the series, but has a yellowish brown surface layer about 6 inches thick and less gravel. Slopes are 1 to 5 percent. Runoff is moderate, and the hazard of water erosion is moderate.

##### Latene sandy loam

This soil is nearly level to gently sloping. Slopes are 1 to 5 percent. Runoff is medium and the hazards of water erosion and soil blowing are moderate.

##### Embudo-Tijeras complex

The Embudo soil is in drainage-ways and depressions, and the Tijeras soil is on low ridges in narrow undulations. The soil complex consists of Embudo gravelly fine sandy loam, 0 to 5 percent slopes, and a Tijeras gravelly fine sandy loam that has 1 to 9 percent slopes. On both soils, runoff is medium and the hazard of water erosion is moderate.

##### Gila fine sandy loam

This nearly level soil is in and at the mouth of the Tijeras Arroyo (USDA 1977). It has a profile similar to that described as representative of the series, but has layers with gravel and has a surface layer that differs in texture. Slopes are 0 to 2 percent. Runoff is slow and flooding is a hazard. The hazards of water erosion and soil blowing are moderate.

Table 2 provides general characteristics and limitations associated with the four soil types within the Proposed Action area. The construction and demolition would occur within the Tijeras gravelly fine sandy loam and Latene sandy loam soil types.

**Table 2. Soil Properties of Mapped Soils within Proposed Action area**

Map Unit Name	Slope (percent)	Farmland Classification	Drainage	Road Limitations	Building Limitations	Excavation Limitations
Tijeras gravelly fine sandy loam	1 to 5	not prime farmland soil	Well-drained	not limited	not limited	very limited
Latene sandy loam	1 to 5	not prime farmland soil	well-drained	not limited	not limited	very limited
Embudo-Tijeras complex	0 to 9	not prime farmland soil	well-drained	somewhat limited	very limited	very limited
Gila fine sandy loam	0 to 2	not prime farmland soil	well-drained	somewhat limited	very limited	somewhat limited

Source: NRCS 2010

### 3.2 Water Resources

#### 3.2.1 Surface and Ground Water

The Proposed Action area contains a manmade lake, Lake Christian, and two unnamed ephemeral drainages. Lake Christian has been drained and the two ephemeral drainages were dry during the site visit, however both are adjacent to the Proposed Action area. Surface flow corresponds to snow melt and summer thunderstorms. Local drainage in the area is through unnamed tributaries to the Rio Grande. Most of the annual flow and discharge of the Rio Grande that reaches the Middle Rio Grande comes from the headwaters of the river basin in Colorado and in the Rio Grande in northern New Mexico.

The Proposed Action area is within the Rio Grande-Albuquerque watershed hydrologic unit delineated by the USGS. This watershed supports approximately half of the population of New Mexico and includes two counties, two cities, four tribes, and several towns, villages, and unincorporated communities.

Two aquifers underlie Kirtland AFB, the regional and perched. The regional aquifer is present under all of Kirtland AFB and is the primary water supply. It ranges from near surface to approximately 200 feet in depth (KAFB 2009a). The perched aquifer occurs from the Tijeras Arroyo northeast of the confluence of Tijeras Arroyo and Arroyo del Coyote and is not used for any purpose. It ranges from 200-400 feet in depth and is a result of water infiltration from manmade and natural origins (KAFB 2009a).

#### 3.2.2 Floodplains and Wetlands

The Proposed Action area is not located within any special flood hazard areas inundated by the 100-year flood. It is located in Zone D of the flood plain map, which are areas in which flood hazards are undetermined, but possible (Federal Emergency Management Agency 2010).

There are no wetlands within or near the Proposed Action area. The nearest wetlands are approximately 6 miles southeast of the Proposed Action area, and are classified as freshwater ponds by the National Wetland Inventory database.

### 3.3 Air Quality and Noise

The Proposed Action area is located in the Albuquerque-Mid Rio Grande Intrastate (AMRGI) Air Quality Control Region (AQCR) 152 (40 CFR 81.83), which encompasses all of Bernalillo County and most of Sandoval and Valencia counties. In 1996, Bernalillo County was redesignated from a “nonattainment

area” to a “maintenance area” for CO. The maintenance area designation is for a 20-year period beginning 13 June 1996 and continuing until 13 June 2016. The AEHD is required to revise its CO Maintenance Plan and incorporate the plan into the New Mexico State Implementation Plan (SIP) to show Bernalillo County will maintain the CO National Ambient Air Quality Standards (NAAQS) for the remainder of the 20 year maintenance period (the 10 year period beginning 13 June 2006). Because CO has been steadily declining and the County has no recent violations, the AEHD submitted a CO Limited Maintenance Plan, an option provided by the Environmental Protection Agency (EPA) if monitored CO levels can remain below 85% of the CO NAAQS.

Kirtland AFB is currently subject to federal conformity rule requirements because of the maintenance classification; however, Bernalillo County has received approval from EPA for its CO Limited Maintenance Plan, which eliminates the conformity requirements found in 20.11.4 NMAC General Conformity. This plan took effect in June 2006 and makes conformity analyses unnecessary.

As long as no violations of the CO NAAQS occur, Bernalillo County will be officially designated as attainment for CO in the year 2016.

The most recent emissions inventories for Bernalillo County and the AMRGI AQCR are shown in Table 3. Bernalillo County is considered the area of influence, and the AMRGI AQCR is considered the regional area of influence for the air quality analysis.

**Table 3. Local and Regional Air Emissions Inventory for 2002.**

Location	CO (tpy)	NO <sub>x</sub> (tpy)	PM <sub>10</sub> (tpy)	PM <sub>2.5</sub> (tpy)	SO <sub>2</sub> (tpy)	VOC (tpy)
Bernalillo County, NM	185,250	24,930	61,892	8,183	1,568	24,310
AMRGI AQCR	245,346	36,778	137,376	16,676	2,619	31,651

Source: USEPA 2009

The Albuquerque-Bernalillo County Air Quality Control Board (AQCB) is the air pollution control authority for Bernalillo County while the Albuquerque Environmental Health Department Air Quality Division handles air quality functions. Sources on Kirtland AFB that emit criteria and HAPs include fuel storage tanks, gasoline service stations, generators, surface coating, boilers, aircraft engine testing, and chemical usage. Kirtland AFB estimates annual emissions from stationary sources and provides this information to the Albuquerque Environmental Health Department Air Quality Division. Table 4 summarizes calendar year 2008 air emissions inventory for Kirtland AFB.

**Table 4. Calendar Year 2008 Air Emissions Inventory for Kirtland AFB**

	CO (tpy)	NO <sub>x</sub> (tpy)	PM <sub>10</sub> (tpy)	SO <sub>2</sub> (tpy)	VOC (tpy)
2008 Actual Emissions	13.0	12.8	8.1	1.1	60.0

Source: KAFB 2008

Air quality in the Proposed Action area is generally good to excellent due to the lack of urban industrial development. Although high winds are common in and around the Proposed Action area, blowing dust is generally not a problem except during extremely dry years. Airborne particulate and carbon monoxide concentrations from wood burning in the Rio Grande valley are occasionally high during winter months when temperature inversions and wood stove use are both more prevalent.

The Albuquerque Environmental Health Department (AEHD) Air Quality Division has fugitive dust control requirements in 20.11.20 NMAC, *Fugitive Dust Control*. A fugitive dust control construction permit is required for projects disturbing 0.75 acres or more, as well as the demolition of buildings containing more than 75,000 cubic feet of space. As stated in 20.11.20.12 NMAC *General Provisions*, each person shall use reasonably available control measures or any other effective control measure during active operations or on inactive disturbed surface areas, as necessary to prevent the release of fugitive dust, whether or not the person is required by 20.11.20 NMAC to obtain a fugitive dust control permit. This regulation also contains a provision for buildings containing asbestos-containing materials (ACM) as stated in 20.11.20.22 NMAC *Demolition and Renovation Activities; Fugitive Dust Control Construction Permit and Asbestos Notification Requirements*: “All demolition and renovation activities shall employ reasonably available control measures at all times, and, when removing asbestos-containing material (ACM), shall also comply with the federal standards incorporated in 20.11.64 NMAC, *Emission Standards for Hazardous Air Pollutants for Stationary Sources*. A person who demolishes or renovates any commercial building, residential building containing five or more dwellings, or a residential structure that will be demolished in order to build a nonresidential structure or building shall file an asbestos notification with the department no fewer than 10 calendar days before the start of such activity. Written asbestos notification certifying to the presence of ACM is required even if regulated ACM is not or may not be present in such buildings or structures.”

The Occupational Safety and Health Administration (OSHA) noise standard limits noise levels to 90 decibels adjusted (dBA) averaged over an eight-hour day (29 CFR 1910.95), although hearing damage can begin at levels as low as 80 dBA over an eight-hour day. No worker may be exposed to noise in excess of 115 dBA without protection, which will reduce the exposure below 115 dBA (AFSCME 2004).

Albuquerque’s noise control ordinance was placed into effect in June 1975. The Environmental Health Department’s Consumer Protection Division personnel are responsible for enforcing the ordinance. Noise control enforcement may involve sources of excessive noise: radios, stereos, television, live bands, machinery, equipment fans, air conditioners, construction, vehicle repairs, motor vehicles, and general noise. The ordinance stipulates a property-line value in which the noise level emitted must not exceed 50 dB or 10 dB above the ambient level; whichever is greater (Mitzelfelt 1996). For example, if you are playing a stereo, the sound level traveling from the stereo to the neighboring property lines cannot be more than 10 dB higher than the general noise level existing before the stereo was turned on. Noise level meters are used to measure the sound level as it is crossing the property line. The meters are similar to radar meters the police used for speed detection; however, instead of detecting an object in motion, it detects air pressure (sound waves) in motion and produces a numbered level called decibels.

Equipment to be used during construction and demolition would generate approximately 71 to 94 dB of noise (Close and Wesler 1975, USEPA 1971). This range typically exceeds ambient noise levels for urban environments (i.e., 60 dB). Construction would take place during normal work hours between 7:00 am and 5:00 pm in order to minimize disturbance. All OSHA and local municipality requirements (as described above) would be adhered to.

### **3.3.1 Climate**

The climate in the vicinity of the proposed project is classified as semi-arid. The average maximum temperature is 71.8 °F and the average minimum temperature is 40 °F (Western Regional Climate Center 2010). The average annual precipitation is between 7 and 10 inches (USDA 2008). Summer is the rainy season. Half of the annual precipitation falls during the period of July to October, typically as brief summer rain storms. The snow season in the Albuquerque area generally extends from November to early in April, but snow seldom accumulates on the ground for more than one day. The average frost-free season in Albuquerque is 190 days, from mid-April to late in October. Relative humidity averages less

than 50 percent and generally less than 20 percent on hot sunny afternoons. Winds blow most frequently from the north during the winter months and from the south along the river valley during the summer season. Wind speed averages around 8 miles per hour for the year (WRCC 2010).

### **3.3.2 Greenhouse Gases**

On December 29, 2009, the U.S. Environmental Protection Agency (USEPA) *Mandatory Reporting of Greenhouse Gases Rule* became effective. It requires reporting of greenhouse gas (GHG) emissions from large sources and supplies in the United States, and is for the purpose of collecting accurate and timely emissions data to inform future policy decisions. The U.S. Supreme Court's decision in Massachusetts v. USEPA ruled that the Clean Air Act (CAA) authorizes regulation of greenhouse gases because they meet the definition of air pollutant under the Act. Therefore, the USEPA will be required to regulate polluters who emit more than 250 tons of pollutants per year. The USEPA has clearly indicated that greenhouse gas emissions and climate change are issues that need to be considered in future planning. Greenhouse gases are produced by the burning of fossil fuels and through industrial and biological processes.

The largest contributor to New Mexico's GHG emissions is the energy sector, which accounted for 83 percent of the gross GHG emissions in 2007. BY the end of 2007, the energy sector contribution remained at the 2000 levels. Within the energy sector, electricity production is the largest single source of emissions, contributing to 41 percent of gross emissions for 2007, followed by the fossil fuel industry, accounting for 22 percent of gross emissions in 2007 (NM Environmental Department 2010). The Energy Information Administration states that in 2007, gross CO<sub>2</sub> emissions in New Mexico were 59.2 million metric tons of CO<sub>2</sub> from fossil fuel consumption (U.S. Energy Information Administration 2010).

## **3.4 Safety**

### **3.4.1 Contractor Safety**

All contractors performing construction and demolition activities are responsible for following federal and state of New Mexico Occupational Health and Safety Bureau (OSHB) regulations and are required to perform construction and demolition activities in a manner that does not increase risk to workers or the public. New Mexico administers its own occupational safety and health program. The Compliance Section of New Mexico OSHB enforces safety and health regulations as outlined in 29 CFR 1910, 1926, and Title 11 provisions.

Occupational safety and health programs address exposure to hazardous and toxic substances, safety hazards, use of personal protective equipment (PPE), and use and availability of Material Safety Data Sheets. Employer responsibilities include review of potentially hazardous workplaces; monitoring exposure to workplace chemical, physical, and biological agents; recommend and evaluate controls to ensure risks to personnel are eliminated or properly handled; and to provide a medical program for employees who are subject to the use of respiratory protection, engaged in hazardous waste work, asbestos, lead, or other work the requires medical attention.

Owing to the historic and deteriorated conditions of the buildings proposed for demolition, ACMs and LBPs may be present. Kirtland AFB maintains an asbestos management plan and a lead-based paint management plan.

Construction site safety and accident prevention are ongoing activities at all job sites. All contracts for construction services include safety as a priority in the standard terms and conditions.

### **3.4.2 Military Personnel Safety**

The 21<sup>st</sup> EOD WMD has its own regulations and guidelines that deal with explosives safety which address the toxicity of explosives and the potential harmful effects as a result of ingestion. Countermeasures are also provided for additional protection to personnel.

### **3.4.3 Airspace**

Kirtland AFB enforces operational constraints that include: airfield clearance; accident potential zones, which discourage development in areas where there is risk of aircraft accidents; and the explosive clear zones, which dictates restricted use of areas surrounding munitions areas, hot cargo pads, and other explosive sensitive area (KAFB 2009a). The existing facility and Proposed Action area is located within a restricted flying zone and would not affect airspace operations. There would be no change in the number of aircrafts using Kirtland AFB. No proposed structures or operations would penetrate into airspace or affect flight paths or patterns.

### **3.4.4 Explosives and Munitions Safety**

The 21<sup>st</sup> EOD WMD does not store any explosives on the compound. All explosives are stored in Kirtland AFB-approved bunkers located approximately 500 meters west of the compound fence across Lovelace Road.

Explosive Quantity-Distance (QD) arcs are established around the existing and proposed shot pads to safeguard the public and installation personnel against possible injury from fires and explosions. The QD arcs for the proposed shot pads are 1,250 feet. Within the QD arc, development is restricted or prohibited to ensure the safety of personnel and to minimize potential for damage to other facilities in the event of an accident. Identifying the QD arcs ensures construction does not occur within these areas.

## **3.5 Infrastructure**

The infrastructure information was obtained from the *Kirtland Air Force Base New Mexico General Plan 2009 Draft* (KAFB 2009a) and provides a brief overview of existing utilities, communications, and fire protection systems.

### **3.5.1 Electrical Systems**

Kirtland AFB purchases electrical power from Western Area Power Administration. All electricity to the installation comes through the Sandia Switching Station on an approximately 80 million-volt amperes (MVA) capacity electrical circuit. The estimated normal electrical load for Kirtland AFB is approximately 35 MVA, and the estimated historical maximum electrical load is approximately 76 MVA (KAFB 2009a).

### **3.5.2 Natural Gas Systems**

Coral Energy supplies Kirtland AFB with natural gas. Natural gas enters the system through a 60 pound-per-square-inch (psi) pipeline near Pennsylvania and Gibson Boulevards at a regulator and metering station. There are approximately 70 miles of natural gas mains at Kirtland AFB that provide natural gas service to several buildings on the installation. The primary buildings that receive natural gas service are in the industrial complex, family housing areas. Natural gas consumption is dependent on weather conditions and additional facility square footage added. The total consumption in 2006 was approximately 1,100,000 BTUs (KAFB 2009a).

### ***3.5.3 Central Heating and Cooling Systems***

Kirtland AFB had three central heating systems that served multiple facilities through approximately 20 miles of steam mains. Two of the steam plants were shut down during Phase I and II of an Energy Savings Performance Contract, and replaced by natural gas fired boilers or furnaces in individual buildings (KAFB 2009a). The Sandia Steam Plant provided service to several buildings throughout the eastern area North of Harding Boulevard and the Sandia National Laboratories, but was shut down in May 2009 after Sandia National Labs installed individual heating and cooling systems (KAFB 2009a). Buildings proposed for demolition have individual boilers or furnaces and swamp coolers.

### ***3.5.4 Water Supply Systems***

Water is supplied to Kirtland AFB by six groundwater wells and two separate but interconnected distribution systems that collectively pump an average of 5.5 million gallons per day (mgd) of treated, potable water through approximately 160 miles of distribution mains (KAFB 2009a). Water is also purchased from the city of Albuquerque to meet the demand during peak times. The city of Albuquerque allows Kirtland AFB to withdraw up to 6,000 acre-feet/year from the underground aquifer (Kirtland AFB 2009a). Kirtland AFB has over five and one half million gallons of on-site storage capacity. Water lines are in good condition and are properly sized. The water utilities system is approximately 45 years old and is in the process of being completely restored (KAFB 2009a).

### ***3.5.5 Sanitary Sewer/Wastewater Systems***

Kirtland AFB does not have its own sewage treatment facility, and sanitary sewer waste water is gravity flowed to the city of Albuquerque waste water facility off of the base (KAFB 2009a). The allowable Kirtland AFB sewer discharge rate is fixed at 70,805,000 gallons per month, and infrastructure is properly sized to meet the current and future need of the installation. The sanitary sewer is in the process of being upgraded and will include repairing sewer lines and lift stations, replacement and removal of septic tanks, and an oil-water separator washrack (KAFB 2009a). The base does not operate any point-source discharges of process wastewater as regulated by the National Pollutant Discharge Elimination System (NPDES). Sanitary wastewater from the installation is collected by the sanitary sewer system, which is connected to the city of Albuquerque sanitary sewer system. The daily discharge of approximately 1.2 million gallons per day of sanitary wastewater includes effluents from Kirtland AFB laboratories, aircraft maintenance facilities, and production operations, as well as discharge from bathrooms and personnel housing (KAFB 2009a).

### ***3.5.6 Solid Waste Management.***

Kirtland AFB collects all refuse through a private contractor, which is disposed of at a regional landfill off the installation. Recycling on Kirtland AFB is contracted out to a private party. Kirtland AFB operates a construction and demolition (C&D) landfill that services all federal tenants at the installation (KAFB 2009a).

### ***3.5.7 Fire Protection***

There are five fire stations on Kirtland AFB; three provide structural fire fighting support, and two provide crash and airfield fire response. There are 1.92 miles of fire protection water mains at Kirtland AFB and the required storage of 4.4 million gallons of water for peak hour demand is met. The closest fire fighting support station is approximately 3 miles north of the compound located in the Manzano Area. Kirtland AFB maintains mutual aid agreements with Cibola National Forest, and the Albuquerque and Bernalillo County Fire departments (KAFB 2009a).

### **3.6 Land Use**

The Proposed Action area is located in Bernalillo County, New Mexico. Kirtland AFB is bordered on the west and north by the city of Albuquerque, by Cibola National Forest on the northeast and east, and by Isleta Indian Reservation (Isleta Pueblo) on the south side. Kirtland AFB occupies approximately 51,558 acres. The 21<sup>st</sup> EOD WMD is located in the southern and western portions of Kirtland AFB in the 29000 Area, which accounts for approximately 80 percent of the installation's total land area, and is primarily used for military training and operational facilities.

The current land use designation for the compound is open space, and in the Kirtland AFB Future Land Use Plan, presented in the *Kirtland Air Force Base New Mexico General Plan 2009 Draft* (KAFB 2009a), land use for this area will convert to industrial use. Open space refers to all developable sites, areas used to buffer installation facilities, and areas preserved due to environmental sensitivity (KAFB 2009a). Industrial uses include sites for storage of supplies and installation maintenance and utility facilities (KAFB 2009a).

The proposed project mostly occurs within the existing compound. The proposed shot pads and assessment and selection site (i.e., LRC) will occur in undisturbed areas.

### **3.7 Biological Resources**

#### **3.7.1 Vegetation Communities**

The Proposed Action area falls within the Plains and Great Basin Grassland plant community, as defined by Brown (1994). The land cover types are defined as Inter-Mountain Basins Montane Sagebrush Steppe and Inter-Mountain Basins Semi-Desert Grassland (U.S. Geological Survey 2004). The Proposed Action area consists of a widely scattered overstory of one-seed juniper (*Juniperus monosperma*) and four-winged saltbush (*Atriplex canescens*) with a relatively continuous herbaceous cover dominated by black grama (*Bouteloua eriopoda*). Other species observed included blue grama (*Bouteloua gracilis*), snakeweed (*Gutierrezia sarothrae*), plains yucca (*Yucca spp.*), prickly pear (*Opuntia spp.*), and winterfat (*Kraschennikovia lanata*). The soils and vegetation within the Proposed Action area have been moderately disturbed from the construction of the existing roads and buildings.

#### **3.7.2 Wildlife**

Wildlife species associated with the Plains and Great Basin Grassland plant community include pronghorn (*Antilocarpa americana*), prairie dogs (*Cynomys spp.*), thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*), swift fox (*Vulpes velox*), plains pocket gopher (*Geomys bursarius*), and plains harvest mouse (*Reithrodontomys montanus*) (Brown 1994). Some of the birds most characteristic of the Plains grassland community are peripheral as nesting species in this area. These species include the upland sandpiper (*Bartramia longicauda*), lark bunting (*Calamospiza melanocorys*), grasshopper sparrow (*Ammodramus savannarum*), and the long-billed curlew (*Numenius americanus*) (Brown 1994). Other grassland species such as meadowlarks, prairie falcon (*Falco mexicanus*) and the burrowing owl (*Athene cunicularia*) may be found throughout these open landscapes. In addition, various reptiles and other small mammals may be present throughout the area.

The peak nesting season for birds is April through August. The Migratory Bird Treaty Act (MBTA) is the primary legislation in the United States established to conserve migratory birds (USFWS 2004). The MBTA prohibits taking, killing, or possession of migratory birds unless permitted by regulations promulgated by the Secretary of the Interior. The U.S. Fish and Wildlife Service and the Department of Justice are the Federal agencies responsible for administering and enforcing the statute.

The Proposed Action would occur in an area that is presently developed, or in areas where sparse vegetation exists. A biological survey was conducted by an Ecosystem Management, Inc. biologist on 21 April 2010. No sign of prairie dogs (*Cynomys* spp.), nor burrowing owls (*Athene cunicularia*) were found and no prairie dogs have been reported to inhabit the Proposed Action area in recent years (G. Dunn, KAFB, personal communication). Evidence of recent mammal activity included a burrow system made by ground squirrels (*Spermophilus* spp.). Bird species observed within the main compound along the boundary fence and near an abandoned lagoon included mourning dove (*Zenaida macroura*), white winged dove (*Zenaida asiatica*), house finch (*Carpodacus mexicanus*), ash-throated flycatcher (*Myiarchus cinerascens*), gray flycatcher (*Empidonax wrightii*), western kingbird (*Tyrannus verticalis*), horned lark (*Eremophila alpestris*), American kestrel (*Falco sparverius*), and Say's phoebe (*Sayornis saya*). Bird species observed within the Proposed Action area included common raven (*Corvus corax*), chipping sparrow (*Spizella passerina*), rock wren (*Salpinctes obsoletus*), and Say's phoebe. Bird species observed in an arroyo adjacent to the north side of the Proposed Action area included curve-billed thrasher (*Toxostoma curvirostre*), black-throated sparrow (*Amphispiza bilineata*), Bewick's wren (*Thryomanes bewickii*), and rock wrens. No nests were observed during the site visit. Wildlife displaced during construction and would be minimal.

### 3.7.3 Threatened and Endangered and Special Status Species

Three agencies have primary responsibilities for protecting and conserving plant and animal species within the Proposed Action area. The U.S. Fish and Wildlife Service (USFWS), under authority of the Endangered Species Act of 1973 (as amended), has the responsibility for federally-listed wildlife species (Appendix B). The New Mexico Department of Game and Fish (NMDGF), under authority of the Wildlife Conservation Act of 1974, has the responsibility for state-listed wildlife species. The New Mexico Energy, Minerals, and Natural Resources Department, under authority of the New Mexico Endangered Plant Species Act and New Mexico Forestry and Resource Conservation Division Rule No. 91-1 has the responsibility for state-listed endangered plant species. Each agency maintains a continually updated list of species that are classified, or are candidates for classification, as protected based on their present status and potential threats to future survival and recruitment into viable breeding populations. These status rankings represent an expression of threat level to a given species survival as a whole and/or within local or discrete populations. Special status species that potentially occur in Bernalillo County and may occur near the Proposed Action area are listed in Table 5.

Protection from harm, harassment, or destruction of habitat is afforded to species protected under the Federal Endangered Species Act. The New Mexico Wildlife Conservation Act and New Mexico Endangered Plant Species Act protect state-listed species by prohibiting take without a permit from the New Mexico Department of Game and Fish or New Mexico Forestry and Resources Conservation Division.

**Table 5. Special Status Species Listed for Bernalillo County, New Mexico**

Common Name	Scientific Name	Federal Status (USFWS) <sup>a</sup>	State of New Mexico status (NMDGF) <sup>b</sup>
<b>Mammals</b>			
black-footed ferret	<i>Mustela nigripes</i>	E	-
New Mexico jumping mouse	<i>Zapus hudsonius luteus</i>	-	E
spotted bat	<i>Euderma maculatum</i>	-	T
<b>Birds</b>			
bald eagle	<i>Haliaeetus leucocephalus alascanus</i>	T, BGEPA, MBTA	T
southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	E	E

Mexican spotted owl	<i>Strix occidentalis lucida</i>	T, MBTA	-
yellow-billed cuckoo	<i>Coccyzus americanus</i>	C	-
common black-hawk	<i>Buteogallus anthracinus</i>	MBTA	T
neotropic cormorant	<i>Phalacrocorax brasilianus</i>	MBTA	T
aplomado falcon	<i>Falco femoralis septentrionalis</i>	MBTA	E
peregrine falcon	<i>Falco peregrinus anatum</i>	MBTA	T
arctic peregrine falcon	<i>Falco peregrinus tundrius</i>	MBTA	T
broad-billed hummingbird	<i>Cyanthus latirostris magicus</i>	MBTA	T
white-eared hummingbird	<i>Hylocharis leucotis borealis</i>	MBTA	T
brown pelican	<i>Pelecanus occidentalis carolinensis</i>	MBTA	E
Baird's sparrow	<i>Ammodramus bairdii</i>	MBTA	T
Bell's vireo	<i>Vireo bellii</i>	MBTA	T
gray vireo	<i>Vireo vicinior</i>	MBTA	T
<b>Fish</b>			
Rio Grande silvery minnow	<i>Hybognathus amarus</i>	E	E
<b>Plants</b>			
Santa Fe milkvetch	<i>Astragalus feensis</i>	SoC	SoC
La Jolla prairie clover	<i>Dalea scariosa</i>	SoC	SoC
Sapello Canyon larkspur	<i>Delphinium sapellonis</i>	SoC	SoC
Sandia alumroot	<i>Heuchera pulchella</i>	SoC	SoC
Todilto stickleaf	<i>Mentzelia todiltoensis</i>	SoC	SoC
Plank's campion	<i>Silene plankii</i>	SoC	SoC

<sup>a</sup> Endangered Species Act status: only endangered and threatened species are protected by the ESA.

E= Endangered: A species that is in danger of extinction throughout all or a significant portion of its range.

T= Threatened: A species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

BGEPA= Bald and Golden Eagle Protection Act

MBTA= Migratory Bird Treaty Act

SoC= Species of Concern: A taxon for which further biological research and field study are needed to resolve their conservation status OR are considered sensitive, rare, or declining on lists maintained by Natural Heritage Programs, State wildlife agencies, other Federal agencies, or professional/academic scientific societies.

<sup>b</sup> State of New Mexico status:

E= Endangered animal species whose prospects of survival or recruitment within the state are in jeopardy.

T= Threatened animal species whose prospects of survival or recruitment within the state are likely to become jeopardized in the foreseeable future.

SoC= Species of Concern: A New Mexico plant species, which should be protected from land use impacts when possible because it is a unique and limited component of the regional flora.

(Source: New Mexico Administrative Code, Title 19, Chapter 21 Part 2.8 (Criteria for inclusion of the endangered plant species list).)

Special status animal species listed by USFWS (USFWS 2010) that might occur in or near the Proposed Action area, but not anticipated to occur, include the following:

The **black-footed ferret** is a federally endangered species. Historically, the black-footed ferret was present in New Mexico, but it is now considered possibly extirpated (NatureServe 2009). The distribution of the black-footed ferret is closely dependent on that of prairie dogs and all viable breeding populations have been associated with prairie dog colonies, which they use for food and shelter. There were no prairie dog towns observed at or near the Proposed Action area during the field visit. Most of the Proposed Action area occurs within previously developed or disturbed land.

The **bald eagle** was removed from the Department of Interior's list of threatened and endangered species on July 9, 2007 (USFWS 2010). However, the bald eagle is a State threatened species and is protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c) and Migratory Bird Treaty Act. This species is typically associated with streams and lakes in New Mexico. Bald eagles feed primarily on

fish, but will also eat waterfowl, small mammals, and carrion. Only a small number of nests have been reported in New Mexico, and these were in trees and on cliffs. Due to the lack of preferred breeding habitat and preferred wintering habitat there is a low potential for the bald eagle to be present in the Proposed Action area; however, there is a possibility that a migrating bird may pass through the construction site. If an eagle arrives during construction activities, or if an eagle is beyond 0.25 mile from the site, construction would not be interrupted. If bald eagles are found consistently in the immediate Proposed Action areas during the construction period, the Corps will contact the USFWS to determine whether formal consultation under the Endangered Species Act is necessary.

The **southwestern willow flycatcher** is a federal and state endangered species. The southwestern willow flycatcher is a neo-tropical migrant that breeds in dense riparian habitats along rivers, streams, or other wetlands. Surface water or saturated soils are almost always associated with occupied habitats during the breeding season. The nearest designated critical habitat (i.e. Rio Grande-Lower complex) is located approximately 15 miles southwest of the Proposed Action area. The Proposed Action area does not have dense riparian shrub habitat or perennial water features.

The **Mexican spotted owl** is a federally threatened species. These owls are endemic to multi-layered canopy, uneven-aged stands with numerous snags and downed woody matter. These are most often found in old-growth mixed-conifer forests and pine-oak forests. These characteristics may also be found in younger stands that are unmanaged or minimally managed, especially when the stands contain remnant large trees or patches of large trees from earlier stands. Primary spotted owl habitat consists of mixed conifer dominated by Douglas fir, pine, and pine-oak forests. Other important habitat characteristics can include such features as steep, narrow canyons and perennial water sources. The winter habitats of Mexican spotted owls include lower-elevation pinyon-juniper woodlands. Owls select nest sites based primarily on the availability of a suitable nest tree. The nearest designated critical habitat is approximately 16 miles north and 11 miles south of the Proposed Action area.

The **yellow-billed cuckoo** is a neo-tropical migrant associated with open riparian woodlands and broad-leaf forests. It occurs at elevations where stream conditions provide sufficient permanent moisture for emergent plants, or for a narrow band of deciduous trees and shrubs. Species of deciduous trees include cottonwood, sycamore, white alder, bigleaf maple, and willow. Woodlands that occur where desert streams provide sufficient moisture for a narrow band of trees and shrubs along the margins is considered preferred yellow-billed cuckoo habitat. They build nests of grass and twigs in trees, shrubs, or vines. The Proposed Action area does not have riparian woodland or broad leaf forest habitat types, and no yellow-billed cuckoos were observed during the field survey.

The **Rio Grande silvery minnow** is a federal and state endangered species. Its historical range included the Rio Grande and Pecos River systems in Texas, New Mexico, and Mexico. This riverine minnow prefers water with slow to moderate flow in perennial sections of the Rio Grande and associated canals (NatureServe 2009). There is no suitable habitat in the Proposed Action area. The nearest designated critical habitat is approximately 10 miles west of the Proposed Action area.

The state species list indicates that there are six status plant species that occur in Bernalillo County: Santa Fe milkvetch (*Astragalus feenis*), La Jolla prairie clover (*Dalea scariosa*), Sapello Canyon larkspur (*Delphinium sapellonis*), Sandia alumroot (*Heuchera pulchella*), Todilto stickleaf (*Mentzelia todiltoensis*), and Plank's campion (*Silene plankii*). They are each listed by the state of New Mexico Division of Forestry as an endangered plant on the New Mexico Rare Plants Technical Council 2010 website (<http://nmrareplants.unm.edu>). Although these plants are known to occur in Bernalillo County, they are not likely to occur within the Proposed Action area. The preferred habitat of two of these plants, Sandia alumroot and Plank's campion, is limestone cliffs and igneous cliffs, respectfully. Santa Fe milkvetch is known to occur on sandy benches and gravelly hillsides in piñon-juniper woodland or plains-

mesa grassland. The Sapello Canyon larkspur is often associated with canyon bottoms and aspen groves in lower and upper montane coniferous forest. The Todilto stickleaf is found in outcrops of gypsum in the Todilto Formation. The La Jolla prairie clover's preferred habitat is open sandy clay banks and bluffs, often along roadsides. Although the construction work would take place along roadsides, the La Jolla prairie clover was not seen during the site visit on 21 April 2010. Most of the vegetation that exists within the road rights-of-way is disturbed. All other preferred habitat mentioned above is not located within the Proposed Action area.

#### **3.7.4 Noxious Weeds**

The federal Noxious Weed Act of 1974 provides for the control and eradication of noxious weeds and their regulation in interstate and foreign commerce. Executive Order 13112 directs federal agencies to prevent the introduction of invasive (exotic) species and to control and minimize the economic, ecological, and human health impacts that invasive species cause. The state of New Mexico, under administration of the U.S. Department of Agriculture, designates and lists certain weed species as being noxious. "Noxious" in this context means plants not native to New Mexico that may have a negative impact on the economy or environment and are targeted for management or control.

There were no noxious weeds observed at the proposed project site.

### **3.8 Cultural Resources**

The 29000 Area initially served as the field headquarters of the New Mexico Proving Ground (NMPG) and the New Mexico Experimental Range (NMER). The 29000 Area of Kirtland AFB hosted the Biophysics Operations Program (BOP) blast biology program from the early 1950's until 1998 (Verhaaren 1998). Extant historic structures in the core area, which were originally constructed by the University of New Mexico as field headquarters for the New Mexico Proving Ground, predate the BOP, and include: the Guards Residence (29040); a Dormitory (29042); Stable (29045); Headquarters (29051); and, a Garage/former Carpentry Shop (29053). These structures are modest, one-story buildings of frame, pumice tile, or concrete block construction with stucco exteriors. Additionally, several Munitions Magazines (29020-29023, 29025-29031) survive, and the "Old Bridge" (29902) and gunners tool house (29900) remain at the artillery line.

The 1998 report titled *The 29000 Area* determined that these surviving structures formed a district based on historical associations and significance rather than architectural merits (Verhaaren 1998). This area currently houses the 21<sup>st</sup> EOD WMD Company. The Area of Potential Effect for the Proposed Action is the historic district, which is the entire 21<sup>st</sup> EOD WMD compound. An MOA to demolish the eligible building 29051 is currently in draft and being staffed for signature (Appendix C). The Draft MOA will likely be signed within the next 90 days.

#### **3.8.1 Architectural Resources**

The Proposed Action area is within a district that has been determined eligible for the National Register of Historic Places. Building 29051 will be the only structure documented in any detail for this project. Historic American Buildings Survey (HABS) was completed on 15 and 16 April 2010 (Common Bond Preservation 2010).

