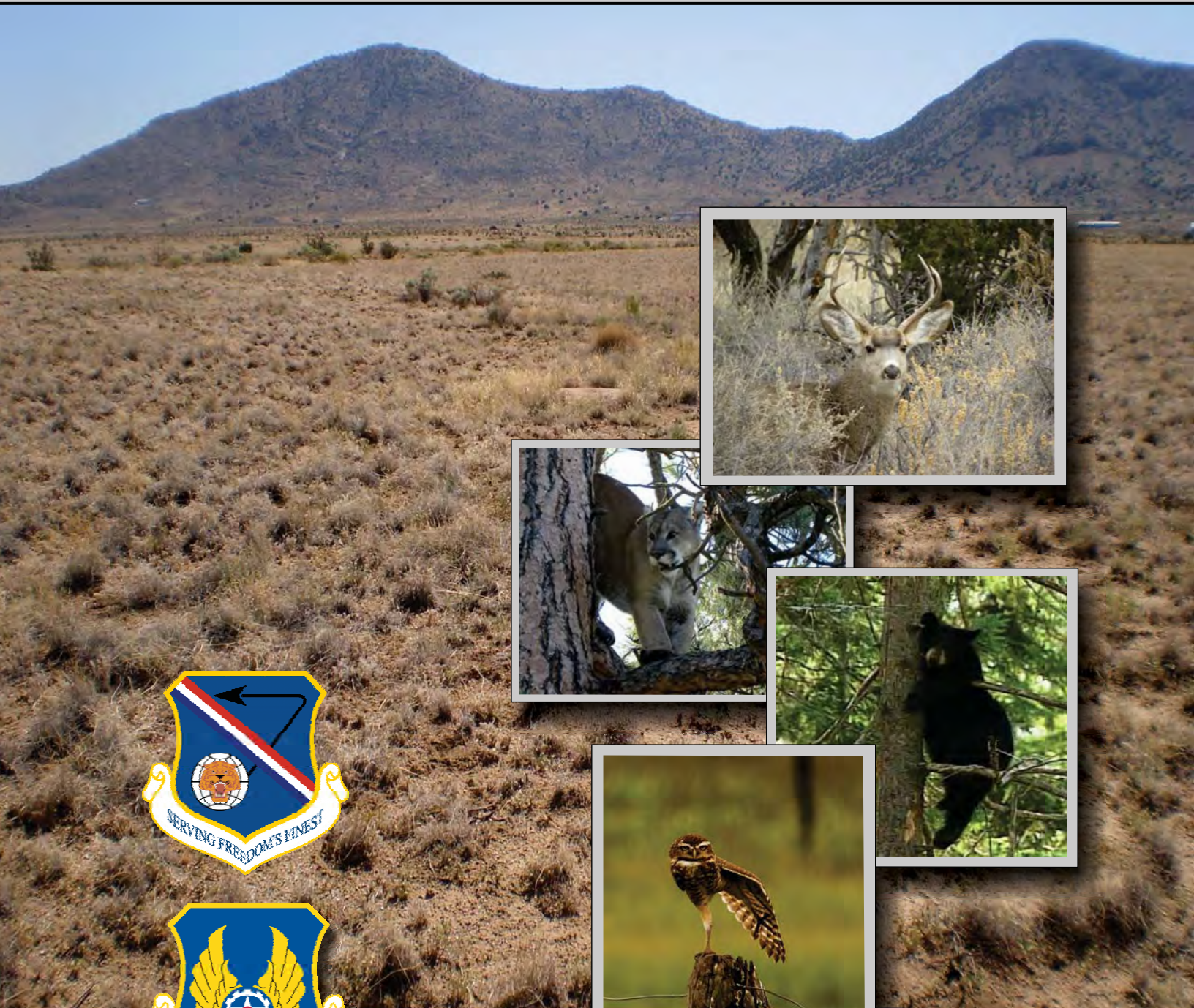


FINAL

**PROGRAMMATIC ENVIRONMENTAL ASSESSMENT FOR
BASE-WIDE MILITARY CONSTRUCTION PLANNING AT
KIRTLAND AIR FORCE BASE, NEW MEXICO**



NOVEMBER 2013

FINAL

**PROGRAMMATIC ENVIRONMENTAL ASSESSMENT FOR
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KIRTLAND AIR FORCE BASE, NEW MEXICO**



November 2013

**FINAL PROGRAMMATIC ENVIRONMENTAL ASSESSMENT
FINDING OF NO SIGNIFICANT IMPACT
NOVEMBER 2013**

1.0 NAME OF PROPOSED ACTION

Programmatic Environmental Assessment (EA) for Base-Wide Military Construction Planning at Kirtland Air Force Base (AFB), New Mexico.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The U.S. Air Force (USAF) incorporates the attached "Programmatic Environmental Assessment for Base-Wide Military Construction Planning at Kirtland AFB, New Mexico" to this Finding of No Significant Impact (FONSI) document. The USAF Materiel Command (AFMC) and the 377th Air Base Wing (377 ABW), a unit of the AFMC, proposes military construction (MILCON) of an administrative building complex at Kirtland AFB, New Mexico. The Proposed Action is to construct, operate, and maintain an administrative building complex with up to 150,000 square feet of interior space capable of accommodating up to 652 new staff. It would consist of office space, copier rooms, storage rooms, restrooms, break rooms, a mail receiving room, and conference rooms. Approximately 10 acres of land would be impacted by the construction of the proposed administrative building complex, parking spaces, access driveway, walkways, and green spaces. The total developed area is a conservative estimate and future mission requirements may require a smaller facility and fewer staff, and create a smaller footprint.

Kirtland AFB conducted a Base-wide survey of suitable sites to construct and operate the proposed administrative building complex and identified six alternative sites. The alternative sites were selected based on a subtractive screening process. Potential sites were eliminated if the construction of administrative buildings in that area would result in an undesirable impact on human health or the environment. Although six sites have been identified and meet the screening criteria, these same criteria may be used to select other sites. It is anticipated that if another site meets the screening criteria, it would meet the purpose of and need for the Proposed Action described in this Programmatic EA. Other sites would be evaluated through Kirtland AFB's Environmental Impact Analysis Process to determine if they can be covered under this EA. If other selected sites cannot be covered under this Programmatic EA, then a Supplemental EA would be required.

Three of the six alternative sites are located in or near the improved areas of Kirtland AFB and three are located in unimproved areas. If an unimproved site is chosen, the proposed administrative building complex would have to install its own power lines, septic systems, and communications lines. It is estimated that MILCON would take 5 years to complete the office complex, from design to occupancy. The No Action Alternative would exclude the construction, operation, and maintenance of a new building complex and 377 ABW would use the existing administrative infrastructure to accommodate and service any changes in mission objectives.

3.0 SUMMARY OF ANTICIPATED ENVIRONMENTAL CONSEQUENCES

The Programmatic EA provides an analysis of potential environmental impacts of the Proposed Action and alternatives within the region of influence, which include Kirtland AFB and Bernalillo County. No adverse impacts were identified on land use, infrastructure, socioeconomics and environmental justice, air quality, noise environment, and safety and occupational health.

Cultural Resources. Kirtland AFB has conducted a Base-wide archaeological survey, and cultural resources were found to exist within the boundaries of Alternative Sites 4, 5, and 6. If these proposed sites are chosen and the footprint of the building could not be adjusted to avoid impacting cultural resources, then further consultation with the State Historic Preservation Officer (SHPO) and applicable Tribal Historic Preservation Officer (THPO) will occur. If sites cannot be avoided, then mitigation measures will be developed in accordance with Section 106 of the National Historic Preservation Act of 1966. Kirtland AFB archaeological surveys, consultation with the SHPO and THPO, avoidance, and mitigation efforts would ensure that impacts on cultural resources would be less than significant.

Biological Resources. The Proposed Action would impact 10 acres of land on Kirtland AFB. As part of the Kirtland AFB Integrated Natural Resource Management Plan (INRMP), staff scientists have conducted Base-wide surveys of biological resources. There are no aquatic communities at any of the six alternative sites. Gunnison's prairie dog (*Cynomys gunnisoni*) and western burrowing owl (*Athene cunicularia*) have been observed throughout Kirtland AFB, and the Gray vireo (*Vireo vicinior*) has been observed in the mountainous areas of Kirtland AFB. Before any ground disturbance, the construction area would be surveyed by a qualified biologist to ensure avoidance of any protected species, and construction would be scheduled for November through February, after the mating and nesting seasons are over for most protected species.

Earth Resources. The new buildings would increase the impervious surface areas in the Tijeras Arroyos watershed by less than 1 percent. The contractor in charge of design and construction of the proposed administrative building complex would comply with Section 438 of the Energy Independence and Security Act and Kirtland AFB's Construction General Permit, and would submit a Stormwater Pollution Prevention Plan (SWPPP) to the Kirtland AFB Water Quality Department. Adherence to the SWPPP and local and Federal regulations would ensure that the Proposed Action would not significantly impact water quality in the region. The Kirtland AFB INRMP and field surveys confirmed that jurisdictional wetlands and floodplains are not located at or near the six alternative sites and that there are no prime farmland soils located on Kirtland AFB; therefore, impacts on earth resources would be less than significant.

Hazardous Materials and Waste Management. Construction activities could result in a spill of petroleum, oil, and lubricants; however, a Spill Prevention, Control, and Countermeasures Plan would be in place prior to the start of construction. Kirtland AFB has a Hazardous Waste Management Plan that provides guidelines for managing hazardous wastes, and a small increase in the transport, use, or disposal of hazardous materials resulting from implementation of the Proposed Action would not result in significant hazards to the public or the environment. New construction could disturb soils near solid waste management units, which could cause contaminant materials to migrate and harm the environment and human health. Kirtland AFB's Environmental Restoration Program would ensure that construction plans identify the location of solid waste management units sites so they are not disturbed during construction activities. Due to these efforts by Kirtland AFB, the impacts would be less than significant.

4.0 PUBLIC COMMENTS

The Programmatic EA was available for public review and comment from 8 September to 9 October 2013 at Montoya Library, 4700 Morris NE, Albuquerque, New Mexico 87102 and San Pedro Library, 5600 Trumbull Avenue, Albuquerque, New Mexico 87108, and <http://www.kirtland.af.mil/>. No public comments were received during this review period. Two responses were received from city and state agencies, and two responses were received from

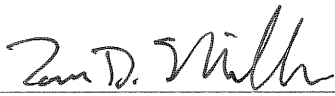
local Tribes. Their comments were incorporated into this Programmatic EA, where applicable, and presented in Appendix B.

A response from the New Mexico Department of Game and Fish (NMDGF) was received after the close of the comment period. In the letter, the NMDGF expressed concern with Alternative Site 5 stating, "development of site 5 would have the most adverse impact on wildlife, such as the gray vireo, from habitat loss and fragmentation. Proposed mitigation of construction during the non-nesting period will not adequately address impacts of the development of a 100,000 (*sic*) square foot building that will support 652 staff, vehicle access, noise and light disturbance to surrounding habitat in the undeveloped eastern foothills area of the base. Therefore, the Department recommends selection of one of the other five proposed sites for development of the administrative building." The NMDGF comment letter can be found in Appendix B.

Kirtland AFB NEPA personnel felt this comment warranted further review by installation biologists. Upon further review, Kirtland AFB biologists noted that several gray vireo nesting and habitat surveys have been conducted on the installation in the past. Populations of gray vireo have been observed in the mountainous, pinyon-juniper areas of the Base and surveys have shown that gray vireo prefer elevations of 5,850 to 6,600 feet above sea level where the densities of trees are less with larger patches of grasslands. Alternative Site 5 is located above Sol se Mete Canyon, where the elevation is above 6,900 feet, and the tree density is greater with fewer grasslands than the gray vireo preferred habitat. However, if Alternative Site 5 is selected, a qualified biologist would survey the area for gray vireo and other sensitive species. If any are discovered, appropriate actions would be taken, in compliance with the Migratory Bird Treaty Act, through coordination with U.S. Fish and Wildlife Service and NMDGF.

5.0 CONCLUSION

Based on analysis of the Programmatic EA conducted in accordance with the requirements of the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) regulations, and Air Force Instruction 32-7061, which is hereby incorporated by reference, and after careful review of the potential impacts, I conclude that the impacts of the Proposed Action on the quality of the human or natural environment would be less than significant. Therefore, issuance of a FONSI is warranted, and the preparation of an Environmental Impact Statement is not required. This analysis fulfills the requirements of NEPA and the implementing regulations promulgated by the CEQ.



Tom D. Miller, Colonel, USAF
Commander

26 Dec 13
Date

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COVER SHEET

PROGRAMMATIC ENVIRONMENTAL ASSESSMENT FOR BASE-WIDE MILITARY CONSTRUCTION PLANNING AT KIRTLAND AIR FORCE BASE, NEW MEXICO

a. *Responsible Agency:* United States Air Force Materiel Command (AFMC).

b. *Proposals and Actions:* Kirtland Air Force Base (AFB) is home to the 377th Air Base Wing (ABW), a unit of the AFMC, which supports more than 100 mission partners. Kirtland AFB has prepared this Programmatic Environmental Assessment (EA) in support of creating a Base-wide screening process to select suitable sites for the construction of a new administrative building complex. The Proposed Action is to construct, operate, and maintain an administrative building complex with a total interior space of up to 150,000 square feet that is capable of servicing up to 652 new staff. Approximately 10 acres of land would be impacted by the installation of the new buildings, parking spaces, access driveway, walkways, and green spaces. Kirtland AFB conducted a Base-wide survey of suitable sites to install the proposed administrative building complex and identified six alternative site locations (Alternative Sites 1 through 6). The alternative sites were selected based on a subtractive screening process. Potential sites were eliminated if the construction and operation of the proposed administrative building complex would result in an undesirable environmental impact within that particular area. Although six alternative sites have been identified and meet the screening criteria, other sites may be chosen at a later date if they meet the conditions of the screening process presented in this Programmatic EA. Other sites would be evaluated through Kirtland AFB's Environmental Impact Analysis Process to determine if they can be covered under this EA. If other selected sites cannot be covered under this Programmatic EA, then a Supplemental EA would be required. Three of the six alternative sites are located in or near the improved areas of Kirtland AFB, and three are located in unimproved areas. If an unimproved site is chosen, Kirtland AFB would install power, septic system, and communications lines as needed. It is estimated that the proposed administrative building complex military construction would take 5 years to complete, from design to occupancy. The No Action Alternative would exclude the construction, operation, and maintenance of a new building complex.

c. *For Additional Information:* The public may obtain information on the Proposed Action and the Programmatic EA by contacting the Kirtland AFB National Environmental Policy Act (NEPA) Program Manager at NEPA@kirtland.af.mil.

d. *Designation:* Programmatic EA

e. *Abstract:* This Programmatic EA was prepared in accordance with NEPA and Air Force Instruction 32-7061 and analyzes the impacts of the Proposed Action and alternatives on the following environmental and human resources: land use, infrastructure, cultural resources, socioeconomic and environmental justice, biological resources, earth resources, air quality, greenhouse gases and climate change, hazardous materials and waste management, safety and occupational health, and noise. The Proposed Action would result in a small increase in the number of staff at Kirtland AFB, relative to existing operations. The civilian and military staff presently working at Kirtland AFB (23,000) is lower than in the past (28,000). The addition of up to 652 staff as a result of the Proposed Action would not cause significant impacts on the installation's safety, water supply, air quality, and transportation systems. The impacts on physical and biological resources would be less than significant. Short-term regional socioeconomic benefits are anticipated from construction activities. Long-term personnel and

population increases are anticipated from the addition of new staff, with concomitant increases in regional income, sales volumes, and taxes. There would be no disproportionate effects upon minorities or low-income populations or children.

EXECUTIVE SUMMARY
PROGRAMMATIC ENVIRONMENTAL ASSESSMENT
FOR BASE-WIDE MILITARY CONSTRUCTION PLANNING AT
KIRTLAND AIR FORCE BASE, NEW MEXICO

Introduction: In accordance with the National Environmental Policy Act of 1969 (NEPA), the U.S. Air Force (USAF) Materiel Command (AFMC) and the 377th Air Base Wing (377 ABW), a unit of the AFMC, has prepared this Programmatic Environmental Assessment (EA) for the military construction (MILCON) of an administrative building complex at Kirtland Air Force Base (AFB), New Mexico. This Programmatic EA discusses the potential environmental effects of the construction, operation, and maintenance of the proposed administrative building complex.

Background/Setting: Kirtland AFB is home to the 377 ABW, which supports more than 100 mission partners. To fulfill the current demands for growth and long-term sustainability, Kirtland AFB needs to increase the administrative office space available on the installation. Some of the current administrative buildings are approaching their service life limits and need to be replaced. The purpose of the Programmatic EA is to provide continued administrative infrastructure support for mission requirements of Kirtland AFB and mission partners.

Proposed Action: Kirtland AFB has prepared this Programmatic EA in support of creating a Base-wide criteria screening process to select suitable sites for construction and operation of a new administrative building complex. The Proposed Action is to construct, operate, and maintain an administrative building complex with up to 150,000 square feet of interior space. Approximately 10 acres of land would be impacted by the construction of the new buildings, parking spaces, access driveway, walkways, and green spaces. The proposed administrative building complex would be capable of servicing up to 652 new staff and would consist of office space, copier rooms, storage rooms, restrooms, a break room, a mail receiving room, and conference rooms. This Programmatic EA provides a Base-wide assessment and identifies six alternative sites as potential areas to construct and operate the proposed administrative building complex. The alternative sites were selected based on a subtractive screening process. Potential sites were eliminated if the installation of administrative buildings in that area would result in an undesirable environmental impact. Although six sites have been identified and meet the screening criteria, these same criteria may be used to select other sites. It is anticipated that if another site meets the screening criteria, it would meet the purpose of and need for the Proposed Action described in this Programmatic EA. Other sites would be evaluated through Kirtland AFB's Environmental Impact Analysis Process to determine if they can be covered under this Programmatic EA. If other selected sites cannot be covered under this Programmatic EA, then a Supplemental EA would be required. Three of the six alternative sites are located in or near the improved areas of Kirtland AFB, and three are located in unimproved areas. If an unimproved site is chosen, Kirtland AFB would have to install power, septic system, and communications lines as needed. It is estimated that MILCON would take 5 years to complete the construction, from design to occupancy.

No Action Alternative: Under the No Action Alternative, the construction and operation of a proposed administrative building complex would not occur, and Kirtland AFB would utilize the existing administrative infrastructure to accommodate any changes in mission objectives.

Environmental Consequences: Kirtland AFB has conducted a Base-wide archaeological survey, and cultural resources were found to exist within the boundaries of Alternative Sites 4, 5, and 6. If these proposed sites are chosen and impacts on cultural resources cannot be avoided, then further consultation with the State Historic Preservation Officer (SHPO) and

applicable Tribal Historic Preservation Officers (THPO) shall occur, and mitigation measures shall be developed in accordance with Section 106 of the National Historic Preservation Act 1966, as amended. Kirtland AFB archaeological surveys, consultation with the SHPO and applicable THPO, avoidance, and mitigation efforts would ensure that impacts on cultural resources would be less than significant.

Construction activities would result in slight short-term and long-term economic benefits due to the associated material purchases, short-term and long-term employment, increased personal income, and increased consumer spending. No adverse impacts on the health and safety of the local population are expected. Impacts on socioeconomics and environmental justice would be less than significant. The new MILCON would potentially impact up to 10 acres of land. The alternative sites are located in areas containing scrub-brush habitats and non-farmland soils. Gunnison's prairie dog (*Cynomys gunnisoni*), western burrowing owl (*Athene cunicularia*), and gray vireo (*Vireo vicinior*) have been observed on Kirtland AFB; however, the chosen alternative site would be surveyed by a qualified biologist before any ground disturbance. Initial ground disturbance would be scheduled outside of the bird mating and nesting season (November through February).

Water resources would potentially be impacted by the addition of impervious surfaces such as building foundations, parking lots, access road, and sidewalks. The installation of a 150,000-square-foot administrative building complex would increase the impervious surfaces in the Tijeras Arroyo watershed (the regional drainage area) by less than 1 percent. The contractor in charge of construction activities would submit a Notice of Intent and a Stormwater Pollution Prevention Plan (SWPPP) to the U.S. Environmental Protection Agency to comply with the Kirtland AFB National Pollution Discharge Permit 2012 Construction General Permit. In addition, the proposed administrative building complex would be designed to comply with Section 438 of the Energy Insurance and Security Act. These measures would minimize impacts on water resources. Recent field surveys found that jurisdictional wetlands and floodplains are not located at or near the proposed alternative sites, and they are limited to defined areas on Kirtland AFB property; therefore, impacts on earth resources would be less than significant. Kirtland AFB air emissions would increase due to construction activities and new staff commuter traffic; however, calculated emissions are below *de minimis* thresholds and impacts on air quality would be less than significant. Kirtland AFB greenhouse gases (GHG) emissions would increase due to an increase in new staff, electrical services, and commuter traffic; however, impacts on climate change and/or the accumulation of GHG would be less than significant.

Construction activities could result in a spill of petroleum, oil, and lubricants (POL); however, a Spill Prevention, Control, and Countermeasures Plan (SPCC) would be in place prior to the start of construction. Kirtland AFB contractors would implement Best Management Practices, as stipulated in the SWPPP and SPCC to further reduce impacts, and would consult with regulatory agencies, as necessary, to ensure compliance with all Federal, state, regional, and local regulations and guidelines. Less than significant impacts on hazardous materials management would be expected from the construction and operation of the proposed administrative building complex. Kirtland AFB has a Hazardous Waste Management Plan, which provides guidelines for managing hazardous wastes, and a resulting increase of approximately 3 percent in the transport, use, or disposal of hazardous materials from implementation of the Proposed Action would not cause significant hazards to the public or the environment and would not disturb existing hazardous waste sites on Kirtland AFB. Construction activities under the Proposed Action could result in impacts on contractor safety; however, these impacts are expected to be less than significant due to the implementation of

effective health and safety programs. Construction noise could potentially impact residences near Alternative Sites 1 and 2; however, noise emissions would be short-term and less than significant.

Conclusion: Based on the analysis of impacts from implementation of the Proposed Action, the installation of the proposed administrative building complex would not result in significant impacts on the human and natural environment. Therefore, no additional environmental analysis (i.e., Environmental Impact Statement) is warranted.

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SECTION 1.0
INTRODUCTION



1.0 INTRODUCTION

This section presents an overview of how this Programmatic Environmental Assessment (EA) document is organized, describes the purpose of and need for the Proposed Action at Kirtland Air Force Base (AFB), provides a summary of the applicable regulatory requirements, and describes the public review process. Federal agencies are required 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) to consider the environmental consequences of a proposed action in the decision-making process.

1.1 BACKGROUND

Kirtland AFB is located in Albuquerque, New Mexico, adjacent to the Albuquerque International Sunport (ABQ) (Figure 1-1). ABQ is a joint operations airport with runways serving both military and civilian aircraft. The 377th Air Base Wing (377 ABW), a unit of the U.S. Air Force (USAF) Materiel Command (AFMC), is the host organization at Kirtland AFB. Kirtland AFB covers approximately 51,585 acres and employs over 23,000 people, including active duty and National Guard and Reserve personnel, civil service members, non-appropriated fund employees, and contract personnel.