### **3.9 Hazardous Materials and Waste**

Hazardous materials are identified and regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Occupational Safety and Health Administration (OSHA); and the Emergency Planning and Community Right-to-Know Act (EPCRA). For the U.S. Air Force, Air Force Policy Directive (AFPD) 32-70, *Environmental Quality* and the Air Force Instruction (AFI) 32-7000 series address all federal regulations and other AFIs for the management of hazardous materials, hazardous wastes, and special hazards. Hazardous waste is defined in the Resource Conservation and Recovery Act (RCRA).

#### ***Hazardous Materials***

The 21<sup>st</sup> EOD WMD stores all hazardous materials in a storage locker. During demolition and construction activities, the liquid nitrogen tank adjacent to building 29053 would be re-located to the Wolfe's Gate Building following final inspection. It is assumed that any hazardous materials contained within the buildings would be removed prior to demolition in accordance with federal, state, and Air Force regulations.

#### ***Hazardous Waste***

The Hazardous Waste Management Plan (HWMP) details the responsibilities, policies, and procedures for managing hazardous waste (HW) at Kirtland AFB. The HWMP incorporates all applicable federal, state, local and U.S. Air Force (USAF) requirements pertaining to HW management. Kirtland AFB must manage its waste in accordance with the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments (HSWA). As part of the HWMP, Kirtland AFB has established the Hazardous Material Management Process Team, composed of personnel from the Environmental Protection Committee, Fuels Management Officer, Civil Engineering Division, Bioenvironmental Engineering, Safety, and Fire (KAFB 2004).

The buildings proposed for demolition are in poor condition and potentially contain hazardous materials. It is assumed that any hazardous materials contained within the buildings would be removed prior to demolition activities in accordance with federal, state, and Air Force regulations.

#### ***Asbestos-Containing Material***

Asbestos is regulated by USEPA under the Clean Air Act (CAA), Toxic Substances Control Act (TSCA), and CERCLA. The USEPA has established that any material containing more than 1 percent asbestos by weight is considered an asbestos containing material (ACM). Guidelines and procedures for recordkeeping, removal, encapsulation, enclosure, and repair activities associated with ACM abatement projects are detailed in the installation's Asbestos Management Plan. Asbestos is considered a hazardous waste and must be disposed of properly. The buildings proposed for demolition potentially contain ACM.

#### ***Lead-Based Paint***

The Residential Lead-Based Paint (LBP) Hazard Act of 1992, Subtitle B, Section 408 regulates the use and disposal of LBP on federal facilities. Federal agencies are required to comply with all applicable federal, state, and local laws pertaining to LBP activities and hazards. Kirtland AFB has a Lead-Based Paint Management Plan that defines the roles, responsibilities, and guidelines for activities involving the surveying and removal of LBP. The buildings for demolition potentially contain LBP.

#### ***Polychlorinated Biphenyls***

Polychlorinated Biphenyls (PCBs) are a group of chemical mixtures used as insulators in electrical equipment. Federal regulations apply to objects that contain 50 to 499 ppm PCBs. Chemicals classified as PCBs were manufactured and used in the United States during the 1950's and 1960's. PCB-containing oil

is often found in older electrical transformers and light fixtures. The fluorescent light ballasts in the existing buildings and pad-mounted transformers proposed for demolition may contain PCBs.

### ***Environmental Restoration Program***

The Defense Environmental Restoration Program (DERP) was formally established by Congress in 1986 to provide for the cleanup of DOD sites. The ERP and the Military Munitions Response Program (MMRP) are components of the DERP. The ERP requires each DOD installation to identify, investigate, and clean up hazardous waste disposal or release sites. The MMRP addresses nonoperational range lands that are known or suspected to contain unexploded ordnance, munitions, constituent contamination, or discarded military munitions.

Solid waste management unit (SWMU) 6-22, Lake Christian (OT-46), consists of a manmade lake that was formerly used for explosives research. The site originally consisted of a 200-foot by 100-foot manmade lake with a polyethylene liner and water level was maintained with groundwater pumped from an onsite groundwater well (KAFB 2006). Currently, all structures and utilities at the site have been removed, the lake has been drained, and there is no activity performed at this site.

The SWMU 6-22 site was investigated as part of a Resource Conservation Recovery Act (RCRA) Facility Investigation in 1993. The investigation aimed to assess the presence of contaminants in the lake sediment, in the soil beneath the lake, and in the groundwater in the area of the lake. Metal concentrations were found to be within naturally occurring levels; no other compounds were detected; and groundwater monitoring did not demonstrate the presence of chemicals of concern in the groundwater (KAFB 2006). In a letter dated July 27, 2006, the New Mexico Environment Department's Hazardous Waste Bureau concluded that SWMU 6-22 is suitable for No Further Action and that it poses an acceptable level of risk under current and future land use.

The Proposed Action area is located near nonoperational range lands that are known to contain unexploded ordnance, munitions, constituent contamination, or discarded military munitions.

The Landfield site, LF-15, was also determined to be suitable for No Further Action.

There are two septic tanks located near the Proposed Action area. The tanks may be on a list for closure. No Further Action regarding the tanks was requested on February 5, 2007, but this has yet to be granted by the New Mexico Environment Department's Hazard Waste Bureau.

The Rad Waste Site, RW-68, was reopened and cleaned. It has been submitted to the New Mexico Environment Department's Hazardous Waste Bureau for No Further Action.

Kirtland AFB is currently investigating potential perchlorate contamination in the 21<sup>st</sup> EOD WMD Hill vicinity.

### **3.10 Socio-Economic Considerations**

Socio-economic resources include population and economic activity, as reflected by personal income, employment distribution, and unemployment. Some related secondary components, such as housing availability and public services, are not considered in this analysis because the action has no potential to generate measurable changes in populations that would create demand for these resources. Statistics at the county, state, and national level would be used to describe the socio-economic context. Bernalillo County serves as the Region of Influence in which most impacts can be expected to occur, and the state and region serve as regions of comparison. Specific information for recreation in the local area and Region of Influence are relevant and also presented.

The Proposed Action is in Bernalillo County, New Mexico. The population in Bernalillo County was estimated at 626,991 (U.S. Census 2008). According to the U.S. Census Bureau, the county has a total area of 1,169 square miles, of which, 1,166 square miles are land and 3 square miles is water. It is generally urban in character.

In 2008, Bernalillo County had a per capita personal income (PCPI) of \$26,102. This PCPI was approximately 112 percent of the State of New Mexico average, \$22,781, and was approximately 95% of the national average, \$27,466. In 2008, the population for Albuquerque, New Mexico was 521,999 (USCB).

The demographics at the county, state, and national levels are compared in Table 6. When compared to the national level, the population of Bernalillo County has proportionately more persons of Hispanic background, while less of other minority groups, including Asian and Black. However, racial composition is similar to the State as a whole, with a higher percentage of American Indian and Alaska Native in the County (5 percent compared to 9.3 percent for New Mexico). It should be noted that persons of Hispanic or Latino origin might be White or any other race. In addition, roughly 17.7 percent claimed to be of Some Other Race, while only 5.8 percent did so at the national level. When compared to New Mexico, Bernalillo County has a similar profile as the state.

Consequently, the population of Bernalillo County is not disproportionately composed of minority groups compared to the region, although there may be specific locations where this is not the case.

**Table 6. Profile of Demographic Characteristics, Year 2008**

Geographic Area	Total Population	Race (Percent of Total Population)*						
		White	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some Other Race	Hispanic or Latino (of Any Race)
U.S.	303,237,703	74.3	12.3	0.8	4.4	0.1	5.8	15.1
New Mexico	1,962,226	70.1	2.2	9.3	1.4	0.0	14.0	44.5
Bernalillo County	626,991	68.5	3.2	5.0	2.3	0.1	17.7	45.2

\*Percentages may add to more than 100% because individuals may report more than one race. Source: U.S. Census Bureau, 2006-2008 American Community Survey.

The percentage of the population in New Mexico living below the poverty level (17.9 percent) is higher compared with the nation (13.2 percent). Similarly, the percent of children (under 18 years) living below the poverty level in New Mexico (24.9 percent) is considerably higher than the nation (18.2 percent). Poverty conditions in Bernalillo County are somewhat better than the state, at 15.2 percent. Therefore, Bernalillo County, when compared to the state, is not disproportionately low-income (U.S. Census 2008).

### 3.11 Environmental Justice

The planning and decision-making process for action proposed by Federal agencies involves a study of other relevant environmental statutes and regulations, including Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, which was issued by President Clinton on February 11, 1994. The essential purpose of EO 12898 is to ensure the

fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, tribal and local programs and policies. Also included with environmental justice are concerns pursuant to EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. This EO directs federal agencies to identify and assess environmental health and safety risks that may disproportionately affect children under the age of 18. These risks are defined as “risks to health or to safety that are attributable to products or substances that the child is likely to come into contact with or ingest.”

Executive Order 12898 (Environmental Justice) requires “to the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report of the National Performance Review, each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations...” Environmental justice considerations addressed in this assessment involve both population demographics, including ethnic, racial, or national origin characteristics, and person in poverty, including children under age 18. In order to determine whether environmental impacts affect minority or low-income populations, it is necessary to establish a basis of comparison, referred to as the “region of comparison.” This area consists of the geopolitical units that include the proposed project. Most environmental effects from the Proposed Action, in this instance, would be expected to occur in Bernalillo and Valencia Counties, New Mexico.

### **3.12 Visual Resources**

Visual resources include the natural and manmade structures that give a landscape its character. The features that form the overall visual impressions a viewer perceives includes landforms, vegetation, color, water, adjacent scenery, scarcity, and manmade structures.

The existing visual environment consists of the chain-link fence surrounding the 21<sup>st</sup> EOD WMD 90 acre compound boundary and seven buildings built in the late 1940’s during and shortly after World War II. Land use for areas adjacent to the compound includes Cibola National Forest lands to the east, Isleta Pueblo Reservation to the south, and Kirtland AFB to the west and north.

The buildings proposed for demolition are single-story, residentially scaled buildings that are deteriorating in condition. The buildings proposed for demolition have exposed electrical wiring and structural wear and tear. As such, their appearance detracts from the overall compound aesthetic appearance.

The lock down and administration buildings proposed for construction are located within the existing compound infrastructure and the assessment and selection site (i.e., LRC, track, obstacle course) and new shot pads are located in an open space area.

## **4.0 ENVIRONMENTAL CONSEQUENCES**

This section presents an analysis of the potential environmental consequences from the implementation of the Proposed Action and the No Action Alternative on the existing natural and human environment.

### **4.1 Topography, Geology, and Soils**

#### ***4.1.1 Proposed Action***

Under the Proposed Action, newly constructed facilities and facility upgrades associated with the buildings, roads, parking areas, and water utility lines would have a footprint of approximately 3.1 acres. Approximately 1.1 of the 3.1 acres would require new ground disturbance for construction of the assessment and selection site (i.e., LRC, track, obstacle course) and shot pads. In addition, there would be 0.1 acres of demolition, which would occur within disturbed areas from previous construction of the buildings. The total acreage disturbance for construction and demolition activities would be 3.2 acres over a 7-year period. As a result of demolition and construction activities, soils would be compacted and soil structure disturbed and altered. The loss of soil structure due to compaction from vehicle traffic and new construction could result in some changes in drainage patterns.

Potential impacts on the soils surrounding the buildings proposed for demolition and areas proposed for construction would be minimal. Through the use of best management practices (BMPs), such as minimization of soil exposure through revegetation, the impacts of demolition and construction activities on the soil resources would be expected to be localized and minimal. In addition, soil erosion and sediment production and off-site transportation would be reduced for all demolition and construction activities as a result of following an approved sediment and erosion-control and storm water management plan. Use of storm water control measures that favor re-infiltration would minimize the potential for erosion and sediment production that often occur during storm events.

All construction activities would be in compliance with all applicable federal, state, and local regulations. Local soil disturbance permits would be required from the city of Albuquerque. There would be 3.2 acres of soil disturbance in order to demolish the buildings and for the construction of the new facilities and facility upgrades, and two explosive shot pads. Landscaping techniques and replanting the areas with native grasses and other vegetation would negate these short-term impacts. Therefore, there would be a temporary short-term adverse effect to the soils by the Proposed Action. There would be no long-term effects to soils by the Proposed Action.

#### ***4.1.2 No Action Alternative***

Under the No Action Alternative, the buildings proposed for demolition within the 29000 Area would not be demolished, and the buildings proposed for construction would not be built. The existing conditions would remain and there would be no effect on geological resources or soils.

### **4.2 Water Resources**

#### ***4.2.1 Proposed Action***

Under the Proposed Action, less than significant impacts on water resources would be expected. Groundwater might be temporarily used for dust suppression during demolition and construction activities, depending on site conditions and wind conditions. If water would be required for dust suppression, sufficient water resources are available within the installation, and therefore, less than significant adverse impacts on groundwater availability would be anticipated.

The Clean Water Act (CWA) (33 U.S.C. 1251 et. seq. as amended) establishes federal limits, through the National Pollutant Discharge Elimination System (NPDES) program, on the amounts of specific pollutants that are discharged to surface waters in order to restore and maintain the chemical, physical, and biological integrity of the water. The NPDES program regulates the discharge of point (end of pipe) and nonpoint sources (storm water) of water pollution. The NPDES storm water program requires construction site operators engaged in grading, clearing, and excavating activities that disturb 1 acre or more to obtain coverage under an NPDES permit for their storm water discharges. The Proposed Action would disturb approximately 3.2 acres over a 7-year period, and would require a NPDES permit.

Construction or demolition that requires permit coverage requires preparation of a Notice of Intent (NOI) to discharge storm water and a Storm Water Pollution Prevention Plan (SWPPP) that is implemented during construction or demolition. A SWPPP would identify BMPs to reduce erosion and runoff from the proposed demolition and construction sites. The USEPA is the permitting authority in New Mexico. A draft SWPPP would need to be reviewed by 377 MSG/CEANC prior to an NOI being submitted to the EPA. The USEPA's Construction General Permit outlines a set of provisions construction operators must follow to comply with the requirements of the NPDES storm water regulations. Kirtland AFB manages an active program that tracks and inspects large (greater than 5 acres) and small (1 to 5 acres) construction activities that require coverage under the NPDES (KAFB 2009a).

Section 401 of the Clean Water Act (CWA) requires that a Water Quality Certification Permit be obtained for anticipated discharges associated with construction activities or other disturbance within waterways. Section 401 of the CWA does not apply to this project, as there would be no discharge associated with construction activities or other disturbance within waters or wetlands of the United States.

Section 404 of the CWA provides for the protection of waters and wetlands of the United States from impacts associated with discharges of dredged or fill material. The Corps' Regulatory Program (33 CFR Parts 320-330) requires that a Section 404 permit evaluation be conducted for all proposed construction that may affect waters of the United States. Section 404 of the CWA does not apply to this project, as there would be no discharge of dredged or fill material into waters of the United States.

The Proposed Action would create approximately 3.2 acres of ground disturbances, which may increase erosion potential and runoff during heavy precipitation events. Although the compound would include expansion from 90 acres to 470 acres, approximately 2.2 acres of ground disturbance would be confined to previously disturbed areas within the current compound. Construction debris could reach waterways through wind or surface runoff if measures are not taken to keep debris on site. BMPs identified in the SWPPP would be implemented to address sediment and erosion control, source controls, and waste management. Compliance may include the installation and maintenance of appropriate stormwater BMPs to minimize impacts associated with erosion following precipitation. The BMPs may include installation of sediment traps, silt fencing, waddles around storm water drop inlets, and vegetation buffers as sediment controls; revegetation of disturbed areas once construction is complete to control runoff and erosion; and designation of waste collection areas for solid wastes with containers that have lids as a construction site stormwater runoff control. All disturbed areas would be stabilized upon completion of construction activities. Implementation of stormwater BMPs for proper housekeeping and retention of construction and demolition debris would prevent construction and demolition pollutants from entering waterways. Therefore, short term and long term adverse effects on surface waters would be less than significant.

Requirements of the construction stormwater permit to minimize the potential for construction-related stormwater to impact downstream water resources, and BMPs identified in the SWPPP would be implemented during construction and demolition activities. Consequently, impact on surface waters is anticipated to be less than significant.

Construction of the assessment and selection site and two shot pads within the existing open space would increase impervious surface area by approximately 1.1 acres and has the potential to permanently alter drainage patterns and increase the potential for erosion and negative direct and indirect impacts on surface water. Impacts on surface waters can be minimized and mitigated through the use of BMPs, including stormwater detention ponds to control levels of stormwater runoff to minimize the potential for downstream impacts on water resources.

Demolition and construction equipment (e.g., bulldozers, backhoes, dump trucks, cranes) would be on site throughout periods of demolition and construction site restoration. Fuels, hydraulic fluids, oils and lubricants would be stored on site during the project to support contractor vehicles and machinery. No other hazardous materials would be stored on site. It is assumed that demolition and construction personnel would follow appropriate BMPs to protect against potential petroleum or hazardous materials spills. Proper housekeeping, maintenance of equipment, and containment of fuels and other hazardous materials would be conducted to minimize the potential for a release of fluids into surface waters or groundwater. In the event of a spill, procedures outlined in KAFB's Spill Prevention, Control, and Countermeasure (SPCC) Plan (2009b) would be followed to contain and clean up the spill.

The average depth to groundwater on KAFB is between 450 and 550 feet (KAFB 2007). Therefore, the likelihood of encountering or impacting groundwater during construction is low. The contractor would develop, however, a contingency plan prior to construction and implement it if groundwater is discovered during construction. Kirtland AFB would review and approve the contingency plan prior to construction.

Executive Order 11988 (Floodplain Management) provides federal guidance for activities within the floodplains of inland and coastal waters. The order requires federal agencies to take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains. The Proposed Action area is not located within any special flood hazard areas inundated by the 100-year flood. It is located in Zone D of the flood plain map, which are areas in which flood hazards are undetermined, but possible (Federal Emergency Management Agency 2010). The proposed project would not have an impact on the 100-year flood plain.

Executive Order 11990 (Protection of Wetlands) requires the avoidance, to the greatest extent possible, of both long and short-term impacts associated with the destruction, modification, or other disturbance of wetland habitats. There are no wetlands within or near the Proposed Action area and therefore, no impacts to wetlands would occur.

#### **4.2.2 No Action Alternative**

Under the No Action Alternative, demolition and construction activities would not take place and there would be no changes to current water resources. Therefore, no new impacts on water resources would be expected as a result of the No Action Alternative.

### **4.3 Air Quality and Noise**

#### **4.3.1 Proposed Action**

Demolition activities at Kirtland AFB under the Proposed Action would result in impacts on air quality resources; however these impacts are expected to be less than significant. The Proposed Action would result in air quality impacts during construction activities, primarily from site-disturbing activities and operation of construction equipment. All emissions associated with demolition and construction operations would be temporary in nature. The proposed project includes demolition and removal of buildings, foundations, and construction of new buildings. The project would also involve removing,

capping, and rerouting sewer, gas, water, and steam lines outside of the work areas. It is not expected that emissions from the Proposed Action would contribute to or affect local or regional attainment status with the NAAQS.

The project would generate particulate matter emissions as fugitive dust from ground-disturbing activities, specifically building demolition and removal. Appropriate fugitive dust control measures would be employed during demolition activities to suppress emissions. Combustion emissions of all criteria pollutants would result from the operation of construction equipment and portable generators during demolition activities, hauling demolition wastes from each project site, and construction workers commuting to each project site. Fugitive dust and combustion emissions associated with construction equipment would produce slightly elevated air pollutant concentrations. However, the effects would be temporary, fall off rapidly with distance from the proposed project sites, and would not result in any long term impacts. The control of particulate matter produced from various construction and demolition activities would be conducted in accordance with all applicable federal and state regulations.

Emissions were estimated for each phase of the construction activities including demolition of existing buildings, site grading, and new building construction. Equipment and vehicle emissions of NO<sub>x</sub>, SO<sub>2</sub>, PM<sub>10</sub>, CO, and VOCs during demolition, grading, and new building construction as well as fugitive dust emissions were estimated using the methodologies and emission factors using the *U.S. Air Force Air Conformity Applicability Model (ACAM)* (Air Force Center for Engineering and Environment 2010). Road haul truck emissions were calculated based on the United States Air Force (USAF) Institute for Environment, Safety and Occupational Health Risk Analysis (IERA) Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations (Revised December 2003), because ACAM does not calculate emissions for construction equipment during demolition and does not have GHG emissions. Project assumptions used in the emission analysis estimations are provided in Appendix D. Table 7 summarizes the estimated construction and operations emissions for criteria pollutants by project year. For purposes of this analysis, it is assumed that the proposed construction and demolition projects would occur in FY 2011–FY 2018.

Detailed information on the type and rating of the stationary equipment such as boilers/heaters and backup generators is not yet available and, therefore, emissions during operation of the existing and new supporting facilities were estimated using the energy consumption rates for residential buildings and nonresidential buildings provided in ACAM. Emission factors for the heating devices were obtained from EPA AP-42.

**Table 7. Estimated Air Emissions resulting from the Proposed Action area**

Activity	CO (tpy)*	NO <sub>x</sub> (tpy)	PM <sub>10</sub> (tpy)	PM <sub>2.5</sub> (tpy)	SO <sub>2</sub> (tpy)	VOC (tpy)	CO <sub>2</sub> (tpy)
2011							
Lock Down Construction	2.15	4.77	0.34	0.33	0.38	0.72	541.04
Construction Commuter	2.47	0.18	0.10	0.03	0.01	0.23	36.66
2012							
Deployment Center Construction	2.54	5.24	0.36	0.33	0.38	2.31	541.04
Construction Commuter	2.47	0.18	0.10	0.03	0.01	0.23	36.66

Activity	CO (tpy)*	NO <sub>x</sub> (tpy)	PM <sub>10</sub> (tpy)	PM <sub>2.5</sub> (tpy)	SO <sub>2</sub> (tpy)	VOC (tpy)	CO <sub>2</sub> (tpy)
2013							
Operations Facility Construction	2.94	6.26	0.40	0.33	0.38	1.61	541.06
Construction Commuter	2.47	0.18	0.10	0.03	0.01	0.23	36.66
2014							
Shot Pad Construction	3.08	6.78	0.42	0.33	0.38	0.63	538.21
Construction Commuter	2.47	0.18	0.10	0.03	0.01	0.23	36.66
2015							
Parking Lot Paving	3.08	4.08	0.63	0.02	0.08	4.57	143.15
Demolition	4.46	1.22	3.32	0.32	0.29	0.31	459.84
Demolition Haul Truck	0.02	0.01	0.01	0.00	0.00	0.01	1.96
Construction Commuter	2.47	0.18	0.10	0.03	0.01	0.23	36.66
2016							
Construction	4.46	9.74	0.54	0.34	0.40	1.55	560.45
Construction Commuter	2.47	0.18	0.10	0.03	0.01	0.23	36.66
2017							
Construction	4.73	10.33	0.57	0.34	0.40	1.56	560.45
Construction Commuter	2.47	0.18	0.10	0.03	0.01	0.23	36.66
2018							
Construction	5.01	10.91	0.59	0.34	0.40	1.58	560.45
Construction Commuter	2.47	0.18	0.10	0.03	0.01	0.23	36.66
2019 and beyond							
Operations	0.99	1.93	0.08	0.00	0.01	0.07	--
<b>Total All Years</b>	53.22	62.71	8.06	2.92	3.18	16.76	4,740.93

\* (tpy): tons per year

General Conformity Rule requirements are not applicable. The Proposed Action would generate emissions below the de minimus limit of the emissions inventory for the AMRGI AQCR and the emissions would be short-term. Therefore, the construction activities associated with the Proposed Action would not have significant effects on air quality at Kirtland AFB or on local or regional air quality.

The Energy Information Administration states that in 2007, gross CO<sub>2</sub> emissions in New Mexico were 59.2 million metric tons of CO<sub>2</sub> from fossil fuel consumption (U.S. Energy Information Administration 2010). Approximately 4,740 metric tons of CO<sub>2</sub> were estimated to be emitted by the Proposed Action. The CO<sub>2</sub> emitted would be approximately 0.008 percent of the New Mexico statewide CO<sub>2</sub>. Therefore, the proposed project would have negligible contribution towards the New Mexico statewide greenhouse gas inventory. CO<sub>2</sub> emission estimates are included in Appendix D.

Noise from construction activities would vary depending on the type of equipment used, the area the activity would occur, and the distance from the source of noise. The proposed demolition activities within the compound would not affect the ambient noise environment beyond the installation boundary. Noise would be generated during demolition and construction activities, and occur during normal working hours. The operation of heavy machinery and vehicle traffic would contribute to elevated levels of noise during the Proposed Action. However, impacts on the noise environment associated with traffic would be temporary. Due to the remote location of the Proposed Action area, it is expected that noise disturbance would have an impact on individuals in the immediate vicinity. Under the Proposed Action, demolition and construction activities would not have significant effects on the noise environment.

#### ***4.3.2 No Action Alternative***

Under the No Action Alternative, Kirtland AFB would not demolish and remove the proposed buildings, nor would it construct any new facilities, therefore there would be no change in the existing condition. No direct or indirect effects to the local and regional air quality and noise environment would be expected from implementation of the No Action Alternative.

### **4.4 Safety**

#### ***4.4.1 Proposed Action***

##### ***Contractor Safety***

Implementation of the Proposed Action would slightly increase the health and safety risk to contractors performing demolition and construction work due to the inherent risk involved in such activities. Contractors would be required to establish and maintain health and safety programs for their employees. All personnel involved in the proposed building demolition would be trained for eliminating the potential exposure to, and release of asbestos and lead. Complying with Kirtland AFB's Asbestos Management Plan and Lead-Based Paint Management Plan would reduce asbestos and lead safety hazards to contractors working on demolition activities. Demolition activities in the compound would result in effects on contractor safety; however, these effects would be expected to be less than significant due to implementation of efficient health and safety programs.

##### ***Military Personnel Safety***

No effects to military personnel health and safety would be expected. New facilities for the 21<sup>st</sup> EOD WMD would be constructed prior to the proposed demolition; therefore those buildings would be vacant and all equipment would be removed. Complying with Kirtland AFB's Asbestos Management Plan and Lead-Based Paint Management Plan would prevent the potential exposure of military personnel to asbestos and lead hazards during demolition activities. In addition, the removal of buildings containing ACM and LBP would be beneficial to the health and safety of the military personnel.

## ***Airspace***

The compound and operations conducted by the 21<sup>st</sup> EOD WMD do not interfere with Kirtland AFB airspace. Therefore, implementation of the Proposed Action would not impact airspace.

## ***Explosives and Munitions***

No effects on explosives and munitions safety would be expected from implementation of the Proposed Action or daily operations. No explosives or munitions are currently stored within the buildings proposed for demolition. Explosives would not be used in the demolition process. The explosive operations conducted by the 21<sup>st</sup> EOD WMD would cease according to demolition and construction activity. No increase in explosive use at the proposed facility is anticipated.

### ***4.4.2 No Action Alternative***

The No Action Alternative would result in continuation of the existing safety conditions and their associated impacts.

## **4.5 Infrastructure**

### ***4.5.1 Proposed Action***

The Proposed Action would be designed and constructed in accordance with regulations and policies that would result in a more energy efficient compound. There would be a small increase from 31 to 50 personnel using the compound; however, the potable water supply, wastewater system, and energy availability are adequate and would not be affected by this minimal increase in demand. Overall, there would be a slight benefit to utility usage due to removing the antiquated utility systems and replacing them with LEED-certified systems. Therefore, there would be no significant effect on infrastructure through implementation of the Proposed Action or operations after the Proposed Action.

## ***Energy and Design***

The proposed rapid deployment center, administrative building, and lock-down facility will need to comply with the terms of Section 438 of the EISA since they each exceed 5,000 square feet. The objective is to promote low impact development and protect and restore watersheds using technologies that are site-appropriate and meet the management goal.

## ***Electrical Systems***

The demand for electricity may increase during demolition and construction of the Proposed Action. Additionally, there would be an increase of personnel from 31 to 50 people using electricity on the compound. Electrical transmission lines connecting buildings proposed for demolition to the Kirtland AFB electrical grid would be removed prior to beginning demolition activities. The overall electrical infrastructure within the developed area of the compound support installation requirements and would be able to handle the increased demand (Kirtland AFB 2009). In addition, the electrical systems in the buildings to be demolished are antiquated and the new buildings would be designed to meet LEED standards (USAF 2007). Thus, energy consumption is expected to decrease and have a beneficial effect on energy usage. Therefore, demolition and construction activities within the compound are not expected to have a significant effect on electrical resources.

## ***Natural Gas***

The demand for gasoline usage could increase during construction and demolition of the Proposed Action. The overall gasoline supply within the developed area within the developed area of the compound support installation requirements and would be able to handle the increased demand (Kirtland AFB 2009). If any of the buildings proposed for demolition are connected to the natural gas system, natural gas service interruptions might occur when these proposed buildings are disconnected. In addition, the natural

gas systems in the buildings to be demolished are antiquated and the new buildings would be designed to meet LEED standards (USAF 2007). Thus, energy consumption is expected to decrease and have a beneficial effect on energy usage. Therefore, demolition and construction activities within the compound are not expected to have a significant effect on natural gas resources.

### ***Central Heating and Cooling Systems***

Buildings proposed for demolition have individual heating and cooling systems so service interruptions to KAFB will not be experienced when these buildings are disconnected. Construction of new buildings would be designed to meet LEED standards (USAF 2007). The construction and demolitions of buildings connected to the Kirtland AFB central heating and cooling systems are not expected to have a significant effect on the demand of these resources.

### ***Water Supply Systems***

There would be a slight increase in water demand during the demolition and construction of the Proposed Action. Additionally, there would be an increase of personnel from 31 to 50 people using water on the compound. During demolition, interruptions in water service may be experienced when the buildings proposed for demolition are disconnected from the Kirtland AFB water system. Water service within the demolition area would be shut off prior to the start of demolition activities. Water supplies required for demolition activities, such as water for dust control, would be obtained from the Kirtland AFB water supply system. Due to the limited number of buildings proposed for demolition, the demand for water during demolition activities would be limited. Kirtland AFB's water supply is capable of meeting the slight increase of water usage through existing infrastructure and the ability to purchase water from the city of Albuquerque (Kirtland AFB 2009). Kirtland AFB currently uses approximately 60% of their allotted water (personnel communication, Danny Hale, Kirtland AFB, Utilities Branch Chief 2010). In addition, the new facilities would be designed to conserve water. Therefore, there would be no significant impacts to the water supply through implementation of the Proposed Action.

### ***Sanitary Sewer/Wastewater***

No significant changes to wastewater use are expected during the construction or operational phases of the Proposed Action. Construction works would not use the Kirtland AFB sanitary system, but would use portable facilities supplied and serviced by the contractor. Sanitary sewer interruptions might be experienced when the buildings proposed for demolition are disconnected from the Kirtland AFB sanitary sewer system. Any onsite septic systems used at the buildings proposed for demolition would be closed down and removed in accordance with state and local regulations for groundwater protection (refer to NMAC 20.6.2). Following the proposed building demolitions, the amount of wastewater generated at Kirtland AFB would be reduced by a negligible amount due to the loss of these buildings. Additionally, the increased personnel from 31 to 50 people would not result in a substantial increase in wastewater production. The wastewater infrastructure is suitably sized to meet both current and future wastewater demands (Kirtland AFB 2009) and the connection of the new facilities to the wastewater system would provide protection of water resources. Therefore, there would be no significant impacts to the wastewater system through implementation of the Proposed Action.

### ***Solid Waste Management***

To reduce the amount of waste generated, materials that could be recycled or reused would be separated and recycled offsite. Cardboard waste would be included in the Kirtland AFB Qualified Recycling Program. Miscellaneous salvageable metals would be transported to the Defense Reutilization and Marketing Office for recycling or reuse.

The nonhazardous demolition waste, such as asphalt, concrete, wood, and nonrecyclable materials, would be transported to the C&D Kirtland AFB landfill for disposal. Dumpsters would be provided for municipal solid waste generated by worker activity within the Proposed Action area. Municipal solid

waste would be transported to the city of Albuquerque's Cerro Colorado Landfill, due to the Kirtland AFB landfill only accepting nonhazardous construction and demolition waste. The C&D Kirtland AFB landfill has an estimated life of 50 years (CH2M HILL 2009). Because demolition materials would be reused or recycled to the extent possible and the landfill has adequate capacity for approximately 50 years, potential impacts would be less than significant.

#### ***4.5.2 No Action Alternative***

Under the No Action Alternative, the Proposed Action would not be implemented and existing infrastructure conditions would remain as discussed in Section 3.6. No additional effects on infrastructure resources would be expected from the Proposed Action not being implemented.

### **4.6 Land Use**

#### ***4.6.1 Proposed Action***

The Proposed Action would be in compliance with the land use policies addressed in the *Draft Kirtland Air Force Base General Plan* (2009), including the goals of providing operational support for missions; ensuring management of resources; promoting the health, safety, and quality of life of personnel; and continuing to improve the visual appearance of Kirtland AFB. The Proposed Action would achieve development objectives addressed in the General Plan, including siting facilities for maximum efficiency, ensuring efficient use of facilities and resources by redeveloping vacant property through demolition of selective buildings, and seeking the input of facility users and identifying their requirements throughout the facility maintenance and development process. The act of demolition and construction of new facilities is consistent with the designated land use for the 29000 Area as open space that will be converted to industrial use. The Proposed Action would comply with the General Plan, and no impacts on land use plans or policies would be expected. However, land use within the new QD arcs would restrict any construction within 1,250 feet of the shot pads to ensure the safety of personnel and to minimize potential for damage to other facilities in the event of an accident. The construction associated with the Proposed Action is consistent with current land use designations, and no changes would be made to current designations after construction and demolition. Consequently, there would be no impacts to land use through implementation of the Proposed Action.

#### ***4.6.2 No Action Alternative***

Under the No Action Alternative, the Proposed Action would not be implemented and existing land use conditions would remain as discussed in Section 3.7. No impacts to land use would be expected.

### **4.7 Biological Resources**

#### ***4.7.1 Proposed Action***

##### ***Vegetation***

The Proposed Action area is currently occupied by buildings or in sparsely vegetated areas. The Proposed Action would result in approximately 3.1 acres of permanent vegetation removal by construction of the Proposed Action; however the plant community is widespread and impacts are expected to be minimal.

##### ***Wildlife***

Due to the previously disturbed nature of the Proposed Action area, wildlife habitat in the Proposed Action area is marginal. Noise and activity during construction may disturb wildlife in the Proposed Action area. However, the impacts on wildlife are expected to be minor and temporary. Wildlife is expected to move to higher quality habitat surrounding the Proposed Action area during construction. Wildlife habitat may suffer short-term degradation due to loss of vegetation that may provide forage and

cover. No major or long-term effects on wildlife are anticipated. Incidental mortality or displacement among small animals may occur on the site during clearing and preparation of the site. Overall, impacts on wildlife would be less than significant.

### ***Threatened and Endangered Species***

No federally or state-listed threatened, endangered, or special status species are known to inhabit the Proposed Action area. The Proposed Action area is not suitable for quality wildlife habitat and impacts to threatened and endangered species from implementation of the Proposed Action would be less than significant.

Although, there are no Gunnison's prairie dogs or Burrowing Owls nests currently present on the Proposed Action area, the owls vary their nesting sites from year to year. During construction in undeveloped habitat there is the possibility a Burrowing Owl nest could be disturbed. To avoid disturbance to potential Burrowing Owl nests in undeveloped areas, pre-construction surveys following the New Mexico Department of Game and Fish guidelines would be conducted for Burrowing Owls and Gunnison's prairie dogs by Kirtland AFB Natural Resource biologist. If Burrowing Owls are present, construction activities would occur after the owls have migrated (i.e., after October 15 to March 15). Additionally, any Burrowing Owl burrows would be flagged and avoided during construction activities, so that nesting sites would remain viable. Therefore, any impacts to Burrowing Owls would be less than significant.

#### ***4.7.2 No Action Alternative***

Under the No Action Alternative, building demolition and construction would not occur. Removal of current degraded structures would allow for future new development to occur in these presently disturbed sites. This would be expected to reduce the need for future development in currently undisturbed or less-disturbed habitats that potentially support native vegetation and wildlife species.