1.2 PURPOSE AND NEED

Kirtland AFB anticipates that mission requirements shall continue to grow. The 377 ABW examined existing facilities, infrastructure, land use, and constraints to future development needs and long-term strategies. In doing so, 377 ABW determined that additional infrastructure is needed to support mission requirements of Kirtland AFB and mission partners. The purpose of the Proposed Action is to coordinate a Base-wide assessment of suitable military construction (MILCON) areas on Kirtland AFB, guide future construction and infrastructure improvements that would better support Kirtland AFB's current missions, and provide flexibility for new missions and growth over the next 7 years.

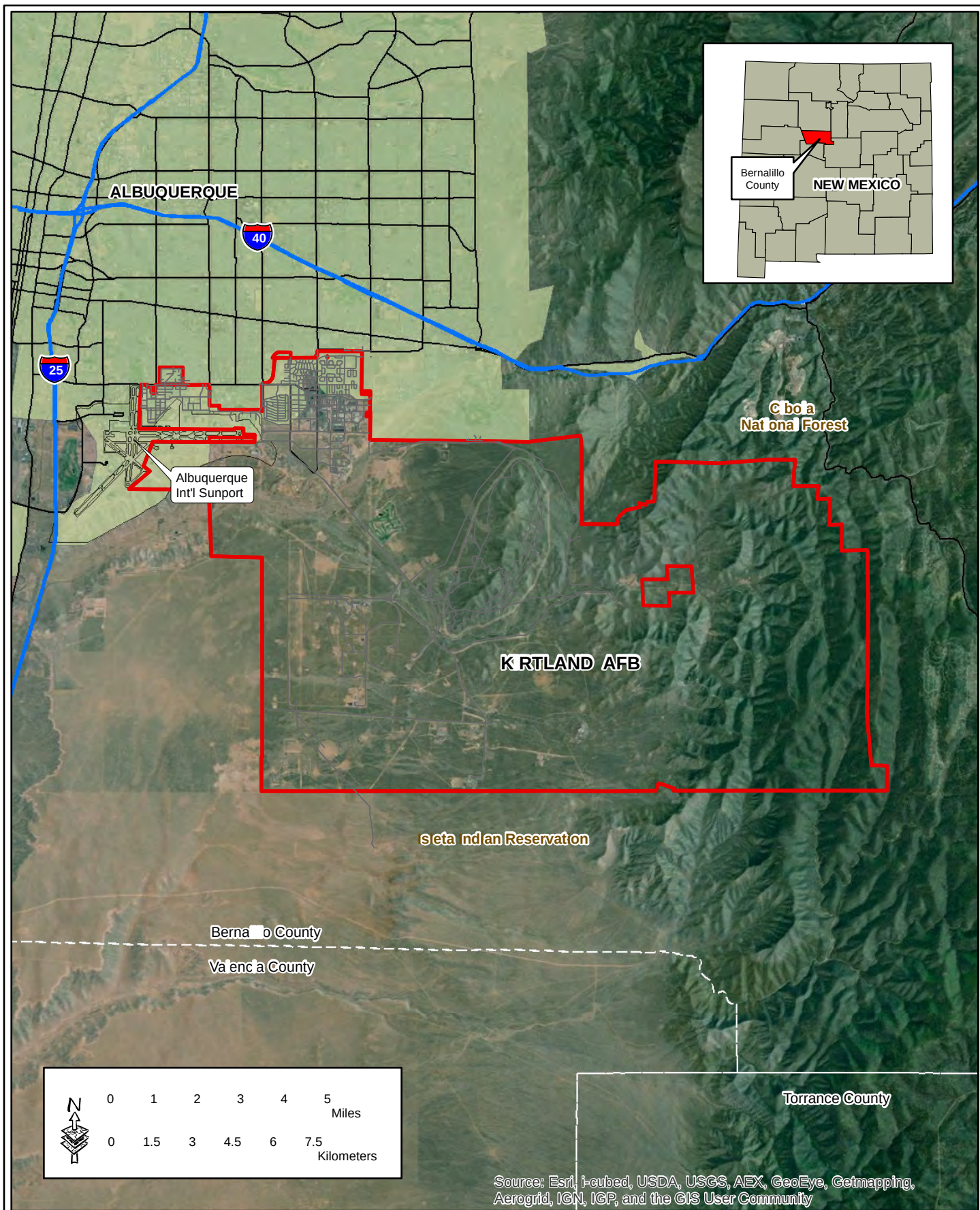


Figure 1-1. Kirtland AFB Vicinity Map

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1.3 REGULATORY FRAMEWORK

In December 1969, the U.S. Congress passed NEPA, which requires the Federal government to consider the environmental consequences of a proposed action before taking the action, and to supply information on the environmental impacts on the public. The regulations governing the preparation of this Programmatic EA are based on NEPA and Executive Orders (EO) 11514 and 11991, the Environmental Quality Improvement Act of 1970, as amended (42 U.S.C. 4371 et seq.), and Section 309 of the Clean Air Act (CAA), as amended (42 U.S.C. 7609), which provide Presidential direction to Federal agencies to implement NEPA regulations. Air Force Instruction (AFI) 32-7061 states that the Environmental Impact Analysis Process (EIAP) must be complete before initiating MILCON projects. EIAP is outlined in Title 32 CFR Part 989.

The decision to proceed with the Proposed Action rests on factors such as mission requirements and schedule, availability of funding, and environmental considerations. In addressing environmental considerations, the USAF is guided by relevant statutes, their corresponding regulations, and EOs that provide standards and guidance on environmental and natural resources management and planning. The construction of MILCON projects at Kirtland AFB requires compliance with the Federal regulations and EOs presented in Table 1-1 and shall be addressed in various sections throughout the Programmatic EA, when relevant to particular environmental resources and conditions.

1.4 PUBLIC INVOLVEMENT

The Air Force invites public participation in the NEPA process. Consideration of the views and information of all interested persons promotes open communication and enables better decision making. The Air Force set forth the Interagency/Intergovernmental Coordination for Environmental Planning as a scoping process that informed local, state, Tribal, and Federal agencies of proposed projects. All agencies, organizations, and members of the public having a potential interest in the Proposed Action, including minority, low-income, disadvantaged, and Native American groups, were urged to participate in the decision-making process.

Table 1-1. Summary of Relevant Regulations, Including Potential Permits or Licensing Requirements

Issue	Action Requiring Permit, Approval, or Review	Agency	Permit, License, Compliance, or Review/Status	Status of Compliance with Relevant Laws and Regulations
FEDERAL AND STATE				
General	NEPA of 1969 (42 U.S.C. 4321 <i>et seq.</i>)	CEQ	Compliance with NEPA, in accordance with CEQ regulations (40 CFR 1500-1508)	Full compliance would be achieved upon issuance of signed FONSI, if appropriate
	32 CFR 989 (Environmental Impact Analysis Process)	USAF	Compliance with regulations specified in 32 CFR 989	Full compliance would be achieved upon issuance of signed FONSI, if appropriate
Sound/Noise	Noise Control Act of 1972 (42 U.S.C. 4901 <i>et seq.</i>), as amended by Quiet Communities of 1978 (Public Law 95-609)	U.S. Environmental Protection Agency (USEPA)	Adjustment of noise contours at Kirtland AFB	Compliance would be assessed prior to implementation of construction activities and training missions
	CAA and Amendments of 1990 (42 U.S.C. 7401-7671q) 40 CFR 50, 52, 93.153(b)	USEPA	Compliance with National Ambient Air Quality Standards (NAAQS) and emission limits and/or reduction measures	Full compliance is anticipated; emissions would be below <i>de minimis</i> thresholds
Air	20.11.21; New Mexico Administrative Code (NMAC) Fugitive Dust Control; 20.11.40 NMAC Source Registration; and 20.11.41 NMAC Authority to Construct	Albuquerque/Bernalillo County Air Quality Control Board	Application for modification of existing 20.11.41 Authority to Construct Permit or new 20.11.41 NMAC Authority to Construct Permit. Obtain 20.11.20 NMAC Fugitive Dust Permit as necessary	Full compliance would be achieved by modifying Kirtland AFB stationary source air permit: new boilers. Construction activities would obtain 20.11.20 NMAC Fugitive Dust Permit
Greenhouse Gases (GHG) and Climate Change	EO 13514; CAA Section 202(a)	USEPA	NEPA compliance with EO 13514	Full compliance
Water	Clean Water Act (CWA) of 1977 (33 U.S.C. 1342); 40 CFR 122	USEPA, New Mexico Environment Department (NMED)	Section 402(b) National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges for Construction Activities-Stormwater Pollution Prevention Plan (SWPPP)	NPDES, SWPPP, and a Notice of Intent would be prepared prior to construction. Full compliance would be achieved prior to implementation of construction activities

Table 1-1, continued

Issue	Action Requiring Permit, Approval, or Review	Agency	Permit, License, Compliance, or Review/Status	Status of Compliance with Relevant Laws and Regulations
Water (continued)	Energy Independence and Security Act (EISA) Section 438 (42 U.S.C. Section 17094)	USEPA	Under these requirements, pre-development site hydrology shall be modeled or calculated and must include site-specific factors such as soil type, ground cover, and ground slope. Site design shall incorporate stormwater retention and reuse technologies such as bioretention areas, permeable pavements, cisterns/recycling, and "green" roofs to the maximum extent feasible. Post-construction analyses shall be conducted to evaluate the effectiveness of the as-built stormwater reduction features	Full compliance is obtained by adopting Department of Defense (DOD) Unified Facilities Criteria that address environment design and operational methods (DOD 2010). Additional guidance on project site hydrology is provided in USEPA's <i>Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the EISA</i>
	EO 11988 (Floodplain Management), as amended by EO 12608	Water Resources Council, Federal Emergency Management Agency, CEQ	Compliance	None of the alternative sites are located in a floodplain
	EO 11990 (Protection of Wetlands), as amended by EO 12608	U.S. Army Corps of Engineers (USACE) and U.S. Fish and Wildlife Service (USFWS)	Compliance	None of the alternative sites would be located on wetlands
	CWA of 1977 (33 U.S.C. 1341 <i>et seq.</i>)	USACE and NMED	Section 401/404 Permit	There are no jurisdictional waters of the U.S. greater than 0.33 acre located on the alternative sites
	Resource Conservation and Recovery Act (RCRA) of 1976 (42 U.S.C. 6901-6992k), as amended by Hazardous and Solid Waste Amendments of 1984 (Public Law 98-616; 98 Stat. 3221)	USEPA	Proper management and, in some cases, permit for remediation	Full compliance would be achieved prior to implementation of construction activities
Soils				

Table 1-1, continued

Issue	Action Requiring Permit, Approval, or Review	Agency	Permit, License, Compliance, or Review/Status	Status of Compliance with Relevant Laws and Regulations
Soils (continued)	Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (42 U.S.C. 9601-9675), as amended by Emergency Planning and Community Right-to-Know Act of 1986 (42 U.S.C. 11001 <i>et seq.</i>) Release or threatened release of a hazardous substance	USEPA	Development of emergency response plans, notification, and cleanup	Full compliance would be achieved prior to implementation of construction activities
	Farmland Protection Policy Act of 1981 (7 U.S.C. 4201 <i>et seq.</i>) 7 CFR 657-658 Prime and Unique Farmlands	Natural Resources Conservation Service (NRCS)	NRCS determination via Form AD-1006	Military lands are exempt from the Farmland Protection Policy Act
Natural Resources	Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1544)	USFWS	Compliance by lead agency and/or consultation to assess impacts and, if necessary, develop mitigation measures	Full compliance; it is anticipated that no listed species would be impacted
	Migratory Bird Treaty Act (MBTA) of 1918	USFWS	Compliance by lead agency and/or consultation to assess impacts and, if necessary, develop mitigation measures	All active nests for migratory birds would be avoided during construction; full compliance
	Bald and Golden Eagle Act of 1940, as amended	USFWS	Compliance by lead agency and/or consultation to assess impacts and, if necessary, obtain permits	No effects on bald or golden eagles are anticipated; full compliance
Health and Safety	Occupational Safety and Health Act of 1970	Occupational Safety and Health Administration	Compliance with guidelines including Material Safety Data Sheets	Full compliance would be achieved upon implementation of construction activities

Table 1-1, continued

Issue	Action Requiring Permit, Approval, or Review	Agency	Permit, License, Compliance, or Review/Status	Status of Compliance with Relevant Laws and Regulations
Cultural/ Archaeological	National Historic Preservation Act (NHPA) of 1966	Advisory Council on Historic Preservation through State Historic Preservation Officer (SHPO)	Section 106 Consultation	Full compliance; it is anticipated that no historic properties would be affected. Concurrence from the SHPO would be obtained prior to construction activities
	Archaeological Resources Protection Act of 1979	Affected Land-Managing Agency	Permits to survey and excavate/remove archaeological resources on Federal lands; Native American tribes with interests in resources must be consulted prior to issuance of permits	Full compliance
	American Indian Religious Freedom Act of 1978, as amended	Tribal Historic Preservation Officer (THPO)	Compliance	Full compliance
	Native American Graves Protection and Repatriation Act (NAGPRA) of 1990	National Park Service	Compliance	Full compliance
	EO 13175 (<i>Consultation and Coordination with Indian Tribal Governments</i>)	Bureau of Indian Affairs	Coordinate directly with tribes claiming cultural affinity to project areas	Full compliance
Social/ Economic	EO 12898 (<i>Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations</i>) of 1994	USEPA	Compliance	Full compliance, as no minority or low-income populations would be affected
	EO 13045 (<i>Protection of Children from Environmental Health Risks and Safety Risks</i>)	USEPA	Compliance	Full compliance, as no children would be exposed to the construction activities
Environmental Restoration Program (ERP)	RCRA Part B	USEPA	Voluntary Compliance	Kirtland AFB has a RCRA Part B Permit and has identified contaminated sites on the Installation and taken steps to remediate those sites

Public participation opportunities with respect to the Programmatic EA and decision making on the Proposed Action are guided by 32 CFR Part 989. A Notice of Availability (NOA) for the Draft Programmatic EA was published in *The Albuquerque Journal* on 8 and 9 September 2013. The publication of the NOA initiated a 30-day review period. At the closing of the public review period, no comments from the general public had been received. Three responses were received from government agencies: from the City of Albuquerque (Mid-Region Council of Governments), a Tribal Nation (White Mountain Apache Tribe), and a state government agency (New Mexico SHPO). These comments were incorporated into the analysis of the Programmatic EA, where applicable. Appendix B contains copies of the comment letters from the government agencies mentioned above and contains additional details about the public review period.

The public may obtain information on the status and progress of the Proposed Action and the Programmatic EA by contacting the Kirtland AFB NEPA Program Manager at NEPA@kirtland.af.mil.

**SECTION 2.0
ALTERNATIVES**



2.0 ALTERNATIVES

This chapter describes the Proposed Action, the No Action Alternative, affected resources, and a Base-wide screening process that provides criteria to select suitable sites for the Proposed Action. The Programmatic EA assesses the potential impacts on environmental and human resources from installing a 150,000-square-foot administrative building complex on Kirtland AFB property.

2.1 BASE-WIDE SCREENING CRITERIA

During the initial planning phases of this Programmatic EA, Kirtland AFB developed screening criteria to locate suitable sites for the construction of the 150,000-square-foot administrative building complex. The location of the Proposed Action must meet specific requirements to be a viable site. These requirements are as follows:

- The site should not be located in a wetland or floodplain.
- The site should not have limiting topographic features or stormwater drainage concerns.
- The site must be located on lands owned by Kirtland AFB.
- The site should not have any USAF protection issues (proximity to railroads/highways).
- The site should not be located in or adjacent to potential accident zones.
- The site should not be located in an area that could have significant adverse impacts on children or minorities.
- The site should not be located in an area that would destroy or compromise historic buildings.
- Prior to selection, the site should be surveyed for cultural resources and consultation with consultation with SHPO should be initiated. If a site is chosen where cultural resources are found and the footprint of the administrative building complex cannot be adjusted to avoid impacting a cultural resource, further consultation with the SHPO and applicable THPOs shall occur, and then mitigation measures shall be developed in accordance with Section 106 of the NHPA to protect cultural resources.
- Prior to selection, the site should be surveyed by a qualified biologist for the presence of habitat for Federally and state protected species, as well as nesting birds.
- Prior to selection, the site should be inspected for hazardous waste and unexploded ordnance (UXO). Site selection should be coordinated with the Kirtland AFB ERP to avoid siting in areas that contain hazardous waste or UXO.

- Prior to selection, the managers should check with the Base Weapons Safety Office to ensure that the installation of the administrative building complex does not interfere with military training.

2.2 PROPOSED ACTION

The Proposed Action would entail the construction, operation, and maintenance of a 150,000-square-foot administrative building complex on approximately 10 acres of land, including parking spaces, access driveway, walkways, and green spaces. The proposed administrative building complex could be composed of any one of the following:

- One 150,000-square-foot building
- One 90,000-square-foot building and one 60,000-square-foot building
- Three 50,000-square-foot buildings

The proposed administrative building complex would consist of office space, copier rooms, storage rooms, restrooms, break rooms, a mail receiving room, and conference rooms. It would require such systems as a boiler room to supply heating, ventilation, and air conditioning, potable water and septic system, fire detection and suppression, intrusion detection, electrical and lighting, communication and computer systems, and an energy-monitoring control system. The building complex would be designed with antiterrorism force protection measures, which include standoff distance, laminated glass, and security lighting.

The administrative building complex foundation, sidewalks, parking spaces, and driveways would create approximately 7 acres of impervious surfaces. Depending on the location, the proposed administrative building complex may require stormwater features to manage stormwater runoff during severe weather events or require an extended driveway for ingress and egress. Therefore, it is assumed that an additional 3 acres of land would be permanently impacted to accommodate necessary infrastructure. The Proposed Action assumes that a total of 10 acres of land, regardless of location, could be permanently impacted.

Kirtland AFB currently employs 23,000 civilian and military staff, and in the past the population of employees was greater than 28,000. The proposed administrative building complex would be capable of servicing up to 652 staff, which would represent an increase of approximately 3 percent in the civilian and military population at Kirtland AFB.

It is estimated that the MILCON funding process would take 5 years to complete the office complex, from design to occupancy. This Programmatic EA assumes a maximum build-out, a conservative scenario with the largest possible footprint. However, future mission requirements could require less manpower, resulting in a smaller building complex with a smaller impact footprint.

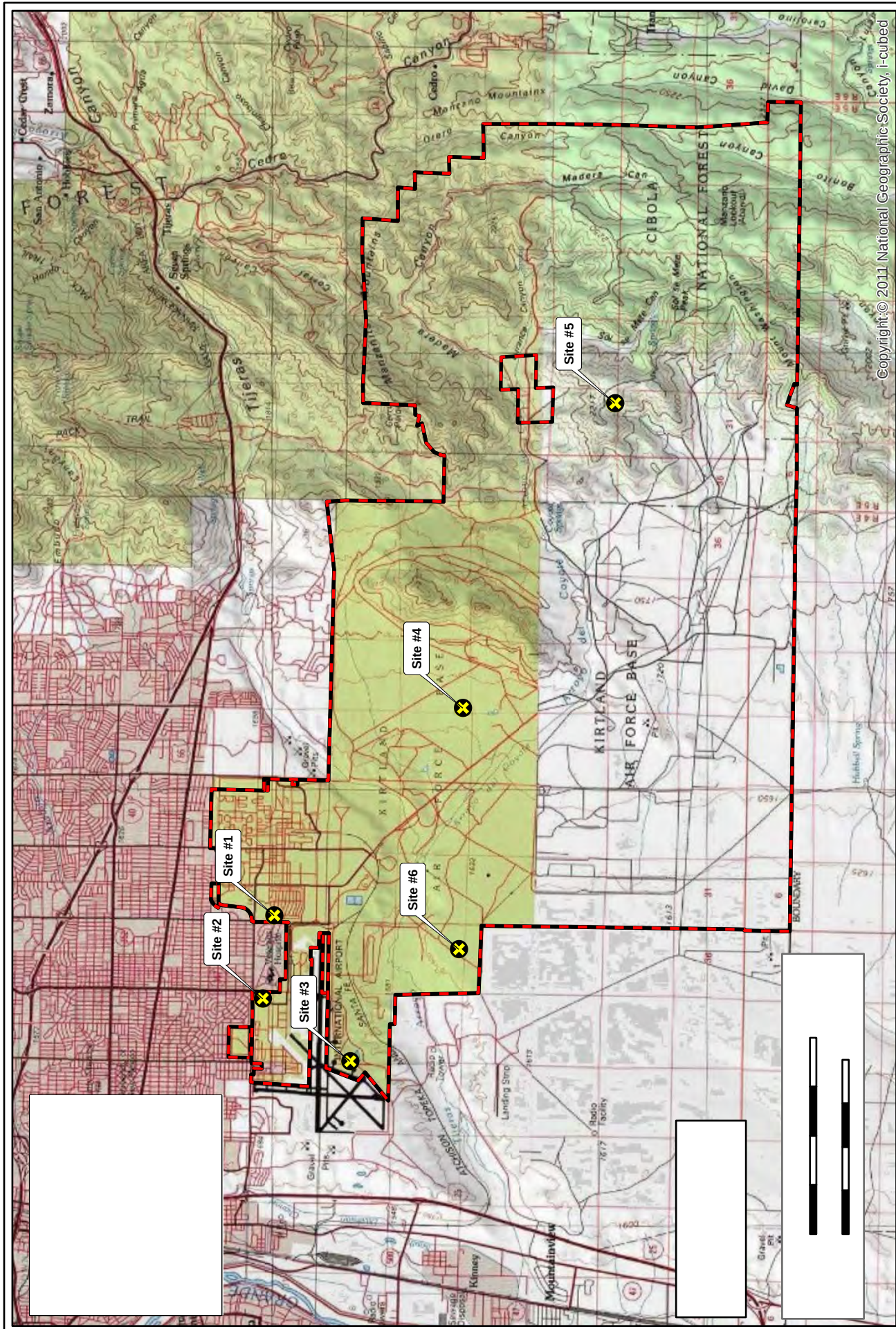
The proposed administrative building complex would be powered by the existing electrical grid system. Diesel generators would be included in the design of the proposed administrative building complex for emergency backup power purposes.

The USAF is committed to sustainable design, construction, and operation of facilities and infrastructure. The construction and operation of the new facilities would meet guidelines recommended by the U.S. Green Building Council (USGBC) for Leadership in Energy and Environmental Design (LEED). The USAF is committed to achieving the USGBC LEED silver certification standard by incorporating construction and operation methods that are designed to improve energy use, reduce water use, and control stormwater runoff.

The demolition of existing buildings could occur as part of the Proposed Action; however, it is not known at this time whether such demolition would be necessary. Therefore, the effects of demolition on the human and natural environment are carried forward for analysis in this Programmatic EA.

2.2.1 Specific Alternative Sites

During the initial planning phases, Kirtland AFB identified six specific sites that meet the Base-wide screening criteria. The six specific sites are identified as Alternative Sites 1, 2, 3, 4, 5, and 6. These sites are described in Table 2-1 and their general locations are presented in Figure 2-1. Figures 2-2 through 2-7 show the alternative sites and their proposed boundaries.



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Figure 2-1. Location of Six Alternative Project Sites on Kirtland AFB Property



Figure 2-2. Location of Alternative Site 1

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Figure 2-3. Location of Alternative Site 2



Figure 2-4. Location of Alternative Site 3

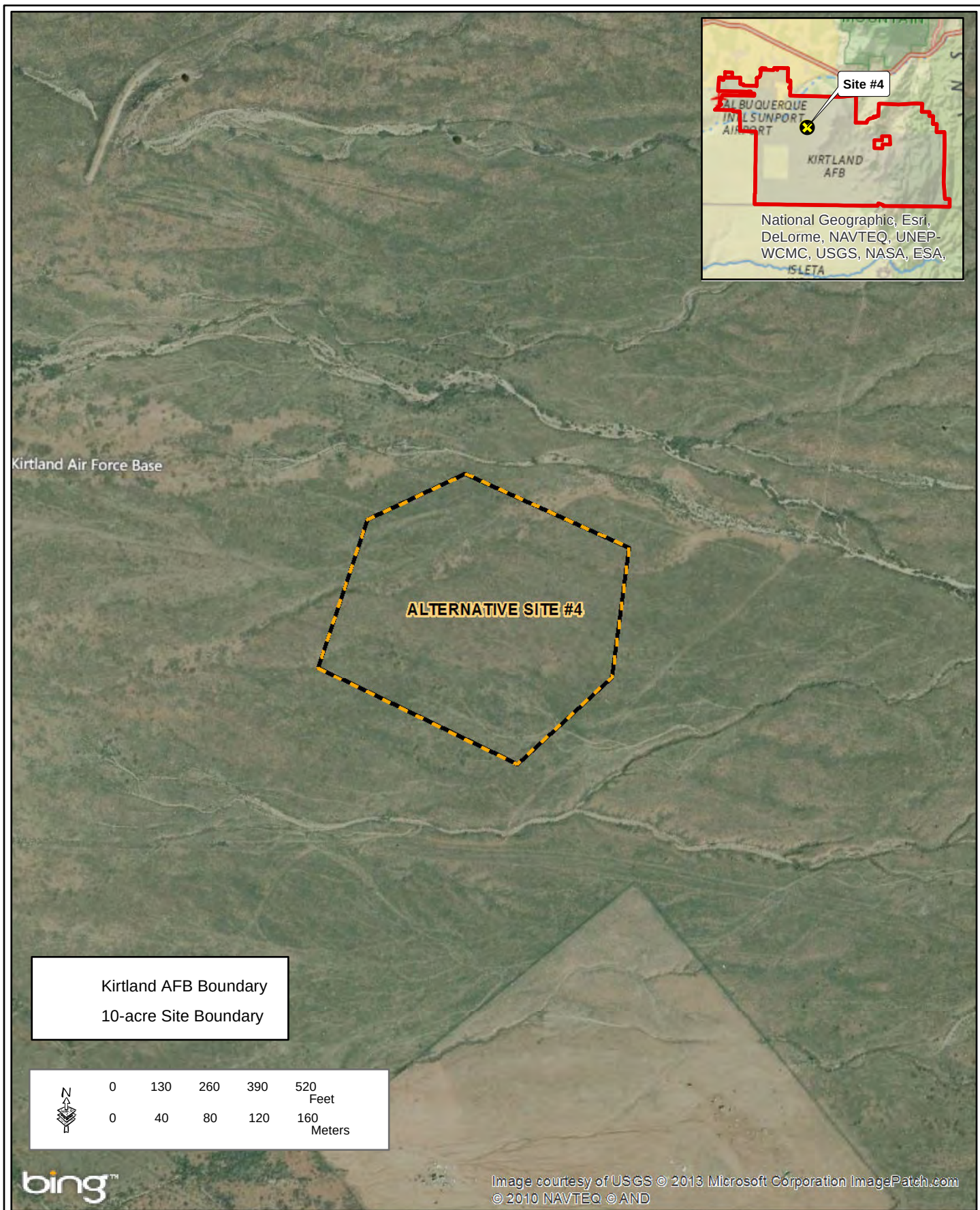


Figure 2-5. Location of Alternative Site 4

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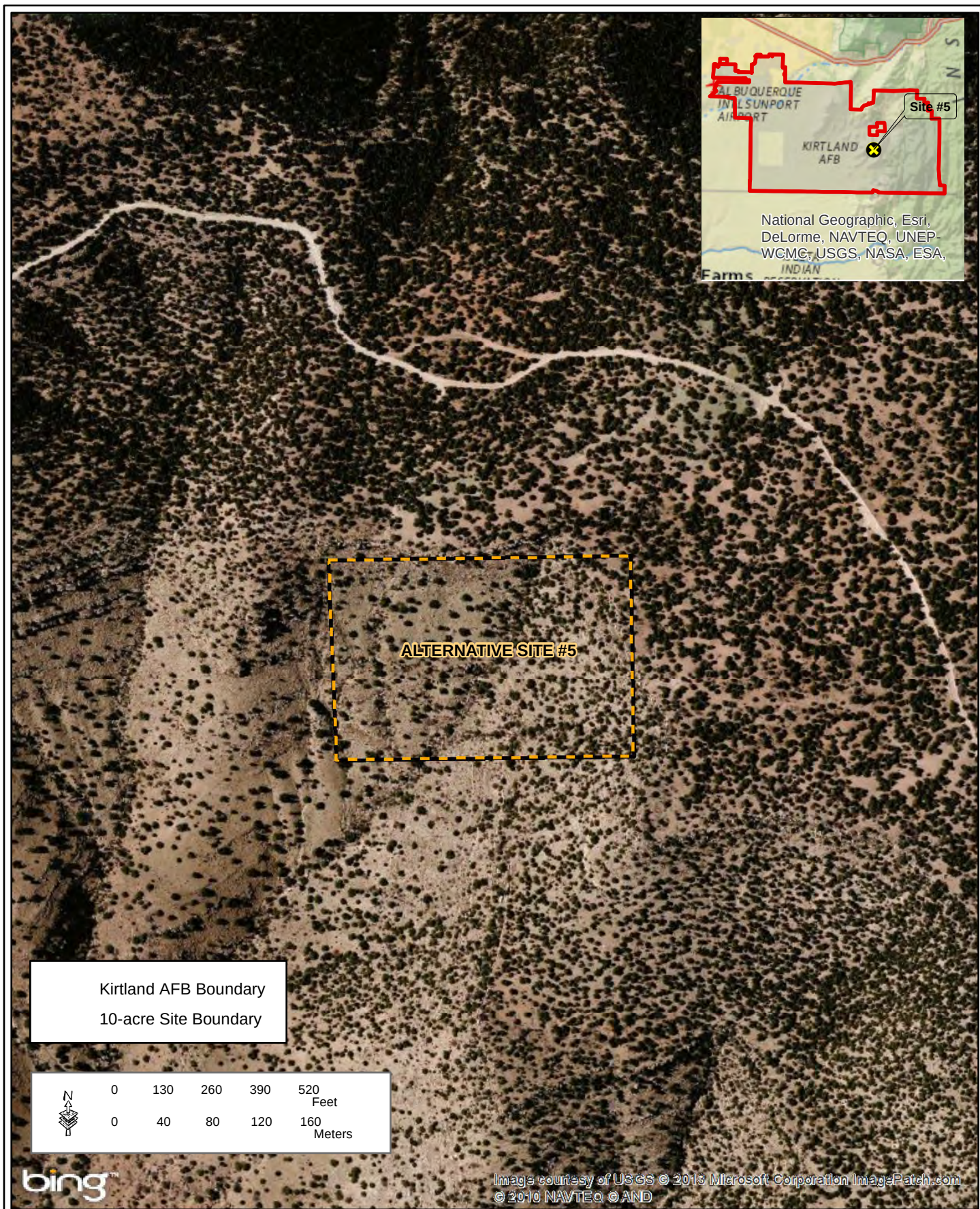


Figure 2-6. Location of Alternative Site 5

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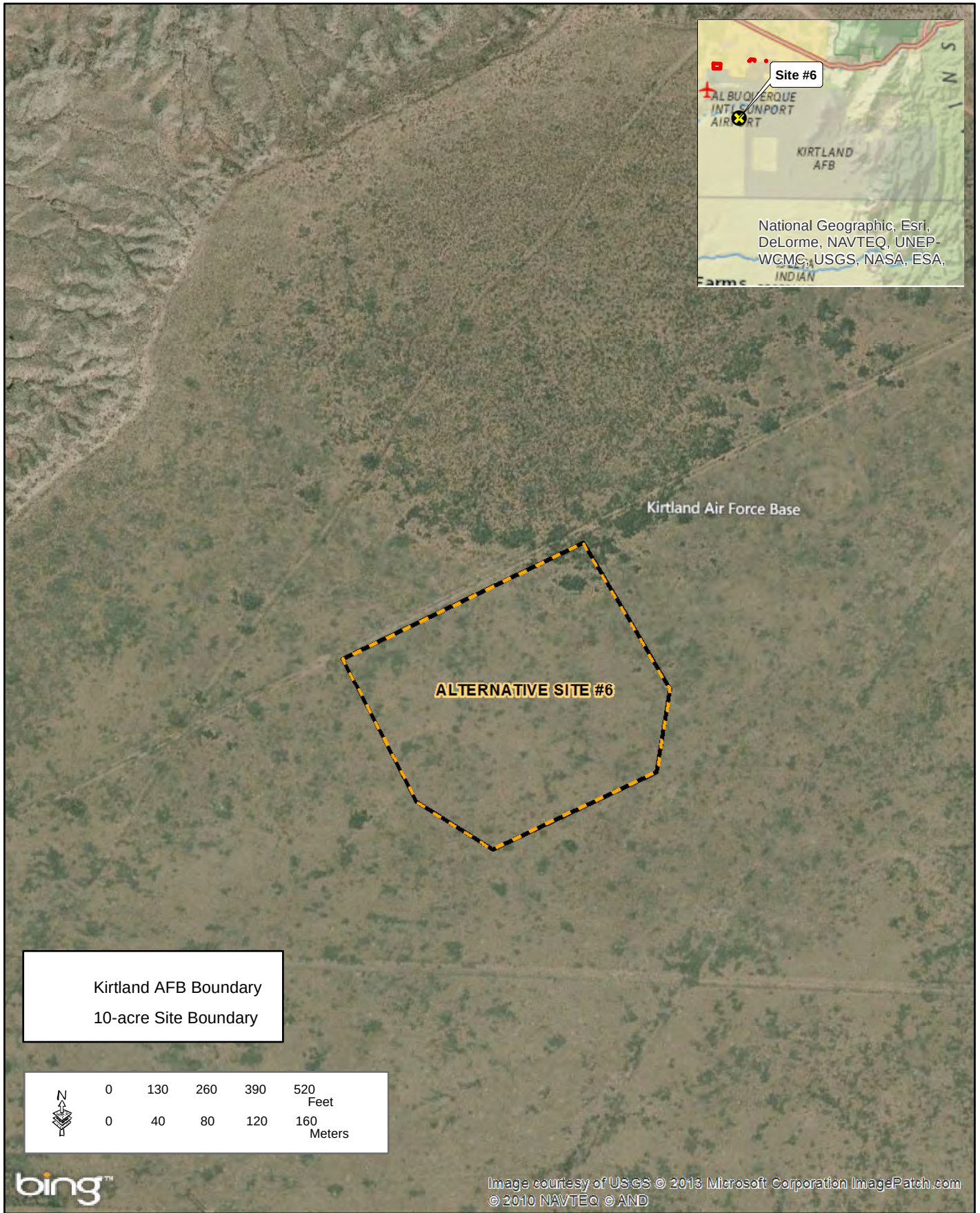


Figure 2-7. Location of Alternative Site 6

Table 2-1. Specific Alternative Sites

Alternative Site/Location		Associated Infrastructure
1	Developed area near Conner Avenue Southeast (SE) and Perimeter Circle SE intersection, east of Louisiana Boulevard SE	Have all necessary infrastructures (water, access, electrical, and sewerage) currently ready for use
2	Developed area between Truman Street SE and Loop Road SE and Aberdeen Drive SE and Gibson Boulevard SE	
3	Developed area 0.5 mile south of ABQ and north of Kirtland Road SE (Southgate Avenue)	
4	Unimproved area 0.5 mile east of the Kirtland AFB golf course and west of Manzano Fence Road	Require sewerage, power, paved access roads, and communications systems
5	Unimproved area in the Manzanita Mountains	
6	Unimproved area approximately 1.0 mile south of the Tijeras Arroyo and near the western boundary of Kirtland AFB	

Although six specific sites have been identified and meet the screening criteria, other sites may be chosen at a later date. Other sites would be evaluated through Kirtland AFB's Environmental Impact Analysis Process to determine if they can be covered under this Programmatic EA. If other selected sites cannot be covered under this Programmatic EA, then a Supplemental EA would be required; however, it is anticipated that if these future sites meet the Base-wide screening criteria, they would meet the purpose and need of the proposed project and could be used to help Kirtland AFB achieve current missions and provide flexibility for new missions and growth.

2.3 NO ACTION ALTERNATIVE

CEQ regulations require inclusion of the No Action Alternative as a standard to compare the environmental impacts of the proposed alternatives to the existing conditions. Under the No Action Alternative, the installation of a new building complex would not occur and Kirtland AFB would utilize the existing administrative infrastructure to accommodate and service any changes in mission objectives. The No Action Alternative would maintain the current infrastructure and environmental status quo.

2.4 COMPARATIVE SUMMARY OF IMPACTS

Potential environmental impacts of the Proposed Action would be those associated with the construction, operation, and maintenance of an administrative building complex and the

potential demolition of buildings. The following resources are analyzed in this Programmatic EA:

- Land Use Resources
- Infrastructure
- Cultural Resources
- Socioeconomics and Environmental Justice
- Biological Resources
- Noise
- Earth Resources
- Air Quality
- Safety and Occupational Health
- Greenhouse Gases and Climate Change
- Hazardous Material/Waste Management

Table 2-2 presents a summary of the potential impacts associated with the Proposed Action and the No Action Alternative.

Table 2-2. Summary of Potential Impacts of the Proposed Action and the No Action Alternative

Resource	Proposed Action	No Action Alternative
Land Use Resources	Land would continue to remain in use for Kirtland AFB mission objectives. The Proposed Action would not alter land uses; however, the new administrative building complex could minimally affect visual resources.	Baseline land use conditions as described in Section 3.1 would remain unchanged; therefore, no impact would result.
Infrastructure	Implementation of the Proposed Action would slightly increase the use of transportation corridors, power, water, sewage, waste, heating and cooling, fuels, and communications systems at Kirtland AFB, but not beyond Kirtland AFB's ability to service these infrastructure needs. As discussed in Section 2.2, the implementation of the Proposed Action represents an increase of approximately 3 percent of the workforce currently present at Kirtland AFB, and would not significantly impact infrastructure.	Baseline infrastructure conditions as described in Section 3.2 would remain unchanged; therefore, no impact would result.
Cultural Resources	Kirtland AFB has conducted a Base-wide archaeological survey and cultural resources were found to exist within the boundaries of Alternative Sites 4, 5, and 6. If these proposed sites are chosen and the footprint of the complex could not be adjusted to avoid impacting a cultural resource, then further consultation with the SHPO/THPO shall occur. If sites cannot be avoided, then mitigation measures shall be developed in accordance with Section 106 of the NHPA. Using the siting protocol established by Kirtland AFB (see Section 2.1), it was determined that no impacts on cultural resources would occur from any future activities affiliated with the Proposed Action.	Baseline cultural resources conditions as described in Section 3.3 would remain unchanged; therefore, no impact would result.
Socioeconomics and Environmental Justice	Temporary short-term and long-term beneficial impacts on revenue in the region of influence (ROI) would occur. The increased population and demand for housing units at Kirtland AFB and in the ROI would not cause significant impacts on either of these resources. No disproportionate adverse impacts on minority or low-income populations or youth are expected.	Baseline socioeconomic and environmental conditions as described in Section 3.4 would remain unchanged; therefore, no impact would result.
Biological Resources	The potential impact on biological resources as a result of the loss of vegetation and wildlife habitat would be considered long-term but minor because of the vast amounts of similar habitat and vegetation communities throughout Kirtland AFB. Six species of Federally or state protected birds, such as western burrowing owl (<i>Athene cucularia</i>) and migratory birds protected under the MBTA, may also be minimally impacted by this alternative. To minimize impacts on migratory birds and sensitive species, all site preparation (including demolition) and utility installation would require either a preconstruction survey for nesting birds, and avoidance if nesting birds are discovered, or that the work be carried out in the fall and winter months to coincide with the non-breeding season for these species.	Baseline biological conditions as described in Section 3.5, would remain unchanged; therefore, no impact would result.
Earth Resources	No perennial surface waters, wetlands, or floodplains occur at the six proposed alternative sites nor would they occur at any other site. The Proposed Action would not result in significant impacts on the region's water supply or water quality. The alternative sites are not located on prime farmland soils, and the Proposed Action would not result in significant impacts on earth resources.	Baseline earth resources conditions as described in Section 3.6 would remain unchanged; therefore, no impact would result.

Table 2-2, continued

Resource	Proposed Action	No Action Alternative
Air Quality	Air emissions from construction activities are well below <i>de minimis</i> thresholds; the annual emissions from the increase of daily commuter and delivery traffic are minor and below <i>de minimis</i> thresholds.	Baseline air emissions as described in Section 3.7 would increase slightly; however, no significant impact would result (Section 4.7.2).
GHG and Climate Change	GHG emissions from the construction equipment and increase in commuter traffic would represent a negligible increase in GHG.	Baseline GHG as described in Section 3.8 would increase slightly; however, no significant impact would result on the climate (Section 4.8.2).
Hazardous Material/Waste Management	Hazardous materials and wastes would be managed in accordance with USEPA and USAF Regulations; no significant impacts are expected. The alternative sites are not located on any active Environmental Restoration Program (ERP) sites, and soil disturbance associated with the Proposed Action would not impact areas included in the Kirtland AFB Environmental Restoration Program per Kirtland AFB screening criteria.	Baseline hazardous materials and waste management conditions as described in Section 3.9 would remain unchanged; therefore, no impact would result. Alterations and disturbances to Kirtland AFB ERP hazardous waste sites would not occur.
Safety and Occupational Health	The construction of the new administrative buildings would not increase the risks to the safety and health of the staff and would be less than significant (Section 4.10.2).	Baseline health and safety conditions as described in Section 3.10 would remain unchanged; therefore, no impact would result.
Noise	Noise emissions from the Proposed Action would not change significantly compared to existing operations at Kirtland AFB. Noise emissions from construction activities are not expected to significantly impact the ambient noise levels on Kirtland AFB or adjacent land uses (Section 4.11.2).	Baseline noise conditions as described in Section 3.11 would remain unchanged; therefore, no impact would result.

SECTION 3.0
AFFECTED ENVIRONMENT



3.0 AFFECTED ENVIRONMENT

This section of the Programmatic EA describes the natural and human environment that exists within the project area. Only those resources that have the potential to be affected by any of the alternatives considered are described, as per CEQ guidance (40 CFR 1501.7[3]). Some topics are limited in scope due to the lack of direct effect from the proposed project on the resource, or because that particular resource is not located within the project area. Therefore, the resources not affected by the proposed project are not addressed for the following reasons:

Airspace and Aircraft Operations

The Proposed Action would not affect any airspace or aircraft operations. The number of aircraft and the airspace associated with aircraft operations at Kirtland AFB would not change. The proposed structures would not extend into navigable airspace or affect flight paths or patterns.

Geology

The Proposed Action would not affect regional geologic features or cause an existing geologic feature to become unstable.

Prime Farmland Soils

The Proposed Action would not affect prime farmland soils because none are found on Kirtland AFB.

Wetlands and Floodplains

Although some isolated wetland areas and floodplains exist on Kirtland AFB, the siting screening criteria presented in Section 2.0 of this Programmatic EA eliminate wetland areas and floodplains as suitable locations for the Proposed Action. Therefore, wetlands or floodplains will not be discussed further, as none would be impacted.

Aquatic Species

A Base-wide survey for aquatic habitats was performed and aquatic species are known to exist at 18 springs located on Kirtland AFB. The Base-wide criteria presented in Section 2.0 of the Programmatic EA excluded the 18 spring areas as suitable sites for the Proposed Action. Therefore, aquatic species shall not be discussed further, as none would be impacted.

3.1 LAND USE RESOURCES

3.1.1 Land Use

Kirtland AFB encompasses 51,585 acres in Bernalillo County and is the third largest Base within the AFMC. Kirtland AFB is home to the 377 ABW, which is Kirtland AFB's host organization. The mission of the 377 ABW is to provide world-class munitions maintenance, readiness and training, and operations support to approximately 100 mission partners (Kirtland AFB 2012b). Accordingly, Kirtland AFB contains various training areas, helicopter landing zones, recreation/open areas, maintenance facilities, classroom and administrative facilities, housing areas, and other structures.

3.1.1.1 Specific Alternative Sites

All of the alternative sites are located on Kirtland AFB property, which is used primarily for military training and operational activities and includes, but is not limited to, helicopter landing zones, ordnance impact areas, and logistics operations. Alternative Sites 1, 2, and 3 are located in the existing developed area of Kirtland AFB on previously developed lands. Alternative Sites 4, 5, and 6 are located outside of the developed area, on unimproved land that is used for Kirtland AFB mission support activities.

3.1.2 Visual Resources

Visual sensitivity may be defined as the degree of public interest in a visual resource and concern over adverse changes in the quality of that resource. Kirtland AFB is a mix of developed and undeveloped areas. The Sandia Ranger District of the Cibola National Forest is located along Kirtland AFB's eastern boundary. The area is mountainous, scenic, and undeveloped. The portion of the Cibola National Forest located within Kirtland AFB borders was withdrawn from public use. Another example of an aesthetically pleasing visual resource on Kirtland AFB is the rolling, open hills located along the southern portion of the Base.

3.1.2.1 Specific Alternative Sites

Alternative Sites 1, 2, and 3 are located in the developed areas of Kirtland AFB. As such, much of the aesthetic quality surrounding these sites is limited due to the existing development. Alternative Sites 4, 5, and 6 are located in the undeveloped portions of Kirtland AFB that contribute to the visual resources on the Base. Specifically, Alternative Site 5 is located in the Cibola National Forest in Kirtland AFB's withdrawn area.

3.2 INFRASTRUCTURE

3.2.1 Transportation

Numerous modes of transportation are available in the region of Kirtland AFB and include aircraft, rail, and Federal and state highway access. Kirtland AFB is situated approximately 4 miles east of Interstate 25 (I-25) and 1.5 miles south of Interstate 40 (I-40). Kirtland AFB is served by interstate highways and many state and local roads. Kirtland AFB is the largest employer in the Albuquerque area and is the principal destination for many commuters. As a result, traffic converges at the gates during the morning and evening peak hours, occasionally causing queuing and congestion at the entrance gates (Richardson 2007). Access to the installation is allowed through eight gated entrances (Figure 3-1), although two of the access gates are for contractors. The most frequently used gates are accessed via Wyoming, Gibson, and Eubank Boulevards. On weekends, only the Gibson, Truman, and Eubank gates are open (Richardson 2007).

Kirtland AFB personnel conducted surveys at the six high-volume access gates from 3 to 16 June 2007 (Richardson 2007). As reflected in Table 3-1, the survey revealed that, on average, the Gibson Gate accounts for the highest volume of vehicle access traffic.