## **4.8 Cultural Resources**

### ***4.8.1 Proposed Action***

An archaeological survey was completed in 2000 of the Proposed Action area and the SHPO concurred with all the findings. No archaeological resources are known within the Proposed Action area and therefore, no archaeological resources would be impacted by the proposed action. In addition, C&D materials would go to Kirtland AFB's existing landfill as described in Section 3.5.6, page 3-7, and therefore no historic properties would be impacted by disposal of C&D from the proposed demolition. The historic district is significant because of the mission of the area not the architectural features of the buildings. The layout of the original historic district would not change by the addition of new facilities and the expansion of the 21<sup>st</sup> EOD WMD compound. Therefore, there would be no impacts to the historic district.

If any inadvertent discoveries of cultural resources are located during construction or demolition, the 21<sup>st</sup> EOD WMD would adhere to the requirements of Section 5 of the *Kirtland AFB Cultural Resources Management Plan* (Kirtland AFB 2008). These measures would include stopping work immediately if cultural resources were discovered, notifying the Environmental Management Division, an evaluation performed by a qualified archaeologist or appropriate personnel, consultation with the cultural resources manager and the State Historic Preservation Office based on recommendations from the archaeologist and evaluation of eligibility of the resource for the National Register of Historic Places. Consultation to resolve adverse effects, as required by Section 800.6, would also be performed, which would reduce the potential impact to less than significant levels.

The Proposed Action is within a district that has been determined eligible for the National Register of Historic Places through consultation with SHPO. Building 29051 was determined eligible for listing on the National Register of Historic Places and, therefore, is considered historic properties under Section 106. Mitigation of adverse effects through Historic American Buildings Survey (HABS) documentation of buildings for Building 29051 is recommended prior to any ground disturbance. HABS for Building 29051 was completed on 15 and 16 April 2010.

#### **4.8.2 No Action Alternative**

Under the No Action Alternative, the buildings proposed for demolition would remain in the current deteriorated condition. Therefore, no significant impacts on cultural resources would occur as a result of the implementation of the No Action Alternative.

### **4.9 Hazardous Materials and Waste**

#### **4.9.1 Proposed Action**

##### ***Hazardous Materials***

Demolition and construction activities would not require the use of hazardous materials; however, hazardous materials may be present in the buildings proposed for demolition. There would be no new chemicals or toxic substances used or stored at the installation in conjunction with the Proposed Action. No significant impacts are expected.

No effects on hazardous materials during demolition would be expected. Contractors would be responsible for the management of hazardous materials, which would be handled according to federal, state, and Kirtland AFB regulations. Contractors must report the use of hazardous materials to the Hazardous Materials Management System (HMMS).

##### ***Hazardous Waste***

No significant impacts would be expected from the generation of hazardous waste during the demolition and construction activities. It is anticipated that the amount of hazardous wastes generated during the proposed demolition activities would be negligible. Contractors would be responsible for the disposal of hazardous wastes in accordance with federal and state laws and regulations, and in accordance with Kirtland AFB's Hazardous Waste Management Plan. BMPs would be in place to ensure that contamination from a spill would not occur; however, if a spill does occur, the SPCC Plan provides measures for spill situations.

##### ***Asbestos-Containing Materials***

The buildings proposed for demolition may contain ACM. Sampling for ACMs would take place prior to demolition and would be handled according to Kirtland AFB's Asbestos Management Plan and be disposed of at a hazardous waste disposal facility. Sampling, removal, and disposal of any ACMs would be short-term and would result in less than significant impacts. In accordance with the Asbestos Management Plan, all buildings would be surveyed prior to demolition and any identified asbestos would be separated from the remainder of the demolition materials and remediated in accordance with federal, state, and Kirtland AFB regulations.

##### ***Lead-Based Paint***

The buildings proposed for demolition may contain LBP. Sampling for LBP would occur prior to demolition and would be handled in accordance with Kirtland AFB's Lead-Based Paint Management Plan and be disposed of at a hazardous waste disposal facility. Sampling, removal, and disposal of any LBP would be short-term in duration and would result in less than significant impacts. In accordance with the

Lead-Based Paint Management Plan, all buildings would be surveyed prior to demolition and any identified LBP would be separated from the remainder of the demolition materials as required and remediated in accordance with federal, state, and Kirtland AFB regulations.

### ***Polychlorinated Biphenyls***

The buildings proposed for demolition could contain light ballasts containing PCBs. The light fixtures within the buildings would be removed prior to demolition and would be handled in accordance with federal and state regulations and Kirtland AFB's Hazardous Waste Management Plan and would be disposed of at a hazardous waste disposal facility. Sampling, removal, and disposal of any light ballast would be short-term in duration and would result in less than significant impacts. In addition, the proposed demolition project could include the removal of pad-mounted transformers. Those identified as containing PCBs would be handled in accordance with federal and state regulations and Kirtland AFB's Hazardous Waste Management Plan and the PCBs would be disposed of at a hazardous waste disposal facility.

### ***Environmental Restoration Program***

The Proposed Action area is located within proximity of identified No Further Action (NFA) ERP sites, two septic tanks proposed for NFA, and a nonoperational rangeland in the southern portion of Kirtland AFB contains unexploded ordnance or discarded military munitions. The Landfield site (LF-15) and the Rad Waste Site (RW-68) are within approximately 0.5 miles of the proposed project. LW-15 received NFA and RW-68 was reopened, cleaned and resubmitted for NFA. No impacts to these sites would be expected from the Proposed Action.

Operation of the proposed shot pads would not increase the amount of ordnance and potential chemicals released into the soil. When used on the designated ranges, the release of munitions would not be considered hazardous waste, because they would be used for their intended purposes. In addition, the 21<sup>st</sup> EOD WMD use only bare explosives and all detonations occur on the shot pads, and no fragmentation is produced.

#### ***4.9.2 No Action Alternative***

The No Action Alternative would result in no change to the existing hazardous materials or waste management conditions. No effects on hazardous materials or waste management would be expected as a result of the Proposed Action not being implemented.

## **4.10 Socio-Economic Considerations**

### ***4.10.1 Proposed Action***

Under the Proposed Action, it can be assumed that construction industry in Albuquerque would provide employees required for the project and provide additional job opportunities for the community. The construction workers would be provided from the local supply, thus workers would commute to the work site, and, therefore, there would be no changes to local population and community services. The cost of the project is comparable with other work of this type being completed in the area, in the county, and in the state. The Proposed Action would have a short-term, beneficial impact on the socio-economic resources, because it would require a temporary increase of civilian contractors (i.e., construction workers) on Kirtland AFB, the purchase of construction materials from local companies, and pay roll tax revenues.

The impacts on socioeconomic conditions from temporary employment would be beneficial, but negligible compared to Kirtland AFB or the county economy. The Proposed Action would not result in long-term change to socio-economic resources.

#### ***4.10.2 No Action Alternative***

Under the No Action Alternative the demolition and construction of new facilities for the 21<sup>st</sup> EOD WMD would not occur and therefore no impacts on the socio-economic environment would be expected.

### **4.11 Environmental Justice**

#### ***4.11.1 Proposed Action***

The project would not disrupt or displace any residential or commercial structures. The work has been reviewed for compliance and it has been determined that the Proposed Action would not adversely affect the health or environment of minority, children, or low-income populations. The Proposed Action would not negatively impact children, because construction and demolished materials would be disposed of at the C&D landfill on Kirtland AFB and access to the Proposed Action area would be restricted to authorized personnel. Indirect disproportionate negative impacts on minority, children, or low-income populations would not be expected as a result of the Proposed Action.

#### ***4.11.2 No Action Alternative***

Under the No Action Alternative the demolition and construction of new facilities for the 21<sup>st</sup> EOD WMD would not occur and therefore no impacts on minority, children, or low income populations would be expected.

### **4.12 Visual Resources**

#### ***4.12.1 Proposed Action***

During the building demolition and construction process, each site would have little aesthetic appeal. Construction and demolition equipment including bull dozers, front end loaders, dump trucks, backhoes, and tractor trailers would be visible from the areas adjoining the Proposed Action areas. Construction and demolition wastes temporarily stored for disposal in dumpsters at the Proposed Action areas and trucks transporting the waste would be seen on Kirtland AFB and public roadways traveling to landfills. Although, the construction and demolition activities would impact Kirtland AFB's overall aesthetic appeal, the impacts would be temporary and therefore there would be no significant impacts to the visual resources through implementation of the Proposed Action.

Currently, the buildings proposed for demolition detract from the overall aesthetic appeal of the compound. Following demolition these areas would be returned to unoccupied land, which would enhance the overall visual resource conditions of the compound. Therefore the building demolition under the Proposed Action would result in a beneficial impact on visual resources.

The construction of new facilities would introduce new elements to the visual landscape, but these changes would not be visible from areas off Kirtland AFB and are consistent with the character of Kirtland AFB. The assessment and selection site and new shot pads would be constructed in open space. However, the new structures would only remove approximately 1.1 acres of open space and would not be visible from areas off Kirtland AFB. Therefore, there would be no adverse visual or aesthetic impacts resulting from construction and operation of the Proposed Action.

#### ***4.12.2 No Action Alternative***

Under the No Action Alternative the demolition and construction of new facilities for the 21<sup>st</sup> EOD WMD would not occur and therefore the buildings to be demolished would continue to deteriorate and detract from the visual aesthetics of the compound and Kirtland AFBs.

### 4.13 Indirect and Cumulative Impacts

Indirect impacts are defined by the CEQ in 40 CFR Section 1508.8 as those “which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect impacts may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects to air, water, and other natural systems, including ecosystems.”

Indirect impacts of the Proposed Action have been addressed in the preceding resource specific analyses. Implementing the Proposed Action is not expected to result in significant indirect impacts on environmental or socio-economic resources. Because the Proposed Action does not involve relocation of personnel to the area or require large, long-term construction that would attract workers to the area, it would not result in growth-inducing effects, induced changes in population, or related effects.

NEPA defines cumulative effects as “...the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonable foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

#### 4.13.1 Past, Present, and Reasonably Foreseeable Actions

Kirtland AFB has been used for military missions since the 1930s and has continuously been developed as DOD missions, organizations, needs, and strategies have evolved. Development and operation of training ranges have impacted thousands of acres with synergistic and cumulative impacts on soil, wildlife habitats, water quality, and noise. Beneficial effects, too, have resulted from the operation and management of Kirtland AFB including, but not limited to, increased employment and income for Bernalillo County, the city of Albuquerque, and its surrounding communities; restoration and enhancement of sensitive resources such as the Coyote Springs wetland area; consumptive and non-consumptive recreation opportunities; and increased knowledge of the history and pre-history of the region through numerous cultural resources surveys and studies.

Kirtland AFB is a large military installation that is continually adapting to meet the needs of its personnel and operations. Projects that may present cumulative impacts are provided in Table 8.

**Table 8. Past, Present, and Reasonably Foreseeable Actions at Kirtland AFB**

<b>Project Name</b>	<b>Description</b>
HC-130 and MC-130 Aircraft Simulator Facilities	The 58 <sup>th</sup> Special Operations Wing proposes to construct new HC-130 and MC-130 simulator facilities at Kirtland AFB. The proposed construction will include one story facilities located in the southwestern section of Kirtland AFB.
Heavy Weapons Range	The 377 ABW is proposing to establish and use a heavy weapons range in the southeastern section of Kirtland AFB, approximately 0.25 miles east of the Starfire Optical Range facilities along Mount Washington Road. The proposed range will encompass the existing M60 range. It would include two firing positions and firing lines and would use the existing targets at the M60 range. Firing distance would be approximately 7,300 feet. Firing position two would be used for sniper heavy weapons (0.50 caliber) and would fire in a more southerly direction to the existing target area, approximately 3,800 feet.
Construct New Hot Cargo Pad	The 377 ABW proposes to construct, operate, and maintain a hot cargo pad at Kirtland AFB to ensure reliable support and backup for the existing hot cargo pad (Pad 5). Other components include construction of a new taxiway to the proposed hot cargo pad; replacement of the deteriorating taxiway to Pad 5;

Project Name	Description
	addition of new and relocation of existing anti-ram barriers, defensive fighting positions, and personal shelters surrounding the proposed hot cargo pad and Pad 5; addition of new lighting at the proposed hot cargo pad and Pad 5; and removal of existing lighting at Pad 5. The new pad will consist of 18-inch Portland cement concrete and will add additional 6-inch asphalt taxiway to the existing taxiway at Pad 5. The new pad will adjoin the existing Pad 5 to minimize enlargement of the clear zone and effects on other critical facilities.
Construction and Demolition of Military Support Facilities	Kirtland AFB proposes to demolish and construct several military personnel support facilities in the developed area in the northwestern portion of the installation. The areas include the VOQ Complex, the Main Enlisted Dormitory Campus, the NCO Academy, and Dormitory Campus 2. Approximately 36 acres would be included in the construction and demolition activities. Kirtland AFB currently has a surplus of old substandard dormitory spaces that this project would help eliminate.
Army and Air Force Exchange Service (AAFES) Base Exchange Shopping Center	AAFES proposes to construct and operate a new 95,421-square-foot Shopping Center on an approximately 2.3-acre developed site located between the existing Commissary (Building 20180) and existing Base Exchange (Building 20170) on Pennsylvania Street. The project also includes demolition of the 1,540-square-foot existing satellite pharmacy (Building 20167), closure of a portion (approximately 345 feet) of Pennsylvania Street, and construction of approximately 492 feet of new road to connect Texas Street with Pennsylvania Street north of the new Shopping Center. The new Shopping Center would include a new Base Exchange, pharmacy, and retail laundry/dry cleaning, a beauty/barber shop, concession kiosks, five food concepts with a food court, and other similar services.
Construct New Fire Station	Kirtland AFB proposes to replace Fire Station 3 within the Manzano Base area. The proposed structure would be approximately 7,300 square feet, one-story, with three high-bay drive-through apparatus stalls. The new structure would be located along a main road in the south-central section of Kirtland AFB. The action also includes the demolition of an approximately 4,300-square-foot fire station (Building 638) within the Manzano Base area.
498 <sup>th</sup> Nuclear System Wing Facility	Kirtland AFB proposes to construct a 32,400-square-foot facility to house the newly formed 498 <sup>th</sup> Nuclear Systems Wing. This facility would be a two-story, steel framed structure with reinforced concrete foundation, floors, and reinforced masonry walls. The construction further includes tying in to utilities and communications and parking for 120 vehicles. The facility would accommodate approximately 200 personnel. The new facility location is proposed between “G” and “H” avenues west of Wyoming Blvd directly behind the Nuclear Weapons Center (Building 20325).
Air Force Nuclear Weapons Center Sustainment Center	Kirtland AFB proposes to construct a 15,946-square-foot sustainment center for the Nuclear Weapons Center. This facility would be a two-story, steel-framed structure built as a Sensitive Compartmented Information Facility with reinforced concrete foundation, floors, and reinforced masonry walls. The construction further includes tying in to utilities and communications and parking for vehicles. The facility would accommodate approximately 36 personnel. The new facility location is proposed between “G” and “H” avenues west of Wyoming Blvd directly behind the Nuclear Weapons Center (Building 20325) and south of the proposed 498 <sup>th</sup> Nuclear Systems Wing facility.
Security Forces	The 377 ABW proposes to construct, operate, and maintain a security forces

Project Name	Description
Complex	complex at Kirtland AFB to provide adequate space and modern facilities to house all 377 security forces squadron administrative and support functions in a consolidated location. The 377 Security Forces Squadron functions that would be transferred to the new 377 security forces complex include base operations center with command and control facility, administration and office space, training rooms, auditorium or assembly room, guard mount, hardened armory for weapons and ammunition storage, confinement facilities, law enforcement, logistics warehouse, general storage, vehicle garage with maintenance area, and associated communications functions. One existing building within the proposed footprint of the 377 security forces complex would be demolished.
Military Working Dog Facility	The 377 ABW proposes to construct, operate, and maintain a military working dog facility according to the Air Force "Design Guide for Military Working Dog Facilities." Building construction would be reinforced concrete foundation, and reinforced masonry walls with insulated standing seam metal roofing. The kennel building would be approximately 2,600-square-feet, with 16 indoor/outdoor kennels and 2 isolation kennels, joined to a 2,500-square-foot administrative/support building by a covered walkway. Depending on the site, construction of a new obedience course might also be required. Three alternative sites have been proposed: (1) north of the existing military working dog building near the intersection of Barrack and Manzano roads, (2) in the southern portion of the area North of Harding Boulevard near the intersection of Wyoming Boulevard and Pennsylvania Street, and (3) in the area North of Harding Boulevard at the southeastern corner of M Avenue and Pennsylvania Street.
Spacecraft Component Integration Lab	Proposed lease action to convert underutilized space, including a former military family housing area and a recreational use area, to use for office, commercial, and senior continuum care space at Kirtland AFB.

#### ***4.13.2 Cumulative Impact Analysis by Resource Area***

##### **Topography, Geology, and Soils**

The Proposed Action, when combined with other reasonably foreseeable projects, would not result in significant cumulative impacts on topography, geology, and soils. The Proposed Action and other local actions would not reduce prime farmland soils or agricultural production. SWPPP measures would be implemented to control erosion during demolition and construction activities, which would minimize impacts.

## **Water Resources**

The cumulative effects of the Proposed Action, when considered with potential disturbances on water resources from future actions would not be expected to have a significant cumulative impact on water resources. Implementation of BMPs would minimize potential for adverse effects on water resources associated with the Proposed Action and future actions.

## **Air Quality**

The Proposed Action would result in low levels of air emissions below *de minimus* thresholds. The combined emissions from the Proposed Action with other reasonably foreseeable projects would not be expected to have any significant cumulative negative impacts on air quality.

## **Noise**

The noise generated by the Proposed Action, when considered with other existing and proposed projects on Kirtland AFB, would not be considered a significant cumulative impact. The cumulative effect of the proposed and future project would result in only temporary increases in the ambient noise levels during construction activities.

## **Safety**

No cumulative impacts on health and safety would be expected. The implementation of effective health and safety plans, which follow federal, state, and local OSHB policies, at all project sites would reduce or eliminate cumulative health and safety impacts on contractors, military personnel, and the general public.

## **Infrastructure**

Cumulative impacts on infrastructure have the potential to cause effects on electrical, natural gas, liquid fuel, water supply, wastewater, storm water, communications, and solid waste management services. *The Kirtland Air Force Base New Mexico General Plan 2002* (KAFB 2002) addresses the capacity and the need to upgrade all elements of the infrastructure to support additional projects at Kirtland AFB. An upgrade of any infrastructure component to support future construction at Kirtland AFB would largely result in beneficial effects for the installation. The Proposed Action would have a short-term negative impact due to the slight increase in water demand during the demolition and construction activities and the increase in personnel. However, Kirtland AFB's water supply is capable of meeting the slight increase of water usage through existing infrastructure and the ability to purchase water from the city of Albuquerque. Therefore, the combined effects from the Proposed Action with past and other reasonably foreseeable projects would not be expected to have any significant cumulative negative impacts on infrastructure resources.

## **Land Use**

A significant impact on land use would occur if any action is inconsistent with adopted land use plans or the action would substantially alter those resources required for supporting or benefiting the current use of the site and adjacent property. The Proposed Action is consistent with the installation's general plan. This action, when considered with other potential alterations of land use, would not be expected to result in a significant cumulative adverse effect. All reasonable past, present, and foreseeable actions on Kirtland AFB are consistent with the installation Master Plan.

## **Biological Resources**

Implementation of the Proposed Action and other reasonably foreseeable projects would not result in a significant cumulative impact on biological resources. Impacts on vegetation associated with the implementation of other projects would be expected, although the projects would primarily be constructed in the developed area on disturbed or currently paved areas. The Proposed Action would result in the loss of approximately 1.1 acres of vegetation on undeveloped land. Any potential coincidence between

demolition activities and construction activities from other future projects would result in temporary increases in ambient noise levels that could impact wildlife. Wildlife could be permanently displaced from the areas and temporarily dispersed from areas adjacent to the Proposed Action areas during demolition periods. The Proposed Action would not result in cumulative impacts when combined with other projects. Although growth and development can be expected to continue outside of Kirtland AFB and within surrounding natural areas, significant cumulative adverse effects on these resources would not be expected when added to the effects of activities associated with the Proposed Action. Overall, due to the current status of the proposed sites and their locations, cumulative impacts on the biological resources of the area would be less than significant.

### **Cultural Resources**

The cumulative impact of the Proposed Action and other foreseeable projects, when compared to the condition of the structures and potential disturbances to cultural resources, would be considered less than significant. The HABS/HAER survey and documentation of Building #29051, proposed for demolition, mitigates the effects on that historic structure. SHPO concurred with the finding of no adverse effects and no cumulative impacts to any cultural resources (Appendix E).

### **Hazardous Materials and Waste**

Implementation of the Proposed Action and other reasonably foreseeable projects would not be expected to result in a significant cumulative impact on hazardous materials and waste. The Proposed Action would result in an increase in the generation of hazardous materials; however, all materials would be handled and disposed of appropriately. Operations of the short pads would not increase the amount of ordnance and chemicals located in the soil of the designated range. Short-term impacts would not be considered hazardous waste, because the munitions would be used for their intended purpose. No long-term impacts from use of the shot pads would occur because the bare explosives used do not produce fragments or land outside the designated range. Future projects would incorporate measures to limit or control hazardous materials and waste into their design and operation plans. Therefore, the effects of the Proposed Action, when combined with other ongoing and proposed projects on Kirtland AFB, would not be considered a significant cumulative effect.

### **Socio-economic Considerations**

No impacts on residential areas, population, or minority or low-income families off the installation would occur. These effects, when combined with the other projects currently proposed or ongoing at Kirtland AFB, would not be considered a significant cumulative impact.

### **Environmental Justice**

Implementation of the Proposed Action would result in beneficial impacts on the region's economy. These effects, when combined with the other projects currently proposed or ongoing at Kirtland AFB, would not be considered a significant cumulative impact.

### **Visual Resources**

Although collective implementation of various projects at Kirtland AFB could result in cumulative impacts on visual resources at Kirtland AFB, impacts would not be significant. Cumulative impacts would be controlled by following the *Kirtland Architectural Compatibility Plan* (KAFB 2007b). This architectural compatibility plan attempts to ensure that future development is performed in a way that limits effects on visual resources and is consistent with existing architectural and visual standards (AAFES 2008). Adherence to the architectural compatibility plan would prevent significant visual cumulative impacts from occurring in the future.

#### ***4.13.3 Unavoidable Adverse Impacts***

Unavoidable adverse impacts would result from implementation of the Proposed Action. None of these impacts would be significant.

**Biological Resources.** The proposed Action would result in a minimal, temporary loss of vegetation and wildlife habitat. However, this unavoidable adverse impact would not be significant because ground disturbed would be restored and would be expected to return to natural conditions.

**Cultural Resources.** The historic Building #29051 would be demolished. The HABS/HAER documentation mitigates the demolition of the building per Memorandum of Agreement between Kirtland AFB and New Mexico SHPO.

**Energy.** The use of nonrenewable resources is an unavoidable occurrence, although not considered significant. The Proposed Action would require the use of fossil fuels, a nonrenewable natural resource. Energy supplies, although relatively small, would be committed to the Proposed Action.

**Geology and Soils.** Demolition activities would result in temporary soil disturbance; however, implementation of BMPs and erosion-control measures would limit the environmental consequences. Although these impacts would be unavoidable, the impact on soils would not be expected to be significant.

**Hazardous Materials and Waste.** The generation of hazardous materials and wastes during demolition activities would be unavoidable; however, these wastes would be handled in accordance with federal and state policies and would not be expected to result in a significant impact.

#### ***4.13.4 Compatibility of the Proposed Action and Alternatives with the Objectives of Federal, Regional, and Local Land Use Plans, Policies, and Controls***

The Proposed Action would occur entirely within KAFB. Building demolition activities would not be incompatible with any current land uses on KAFB. The Proposed Action would not conflict with any applicable off-installation land use ordinances. Demolition activities would follow all applicable permitting, building, and safety requirements.

#### ***4.13.5 Relationship Between Short-Term Uses and Long-Term Productivity***

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

Implementation of the Proposed Action would not require short-term resource uses that would result in long-term compromises of productivity. The Proposed Action would not result in intensification of land use at KAFB and the surrounding area. It is anticipated that the Proposed Action would not result in any cumulative land use. Long-term productivity of the proposed demolition sites would be increased by implementation of the Proposed Action.

#### ***4.13.6 Irreversible and Irretrievable Commitment of Resources***

Irreversible and irretrievable commitments are related to the use of nonrenewable resources and the effects that use of these resources will have on future generations. Irreversible effects primarily result from use or destruction of a specific resource that cannot be replaced within a reasonable timeframe. The irreversible and irretrievable commitments of resources that would result from implementation of the

Proposed Action involve the consumption of material resources used for construction, energy resources, land and human labor resources. The use of these resources is considered to be permanent.

**Material Resources.** Construction of new buildings and associated improvements to include fencing, water tanks and utilities would require the use of construction materials.

**Energy Resources.** Energy Resources used for the Proposed Action would be irretrievably lost. This includes petroleum-based products (such as gasoline and diesel). During demolition and construction activities, gasoline and diesel would be used for operation of vehicles. Consumption of these energy resources would not place a significant demand on their availability in the region; therefore, no significant effects would be expected.

**Biological Resources.** The Proposed Action would result in temporary disturbance to vegetation and wildlife habitat; however, this disturbance would be temporary and not considered significant.

**Cultural Resources.** Building #29051, which is in a District eligible for listing on the National Register of Historic Places, would be demolished. However, the building has been documented in a HABS/HAER report.

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

## **5.0 PREPARATION, CONSULTATION, AND COORDINATION**

### **5.1 Preparers**

Stephanie Lee- Biologist, Ecosystem Management, Inc.  
Mike Tremble- Project Manager, Ecosystem Management, Inc.  
Amanda Hemmerich, Planner, Ecosystem Management, Inc.  
Bill Dunn- Biologist, Ecosystem Management, Inc.  
Kate Wright- Archeologist, Ecosystem Management, Inc.  
Shannon Papin, Common Bond Preservation  
Heather Barrett Crane, Common Bond Preservation

### **5.2 Quality Control**

This EA has been reviewed for quality control purposes. Personnel who reviewed this EA include:

Bill Hevron	President, Ecosystem Management, Inc.
Mike Tremble	Vice President, Ecosystem Management, Inc.
Todd Howell	Director, Cultural Resources Program, Ecosystem Management, Inc.

### **5.3 Consultation and Coordination**

U.S. Fish and Wildlife Service  
U.S. Air Force, Kirtland Air Force Base  
New Mexico Department of Game and Fish

## 6.0 REFERENCES

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**Personal Communication**

Gregg Dunn, KAFB, Biologist

Danny Hale, KAFB, Utilities Branch Chief, 11-1-2010

Melissa Clark, KAFB, Air Program Manager, 12-9-2010

## **APPENDIX A**

### **INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR ENVIRONMENTAL PLANNING (IICEP) MATERIALS**

The 21<sup>st</sup> EOD WMD solicited comments on the Draft EA by distributing letters to potentially interested federal, state, and local agencies; Native American tribes; and other stakeholder groups or individuals notifying them that the Draft EA was available for review. Comments were received from New Mexico Department of Game and Fish and Bernalillo County Public Works, and they follow the NOA of this appendix. No comments were received from the general public. The following is the list of potentially interested parties that were notified:

Prairie Dog Pals  
PO Box 14235  
Albuquerque NM 87191

Jeff Robins  
NNSA Service Center  
P.O. Box 5400  
Albuquerque NM 87185-5400

FEDERAL A VIA TION ADMINSTRATION  
Tim Tandy  
ASW-640  
260 Meachum Blvd.  
Ft. Worth, TX 76137-4298

Bernalillo County Water Resources Program  
2400 Broadway, SE, Building N  
Albuquerque NM 87102

Bernalillo County Open Space  
III Union Square SE, Suite 200  
Albuquerque NM 87102

Bernalillo County Parks and Recreation  
III Union Square  
Albuquerque NM 87102

Bernalillo County Zoning, Building and Planning  
Department  
111 Union Square SE, Suite 100  
Albuquerque NM 87102

Ms. Julie Alcon  
U.S. Army Corps of Engineers  
Chief of Environmental Resources Section  
410 I Jefferson Plaza NE  
Albuquerque NM 87109

Mr. Robert Campellone  
U.S. Fish and Wildlife Service  
Division of Planning  
P.O. Box 1306  
Albuquerque, NM 87103

Ms. Jackie Andrew  
Southwestern Region NEPA Coordinator  
U.S. Forest Service  
333 Broadway Boulevard SE  
Albuquerque, NM 87102

Mr. Al Armendariz, Regional Administrator  
U.S. Environmental Protection Agency, Region 6  
Fountain Place 12th Floor, Suite 1200  
1445 Ross Avenue  
Dallas, TX 75202-2733

Mr. Josh Sherman, District Conservationist  
National Resources Conservation Service  
Albuquerque Service Center  
6200 Jefferson NE, Room 125  
Albuquerque, NM 87109

Mr. Ed Singleton, District Manager  
Bureau of Land Management  
Albuquerque District Office  
435 Montano Road, NE  
Albuquerque, NM 87107-4935

The Honorable Jeff Bingaman  
United States Senate  
625 Silver Avenue, SW, Suite 130  
Albuquerque, NM 87102  
Phone: (505) 346-6601

The Honorable Tom Udall  
United States Senate  
219 Central Ave NW, Suite 210  
Albuquerque, NM 87102

The Honorable Martin Heinrich  
House of Representatives, 1st Congressional  
District of New Mexico  
20 First Plaza NW, Suite 603  
Albuquerque, NM 87102

The Honorable Harry Teague  
House of Representatives, 2nd Congressional  
District of New Mexico  
II I School of Mines Road  
Socorro NM 8780 I

Ms. Georgia Cleverly  
New Mexico Environment Department  
Office of Planning and Performance  
P.O. Box 5469  
Santa Fe NM 87502-5469

Ms. Terra Monasco  
New Mexico Game and Fish  
Assistant Chief of Conservation Services Division  
P.O. Box 25112  
Santa Fe NM 87504

Dr. I. Miley Gonzalez, Director/Secretary  
New Mexico Department of Agriculture  
MSC 3189, Box 30005  
Las Cruces NM 88003-8005

Mr. Jim Noel, Cabinet Secretary  
New Mexico Energy, Minerals and Natural  
Resources Department  
1220 South St. Francis Drive  
Santa Fe NM 87505

Mr. Patrick H. Lyons, Commissioner  
New Mexico State Land Office  
P.O. Box 1148  
Santa Fe NM 87504-1148

The Honorable Cisco McSorley  
New Mexico State Senate  
415 Wellesley Place NE  
Albuquerque NM 87106

The Honorable Sheryl Williams Stapleton  
New Mexico House of Representatives  
Box 25385  
Albuquerque NM 87108

Ms. Mary Lou Leonard  
City of Albuquerque  
Acting Director  
Environmental Health Department  
P.O. Box 1293  
Albuquerque NM 87103

Ms. Barbara Baca, Director  
City of Albuquerque Parks and Recreation  
Department  
P.O. Box 1293  
Albuquerque NM 87103

Ms. Deborah Stover, Director  
City of Albuquerque Planning Department  
P.O. Box 1293  
Albuquerque NM 87103

The Honorable Isaac Benton  
Albuquerque City Council, District 3  
One Civic Plaza NW, Room 9087  
Albuquerque NM 87102

The Honorable Rey Garduno  
Albuquerque City Council, District 6  
One Civic Plaza NW, Room 9087  
Albuquerque NM 87102

The Honorable Don Harris  
Albuquerque City Council, District 9  
One Civic Plaza NW, Room 9087  
Albuquerque NM 87102

Ms. Sue Hansen, Project Manager  
Ciudad Soil and Water Conservation District  
6200 Jefferson NE, Room 125  
Albuquerque NM 87109

Bernalillo County Environmental Health Office  
III Union Square SE  
Albuquerque NM 87102

The Honorable Art De La Cruz  
Bernalillo County Board of Commissioners,  
District #2  
One Civic Plaza, NW  
Albuquerque NM 87102

The Honorable Michael Brasher  
Bernalillo County Board of Commissioners,  
District #5  
One Civic Plaza, NW  
Albuquerque NM 87102

Board of Directors  
Mid Region Council of Governments  
809 Copper Ave, NW  
Albuquerque NM 87102

The Honorable Robert Benavides  
PUEBLO OF ISLETA  
P.O. Box 1270  
Isleta Pueblo NM 87022

The Honorable Chandler Sanchez  
PUEBLO OF ACOMA  
P.O. Box 309  
Acoma NM 87034

The Honorable Joshua Madalena  
PUEBLO OF JEMEZ  
P.O. Box 100  
Jemez Pueblo NM 87024

The Honorable Levi Pesata  
JICARILLA APACHE NATION  
P.O. Box 507  
Dulce NM 87528

The Honorable John Antonio, Sr.  
PUEBLO OF LAGUNA  
P.O. Box 194  
Laguna Pueblo NM 87026

The Honorable Joe Shirley, Jr.  
NAVAJO NATION  
P.O. Box 9000  
Window Rock AZ 86515

The Honorable Ernest Mirabal  
PUEBLO OF NAMBE  
Route I, Box 117-BB  
Santa Fe NM 87506

The Honorable Lawrence T. Morgan  
NAVAJO NATION COUNCIL  
P.O. Box 3390  
Window Rock AZ 86515

The Honorable Marcelino Aguino  
OHKA Y OWINGEH  
P.O. Box 1099  
San Juan Pueblo NM 87566

The Honorable Manuel Archuleta  
PUEBLO OF PICURIS  
P.O. Box 127  
Penasco NM 87553

The Honorable George Rivera  
PUEBLO OF POJOAQUE  
78 Cities of Gold Road  
Santa Fe NM 87506

The Honorable Feliciano Candelaria  
PUEBLO OF SAN FELIPE  
P.O. Box 4339  
San Felipe Pueblo NM 87001

The Honorable Perry Martinez  
PUEBLO OF SAN ILDEFONSO  
Route 5, Box 315-A  
Santa Fe NM 87506

The Honorable Joe M. Lujan  
PUEBLO OF SANDIA  
481 Sandia Loop  
Bernalillo NM 87004

The Honorable Bruce Sanchez  
PUEBLO OF SANTA ANA  
2 Dove Road  
Santa Ana Pueblo NM 87004

The Honorable Walter Dasheno  
PUEBLO OF SANTA CLARA  
P.O. Box 580  
Española NM 87532

The Honorable Thony Tortalita  
PUEBLO OF SANTO DOMINGO  
P.O. Box 99  
Santa Domingo Pueblo NM 87052

The Honorable James Lujan, Sr.  
PUEBLO OF TAOS  
P.O. Box 1846  
Taos NM 87571

The Honorable David G. Gomez  
PUEBLO OF TAOS W ARCHIEF  
Office of Natural Resource Protection  
P.O. Box 2596  
Taos NM 87571

The Honorable Fredrick Vigil  
PUEBLO OF TESUQUE  
Route 42, Box 360-T  
Santa Fe NM 87506

The Honorable Norman Coeeyate  
PUEBLO OF ZUNI  
P.O. Box 339  
Zuni NM 87327

The Honorable Marcellus Medina  
PUEBLO OF ZIA  
135 Capitol Square Drive  
Zia Pueblo NM 87053-6013

The Honorable Vernon M. Garcia  
PUEBLO OF COCHITI  
Cochiti Pueblo NM 87072

The Honorable Mark Chino  
MESCALERO APACHE TRIBE  
P.O. Box 227  
Mescalero NM 88340

## Example HCEP Letter to Agency



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 377TH AIR BASE WING (A-3MC)

FEB 1 2011

Colonel Robert L. Maness  
377ABW/CC  
2000 Wyoming Blvd SE Suite E-3  
Kirtland AFB NM 87117-5000

Jeff Robins  
NNSA Service Center  
P.O. Box 5400  
Albuquerque NM 87185-5400

RE: 21 Explosive Ordnance Disposal Weapons of Mass Destruction Facilities Demolition  
and Expansion at Kirtland Air Force Base

Dear Mr. Robins,

The 21st Explosive Ordnance Disposal Weapons of Mass Destruction Company (21 EOD WMD), Kirtland Air Force Base (KAFB), has prepared a Draft Environmental Assessment (EA) addressing facility demolition and construction and expansion at KAFB. The 21EOD WMD proposes to demolish up to three buildings on KAFB and construct four new buildings. The 21 EOD WMD Company's mission objective is to "render safe weapons of mass destruction directed against the United States and its interests." In order to carry out this mission, the unit requires new and modern facilities to accommodate personnel growth and training requirements. The current facilities do not meet current safety and construction standards, and no longer provide adequate space for growth of additional personnel. In addition, these facilities house multi-million dollar equipment and specialized tools, of which there are only four sets in the world. The environmental impact analysis process for this proposal is being conducted in accordance with Council on Environmental Quality regulations pursuant to the National Environmental Policy Act (NEPA) of 1969.