Table 3-1. Traffic Volume Counts for Kirtland Entrances

Average Annual Daily Traffic (AADT) at Kirtland AFB Entrance Gates	
Entrance Gate	AADT
Gibson	23,600
Wyoming	18,800
Eubank	17,800
Truman	9,100
Carlisle	5,000
South Valley	1,000
Total	75,300

Source: Richardson 2007

There have been no comprehensive traffic counts to assess traffic flow within Kirtland AFB since the 1999 CAA Transportation Intermodal Study (Kirtland AFB 1999); however, many of the road improvements recommended in the study have been implemented and have improved traffic flow in the developed areas of Kirtland AFB (Kirtland AFB 2010b).

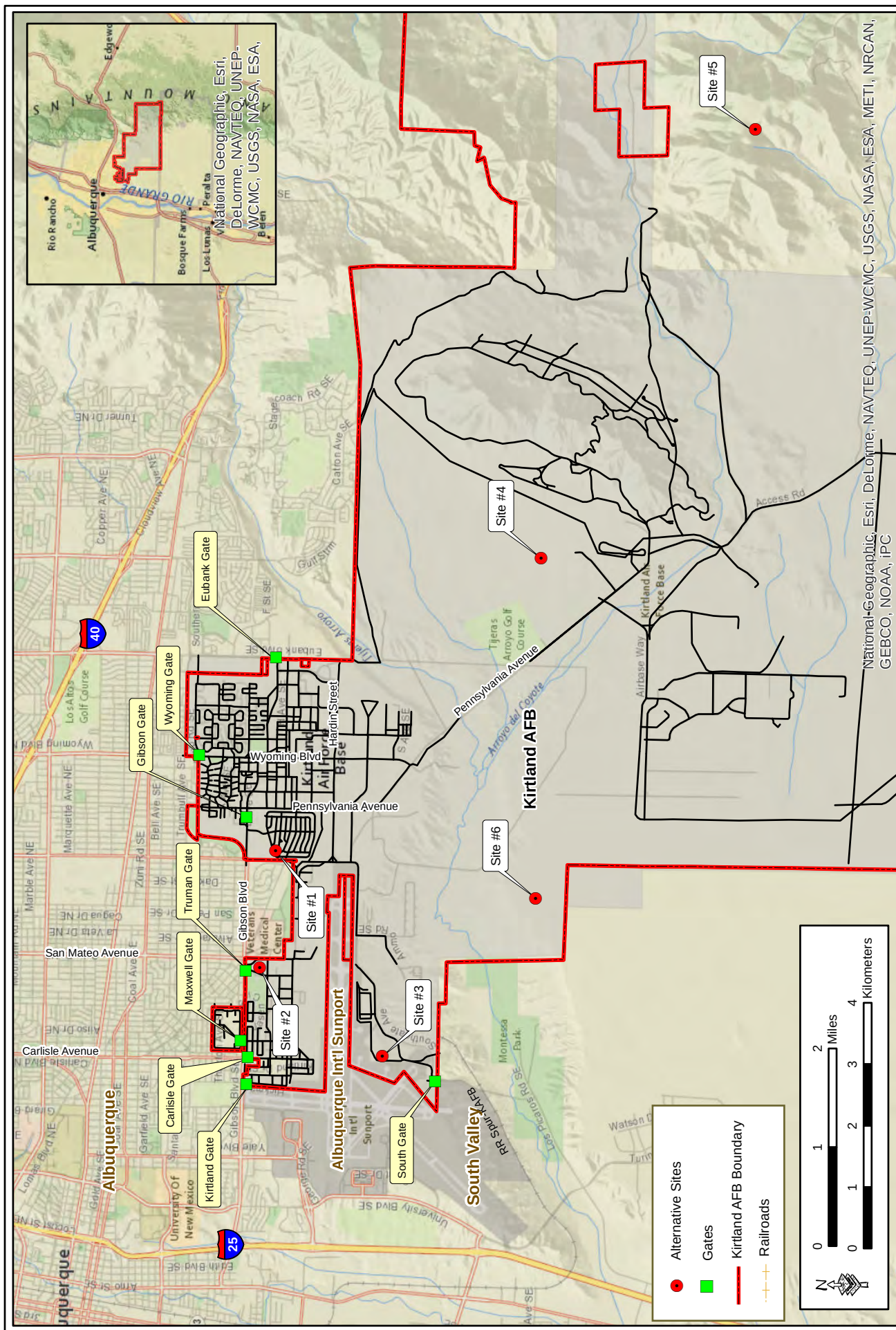


Figure 3-1. Map of Major Transportation Infrastructure at Kirtland AFB

3.2.2 Electrical Distribution

Power is normally purchased for the entire Base from Western Area Power Administration. The electrical power connects to the Base at one location, the Sandia Switching Station, with primary transmission backup connection points. This station distributes power to 43 substations and has three voltages, 345 kilovolt (kV), 115 kV, and 46 kV (Kirtland AFB 2010b). In the developed areas of the Base, approximately 85 percent of the buildings have multiple sources of electricity (redundancy capacity). There is a limited emergency backfeed capability on the west side of the occupied area of the Base, which has 24 million volt ampere (MVA) available on the 46 kV amperes system. The estimated historical peak load is approximately 76 MVA and the total capacity is 80 MVA (Kirtland AFB 2010b).

3.2.3 Natural Gas

Kirtland AFB purchases natural gas from a wholesale supplier and distributes it through pipelines owned by the New Mexico Gas Company. Several wholesalers sell gas to metering stations at the Base boundaries, and the Kirtland AFB Utilities Branch distributes gas from the metering stations to the facilities on the Base. Kirtland AFB Utilities Branch has a daily capacity of approximately 2.7 billion cubic feet available through wholesalers, while average consumption is around 1 billion cubic feet, leaving sufficient capacity available for the proposed project (Kirtland AFB 2010b).

3.2.4 Potable Water

Kirtland AFB obtains its potable water from two sources: Kirtland AFB groundwater production wells and Albuquerque Bernalillo County Water Utility Authority water purchases. The Kirtland AFB groundwater production wells were installed in the Albuquerque Regional Water Basin at depths of 450 to 1,000 feet below ground surface (bgs), and water obtained from the wells is treated through a blending system to reduce arsenic levels (Kirtland AFB 2011a). In 2011, approximately 755 million gallons (approximately 2,317 acre-feet) of water were pumped from Kirtland AFB's groundwater wells (Kirtland AFB 2011a). Kirtland AFB also purchases water from the City of Albuquerque to accommodate peak water demands or low water levels within the aquifer. However, in 2012, Kirtland AFB did not purchase any water from the City of Albuquerque (Warren 2013 personal communication). Water conservation recently improved at Kirtland AFB. They performed a 108-mile water distribution leak detection survey, and a total of 31 leaks were identified and repaired for an estimated savings of 175 million gallons of water per year. This volume is estimated to be 16 percent of Kirtland AFB's 2006 water usage

(Kirtland AFB 2008b). Kirtland AFB's appropriated water right of 6,398 acre-feet per year from the Santa Fe Aquifer is equal to approximately 2 billion gallons of water (Kirtland AFB 2002).

3.2.5 Sewage

Wastewater lines from Kirtland AFB discharge wastewater to the Southside Water Reclamation Plant in Albuquerque, New Mexico. The average daily flow at the Southside Water Reclamation Plant is 54 million gallons per day (MGD) and the maximum daily capacity is 114 MGD (Albuquerque Economic Development 2009). Discharges to the city's system are authorized under a City of Albuquerque Wastewater Permit. The Southside Water Reclamation Plant currently operates under an NPDES Permit (NMS000101) issued by the USEPA. Due to recent improvements in sewer lines and the privatization of military housing, Kirtland AFB contributes 2.4 MGD of wastewater to the city's treatment facility (Kirtland AFB 2011a).

3.2.6 Solid Waste

Solid waste management at Kirtland AFB is guided by the USAF regulation AFI 32-7042. Municipal solid waste generated by Kirtland AFB is collected by Mark Dunning Industries and transported to the City of Albuquerque's Cerro Colorado Landfill. Kirtland AFB also has an on-Base landfill used for the disposal of non-hazardous construction and demolition (C & D) debris. The Kirtland AFB C & D landfill has a 7,165,620-cubic-yard total capacity, with a 4,939,563-cubic-yard remaining capacity. Kirtland's Qualified Recycling Program (QRP) provides various types of recycling services. An office curbside recycling program collects white paper, shredded paper, mixed paper, aluminum beverage cans, plastic beverage containers, and toner cartridges from about 140 participating buildings on-Base. The QRP also maintains recycling dumpsters for corrugated cardboard and scrap metal. There are over 70 recycling dumpsters Base-wide and a public drop-off site in the southwest corner of the Commissary parking lot.

3.2.7 Storm Drainage System

Stormwater from the developed areas of Kirtland AFB drains into the City of Albuquerque's stormwater system and is monitored by city officials (U.S. Geological Survey [USGS] 2006). Kirtland AFB has an NPDES permit (Permit No. NMR040000), and must maintain a Construction General Permit (CGP) and a SWPPP that identify the best management practices (BMPs) and other actions Kirtland AFB would employ to reduce the amount of water pollution that may occur during construction activities. Within the undeveloped and open landscapes of Kirtland AFB, the majority of stormwater runoff flows through ephemeral streams into the Tijeras

Arroyo and eventually into the Rio Grande; however, nearly 95 percent of the precipitation that flows through the Tijeras Arroyo evaporates before it reaches the Rio Grande (Kirtland AFB 2012a).

In addition to construction BMPs, Section 438 of the EISA (42 U.S.C. Section 17094) requires Federal construction projects that disturb a footprint of greater than 5,000-square-feet to incorporate stormwater control measures in the design of new building projects. EISA Section 438 requirements are independent of stormwater requirements under the CWA. Under these requirements, predevelopment site hydrology must be maintained or restored to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow. EISA requirements must be met through a combination of Low Impact Development (LID) techniques. Retention basins are strongly discouraged. EISA designs must be approved under the Office of State Engineers water rights regulations. Predevelopment hydrology must be modeled or calculated, and must include site-specific factors such as soil type, ground cover, and ground slope. These regulations were incorporated into DOD Unified Facilities Criteria “Low Impact Development” dated 15 November 2010 (DOD 2010). Additional guidance is provided in USEPA’s *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act* (USEPA 2009a).

3.2.7.1 Specific Alternative Site Locations - Infrastructure

Table 3-2 describes the electrical, potable water, natural gas, sewerage, and stormwater drainage infrastructure at each of the alternative sites.

Table 3-2. Utility Infrastructure at the Six Alternative Sites

Alternative Site	Electrical	Potable Water	Sewerage	Natural Gas	Stormwater Drainage
1	Grid power at site	Water main at site	Sewer main at site	Gas available at site	City of Albuquerque storm drains
2	Grid power at site	Water main at site	Sewer main at site	Gas available at site	City of Albuquerque storm drains
3	Grid power at site	Water main at site	Sewer main at site	Gas available at site	City of Albuquerque storm drains
4	Grid power 0.5 mile from site	Water main 0.5 mile from site	Septic system	Gas line 0.5 mile from site	Natural drainage
5	Grid power 1.0 mile from site	Water main 1.0 mile from site	Septic system	Gas line 2.2 miles from site	Natural drainage
6	Grid power 0.3 mile from site	Water main 1.4 miles from site	Septic system	Gas line 1.6 miles from site	Natural drainage

3.3 CULTURAL RESOURCES

The term 'cultural resource' refers to any prehistoric or historic resource such as settlement sites, historic archaeological sites, or other evidence of our cultural heritage. The term 'historic property' refers specifically to a cultural resource that has been determined to be eligible for inclusion in the National Register of Historic Places (NRHP). Five classes of historic properties are defined as eligible for listing on the NRHP: buildings, sites, districts, structures, and objects (36 CFR 60.3). In addition, cultural resources may qualify for protection afforded by the Archaeological Resources Protection Act. Under Section 106 of the NHPA, the USAF is required to assess the effects of undertakings prior to initiation to ensure that there would be no adverse effects on historic properties (36 CFR 800). Title 36 CFR Section 60.4 defines the criteria used to establish significance and eligibility for the NRHP. Section 110 of the NHPA requires the USAF to complete an inventory of historic properties located on its land (36 CFR 60, 63, 78, 79, and 800).

Kirtland AFB has conducted a Base-wide survey of archaeological and cultural resources. More than 660 archaeological sites were recorded within the boundaries of Kirtland AFB, and a total of 2,183 facilities were evaluated for eligibility for the NRHP. Of the 2,183 facilities evaluated, 244 were found to be eligible for the NRHP (Kirtland AFB 2008a). Kirtland AFB currently has an Integrated Cultural Resources Management Plan (ICRMP) in place. The ICRMP (Kirtland AFB 2008a) is an integral part of Kirtland AFB's Comprehensive Plan and addresses the cultural resources at Kirtland AFB. It integrates the cultural resources management program with ongoing mission activities and the property managed by Kirtland AFB, allows for the identification of conflicts between mission activities and cultural resources management, and provides guidelines for mitigating any such conflicts (Kirtland AFB 2008a).

The purpose of the ICRMP is to provide guidelines and standard operating procedures (SOP) to non-technical managers and planners in order to comply with Kirtland AFB's legal responsibilities for the preservation of significant archaeological and historic resources. One of the SOPs in the ICRMP requires that the cultural resource staff at Kirtland AFB survey construction sites again for cultural resources before groundbreaking to ensure that no cultural resources have been missed in previous surveys.

3.3.1 Specific Alternative Site Locations – Cultural Resources

The Kirtland AFB Cultural Resource Manager has evaluated all six alternative sites for the Proposed Action. No cultural resources exist within 1 mile of the area of potential effect (APE) for Alternative Sites 1, 2, and 3. The Base-wide archaeological survey found cultural resources present within the APE boundaries of Alternative Sites 4, 5, and 6. Within the APE for Alternative Site 4, two archaeological resources have been determined eligible for the NRHP. Five archaeological resources that are eligible for the NRHP are located within the APE for Alternative Site 5. Two NRHP-eligible archaeological resources are located within the APE for Alternative Site 6.

3.4 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

3.4.1 Socioeconomics

Bernalillo County is one of 33 counties in New Mexico and is considered the region of influence (ROI) for socioeconomic effects of the Proposed Action. Bernalillo County is part of the Albuquerque Metropolitan Statistical Area. The 2010 racial mix of Bernalillo County consists predominantly of Caucasians (69 percent), followed by Native Americans (5 percent) and African Americans (3 percent). The remainder is divided among people claiming to be of other races or two or more races. Approximately 48 percent of the population of Bernalillo County claim Hispanic or Latino origins. The total 2010 population of Bernalillo County was 662,564 (U.S. Census Bureau 2012), and the 2010 population of the City of Albuquerque was 545,852 (U.S. Census Bureau 2012).

The total number of jobs in the ROI was 417,366 in 2010. Approximately 18 percent of all workers in the region are employed by the government and government enterprises. This estimate includes military personnel, Federal civilian workers, and state and local government personnel. The health care and social assistance industry provided the second-highest number of jobs (48,393), followed by retail trade (43,244), and professional and technical services (40,145) (Bureau of Economic Analysis [BEA] 2012). In 2010, Bernalillo County had a per capita personal income (PCPI) of \$35,787, which exceeded the state average and represented a 0.7 percent increase over the 2009 PCPI for Bernalillo County. Total personal income (TPI) for Bernalillo County in 2008 was \$23.7 billion. This TPI ranked first in the State of New Mexico and accounted for 34.5 percent of the state total. The 2010 TPI reflected an increase of 2.1 percent from 2009 (BEA 2012). The median annual household income (2006 to 2010) of

Bernalillo County was \$47,481, and approximately 15.6 percent of the population of the county lived below the poverty level (U.S. Census Bureau 2012).

The total number of housing units in Bernalillo County in 2010 was estimated to be 284,234. Approximately 264,189 housing units were occupied and approximately 20,213 housing units were estimated to be vacant in 2010. In 2010, 428,036 persons were in owner-occupied housing units, with 336,485 persons living in housing units that were owned with a mortgage or loan, and 91,551 persons living in housing units that were owned free and clear. A total population of 222,583 lived in renter-occupied housing units (U.S. Census Bureau 2012).

3.4.2 Environmental Justice

E.O. 12898 (Environmental Justice) requires all Federal agencies to identify and address disproportionately high and adverse effects of its programs, policies, and activities on minority and low-income populations. Although the majority of the population in Bernalillo County claims to be Caucasian, about 48 percent claim Hispanic origin and about 8 percent claim to be African American or Native American. In addition, over 15.6 percent of the Bernalillo County population is considered to live below the poverty level (U.S. Census Bureau 2012).

E.O. 13045 (Protection of Children) requires each Federal agency “to identify and assess environmental health risks and safety risks that may disproportionately affect children” and “ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.” In Bernalillo County, about 8 percent of the population are 5 years old or less and 25 percent are younger than 18 years (U.S. Census Bureau 2012).

3.4.2.1 Specific Alternative Sites – Environmental Justice

Alternative Sites 1 and 2 are located in developed areas with a residential neighborhood located within 400 feet; however, these residential areas are located outside of the fenced and gated boundary of the Base. Alternative Site 3 is located near ABQ in a commercially developed area. Alternative Sites 4, 5, 6 are located in remote areas of the Base removed from any populated area.

3.5 BIOLOGICAL RESOURCES

3.5.1 Vegetation Communities

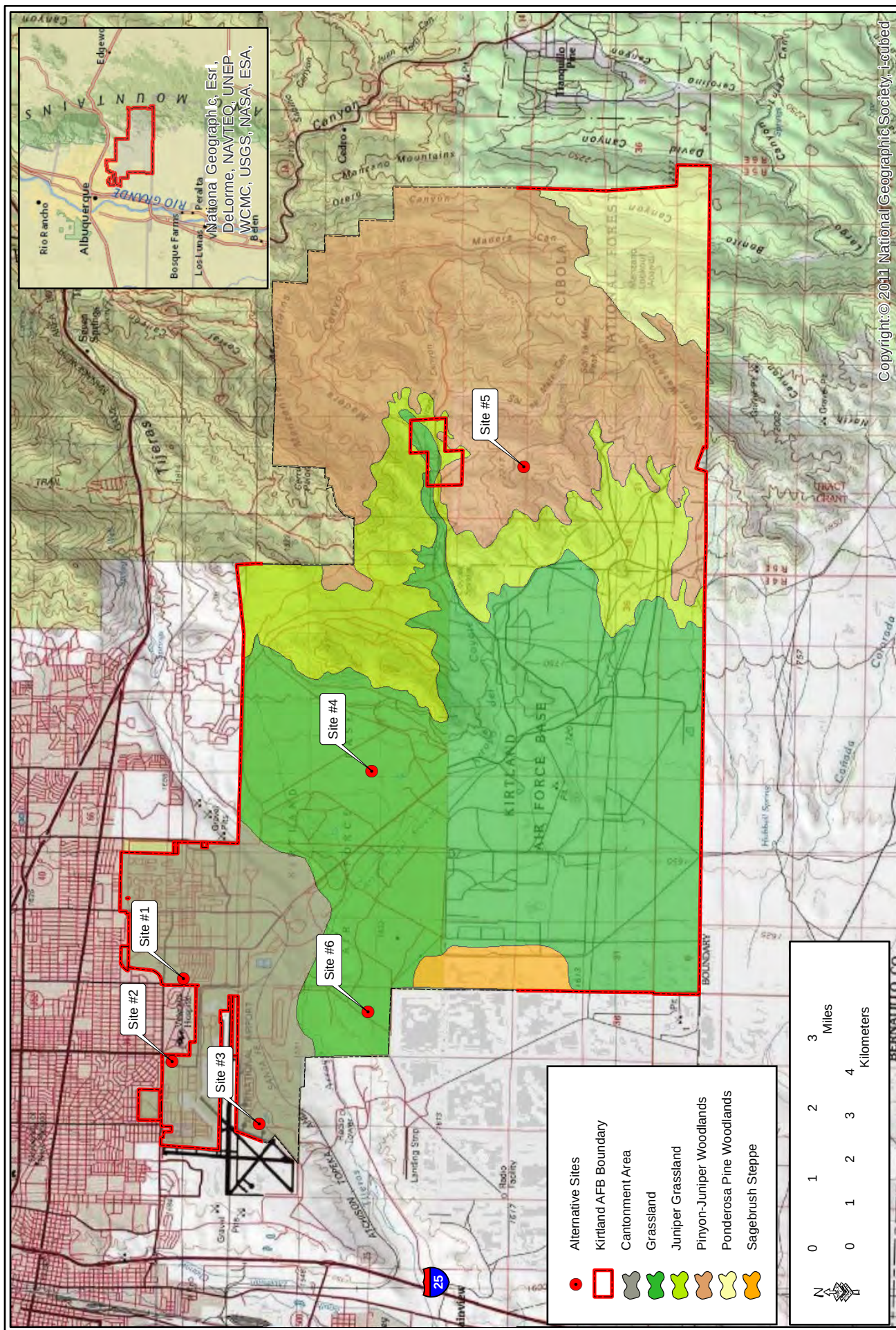
The dominant vegetation communities at Kirtland AFB consist of grasslands, sagebrush steppe, juniper grassland, ponderosa pine woodlands, and pinyon-juniper woodlands (Kirtland AFB 2012a). The six alternative sites and the dominant vegetation communities on the Base are presented in Figure 3-2.

3.5.1.1 Grassland

Grassland communities at Kirtland AFB occupy much of the central and western portions of the installation (Figure 3-2). The grasslands of Kirtland AFB are influenced primarily by natural disturbance regimes typical of Chihuahuan Desert habitat. Regionally, grasslands occur between elevations of 5,200 and 5,700 feet mean sea level (MSL), and may occur as high as 6,900 feet MSL in the foothills of the Manzanita Mountains. Common grass species include ring muhly (*Muhlenbergia torreyi*), Indian ricegrass (*Achnatherum hymenoides*), sixweeks grama (*Bouteloua barbata*), black grama (*Bouteloua eriopoda*), blue grama (*Bouteloua gracilis*), and spike dropseed (*Sporobolus contractus*). Shrubs commonly found in the grassland community include sand sagebrush (*Artemisia filifolia*), winterfat (*Krascheninnikovia lanata*), and broom snakeweed (*Gutierrezia sarothrae*). Other species include purple threeawn (*Aristida purpurea*), sixweeks threeawn (*Aristida adscensionis*), hairy grama (*Bouteloua hirsuta*), mesa dropseed (*Sporobolus flexuosus*), four-wing saltbush (*Atriplex canescens*), Apache plume (*Fallugia paradoxa*), plains prickly pear (*Opuntia polykantha*), and soapweed yucca (*Yucca glauca*). Transitional shrublands are common between grassland and pinyon-juniper woodland communities, with many species from both communities inhabiting these areas (Kirtland AFB 2012a).

3.5.1.2 Sagebrush Steppe

Sagebrush steppe communities occur along the western boundary of Kirtland AFB. Sand sagebrush is the dominant shrub species, while the understory is similar to that of the adjacent grasslands. However, in the sagebrush steppe, the understory is less dense, and exposed patches of soil are covered with a tightly bound mesh of bacteria that stabilizes the soil, thereby providing media for seed germination.



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Figure 3-2. Vegetation at Kirtland AFB

3.5.1.3 Pinyon-Juniper Woodland

The pinyon-juniper woodland community occupies elevations of 6,300 and 7,500 feet MSL and is found in the mountainous areas of the eastern portion of Kirtland AFB (see Figure 3-2). This plant community is primarily composed of two-needle pinyon (*Pinus edulis*) and juniper (*Juniperus* spp.), with an understory of shrubs and grasses. At most elevations, this community consists of open woodland with grama grasses dominating the understory. Other species associated with this plant community are broom snakeweed, rubber rabbitbrush (*Ericameria nauseosa*), threadleaf groundsel (*Senecio flaccidus*), and alderleaf mountain mahogany (*Cercocarpus montanus*).

3.5.1.4 Ponderosa Pine Woodland

The ponderosa pine woodland community occurs at elevations between 7,600 and 7,988 feet MSL, and is found in the southeast portion of Kirtland AFB (see Figure 3-2). Common species include ponderosa pine (*Pinus ponderosa*), Colorado pinyon pine (*Pinus edulis*), Rocky Mountain juniper (*Juniperus scopulorum*), and Gambel oak (*Quercus gambelii*). Intermingled with these species are creeping barberry (*Mahonia repens*), New Mexican locust (*Robinia neomexicana*), and snowberry (*Symphoricarpos albus*). One-seeded juniper (*Juniperus monosperma*), hoptree (*Ptelea trifoliata*), and alderleaf mountain mahogany are also present in ponderosa pine woodland (Kirtland AFB 2012a).

3.5.1.5 Riparian/Wetland/Arroyo

The riparian/wetland/arroyo community consists of species having a greater moisture requirement than species common to other plant communities on Kirtland AFB. These plant communities are found along Tijeras Arroyo, Arroyo del Coyote, and near various springs located throughout Kirtland AFB. Common species include cottonwood (*Populus fremontii*), hoptree, Apache plume, yerba mansa (*Anemopsis californica*), and salt cedar (*Tamarisk ramosissima*). Wetland communities located on Kirtland AFB can be described as a few relatively small, scattered depressions near water sources that can support hydrophytic vegetation.

3.5.1.6 Specific Alternative Sites – Vegetation Community

Gulf South Research Corporation (GSRC) biologists Shalise Hadden and Curt Schaeffer conducted reconnaissance-level surveys for biological resources at each of the six alternative

sites. The surveys were performed from 11 through 14 June 2012, and field observations for each of the alternative sites are described below.

Alternative Site 1 is located in a developed area with 85 percent of the area showing bare soils. The site exhibits park-like conditions with widely spaced canopy trees and little to no herbaceous vegetation. The tree stratum is represented by desert willow (*Chilopsis linearis*), tree of heaven (*Alnus altissima*), and Texas mulberry (*Morus microphylla*). The tree canopy covers approximately 10 percent of the site, with each species representing approximately 33 percent of the canopy cover at Alternative Site 1. Desert willow, smooth sumac (*Rhus glabra*), and mountain pepperweed (*Lepidium montanum*) represent the shrub stratum. These shrubs are sparsely populated at the site and occupy 5 percent of the total area. Species observed in the herbaceous stratum include trailing windmill (*Allionia incarnate*) and copper globemallow (*Sphaeralcea incarnata*), occupying 5 percent of the ground area. Alternative Site 1 was surveyed on 11 June 2012.

Alternative Site 2 is located in a developed area (Kirtland AFB 2012a) with about 80 percent bare soils. The site is devoid of overstory species and large shrub species. The dominant vegetation at Alternative Site 2 is broom snakeweed, which covers approximately 13 percent of the total area. Common fiddleneck (*Amsinckia menziesii*) and copper globemallow dominate the herbaceous stratum, accounting for approximately 7 percent of the total area. Alternative Site 2 was surveyed on 12 June 2012.

Alternative Site 3 is located in a developed area (Kirtland AFB 2012a) with 72 percent displaying bare soils. The on-site vegetation is composed of shrubs and herbaceous species. Four-wing saltbush dominate the shrub stratum, while broom snakeweed and soapweed yucca are less common. Shrub species account for approximately 14 percent of the total cover at Alternative Site 3. Tabosa grass (*Pleuraphis mutica*) dominates the herbaceous stratum, while bush muhly (*Muhlenbergia porteri*), copper globemallow, and golden crownbeard (*Verbesina encelioides*) are less abundant. Herbaceous species represent approximately 14 percent of the total cover at this site. Alternative Site 3 was surveyed on 12 June 2012.

The vegetation community at Alternative Site 4 is classified as grassland (Kirtland AFB 2012a) and is primarily composed of herbaceous species and sparsely distributed shrub species. The shrub stratum is composed of common sotol (*Dasyilirion wheeleri*), prickly Russian thistle

(*Salsola tragus*), plains prickly pear, and broom snakeweed. Tabosa grass and bush muhly dominate the herbaceous stratum, while burrograss (*Scleropogon brevifolius*), Rocky Mountain zinnia (*Zinnia grandiflora*), ring muhly, and golden crownbeard are less abundant. Bare soils occupy approximately 53 percent of the area and shrub species and herbaceous species occupy approximately 12 percent and 35 percent, respectively, of the area. Alternative Site 4 was surveyed on 13 June 2012.

The vegetation community at Alternative Site 5 is classified as a pinyon-juniper woodland (Kirtland AFB 2012a). Two-needle pinyon dominates the shrub stratum, while one-seeded juniper, four-wing saltbush, broom snakeweed, American tarwort (*Flourensia cernua*), and rubber rabbitbrush are less common. The shrub species occupy approximately 45 percent of the area at this site. Grasses observed include bush muhly, Rocky Mountain zinnia, Fendler's threeawn (*Aristida longiseta*), Harvard's threeawn (*Aristida havardii*), and sixweeks grama. Herbaceous species account for approximately 14 percent of the total vegetative cover at this site, and the remaining 41 percent of the area is occupied by bare soils. Alternative Site 5 was surveyed on 13 June 2012.

The vegetation community at Alternative Site 6 is classified as grassland (Kirtland AFB 2012a) and is primarily composed of herbaceous species, sparsely distributed shrub species, and bare soils. The shrub stratum is composed of common sotol, sand sagebrush (*Artemisia filifolia*), rubber rabbitbrush, and Russian thistle. Shrub species account for approximately 3 percent of the total vegetative cover at Alternative Site 6. Approximately 40 percent of the total area at this site is composed of herbaceous species. The herbaceous stratum is represented by Rocky Mountain zinnia, tabosa grass, bush muhly, ring muhly, and a species of dropseed (*Sporobolus* spp). Alternative Site 6 was surveyed on 14 June 2012.

3.5.2 Wildlife

Wildlife falls under the jurisdiction of the New Mexico Department of Game and Fish (NMDGF), which manages state-listed threatened or endangered species, and the U.S. Fish and Wildlife Service (USFWS), which is responsible for the management of migratory birds and Federally listed threatened and endangered species. Threatened and endangered species are addressed in this document under Section 3.5.3. Wildlife communities outside of the improved areas on Kirtland AFB are typical of those found in woodland and grassland habitats in central New Mexico. The composition of these communities is dependent upon the quality and quantity of

available habitat that meets the needs of individual wildlife species (Stephens and Associates 1996). Species may be transient and travel within or inhabit several communities, or may exist in transitional areas between vegetation communities.

Common bird species at Kirtland AFB include the horned lark (*Eremophila alpestris*), scaled quail (*Callipepla squamata*), mourning dove (*Zenaida macroura*), greater roadrunner (*Geococcyx californianus*), American crow (*Corvus brachyrhynchos*), northern mockingbird (*Mimus polyglottos*), western meadowlark (*Sturnella neglecta*), brown-headed cowbird (*Melothrus ater*), and house finch (*Carpodacus mexicanus*). Raptor species known to occur or that may potentially occur at Kirtland AFB include the northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*Buteo swainsoni*), ferruginous hawk (*Buteo regalis*), American kestrel (*Falco sparverius*), and burrowing owl (*Athene cunicularia*). Additionally, turkey vultures (*Cathartes aura*) are common scavengers in the area (Peterson 1990).

Dominant mammalian species include desert cottontail (*Sylvilagus audubonii*), black-tailed jackrabbit (*Lepus californicus*), spotted ground squirrel (*Spermophilis spilosoma*), western harvest mouse (*Reithrodontomys megalotis*), deer mouse (*Peromyscus maniculatus*), coyote (*Canis latrans*), kit fox (*Vulpes macrotis*), mule deer (*Odocoileus hemionus*), badger (*Taxidea taxus*), striped skunk (*Mephitis mephitis*), and pronghorn (*Antilocapra americana*) (Reid 2006).

Reptiles and amphibians found on Kirtland AFB are represented by species that exhibit extensive dormancy periods during dry conditions and rapid reproductive cycles when temporary standing water is present following rainfall events. These include Woodhouse's toad (*Bufo woodhousii*), redspotted toad (*Anaxyrus punctatus*), western box turtle (*Terrapene ornata*), little-striped whiptail lizard (*Aspidoscelis inornata*), short-horned lizard (*Phrynosoma douglassi*), lesser earless lizard (*Holbrookia maculata*), bull snake (*Pituophis catenifer sayi*), western diamondback rattlesnake (*Crotalus atrox*), and glossy snake (*Arizona elegans*) (Stebbins 2003).

3.5.2.1 Specific Alternative Sites - Wildlife

Wildlife were observed by GSRC biologist during reconnaissance surveys for biological resources at the alternative sites in June 2012. Wildlife observed at Alternative Sites 1 and 2 include common bird species such as mourning dove, black-throated sparrow (*Amphispiza*

bilineata), and lark sparrow (*Chondestes grammacus*). Although no mammals were observed, the presence of Gunnison's prairie dog (*Cynomys gunnisoni*) burrows at the site indicates that the area was being used by a community of prairie dogs. No western burrowing owls were observed at either site. The wildlife observed at Alternative Site 3 includes two species of reptile, the whiptail lizard and earless lizard, and one species of bird, lark sparrow. Wildlife at Alternative Site 4 include lark sparrow, black-throated sparrow, house finch, and western meadowlark. The wildlife observed at Alternative Site 5 include a western diamondback rattlesnake and several chipping sparrows (*Spizella passerina*). The wildlife observed at Alternative Site 6 include two earless lizards and several lark sparrows.

3.5.3 Sensitive Species

Sensitive species, as used herein, are plant and animal species that are protected by the Federal government under the Endangered Species Act (ESA), or by the State of New Mexico under the Wildlife Conservation Act or the New Mexico Endangered Plant Species Act. The USFWS has the responsibility to identify and conserve species protected under the ESA. These species are listed as either threatened, endangered, or candidate. NMDGF is responsible for those species protected by the New Mexico Wildlife Conservation Act. The New Mexico Energy, Minerals, and Natural Resources Department maintains a listing of state threatened and endangered plants that are protected under the New Mexico Endangered Plant Species Act.

Sensitive species that may occur in the region of Kirtland AFB are shown in Table 3-3. The categorizations of “sensitive” or “species of concern” for some species in Table 3-3 carry no legal requirements or protections; they simply identify those species that deserve special consideration in management and planning, and alert land managers to the need for caution in management where these taxa may be affected. However, species of concern may be protected under other Federal or state laws, such as the MBTA. A complete list of both Federal and state sensitive species can be found in Appendix A.

3.5.3.1 Federal

As seen in Table 3-3, there are eight Federally protected species that are known to occur within the Kirtland AFB boundaries (USFWS 2012). The Federal government lists western burrowing owl, loggerhead shrike, and mountain plover as species of concern. Several other Federal species of concern occurring on Kirtland AFB are the northern goshawk, slate millipede,

Townsend's big-eared bat, and gramma-grass cactus. The mountain plover may potentially occur on-Base; chicks have been observed adjacent to Kirtland AFB (Kirtland AFB 2012a). The western burrowing owl and loggerhead shrike inhabit the Base.

Table 3-3. Sensitive Species for Bernalillo County, New Mexico, Potentially Occurring on Kirtland AFB

Common Name	Scientific Name	USFWS	NMDGF	Possible Habitat on Kirtland AFB
FISH				
Rio Grande silvery minnow	<i>Hybognathus amarus</i>	E	E	No
BIRDS				
Neotropic cormorant	<i>Phalacrocorax brasilianus</i>		T	No
Northern goshawk	<i>Acipiter gentilis</i>	SOC		Yes
Bald eagle	<i>Haliaeetus leucocephalus</i>		T	No
Common black-hawk	<i>Buteogallus anthracinus</i>		T	No
American peregrine falcon	<i>Falco peregrinus</i>	SOC	T	Yes
Arctic peregrine falcon	<i>Falco peregrinus tundrius</i>	SOC	T	No
Mexican spotted owl	<i>Strix occidentalis</i>	T		No
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	E	E	No
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	C		No
Bell's vireo	<i>Vireo bellii</i>		T	No
Gray vireo	<i>Vireo vicinior</i>		T	Yes
Whooping crane	<i>Grus americana</i>	E	E	No
Western burrowing owl	<i>Athene cunicularia</i>	SOC		Yes
Baird's sparrow	<i>Ammodramus bairdii</i>	SOC	T	No
Loggerhead shrike	<i>Lanius ludovicianus</i>	SOC		Yes
Mountain plover	<i>Charadrius montanus</i>	SOC	S	Yes
MAMMALS				
Pecos River muskrat	<i>Ondatra zibethicus ripensis</i>	SOC		No
Spotted bat	<i>Euderma maculatum</i>		T	Yes
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	SOC		Yes
Black-footed ferret	<i>Mustela nigripes</i>	E		No
Gunnison's prairie dog	<i>Cynomys gunnisoni</i>		S	Yes
New Mexico meadow jumping mouse	<i>Zapus hudsonius luteus</i>	C	E	No
INVERTEBRATE				
Slate millipede	<i>Comanchelus chihuensis</i>	SOC		Yes
PLANTS				
Gramma-grass cactus	<i>Pediocactus papyracanthus</i>	SOC		Yes
Wild hollyhock	<i>Iliamna gradiflora</i>		S	No

Key: E – Endangered, T – Threatened, D – Delisted, C – Candidate species, SOC – Species of concern, S - Sensitive
Source: NMDGF 2012, USFWS 2012

Western burrowing owls are an ESA species of concern, native to New Mexico, and a common resident at Kirtland AFB. This species is closely associated with prairie dog colonies on Kirtland AFB, as the owl may utilize abandoned prairie dog burrows for nesting. The owls generally are found on Kirtland AFB property from March through October before their migration south, although some may remain on Kirtland AFB during mild winters. The burrowing owl breeding season begins in March and continues through July (NMDGF 2008a). Juvenile burrowing owls are capable of short flights within 4 weeks of hatching, and fledging occurs approximately 44 days after hatching (Landry 1979). Burrowing owls breed in grasslands, prairies, or open areas near human habitation, especially golf courses and airports (NMDGF 2008a). The affinity of this species for areas near human habitation may lead to the possibility of burrowing owls occurring within the developed area on Kirtland AFB.

Kirtland AFB already has a program in place that identifies locations of nesting burrowing owls and has developed procedures to relocate owls if necessary. Since this program has been implemented successfully for several years, the protection of this species does not constrain development at the Base (Kirtland AFB 2012a).

3.5.3.2 State

After review of listed species distribution, biology, and preferred habitats, it was determined that five state-protected or sensitive species have the potential to occur on Kirtland AFB: gray vireo, spotted bat, peregrine falcon, mountain plover, and Gunnison's prairie dog (Kirtland AFB 2012a). In 2010 and 2011, a Base-wide gray vireo survey was conducted in which 58 to 74 territories were mapped (Kirtland AFB 2011b). Territories were found on the west side of the Manzanita Mountains throughout the pinyon-juniper woodland community between elevations of 6,194 and 7,962 feet MSL (Kirtland AFB 2011b). During the summer, Kirtland AFB is home to the largest gray vireo colony in New Mexico (Kirtland AFB 2012a).

Gunnison's prairie dogs require grassland or short shrubland habitat, with soil types conducive to burrowing (e.g., sandy loams). Tunnels are excavated to an average depth of 3.5 feet and some burrows may interconnect with the burrow systems of their neighbors. Burrows are essential for survival since they provide escape from many predators and extreme temperatures (Kirtland AFB 2012a).

It is generally believed that spotted bats roost in crevices located in cliffs or under loose rocks and rocky areas. In New Mexico, this bat was documented as occurring only during the warmer months from April through September; however, it was suggested that this species may summer in forested areas at higher elevations and migrate through lower elevations during other seasons. More recently, the use of a building as a winter roost by spotted bats was documented at a warehouse in Albuquerque, New Mexico (Sherwin and Gannon 2005). Spotted bats have also been observed during the summer on a building at Holloman AFB, approximately 150 miles south of Kirtland AFB (New Mexico Natural Heritage Program [NMNHP] 1996). This information leads to the possibility of spotted bats making use of buildings or other structures within the existing developed area of Kirtland AFB as roosting habitat.

3.5.3.3 *Specific Alternative Sites – Sensitive Species*

Sensitive species were not observed at any of the alternative sites during reconnaissance surveys for biological resources. However, Alternative Sites 1 and 2 did have Gunnison's prairie dog towns, which could be used by western burrowing owls. Suitable habitat for sensitive species was not observed at Alternative Sites 3, 4, or 6. Although no individuals were observed during the reconnaissance surveys for biological resources, Alternative Site 5 is located in known gray vireo habitat (Kirtland AFB 2011b), as shown in Figure 3-3.

3.6 EARTH RESOURCES

3.6.1 Water Resources

3.6.1.1 *Surface Water*

The Rio Grande, which is located approximately 5 miles west of Kirtland AFB, is the major surface water body in the region (Kirtland AFB 2012a). All of Kirtland AFB property is located in the Tijeras Arroyo drainage basin. The drainage area of the Tijeras Arroyo watershed is approximately 72-square-miles. Arroyo del Coyote is an ephemeral tributary that flows into Tijeras Arroyo. The Tijeras Arroyo (Figure 3-4) is an ephemeral stream that is not meeting state and Federal standards for nutrients, eutrophication, and biological indicators, and is listed on the 2010-to-2012 New Mexico CWA 303(d) list of impaired waters as not meeting its designated use for warm-water aquatic life (NMED 2012). Table 3-4 presents the designated uses, probable causes of impairment, and probable sources of impairment for the Tijeras Arroyo watershed.

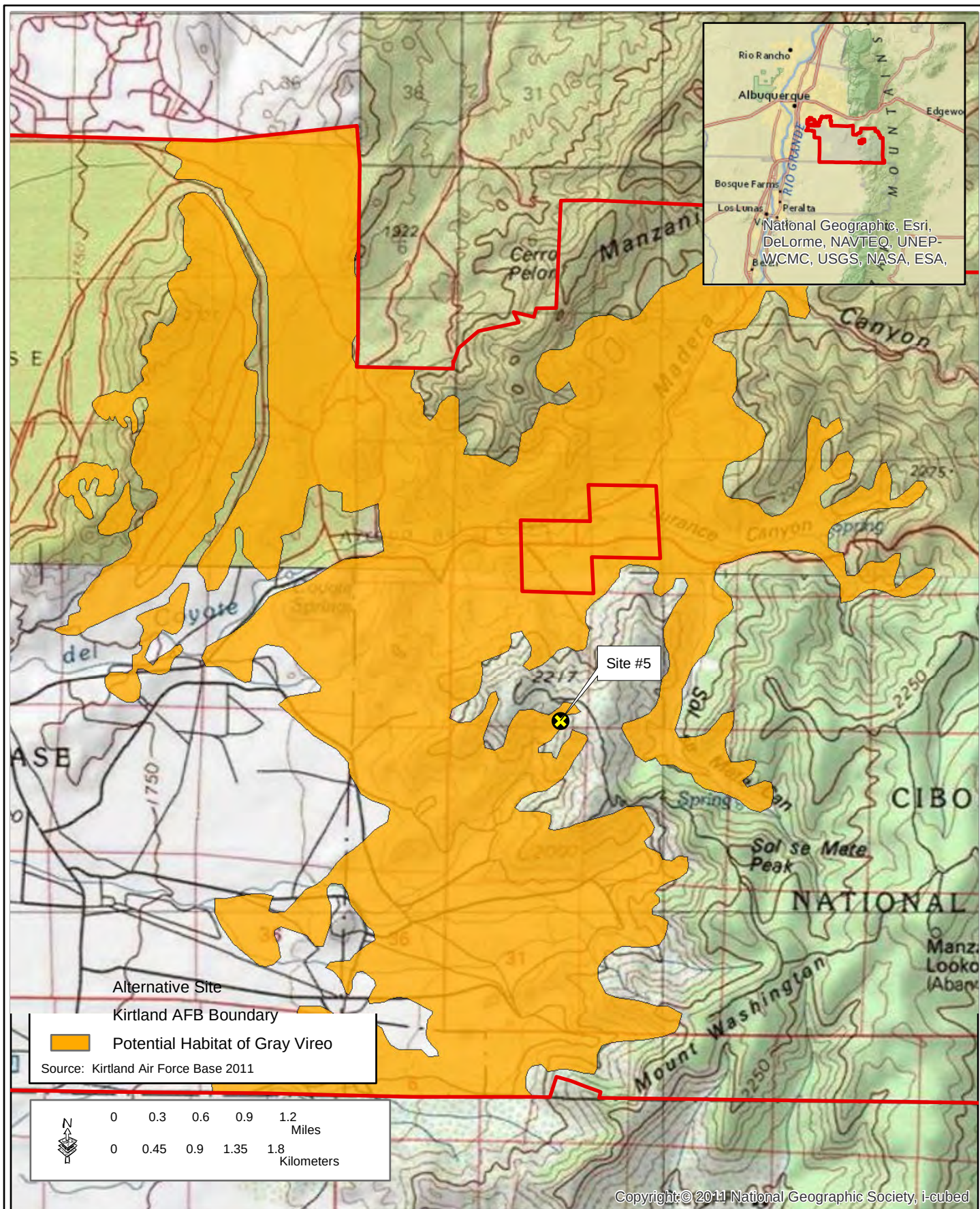


Figure 3-3. Potential Gray Vireo (*Vireo plumbeus*) Habitat in the Pinyon-juniper Woodlands of Kirtland AFB