In accordance with Executive Order 12372, Intergovernmental Review of Federal Programs, I request your participation by reviewing the Draft EA and solicit your comments concerning the proposal and any potential environmental concerns you may have. Copies of the Draft EA and the proposed Finding of No Significant Impact are available at <http://www.kirtland.af.mil/environment.asp> under the "Environmental Issues" tab. Please provide written comments on the Draft EA or other information regarding the action at your earliest convenience but no later than 30 days from the receipt of this letter. Section 5 of the Draft EA contains a listing of those Federal, state, and local agencies that have been contacted. If there are any additional agencies that you feel should review and comment on the proposed activities, please include them in your distribution of this letter.

Please address questions or comments on this proposed action to the NEPA Program Manager, 377 MSG/CEANQ, 2050 Wyoming Boulevard SE, Suite 125, KAFB, NM 87117, or via email to [nepa@kirtland.af.mil](mailto:nepa@kirtland.af.mil).

Sincerely



ROBERT L. MANESS, Colonel, USAF  
Commander

**PUBLIC NOTICE  
FACILITIES DEMOLITION AND CONSTRUCTION  
KIRTLAND AIR FORCE BASE**

The 21st Explosive Ordnance Disposal Weapons of Mass Destruction Unit (EOD WMD), Kirtland Air Force Base, has prepared an Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) for FACILITIES DEMOLITION AND CONSTRUCTION AND COMPOUND EXPANSION.

THE ASSESSMENT EVALUATES THE POTENTIAL IMPACTS ASSOCIATED WITH THE FACILITIES DEMOLITION AND CONSTRUCTION AND COMPOUND EXPANSION. THE PROJECT INCLUDES COMPLETE DEMOLITION OF 3 FACILITIES AND CONSTRUCTION OF 4 FACILITIES. FACILITIES INCLUDE OPERATIONS FACILITY, RAPID DEPLOYMENT CENTER, LOCK DOWN BUILDING, AND AN ASSESSMENT AND SELECTION SITE. THE CURRENT COMPOUND AREA WOULD EXPAND FROM 90 ACRES TO 470 ACRES.

The EA indicates that the proposed action would not have a significant impact on the quality of the human environment. The EA and FONSI are open for public review and comment. These documents are available at the CNMCC Montoya Campus Library, 4700 Morris NE; the Kirtland AFB Library; and on the Kirtland web site, <http://www.kirtland.af.mil/> under 'Our Environment.' The comment period ends March 8, 2011.

For additional information or to make comments, contact: National Environmental Policy Act Program Manager, 377 MSG/CEANQ, 2050 Wyoming Blvd SE, Kirtland AFB, NM 87117-5270 or email NEPA@kirtland.af.mil

## Federal, State, Local, and Tribal Responses

GOVERNOR  
Susana Martinez



DIRECTOR AND SECRETARY  
TO THE COMMISSION  
Tod W. Stevenson

### STATE OF NEW MEXICO DEPARTMENT OF GAME & FISH

One Wildlife Way  
Post Office Box 25112  
Santa Fe, NM 87504  
Phone: (505) 476-8008  
Fax: (505) 476-8124

Visit our website at [www.wildlife.state.nm.us](http://www.wildlife.state.nm.us)  
For information call: (505) 476-8000  
To order free publications call: (800) 862-9310

#### STATE GAME COMMISSION

JIM McCLINTIC, Chairman  
Albuquerque, NM

DR. TOM ARVAS, Commissioner  
Albuquerque, NM

GARY W. FONAY, Commissioner  
Hobbs, NM

KENT A. SALAZAR, Commissioner  
Albuquerque, NM

M.H. "DUTCH" SALMON, Commissioner  
Silver City, NM

THOMAS "DICK" SALOPEK, Commissioner  
Las Cruces, NM

---

March 22, 2010

NEPA Program Manager  
377 MSG/CEANQ  
2050 Wyoming Blvd. SE, Suite 125  
KAFB, NM 87117

Re: 21 Explosive Ordinance Disposal Weapons of Mass Destruction Facilities Demolition, Kirtland Air Force Base  
NMDGF Doc. No. 14041

Dear Sir:

The Department of Game and Fish (Department) has reviewed the Environmental Assessment for the above-referenced project. For undeveloped habitat in the project area, we request that pre-construction surveys be conducted for Gunnison's prairie dogs (*Cynomys gunnisoni*) and burrowing owl (*Athene cunicularia*). Burrowing owl surveys should be conducted between March and October, and prairie dog surveys also be conducted within this period.

We have attached the Department's *Guidelines and Recommendations for Burrowing Owl Surveys and Mitigation* (July 2007) which provides details on weather conditions and other considerations regarding when surveys should be conducted. Mitigation directions are also provided should burrowing owls be documented to occur on the site. No construction activity should occur if burrowing owls are detected within the nesting period of 1 March through 1 August.

Should Gunnison's prairie dogs be documented to occur within the project area, we recommend that live-trapping efforts be conducted before construction activities occur, and that reasonable efforts be made to capture and relocate as many animals as possible.

We appreciate the opportunity to comment on this project. Should you have any questions regarding our comments, please contact Mark Watson, Habitat Specialist, of my staff at (505) 476-8115, or <[mark.watson@state.nm.us](mailto:mark.watson@state.nm.us)>.

Sincerely,

Matt Wunder, Ph.D.  
Chief, Conservation Services Division

MW/MLW

CC: Wally Murphy (Ecological Services Field Supervisor, USFWS)  
Mark Birkhauser (Northwest Area Habitat Specialist, NMDGF)  
Mark Watson (Conservation Services Habitat Specialist, NMDGF)

# County of Bernalillo

State of New Mexico

## BOARD OF COUNTY COMMISSIONERS

**ART DE LA CRUZ**, CHAIR

DISTRICT 2

**MAGGIE HART STEBBINS**, VICE CHAIR

DISTRICT 3

**ALAN B. ARMJO**, MEMBER

DISTRICT 1

**MICHAEL C. WIENER**, MEMBER

DISTRICT 4

**MICHAEL BRASHER**, MEMBER

DISTRICT 5

**THADDEUS LUCERO**, COUNTY MANAGER



## Bernalillo County Public Works

2400 Broadway S.E.

Albuquerque, NM 87102

505-848-1500

Fax 505-848-1510

**KAREN L. MONTOYA**, ASSESSOR

**MAGGIE TOULOUSE OLIVER**, CLERK

**MERRI RUDD**, PROBATE JUDGE

**MANUEL GONZALES III**, SHERIFF

**PATRICK J. PADILLA**, TREASURER

February 16, 2011

Colonel Robert L. Maness  
377ABW/CC  
2000 Wyoming Blvd SE, Ste E-3  
Kirtland AFB, NM 87117-5000

RE: Comments on EA for 21<sup>st</sup> EOD WMD Facility Demolition and Expansion at Kirtland AFB

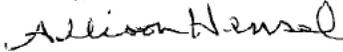
Dear Colonel Maness:

In response to your request for comments on the Environmental Assessment for the 21<sup>st</sup> EOD WMD Facility at Kirtland AFB, Bernalillo County (County) would like to submit the following comments:

- 1) In regard to the construction of new facilities on-site, the EA does not mention incorporation of new Green Technology in the construction plans for the new facilities. The County encourages Kirtland AFB to set a good example for the community with respect to energy efficiency, water conservation, and green building practices.
- 2) The EA mentioned the removal of 4 septic tanks that are currently located on-site. The removal of septic tanks would be in compliance with current County guidelines for groundwater protection. Connection of the new facilities to sewer lines and removal of the septic tanks would provide for the protection of water resources in the County.
- 3) In the description of the ordinances to be detonated on-site, the EA references that if the ordinances fall outside of the designated area, there would be a requirement for Hazardous Waste reporting. It does not, however, provide any information as to what type of hazardous materials may be present, or whether there is any potential for these materials (possibly heavy metals, etc) leaching into the groundwater and being carried off-site by groundwater flows. As noted in prior environmental issues relating to groundwater on Kirtland facilities, there are different levels of groundwater present throughout the area. This should be investigated and addressed to determine if any risk might be present, and if so, what measures could be taken to prevent or mitigate the situation if it were to occur.
- 4) At the bottom of page 3-6, in reference to the energy usage on Kirtland, the report cites the usage on Kirtland as 1,100,000 million BTUs. 1,100,000 million = 1.1 trillion BTUs. This number seems extremely high and is most likely an error or typo. Possible correction of 1,100,000 (1.1 million) BTUs?

Thank you for the opportunity to provide comments on this project. If you have any questions in regard to the comments we have provided, please contact Dan McGregor, County Hydrogeologist at 848-1578 or Mary Murnane, Water Resources and Energy Efficiency Program Manager at 848-1507.

Sincerely,



Allison Hensel  
BCPWD – Water Resources

Cc: Mary Murnane, Water Program Director  
Dan McGregor, Hydrogeologist  
File



United States  
Department of  
Agriculture

Forest  
Service

Cibola National Forest and  
National Grasslands

2113 Osuna Road NE  
Albuquerque, NM 87113-1001  
(505) 346-3900 FAX: 346-3901

File Code: 1950

Date: February 28, 2011

Mr. Josh Adkins  
NEPA Program Manager  
377 MSG/CEANQ  
2050 Wyoming Boulevard SE, Suite 125  
Kirtland AFB, NM 87117

Dear Mr. Adkins:

Kirtland AFB requested Forest Service participation in the review and comment on the Air Force's Draft EA addressing facility demolition and construction and expansion at Kirtland Air Force Base. The Regional Forester for the Southwestern Region forwarded your request to the Cibola National Forest and Grasslands for response.

After examining the project location and description from information on your website, we have determined that activities would not occur near lands administered by the Cibola NF. Based on the type of activities described in the Draft EA, it is unlikely that forest resources would be affected. We have no further comment on the project.

Sincerely,

NANCY ROSE  
Forest Supervisor



Caring for the Land and Serving People

Printed on Recycled Paper



**From:** [Stapleton, Sheryl Williams](#)  
**To:** [Stephanie Lee](#)  
**Subject:** RE: 21st Explosive Ordnance Disposal Weapons of Mass Destruction Facilities Demolition and Expansion at Kirtland Air Force Base EA Scoping Letter  
**Date:** Friday, March 11, 2011 3:49:22 PM

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Hi Stephanie,

Thank you for sending me another copy of the letter and website with the copies of the Draft EA. I have no problem with the demolition nor the expansion.

Thank you,

Representative Sheryl Williams Stapleton

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**From:** [377 MSG/CEAN NEPA Environmental Assessment](#)  
**To:** [Stephanie Lee](#)  
**Cc:** [Garza, Nathaniel CPT USA DoD 21 EOD WMD CO/AFCB-OP-TF](#); [Bone, Michael SPA](#)  
**Subject:** FW: Comments on Draft EA for 21 Explosive Ordinance Disposal Weapons of Mass Destruction Facilities Demolition and Expansion at Kirtland Air Force Base  
**Date:** Friday, February 25, 2011 2:52:19 PM

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Please see the below comment from the City of Albuquerque Parks and Recreation Department concerning the EA for the 21st EOD Expansion. Please let me know if you have questions or comments.

Thank you,  
Joshua Adkins  
NEPA Program Manager  
505-846-7084  
DSN 246-7084

-----Original Message-----

From: Sandoval, Christina M. [<mailto:cmsandoval@cabq.gov>]  
Sent: Thursday, February 24, 2011 10:01 AM  
To: 377 MSG/CEAN NEPA Environmental Assessment  
Cc: Baca, Barbara C.; Trujillo, Jane E.; Zuschlag, Sandy C.  
Subject: Comments on Draft EA for 21 Explosive Ordinance Disposal Weapons of Mass Destruction Facilities Demolition and Expansion at Kirtland Air Force Base

The City of Albuquerque Parks and Recreation Department is in receipt of your request for review of the EA for the proposed 21 Explosive Ordinance Disposal Weapons of Mass Destruction Facilities Demolition and Expansion at Kirtland Air Force Base. We have reviewed the document and it appears that your project will have no affect on our facilities, therefore we have no adverse comments. We appreciate the opportunity to review this project. If you have any questions feel free to contact me at 768-5370..

Christina Sandoval  
Senior Planner  
Parks & Recreation Department  
768-5370(w) 768-5305(f)



SUSANNA MATINEZ  
Governor  
JOHN A. SANCHEZ  
Lieutenant Governor

NEW MEXICO  
ENVIRONMENT DEPARTMENT

*Office of the Secretary*

Harold Runnels Building  
1190 Saint Francis Drive (87505)  
PO Box 5469, Santa Fe, NM 87502-5469  
Phone (505) 827-2855 Fax (505) 827-2836  
www.nmenv.state.nm.us



DAVE MARTIN  
Cabinet Secretary  
RAJ SOLOMON, P.E.  
Deputy Secretary

March 18, 2011

Colonel Robert L. Maness  
377ABW/CC  
2000 Wyoming Blvd SE Suite E-3  
Kirtland AFB, NM 87117-5000

**RE: 21 Explosive Ordnance Disposal Weapons of Mass Destruction Facilities Demolition  
and Explosives at Kirtland AFB (NMED File No. 3408ER)**

Dear Colonel Maness:

Your letter regarding the above named project was received in the New Mexico Environment Department (NMED) and was sent to various Bureaus for review and comment. Comments were provided by the Ground Water Quality Bureau and Surface Water Quality Bureau and are as follows.

**Ground Water Quality Bureau**

GWQB staff reviewed the EA as requested, focusing specifically on the potential effect to ground water resources in the area of the proposed project.

The letter states that the U.S. Air Force intends to construct a new operations complex for the 21<sup>st</sup> Explosive Ordnance Disposal (EOD) Company at Kirtland Air Force Base. Activities will include construction of four new buildings, two water storage tanks, and two concrete explosive shot pads (each surrounded by eight-foot earthen berms); and demolition of three existing buildings (including closure of five existing septic systems). Depth to ground water is estimated to range from 450 to 550 feet.

Implementation of this project is not expected to have any adverse impacts on ground water quality in the area of the project. However, construction and demolition activities will likely involve the use of heavy equipment, thereby leading to the possibility of contaminant releases (e.g., fuel, hydraulic fluid, etc.) associated with equipment malfunctions. The GWQB advises all parties involved in the project to be aware of notification requirements for accidental discharges contained in 20.6.2.1203 NMAC. Compliance with the notification and response requirements will further ensure the protection of ground water quality in the vicinity of the project.

Upon completion of the EOD operations complex, 50 personnel will be housed in the new structures. Domestic wastewater generated at the EOD operations complex will be plumbed to the KAFB sanitary sewer collection system and routed to City of Albuquerque sanitary sewer collection lines for treatment at a City of Albuquerque wastewater treatment plant. As there will be no on-site discharge of domestic wastewater, a ground water Discharge Permit will not be required for the discharge of domestic wastewater generated by the EOD operations complex. It is recommended that the five existing septic systems be closed in the following manner:

- 1) Remove or plug all lines conveying wastewater to the septic tank/leachfield systems.
- 2) Pump the septic tanks and dispose of pumpings in accordance with all local, state, and federal regulations.
- 3) Backfill the septic tanks with clean fill or sand, or remove from the site.

#### **Surface Water Quality Bureau**

The U.S. Environmental Protection Agency (USEPA) requires National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) coverage for storm water discharges from construction projects (common plans of development) that will result in the disturbance (or re-disturbance) of one or more acres, including expansions, of total land area. If construction of one, or a combination of several discrete facilities, exceed one acre (including staging areas, etc.), these construction activities will require appropriate NPDES permit coverage prior to beginning construction (small, one - five acre, construction projects may be able to qualify for a waiver in lieu of permit coverage - see Appendix D).

Among other things, this permit requires that a Storm Water Pollution Prevention Plan (SWPPP) be prepared for the site and that appropriate Best Management Practices (BMPs) be installed and maintained both during and after construction to prevent, to the extent practicable, pollutants (primarily sediment, oil & grease and construction materials from construction sites) in storm water runoff from entering waters of the U.S. This permit also requires that permanent stabilization measures (revegetation, paving, etc.), and permanent storm water management measures (storm water detention/retention structures, velocity dissipation devices, etc.) be implemented post construction to minimize, in the long term, pollutants in storm water runoff from entering these waters. In addition, permittees must ensure that there is no increase in sediment yield and flow velocity from the construction site (both during and after construction) compared to pre-construction, undisturbed conditions (see Subpart 10.D.1.b)

You should also be aware that EPA requires that all "operators" (see Appendix A) obtain NPDES permit coverage for construction projects. Generally, this means that at least two parties will require permit coverage. The owner/developer of this construction project who has operational control over project specifications (probably KAFB in this case), the general contractor who has day-to-day operational control of those activities at the site, which are necessary to ensure compliance with the storm water pollution plan and other permit conditions, and possibly other "operators" will require appropriate NPDES permit coverage for this project.

The CGP was re-issued effective June 30, 2008. The CGP, Notice of Intent (NOI), Fact Sheet, and Federal Register notice can be downloaded at:  
<http://cfpub.epa.gov/npdes/stormwater/cgp.cfm>

I hope this information is helpful to you.

Sincerely,

A handwritten signature in cursive script, appearing to read "Julie Roybal".

Julie Roybal  
Environmental Impact Review Coordinator  
NMED File #3408 ER

# CITY OF ALBUQUERQUE



February 28, 2011

Program Manager, KAFB  
National Environmental Policy Act  
377 MSG/CEANQ  
2050 Wyoming Blvd. SE, Suite 125  
Kirtland AFB, NM 87117

**Certified Mail No. 7007 1490 0003 5645 3138**

**Re:** 21 Explosive Ordinance Disposal Weapons of Mass Destruction Facilities Demolition and Expansion at Kirtland Air Force Base

KAFB NEPA Program Manager:

Thank you for providing the Air Quality Division (Division) the opportunity to review the KAFB preliminary EA (EA) for the demolition and expansion of the 21 EOD WMD facilities. Based on review of the preliminary EA, dated January 2011, the Division has concluded that activities associated with this type of activity appear to require notification and Source Registration/Permit application submittals to the Division. KAFB must ensure that all appropriate notifications and applications are submitted as required by 20.11 NMAC.

PO Box 1293

The EA states that building reconstruction/demolition will occur as a result of this project. Inspection, notification requirements and asbestos removal will need to be done in accordance with 20.11.20.22 NMAC – Demolition and Renovation Activities; Fugitive Dust Control Construction Permit and Asbestos Notification Requirements and Title 40 CFR Subpart M—National Emission Standard for Asbestos §61.145 – Standard for demolition and renovation.

Albuquerque

NM 87103

The EA reports that the planned construction will result in surface disturbance. Surface disturbance of  $\frac{3}{4}$  of an acre or more will require a Fugitive Dust Permit. Buildings to be demolished that exceed 75,000 ft<sup>3</sup> will require a Fugitive Dust Permit. If a Fugitive Dust Permit is required, surface disturbance/demolition shall not occur before Division staff sign and issue a fugitive dust permit. Fugitive dust emissions resulting from this project must be mitigated and controlled as cited in 20.11.20 NMAC.

www.cabq.gov

KAFB shall ensure that the appropriate Source Registration, 20.11.40 NMAC, and Authority to Construct, 20.11.41 NMAC, applications have been submitted and the appropriate Certificate/Permit have been issued by the Division. Construction and operation of these sources shall be done in accordance with 20.11.40 NMAC and 20.11.41 NMAC as applicable. Those engines, not defined as a "Nonroad engine" under Title 40 CFR Part 89 or 90, and applicable to 20.11.41 NMAC, shall obtain a permit pursuant to Part 41. If applicable to 20.11.40 NMAC, the owner/operator shall obtain a Certificate of Registration pursuant to Part 40.

*Albuquerque - Making History 1706-2006*

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Program Manager  
February 28, 2011  
Page 2

Thank you for the time and the opportunity to review the EA Draft Report. Please do not hesitate to contact me with any questions or concerns you may have ([dreyes@cabq.gov](mailto:dreyes@cabq.gov) or 505-768-1958).

Sincerely,



Damon R. Reyes  
Enforcement Section Supervisor  
Air Quality Division  
Environmental Health Department  
City of Albuquerque

Xc: Mary Lou Leonard, Director, Environmental Health Department  
Isreal Tavarez, Environmental Engineering Manager, Air Quality Permitting Section  
William Gallegos, Environmental Health Manager, Environmental Service Department



Yvonne Boudreaux  
President

PO Box 14235  
Albuquerque, NM 87191  
(505) 296-1937  
www.prairiedogpals.org  
prairiedogpals@comcast.net

February 11, 2011

Colonel Robert L. Maness  
377ABw/CC  
2000 Wyoming Blvd SE Suite E -3  
Kirtland AFB, NM 87117-5000

Subject: Comments on Environmental Assessments  
Specific Request: *Draft EA – 21 EOD WMD  
Demolition and Expansion Project*  
Forthcoming Assessments: *58 SOW Drop Zones  
and Helicopter Landing Zones;  
Revision of Integrated Natural Resources Management Plan*

We sincerely appreciate the invitation to participate in NEPA process for Kirtland Air Force Base. Pursuant to the letter from Colonel Robert L. Maness dated February 1, 2011; we have considered what our role would be and what specific comments would be important. We have decided it would be important for us to understand the current dynamics and locations of Gunnison's prairie dog<sup>1</sup> colonies and associated wildlife, including burrowing owls.<sup>2</sup> We are respectfully requesting an on-site survey of existing prairie dog populations. We estimate that such a tour would require about one – two hours of time.

We are aware of significant population fluctuations amongst prairie dogs and associates on the base. We know that to provide accurate comments on the primary topic(s) our organization and the community would be interested in would require first hand information of the extent and locations of the current populations or colonies.

1  
Prairie Dog Pals Request for Site Survey  
Kirtland AFB Draft & Preliminary EAs  
February 11, 2011

In the past, prairie dog colonies on base may have qualified for potential surveys for the federally Endangered black-footed ferret. This may not be the case, depending upon the extent of populations and colony dynamics.

We wish to collaborate and serve you in the best manner possible and look forward to hearing from you at your earliest convenience

Sincerely



Y Boudreaux  
Prairie Dog Pals

- 
1. Gunnison's prairie dogs are currently listed as a Candidate for the federal Endangered Species Act in Montane portions of their range. Lawsuits may change or expand the potential listing. State – Species of Greatest Conservation Concern.
  2. Burrowing owls reside in prairie dog burrows and are under the provisions of the Migratory Bird Treaty Act. Federal - Species of Concern; State – Fully protected, Species of Greatest Conservation Need.

2  
Prairie Dog Pals Request for Site Survey  
Kirtland AFB Draft & Preliminary EAs  
February 11, 2011

## **APPENDIX B**

### **Agency T&E Data Request and Response Letters**



January 15, 2010

Wally Murphy, Field Supervisor  
New Mexico Ecological Services Field Office  
2105 Osuna NE  
Albuquerque, NM 87113

**Subject: Proposed Training Area Expansion Project on Kirtland Air Force Base**

Ecosystem Management Inc. is providing environmental services for the proposed training area expansion project on Kirtland Air Force Base (KAFB). We are requesting a list of protected species that could occur in the Proposed Action area as well as any comments your agency may have about the proposed action. The proposed project is located in Sections 35 and 36 of T9N, R4E, and is mapped on Mount Washington USGS 7.5' quadrangle. The project site is located approximately 13 miles southeast of Albuquerque, New Mexico. A map is attached.

The U.S. Army Corps of Engineers Albuquerque District proposes a facility expansion and site improvements for the 21<sup>st</sup> Explosive Ordnance Division Weapons of Mass Destruction Company (EOD WMD) Complex at KAFB. The 21<sup>st</sup> EOD WMD currently occupies approximately 90 acres with seven buildings. All buildings, except one, were constructed in the 1940s and all buildings do not meet current building codes and are sub-standard in utilities and fire protection. The proposed training area expansion project, as now designed, would expand the current compound to approximately 290 acres to accommodate growth and training requirements. Specifically, the project would entail demolishing 6 out of the 7 current buildings and constructing 3 new buildings, new parking areas, 2 new shot pads, and 3 field training courses. In addition, the compound roads would be improved and expanded.

If you have any comments, recommendations, or concerns, I can be reached at 505-884-8300 or [stephaniel@emi-nm.com](mailto:stephaniel@emi-nm.com).

Sincerely,

Stephanie Lee



## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
New Mexico Ecological Services Field Office  
2105 Osuna NE  
Albuquerque, New Mexico 87113  
Phone: (505) 346-2525 Fax: (505) 346-2542

JAN 21 2010

Thank you for your recent request for information on threatened or endangered species or important wildlife habitats that may occur in your project area. The New Mexico Ecological Services Field Office has posted lists of the endangered, threatened, proposed, candidate and species of concern occurring in all New Mexico Counties on the Internet. Please refer to the following web page for species information in the county where your project occurs: [http://www.fws.gov/southwest/es/NewMexico/SBC\\_intro.cfm](http://www.fws.gov/southwest/es/NewMexico/SBC_intro.cfm). If you do not have access to the Internet or have difficulty obtaining a list, please contact our office and we will mail or fax you a list as soon as possible.

After opening the web page, find New Mexico Listed and Sensitive Species Lists on the main page and click on the county of interest. Your project area may not necessarily include all or any of these species. This information should assist you in determining which species may or may not occur within your project area.

Under the Endangered Species Act of 1973, as amended (Act), it is the responsibility of the Federal action agency or its designated representative to determine if a proposed action "may affect" endangered, threatened, or proposed species, or designated critical habitat, and if so, to consult with us further. Similarly, it is their responsibility to determine if a proposed action has no effect to endangered, threatened, or proposed species, or designated critical habitat. On December 16, 2008, we published a final rule concerning clarifications to section 7 consultations under the Act (73 FR 76272). One of the clarifications is that section 7 consultation is not required in those instances when the direct and indirect effects of an action pose no effect to listed species or critical habitat. As a result, we do not provide concurrence with project proponent's "no effect" determinations.

If your action area has suitable habitat for any of these species, we recommend that species-specific surveys be conducted during the flowering season for plants and at the appropriate time for wildlife to evaluate any possible project-related impacts. Please keep in mind that the scope of federally listed species compliance also includes any interrelated or interdependent project activities (e.g., equipment staging areas, offsite borrow material areas, or utility relocations) and any indirect or cumulative effects.

Candidates and species of concern have no legal protection under the Act and are included on the web site for planning purposes only. We monitor the status of these species. If significant declines are detected, these species could potentially be listed as endangered or threatened. Therefore, actions that may contribute to their decline should be avoided. We recommend that candidates and species of concern be included in your surveys.

Also on the web site, we have included additional wildlife-related information that should be considered if your project is a specific type. These include communication towers, power line safety for raptors, road and highway improvements and/or construction, spring developments and livestock watering facilities, wastewater facilities, and trenching operations.

Under Executive Orders 11988 and 11990, Federal agencies are required to minimize the destruction, loss, or degradation of wetlands and floodplains, and preserve and enhance their natural and beneficial values. We recommend you contact the U.S. Army Corps of Engineers for permitting requirements under section 404 of the Clean Water Act if your proposed action could impact floodplains or wetlands. These habitats should be conserved through avoidance, or mitigated to ensure no net loss of wetlands function and value.

The Migratory Bird Treaty Act (MBTA) prohibits the taking of migratory birds, nests, and eggs, except as permitted by the U.S. Fish and Wildlife Service. To minimize the likelihood of adverse impacts to all birds protected under the MBTA, we recommend construction activities occur outside the general migratory bird nesting season of March through August, or that areas proposed for construction during the nesting season be surveyed, and when occupied, avoided until nesting is complete.

We suggest you contact the New Mexico Department of Game and Fish, and the New Mexico Energy, Minerals, and Natural Resources Department, Forestry Division for information regarding fish, wildlife, and plants of State concern.

Thank you for your concern for endangered and threatened species and New Mexico's wildlife habitats. We appreciate your efforts to identify and avoid impacts to listed and sensitive species in your project area.

Sincerely,



Wally Murphy  
Field Supervisor



February 19, 2010, 2010

Bruce Thompson, Director  
New Mexico Department of Game and Fish  
P.O. Box 25112  
Santa Fe, NM 87504

**Subject: Proposed Training Area Expansion Project on Kirtland Air Force Base**

Ecosystem Management Inc. is providing environmental services for the proposed training area expansion project on Kirtland Air Force Base (KAFB). We are requesting a list of protected species that could occur in the Proposed Action area as well as any comments your agency may have about the proposed action. The proposed project is located in Sections 35 and 36 of Township 9N, Range 4E, and is mapped on Mount Washington USGS 7.5' quadrangle. The project site is located approximately 13 miles southeast of Albuquerque, New Mexico. A map is attached.

The U.S. Army Corps of Engineers Albuquerque District proposes a facility expansion and site improvements for the 21<sup>st</sup> Explosive Ordnance Division Weapons of Mass Destruction Company (EOD WMD) Complex at KAFB. The 21<sup>st</sup> EOD WMD currently occupies approximately 90 acres with seven buildings. All buildings, except one, were constructed in the 1940s and do not meet current building codes and is sub-standard in utilities and fire protection. The proposed training area expansion project, as now designed, would expand the current compound to approximately 290 acres to accommodate growth and training requirements. Specifically, the project would entail demolishing 6 out of the 7 current buildings and constructing 3 new buildings, new parking areas, 2 new shot pads, and 3 field training courses. In addition, the compound roads would be improved and expanded.

If you have any comments, recommendations, or concerns, I can be reached at 505-884-8300 or [stephaniel@emi-nm.com](mailto:stephaniel@emi-nm.com).

Sincerely,

Stephanie Lee

GOVERNOR  
Bill Richardson



DIRECTOR AND SECRETARY  
TO THE COMMISSION  
Tod Stevenson

Robert S. Jenks, Deputy Director

STATE OF NEW MEXICO  
DEPARTMENT OF GAME & FISH

One Wildlife Way  
Post Office Box 21112  
Santa Fe, NM 87504  
Phone: (505) 475-8008  
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Visit our website at [www.nmDGF.com.nm.us](http://www.nmDGF.com.nm.us)  
For information call: 505-475-8008  
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Silver City, NM

THOMAS "DICK" SALOPEK, Commissioner  
Las Cruces, NM

March 22, 2010

Ms. Stephanie Lee  
Ecosystem Management Inc.  
4004 Carlisle Blvd. NE, Suite C1  
Albuquerque, NM 87107

Re: Kirtland Air Force Base Proposed Training Area Expansion Project; NMDGF Doc. No. 13213

Dear Ms. Lee:

The Department of Game and Fish (Department) has reviewed your 19 Feb 2010 letter requesting comments on the above-referenced project. Based on the review of the attached map, we request that pre-construction surveys be conducted for Gunnison's prairie dogs (*Cynomys gunnisoni*) and burrowing owl (*Athene cunicularia*). Burrowing owl surveys should be conducted between March and October, and prairie dog surveys also be conducted within this timeframe.

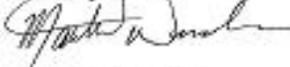
We have attached the Department's *Guidelines and Recommendations for Burrowing Owl Surveys and Mitigation* (July 2007) which provides details on weather conditions and other considerations regarding when surveys should be conducted. Mitigation directions are also provided should burrowing owls be documented to occur on the site. No construction activity should occur if burrowing owls are detected within the nesting period of 1 March through 1 August.

Ms. Stephanie Lee  
March 22, 2010  
Page -2-

Should Gunnison's prairie dogs be documented to occur within the project area, we recommend that live-trapping efforts be conducted before construction activities occur, and that reasonable efforts be made to capture and relocate as many animals as possible.

We appreciate the opportunity to comment on this project. Should you have any questions regarding our comments, please contact Mark Watson, Habitat Specialist, of my staff at (505) 476-8115, or <mark.watson@state.nm.us>.

Sincerely,



Matt Wunder, PhD  
Chief, Conservation Services Division

MW/mlw

cc: Wally Murphy (Ecological Services Field Supervisor, USFWS)  
Brian Gleadle (Northwest Area Operations Supervisor, NMDGF)  
Mark Watson (Conservation Services Habitat Specialist, NMDGF)

**From:** [Watson, Mark L., DGF](#)  
**To:** [Stephanie Lee](#)  
**Cc:** [Gilbert, Eliza, DGF](#); [Wunder, Matthew, DGF](#); [Walker, Hira, DGF](#); [Stuart, James N., DGF](#)  
**Subject:** RE: Kirtland Air Force Base Training Area Expansion Project; NMDGF Doc 13213  
**Date:** Friday, January 14, 2011 10:43:00 AM

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Stephanie,

Thanks very much for updating us on the results of our survey recommendations. It is usually difficult for us to determine if our recommendations have been implemented by project proponents, so we appreciate your response.

Mark Watson

Mark L. Watson  
Terrestrial Habitat Specialist  
Conservation Services Division  
NM Department of Game and Fish  
P.O. Box 25112  
Santa Fe, NM 87504  
1 Wildlife Way  
Santa Fe, NM 87507  
(505) 476-8115  
FAX: (505) 476-8128

For NM wildlife info, visit Biota Information System of New Mexico (BISON-M):  
Species Accounts, Searches and County Lists (use the "Database Query" option): <http://www.bison-m.org/>  
Habitat Handbook Project Guidelines:  
[http://www.wildlife.state.nm.us/conservation/habitat\\_handbook/index.htm](http://www.wildlife.state.nm.us/conservation/habitat_handbook/index.htm)  
New Mexico Wildlife of Concern by Counties List:  
[http://www.wildlife.state.nm.us/conservation/share\\_with\\_wildlife/documents/speciesofconcern.pdf](http://www.wildlife.state.nm.us/conservation/share_with_wildlife/documents/speciesofconcern.pdf)

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**From:** Stephanie Lee [mailto:[StephanieL@emi-nm.com](mailto:StephanieL@emi-nm.com)]  
**Sent:** Friday, January 14, 2011 10:37 AM  
**To:** Watson, Mark L., DGF  
**Subject:** Kirtland Air Force Base Training Area Expansion Project; NMDGF Doc 13213

Mr. Mark Watson:

The NMDGF Doc 13213 dated March 22, 2010 requested pre-construction surveys be conducted for Gunnison's prairie dogs (*Cynomys gunnisoni*) and burrowing owls (*Athene cunicularia*). EMI biologist, Bill Dunn, conducted a pre-construction survey on 21 April 2010 for Gunnison's prairie dogs and burrowing owls to determine the presence or absence of these species within the project area. No sign of prairie dogs (*Cynomys* spp.), nor burrowing owls were found and no prairie dogs have been reported to inhabit the Proposed Action area in recent years (Gregg Dunn, KAFB, biologist, personal communication).

Sincerely,  
Stephanie Lee  
Biologist/Project Manager

## **APPENDIX C**

### **Draft MOA Letter**

**MEMORANDUM OF AGREEMENT  
BETWEEN  
UNITED STATES AIR FORCE, KIRTLAND AIR FORCE BASE  
AND  
NEW MEXICO STATE HISTORIC PRESERVATION OFFICER**

SUBJECT: Reconfigure the 21<sup>st</sup> EOD complex (Proximity Fuze Historic District). This will include demolishing historic building 29051, making changes to other facilities, and extending the 21<sup>st</sup> EOD complex permit boundary at; Kirtland Air Force Base (KAFB).