November 2012

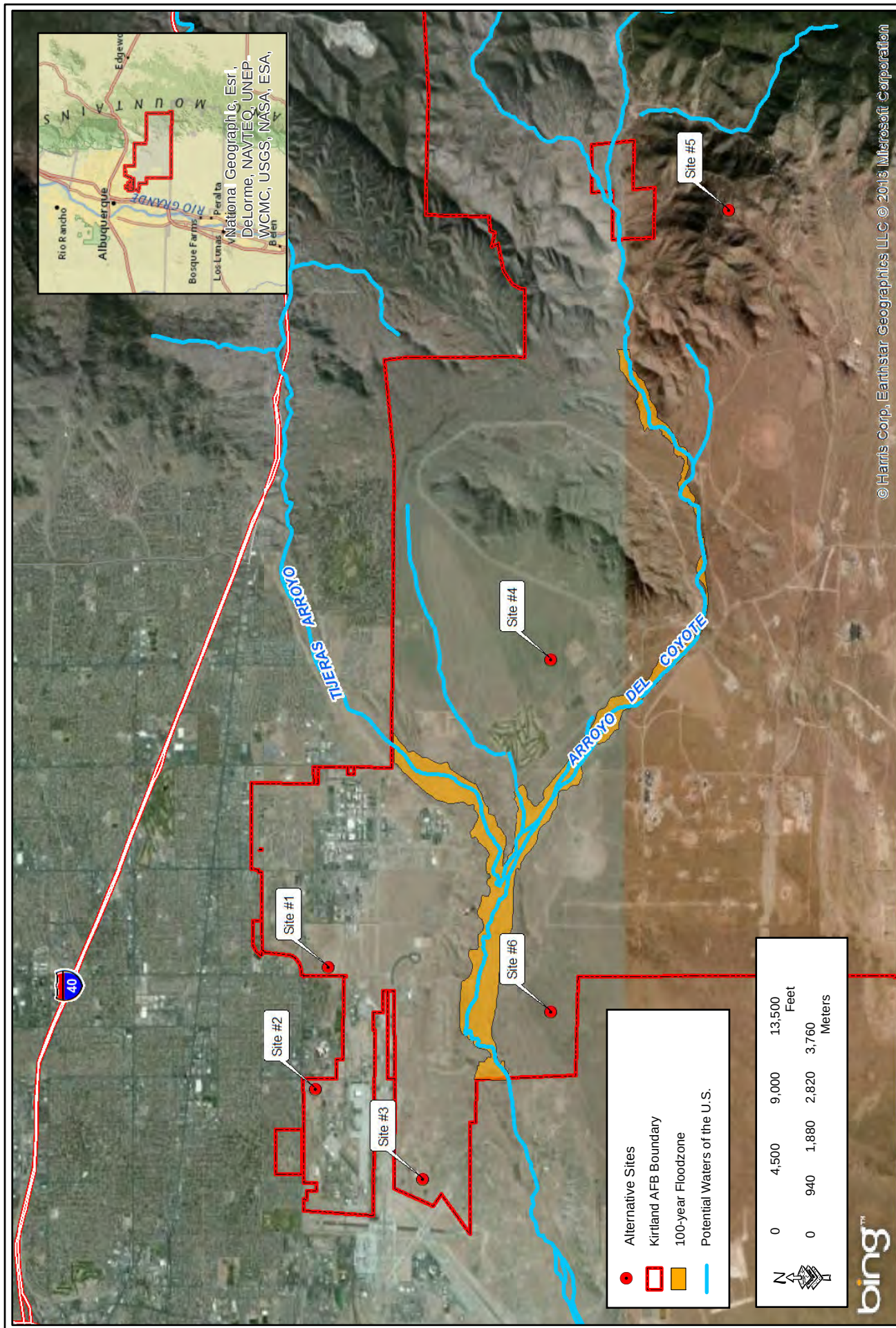


Figure 3-4. Location of Floodplains, Wetlands, and Major Ephemeral Streams on Kirtland AFB

Table 3-4. New Mexico CWA 303(d) List of Impairments for Tijeras Arroyo

Tijeras Arroyo	
Class of Information	Water Quality Data
Hydrologic Unit Code (HUC) 10	1302020302
NM Assessment Unit ID:	NM-9000.A_001
Designated Uses	Livestock Watering: Fully Supporting Primary Contact: Fully Supporting Warmwater Aquatic Life: Not Supporting Wildlife Habitat: Fully Supporting
Probable Causes of Impairment	Benthic-Macroinvertebrate Bioassessments Nutrient/Eutrophication Biological Indicators
Probable Sources of Impairment	Channelization Drought-related Impacts On-site Treatment Systems (Septic Systems and Similar Decentralized Systems) Rangeland Grazing Wastes from Pets

Source: NMED 2012.

3.6.1.2 Hydrogeology/Groundwater

The Tijeras Arroyo and Arroyo del Coyote are the primary hydrologic features on Kirtland AFB. Arroyo del Coyote flows into the Tijeras Arroyo approximately 1 mile west of the Tijeras Arroyo Golf Course (see Figure 3-4). Both of these channels are ephemeral streams and contain surface water only during and shortly after rainfall events.

Kirtland AFB is located above the Albuquerque Basin Regional Aquifer within the Santa Fe Formation. Generally, the upper unit of the Santa Fe Formation contains the most productive portion of the regional aquifer that supplies groundwater to the City of Albuquerque and Kirtland AFB. The average depth to groundwater beneath Kirtland AFB is 450 to 550 feet bgs. There are also multiple shallow zones of perched water, which may not be continuous, that are located at approximately 300 to 400 feet bgs. No potable water wells are drawn from the perched aquifer. The groundwater contains elevated levels of arsenic and copper, but no contaminants exceed the safe drinking water standards established by USEPA under the Safe Drinking Water Act (Kirtland AFB 2010b).

3.6.1.3 Waters of the U.S.

Waters of the U.S. are defined as tidal areas, desert playas, mud and salt flats, and intermittent and ephemeral stream channels. Activities that result in the dredging and/or filling of waters of the U.S. are regulated under Section 404 of the CWA.

3.6.1.4 Specific Alternative Sites – Earth Resources

GSRC biologists surveyed the six alternative sites, and no waters of the U.S. were observed at or near Alternative Sites 1, 2, 3, 5, or 6. However, at Alternative Site 4, there is one ephemeral stream that has the potential to be considered a waters of the U.S. It bisects the site from the northeast to the southwest. It is approximately 600 feet long and 3 to 5 feet wide and the streambed footprint within the project site boundary is approximately 0.07 acre. There are also two other small washes running east to west, 100 feet north and 150 feet south of the site, that have the potential to be considered waters of the U.S. (Figure 3-5).

3.6.2 Soils

Kirtland AFB is located in the Albuquerque Basin, most of which consists of poorly consolidated sediments that eroded from the surrounding mountains following faulting and geologic activity. These sediments, known as the Santa Fe Group, are overlain in places by the Ortiz gravel deposits, which are between 1.6 million and 5.3 million years old. In certain places, Rio Grande soil types and volcanic deposits are interspersed. In the eastern half of the Base, bedrock is exposed in a series of northeast-trending geologic structures. This area consists primarily of granite, metamorphic rock, and marine carbonate rocks that are approximately 57 million years old (Kirtland AFB 2012a). The dominant soils of the Albuquerque Basin are well-drained and loamy, with minor amounts of gravelly and stony soils along the mountains and arroyos (NRCS 2006). Figure 3-6 presents a map of the different soil types that were identified on Kirtland AFB.

3.6.2.1 Specific Alternative Sites - Soils

Table 3-5 presents the types of soils found at each of the alternative sites. The table is followed by a brief description of the soils found at each site.

Table 3-5. Types of Soils at Each of the Six Alternative Sites

Alternative Site	Type of Soils	Acres
1	Latene sandy loam Madurez-Wink association	0.7 9.3
2	Latene sandy loam	10.0
3	Bluepoint – Kokan association Wink fine sandy loam	9.2 0.8
4	Tijeras gravelly fine sandy loam	10.0
5	Rock outcrop – Orthids complex	10.0
6	Tome very fine sandy loam	10.0

Source: Soil Survey Geographic (2008).

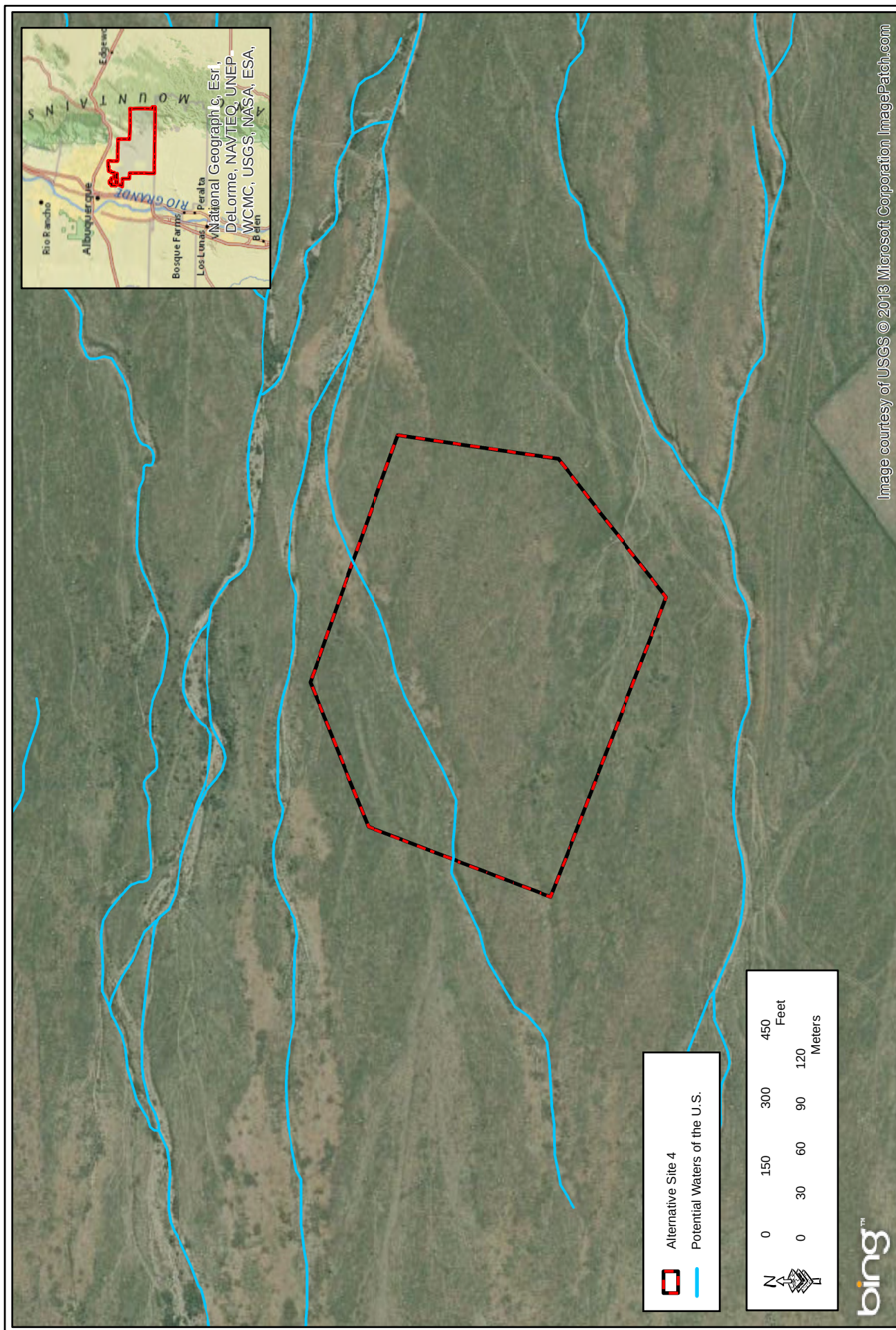


Figure 3-5. Locations of Potential Waters of the U.S. near Alternative Site 4

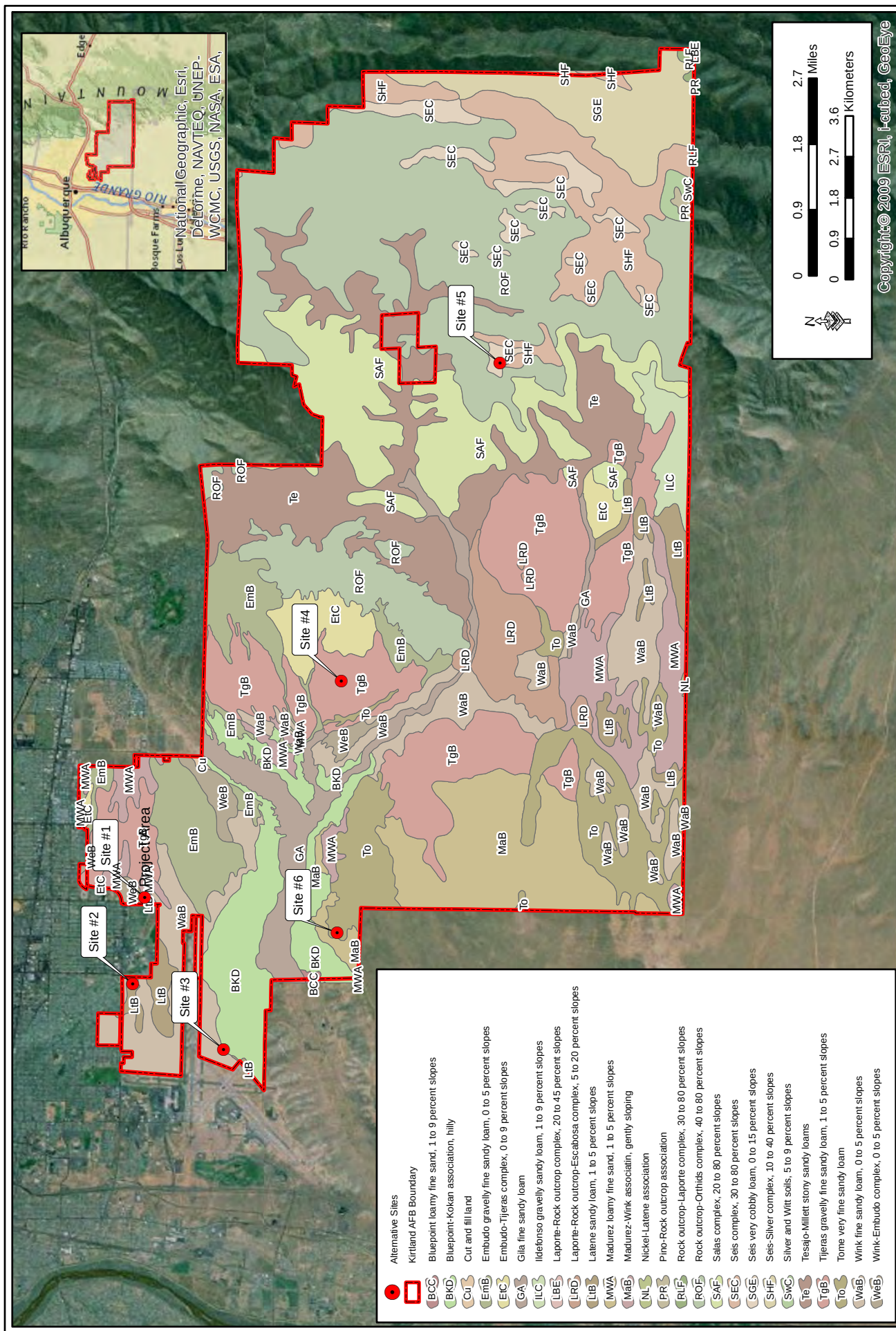


Figure 3-6. Soils at Kirtland AFB

Latene Series: The Latene series consists of deep, well-drained soils that formed in old calcareous alluvium and mixed eolian sediments. This soil is found on gently sloping to rolling alluvial fans and stream terraces at elevations of 3,900 to 6,000 feet MSL. Slopes range from 1 to 10 percent. The soil has slow to medium runoff and is moderately permeable. These soils are used for native rangeland. Some tracts are subdivided for building developments (NRCS 2006).

Madurez-Wink association: These soils are nearly level to gently sloping, well-drained, and moderately permeable at elevations ranging from 4,900 to 6,000 feet MSL. These soils are used for native rangeland and building developments.

Bluepoint – Kokan association: The Bluepoint series consists of deep, excessively drained soil that forms in sandy alluvial and eolian materials derived from mixed rock sources. Bluepoint soils are on alluvial fans and terraces at elevations of 1,700 to 4,000 feet MSL. The soil is slightly calcareous (containing calcium carbonate) and mildly to moderately alkaline (Kirtland AFB 2009). The Kokan series consists of very deep, excessively drained, very rapidly permeable soils that formed in very gravelly and sandy alluvium (NRCS 2009).

Wink fine sandy loam: The Wink series consists of very deep, well-drained soils formed in calcareous, loamy alluvium sediments. Risks to water erosion are light to moderate. These soils are on nearly level to moderately sloping uplands at elevations from 5,000 to 6,000 feet MSL.

Tijeras gravelly fine sandy loam: The Tijeras gravelly fine sandy loams are found on 1 to 5 percent slopes. Tijeras soils are formed in sandy to medium-textured sediments on nearly level to gently rolling fan remnants at elevations of 5,000 to 6,500 feet MSL (NRCS 2007a). The runoff is medium with mild risk for water erosion. Tijeras soils are commonly used as rangeland, but tracts can be divided for urban development and building.

Rock outcrop – Orthids complex: The Rock outcrop-Orthids soils are moderately deep, well-drained soils that formed from weathered limestone and shale on ridges and hill slopes at elevations of 7,000 to 8,500 feet MSL. Rock outcrops occur where limestone, schist, gneiss, or granite has been exposed through geomorphic processes like uplift, faulting, and wind and water erosion. These soils are used for forestry, recreation, and range. Vegetation primarily

consists of pine and fir with a thin understory of grasses and shrubs (NRCS 2007a). Runoff is rapid with a moderate to high risk for soil erosion due to water and winds.

Tome very fine sandy loam: Tome soils are deep, well-drained medium-textured soils formed in alluvial sediments derived primarily from limestone and silty shale at elevations ranging from 4,800 to 5,600 feet MSL (NRCS 2007b). This soil has slow to rapid runoff, moderately slow permeability, and moderate risk of water erosion.

3.7 AIR QUALITY

3.7.1 Regulatory Setting

USEPA established National Ambient Air Quality Standards (NAAQS) for specific pollutants. The NAAQS standards are classified as either "primary" or "secondary" standards. The major pollutants of concern, or criteria pollutants, are carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), ozone (O₃), particulate matter less than 10 microns (PM-10), particulate matter less than 2.5 microns (PM-2.5), and lead (USEPA 2011a). NAAQS represent the maximum levels of pollutants that are considered safe, with an adequate margin of safety, to protect the public health and welfare. The NMED adopted similar, although more stringent, New Mexico Ambient Air Quality Standards (NMAAQs). The NMED manages air quality for the State of New Mexico outside of Bernalillo County and is responsible for monitoring and enforcing Federal air quality standards and regulations.

The Albuquerque/Bernalillo County Air Quality Control Board (AQCB) is the Federally delegated air quality authority for the City of Albuquerque and Bernalillo County. The AQCB administers and enforces the CAA and the New Mexico Air Quality Control Act in the Albuquerque/Bernalillo County area. The Albuquerque Environmental Health Department (AEHD), Air Quality Division, is the local agency that governs air quality issues on Kirtland AFB. The AQCB enforces Chapter 2 of Title 20 of the New Mexico Administrative Code (NMAC).

Areas that do not meet these NAAQS or NMAAQs standards are called non-attainment areas or maintenance areas; areas that meet both primary and secondary standards are known as attainment areas. The Federal Conformity Final Rule (40 CFR Parts 51 and 93) specifies criteria or requirements for conformity determinations for Federal projects. The rule mandates that a conformity analysis must be performed when a Federal action generates air pollutants in

a region that was designated as a non-attainment or maintenance area for one or more NAAQS. A conformity analysis is the process used to determine whether a Federal action meets the requirements of the General Conformity Rule. It requires the responsible Federal agency to evaluate the nature of the proposed action and associated air pollutant emissions, calculate emissions as a result of the proposed action, and mitigate emissions if *de minimis* threshold levels are exceeded.

Bernalillo County is a maintenance area for CO, but is in attainment for all other Federal NAAQS and state NMAAQs. Although Albuquerque-Bernalillo County is under a 20-year State Implementation Plan (SIP) to reduce CO emissions, the air quality in Bernalillo County has improved to the extent that, as a result of a 10-year review, the AQCB approved a CO Limited Maintenance Plan. In addition, Bernalillo County is included in a SIP to control regional haze. In 1999, the USEPA issued regulations to address regional haze in 156 National Parks and Wilderness Areas across the country (64 Federal Register 35714). The goal of the Regional Haze Rule is to eliminate anthropogenic visibility impairment in National Parks and Wilderness Areas. It contains strategies to improve visibility over the next 60 years, and requires states to adopt implementation plans to address regional haze (AQCB 2008).

Kirtland AFB also manages a number of emission source registrations, construction permits, open burning permits, and fugitive dust control permits, all of which include operating or emissions limits to ensure compliance with the CAA. Stationary sources at Kirtland AFB, such as boilers or back-up diesel generators, are managed by Kirtland AFB's CAA Title V air quality permit which is issued by the AQCB. Kirtland AFB is also considered a synthetic minor source of hazardous air pollutants under Title I, Section 112 of the CAA. Kirtland AFB's mission-related air emissions are from training exercises, aircraft engine testing, activities related to aircraft refueling and maintenance, fuel storage and distribution, and corrosion control activities. Non-mission-related air emissions come from internal combustion engines, and vehicle refueling and maintenance. Kirtland AFB possesses stationary air permits for the 58th Special Operations Wing (58 SOW) Jet Engine Test Cell, generators, corrosion control facility, and paint booth. Kirtland AFB was issued a CAA Title V permit (#527) on 16 December 2011. Kirtland AFB is also considered a minor source of hazardous air pollutants under Title I, Section 112, of the CAA.

3.8 GREENHOUSE GASES AND CLIMATE CHANGE

Global climate change refers to a change in the average weather on the planet. GHG trap heat in the atmosphere and include gases such as water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxides (N₂O), fluorinated gases including chlorofluorocarbons (CFC) and hydrochlorofluorocarbons (HFC), and halons, as well as ground-level ozone (O₃) (California Energy Commission 2007).

3.8.1 GHG Threshold of Significance

The CEQ provided draft guidelines for determining meaningful GHG decision-making analysis. The CEQ GHG guidance has not yet been finalized; however, the draft guidance states that if the proposed action would be reasonably anticipated to cause direct emissions of 27,557 U.S. tons or more of CO₂ or carbon dioxide equivalents (CO₂e) GHG emissions on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public. CO₂e are GHG other than CO₂ that include CH₄, N₂O, HFC, perfluorocarbons, and sulfur hexafluoride. These GHG have varying heat-trapping abilities and atmospheric lifetimes. CO₂ equivalency is a measuring methodology used to compare the heat-trapping impact from various GHG relative to CO₂. Some gases have a greater global warming potential than others. Nitrous oxides (NO_x), for instance, have a global warming potential that is 310 times greater than an equivalent amount of CO₂, and CH₄ is 21 times greater than an equivalent amount of CO₂.

For long-term actions that have annual direct emissions of less than 27,557 U.S. tons of CO₂e, CEQ encourages Federal agencies to consider whether the action's long-term emissions should receive similar analysis. CEQ does not propose this as an indicator of a threshold of significant effects, but rather as an indicator of a minimum level of GHG emissions that may warrant some description in the appropriate NEPA analysis for agency actions involving direct emissions of GHG (CEQ 2010).

3.8.2 New Mexico GHG Rules and Reporting

The NMED issued 2010 GHG Reporting Requirements and Guidance 20.11.48 NMAC (February 5, 2010, revised). These rules do not apply to Kirtland AFB because it is not an air pollution source outlined in the code (e.g., petroleum refineries and cement manufacturers). However, per 20.11.47 NMAC, the AEHD Air Quality Division may request a GHG emission

inventory at any time (20.11.47.15 NMAC). At the time of writing this Programmatic EA, NMED has not created any long-term GHG reduction goals; they are currently developing a GHG reporting system and compiling an inventory of annual GHG emissions.

The NMED Report, *New Mexico Greenhouse Gas Inventory and Reference Case Projections, 1990-2020* (NMED 2006), contains an inventory of New Mexico's GHG emissions from 1990 to 2000. In 1990, New Mexico emitted GHG in the amount of 47.6 million metric tons (MMT) of CO₂. In 2000, GHG emissions increased to 62.0 MMT of CO₂e, an overall increase of 30 percent, from 1990 to 2000. Emissions from the agriculture and waste sectors increased by 33 and 50 percent, respectively, compared to a 200 percent growth in emissions from industrial processes, that has been mostly due to a growth in substitutes for ozone-depleting substances.

3.9 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

Kirtland AFB is a large-quantity generator (Handler Identification NM9570024423) of hazardous waste and has three 90-day hazardous waste accumulation areas. Hazardous wastes are permanently disposed of at an off-site treatment, storage, and disposal facility (Kirtland AFB 2010a, 2010b, 2010c). Hazardous waste management at Kirtland AFB adheres to the RCRA and complies with applicable Federal, state, and local standards for solid waste and hazardous waste management.

3.9.1 Pollution Prevention

Pollution prevention at Kirtland AFB is guided by the AFI 32-7080. AFI 32-7080 is a Base-wide Pollution Prevention Program that implements the regulatory mandates in the Emergency Planning and Community Right-to-Know Act, Pollution Prevention Act of 1990; EO 12873, *Federal Acquisition, Recycling, and Waste Prevention*; and EO 12902, *Energy Efficiency and Water Conservation at Federal Facilities*. AFI 32-7080 prescribes the establishment of Pollution Prevention Management Plans, which have management and minimization strategies for ozone-depleting substances, USEPA 17 industrial toxics, hazardous wastes, municipal solid wastes, affirmative procurement of environmentally friendly products, energy conservation, and air and water pollutant reduction. The 377 ABW fulfills these regulatory requirements with the following plans.

- Pollution Prevention Management Action Plan
- Final Management Action Plan
- Hazardous Waste Management Plan (HWMP)
- Asbestos Management Plan
- Lead-Based Paint Management Plan
- Spill Prevention Control and Countermeasures Plan (SPCC)

3.9.2 Asbestos-Containing Materials

Asbestos-containing materials (ACM) are regulated by USEPA under the CAA, Toxic Substances Control Act, and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Guidelines and procedures for recordkeeping, removal, encapsulation, enclosure, and repair activities associated with ACM-abatement projects are specified in the Base's Asbestos Management Plan. Asbestos is considered to be a hazardous waste and must be disposed of accordingly. Any ACM removed from buildings proposed for demolition would be disposed of at the Keers Special Waste Landfill in Mountainair, New Mexico; the City of Rio Rancho landfill; or another approved permitted site.

3.9.3 Lead-Based Paint

Federal agencies are required to comply with applicable Federal, state, and local laws relating to lead-based paint (LBP) activities and hazards. Kirtland AFB has a Lead-Based Paint Management Plan that establishes the roles, responsibilities, and guidelines for activities involving the surveying and removal of LBP. The buildings at Kirtland AFB could potentially contain LBP.

3.9.4 Polychlorinated Biphenyls

Polychlorinated Biphenyls (PCBs) are a group of chemical mixtures used as insulators in electrical equipment such as transformers and fluorescent light ballasts. Federal regulations govern items containing 50 to 499 parts per million (ppm) PCBs. Chemicals classified as PCBs were widely manufactured and used in the U.S. throughout the 1950s and 1960s. PCB-containing oil is typically found in older electrical transformers and light fixtures (ballasts). Transformers containing greater than 500 ppm PCBs, between 50 and 500 ppm PCBs, or less than 50 ppm PCBs are considered PCBs, PCB-contaminated, and non-PCB, respectively.

The fluorescent light ballasts in the buildings and pad-mounted transformers near buildings proposed for demolition might contain PCBs. Other items that might contain PCBs include capacitors and surge protectors. Any pad-mounted transformers outside of buildings would be tested for PCBs prior to altering the utility and would be treated in accordance with Federal, state, and USAF regulations.

3.9.5 Environmental Restoration Program

The DOD developed the Environmental Restoration Program (ERP) to facilitate cleanup of contaminated sites on military installations. The Installation Restoration Program (IRP) and the Military Munitions Response Program (MMRP) are components of the ERP. The IRP requires each DOD installation to identify, investigate, and clean up hazardous waste disposal or release sites. The MMRP addressed nonoperational range lands that are suspected or known to contain unexploded ordnance (UXO), discarded military munitions, or munitions constituent contamination.

There are 287 IRP/ERP sites (September 2010) on Kirtland AFB property. The IRP/ERP program sites include landfills, sewage lagoons, radioactive holding tanks, oil/water separators, drainage areas, septic systems, spill areas, fire-training areas, and military training areas. The presence of IRP/ERP sites on Kirtland AFB does not present a significant constraint to present or future development on-Base. The NMED requires the cleanup of IRP sites to residential standards for No Further Action approval. Kirtland AFB is actively cleaning up all IRP sites to these standards (Kirtland AFB 2012a).

3.9.6 Specific Alternative Site Locations – Environmental Restoration Program

There are ERP and MMRP sites located within 0.5 mile of Alternative Sites 1, 2, 3, and 4, and military training areas near Alternative Sites 3, 4, and 6; however, there are no ERP, MMRP sites, or military training areas located within 0.5 mile of Alternative Site 5.

Alternative Site 3 is located adjacent to ERP Site SWMU 06-16 (FT-13), which is Kirtland AFB's old Fire Training Area. The site was originally assessed (Phase 1) as having a high potential for contamination due to the large quantities of foam, jet fuel, and waste chemicals used during training and the permeable soil (Kirtland AFB 1981, 1985). During the Phase 2 assessment, soil samples were collected at Site FT-13 and the concentration of oil and grease were found to be elevated near the site (Kirtland AFB 1993, 1999). In 1998, Kirtland AFB drilled two

groundwater monitoring wells upstream of the FT-13 site to collect baseline data. Concentrations of pollutants in groundwater were found to be lower at the Fire Training Area site than at the upstream baseline well (Kirtland AFB 1985, 1993, 1999). In 2006, NMED determined that soils at the site were at approved background levels and the site needed no further corrective actions (NFA).

Alternative Site 5 is located approximately 0.6 mile northeast of the High Energy Research and Test Facility (HERTF) and is located in Forest Service Withdrawn Property. Military training sites are located near Alternative Sites 3, 5, and 6 and, although there are no active munitions training at the military training areas, the area may contain UXO, munitions, or discarded military munitions.

Table 3-6 presents the ERP sites located within 0.5 mile of Alternative Sites 1, 2, 3, and 4.

Table 3-6. ERP and MMRP Sites Located Within 0.5 Mile of Alternative Sites 1, 2, 3, and 4

Alternative Site Number	ERP Site Number	SWMU ID	Site Description	Proximity to Alternative Site (feet)	Site Status
1	ST-228	10-07-H	Sewage Ejector Unit Bldg. 1043	2,368	NFA
1	ST-237	10-07-K	Oil/Water Separator Bldg. 1056	2,484	NFA ¹
1	ST-239	10-07-L	Holding Tank Bldg. 1058	2,463	NFA
1	ST-245	10-07-O	Holding tank Bldg. 1064	2,322	NFA
1	ST-070	ST-070-F	Oil/Water Separator (ST-247)	2,627	Active ²
1	ST-234	10-07-K	Oil/Water Separator Bldg. 1051	2,565	NFA
1	ST-235	10-07-K	Oil/Water Separator Bldg. 1051	2,518	NFA
1	ST-236	10-07-K	Area Drain Bldg. 1051	2,439	NFA
1	ST-238	10-07-L	Oil/Water Separator Bldg. 1056	2,559	NFA
1	ST-240	10-07-M	Oil/Water Separator Bldg. 1061	2,465	NFA
1	ST-241	10-07-N	Oil/Water Separator Bldg. 1063	2,496	NFA
1	ST-244	10-07-O	Oil/Water Separator Bldg. 1064	2,196	NFA
1	ST-242	08-26	Oil/Water Separator, Bldg.1063	2,500	NFA
1	ST-280	10-01-C	Sanitary Sewer System C	1,600	Active
1	ST-282	10-01-E	Sanitary Sewer System E	1,400	Active
1	ST-243	08-26	Oil/Water Separator, Bldg.1063	2,559	Active
1	ST-300	10-21-E	Septic System Bldg.20199	1,220	Active
1	OT-086	OT-86	Former Small Arms Range	2,562	NFA
2	ST-286	10-02-I	East Storm Sewer	2,458	Active
2	ST-331	10-02-G	Storm Sewer Bldg. 1009	2,599	Active
2	SS-081	SS-081	Detention Pond Bldg. 907	660	NFA
2	ST-071	41499	Oil/Water Separator Bldg. 1009	2,565	Active

Table 3-6, continued

Alternative Site Number	ERP Site Number	SWMU ID	Site Description	Proximity to Alternative Site (feet)	Site Status
2	ST-278	10-01-A	Sanitary Sewer System A	1,140	Active
2	SS-062	09-20	Waste Acc. Area Bldg. 909	994	Active
2	ST-287	10-21-A	Bldg.525 Septic System	840	NFA
3	SS-103	SS-103	Jet Engine Test Fuel Line	2,049	NFA
3	ST-271	09-15	Neutralization Pit Bldg. 617	2,042	NFA
3	ST-272	09-16	Evaporation Pond Bldg. 617	2,409	NFA
3	ST-276	09-04	Waste Acc. Area Bldg. 617	2,371	NFA
3	ST-351	10-21-B	Building 635 Septic Tank	1,610	NFA
3	SS-063	10-02-E	Jet Engine Cell (ST-336)	2,341	NFA
3	ST-349	10-21-B	Building 626 Septic Tank	2,224	NFA
3	ST-350	10-21-X	600 Area Field Office Septic Tank	433	NFA
3	ST-296	10-21-D	Septic System, Bldg.702	1,700	NFA
3	ST-289	10-21-B	Septic System, Bldgs. 617/620	2,398	Active
3	ST-291	10-21-B	Bldg.617 Septic System,	2,363	Active
3	ST-294	10-21-C	Bldg.633 Septic System	365	Active
3	FT-013	06-16	Kirtland Fire Training Area	10	NFA
3	LF-045	06-15	Unammed Dump	2,652	NFA
3	LF-018	06-06	Landfill A	2,304	Active
3	ST-270	09-14	Caustic Drain Line Bldg. 617	2,218	NFA
3	ST-273	10-21-B	Septic System, Bldg.618	1,789	Active
3	ST-290	10-21-B	Septic System, Bldg.619	1,923	NFA
3	ST-295	10-21-C	Septic System, Bldg. 638	380	NFA
3	ST-297	10-21-D	Septic System, Bldg.707	1,200	NFA
4	WP-016	06-24	Manzano Sewage Treatment Facility	2,353	Active

Key:

(1) NFA stands for "No Further Action", which is a determination by NMED that Kirtland AFB has closed, cleaned up, and mitigated any hazardous substances at the site.

(2) Active means that the site is still in use or has not been permanently closed, cleaned up, or mitigated.

Figures 3-7 through 3-12 present Alternative Sites 1 through 6 and the locations of adjacent IRP/ERP sites, MMRP sites, and military training areas.

3.10 SAFETY AND OCCUPATIONAL HEALTH

In the event of demolition, the construction and demolition contractor is responsible for following Federal and state safety regulations. New Mexico has its own occupational safety and health (OSH) program and is responsible for enforcing it. OSH regulations delegate the responsibility of occupational health and safety to the contractors. The contractor is responsible for workplace hazards and administration of controls and protection.

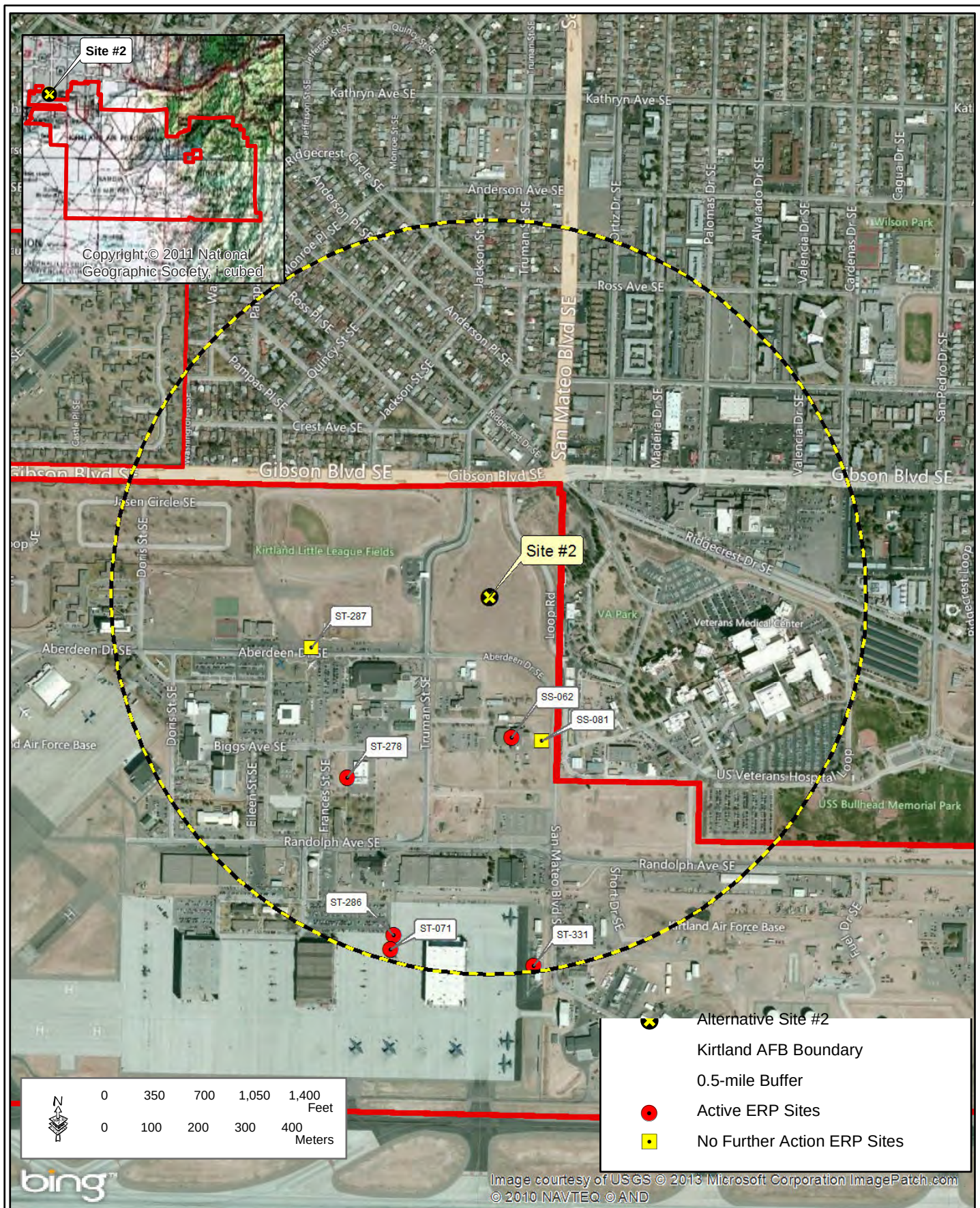


Figure 3-8. Location of ERP Sites within 0.5 mile of Alternative Site 2

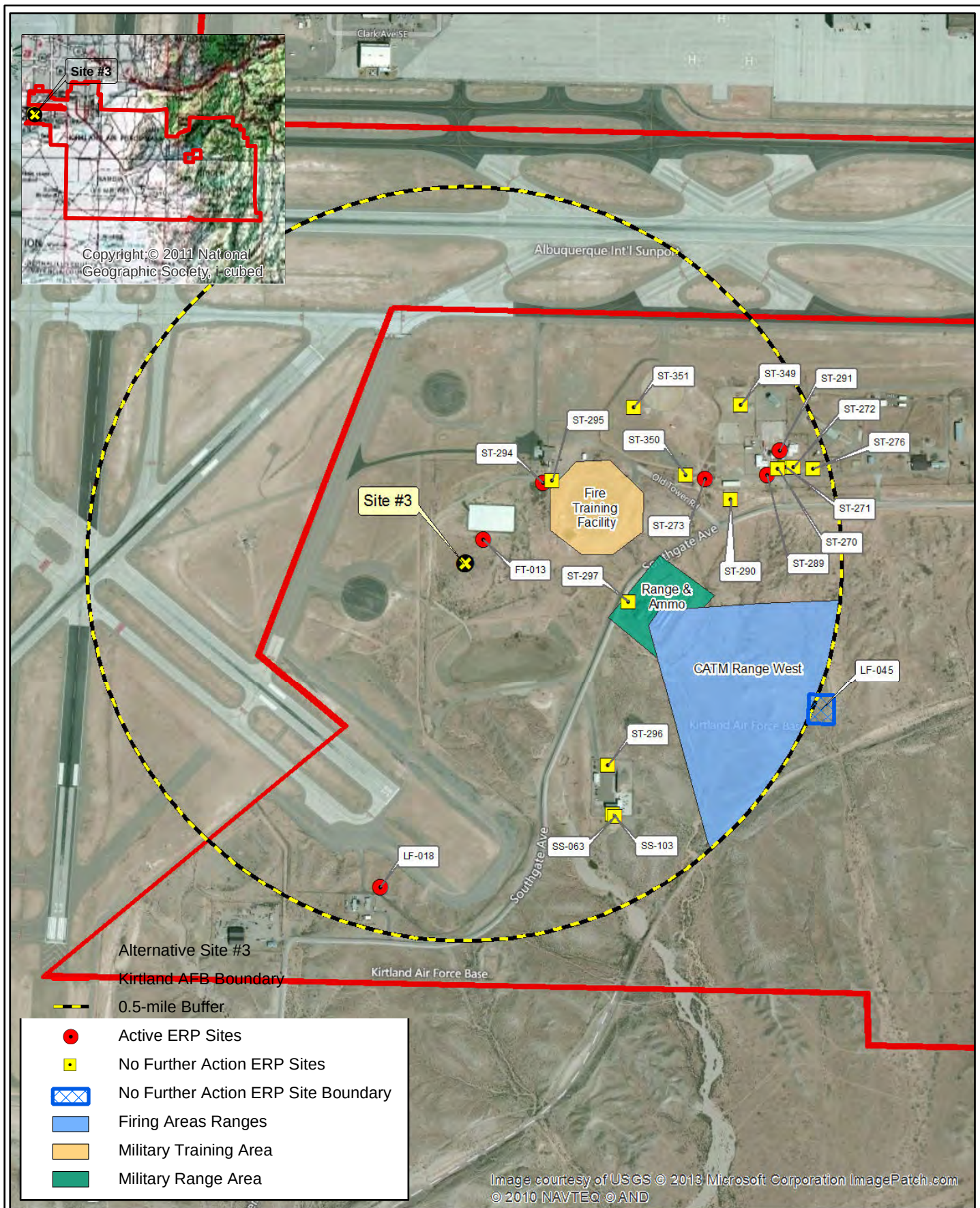


Figure 3-9. Location of ERP Sites and Military Training Areas within 0.5 mile of Alternative Site 3

February 2013

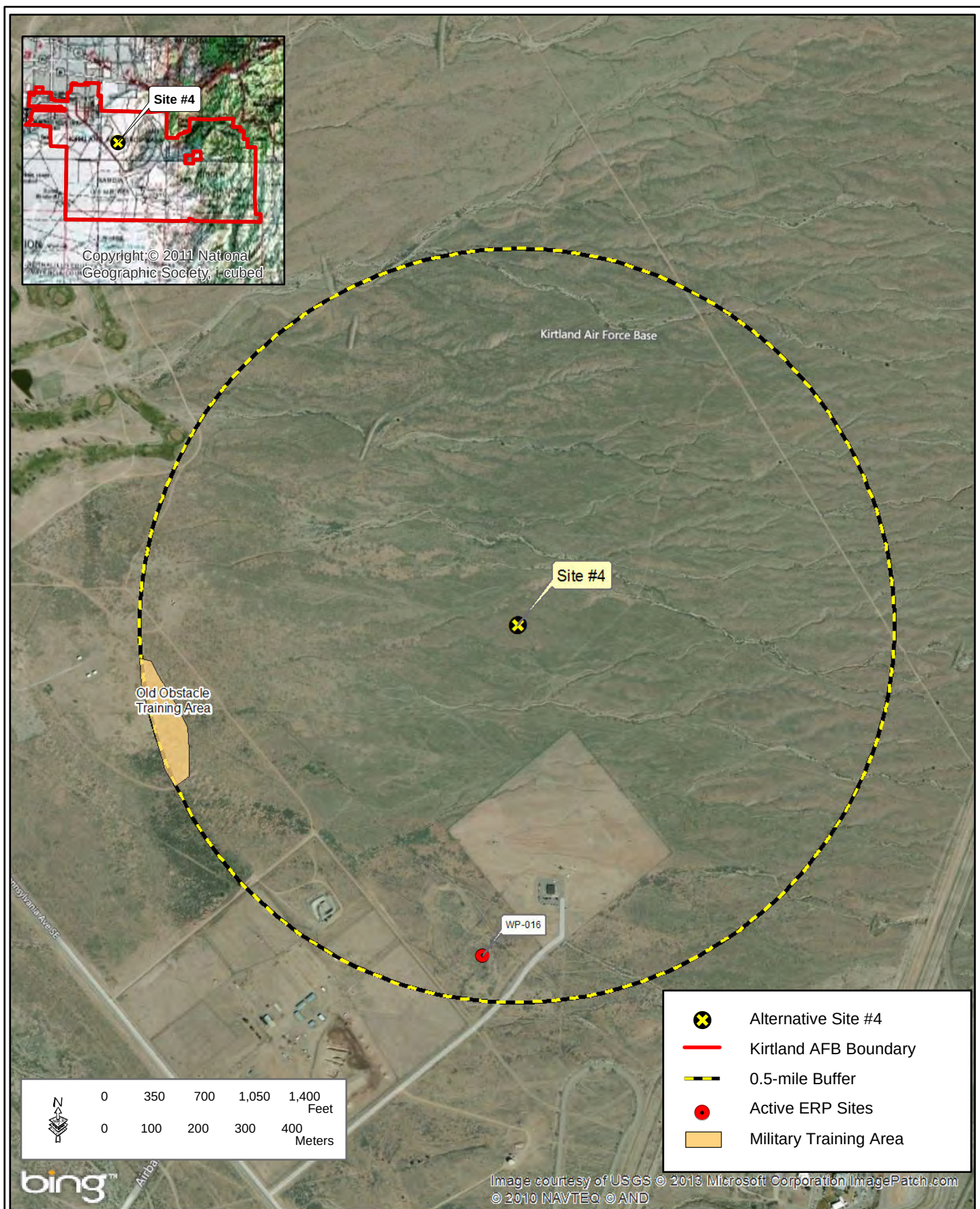


Figure 3-10. Location of ERP Sites and Military Training Areas within 0.5 mile of Alternative Site 4