**WHEREAS**, Kirtland Air Force Base (KAFB), proposes to demolish building 29051 that has been determined to be eligible for the National Register of Historic Places, KAFB, New Mexico; and

**WHEREAS**, KAFB has determined that the building, through neglect, has deteriorated to such a degree that there is no other feasible alternative but to demolish the structure; and

**WHEREAS**, KAFB has determined that the demolition constitutes an undertaking, as described in Section 106 of the National Historic Preservation Act (16 U. S. C. 470f.4); and

**WHEREAS**, KAFB has determined that the undertaking will have an adverse effect upon a historic property eligible for inclusion on the National Register of Historic places; and

**WHEREAS**, KAFB has consulted with the State Historic Preservation Officer (SHPO) concerning this undertaking; and

**WHEREAS**, KAFB intends to use the provisions of this Memorandum of Agreement to address applicable requirements of Section 106 of the National Historic Preservation Act (NHPA), 16 U. S. C. 470f, and its implementing regulations, 36 C.F.R. Part 800; and

**WHEREAS**, KAFB contacted the Advisory Council on Historic Preservation (ACHP) in this undertaking in a letter dated \_\_\_\_\_; and

**WHEREAS**, to the best of KAFB's knowledge and belief, no human remains, associated or unassociated funerary objects, or objects of cultural patrimony, as defined in the Native American Graves Protection and Repatriation Act (NAGPRA) (25 U.S.C. 3001), are expected to be encountered during the demolition; and

**NOW, THEREFORE**, KAFB and the SHPO agree, upon KAFB's decision to proceed with the demolition, KAFB shall implement the following stipulations to take into account the effects of the undertaking on the historic properties.

**Stipulations**

**KAFB shall ensure that the following measures are carried out:**

**I. Documentation:**

- a. Documentation will be carried out according to the standards of the Historic American Building Survey/Historic American Engineering Record (HABS/HAER) Level II. Select existing drawings will be supplied on Mylar paper.
- b. Digital photographs of the building's exterior and historic photographs of the building will also be provided, where available, on archival paper.

- c. A written history of the buildings shall be prepared and will include a use history of the property. This use history will include a discussion of the building's historical significance and how the structure contributed to the Cold War effort at KAFB.
- d. Demolition activities will commence after the draft drawing and photographs have been produced and reviewed by the SHPO. A final report will be submitted to the SHPO after the demolition phase is completed.
- e. Six (6) Copies of all documentation, including historical and architectural information, will be provided to the New Mexico SHPO. The New Mexico Historic Preservation Division will be the designated repository. Additional copies will be curated in KAFB Environmental Cultural Resources office, the history office, and the Maxwell Museum of Anthropology.

**II. Commencement of Demolition:** Demolition may commence after the SHPO has reviewed the draft drawings and photographs. A final report shall be submitted to the SHPO within six months after the demolition phase is completed.

**III. Duration:** This MOA shall be null and void if its stipulations are not carried out within two (2) years from the date of its execution. At such time, and prior to work continuing on the undertaking, KAFB shall either: (a) execute a MOA pursuant to 36 C.F.R. 800.6 or (b) request, take into account, and respond to the comments of the ACHP under 36 C.F.R. 800.7. Prior to such time, KAFB may consult with the SHPO to reconsider the terms of the MOA and amend it in accordance with the Stipulation VI, Amendments, below.

**IV. Post-Review Discoveries:** If potential historic properties are discovered or unanticipated effects on historic properties are found, KAFB shall stop demolition activities in the vicinity of the property and shall take all reasonable measures to avoid or minimize harm to the property until consultation with the SHPO regarding significance and the effect has been concluded. KAFB shall notify the SHPO at the earliest possible time and consult to develop actions that shall take the effects of the undertaking into account. KAFB shall notify the SHPO of any time constraints and KAFB and SHPO shall mutually agree upon time frames for the consultation. In the event that human remains are encountered during the project, all work shall cease in the area of the discovery until a determination is made that the remains are Native American and following this identification a determination of cultural affiliation is made and the appropriate tribe(s) has been contacted pursuant to the NAGPRA. Work shall resume in the area of discovery only after a human remains treatment plan has been completed by KAFB in conjunction with the affiliated tribes. If the remains are not Native American, KAFB CID shall be notified.

**V. Dispute Resolution:** Should any signatory to this MOA object in writing at any time to any actions proposed or the manner in which the terms of this MOA are implemented, KAFB shall consult with such party to resolve the objection. If KAFB determines in writing that such an objection cannot be resolved, KAFB shall:

- a. Forward all documentation relevant to the dispute, including all proposed resolutions pursuant to 36 CFR 800.7(c)(2) within forty-five (45) days of receiving adequate documentation (36 CFR 800.11). KAFB shall take into account the ACHP's comments in reaching a final decision on the undertaking and provide the ACHP, and all signatories and concurring parties a copy of its decision in writing. The written decision shall contain the rationale for the decision and evidence of consideration of the ACHP's comments, and KAFB shall notify the public and make the record available for public inspection pursuant to regulation (36 CFR 800.7(4)(i-iii)). KAFB shall then proceed according to its final decision.
- b. If the ACHP does not provide its advice regarding the dispute within the forty-five day time period, KAFB may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision KAFB shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the MOA, and provide them and the ACHP with a copy of such written response. The written decision shall contain the rationale for the decision. KAFB shall notify the public and make the record available for public inspection pursuant to regulation (36 CFR 800.7(4)(i-iii)).
- c. KAFB's responsibilities to carry out all other actions subject to the terms of this MOA that are not subject of a dispute remain unchanged.

**VI. Amendments:** This MOA may be amended when such an amendment is agreed to in writing by all signatories. The amendment shall be effective on the date a copy signed by all signatories is filed with the ACHP.

**VII. Termination:**

- a. If any signatory to this MOA determines that its terms cannot be carried out, that party shall immediately consult with the other parties to attempt to develop an amendment per Stipulation VI, above. If within thirty (30) days (or another time period agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the SHPO.
- b. Once the MOA is terminated, and prior to work continuing on the undertaking, KAFB must either: (a) execute the MOA pursuant to 36 CFR 800.6, or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR 800.7, KAFB shall notify the SHPO as to the course of action it will pursue.

Execution and implementation of this MOA by the KAFB and SHPO evidences that KAFB has taken into account the effects of the undertaking on historic properties and afforded the ACHP an opportunity to comment.

**SIGNATORIES:**

**KIRTLAND AIR FORCE BASE:**

**NEW MEXICO STATE HISTORIC  
PRESERVATION OFFICER:**

---

**ROBERT L. MANESS, Colonel, USAF  
Commander**

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**JAN V. BIELLA, RPA  
Deputy SHPO/Acting State Archaeologist**

## **APPENDIX D**

### **Air Quality Emissions Estimates**

**2011 combustion emissions**

Combustion emissions of VOC, NOx, SO<sub>2</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>, CO<sub>2</sub>

Assumptions:

Construction of 6,000 square feet building

Total project area disturbed (ft<sup>2</sup>) = (√ (Building Size (ft<sup>2</sup>)) + 200 ft)<sup>2</sup>

This methodology also assumes all buildings are one story and that each building is square.

Total Disturbed Area: 76,984 ft<sup>2</sup>                      1.77 acres

Construction Duration: 12 months

Annual Construction Activity: 240 days/year    Assumes 12 months, 4 weeks per month, 5 days per week

**Emission Factors Used for Construction Equipment**

References: Guide to Air Quality Assessment, SMAQMD, 2004; and U.S. EPA NONROAD Emission Model. Factors provided are the weighted average U.S. fleet for CY 2007. Assumptions regarding the type and number of the equipment are from the SMAQMD Table 3-1 unless otherwise noted.

**Grading**

Equipment	No. Req'd. <sup>a</sup> per 10 acres	NOx (lb/day)	VOC <sup>b</sup> (lb/day)	CO (lb/day)	SO <sub>2</sub> <sup>c</sup> (lb/day)	PM <sub>10</sub> (lb/day)	PM <sub>2.5</sub> (lb/day)	CO <sub>2</sub> (lb/day)
Bulldozer	1	13.60	0.96	5.50	1.02	0.89	0.87	1456.90
Motor Grader	1	9.69	0.73	3.20	0.80	0.66	0.64	1141.65
Water Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Total per 10 acres of activity	3	41.64	2.58	15.71	0.83	2.55	2.47	4941.53

**Building Construction**

Equipment	No. Req'd. <sup>a</sup> per 10 acres	NOx (lb/day)	VOC <sup>b</sup> (lb/day)	CO (lb/day)	SO <sub>2</sub> <sup>c</sup> (lb/day)	PM <sub>10</sub> (lb/day)	PM <sub>2.5</sub> (lb/day)	CO <sub>2</sub> (lb/day)
Stationary								
Generator Set	1	2.38	0.32	1.18	0.15	0.23	0.22	213.06
Industrial Saw	1	2.62	0.32	1.97	0.20	0.32	0.31	291.92
Welder	1	1.12	0.38	1.50	0.08	0.23	0.22	112.39

Mobile (non-road)								
Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Forklift	1	5.34	0.56	3.33	0.40	0.55	0.54	572.24
Crane	1	9.57	0.66	2.39	0.65	0.50	0.49	931.93
Total per 10 acres of activity	6	39.40	3.13	17.38	3.12	2.83	2.74	4464.51

### Architectural Coatings

Equipment	No. Reqd. <sup>a</sup> per 10 acres	NOx (lb/day)	VOC <sup>b</sup> (lb/day)	CO (lb/day)	SO <sub>2</sub> <sup>c</sup> (lb/day)	PM <sub>10</sub> (lb/day)	PM <sub>2.5</sub> (lb/day)	CO <sub>2</sub> (lb/day)
Air Compressor	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77
Total per 10 acres of activity	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77

- a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.
- b) The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purpose of this worksheet ROG = VOC. The NONROAD model contains emission factors for total HC and for VOC. The factors used here are the VOC factors.
- c) The NONROAD emission factors assume the average fuel burned in nonroad trucks is 1100 ppm sulfur. Trucks that would be used for the Proposed Action will all be highway grade diesel fuel which cannot exceed 500 ppm sulfur. These estimates therefore over-estimate SO<sub>2</sub> emissions by more than a factor of two.
- d) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

### Project-Specific Emission Factor Summary

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)						
		NO <sub>x</sub>	VOC	CO	SO <sub>2</sub> **	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
Grading Equipment	1	416.4	25.8	157.1	8.3	25.5	24.7	49415.3
Building Construction Equipment	1	45.37	2.61	18.58	0.91	2.78	2.69	5623.96
Air Compressor for Architectural Coatings	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77

\*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.

\*\*Emission factor is from the evaporation of solvents during painting per "Air Quality Thresholds Significance", SMAQMD, 1994

Example: SMAQMD Emission Factor for Grading Equipment NO<sub>x</sub> = (Total Grading NO<sub>x</sub> per 10 acre) \* (Equipment Multiplier)

Summary of Input Parameters

Activity	Total Area (ft <sup>2</sup> )	Total Area (acres)	Total Days
Grading	76,984	1.77	2
Building Construction	76,984	1.77	240
Architectural Coating	6,000	0.14	2

NOTE: The “Total Days” estimated for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19<sup>th</sup> Edition, for ‘Asphaltic Concrete Pavement, Lots, and Driveways – 6” stone base’, which provides an estimate of square feet paved per day. There is also an estimate for ‘Plain Concrete Pavement’; however the estimate for asphalt is used because it is more conservative.

**Total Project Emissions by Activity**

	NO <sub>x</sub>	VOC	CO	SO <sub>2</sub> **	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
Grading Equipment	27,898.80	1,728.60	10,525.70	556.10	1,708.50	1,654.90	3,310,825.10
Building Construction Equipment	9,456.00	751.20	4,171.20	748.80	679.20	657.60	1,071,482.40
Architectural Coating	7.14	0.74	3.14	0.50	0.62	0.60	719.54
<b>Total Emissions (lb)</b>	<b>9,546.42</b>	<b>757.10</b>	<b>4,205.76</b>	<b>750.96</b>	<b>684.92</b>	<b>663.14</b>	<b>1,082,085.00</b>

**Results: Total Project Annual Emission Rates:**

	NO <sub>x</sub>	VOC	CO	SO <sub>2</sub> **	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
<b>Total Emissions (lb)</b>	9,546.42	757.10	4,205.76	750.96	684.92	663.14	1,082,085.00
<b>Total Emissions (tons)</b>	4.77	0.38	2.10	0.38	0.34	0.33	541.04

**2011 Construction Commuter Emissions**

Emissions from construction workers commuting to the job site are estimated in this spreadsheet.

Emission Estimation Method: United States Air Force (USAF) Institute for Environment, Safety and Occupational Health Risk Analysis (IERA) Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations (Revised December 2003).

**Assumptions:**

Passenger vehicle emission factors for scenario year 2010 are used.

Assume up to 10 workers would be required at the site.

Passenger vehicle model year 2000 is used.

The average roundtrip commute for a construction worker = 30 miles  
 Number of construction days = 240 days  
 Number of construction workers (daily) = 10 people  
 Riders per vehicle = 1 person  
 Number of vehicles (daily) = 10 vehicles

**Average On-Road Vehicle Emission Factors (grams/mile)**

Vehicle Type Category	NO <sub>x</sub>	VOC	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
LDGV	2.10	2.90	33.10	0.072	0.71	0.20	391.97
LDGT1	2.20	3.10	35.20	0.096	1.08	0.29	526.04
LDGT2	2.50	3.40	38.60	0.098	2.58	0.66	535.24
HDGV	3.40	2.90	20.50	0.154	5.51	1.42	843.56
LDDV	1.20	0.60	1.70	0.116	0.80	0.28	373.70
LDDT	1.50	1.00	1.90	0.157	1.59	0.48	505.90
HDDV	6.50	2.00	11.80	0.512	7.73	2.01	1645.60
MC	0.90	5.70	22.50	0.032	0.08	0.03	177.48

**Notes:**

Emission factors for all pollutants except CO<sub>2</sub> are from USAF IERA 2003.

Emission factors for PM, PM<sub>10</sub>, SO<sub>x</sub> are from Table 4-50 (USAF IERA 2003).

Emission factors for VOC, CO, and NO<sub>x</sub> are from Tables 4-2 through 4-49 for the 2010 calendar year, 2000 model year (USAF IERA 2003).

It is assumed that the average vehicle will produce 19.564 pounds of CO<sub>2</sub> per gallon of gas used and 22.384 pounds of CO<sub>2</sub> per gallon

of diesel used (<http://www.eia.doe.gov/oiarf/1605/coefficients.html>).

Using the default fuel economy for the vehicle type categories in USAF IERA Table 4-51, the CO<sub>2</sub> emission factor was estimated.

HDDV CO<sub>2</sub> emission factor = 22.384 lbs CO<sub>2</sub>/gallon diesel \* gallon diesel/6.17 miles \* 453.6 g/lb = 1645.60 g/mile

**On-Road Vehicle Emissions (Annual)**

Vehicle Type Category	NO <sub>x</sub>	VOC	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
LDGV	229.67	317.16	3619.98	7.87	77.65	21.87	42867.97
LDGT1	39.81	56.10	636.95	1.74	19.54	5.25	9518.75
LDGT2	33.73	45.87	520.79	1.32	34.81	8.90	7221.45
HDGV	8.10	6.90	48.81	0.37	13.12	3.38	2008.47
LDDV	7.43	3.71	10.52	0.72	4.95	1.73	2313.37
LDDT	4.52	3.02	5.73	0.47	4.80	1.45	1525.73
HDDV	29.92	9.21	54.32	2.36	35.58	9.25	7575.01
MC	1.43	9.05	35.71	0.05	0.13	0.05	281.72
Total (lbs)	354.60	451.02	4932.83	14.90	190.58	51.89	73312.47
Total (tons)	0.18	0.23	2.47	0.01	0.10	0.03	36.66

Example Calculation: NO<sub>x</sub> emissions (lbs) = 20 vehicles \* percent of vehicle mix /100 \* NO<sub>x</sub> emission factor (g/mile) \* 50 miles/day \* number of construction days \* lb/453.6 g

**Default Fuel Economies for On-Road Vehicles**

Vehicle Type Category	Default Fuel Economy (mpg)
LDGV	22.64
LDGT1	16.87
LDGT2	16.58
HDGV	10.52
LDDV	27.17
LDDT	20.07
HDDV	6.17
MC	50

**Notes:**

Values from Table 4-51 (USAF IERA 2003).

**Average On-Road Vehicle Mix**

Vehicle Type Category	Average On-Road Vehicle Mix (%)
LDGV	68.9
LDGT1	11.4
LDGT2	8.5
HDGV	1.5
LDDV	3.9
LDDT	1.9
HDDV	2.9
MC	1

**Notes:**

Vehicle mix is from Table 6-1 (USAF IERA 2003).

# USAF Air Conformity Applicability Model

## Emissions Summary Information

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

## Emissions Summary Report For 2011

SOURCE CATEGORY	Emissions, Ton/Year					
	CO	NOX	SO2	VOC	PM10	PM2.5
<b>Area Sources</b>						
Miscellaneous Area Sources	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase I Const. - Grading Ops.	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase II Const. - Arch. Ctgs.	0.00	0.00	0.00	0.33	0.00	0.00
Other Phase II Const. - Asphalt Paving	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase II Const. - Workers Trips	0.03	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.03</b>	<b>0.00</b>	<b>0.00</b>	<b>0.34</b>	<b>0.00</b>	<b>0.00</b>
<b>Mobile Sources</b>						
Mobile - Base Employee Commute VMT	0.00	0.00	0.00	0.00	0.00	0.00
Mobile - On-Road GOV VMT	0.01	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Point Sources</b>						
Residential Space Heating	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Grand Total 2011</b>	<b>0.05</b>	<b>0.00</b>	<b>0.00</b>	<b>0.34</b>	<b>0.00</b>	<b>0.00</b>

Note: - Non-Residential Architectural Coating emissions are combined across Aircraft and Non-Aircraft activities.  
 - Emissions displayed as fixed decimal numbers. Totals calculated using full numbers.

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**2012 combustion emissions**

Combustion emissions of VOC, NOx, SO<sub>2</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>, CO<sub>2</sub>

Assumptions:

Construction of 20,000 square feet building

$$\text{Total project area disturbed (ft}^2\text{)} = (\sqrt{\text{Building Size (ft}^2\text{)} + 200 \text{ ft}})^2$$

This methodology also assumes all buildings are one story and that each building is square.

Total Disturbed Area: 116,559 ft<sup>2</sup>                      2.68 acres

Construction Duration: 12 months

Annual Construction Activity: 240 days/year    Assumes 12 months, 4 weeks per month, 5 days per week

**Emission Factors Used for Construction Equipment**

References: Guide to Air Quality Assessment, SMAQMD, 2004; and U.S. EPA NONROAD Emission Model. Factors provided are the weighted average U.S. fleet for CY 2007. Assumptions regarding the type and number of the equipment are from the SMAQMD Table 3-1 unless otherwise noted.

**Grading**

Equipment	No. Req'd. <sup>a</sup> per 10 acres	NOx (lb/day)	VOC <sup>b</sup> (lb/day)	CO (lb/day)	SO <sub>2</sub> <sup>c</sup> (lb/day)	PM <sub>10</sub> (lb/day)	PM <sub>2.5</sub> (lb/day)	CO <sub>2</sub> (lb/day)
Bulldozer	1	13.60	0.96	5.50	1.02	0.89	0.87	1456.90
Motor Grader	1	9.69	0.73	3.20	0.80	0.66	0.64	1141.65
Water Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Total per 10 acres of activity	3	41.64	2.58	15.71	0.83	2.55	2.47	4941.53

**Building Construction**

Equipment	No. Req'd. <sup>a</sup> per 10 acres	NOx (lb/day)	VOC <sup>b</sup> (lb/day)	CO (lb/day)	SO <sub>2</sub> <sup>c</sup> (lb/day)	PM <sub>10</sub> (lb/day)	PM <sub>2.5</sub> (lb/day)	CO <sub>2</sub> (lb/day)
Stationary								
Generator Set	1	2.38	0.32	1.18	0.15	0.23	0.22	213.06
Industrial Saw	1	2.62	0.32	1.97	0.20	0.32	0.31	291.92
Welder	1	1.12	0.38	1.50	0.08	0.23	0.22	112.39

Mobile (non-road)								
Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Forklift	1	5.34	0.56	3.33	0.40	0.55	0.54	572.24
Crane	1	9.57	0.66	2.39	0.65	0.50	0.49	931.93
Total per 10 acres of activity	6	39.40	3.13	17.38	3.12	2.83	2.74	4464.51

#### Architectural Coatings

Equipment	No. Reqd. <sup>a</sup> per 10 acres	NOx (lb/day)	VOC <sup>b</sup> (lb/day)	CO (lb/day)	SO <sub>2</sub> <sup>c</sup> (lb/day)	PM <sub>10</sub> (lb/day)	PM <sub>2.5</sub> (lb/day)	CO <sub>2</sub> (lb/day)
Air Compressor	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77
Total per 10 acres of activity	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77

- a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.
- b) The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purpose of this worksheet ROG = VOC. The NONROAD model contains emission factors for total HC and for VOC. The factors used here are the VOC factors.
- c) The NONROAD emission factors assume the average fuel burned in nonroad trucks is 1100 ppm sulfur. Trucks that would be used for the Proposed Action will all be highway grade diesel fuel which cannot exceed 500 ppm sulfur. These estimates therefore over-estimate SO<sub>2</sub> emissions by more than a factor of two.
- d) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

#### Project-Specific Emission Factor Summary

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)						
		NO <sub>x</sub>	VOC	CO	SO <sub>2</sub> **	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
Grading Equipment	1	416.4	25.8	157.1	8.3	25.5	24.7	49415.3
Building Construction Equipment	1	45.37	2.61	18.58	0.91	2.78	2.69	5623.96
Air Compressor for Architectural Coatings	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77

\*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.

\*\*Emission factor is from the evaporation of solvents during painting per "Air Quality Thresholds Significance", SMAQMD, 1994

Example: SMAQMD Emission Factor for Grading Equipment NO<sub>x</sub> = (Total Grading NO<sub>x</sub> per 10 acre) \* (Equipment Multiplier)

Summary of Input Parameters

Activity	Total Area (ft <sup>2</sup> )	Total Area (acres)	Total Days
Grading	116,569	2.68	2
Building Construction	116,659	2.68	240
Architectural Coating	20,000	0.46	2

NOTE: The “Total Days” estimated for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19<sup>th</sup> Edition, for ‘Asphaltic Concrete Pavement, Lots, and Driveways – 6” stone base’, which provides an estimate of square feet paved per day. There is also an estimate for ‘Plain Concrete Pavement’; however the estimate for asphalt is used because it is more conservative.

**Total Project Emissions by Activity**

	NO <sub>x</sub>	VOC	CO	SO <sub>2</sub> **	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
Grading Equipment	83.28	5.16	31.42	1.66	5.10	4.94	9,883.06
Building Construction Equipment	9,456.00	751.20	4,171.20	748.80	679.20	657.60	1,071,482.40
Architectural Coating	7.14	0.74	3.14	0.50	0.62	0.60	719.54
<b>Total Emissions (lb)</b>	<b>9,546.42</b>	<b>757.10</b>	<b>4,205.76</b>	<b>750.96</b>	<b>684.92</b>	<b>663.14</b>	<b>1,082,085.00</b>

**Results: Total Project Annual Emission Rates:**

	NO <sub>x</sub>	VOC	CO	SO <sub>2</sub> **	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
<b>Total Emissions (lb)</b>	9,546.42	757.10	4,205.76	750.96	684.92	663.14	1,082,085.00
<b>Total Emissions (tons)</b>	4.77	0.38	2.10	0.38	0.34	0.33	541.04

## 2012 Construction Commuter Emissions

Emissions from construction workers commuting to the job site are estimated in this spreadsheet.

Emission Estimation Method: United States Air Force (USAF) Institute for Environment, Safety and Occupational Health Risk Analysis (IERA) Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations (Revised December 2003).

### Assumptions:

Passenger vehicle emission factors for scenario year 2010 are used.

Assume up to 10 workers would be required at the site.

Passenger vehicle model year 2000 is used.

The average roundtrip commute for a construction worker =	30 miles
Number of construction days =	240 days
Number of construction workers (daily) =	10 people
Riders per vehicle =	1 person
Number of vehicles (daily) =	10 vehicles

### Average On-Road Vehicle Emission Factors (grams/mile)

Vehicle Type Category	NO <sub>x</sub>	VOC	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>	
LDGV	2.10	2.90	33.10	0.072	0.71	0.20	391.97	Light Duty Gasoline Vehicles
LDGT1	2.20	3.10	35.20	0.096	1.08	0.29	526.04	Light SUVs and Pickups
LDGT2	2.50	3.40	38.60	0.098	2.58	0.66	535.24	Heavy SUVs and Pickups
HDGV	3.40	2.90	20.50	0.154	5.51	1.42	843.56	Heavy Duty Gasoline Vehicles
LDDV	1.20	0.60	1.70	0.116	0.80	0.28	373.70	Light Duty Diesel Vehicles
LDDT	1.50	1.00	1.90	0.157	1.59	0.48	505.90	Light Duty Diesel Trucks
HDDV	6.50	2.00	11.80	0.512	7.73	2.01	1645.60	Heavy Duty Diesel Vehicles
MC	0.90	5.70	22.50	0.032	0.08	0.03	177.48	Motorcycles

### Notes:

Emission factors for all pollutants except CO<sub>2</sub> are from USAF IERA 2003.

Emission factors for PM, PM<sub>10</sub>, SO<sub>x</sub> are from Table 4-50 (USAF IERA 2003).

Emission factors for VOC, CO, and NO<sub>x</sub> are from Tables 4-2 through 4-49 for the 2010 calendar year, 2000 model year (USAF IERA 2003).

It is assumed that the average vehicle will produce 19.564 pounds of CO<sub>2</sub> per gallon of gas used and 22.384 pounds of CO<sub>2</sub> per gallon

of diesel used (<http://www.eia.doe.gov/oiarf/1605/coefficients.html>).

Using the default fuel economy for the vehicle type categories in USAF IERA Table 4-51, the CO<sub>2</sub> emission factor was estimated.

HDDV CO<sub>2</sub> emission factor = 22.384 lbs CO<sub>2</sub>/gallon diesel \* gallon diesel/6.17 miles \* 453.6 g/lb = 1645.60 g/mile

### On-Road Vehicle Emissions (Annual)

Vehicle Type Category	NO <sub>x</sub>	VOC	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
LDGV	229.67	317.16	3619.98	7.87	77.65	21.87	42867.97
LDGT1	39.81	56.10	636.95	1.74	19.54	5.25	9518.75
LDGT2	33.73	45.87	520.79	1.32	34.81	8.90	7221.45
HDGV	8.10	6.90	48.81	0.37	13.12	3.38	2008.47
LDDV	7.43	3.71	10.52	0.72	4.95	1.73	2313.37
LDDT	4.52	3.02	5.73	0.47	4.80	1.45	1525.73
HDDV	29.92	9.21	54.32	2.36	35.58	9.25	7575.01
MC	1.43	9.05	35.71	0.05	0.13	0.05	281.72
Total (lbs)	354.60	451.02	4932.83	14.90	190.58	51.89	73312.47
Total (tons)	0.18	0.23	2.47	0.01	0.10	0.03	36.66

Example Calculation: NO<sub>x</sub> emissions (lbs) = 20 vehicles \* percent of vehicle mix /100 \* NO<sub>x</sub> emission factor (g/mile) \* 50 miles/day \* number of construction days \* lb/453.6 g

### Default Fuel Economies for On-Road Vehicles

Vehicle Type Category	Default Fuel Economy (mpg)
LDGV	22.64
LDGT1	16.87
LDGT2	16.58
HDGV	10.52
LDDV	27.17
LDDT	20.07
HDDV	6.17
MC	50

### Notes:

Values from Table 4-51 (USAF IERA 2003).

### Average On-Road Vehicle Mix

Vehicle Type Category	Average On-Road Vehicle Mix (%)
LDGV	68.9
LDGT1	11.4
LDGT2	8.5
HDGV	1.5
LDDV	3.9
LDDT	1.9
HDDV	2.9
MC	1

### Notes:

Vehicle mix is from Table 6-1 (USAF IERA 2003).

# USAF Air Conformity Applicability Model

## Emissions Summary Information

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

### Emissions Summary Report For 2012

SOURCE CATEGORY	Emissions, Ton/Year					
	CO	NOX	SO2	VOC	PM10	PM2.5
<b>Area Sources</b>						
Miscellaneous Area Sources	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase I Const. - Grading Ops.	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase II Const. - Arch. Ctgs.	0.00	0.00	0.00	1.91	0.00	0.00
Other Phase II Const. - Asphalt Paving	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase II Const. - Workers Trips	0.20	0.01	0.00	0.01	0.00	0.00
<b>Total</b>	<b>0.20</b>	<b>0.01</b>	<b>0.00</b>	<b>1.92</b>	<b>0.00</b>	<b>0.00</b>
<b>Mobile Sources</b>						
Mobile - Base Employee Commute VMT	0.01	0.00	0.00	0.00	0.00	0.00
Mobile - On-Road GOV VMT	0.03	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.04</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Point Sources</b>						
Other Const. - Facility Heating	0.20	0.45	0.00	0.01	0.02	0.00
Residential Space Heating	0.00	0.01	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.20</b>	<b>0.46</b>	<b>0.00</b>	<b>0.01</b>	<b>0.02</b>	<b>0.00</b>
<b>Grand Total 2012</b>	<b>0.44</b>	<b>0.47</b>	<b>0.00</b>	<b>1.93</b>	<b>0.02</b>	<b>0.00</b>

Note: - Non-Residential Architectural Coating emissions are combined across Aircraft and Non-Aircraft activities.  
 - Emissions displayed as fixed decimal numbers. Totals calculated using full numbers.

**2013 combustion emissions**

Combustion emissions of VOC, NOx, SO<sub>2</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>, CO<sub>2</sub>

Assumptions:

Construction of 14,000 square feet building

Total project area disturbed (ft<sup>2</sup>) = (√ (Building Size (ft<sup>2</sup>)) + 200 ft)<sup>2</sup>

This methodology also assumes all buildings are one story and that each building is square.

Total Disturbed Area: 101,329 ft<sup>2</sup>                      2.33 acres

Construction Duration: 12 months

Annual Construction Activity: 240 days/year    Assumes 12 months, 4 weeks per month, 5 days per week

**Emission Factors Used for Construction Equipment**

References: Guide to Air Quality Assessment, SMAQMD, 2004; and U.S. EPA NONROAD Emission Model. Factors provided are the weighted average U.S. fleet for CY 2007. Assumptions regarding the type and number of the equipment are from the SMAQMD Table 3-1 unless otherwise noted.

**Grading**

Equipment	No. Req'd. <sup>a</sup> per 10 acres	NOx (lb/day)	VOC <sup>b</sup> (lb/day)	CO (lb/day)	SO <sub>2</sub> <sup>c</sup> (lb/day)	PM <sub>10</sub> (lb/day)	PM <sub>2.5</sub> (lb/day)	CO <sub>2</sub> (lb/day)
Bulldozer	1	13.60	0.96	5.50	1.02	0.89	0.87	1456.90
Motor Grader	1	9.69	0.73	3.20	0.80	0.66	0.64	1141.65
Water Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Total per 10 acres of activity	3	41.64	2.58	15.71	0.83	2.55	2.47	4941.53

**Building Construction**

Equipment	No. Req'd. <sup>a</sup> per 10 acres	NOx (lb/day)	VOC <sup>b</sup> (lb/day)	CO (lb/day)	SO <sub>2</sub> <sup>c</sup> (lb/day)	PM <sub>10</sub> (lb/day)	PM <sub>2.5</sub> (lb/day)	CO <sub>2</sub> (lb/day)
Stationary								
Generator Set	1	2.38	0.32	1.18	0.15	0.23	0.22	213.06
Industrial Saw	1	2.62	0.32	1.97	0.20	0.32	0.31	291.92
Welder	1	1.12	0.38	1.50	0.08	0.23	0.22	112.39

Mobile (non-road)								
Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Forklift	1	5.34	0.56	3.33	0.40	0.55	0.54	572.24
Crane	1	9.57	0.66	2.39	0.65	0.50	0.49	931.93
Total per 10 acres of activity	6	39.40	3.13	17.38	3.12	2.83	2.74	4464.51

#### Architectural Coatings

Equipment	No. Reqd. <sup>a</sup> per 10 acres	NOx (lb/day)	VOC <sup>b</sup> (lb/day)	CO (lb/day)	SO <sub>2</sub> <sup>c</sup> (lb/day)	PM <sub>10</sub> (lb/day)	PM <sub>2.5</sub> (lb/day)	CO <sub>2</sub> (lb/day)
Air Compressor	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77
Total per 10 acres of activity	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77

- a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.
- b) The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purpose of this worksheet ROG = VOC. The NONROAD model contains emission factors for total HC and for VOC. The factors used here are the VOC factors.
- c) The NONROAD emission factors assume the average fuel burned in nonroad trucks is 1100 ppm sulfur. Trucks that would be used for the Proposed Action will all be highway grade diesel fuel which cannot exceed 500 ppm sulfur. These estimates therefore over-estimate SO<sub>2</sub> emissions by more than a factor of two.
- d) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

#### Project-Specific Emission Factor Summary

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)						
		NO <sub>x</sub>	VOC	CO	SO <sub>2</sub> **	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
Grading Equipment	1	416.4	25.8	157.1	8.3	25.5	24.7	49415.3
Building Construction Equipment	1	45.37	2.61	18.58	0.91	2.78	2.69	5623.96
Air Compressor for Architectural Coatings	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77

\*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.

\*\*Emission factor is from the evaporation of solvents during painting per "Air Quality Thresholds Significance", SMAQMD, 1994

Example: SMAQMD Emission Factor for Grading Equipment NO<sub>x</sub> = (Total Grading NO<sub>x</sub> per 10 acre) \* (Equipment Multiplier)

Summary of Input Parameters

Activity	Total Area (ft <sup>2</sup> )	Total Area (acres)	Total Days
Grading	101,329	2.33	2
Building Construction	101,329	2.33	240
Architectural Coating	14,000	0.32	2

NOTE: The “Total Days” estimated for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19<sup>th</sup> Edition, for ‘Asphaltic Concrete Pavement, Lots, and Driveways – 6” stone base’, which provides an estimate of square feet paved per day. There is also an estimate for ‘Plain Concrete Pavement’; however the estimate for asphalt is used because it is more conservative.

**Total Project Emissions by Activity**

	NO <sub>x</sub>	VOC	CO	SO <sub>2</sub> **	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
Grading Equipment	83.28	5.16	31.42	1.66	5.10	4.94	9,883.06
Building Construction Equipment	9,456.00	751.20	4,171.20	748.80	679.20	657.60	1,071,482.40
Architectural Coating	7.14	0.74	3.14	0.50	0.62	0.60	719.54
<b>Total Emissions (lb)</b>	<b>9,546.42</b>	<b>757.10</b>	<b>4,205.76</b>	<b>750.96</b>	<b>684.92</b>	<b>663.14</b>	<b>1,082,085.00</b>

**Results: Total Project Annual Emission Rates:**

	NO <sub>x</sub>	VOC	CO	SO <sub>2</sub> **	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
<b>Total Emissions (lb)</b>	9,546.42	757.10	4,205.76	750.96	684.92	663.14	1,082,085.00
<b>Total Emissions (tons)</b>	4.77	0.38	2.10	0.38	0.34	0.33	541.04

**2013 Construction Commuter Emissions**

Emissions from construction workers commuting to the job site are estimated in this spreadsheet.

Emission Estimation Method: United States Air Force (USAF) Institute for Environment, Safety and Occupational Health Risk Analysis (IERA) Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations (Revised December 2003).

**Assumptions:**

Passenger vehicle emission factors for scenario year 2010 are used.

Assume up to 10 workers would be required at the site.

Passenger vehicle model year 2000 is used.

The average roundtrip commute for a construction worker = 30 miles  
 Number of construction days = 240 days  
 Number of construction workers (daily) = 10 people  
 Riders per vehicle = 1 person  
 Number of vehicles (daily) = 10 vehicles

**Average On-Road Vehicle Emission Factors (grams/mile)**

Vehicle Type Category	NO <sub>x</sub>	VOC	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>	
LDGV	2.10	2.90	33.10	0.072	0.71	0.20	391.97	Light Duty Gasoline Vehicles
LDGT1	2.20	3.10	35.20	0.096	1.08	0.29	526.04	Light SUVs and Pickups
LDGT2	2.50	3.40	38.60	0.098	2.58	0.66	535.24	Heavy SUVs and Pickups
HDGV	3.40	2.90	20.50	0.154	5.51	1.42	843.56	Heavy Duty Gasoline Vehicles
LDDV	1.20	0.60	1.70	0.116	0.80	0.28	373.70	Light Duty Diesel Vehicles
LDDT	1.50	1.00	1.90	0.157	1.59	0.48	505.90	Light Duty Diesel Trucks
HDDV	6.50	2.00	11.80	0.512	7.73	2.01	1645.60	Heavy Duty Diesel Vehicles
MC	0.90	5.70	22.50	0.032	0.08	0.03	177.48	Motorcycles

**Notes:**

Emission factors for all pollutants except CO<sub>2</sub> are from USAF IERA 2003.  
 Emission factors for PM, PM<sub>10</sub>, SO<sub>x</sub> are from Table 4-50 (USAF IERA 2003).  
 Emission factors for VOC, CO, and NO<sub>x</sub> are from Tables 4-2 through 4-49 for the 2010 calendar year, 2000 model year (USAF IERA 2003).  
 It is assumed that the average vehicle will produce 19.564 pounds of CO<sub>2</sub> per gallon of gas used and 22.384 pounds of CO<sub>2</sub> per gallon of diesel used (<http://www.eia.doe.gov/oi/aff/1605/coefficients.html>).  
 Using the default fuel economy for the vehicle type categories in USAF IERA Table 4-51, the CO<sub>2</sub> emission factor was estimated.  
 HDDV CO<sub>2</sub> emission factor = 22.384 lbs CO<sub>2</sub>/gallon diesel \* gallon diesel/6.17 miles \* 453.6 g/lb = 1645.60 g/mile

**On-Road Vehicle Emissions (Annual)**

Vehicle Type Category	NO <sub>x</sub>	VOC	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
LDGV	229.67	317.16	3619.98	7.87	77.65	21.87	42867.97
LDGT1	39.81	56.10	636.95	1.74	19.54	5.25	9518.75
LDGT2	33.73	45.87	520.79	1.32	34.81	8.90	7221.45
HDGV	8.10	6.90	48.81	0.37	13.12	3.38	2008.47
LDDV	7.43	3.71	10.52	0.72	4.95	1.73	2313.37
LDDT	4.52	3.02	5.73	0.47	4.80	1.45	1525.73
HDDV	29.92	9.21	54.32	2.36	35.58	9.25	7575.01
MC	1.43	9.05	35.71	0.05	0.13	0.05	281.72
Total (lbs)	354.60	451.02	4932.83	14.90	190.58	51.89	73312.47
Total (tons)	0.18	0.23	2.47	0.01	0.10	0.03	36.66

Example Calculation: NO<sub>x</sub> emissions (lbs) = 20 vehicles \* percent of vehicle mix /100 \* NO<sub>x</sub> emission factor (g/mile) \* 50 miles/day \* number of construction days \* lb/453.6 g

**Default Fuel Economies for On-Road Vehicles**

Vehicle Type Category	Default Fuel Economy (mpg)
LDGV	22.64
LDGT1	16.87
LDGT2	16.58
HDGV	10.52
LDDV	27.17
LDDT	20.07
HDDV	6.17
MC	50

**Notes:**

Values from Table 4-51 (USAF IERA 2003).

**Average On-Road Vehicle Mix**

Vehicle Type Category	Average On-Road Vehicle Mix (%)
LDGV	68.9
LDGT1	11.4
LDGT2	8.5
HDGV	1.5
LDDV	3.9
LDDT	1.9
HDDV	2.9
MC	1

**Notes:**

Vehicle mix is from Table 6-1 (USAF IERA 2003).

# USAF Air Conformity Applicability Model

## Emissions Summary Information

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

## Emissions Summary Report For 2013

SOURCE CATEGORY	Emissions, Ton/Year					
	CO	NOX	SO2	VOC	PM10	PM2.5
<b>Area Sources</b>						
Miscellaneous Area Sources	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase I Const. - Grading Ops.	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase II Const. - Arch. Ctgs.	0.00	0.00	0.00	1.17	0.00	0.00
Other Phase II Const. - Asphalt Paving	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase II Const. - Workers Trips	0.12	0.01	0.00	0.01	0.00	0.00
<b>Total</b>	<b>0.12</b>	<b>0.01</b>	<b>0.00</b>	<b>1.18</b>	<b>0.00</b>	<b>0.00</b>
<b>Mobile Sources</b>						
Mobile - Base Employee Commute VMT	0.01	0.00	0.00	0.00	0.00	0.00
Mobile - On-Road GOV VMT	0.05	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.06</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Point Sources</b>						
Other Const. - Facility Heating	0.65	1.47	0.00	0.04	0.06	0.00
Residential Space Heating	0.00	0.01	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.65</b>	<b>1.48</b>	<b>0.00</b>	<b>0.04</b>	<b>0.06</b>	<b>0.00</b>
<b>Grand Total 2013</b>	<b>0.84</b>	<b>1.49</b>	<b>0.00</b>	<b>1.23</b>	<b>0.06</b>	<b>0.00</b>

Note: - Non-Residential Architectural Coating emissions are combined across Aircraft and Non-Aircraft activities.  
 - Emissions displayed as fixed decimal numbers. Totals calculated using full numbers.

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**2014 combustion emissions**

Combustion emissions of VOC, NOx, SO<sub>2</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>, CO<sub>2</sub>

Assumptions:

Construction of 2 shot pads with a 100 ft diameter

Total Disturbed Area: 15,708 ft<sup>2</sup>                      0.36 acres

Construction Duration: 12 months

Annual Construction Activity: 240 days/year    Assumes 12 months, 4 weeks per month, 5 days per week

**Emission Factors Used for Construction Equipment**

References: Guide to Air Quality Assessment, SMAQMD, 2004; and U.S. EPA NONROAD Emission Model. Factors provided are the weighted average U.S. fleet for CY 2007. Assumptions regarding the type and number of the equipment are from the SMAQMD Table 3-1 unless otherwise noted.

**Grading**

Equipment	No. Req'd. <sup>a</sup> per 10 acres	NOx (lb/day)	VOC <sup>b</sup> (lb/day)	CO (lb/day)	SO <sub>2</sub> <sup>c</sup> (lb/day)	PM <sub>10</sub> (lb/day)	PM <sub>2.5</sub> (lb/day)	CO <sub>2</sub> (lb/day)
Bulldozer	1	13.60	0.96	5.50	1.02	0.89	0.87	1456.90
Motor Grader	1	9.69	0.73	3.20	0.80	0.66	0.64	1141.65
Water Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
<b>Total per 10 acres of activity</b>	<b>3</b>	<b>41.64</b>	<b>2.58</b>	<b>15.71</b>	<b>0.83</b>	<b>2.55</b>	<b>2.47</b>	<b>4941.53</b>

**Building Construction**

Equipment	No. Req'd. <sup>a</sup> per 10 acres	NOx (lb/day)	VOC <sup>b</sup> (lb/day)	CO (lb/day)	SO <sub>2</sub> <sup>c</sup> (lb/day)	PM <sub>10</sub> (lb/day)	PM <sub>2.5</sub> (lb/day)	CO <sub>2</sub> (lb/day)
Stationary								
Generator Set	1	2.38	0.32	1.18	0.15	0.23	0.22	213.06
Industrial Saw	1	2.62	0.32	1.97	0.20	0.32	0.31	291.92
Welder	1	1.12	0.38	1.50	0.08	0.23	0.22	112.39
Mobile (non-road)								
Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Forklift	1	5.34	0.56	3.33	0.40	0.55	0.54	572.24

Crane	1	9.57	0.66	2.39	0.65	0.50	0.49	931.93
Total per 10 acres of activity	6	39.40	3.13	17.38	3.12	2.83	2.74	4464.51

- a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.
- b) The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purpose of this worksheet ROG = VOC. The NONROAD model contains emission factors for total HC and for VOC. The factors used here are the VOC factors.
- c) The NONROAD emission factors assume the average fuel burned in nonroad trucks is 1100 ppm sulfur. Trucks that would be used for the Proposed Action will all be highway grade diesel fuel which cannot exceed 500 ppm sulfur. These estimates therefore over-estimate SO<sub>2</sub> emissions by more than a factor of two.
- d) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

#### Project-Specific Emission Factor Summary

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)						
		NO <sub>x</sub>	VOC	CO	SO <sub>2</sub> **	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
Grading Equipment	1	416.4	25.8	157.1	8.3	25.5	24.7	49415.3
Building Construction Equipment	1	45.37	2.61	18.58	0.91	2.78	2.69	5623.96

\*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.

\*\*Emission factor is from the evaporation of solvents during painting per "Air Quality Thresholds Significance", SMAQMD, 1994

Example: SMAQMD Emission Factor for Grading Equipment NO<sub>x</sub> = (Total Grading NO<sub>x</sub> per 10 acre) \* (Equipment Multiplier)

#### Summary of Input Parameters

Activity	Total Area (ft <sup>2</sup> )	Total Area (acres)	Total Days
Grading	15,708	0.36	1
Building Construction	15,708	0.36	240

NOTE: The "Total Days" estimated for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19<sup>th</sup> Edition, for 'Asphaltic Concrete Pavement, Lots, and Driveways – 6" stone base', which provides an estimate of square feet paved per day. There is also an estimate for 'Plain Concrete Pavement'; however the estimate for asphalt is used because it is more conservative.

**Total Project Emissions by Activity**

	NO <sub>x</sub>	VOC	CO	SO <sub>2</sub> **	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
Grading Equipment	41.64	2.58	15.71	0.83	2.55	2.47	4,941.53
Building Construction Equipment	9,456.00	751.20	4,171.20	748.80	679.20	657.60	1,071,482.40
<b>Total Emissions (lb)</b>	<b>9,497.64</b>	<b>753.78</b>	<b>4,186.91</b>	<b>749.63</b>	<b>681.75</b>	<b>660.07</b>	<b>1,076,423.93</b>

**Results: Total Project Annual Emission Rates:**

	NO <sub>x</sub>	VOC	CO	SO <sub>2</sub> **	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
<b>Total Emissions (lb)</b>	9,497.64	753.78	4,186.91	749.63	681.75	660.07	1,076,423.93
<b>Total Emissions (tons)</b>	4.75	0.38	2.09	0.37	0.34	0.33	538.21

**2014 Construction Commuter Emissions**

Emissions from construction workers commuting to the job site are estimated in this spreadsheet.

Emission Estimation Method: United States Air Force (USAF) Institute for Environment, Safety and Occupational Health Risk Analysis (IERA) Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations (Revised December 2003).

**Assumptions:**

Passenger vehicle emission factors for scenario year 2010 are used.

Assume up to 10 workers would be required at the site.

Passenger vehicle model year 2000 is used.

The average roundtrip commute for a construction worker =	30 miles
Number of construction days =	240 days
Number of construction workers (daily) =	10 people
Riders per vehicle =	1 person
Number of vehicles (daily) =	10 vehicles

**Average On-Road Vehicle Emission Factors (grams/mile)**

Vehicle Type Category	NO <sub>x</sub>	VOC	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>	
LDGV	2.10	2.90	33.10	0.072	0.71	0.20	391.97	Light Duty Gasoline Vehicles
LDGT1	2.20	3.10	35.20	0.096	1.08	0.29	526.04	Light SUVs and Pickups
LDGT2	2.50	3.40	38.60	0.098	2.58	0.66	535.24	Heavy SUVs and Pickups
HdGV	3.40	2.90	20.50	0.154	5.51	1.42	843.56	Heavy Duty Gasoline Vehicles
LDDV	1.20	0.60	1.70	0.116	0.80	0.28	373.70	Light Duty Diesel Vehicles
LDDT	1.50	1.00	1.90	0.157	1.59	0.48	505.90	Light Duty Diesel Trucks
HDDV	6.50	2.00	11.80	0.512	7.73	2.01	1645.60	Heavy Duty Diesel Vehicles
MC	0.90	5.70	22.50	0.032	0.08	0.03	177.48	Motorcycles

**Notes:**

Emission factors for all pollutants except CO<sub>2</sub> are from USAF IERA 2003.

Emission factors for PM, PM<sub>10</sub>, SO<sub>x</sub> are from Table 4-50 (USAF IERA 2003).

Emission factors for VOC, CO, and NO<sub>x</sub> are from Tables 4-2 through 4-49 for the 2010 calendar year, 2000 model year (USAF IERA 2003).

It is assumed that the average vehicle will produce 19.564 pounds of CO<sub>2</sub> per gallon of gas used and 22.384 pounds of CO<sub>2</sub> per gallon of diesel used (<http://www.eia.doe.gov/oi/aff/1605/coefficients.html>).

Using the default fuel economy for the vehicle type categories in USAF IERA Table 4-51, the CO<sub>2</sub> emission factor was estimated.

HDDV CO<sub>2</sub> emission factor = 22.384 lbs CO<sub>2</sub>/gallon diesel \* gallon diesel/6.17 miles \* 453.6 g/lb = 1645.60 g/mile

HDDV CO<sub>2</sub> emission factor = 22.384 lbs CO<sub>2</sub>/gallon diesel \* gallon diesel/6.17 miles \* 453.6 g/lb = 1645.60 g/mile

**On-Road Vehicle Emissions (Annual)**

Vehicle Type Category	NO <sub>x</sub>	VOC	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
LDGV	229.67	317.16	3619.98	7.87	77.65	21.87	42867.97
LDGT1	39.81	56.10	636.95	1.74	19.54	5.25	9518.75
LDGT2	33.73	45.87	520.79	1.32	34.81	8.90	7221.45
HdGV	8.10	6.90	48.81	0.37	13.12	3.38	2008.47
LDDV	7.43	3.71	10.52	0.72	4.95	1.73	2313.37
LDDT	4.52	3.02	5.73	0.47	4.80	1.45	1525.73
HDDV	29.92	9.21	54.32	2.36	35.58	9.25	7575.01
MC	1.43	9.05	35.71	0.05	0.13	0.05	281.72
Total (lbs)	354.60	451.02	4932.83	14.90	190.58	51.89	73312.47
Total (tons)	0.18	0.23	2.47	0.01	0.10	0.03	36.66

Example Calculation: NO<sub>x</sub> emissions (lbs) = 20 vehicles \* percent of vehicle mix /100 \* NO<sub>x</sub> emission factor (g/mile) \* 50 miles/day \* number of construction days \* lb/453.6 g

**Default Fuel Economies for On-Road Vehicles**

Vehicle Type Category	Default Fuel Economy (mpg)
LDGV	22.64
LDGT1	16.87
LDGT2	16.58
HdGV	10.52
LDDV	27.17
LDDT	20.07
HDDV	6.17
MC	50

**Notes:**

Values from Table 4-51 (USAF IERA 2003).

**Average On-Road Vehicle Mix**

Vehicle Type Category	Average On-Road Vehicle Mix (%)
LDGV	68.9
LDGT1	11.4
LDGT2	8.5
HdGV	1.5
LDDV	3.9
LDDT	1.9
HDDV	2.9
MC	1

**Notes:**

Vehicle mix is from Table 6-1 (USAF IERA 2003).

# USAF Air Conformity Applicability Model

## Emissions Summary Information

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

## Emissions Summary Report For 2014

SOURCE CATEGORY	Emissions, Ton/Year					
	CO	NOX	SO2	VOC	PM10	PM2.5
<b>Area Sources</b>						
Miscellaneous Area Sources	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase I Const. - Grading Ops.	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase II Const. - Arch. Ctgs.	0.00	0.00	0.00	0.18	0.00	0.00
Other Phase II Const. - Asphalt Paving	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase II Const. - Workers Trips	0.02	0.00	0.00	0.00	0.00	0.00
Total	0.02	0.00	0.00	0.18	0.00	0.00
<b>Mobile Sources</b>						
Mobile - Base Employee Commute VMT	0.01	0.00	0.00	0.00	0.00	0.00
Mobile - On-Road GOV VMT	0.06	0.01	0.00	0.00	0.00	0.00
Total	0.08	0.01	0.00	0.00	0.00	0.00
<b>Point Sources</b>						
Other Const. - Facility Heating	0.89	2.01	0.01	0.06	0.08	0.00
Residential Space Heating	0.01	0.01	0.00	0.00	0.00	0.00
Total	0.89	2.02	0.01	0.06	0.08	0.00
<b>Grand Total</b> 2014	0.99	2.03	0.01	0.25	0.08	0.00

Note: - Non-Residential Architectural Coating emissions are combined across Aircraft and Non-Aircraft activities.  
 - Emissions displayed as fixed decimal numbers. Totals calculated using full numbers.

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### 2015 combustion emissions

Combustion emissions of VOC, NOx, SO<sub>2</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>, CO<sub>2</sub>

Assumptions:

Paving of parking areas (assume 9 acres)

Grading 9 acres

Demolition of 3 buildings

Total project area disturbed for demolition is based on a 100 foot buffer surrounding each building.

Total project area disturbed (ft<sup>2</sup>) = (√ (Building Size (ft<sup>2</sup>)) + 200 ft)<sup>2</sup>

This methodology also assumes all buildings are one story and that each building is square.

Buildings to be Demolished	Building Size	Total Project Area Disturbed
Building 29051	2,560 ft <sup>2</sup>	62,799 ft <sup>2</sup>
Building 29099	1,460 ft <sup>2</sup>	56,744 ft <sup>2</sup>
Building 29040	1,960 ft <sup>2</sup>	59,669 ft <sup>2</sup>
Total Building Size	5,980 ft <sup>2</sup>	0.14 acres
Total Disturbed Area:	179,212 ft <sup>2</sup>	4.11 acres

Total Disturbed Area: 557,035 ft<sup>2</sup>                      12.79 acres

Construction Duration: 1.5 months

Annual Construction Activity: 49 days/year

#### Emission Factors Used for Construction Equipment

References: Guide to Air Quality Assessment, SMAQMD, 2004; and U.S. EPA NONROAD Emission Model. Factors provided are the weighted average U.S. fleet for CY 2007. Assumptions regarding the type and number of the equipment are from the SMAQMD Table 3-1 unless otherwise noted.

#### Grading

Equipment	No. Reqd. <sup>a</sup> per 10 acres	NOx (lb/day)	VOC <sup>b</sup> (lb/day)	CO (lb/day)	SO <sub>2</sub> <sup>c</sup> (lb/day)	PM <sub>10</sub> (lb/day)	PM <sub>2.5</sub> (lb/day)	CO <sub>2</sub> (lb/day)
Bulldozer	1	13.60	0.96	5.50	1.02	0.89	0.87	1456.90
Motor Grader	1	9.69	0.73	3.20	0.80	0.66	0.64	1141.65
Water Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98

Total per 10 acres of activity	3	41.64	2.58	15.71	0.83	2.55	2.47	4941.53
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**Paving**

Equipment	No. Reqd. <sup>a</sup> per 10 acres	NOx (lb/day)	VOC <sup>b</sup> (lb/day)	CO (lb/day)	SO <sub>2</sub> <sup>c</sup> (lb/day)	PM <sub>10</sub> (lb/day)	PM <sub>2.5</sub> (lb/day)	CO <sub>2</sub> (lb/day)
Paver	1	3.83	0.37	2.06	0.28	0.35	0.34	401.93
Roller	1	4.82	0.44	2.51	0.37	0.43	0.42	536.07
Truck	2	36.71	1.79	14.01	3.27	1.99	1.93	4685.95
Total per 10 acres of activity	4	45.37	2.61	18.58	0.91	2.78	2.69	5623.96

**Demolition**

Equipment	No. Reqd. <sup>a</sup> per 10 acres	NOx (lb/day)	VOC <sup>b</sup> (lb/day)	CO (lb/day)	SO <sub>2</sub> <sup>c</sup> (lb/day)	PM <sub>10</sub> (lb/day)	PM <sub>2.5</sub> (lb/day)	CO <sub>2</sub> (lb/day)
Loader	1	13.45	0.99	5.58	0.95	0.93	0.90	1360.10
Total per 10 acres of activity	1	13.45	0.99	5.58	0.95	0.93	0.90	1360.10

- a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.
- b) The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purpose of this worksheet ROG = VOC. The NONROAD model contains emission factors for total HC and for VOC. The factors used here are the VOC factors.
- c) The NONROAD emission factors assume the average fuel burned in nonroad trucks is 1100 ppm sulfur. Trucks that would be used for the Proposed Action will all be highway grade diesel fuel which cannot exceed 500 ppm sulfur. These estimates therefore over-estimate SO<sub>2</sub> emissions by more than a factor of two.
- d) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

### Project-Specific Emission Factor Summary

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)						
		NO <sub>x</sub>	VOC	CO	SO <sub>2</sub> **	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
Grading Equipment	1	41.64	2.58	15.71	0.83	2.55	2.47	4941.53
Paving Equipment	1	45.37	2.61	18.58	0.91	2.78	2.69	5623.96
Demolition Loader	1	13.45	0.99	5.58	0.95	0.93	0.90	1360.10

\*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.

\*\*Emission factor is from the evaporation of solvents during painting per "Air Quality Thresholds Significance", SMAQMD, 1994

Example: SMAQMD Emission Factor for Grading Equipment NO<sub>x</sub> = (Total Grading NO<sub>x</sub> per 10 acre) \* (Equipment Multiplier)

### Summary of Input Parameters

Activity	Total Area (ft <sup>2</sup> )	Total Area (acres)	Total Days
Grading	557,035	12.79	9
Paving	377,823	8.68	43
Loader for Demolition	179,212	4.11	206

NOTE: The "Total Days" estimated for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19<sup>th</sup> Edition, for 'Asphaltic Concrete Pavement, Lots, and Driveways - 6" stone base', which provides an estimate of square feet paved per day. There is also an estimate for 'Plain Concrete Pavement'; however the estimate for asphalt is used because it is more conservative. The "Total Days" estimate for demolition is calculated by dividing the total number of acres by 0.02 acres/day, which is a factor also derived from the 2005 MEANS reference.

### Total Project Emissions by Activity

	NO <sub>x</sub>	VOC	CO	SO <sub>2</sub> **	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
Grading Equipment	374.76	23.22	141.39	7.47	22.95	22.23	44,473.77
Paving Equipment	1,950.91	112.23	798.94	39.13	119.54	115.67	241,830.28
Loader for Demolition	2,770.70	203.94	1,149.48	195.70	191.58	185.40	280,180.60
<b>Total Emissions (lb)</b>	<b>5,096.37</b>	<b>339.39</b>	<b>2,089.81</b>	<b>242.30</b>	<b>334.07</b>	<b>323.30</b>	<b>566,484.65</b>

### Results: Total Project Annual Emission Rates:

	NO <sub>x</sub>	VOC	CO	SO <sub>2</sub> **	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
<b>Total Emissions (lb)</b>	5,096.37	339.39	2,089.81	242.30	334.07	323.30	566,484.65
<b>Total Emissions (tons)</b>	2.55	0.17	1.04	0.12	0.17	0.16	283.24

**2015 Haul Truck Emissions**

Emissions from hauling construction and demolition debris are estimated in this spreadsheet.

Emission Estimation Method References: United States Air Force (USAF) Institute for Environment, Safety and Occupational Health Risk Analysis (IERA) Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations (Revised December 2003).

US EPA Estimating 2003 Building-Related Construction and Demolition Materials Amounts (March 2009).

**Assumptions:**

Haul trucks carry 20 cubic yards of material per trip.

The average distance from the demolition site to the base landfill is 7 miles, and from the demolition site to the offsite Cerro Colorado Landfill is 30 miles.

Assume 85% of demolition waste would go to the base landfill and 15% would be transported offsite. Therefore a haul truck will have a weighted average of 21 miles round trip.

Estimated number of trips required by haul trucks = total amount of material demolished on installation/20 cubic yards per truck

Typical non-residential demolition materials generation per unit area:	158 lb/ft <sup>2</sup>	EPA 2009
Total demolition waste removed:	26,351 ft <sup>2</sup>	From Project Combustion
Total demolition waste:	4,163,458 lbs	Density of demolition waste * project area
Density of demolition waste:	150 lbs/ft <sup>3</sup>	Density of concrete (EPA 2009)
Total volume of demolition waste:	1,028 cubic yards	
Number of trucks required to haul demolition waste:	51	Heavy duty diesel haul trucks (20 CY)
Miles per round trip:	21 miles	Weighted average

**Heavy Duty Diesel Vehicle (HDDV) Average Emission Factors (grams/mile)**

	NO <sub>x</sub>	VOC	CO	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
HDDV	6.500	4.7000	19.10	0.512	7.7	2.01	1646

**Notes:**

Emission factors for all pollutants except CO<sub>2</sub> are from USAF IERA 2003.

Emission factors for PM, PM<sub>10</sub>, SO<sub>x</sub> are from HDDV in Table 4-50 (USAF IERA 2003).

Emission factors for VOC, CO, and NO<sub>x</sub> are from Tables 4-41 through 4-43 for the 2010 calendar year, 2000 model year (USAF IERA 2003).

Diesel fuel produces 22.384 pounds of CO<sub>2</sub> per gallon.

It is assumed that the average HDDV has a fuel economy of 6.17 miles per gallon, Table 4-51 (USAF IERA 2003)

CO<sub>2</sub> emission factor = 22.384 lbs CO<sub>2</sub>/gallon diesel \* gallon diesel/6.17 miles \* 453.6 g/lb

**HDDV Haul Truck Emissions**

	NO <sub>x</sub>	VOC	CO	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
lbs	15.47	11.18	45.45	1.22	18.39	4.78	3915.98
tons	0.008	0.006	0.023	0.001	0.009	0.002	1.958

Example Calculation: NO<sub>x</sub> emissions (lbs) = 26 miles per round trip \* 308 trips \* NO<sub>x</sub> emission factor (g/mile) \* lb/453.6 g

## 2015 Construction Commuter Emissions

Emissions from construction workers commuting to the job site are estimated in this spreadsheet.

Emission Estimation Method: United States Air Force (USAF) Institute for Environment, Safety and Occupational Health Risk Analysis (IERA) Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations (Revised December 2003).

### Assumptions:

Passenger vehicle emission factors for scenario year 2010 are used.

Assume up to 10 workers would be required at the site.

Passenger vehicle model year 2000 is used.

The average roundtrip commute for a construction worker =	30 miles
Number of construction days =	240 days
Number of construction workers (daily) =	10 people
Riders per vehicle =	1 person
Number of vehicles (daily) =	10 vehicles

### Average On-Road Vehicle Emission Factors (grams/mile)

Vehicle Type Category	NO <sub>x</sub>	VOC	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>	
LDGV	2.10	2.90	33.10	0.072	0.71	0.20	391.97	Light Duty Gasoline Vehicles
LDGT1	2.20	3.10	35.20	0.096	1.08	0.29	526.04	Light SUVs and Pickups
LDGT2	2.50	3.40	38.60	0.098	2.58	0.66	535.24	Heavy SUVs and Pickups
HDGV	3.40	2.90	20.50	0.154	5.51	1.42	843.56	Heavy Duty Gasoline Vehicles
LDDV	1.20	0.60	1.70	0.116	0.80	0.28	373.70	Light Duty Diesel Vehicles
LDDT	1.50	1.00	1.90	0.157	1.59	0.48	505.90	Light Duty Diesel Trucks
HDDV	6.50	2.00	11.80	0.512	7.73	2.01	1645.60	Heavy Duty Diesel Vehicles
MC	0.90	5.70	22.50	0.032	0.08	0.03	177.48	Motorcycles

### Notes:

Emission factors for all pollutants except CO<sub>2</sub> are from USAF IERA 2003.

Emission factors for PM, PM<sub>10</sub>, SO<sub>x</sub> are from Table 4-50 (USAF IERA 2003).

Emission factors for VOC, CO, and NO<sub>x</sub> are from Tables 4-2 through 4-49 for the 2010 calendar year, 2000 model year (USAF IERA 2003).

It is assumed that the average vehicle will produce 19.564 pounds of CO<sub>2</sub> per gallon of gas used and 22.384 pounds of CO<sub>2</sub> per gallon

of diesel used (<http://www.eia.doe.gov/oiarf/1605/coefficients.html>).

Using the default fuel economy for the vehicle type categories in USAF IERA Table 4-51, the CO<sub>2</sub> emission factor was estimated.

HDDV CO<sub>2</sub> emission factor = 22.384 lbs CO<sub>2</sub>/gallon diesel \* gallon diesel/6.17 miles \* 453.6 g/lb = 1645.60 g/mile

### On-Road Vehicle Emissions (Annual)

Vehicle Type Category	NO <sub>x</sub>	VOC	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
LDGV	229.67	317.16	3619.98	7.87	77.65	21.87	42867.97
LDGT1	39.81	56.10	636.95	1.74	19.54	5.25	9518.75
LDGT2	33.73	45.87	520.79	1.32	34.81	8.90	7221.45
HDGV	8.10	6.90	48.81	0.37	13.12	3.38	2008.47
LDDV	7.43	3.71	10.52	0.72	4.95	1.73	2313.37
LDDT	4.52	3.02	5.73	0.47	4.80	1.45	1525.73
HDDV	29.92	9.21	54.32	2.36	35.58	9.25	7575.01
MC	1.43	9.05	35.71	0.05	0.13	0.05	281.72
Total (lbs)	354.60	451.02	4932.83	14.90	190.58	51.89	73312.47
Total (tons)	0.18	0.23	2.47	0.01	0.10	0.03	36.66

Example Calculation: NO<sub>x</sub> emissions (lbs) = 20 vehicles \* percent of vehicle mix /100 \* NO<sub>x</sub> emission factor (g/mile) \* 50 miles/day \* number of construction days \* lb/453.6 g

### Default Fuel Economies for On-Road Vehicles

Vehicle Type Category	Default Fuel Economy (mpg)
LDGV	22.64
LDGT1	16.87
LDGT2	16.58
HDGV	10.52
LDDV	27.17
LDDT	20.07
HDDV	6.17
MC	50

### Notes:

Values from Table 4-51 (USAF IERA 2003).

### Average On-Road Vehicle Mix

Vehicle Type Category	Average On-Road Vehicle Mix (%)
LDGV	68.9
LDGT1	11.4
LDGT2	8.5
HDGV	1.5
LDDV	3.9
LDDT	1.9
HDDV	2.9
MC	1

### Notes:

Vehicle mix is from Table 6-1 (USAF IERA 2003).

# USAF Air Conformity Applicability Model

## Emissions Summary Information

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

## Emissions Summary Report For 2015

SOURCE CATEGORY	Emissions, Ton/Year					
	CO	NOX	SO2	VOC	PM10	PM2.5
<b>Area Sources</b>						
Miscellaneous Area Sources	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase I Const. - Grading Ops.	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase II Const. - Arch. Ctgs.	0.00	0.00	0.00	4.37	0.00	0.00
Other Phase II Const. - Asphalt Paving	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase II Const. - Workers Trips	0.06	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.06</b>	<b>0.00</b>	<b>0.00</b>	<b>4.38</b>	<b>0.00</b>	<b>0.00</b>
<b>Mobile Sources</b>						
Mobile - Base Employee Commute VMT	0.02	0.00	0.00	0.00	0.00	0.00
Mobile - On-Road GOV VMT	0.08	0.01	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.09</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Point Sources</b>						
Other Const. - Facility Heating	1.76	3.99	0.01	0.12	0.16	0.00
Residential Space Heating	0.01	0.01	0.00	0.00	0.00	0.00
<b>Total</b>	<b>1.77</b>	<b>4.00</b>	<b>0.01</b>	<b>0.12</b>	<b>0.16</b>	<b>0.00</b>
<b>Grand Total 2015</b>	<b>1.92</b>	<b>4.01</b>	<b>0.01</b>	<b>4.50</b>	<b>0.16</b>	<b>0.00</b>

Note: - Non-Residential Architectural Coating emissions are combined across Aircraft and Non-Aircraft activities.  
 - Emissions displayed as fixed decimal numbers. Totals calculated using full numbers.

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# USAF Air Conformity Applicability Model

## Emissions Summary Information

Scenario: Demolition  
 Installation: KIRTLAND AFB

### Emissions Summary Report For 2015

SOURCE CATEGORY	Emissions, Ton/Year					
	CO	NOX	SO2	VOC	PM10	PM2.5
<b>Area Sources</b>						
Demolition	0.00	0.00	0.00	0.00	1.49	0.00
Other Phase I Const. - Grading Ops.	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	1.49	0.00
<b>Point Sources</b>						
Other Const. - Facility Heating	0.40	0.90	0.00	0.03	0.04	0.00
Total	0.40	0.90	0.00	0.03	0.04	0.00
<b>Grand Total</b> 2015	0.40	0.90	0.00	0.03	1.53	0.00

Note: - Non-Residential Architectural Coating emissions are combined across Aircraft and Non-Aircraft activities.  
 - Emissions displayed as fixed decimal numbers. Totals calculated using full numbers.

# USAF Air Conformity Applicability Model

## Proposed Action Personnel Information

### Demolition Activities

Scenario: Demolition

Installation: KIRTLAND AFB

#### Proposed Action Demolition For 2015

Demolition Name	Duration (days)	Width	Building	
			Length	Height
29040	69	244	244	10
29051	69	251	251	10
29099	69	238	238	10

**2016 – 2018 combustion emissions**

Combustion emissions of VOC, NOx, SO<sub>2</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>, CO<sub>2</sub>

Assumptions:

Constructing of utility lines, water tanks, fencing and completing the 21<sup>st</sup> EOD WMD compound expansion from 90 acres to 470 acres.

Assume 2 acres of building construction

Grading 100 acres

Total Disturbed Area: 87,120 ft<sup>2</sup>                      2.52 acres

Construction Duration: 12 months

Annual Construction Activity: 240 days/year    Assumes 12 months, 4 weeks per month, 5 days per week

**Emission Factors Used for Construction Equipment**

References: Guide to Air Quality Assessment, SMAQMD, 2004; and U.S. EPA NONROAD Emission Model. Factors provided are the weighted average U.S. fleet for CY 2007. Assumptions regarding the type and number of the equipment are from the SMAQMD Table 3-1 unless otherwise noted.

**Grading**

Equipment	No. Req <sup>a</sup> per 10 acres	NOx (lb/day)	VOC <sup>b</sup> (lb/day)	CO (lb/day)	SO <sub>2</sub> <sup>c</sup> (lb/day)	PM <sub>10</sub> (lb/day)	PM <sub>2.5</sub> (lb/day)	CO <sub>2</sub> (lb/day)
Bulldozer	1	13.60	0.96	5.50	1.02	0.89	0.87	1456.90
Motor Grader	1	9.69	0.73	3.20	0.80	0.66	0.64	1141.65
Water Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Total per 10 acres of activity	3	41.64	2.58	15.71	0.83	2.55	2.47	4941.53

**Building Construction**

Equipment	No. Req <sup>a</sup> per 10 acres	NOx (lb/day)	VOC <sup>b</sup> (lb/day)	CO (lb/day)	SO <sub>2</sub> <sup>c</sup> (lb/day)	PM <sub>10</sub> (lb/day)	PM <sub>2.5</sub> (lb/day)	CO <sub>2</sub> (lb/day)
Stationary								
Generator Set	1	2.38	0.32	1.18	0.15	0.23	0.22	213.06
Industrial Saw	1	2.62	0.32	1.97	0.20	0.32	0.31	291.92
Welder	1	1.12	0.38	1.50	0.08	0.23	0.22	112.39
Mobile (non-road)								

Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Forklift	1	5.34	0.56	3.33	0.40	0.55	0.54	572.24
Crane	1	9.57	0.66	2.39	0.65	0.50	0.49	931.93
Total per 10 acres of activity	6	39.40	3.13	17.38	3.12	2.83	2.74	4464.51

- a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.
- b) The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purpose of this worksheet ROG = VOC. The NONROAD model contains emission factors for total HC and for VOC. The factors used here are the VOC factors.
- c) The NONROAD emission factors assume the average fuel burned in nonroad trucks is 1100 ppm sulfur. Trucks that would be used for the Proposed Action will all be highway grade diesel fuel which cannot exceed 500 ppm sulfur. These estimates therefore over-estimate SO<sub>2</sub> emissions by more than a factor of two.
- d) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

#### Project-Specific Emission Factor Summary

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)						
		NO <sub>x</sub>	VOC	CO	SO <sub>2</sub> **	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
Grading Equipment	10	416.4	25.8	157.1	8.3	25.5	24.7	49415.3
Building Construction Equipment	1	45.37	2.61	18.58	0.91	2.78	2.69	5623.96

\*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.

\*\*Emission factor is from the evaporation of solvents during painting per "Air Quality Thresholds Significance", SMAQMD, 1994

Example: SMAQMD Emission Factor for Grading Equipment NO<sub>x</sub> = (Total Grading NO<sub>x</sub> per 10 acre) \* (Equipment Multiplier)

#### Summary of Input Parameters

Activity	Total Area (ft <sup>2</sup> )	Total Area (acres)	Total Days
Grading	4,356,000	100.0	67
Building Construction	87,120	2.0	240

NOTE: The "Total Days" estimated for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19<sup>th</sup> Edition, for 'Asphaltic Concrete Pavement, Lots, and Driveways - 6" stone base', which provides an estimate of square feet paved per day. There is also an estimate for 'Plain Concrete Pavement'; however the estimate for asphalt is used because it is more conservative.

**Total Project Emissions by Activity**

	NO <sub>x</sub>	VOC	CO	SO <sub>2</sub> **	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
Grading Equipment	416.40	25.80	157.10	8.30	25.50	24.70	49,415.30
Building Construction Equipment	9,456.00	751.20	4,171.20	748.80	679.20	657.60	1,071,482.40
<b>Total Emissions (lb)</b>	<b>9,872.40</b>	<b>777.00</b>	<b>4,328.30</b>	<b>757.10</b>	<b>704.70</b>	<b>682.30</b>	<b>1,120,897.70</b>

**Results: Total Project Annual Emission Rates:**

	NO <sub>x</sub>	VOC	CO	SO <sub>2</sub> **	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
<b>Total Emissions (lb)</b>	9,872.40	777.00	4,328.30	757.10	704.70	682.30	1,120,897.70
<b>Total Emissions (tons)</b>	4.94	0.39	2.16	0.38	0.35	0.34	560.45

## 2016 Construction Commuter Emissions

Emissions from construction workers commuting to the job site are estimated in this spreadsheet.

Emission Estimation Method: United States Air Force (USAF) Institute for Environment, Safety and Occupational Health Risk Analysis (IERA) Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations (Revised December 2003).

### Assumptions:

Passenger vehicle emission factors for scenario year 2010 are used.

Assume up to 10 workers would be required at the site.

Passenger vehicle model year 2000 is used.

The average roundtrip commute for a construction worker =	30 miles
Number of construction days =	240 days
Number of construction workers (daily) =	10 people
Riders per vehicle =	1 person
Number of vehicles (daily) =	10 vehicles

### Average On-Road Vehicle Emission Factors (grams/mile)

Vehicle Type Category	NO <sub>x</sub>	VOC	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>	
LDGV	2.10	2.90	33.10	0.072	0.71	0.20	391.97	Light Duty Gasoline Vehicles
LDGT1	2.20	3.10	35.20	0.096	1.08	0.29	526.04	Light SUVs and Pickups
LDGT2	2.50	3.40	38.60	0.098	2.58	0.66	535.24	Heavy SUVs and Pickups
HDGV	3.40	2.90	20.50	0.154	5.51	1.42	843.56	Heavy Duty Gasoline Vehicles
LDDV	1.20	0.60	1.70	0.116	0.80	0.28	373.70	Light Duty Diesel Vehicles
LDDT	1.50	1.00	1.90	0.157	1.59	0.48	505.90	Light Duty Diesel Trucks
HDDV	6.50	2.00	11.80	0.512	7.73	2.01	1645.60	Heavy Duty Diesel Vehicles
MC	0.90	5.70	22.50	0.032	0.08	0.03	177.48	Motorcycles

#### Notes:

Emission factors for all pollutants except CO<sub>2</sub> are from USAF IERA 2003.

Emission factors for PM, PM<sub>10</sub>, SO<sub>x</sub> are from Table 4-50 (USAF IERA 2003).

Emission factors for VOC, CO, and NO<sub>x</sub> are from Tables 4-2 through 4-49 for the 2010 calendar year, 2000 model year (USAF IERA 2003).

It is assumed that the average vehicle will produce 19.564 pounds of CO<sub>2</sub> per gallon of gas used and 22.384 pounds of CO<sub>2</sub> per gallon

of diesel used (<http://www.eia.doe.gov/oi/af/1605/coefficients.html>).

Using the default fuel economy for the vehicle type categories in USAF IERA Table 4-51, the CO<sub>2</sub> emission factor was estimated.

HDDV CO<sub>2</sub> emission factor = 22.384 lbs CO<sub>2</sub>/gallon diesel \* gallon diesel/6.17 miles \* 453.6 g/lb = 1645.6 g/mile

### On-Road Vehicle Emissions (Annual)

Vehicle Type Category	NO <sub>x</sub>	VOC	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
LDGV	229.67	317.16	3619.98	7.87	77.65	21.87	42867.97
LDGT1	39.81	56.10	636.95	1.74	19.54	5.25	9518.75
LDGT2	33.73	45.87	520.79	1.32	34.81	8.90	7221.45
HDGV	8.10	6.90	48.81	0.37	13.12	3.38	2008.47
LDDV	7.43	3.71	10.52	0.72	4.95	1.73	2313.37
LDDT	4.52	3.02	5.73	0.47	4.80	1.45	1525.73
HDDV	29.92	9.21	54.32	2.36	35.58	9.25	7575.01
MC	1.43	9.05	35.71	0.05	0.13	0.05	281.72
Total (lbs)	354.60	451.02	4932.83	14.90	190.58	51.89	73312.47
Total (tons)	0.18	0.23	2.47	0.01	0.10	0.03	36.66

Example Calculation: NO<sub>x</sub> emissions (lbs) = 20 vehicles \* percent of vehicle mix /100 \* NO<sub>x</sub> emission factor (g/mile) \* 50 miles/day \* number of construction days \* lb/453.6 g

### Default Fuel Economies for On-Road Vehicles

Vehicle Type Category	Default Fuel Economy (mpg)
LDGV	22.64
LDGT1	16.87
LDGT2	16.58
HDGV	10.52
LDDV	27.17
LDDT	20.07
HDDV	6.17
MC	50

#### Notes:

Values from Table 4-51 (USAF IERA 2003).

### Average On-Road Vehicle Mix

Vehicle Type Category	Average On-Road Vehicle Mix (%)
LDGV	68.9
LDGT1	11.4
LDGT2	8.5
HDGV	1.5
LDDV	3.9
LDDT	1.9
HDDV	2.9
MC	1

#### Notes:

Vehicle mix is from Table 6-1 (USAF IERA 2003).

**2017 Construction Commuter Emissions**

Emissions from construction workers commuting to the job site are estimated in this spreadsheet.

Emission Estimation Method: United States Air Force (USAF) Institute for Environment, Safety and Occupational Health Risk Analysis (IERA) Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations (Revised December 2003).

**Assumptions:**

Passenger vehicle emission factors for scenario year 2010 are used.

Assume up to 10 workers would be required at the site.

Passenger vehicle model year 2000 is used.

The average roundtrip commute for a construction worker = 30 miles  
 Number of construction days = 240 days  
 Number of construction workers (daily) = 10 people  
 Riders per vehicle = 1 person  
 Number of vehicles (daily) = 10 vehicles

**Average On-Road Vehicle Emission Factors (grams/mile)**

Vehicle Type Category	NO <sub>x</sub>	VOC	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>	
LDGV	2.10	2.90	33.10	0.072	0.71	0.20	391.97	Light Duty Gasoline Vehicles
LDGT1	2.20	3.10	35.20	0.096	1.08	0.29	526.04	Light SUVs and Pickups
LDGT2	2.50	3.40	38.60	0.098	2.58	0.66	535.24	Heavy SUVs and Pickups
HdGV	3.40	2.90	20.50	0.154	5.51	1.42	843.56	Heavy Duty Gasoline Vehicles
LDDV	1.20	0.60	1.70	0.116	0.80	0.28	373.70	Light Duty Diesel Vehicles
LDDT	1.50	1.00	1.90	0.157	1.59	0.48	505.90	Light Duty Diesel Trucks
HDDV	6.50	2.00	11.80	0.512	7.73	2.01	1645.60	Heavy Duty Diesel Vehicles
MC	0.90	5.70	22.50	0.032	0.08	0.03	177.48	Motorcycles

**Notes:**

Emission factors for all pollutants except CO<sub>2</sub> are from USAF IERA 2003.

Emission factors for PM, PM<sub>10</sub>, SO<sub>x</sub> are from Table 4-50 (USAF IERA 2003).

Emission factors for VOC, CO, and NO<sub>x</sub> are from Tables 4-2 through 4-49 for the 2010 calendar year, 2000 model year (USAF IERA 2003).

It is assumed that the average vehicle will produce 19.564 pounds of CO<sub>2</sub> per gallon of gas used and 22.384 pounds of CO<sub>2</sub> per gallon

of diesel used (<http://www.eia.doe.gov/loiaff/1605/coefficients.html>).

Using the default fuel economy for the vehicle type categories in USAF IERA Table 4-51, the CO<sub>2</sub> emission factor was estimated.

HDDV CO<sub>2</sub> emission factor = 22.384 lbs CO<sub>2</sub>/gallon diesel \* gallon diesel/6.17 miles \* 453.6 g/lb = 1645.60 g/mile

**On-Road Vehicle Emissions (Annual)**

Vehicle Type Category	NO <sub>x</sub>	VOC	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
LDGV	229.67	317.16	3619.98	7.87	77.65	21.87	42867.97
LDGT1	39.81	56.10	636.95	1.74	19.54	5.25	9518.75
LDGT2	33.73	45.87	520.79	1.32	34.81	8.90	7221.45
HdGV	8.10	6.90	48.81	0.37	13.12	3.38	2008.47
LDDV	7.43	3.71	10.52	0.72	4.95	1.73	2313.37
LDDT	4.52	3.02	5.73	0.47	4.80	1.45	1525.73
HDDV	29.92	9.21	54.32	2.36	35.58	9.25	7575.01
MC	1.43	9.05	35.71	0.05	0.13	0.05	281.72
Total (lbs)	354.60	451.02	4932.83	14.90	190.58	51.89	73312.47
Total (tons)	0.18	0.23	2.47	0.01	0.10	0.03	36.66

Example Calculation: NO<sub>x</sub> emissions (lbs) = 20 vehicles \* percent of vehicle mix /100 \* NO<sub>x</sub> emission factor (g/mile) \* 50 miles/day \* number of construction days \* lb/453.6 g

**Default Fuel Economies for On-Road Vehicles**

Vehicle Type Category	Default Fuel Economy (mpg)
LDGV	22.64
LDGT1	16.87
LDGT2	16.58
HdGV	10.52
LDDV	27.17
LDDT	20.07
HDDV	6.17
MC	50

**Notes:**

Values from Table 4-51 (USAF IERA 2003).

**Average On-Road Vehicle Mix**

Vehicle Type Category	Average On-Road Vehicle Mix (%)
LDGV	68.9
LDGT1	11.4
LDGT2	8.5
HdGV	1.5
LDDV	3.9
LDDT	1.9
HDDV	2.9
MC	1

**Notes:**

Vehicle mix is from Table 6-1 (USAF IERA 2003).

## 2018 Construction Commuter Emissions

Emissions from construction workers commuting to the job site are estimated in this spreadsheet.

Emission Estimation Method: United States Air Force (USAF) Institute for Environment, Safety and Occupational Health Risk Analysis (IERA) Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations (Revised December 2003).

### Assumptions:

Passenger vehicle emission factors for scenario year 2010 are used.

Assume up to 10 workers would be required at the site.

Passenger vehicle model year 2000 is used.

The average roundtrip commute for a construction worker =	30 miles
Number of construction days =	240 days
Number of construction workers (daily) =	10 people
Riders per vehicle =	1 person
Number of vehicles (daily) =	10 vehicles

### Average On-Road Vehicle Emission Factors (grams/mile)

Vehicle Type Category	NO <sub>x</sub>	VOC	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>	
LDGV	2.10	2.90	33.10	0.072	0.71	0.20	391.97	Light Duty Gasoline Vehicles
LDGT1	2.20	3.10	35.20	0.096	1.08	0.29	526.04	Light SUVs and Pickups
LDGT2	2.50	3.40	38.60	0.098	2.58	0.66	535.24	Heavy SUVs and Pickups
HDGV	3.40	2.90	20.50	0.154	5.51	1.42	843.56	Heavy Duty Gasoline Vehicles
LDDV	1.20	0.60	1.70	0.116	0.80	0.28	373.70	Light Duty Diesel Vehicles
LDDT	1.50	1.00	1.90	0.157	1.59	0.48	505.90	Light Duty Diesel Trucks
HDDV	6.50	2.00	11.80	0.512	7.73	2.01	1645.60	Heavy Duty Diesel Vehicles
MC	0.90	5.70	22.50	0.032	0.08	0.03	177.48	Motorcycles

### Notes:

Emission factors for all pollutants except CO<sub>2</sub> are from USAF IERA 2003.

Emission factors for PM, PM<sub>10</sub>, SO<sub>x</sub> are from Table 4-50 (USAF IERA 2003).

Emission factors for VOC, CO, and NO<sub>x</sub> are from Tables 4-2 through 4-49 for the 2010 calendar year, 2000 model year (USAF IERA 2003).

It is assumed that the average vehicle will produce 19.564 pounds of CO<sub>2</sub> per gallon of gas used and 22.384 pounds of CO<sub>2</sub> per gallon

of diesel used (<http://www.eia.doe.gov/oi/aff/1605/coefficients.html>).

Using the default fuel economy for the vehicle type categories in USAF IERA Table 4-51, the CO<sub>2</sub> emission factor was estimated.

HDDV CO<sub>2</sub> emission factor = 22.384 lbs CO<sub>2</sub>/gallon diesel \* gallon diesel/6.17 miles \* 453.6 g/lb = 1645.60 g/mile

### On-Road Vehicle Emissions (Annual)

Vehicle Type Category	NO <sub>x</sub>	VOC	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
LDGV	229.67	317.16	3619.98	7.87	77.65	21.87	42867.97
LDGT1	39.81	56.10	636.95	1.74	19.54	5.25	9518.75
LDGT2	33.73	45.87	520.79	1.32	34.81	8.90	7221.45
HDGV	8.10	6.90	48.81	0.37	13.12	3.38	2008.47
LDDV	7.43	3.71	10.52	0.72	4.95	1.73	2313.37
LDDT	4.52	3.02	5.73	0.47	4.80	1.45	1525.73
HDDV	29.92	9.21	54.32	2.36	35.58	9.25	7575.01
MC	1.43	9.05	35.71	0.05	0.13	0.05	281.72
Total (lbs)	354.60	451.02	4932.83	14.90	190.58	51.89	73312.47
Total (tons)	0.18	0.23	2.47	0.01	0.10	0.03	36.66

Example Calculation: NO<sub>x</sub> emissions (lbs) = 20 vehicles \* percent of vehicle mix /100 \* NO<sub>x</sub> emission factor (g/mile) \* 50 miles/day \* number of construction days \* lb/453.6 g

### Default Fuel Economies for On-Road Vehicles

Vehicle Type Category	Default Fuel Economy (mpg)
LDGV	22.64
LDGT1	16.87
LDGT2	16.58
HDGV	10.52
LDDV	27.17
LDDT	20.07
HDDV	6.17
MC	50

### Notes:

Values from Table 4-51 (USAF IERA 2003).

### Average On-Road Vehicle Mix

Vehicle Type Category	Average On-Road Vehicle Mix (%)
LDGV	68.9
LDGT1	11.4
LDGT2	8.5
HDGV	1.5
LDDV	3.9
LDDT	1.9
HDDV	2.9
MC	1

### Notes:

Vehicle mix is from Table 6-1 (USAF IERA 2003).

# USAF Air Conformity Applicability Model

## Emissions Summary Information

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

### Emissions Summary Report For 2016

SOURCE CATEGORY	Emissions, Ton/Year					
	CO	NOX	SO2	VOC	PM10	PM2.5
<b>Area Sources</b>						
Miscellaneous Area Sources	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase I Const. - Grading Ops.	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase II Const. - Arch. Ctgs.	0.00	0.00	0.00	1.01	0.00	0.00
Other Phase II Const. - Asphalt Paving	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase II Const. - Workers Trips	0.07	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.07</b>	<b>0.00</b>	<b>0.00</b>	<b>1.01</b>	<b>0.00</b>	<b>0.00</b>
<b>Mobile Sources</b>						
Mobile - Base Employee Commute VMT	0.02	0.00	0.00	0.00	0.00	0.00
Mobile - On-Road GOV VMT	0.09	0.01	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.11</b>	<b>0.01</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>
<b>Point Sources</b>						
Other Const. - Facility Heating	2.11	4.77	0.02	0.14	0.19	0.00
Residential Space Heating	0.01	0.02	0.00	0.00	0.00	0.00
<b>Total</b>	<b>2.12</b>	<b>4.79</b>	<b>0.02</b>	<b>0.14</b>	<b>0.19</b>	<b>0.00</b>
<b>Grand Total 2016</b>	<b>2.30</b>	<b>4.80</b>	<b>0.02</b>	<b>1.16</b>	<b>0.19</b>	<b>0.00</b>

Note: - Non-Residential Architectural Coating emissions are combined across Aircraft and Non-Aircraft activities.  
 - Emissions displayed as fixed decimal numbers. Totals calculated using full numbers.

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# USAF Air Conformity Applicability Model

## Emissions Summary Information

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

## Emissions Summary Report For 2017

SOURCE CATEGORY	Emissions, Ton/Year					
	CO	NOX	SO2	VOC	PM10	PM2.5
<b>Area Sources</b>						
Miscellaneous Area Sources	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase I Const. - Grading Ops.	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase II Const. - Arch. Ctgs.	0.00	0.00	0.00	1.01	0.00	0.00
Other Phase II Const. - Asphalt Paving	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase II Const. - Workers Trips	0.07	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.07</b>	<b>0.00</b>	<b>0.00</b>	<b>1.01</b>	<b>0.00</b>	<b>0.00</b>
<b>Mobile Sources</b>						
Mobile - Base Employee Commute VMT	0.02	0.00	0.00	0.00	0.00	0.00
Mobile - On-Road GOV VMT	0.10	0.01	0.00	0.01	0.00	0.00
<b>Total</b>	<b>0.12</b>	<b>0.01</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>
<b>Point Sources</b>						
Other Const. - Facility Heating	2.37	5.35	0.02	0.16	0.22	0.00
Residential Space Heating	0.01	0.02	0.00	0.00	0.00	0.00
<b>Total</b>	<b>2.38</b>	<b>5.38</b>	<b>0.02</b>	<b>0.16</b>	<b>0.22</b>	<b>0.00</b>
<b>Grand Total 2017</b>	<b>2.57</b>	<b>5.39</b>	<b>0.02</b>	<b>1.17</b>	<b>0.22</b>	<b>0.00</b>

Note: - Non-Residential Architectural Coating emissions are combined across Aircraft and Non-Aircraft activities.  
 - Emissions displayed as fixed decimal numbers. Totals calculated using full numbers.

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# USAF Air Conformity Applicability Model

## Emissions Summary Information

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

### Emissions Summary Report For 2018

SOURCE CATEGORY	Emissions, Ton/Year					
	CO	NOX	SO2	VOC	PM10	PM2.5
<b>Area Sources</b>						
Miscellaneous Area Sources	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase I Const. - Grading Ops.	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase II Const. - Arch. Ctgs.	0.00	0.00	0.00	1.01	0.00	0.00
Other Phase II Const. - Asphalt Paving	0.00	0.00	0.00	0.00	0.00	0.00
Other Phase II Const. - Workers Trips	0.07	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.07</b>	<b>0.00</b>	<b>0.00</b>	<b>1.01</b>	<b>0.00</b>	<b>0.00</b>
<b>Mobile Sources</b>						
Mobile - Base Employee Commute VMT	0.02	0.00	0.00	0.00	0.00	0.00
Mobile - On-Road GOV VMT	0.11	0.01	0.00	0.01	0.00	0.00
<b>Total</b>	<b>0.14</b>	<b>0.01</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>
<b>Point Sources</b>						
Other Const. - Facility Heating	2.63	5.94	0.02	0.17	0.24	0.00
Residential Space Heating	0.01	0.02	0.00	0.00	0.00	0.00
<b>Total</b>	<b>2.64</b>	<b>5.96</b>	<b>0.02</b>	<b>0.17</b>	<b>0.24</b>	<b>0.00</b>
<b>Grand Total 2018</b>	<b>2.85</b>	<b>5.97</b>	<b>0.02</b>	<b>1.19</b>	<b>0.24</b>	<b>0.00</b>

Note: - Non-Residential Architectural Coating emissions are combined across Aircraft and Non-Aircraft activities.  
 - Emissions displayed as fixed decimal numbers. Totals calculated using full numbers.

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# USAF Air Conformity Applicability Model

## Emissions Summary Information

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

### Emissions Summary Report For 2019

SOURCE CATEGORY	Emissions, Ton/Year					
	CO	NOX	SO2	VOC	PM10	PM2.5
<b>Area Sources</b>						
Miscellaneous Area Sources	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Mobile Sources</b>						
Mobile - Base Employee Commute VMT	0.02	0.00	0.00	0.00	0.00	0.00
Mobile - On-Road GOV VMT	0.11	0.01	0.00	0.01	0.00	0.00
<b>Total</b>	<b>0.14</b>	<b>0.01</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>
<b>Point Sources</b>						
Other Const. - Facility Heating	2.82	6.38	0.02	0.18	0.26	0.00
Residential Space Heating	0.01	0.02	0.00	0.00	0.00	0.00
<b>Total</b>	<b>2.83</b>	<b>6.40</b>	<b>0.02</b>	<b>0.19</b>	<b>0.26</b>	<b>0.00</b>
<b>Grand Total 2019</b>	<b>2.97</b>	<b>6.41</b>	<b>0.02</b>	<b>0.19</b>	<b>0.26</b>	<b>0.00</b>

Note: - Non-Residential Architectural Coating emissions are combined across Aircraft and Non-Aircraft activities.  
 - Emissions displayed as fixed decimal numbers. Totals calculated using full numbers.

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# USAF Air Conformity Applicability Model

## Proposed Action Support Facilities Information

### Non-Aircraft Facilities Construction

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

#### Proposed Action Support Facilities For 2011

				Phase I										Phase 2	
No. Residential Units		Space (sq ft)		No. Days	Area Graded (acres)	Soil Piles		Exposed Surface		Loads		Haul Roads		No. Days	Paved (lbs/yr)
Multi	Single	Comm./Retail	Office/Empl.			Covered	Auto Watered	Water-ed	Kept Moist	Free-board	Covered	Un-paved	Paved		
Lock Down Facility															
0	0	0	76984	2	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	240	0

#### Proposed Action Support Facilities For 2012

				Phase I										Phase 2	
No. Residential Units		Space (sq ft)		No. Days	Area Graded (acres)	Soil Piles		Exposed Surface		Loads		Haul Roads		No. Days	Paved (lbs/yr)
Multi	Single	Comm./Retail	Office/Empl.			Covered	Auto Watered	Water-ed	Kept Moist	Free-board	Covered	Un-paved	Paved		
Deployment Center															
0	0	0	116569	2	3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	240	0

#### Proposed Action Support Facilities For 2013

				Phase I										Phase 2	
No. Residential Units		Space (sq ft)		No. Days	Area Graded (acres)	Soil Piles		Exposed Surface		Loads		Haul Roads		No. Days	Paved (lbs/yr)
Multi	Single	Comm./Retail	Office/Empl.			Covered	Auto Watered	Water-ed	Kept Moist	Free-board	Covered	Un-paved	Paved		
Operations Facility															
0	0	0	101329	2	3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	240	0

Proposed Action Support Facilities For 2014

				Phase I										Phase 2	
No. Residential Units		Space (sq ft)		No. Days	Area Graded (acres)	Soil Piles		Exposed Surface		Loads		Haul Roads		No. Days	Paved (lbs/yr)
Multi	Single	Comm./Retail	Office/Empl.			Covered	Auto Watered	Water-ed	Kept Moist	Free-board	Covered	Un-paved	Paved		
Shotpads															
0	0	0	15708	1	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	240	0

Proposed Action Support Facilities For 2015

				Phase I										Phase 2	
No. Residential Units		Space (sq ft)		No. Days	Area Graded (acres)	Soil Piles		Exposed Surface		Loads		Haul Roads		No. Days	Paved (lbs/yr)
Multi	Single	Comm./Retail	Office/Empl.			Covered	Auto Watered	Water-ed	Kept Moist	Free-board	Covered	Un-paved	Paved		
Parking Areas															
0	0	0	377823	6	9	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	43	2

Proposed Action Support Facilities For 2016

				Phase I										Phase 2	
No. Residential Units		Space (sq ft)		No. Days	Area Graded (acres)	Soil Piles		Exposed Surface		Loads		Haul Roads		No. Days	Paved (lbs/yr)
Multi	Single	Comm./Retail	Office/Empl.			Covered	Auto Watered	Water-ed	Kept Moist	Free-board	Covered	Un-paved	Paved		
2016 Utilities															
0	0	0	87120	67	100	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	240	0

Proposed Action Support Facilities For 2017

				Phase I										Phase 2	
No. Residential Units		Space (sq ft)		No. Days	Area Graded (acres)	Soil Piles		Exposed Surface		Loads		Haul Roads		No. Days	Paved (lbs/yr)
Multi	Single	Comm./Retail	Office/Empl.			Covered	Auto Watered	Water-ed	Kept Moist	Free-board	Covered	Un-paved	Paved		
2017 Utilities															
0	0	0	87120	67	100	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	240	0

**Proposed Action Support Facilities For 2018**

				Phase 1										Phase 2		
No. Residential Units		Space (sq ft)		No. Days	Area Graded (acres)	Soil Piles		Exposed Surface			Loads		Haul Roads		No. Days	Paved (lbs/yr)
Multi	Single	Comm./Retail	Office/Emp.			Covered	Auto Watered	Water-ed	Kept Moist	Free-board	Covered	Un-paved	Paved			
<b>2018 Utilities</b>																
0	0	0	87120	67	100	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	240	0	
<b>Grand Total</b>																
0	0	0	949773		318										2	

## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
2016 Utilities	Aerial Lifts	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Air Compressors	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Bore/Drill Rigs	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Cement and Mortar Mixers	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Concrete/Industrial Saws	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Cranes	Phase1	0	4	0	0	0	Option 1
2016 Utilities	Crawler Tractors	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Crushing/Processing Equipment	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Dumpers/Tenders	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Excavators	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Forklifts	Phase1	0	6	0	0	0	Option 1
2016 Utilities	Generator Sets	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Graders	Phase1	10	6	0	0	0	Option 1
2016 Utilities	Off-Highway Tractors	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Off-Highway Trucks	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Other Construction Equipment	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Other General Industrial Equipment	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Other Material Handling Equipment	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Pavers	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Paving Equipment	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Plate Compactors	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Pressure Washers	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Pumps	Phase1	0	8	0	0	0	Option 1

Wednesday, January 12, 2011

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
2016 Utilities	Rollers	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Rough Terrain Forklifts	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Rubber Tired Dozers	Phase1	10	6	0	0	0	Option 1
2016 Utilities	Rubber Tired Loaders	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Scrapers	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Signal Boards	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Skid Steer Loaders	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Surfacing Equipment	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Sweepers/Scrubbers	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Tractors/Loaders/Backhoes	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Trenchers	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Water Trucks	Phase1	10	8	0	0	0	Option 1
2016 Utilities	Welders	Phase1	0	8	0	0	0	Option 1
2016 Utilities	Aerial Lifts	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Air Compressors	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Bore/Drill Rigs	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Cement and Mortar Mixers	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Concrete/Industrial Saws	Phase2	1	8	0	0	0	Option 1
2016 Utilities	Cranes	Phase2	1	4	0	0	0	Option 1
2016 Utilities	Crawler Tractors	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Crushing/Processing Equipment	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Dumpers/Tenders	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Excavators	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Forklifts	Phase2	1	6	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
2016 Utilities	Generator Sets	Phase2	1	8	0	0	0	Option 1
2016 Utilities	Graders	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Off-Highway Tractors	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Off-Highway Trucks	Phase2	1	8	0	0	0	Option 1
2016 Utilities	Other Construction Equipment	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Other General Industrial Equipment	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Other Material Handling Equipment	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Pavers	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Paving Equipment	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Plate Compactors	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Pressure Washers	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Pumps	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Rollers	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Rough Terrain Forklifts	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Rubber Tired Dozers	Phase2	0	6	0	0	0	Option 1
2016 Utilities	Rubber Tired Loaders	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Scrapers	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Signal Boards	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Skid Steer Loaders	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Surfacing Equipment	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Sweepers/Scrubbers	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Tractors/Loaders/Backhoes	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Trenchers	Phase2	0	8	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
2016 Utilities	Water Trucks	Phase2	0	8	0	0	0	Option 1
2016 Utilities	Welders	Phase2	1	8	0	0	0	Option 1

User Specified Mode: Default: User does not specify any specific equipment. Default Mobile and Stationary Construction Equipment Calculations are used.  
Option 1: User Specifies Types and Number of Mobile and Stationary Construction Equipment and Avg Hours/day Operating Time.  
Option 2: User Specifies Types and Number of Mobile and Stationary Construction Equipment and Avg Hours/day Operating Time and Operating Days per Year.

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
2017 Utilities	Aerial Lifts	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Air Compressors	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Bore/Drill Rigs	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Cement and Mortar Mixers	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Concrete/Industrial Saws	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Cranes	Phase1	0	4	0	0	0	Option 1
2017 Utilities	Crawler Tractors	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Crushing/Processing Equipment	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Dumpers/Tenders	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Excavators	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Forklifts	Phase1	0	6	0	0	0	Option 1
2017 Utilities	Generator Sets	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Graders	Phase1	10	6	0	0	0	Option 1
2017 Utilities	Off-Highway Tractors	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Off-Highway Trucks	Phase1	0	8	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
2017 Utilities	Other Construction Equipment	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Other General Industrial Equipment	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Other Material Handling Equipment	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Pavers	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Paving Equipment	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Plate Compactors	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Pressure Washers	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Pumps	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Rollers	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Rough Terrain Forklifts	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Rubber Tired Dozers	Phase1	10	6	0	0	0	Option 1
2017 Utilities	Rubber Tired Loaders	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Scrapers	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Signal Boards	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Skid Steer Loaders	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Surfacing Equipment	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Sweepers/Scrubbers	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Tractors/Loaders/Backhoes	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Trenchers	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Water Trucks	Phase1	10	8	0	0	0	Option 1
2017 Utilities	Welders	Phase1	0	8	0	0	0	Option 1
2017 Utilities	Aerial Lifts	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Air Compressors	Phase2	0	8	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
2017 Utilities	Bore/Drill Rigs	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Cement and Mortar Mixers	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Concrete/Industrial Saws	Phase2	1	8	0	0	0	Option 1
2017 Utilities	Cranes	Phase2	1	4	0	0	0	Option 1
2017 Utilities	Crawler Tractors	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Crushing/Processing Equipment	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Dumpers/Tenders	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Excavators	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Forklifts	Phase2	1	6	0	0	0	Option 1
2017 Utilities	Generator Sets	Phase2	1	8	0	0	0	Option 1
2017 Utilities	Graders	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Off-Highway Tractors	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Off-Highway Trucks	Phase2	1	8	0	0	0	Option 1
2017 Utilities	Other Construction Equipment	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Other General Industrial Equipment	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Other Material Handling Equipment	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Pavers	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Paving Equipment	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Plate Compactors	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Pressure Washers	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Pumps	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Rollers	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Rough Terrain Forklifts	Phase2	0	8	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
2017 Utilities	Rubber Tired Dozers	Phase2	0	6	0	0	0	Option 1
2017 Utilities	Rubber Tired Loaders	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Scrapers	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Signal Boards	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Skid Steer Loaders	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Surfacing Equipment	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Sweepers/Scrubbers	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Tractors/Loaders/Backhoes	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Trenchers	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Water Trucks	Phase2	0	8	0	0	0	Option 1
2017 Utilities	Welders	Phase2	1	8	0	0	0	Option 1

User Specified Mode: Default: User does not specify any specific equipment. Default Mobile and Stationary Construction Equipment Calculations are used.  
Option 1: User Specifies Types and Number of Mobile and Stationary Construction Equipment and Avg Hours/day Operating Time.  
Option 2: User Specifies Types and Number of Mobile and Stationary Construction Equipment and Avg Hours/day Operating Time and Operating Days per Year.

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
2018 Utilities	Aerial Lifts	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Air Compressors	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Bore/Drill Rigs	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Cement and Mortar Mixers	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Concrete/Industrial Saws	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Cranes	Phase1	0	4	0	0	0	Option 1
2018 Utilities	Crawler Tractors	Phase1	0	8	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
2018 Utilities	Crushing/Processing Equipment	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Dumpers/Tenders	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Excavators	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Forklifts	Phase1	0	6	0	0	0	Option 1
2018 Utilities	Generator Sets	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Graders	Phase1	10	6	0	0	0	Option 1
2018 Utilities	Off-Highway Tractors	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Off-Highway Trucks	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Other Construction Equipment	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Other General Industrial Equipment	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Other Material Handling Equipment	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Pavers	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Paving Equipment	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Plate Compactors	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Pressure Washers	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Pumps	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Rollers	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Rough Terrain Forklifts	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Rubber Tired Dozers	Phase1	10	6	0	0	0	Option 1
2018 Utilities	Rubber Tired Loaders	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Scrapers	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Signal Boards	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Skid Steer Loaders	Phase1	0	8	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
2018 Utilities	Surfacing Equipment	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Sweepers/Scrubbers	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Tractors/Loaders/Backhoes	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Trenchers	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Water Trucks	Phase1	10	8	0	0	0	Option 1
2018 Utilities	Welders	Phase1	0	8	0	0	0	Option 1
2018 Utilities	Aerial Lifts	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Air Compressors	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Bore/Drill Rigs	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Cement and Mortar Mixers	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Concrete/Industrial Saws	Phase2	1	8	0	0	0	Option 1
2018 Utilities	Cranes	Phase2	1	4	0	0	0	Option 1
2018 Utilities	Crawler Tractors	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Crushing/Processing Equipment	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Dumpers/Tenders	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Excavators	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Forklifts	Phase2	1	6	0	0	0	Option 1
2018 Utilities	Generator Sets	Phase2	1	8	0	0	0	Option 1
2018 Utilities	Graders	Phase2	0	6	0	0	0	Option 1
2018 Utilities	Off-Highway Tractors	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Off-Highway Trucks	Phase2	1	8	0	0	0	Option 1
2018 Utilities	Other Construction Equipment	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Other General Industrial Equipment	Phase2	0	8	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
2018 Utilities	Other Material Handling Equipment	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Pavers	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Paving Equipment	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Plate Compactors	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Pressure Washers	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Pumps	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Rollers	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Rough Terrain Forklifts	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Rubber Tired Dozers	Phase2	0	6	0	0	0	Option 1
2018 Utilities	Rubber Tired Loaders	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Scrapers	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Signal Boards	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Skid Steer Loaders	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Surfacing Equipment	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Sweepers/Scrubbers	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Tractors/Loaders/Backhoes	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Trenchers	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Water Trucks	Phase2	0	8	0	0	0	Option 1
2018 Utilities	Welders	Phase2	1	8	0	0	0	Option 1

User Specified Mode: Default: User does not specify any specific equipment. Default Mobile and Stationary Construction Equipment Calculations are used.  
Option 1: User Specifies Types and Number of Mobile and Stationary Construction Equipment and Avg Hours/day Operating Time.  
Option 2: User Specifies Types and Number of Mobile and Stationary Construction Equipment and Avg Hours/day Operating Time and Operating Days per Year.

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
Deployment Cenetr	Aerial Lifts	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Air Compressors	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Bore/Drill Rigs	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Cement and Mortar Mixers	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Concrete/Industrial Saws	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Cranes	Phase1	0	4	0	0	0	Option 1
Deployment Cenetr	Crawler Tractors	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Crushing/Processing Equipment	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Dumpers/Tenders	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Excavators	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Forklifts	Phase1	0	6	0	0	0	Option 1
Deployment Cenetr	Generator Sets	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Graders	Phase1	1	6	0	0	0	Option 1
Deployment Cenetr	Off-Highway Tractors	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Off-Highway Trucks	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Other Construction Equipment	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Other General Industrial Equipment	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Other Material Handling Equipment	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Pavers	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Paving Equipment	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Plate Compactors	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Pressure Washers	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Pumps	Phase1	0	8	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
Deployment Cenetr	Rollers	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Rough Terrain Forklifts	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Rubber Tired Dozers	Phase1	1	6	0	0	0	Option 1
Deployment Cenetr	Rubber Tired Loaders	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Scrapers	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Signal Boards	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Skid Steer Loaders	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Surfacing Equipment	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Sweepers/Scrubbers	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Tractors/Loaders/Backhoes	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Trenchers	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Water Trucks	Phase1	1	8	0	0	0	Option 1
Deployment Cenetr	Welders	Phase1	0	8	0	0	0	Option 1
Deployment Cenetr	Aerial Lifts	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Air Compressors	Phase2	1	8	0	0	0	Option 1
Deployment Cenetr	Bore/Drill Rigs	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Cement and Mortar Mixers	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Concrete/Industrial Saws	Phase2	1	8	0	0	0	Option 1
Deployment Cenetr	Cranes	Phase2	1	4	0	0	0	Option 1
Deployment Cenetr	Crawler Tractors	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Crushing/Processing Equipment	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Dumpers/Tenders	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Excavators	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Forklifts	Phase2	1	6	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
Deployment Cenetr	Generator Sets	Phase2	1	8	0	0	0	Option 1
Deployment Cenetr	Graders	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Off-Highway Tractors	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Off-Highway Trucks	Phase2	1	8	0	0	0	Option 1
Deployment Cenetr	Other Construction Equipment	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Other General Industrial Equipment	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Other Material Handling Equipment	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Pavers	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Paving Equipment	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Plate Compactors	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Pressure Washers	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Pumps	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Rollers	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Rough Terrain Forklifts	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Rubber Tired Dozers	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Rubber Tired Loaders	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Scrapers	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Signal Boards	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Skid Steer Loaders	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Surfacing Equipment	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Sweepers/Scrubbers	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Tractors/Loaders/Backhoes	Phase2	0	8	0	0	0	Option 1
Deployment Cenetr	Trenchers	Phase2	0	8	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

**Scenario: 21st EOD WMD Construction**

**Installation: KIRTLAND AFB**

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
Deployment Cener	Water Trucks	Phase2	0	8	0	0	0	Option 1
Deployment Cener	Welders	Phase2	1	8	0	0	0	Option 1

User Specified Mode: Default: User does not specify any specific equipment. Default Mobile and Stationary Construction Equipment Calculations are used.  
 Option 1: User Specifies Types and Number of Mobile and Stationary Construction Equipment and Avg Hours/day Operating Time.  
 Option 2: User Specifies Types and Number of Mobile and Stationary Construction Equipment and Avg Hours/day Operating Time and Operating Days per Year.

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
Grading	Aerial Lifts	Phase1	0	8	0	0	0	Option 1
Grading	Air Compressors	Phase1	0	8	0	0	0	Option 1
Grading	Bore/Drill Rigs	Phase1	0	8	0	0	0	Option 1
Grading	Cement and Mortar Mixers	Phase1	0	8	0	0	0	Option 1
Grading	Concrete/Industrial Saws	Phase1	0	8	0	0	0	Option 1
Grading	Cranes	Phase1	0	4	0	0	0	Option 1
Grading	Crawler Tractors	Phase1	0	8	0	0	0	Option 1
Grading	Crushing/Processing Equipment	Phase1	0	8	0	0	0	Option 1
Grading	Dumpers/Tenders	Phase1	0	8	0	0	0	Option 1
Grading	Excavators	Phase1	0	8	0	0	0	Option 1
Grading	Forklifts	Phase1	0	6	0	0	0	Option 1
Grading	Generator Sets	Phase1	0	8	0	0	0	Option 1
Grading	Graders	Phase1	1	6	0	0	0	Option 1
Grading	Off-Highway Tractors	Phase1	0	8	0	0	0	Option 1
Grading	Off-Highway Trucks	Phase1	0	8	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: Demolition

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
Grading	Other Construction Equipment	Phase1	0	8	0	0	0	Option 1
Grading	Other General Industrial Equipment	Phase1	0	8	0	0	0	Option 1
Grading	Other Material Handling Equipment	Phase1	0	8	0	0	0	Option 1
Grading	Pavers	Phase1	0	8	0	0	0	Option 1
Grading	Paving Equipment	Phase1	0	8	0	0	0	Option 1
Grading	Plate Compactors	Phase1	0	8	0	0	0	Option 1
Grading	Pressure Washers	Phase1	0	8	0	0	0	Option 1
Grading	Pumps	Phase1	0	8	0	0	0	Option 1
Grading	Rollers	Phase1	0	8	0	0	0	Option 1
Grading	Rough Terrain Forklifts	Phase1	0	8	0	0	0	Option 1
Grading	Rubber Tired Dozers	Phase1	1	6	0	0	0	Option 1
Grading	Rubber Tired Loaders	Phase1	0	8	0	0	0	Option 1
Grading	Scrapers	Phase1	0	8	0	0	0	Option 1
Grading	Signal Boards	Phase1	0	8	0	0	0	Option 1
Grading	Skid Steer Loaders	Phase1	0	8	0	0	0	Option 1
Grading	Surfacing Equipment	Phase1	0	8	0	0	0	Option 1
Grading	Sweepers/Scrubbers	Phase1	0	8	0	0	0	Option 1
Grading	Tractors/Loaders/Backhoes	Phase1	0	8	0	0	0	Option 1
Grading	Trenchers	Phase1	0	8	0	0	0	Option 1
Grading	Water Trucks	Phase1	1	8	0	0	0	Option 1
Grading	Welders	Phase1	0	8	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

**Scenario: Demolition**

**Installation: KIRTLAND AFB**

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
<b>User Specified Mode:</b> Default: User does not specify any specific equipment. Default Mobile and Stationary Construction Equipment Calculations are used. Option 1: User Specifies Types and Number of Mobile and Stationary Construction Equipment and Avg Hours/day Operating Time. Option 2: User Specifies Types and Number of Mobile and Stationary Construction Equipment and Avg Hours/day Operating Time and Operating Days per Year.								

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
Lock Down Facility	Aerial Lifts	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Air Compressors	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Bore/Drill Rigs	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Cement and Mortar Mixers	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Concrete/Industrial Saws	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Cranes	Phase1	0	4	0	0	0	Option 1
Lock Down Facility	Crawler Tractors	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Crushing/Processing Equipment	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Dumpers/Tenders	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Excavators	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Forklifts	Phase1	0	6	0	0	0	Option 1
Lock Down Facility	Generator Sets	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Graders	Phase1	1	6	0	0	0	Option 1
Lock Down Facility	Off-Highway Tractors	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Off-Highway Trucks	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Other Construction Equipment	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Other General Industrial Equipment	Phase1	0	8	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
Lock Down Facility	Other Material Handling Equipment	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Pavers	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Paving Equipment	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Plate Compactors	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Pressure Washers	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Pumps	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Rollers	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Rough Terrain Forklifts	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Rubber Tired Dozers	Phase1	1	6	0	0	0	Option 1
Lock Down Facility	Rubber Tired Loaders	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Scrapers	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Signal Boards	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Skid Steer Loaders	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Surfacing Equipment	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Sweepers/Scrubbers	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Tractors/Loaders/Backhoes	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Trenchers	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Water Trucks	Phase1	1	8	0	0	0	Option 1
Lock Down Facility	Welders	Phase1	0	8	0	0	0	Option 1
Lock Down Facility	Aerial Lifts	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Air Compressors	Phase2	1	8	0	0	0	Option 1
Lock Down Facility	Bore/Drill Rigs	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Cement and Mortar Mixers	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Concrete/Industrial Saws	Phase2	1	8	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
Lock Down Facility	Cranes	Phase2	1	4	0	0	0	Option 1
Lock Down Facility	Crawler Tractors	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Crushing/Processing Equipment	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Dumpers/Tenders	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Excavators	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Forklifts	Phase2	1	6	0	0	0	Option 1
Lock Down Facility	Generator Sets	Phase2	1	8	0	0	0	Option 1
Lock Down Facility	Graders	Phase2	0	6	0	0	0	Option 1
Lock Down Facility	Off-Highway Tractors	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Off-Highway Trucks	Phase2	1	8	0	0	0	Option 1
Lock Down Facility	Other Construction Equipment	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Other General Industrial Equipment	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Other Material Handling Equipment	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Pavers	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Paving Equipment	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Plate Compactors	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Pressure Washers	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Pumps	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Rollers	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Rough Terrain Forklifts	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Rubber Tired Dozers	Phase2	0	6	0	0	0	Option 1
Lock Down Facility	Rubber Tired Loaders	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Scrapers	Phase2	0	8	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
Lock Down Facility	Signal Boards	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Skid Steer Loaders	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Surfacing Equipment	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Sweepers/Scrubbers	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Tractors/Loaders/Backhoes	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Trenchers	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Water Trucks	Phase2	0	8	0	0	0	Option 1
Lock Down Facility	Welders	Phase2	1	8	0	0	0	Option 1

User Specified Mode: Default: User does not specify any specific equipment. Default Mobile and Stationary Construction Equipment Calculations are used.

Option 1: User Specifies Types and Number of Mobile and Stationary Construction Equipment and Avg Hours/day Operating Time.

Option 2: User Specifies Types and Number of Mobile and Stationary Construction Equipment and Avg Hours/day Operating Time and Operating Days per Year.

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
Operations Facility	Aerial Lifts	Phase1	0	8	0	0	0	Option 1
Operations Facility	Air Compressors	Phase1	0	8	0	0	0	Option 1
Operations Facility	Bore/Drill Rigs	Phase1	0	8	0	0	0	Option 1
Operations Facility	Cement and Mortar Mixers	Phase1	0	8	0	0	0	Option 1
Operations Facility	Concrete/Industrial Saws	Phase1	0	8	0	0	0	Option 1
Operations Facility	Cranes	Phase1	0	4	0	0	0	Option 1
Operations Facility	Crawler Tractors	Phase1	0	8	0	0	0	Option 1
Operations Facility	Crushing/Processing Equipment	Phase1	0	8	0	0	0	Option 1
Operations Facility	Dumpers/Tenders	Phase1	0	8	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
Operations Facility	Excavators	Phase1	0	8	0	0	0	Option 1
Operations Facility	Forklifts	Phase1	0	6	0	0	0	Option 1
Operations Facility	Generator Sets	Phase1	0	8	0	0	0	Option 1
Operations Facility	Graders	Phase1	1	6	0	0	0	Option 1
Operations Facility	Off-Highway Tractors	Phase1	0	8	0	0	0	Option 1
Operations Facility	Off-Highway Trucks	Phase1	0	8	0	0	0	Option 1
Operations Facility	Other Construction Equipment	Phase1	0	8	0	0	0	Option 1
Operations Facility	Other General Industrial Equipment	Phase1	0	8	0	0	0	Option 1
Operations Facility	Other Material Handling Equipment	Phase1	0	8	0	0	0	Option 1
Operations Facility	Pavers	Phase1	0	8	0	0	0	Option 1
Operations Facility	Paving Equipment	Phase1	0	8	0	0	0	Option 1
Operations Facility	Plate Compactors	Phase1	0	8	0	0	0	Option 1
Operations Facility	Pressure Washers	Phase1	0	8	0	0	0	Option 1
Operations Facility	Pumps	Phase1	0	8	0	0	0	Option 1
Operations Facility	Rollers	Phase1	0	8	0	0	0	Option 1
Operations Facility	Rough Terrain Forklifts	Phase1	0	8	0	0	0	Option 1
Operations Facility	Rubber Tired Dozers	Phase1	1	6	0	0	0	Option 1
Operations Facility	Rubber Tired Loaders	Phase1	0	8	0	0	0	Option 1
Operations Facility	Scrapers	Phase1	0	8	0	0	0	Option 1
Operations Facility	Signal Boards	Phase1	0	8	0	0	0	Option 1
Operations Facility	Skid Steer Loaders	Phase1	0	8	0	0	0	Option 1
Operations Facility	Surfacing Equipment	Phase1	0	8	0	0	0	Option 1
Operations Facility	Sweepers/Scrubbers	Phase1	0	8	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
Operations Facility	Tractors/Loaders/Backhoes	Phase1	0	8	0	0	0	Option 1
Operations Facility	Trenchers	Phase1	0	8	0	0	0	Option 1
Operations Facility	Water Trucks	Phase1	1	8	0	0	0	Option 1
Operations Facility	Welders	Phase1	0	8	0	0	0	Option 1
Operations Facility	Aerial Lifts	Phase2	0	8	0	0	0	Option 1
Operations Facility	Air Compressors	Phase2	1	8	0	0	0	Option 1
Operations Facility	Bore/Drill Rigs	Phase2	0	8	0	0	0	Option 1
Operations Facility	Cement and Mortar Mixers	Phase2	0	8	0	0	0	Option 1
Operations Facility	Concrete/Industrial Saws	Phase2	1	8	0	0	0	Option 1
Operations Facility	Cranes	Phase2	1	4	0	0	0	Option 1
Operations Facility	Crawler Tractors	Phase2	0	8	0	0	0	Option 1
Operations Facility	Crushing/Processing Equipment	Phase2	0	8	0	0	0	Option 1
Operations Facility	Dumpers/Tenders	Phase2	0	8	0	0	0	Option 1
Operations Facility	Excavators	Phase2	0	8	0	0	0	Option 1
Operations Facility	Forklifts	Phase2	1	6	0	0	0	Option 1
Operations Facility	Generator Sets	Phase2	1	8	0	0	0	Option 1
Operations Facility	Graders	Phase2	0	6	0	0	0	Option 1
Operations Facility	Off-Highway Tractors	Phase2	0	8	0	0	0	Option 1
Operations Facility	Off-Highway Trucks	Phase2	1	8	0	0	0	Option 1
Operations Facility	Other Construction Equipment	Phase2	0	8	0	0	0	Option 1
Operations Facility	Other General Industrial Equipment	Phase2	0	8	0	0	0	Option 1
Operations Facility	Other Material Handling Equipment	Phase2	0	8	0	0	0	Option 1
Operations Facility	Pavers	Phase2	0	8	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
Operations Facility	Paving Equipment	Phase2	0	8	0	0	0	Option 1
Operations Facility	Plate Compactors	Phase2	0	8	0	0	0	Option 1
Operations Facility	Pressure Washers	Phase2	0	8	0	0	0	Option 1
Operations Facility	Pumps	Phase2	0	8	0	0	0	Option 1
Operations Facility	Rollers	Phase2	0	8	0	0	0	Option 1
Operations Facility	Rough Terrain Forklifts	Phase2	0	8	0	0	0	Option 1
Operations Facility	Rubber Tired Dozers	Phase2	0	6	0	0	0	Option 1
Operations Facility	Rubber Tired Loaders	Phase2	0	8	0	0	0	Option 1
Operations Facility	Scrapers	Phase2	0	8	0	0	0	Option 1
Operations Facility	Signal Boards	Phase2	0	8	0	0	0	Option 1
Operations Facility	Skid Steer Loaders	Phase2	0	8	0	0	0	Option 1
Operations Facility	Surfacing Equipment	Phase2	0	8	0	0	0	Option 1
Operations Facility	Sweepers/Scrubbers	Phase2	0	8	0	0	0	Option 1
Operations Facility	Tractors/Loaders/Backhoes	Phase2	0	8	0	0	0	Option 1
Operations Facility	Trenchers	Phase2	0	8	0	0	0	Option 1
Operations Facility	Water Trucks	Phase2	0	8	0	0	0	Option 1
Operations Facility	Welders	Phase2	1	8	0	0	0	Option 1

User Specified Mode: Default: User does not specify any specific equipment. Default Mobile and Stationary Construction Equipment Calculations are used.  
Option 1: User Specifies Types and Number of Mobile and Stationary Construction Equipment and Avg Hours/day Operating Time.  
Option 2: User Specifies Types and Number of Mobile and Stationary Construction Equipment and Avg Hours/day Operating Time and Operating Days per Year.

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
Parking Areas	Aerial Lifts	Phase1	0	8	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
Parking Areas	Air Compressors	Phase1	0	8	0	0	0	Option 1
Parking Areas	Bore/Drill Rigs	Phase1	0	8	0	0	0	Option 1
Parking Areas	Cement and Mortar Mixers	Phase1	0	8	0	0	0	Option 1
Parking Areas	Concrete/Industrial Saws	Phase1	0	8	0	0	0	Option 1
Parking Areas	Cranes	Phase1	0	4	0	0	0	Option 1
Parking Areas	Crawler Tractors	Phase1	0	8	0	0	0	Option 1
Parking Areas	Crushing/Processing Equipment	Phase1	0	8	0	0	0	Option 1
Parking Areas	Dumpers/Tenders	Phase1	0	8	0	0	0	Option 1
Parking Areas	Excavators	Phase1	0	8	0	0	0	Option 1
Parking Areas	Forklifts	Phase1	0	6	0	0	0	Option 1
Parking Areas	Generator Sets	Phase1	0	8	0	0	0	Option 1
Parking Areas	Graders	Phase1	1	6	0	0	0	Option 1
Parking Areas	Off-Highway Tractors	Phase1	0	8	0	0	0	Option 1
Parking Areas	Off-Highway Trucks	Phase1	0	8	0	0	0	Option 1
Parking Areas	Other Construction Equipment	Phase1	0	8	0	0	0	Option 1
Parking Areas	Other General Industrial Equipment	Phase1	0	8	0	0	0	Option 1
Parking Areas	Other Material Handling Equipment	Phase1	0	8	0	0	0	Option 1
Parking Areas	Pavers	Phase1	0	8	0	0	0	Option 1
Parking Areas	Paving Equipment	Phase1	0	8	0	0	0	Option 1
Parking Areas	Plate Compactors	Phase1	0	8	0	0	0	Option 1
Parking Areas	Pressure Washers	Phase1	0	8	0	0	0	Option 1
Parking Areas	Pumps	Phase1	0	8	0	0	0	Option 1
Parking Areas	Rollers	Phase1	0	8	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
Parking Areas	Rough Terrain Forklifts	Phase1	0	8	0	0	0	Option 1
Parking Areas	Rubber Tired Dozers	Phase1	1	8	0	0	0	Option 1
Parking Areas	Rubber Tired Loaders	Phase1	0	8	0	0	0	Option 1
Parking Areas	Scrapers	Phase1	0	8	0	0	0	Option 1
Parking Areas	Signal Boards	Phase1	0	8	0	0	0	Option 1
Parking Areas	Skid Steer Loaders	Phase1	0	8	0	0	0	Option 1
Parking Areas	Surfacing Equipment	Phase1	0	8	0	0	0	Option 1
Parking Areas	Sweepers/Scrubbers	Phase1	0	8	0	0	0	Option 1
Parking Areas	Tractors/Loaders/Backhoes	Phase1	0	8	0	0	0	Option 1
Parking Areas	Trenchers	Phase1	0	8	0	0	0	Option 1
Parking Areas	Water Trucks	Phase1	1	8	0	0	0	Option 1
Parking Areas	Welders	Phase1	0	8	0	0	0	Option 1
Parking Areas	Aerial Lifts	Phase2	0	8	0	0	0	Option 1
Parking Areas	Air Compressors	Phase2	0	8	0	0	0	Option 1
Parking Areas	Bore/Drill Rigs	Phase2	0	8	0	0	0	Option 1
Parking Areas	Cement and Mortar Mixers	Phase2	0	8	0	0	0	Option 1
Parking Areas	Concrete/Industrial Saws	Phase2	0	8	0	0	0	Option 1
Parking Areas	Cranes	Phase2	0	4	0	0	0	Option 1
Parking Areas	Crawler Tractors	Phase2	0	8	0	0	0	Option 1
Parking Areas	Crushing/Processing Equipment	Phase2	0	8	0	0	0	Option 1
Parking Areas	Dumpers/Tenders	Phase2	0	8	0	0	0	Option 1
Parking Areas	Excavators	Phase2	0	8	0	0	0	Option 1
Parking Areas	Forklifts	Phase2	0	6	0	0	0	Option 1
Parking Areas	Generator Sets	Phase2	0	8	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
Parking Areas	Graders	Phase2	0	6	0	0	0	Option 1
Parking Areas	Off-Highway Tractors	Phase2	0	8	0	0	0	Option 1
Parking Areas	Off-Highway Trucks	Phase2	2	8	0	0	0	Option 1
Parking Areas	Other Construction Equipment	Phase2	0	8	0	0	0	Option 1
Parking Areas	Other General Industrial Equipment	Phase2	0	8	0	0	0	Option 1
Parking Areas	Other Material Handling Equipment	Phase2	0	8	0	0	0	Option 1
Parking Areas	Pavers	Phase2	1	8	0	0	0	Option 1
Parking Areas	Paving Equipment	Phase2	0	8	0	0	0	Option 1
Parking Areas	Plate Compactors	Phase2	0	8	0	0	0	Option 1
Parking Areas	Pressure Washers	Phase2	0	8	0	0	0	Option 1
Parking Areas	Pumps	Phase2	0	8	0	0	0	Option 1
Parking Areas	Rollers	Phase2	1	8	0	0	0	Option 1
Parking Areas	Rough Terrain Forklifts	Phase2	0	8	0	0	0	Option 1
Parking Areas	Rubber Tired Dozers	Phase2	0	6	0	0	0	Option 1
Parking Areas	Rubber Tired Loaders	Phase2	0	8	0	0	0	Option 1
Parking Areas	Scrapers	Phase2	0	8	0	0	0	Option 1
Parking Areas	Signal Boards	Phase2	0	8	0	0	0	Option 1
Parking Areas	Skid Steer Loaders	Phase2	0	8	0	0	0	Option 1
Parking Areas	Surfacing Equipment	Phase2	0	8	0	0	0	Option 1
Parking Areas	Sweepers/Scrubbers	Phase2	0	8	0	0	0	Option 1
Parking Areas	Tractors/Loaders/Backhoes	Phase2	0	8	0	0	0	Option 1
Parking Areas	Trenchers	Phase2	0	8	0	0	0	Option 1
Parking Areas	Water Trucks	Phase2	0	8	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

**Scenario: 21st EOD WMD Construction**

**Installation: KIRTLAND AFB**

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
Parking Areas	Welders	Phase2	0	8	0	0	0	Option 1

User Specified Mode: Default: User does not specify any specific equipment. Default Mobile and Stationary Construction Equipment Calculations are used.  
Option 1: User Specifies Types and Number of Mobile and Stationary Construction Equipment and Avg Hours/day Operating Time.  
Option 2: User Specifies Types and Number of Mobile and Stationary Construction Equipment and Avg Hours/day Operating Time and Operating Days per Year.

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
Shotpads	Aerial Lifts	Phase1	0	8	0	0	0	Option 1
Shotpads	Air Compressors	Phase1	0	8	0	0	0	Option 1
Shotpads	Bore/Drill Rigs	Phase1	0	8	0	0	0	Option 1
Shotpads	Cement and Mortar Mixers	Phase1	0	8	0	0	0	Option 1
Shotpads	Concrete/Industrial Saws	Phase1	0	8	0	0	0	Option 1
Shotpads	Cranes	Phase1	0	4	0	0	0	Option 1
Shotpads	Crawler Tractors	Phase1	0	8	0	0	0	Option 1
Shotpads	Crushing/Processing Equipment	Phase1	0	8	0	0	0	Option 1
Shotpads	Dumpers/Tenders	Phase1	0	8	0	0	0	Option 1
Shotpads	Excavators	Phase1	1	8	0	0	0	Option 1
Shotpads	Forklifts	Phase1	0	6	0	0	0	Option 1
Shotpads	Generator Sets	Phase1	0	8	0	0	0	Option 1
Shotpads	Graders	Phase1	0	6	0	0	0	Option 1
Shotpads	Off-Highway Tractors	Phase1	0	8	0	0	0	Option 1
Shotpads	Off-Highway Trucks	Phase1	0	8	0	0	0	Option 1
Shotpads	Other Construction Equipment	Phase1	0	8	0	0	0	Option 1

## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

Scenario: 21st EOD WMD Construction

Installation: KIRTLAND AFB

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
Shotpads	Other General Industrial Equipment	Phase1	0	8	0	0	0	Option 1
Shotpads	Other Material Handling Equipment	Phase1	0	8	0	0	0	Option 1
Shotpads	Pavers	Phase1	0	8	0	0	0	Option 1
Shotpads	Paving Equipment	Phase1	0	8	0	0	0	Option 1
Shotpads	Plate Compactors	Phase1	0	8	0	0	0	Option 1
Shotpads	Pressure Washers	Phase1	0	8	0	0	0	Option 1
Shotpads	Pumps	Phase1	0	8	0	0	0	Option 1
Shotpads	Rollers	Phase1	0	8	0	0	0	Option 1
Shotpads	Rough Terrain Forklifts	Phase1	0	8	0	0	0	Option 1
Shotpads	Rubber Tired Dozers	Phase1	1	6	0	0	0	Option 1
Shotpads	Rubber Tired Loaders	Phase1	0	8	0	0	0	Option 1
Shotpads	Scrapers	Phase1	0	8	0	0	0	Option 1
Shotpads	Signal Boards	Phase1	0	8	0	0	0	Option 1
Shotpads	Skid Steer Loaders	Phase1	0	8	0	0	0	Option 1
Shotpads	Surfacing Equipment	Phase1	0	8	0	0	0	Option 1
Shotpads	Sweepers/Scrubbers	Phase1	0	8	0	0	0	Option 1
Shotpads	Tractors/Loaders/Backhoes	Phase1	0	8	0	0	0	Option 1
Shotpads	Trenchers	Phase1	0	8	0	0	0	Option 1
Shotpads	Water Trucks	Phase1	1	8	0	0	0	Option 1
Shotpads	Welders	Phase1	0	8	0	0	0	Option 1
Shotpads	Aerial Lifts	Phase2	0	8	0	0	0	Option 1
Shotpads	Air Compressors	Phase2	0	8	0	0	0	Option 1
Shotpads	Bore/Drill Rigs	Phase2	0	8	0	0	0	Option 1

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## USAF Air Conformity Applicability Model

### Mobile Construction Equipment Details

**Scenario: 21st EOD WMD Construction**

**Installation: KIRTLAND AFB**

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
Shotpads	Cement and Mortar Mixers	Phase2	0	8	0	0	0	Option 1
Shotpads	Concrete/Industrial Saws	Phase2	1	8	0	0	0	Option 1
Shotpads	Cranes	Phase2	1	4	0	0	0	Option 1
Shotpads	Crawler Tractors	Phase2	0	8	0	0	0	Option 1
Shotpads	Crushing/Processing Equipment	Phase2	0	8	0	0	0	Option 1
Shotpads	Dumpers/Tenders	Phase2	0	8	0	0	0	Option 1
Shotpads	Excavators	Phase2	0	8	0	0	0	Option 1
Shotpads	Forklifts	Phase2	1	6	0	0	0	Option 1
Shotpads	Generator Sets	Phase2	1	8	0	0	0	Option 1
Shotpads	Graders	Phase2	0	6	0	0	0	Option 1
Shotpads	Off-Highway Tractors	Phase2	0	8	0	0	0	Option 1
Shotpads	Off-Highway Trucks	Phase2	1	8	0	0	0	Option 1
Shotpads	Other Construction Equipment	Phase2	0	8	0	0	0	Option 1
Shotpads	Other General Industrial Equipment	Phase2	0	8	0	0	0	Option 1
Shotpads	Other Material Handling Equipment	Phase2	0	8	0	0	0	Option 1
Shotpads	Pavers	Phase2	0	8	0	0	0	Option 1
Shotpads	Paving Equipment	Phase2	0	8	0	0	0	Option 1
Shotpads	Plate Compactors	Phase2	0	8	0	0	0	Option 1
Shotpads	Pressure Washers	Phase2	0	8	0	0	0	Option 1
Shotpads	Pumps	Phase2	0	8	0	0	0	Option 1
Shotpads	Rollers	Phase2	0	8	0	0	0	Option 1
Shotpads	Rough Terrain Forklifts	Phase2	0	8	0	0	0	Option 1
Shotpads	Rubber Tired Dozers	Phase2	0	6	0	0	0	Option 1

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# USAF Air Conformity Applicability Model

## Mobile Construction Equipment Details

**Scenario: 21st EOD WMD Construction**

**Installation: KIRTLAND AFB**

NAME:	Mobile Equipment Type	Applicable Phase	Number Used	Average Operating Hours Per Day	Use in First Year (Days/Year)	Use in Intervening Full Years (Days/Year)	Use in Last Year (Days/Year)	User Specified Mode
Shotpads	Rubber Tired Loaders	Phase2	0	8	0	0	0	Option 1
Shotpads	Scrapers	Phase2	0	8	0	0	0	Option 1
Shotpads	Signal Boards	Phase2	0	8	0	0	0	Option 1
Shotpads	Skid Steer Loaders	Phase2	0	8	0	0	0	Option 1
Shotpads	Surfacing Equipment	Phase2	0	8	0	0	0	Option 1
Shotpads	Sweepers/Scrubbers	Phase2	0	8	0	0	0	Option 1
Shotpads	Tractors/Loaders/Backhoes	Phase2	0	8	0	0	0	Option 1
Shotpads	Trenchers	Phase2	0	8	0	0	0	Option 1
Shotpads	Water Trucks	Phase2	0	8	0	0	0	Option 1
Shotpads	Welders	Phase2	1	8	0	0	0	Option 1

User Specified Mode: Default: User does not specify any specific equipment. Default Mobile and Stationary Construction Equipment Calculations are used.  
 Option 1: User Specifies Types and Number of Mobile and Stationary Construction Equipment and Avg Hours/day Operating Time.  
 Option 2: User Specifies Types and Number of Mobile and Stationary Construction Equipment and Avg Hours/day Operating Time and Operating Days per Year.

# USAF Air Conformity Applicability Model

## Proposed Action Personnel Information

Scenario: 21st EOD WMD Cons.

Installation: KIRTLAND AFB

### Proposed Action Personnel For 2011

Operating Profile	Number	Calendar Quarter	% Employees Living on Base	Days/Months (National Guard and Reserves only)
Civilian	10	4	18	
Civilian	10	1	18	
Civilian	10	1	18	
Civilian	10	1	18	
Civilian	10	1	18	
Civilian	10	1	18	
Civilian	10	1	18	
Civilian	10	1	18	
Civilian	10	1	18	

# USAF Air Conformity Applicability Model

## Receiving Installation Details

Scenario: EOD

Installation: KIRTLAND AFB

<b>Inst. ID</b>	<b>ZIP Code:</b>	<b>County</b>	<b>State</b>			
350	87117	Bernalillo	NM			
<b>Regional Emissions Inventory (tpy)</b>						
<b>Inv. Year</b>	<b>CO Total</b>	<b>NOX Total</b>	<b>VOC Total</b>	<b>SO2 Total</b>	<b>PM10 Total</b>	<b>PM2.5 Total</b>
2005	154,943.1	23,231.28	22,091.31	1,594.89	62,336.84	8,531.62
<b>Installation Emissions (tpy)</b>			<b>Emissions Drivers</b>			
<b>Inv. Year:</b>	<b>VOC Total</b>	<b>NOX Total</b>	<b>Residential Heating</b>	<b>Commute Miles:</b>	<b>GOV Miles:</b>	
average 05-07	56	18	MMBTU/resident	15	119	
			7.3			
<b>CO Total</b>	<b>SO2 Total</b>	<b>PM10 Total</b>	<b>% New Emp. Living</b>	<b>% Facility Heating by</b>		
15	2	40	on Base	Central Plant		
			18	0		
<b>PM2.5 Total</b>						
0						
<b>Status Year</b> 2009						
<b>County Attainment Status</b>						
<b>Transport Zone</b>	<b>Ozone Status</b>	<b>NO2 Status</b>	<b>SO2 Status</b>	<b>PM10 Status</b>	<b>PM2.5 Status</b>	<b>CO Status</b>
NO	ATT	ATT	ATT	ATT	ATT	MAN
	<b>Ozone Class</b>	<b>NO2 Class</b>	<b>SO2 Class</b>	<b>PM10 Class</b>	<b>PM2.5 Class</b>	<b>CO Class</b>
	NA	NA	NA	NA	NA	NA

Mobile 6					
Inspection and Maintenance Program :					
Enhanced					
Fleet-Mix	POV	GOV	Fleet-Mix	POV	GOV
LDV	0.773	0.265	HDV5	0	0.004
LDT1	0.05	0.096	HDV6	0	0.016
LDT2	0.168	0.321	HDV7	0	0.019
LDT3	0	0.064	HDV8A	0	0.021
LDT4	0	0.029	HDV8B	0	0.074
HDV2B	0	0.072	HDBS	0	0.004
HDV3	0	0.007	HDBT	0	0.002
HDV4	0	0.006	MC	0.009	0

Point of Contact Information	
<b>Air Agency/AQCD:</b> Air Quality Bureau	
<b>Web Address:</b> www.nmenv.state.nm.us	<b>Phone:</b> (505) 827-1494

## **APPENDIX E**

### **SHPO Concurrence Letter**



STATE OF NEW MEXICO  
**DEPARTMENT OF CULTURAL AFFAIRS**  
**HISTORIC PRESERVATION DIVISION**

BATAAN MEMORIAL BUILDING  
407 GALISTEO STREET, SUITE 236  
SANTA FE, NEW MEXICO 87501  
PHONE (505) 827-6320 FAX (505) 827-6338

June 27, 2011

Valerie Renner  
377 MSG/CEANQ  
Cultural Resource Manager  
2050 Wyoming Blvd SE  
Kirtland AFB NM 87117

Subject: 21<sup>st</sup> Explosive Ordnance Disposal/Weapons Mass Destruction expansion

Dear Ms. Renner:

I have reviewed the information in your June 22<sup>nd</sup> letter concerning plans to expand the 21<sup>st</sup> Explosive Ordnance Disposal/Weapons Mass Destruction permitted area. The proposed activities or undertaking will include the construction of new facilities and the demolition of two buildings (29099 & 29040) and that plans to demolish building 29051 have been reconsidered. Building 29051 is a historic property and the State Historic Preservation Office has asked whether Kirtland Air Force Base (AFB) is able to continue the expansion without demolishing the historic building.

Kirtland AFB and the 21<sup>st</sup> EOD/MWD will now preserve the historic building 29051 and the 21<sup>st</sup> EOD/MWD will continue occupying the building. A discussion of building 29051 and these mitigation measures for its preservation will be documented in the Finding of No Significant Impact. I appreciate Kirtland AFB's consideration of our request and with its decision to protect this historic property, and I am pleased to concur with your finding of **No Adverse Effect** pursuant to 36 CFR part 800.5(b).

Thank you for the opportunity to review the action and please do not hesitate contacting me at 505-827-4045 or [jan.biella@state.nm.us](mailto:jan.biella@state.nm.us) if you have any questions.

Sincerely,

Jan V. Biella  
Interim State Historic Preservation Officer