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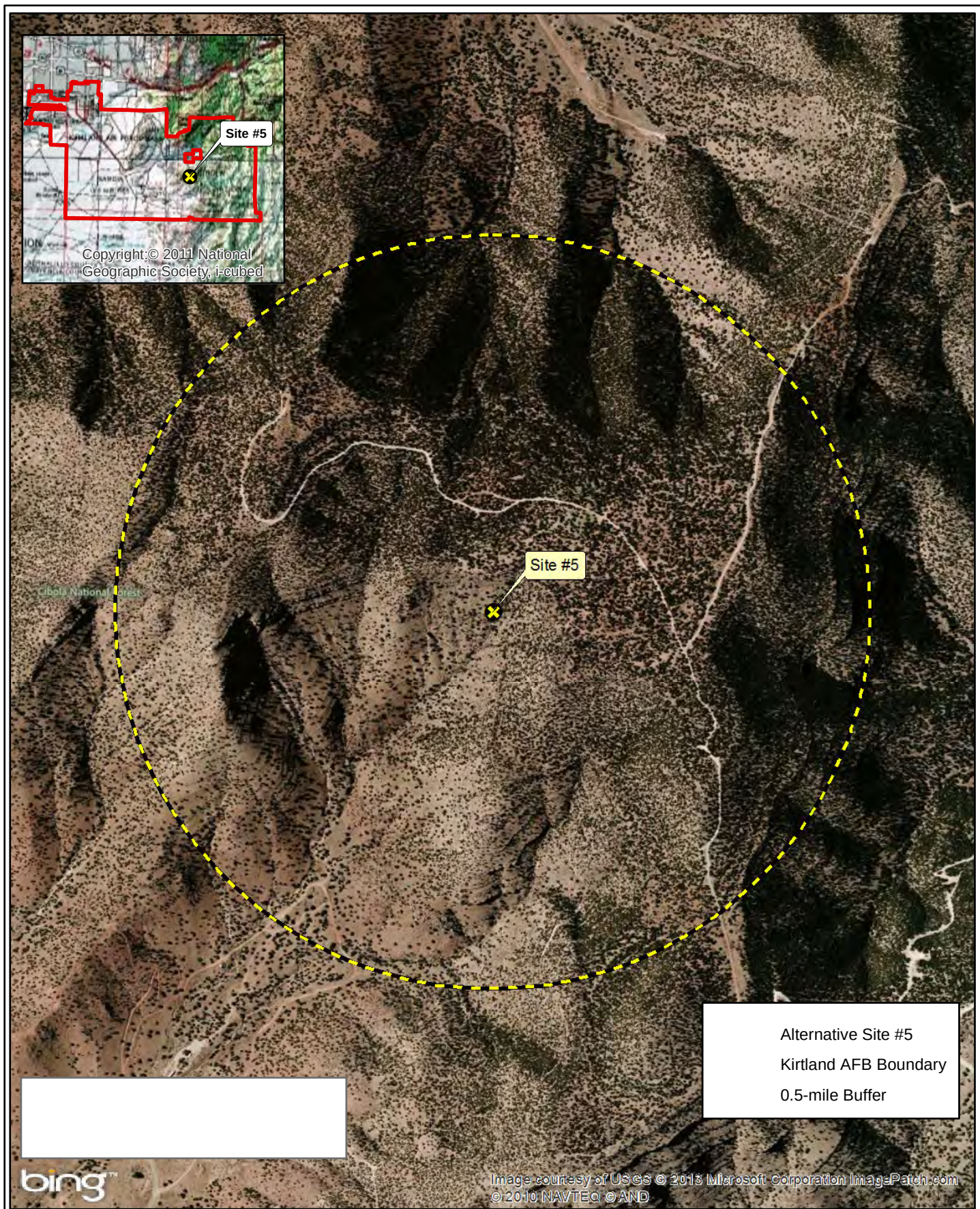


Figure 3-11. Location of ERP Sites within 0.5 mile of Alternative Site 5

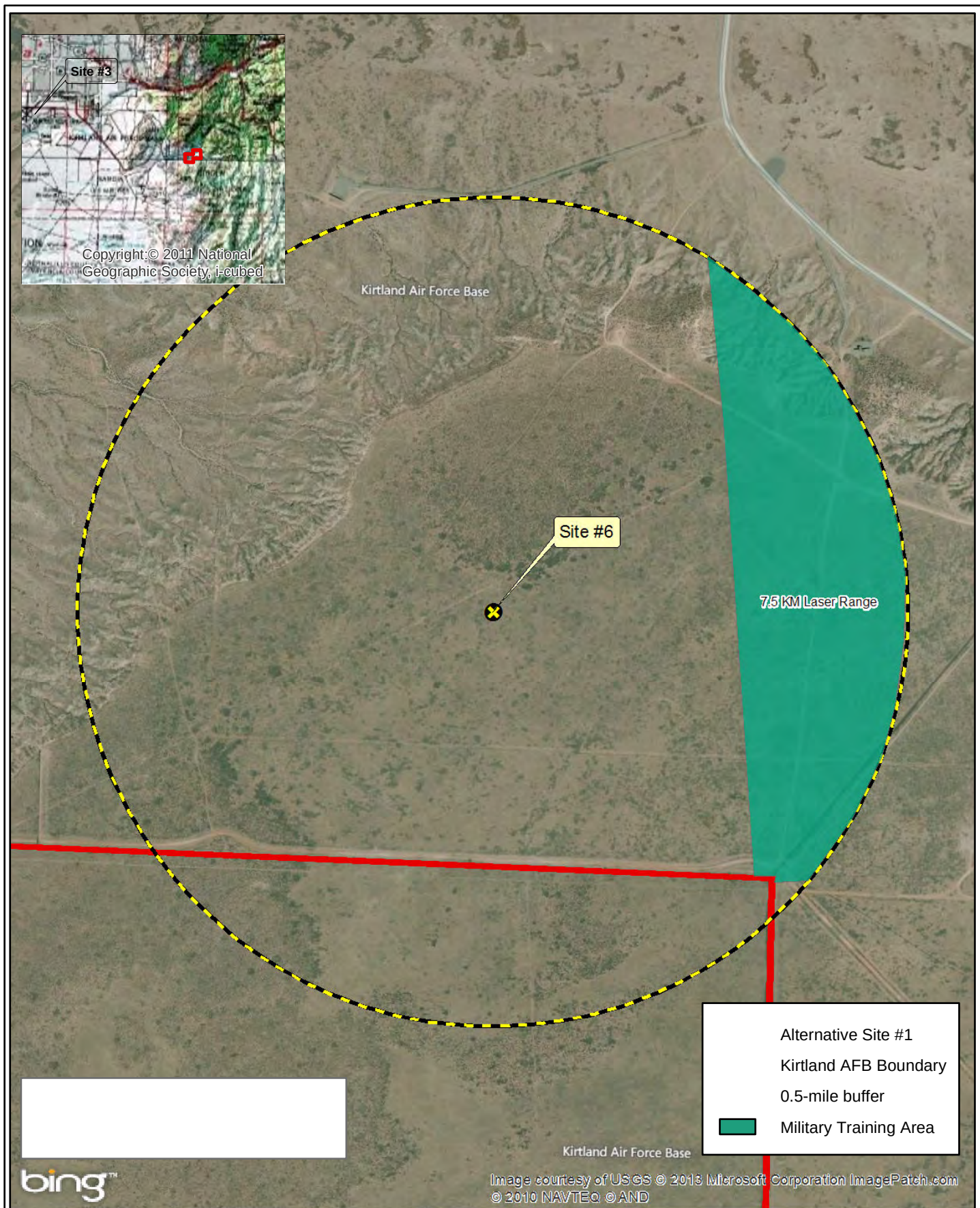


Figure 3-12. Location of ERP Sites and Military Training Areas within 0.5 mile of Alternative Site 6

February 2013

During operations, the USAF host and tenant safety offices are responsible for implementing the Air Force Safety Program. The host safety office implements mishap prevention programs and processes for all USAF units and programs on-Base unless otherwise outlined in a Host/Tenant Support Agreement. Safety staff at all levels assist with implementation and integration of operational risk management in all USAF operations and missions.

With the help of the Kirtland AFB safety office, commanders, functional managers, supervisors, and individuals identify rules, criteria, procedures, OSH, USAF occupational and environmental safety, fire protection, and health, explosive safety, or other safety standards that could help eliminate unsafe acts or conditions that cause mishaps. Detailed SOPs fulfill many health and safety requirements, and personnel involved with different test equipment are instructed on the use of equipment and personal protective equipment.

3.11 NOISE

3.11.1 Background Information

Noise is generally described as unwanted sound, which can be based either on objective effects (i.e., hearing loss, damage to structures) or subjective judgments (e.g., community annoyance). Sound is usually represented on a logarithmic scale with a unit called the decibel (dB). Sound on the decibel scale is referred to as sound level. The threshold of human hearing is approximately 3 dB, and the threshold of discomfort or pain is around 120 dB. The characteristics of sound include parameters such as amplitude (loudness), frequency (pitch), and duration. Sound varies over an extremely large range of amplitudes. The decibel is the accepted standard unit for describing levels of sound, and is expressed in logarithmic units to account for the large variations in amplitude.

Noise levels occurring at night generally produce a greater annoyance than do the same levels occurring during the day. It is generally agreed that people perceive intrusive noise at night as being 10 A-weighted decibels (dBA) (A-weighting measures sound similar to the way the human ear responds) louder than the same level of intrusive noise during the day, at least in terms of its potential for causing community annoyance. This perception is largely because background environmental sound levels at night in most areas are also about 10 dBA lower than those during the day.

The average day/night sound level (DNL) metric is a measure of the total community noise environment. DNL is the average A-weighted sound level over a 24-hour period, with a 10 dBA adjustment added to the nighttime levels (between 10:00 p.m. and 7:00 a.m.). This adjustment is an effort to account for increased human sensitivity to nighttime noise events. DNL was endorsed by the USEPA for use by Federal agencies and was adopted by the U.S. Department of Housing and Urban Development (HUD). DNL is an accepted unit for quantifying annoyance to humans from general environmental noise, including construction noise. Land use compatibility and incompatibility are determined by comparing the predicted DNL level at a site with the recommended land uses.

Acceptable noise levels have been established by HUD in residential areas (HUD 1984):

Acceptable (not exceeding 65 dBA DNL) – The noise exposure may be of some concern, but common building construction will make the indoor environment acceptable, and the outdoor environment will be reasonably pleasant for recreation and play.

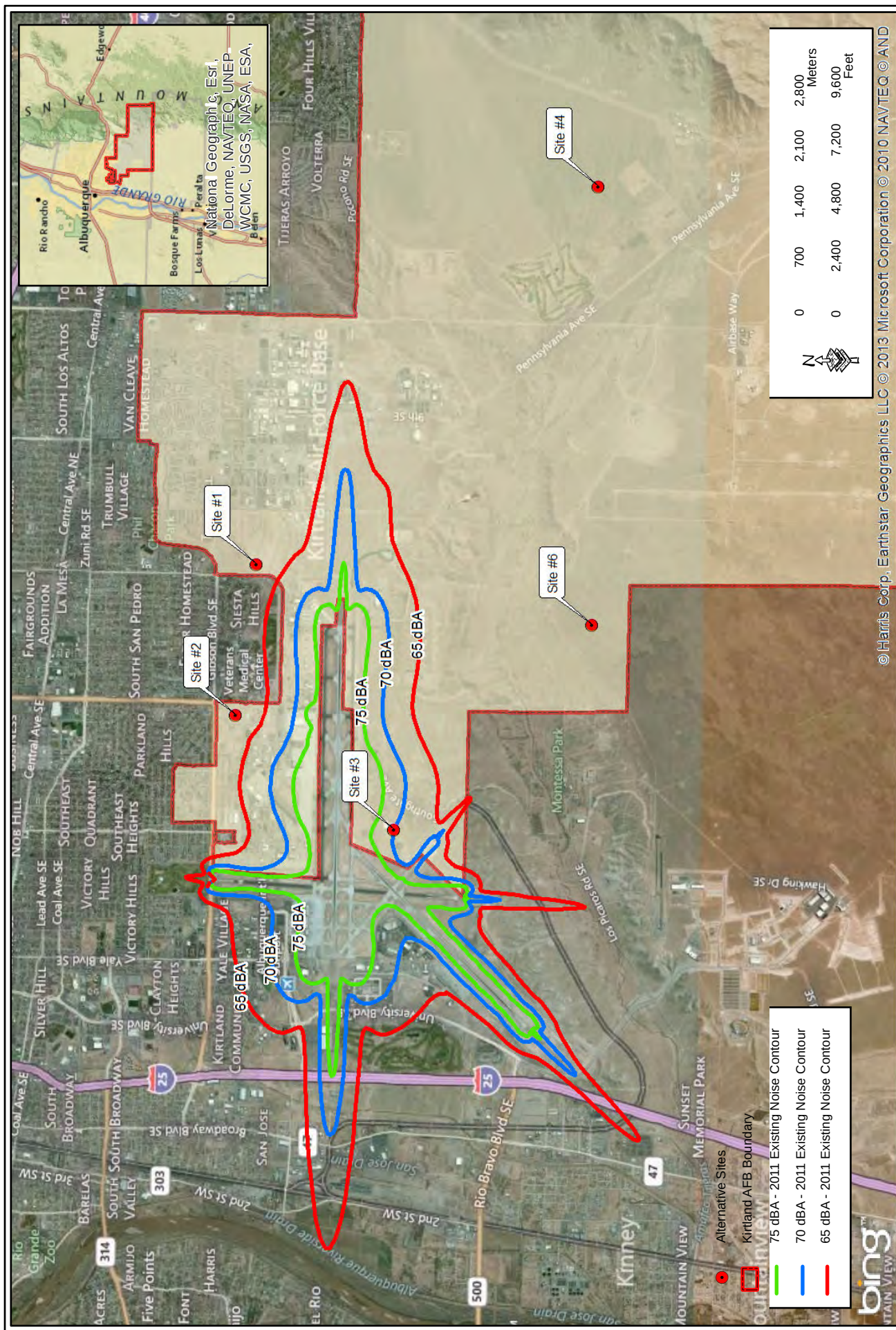
Normally Unacceptable (above 65 but not greater than 75 dBA DNL) – The noise exposure is significantly more severe; barriers may be necessary between the site and prominent noise sources to make the outdoor environment acceptable; special building construction may be necessary to ensure that people indoors are sufficiently protected from outdoor noise.

Unacceptable (greater than 75 dBA DNL) – The noise exposure at the site is so severe that the construction costs to make the indoor noise environment acceptable may be prohibitive, and the outdoor environment would still be unacceptable.

3.11.1.1 Specific Alternative Sites - Noise

Alternative Sites 1 and 2 are located near the residential and commercial areas. Residential areas are located approximately 230 feet west of Alternative Site 1, across Louisiana Avenue. Commercial and residential areas are located north and east of Alternative Site 2, across Gibson Boulevard and Loop Road. Residential receptors are located approximately 550 feet north of Alternative Site 2. Other sensitive noise receptors near the two alternative sites include Wherry Elementary School, which is located approximately 700 feet northeast of Alternative Site 1, and the Raymond Murphy VA Medical Center, which is located 1,000 feet northeast of Alternative Site 2. There are no sensitive noise receptors near Alternative Sites 5 and 6. ABQ recently analyzed the noise conditions on and around the airport using the Federal Aviation Administration's (FAA) Integrated Noise Model for the Closure of Runway 17-35 EA. The

resulting FAA ABQ 2011 noise contours, shown in Figure 3-13, represent the most recent noise exposure maps associated with aircraft operations at Kirtland AFB. Figure 3-13 depicts the 2011 noise exposure area for the baseline conditions in 5 dBA increments and the location of the six alternative sites. Alternative Site 1 and 2 are located approximately 1,500 feet north of the 65 dBA noise contour. Alternative Site 3 is located in both the 70 dBA and 65 dBA noise contours. Alternative Sites 4, 5, and 6 are located greater than 1 mile south from the 65 dBA noise contour.



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Figure 3-13. Noise Contours at Kirtland AFB

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SECTION 4.0
ENVIRONMENTAL CONSEQUENCES



4.0 ENVIRONMENTAL CONSEQUENCES

This section of the Programmatic EA describes the potential impacts of the Proposed Action, as outlined in Section 2.0 of this document, on the natural and human environment that exists within the project area. The effects from the Proposed Action include impacts from construction (and potentially demolition), operation, and maintenance of an administrative building complex at any of the six known alternative sites and on a programmatic level throughout Kirtland AFB. This includes all areas and lands that might be affected, and may change depending on how the natural, cultural, and socioeconomic resources they contain or support are affected.

Impacts (consequence or effect) can be either beneficial or adverse, and can be either directly related to the action or indirectly caused by the action. Direct impacts are those effects that are caused by the action and occur at the same time and place (40 CFR 1508.8[a]). Indirect impacts are those effects that are caused by the action and are later in time or further removed in distance, but are still reasonably foreseeable (40 CFR 1508.8[b]). As discussed in this section, the No Action Alternative and the Proposed Action may create temporary (lasting the duration of construction), short-term (up to 3 years), long-term (greater than 3 years), or permanent impacts or effects.

Impacts can vary in degree or magnitude from a slightly noticeable change to a total change in the environment. The significance of the impacts presented in this Programmatic EA is based upon existing regulatory standards, scientific and environmental knowledge, and/or best professional opinions of the authors of the Programmatic EA. The magnitude of impacts on each resource shall be described as significant, less than significant, or no impact. Significant impacts are those effects that would result in substantial changes to the environment (as defined by 40 CFR 1508.27) and should receive the greatest attention in the decision-making process.

4.1 LAND USE RESOURCES

4.1.1 No Action Alternative

Implementation of the No Action Alternative would not alter transportation corridors, visual resources, or land uses at Kirtland AFB. Land uses at Kirtland AFB would continue to accommodate the existing 377 ABW and mission partners.

4.1.2 Proposed Action

4.1.2.1 Land Use

The Proposed Action would be in compliance with the land use policies presented in the *Kirtland AFB 2010 General Plan*, including the main goals of providing operational support for missions and ensuring the management of resources (Kirtland AFB 2010b). Alternative Sites 1, 2, and 3 are located on previously disturbed, improved areas. Although there would be new construction, no changes in land use are planned for these sites, and the construction of administrative facilities would be consistent with Kirtland AFB's General Plan (Kirtland AFB 2010b). Alternative Sites 4, 5, and 6 are located on unimproved grounds outside of the developed area of Kirtland AFB, and the land would continue to be used to support Kirtland AFB's mission. The construction of the proposed administrative building complex would specifically satisfy several development objectives identified in the General Plan and achieve stated goals, such as siting facilities for maximum efficiency and ensuring the efficient use of resources by redeveloping vacant property. The Proposed Action would not violate local zoning ordinances because municipal zoning regulations do not apply to Federal property. The Proposed Action would not preclude the viability of existing on-Base and off-Base land uses or the continued use and occupation of areas surrounding the alternate sites. Therefore, under the Proposed Action, the impacts on existing land use viability would be less than significant.

4.1.2.2 Visual Resources

The primary concern regarding potential effects on visual resources would be an action that substantially alters a visually sensitive setting. Potential effects are precluded by the fact that the Proposed Action does not involve any activities that would substantially change the quality of a visually sensitive setting. Alternative Sites 1, 2, and 3 are located in the improved areas of Kirtland AFB. The design of the proposed administrative building complex would be visually consistent with existing structures at Kirtland AFB. The alternative sites located in the unimproved areas of Kirtland AFB would not alter the visually sensitive settings in the region. Alternative Sites 4 and 6 are located on Kirtland AFB grasslands and are greater than 5 miles from residential neighborhoods or civic park lands. Alternative Site 5 is located in the Manzanita Mountains and cannot be seen from off-Base. The visual character of all alternative sites is typical of military installations, and the visual sensitivity of the area is low due to the land use restrictions at Kirtland AFB. Due to the fact that all the alternative sites are located on Kirtland AFB and most are difficult to detect from off-Base, the potential adverse impacts would be less than significant.

4.2 INFRASTRUCTURE

4.2.1 No Action Alternative

Implementation of the No Action Alternative would not impact the electrical distribution, water supply, sewerage, waste disposal, storm drainage, heating and cooling, fuel, or communication systems at Kirtland AFB. It is anticipated that existing infrastructure would continue to service Kirtland AFB administrative needs.

4.2.2 Proposed Action

4.2.2.1 *Transportation*

During construction of the Proposed Action, Kirtland AFB transportation corridors would experience an increase in traffic due to the delivery of materials and workers commuting to work. All construction contractors and deliveries accessing Kirtland AFB must use the contractor gate at Hickam Street. The maximum daily trips due to contractor deliveries through the gate each way should not exceed 50 per day. The construction traffic would result in minor, short-term adverse impacts on the Kirtland AFB roadway network that would be minimized through the encouragement of construction workers to carpool to the site and scheduling truck trips of construction vehicles, deliveries, and debris removal at intervals throughout the entire working day to avoid peak travel hours.

The Proposed Action would create a long-term traffic increase at Kirtland AFB due to the addition of up to 652 personnel. It is assumed that the new staff would live off-Base in the Albuquerque area and utilize automobiles to commute during shift change or rush hour. Staff automobiles would contribute to on-Base road congestion and auto queuing at the entrance gates to Kirtland AFB. The 652 additional staff would increase gate usage by 1,304 vehicles passing as they arrive in the morning and depart in the evening. The average daily traffic through Kirtland AFB entrance gates is 75,300, and the addition of 1,304 queuing events would increase the number of vehicles by 1.7 percent. This increase would not exceed the design capacity of the Kirtland AFB road and gate infrastructure. Automobile transportation impacts would be less than significant due to the original design capacity and current size of staff at Kirtland AFB. Additionally, I-25 and I-40 are capable of managing the addition of the 652 new commuters without significantly impacting traffic in the region (Webster 2012). The impacts on roads, gates, and intersections at Kirtland AFB or the regional highway system would be less than significant if the Proposed Action were implemented.

4.2.2.2 Electrical Distribution

The Proposed Action has the potential to increase the demand placed upon Kirtland AFB electrical systems. All of the alternative sites would obtain electrical power from the existing Kirtland AFB electrical grid. Electrical usage and demand are expected to increase slightly due to the slight increase of staff (up to 3 percent) at Kirtland AFB. Kirtland AFB has historically used, at peak capacity, only 80 percent of the power allocated to Kirtland AFB by Western Area Power Administration (Kirtland AFB 2010b). Western Area Power Administration provides power to several western states in addition to Kirtland AFB. Providing electrical service to the proposed administrative building complex would increase the power demand at Kirtland AFB, but not beyond the supply capacity of the Western Area Power Administration, and the impacts of the Proposed Action would be less than significant.

4.2.2.3 Natural Gas

The proposed administrative building complex would require natural gas for miscellaneous purposes such as boilers. Kirtland AFB purchases their natural gas supplies through local wholesalers. Kirtland AFB is presently using 40 percent of the available capacity of the natural gas supplies (Kirtland AFB 2010), and the Proposed Action would increase natural gas use by approximately 3 percent. The implementation of the Proposed Action would not significantly impact the available supplies of natural gas.

4.2.2.4 Potable Water

The Proposed Action would only slightly increase the demand on Kirtland AFB's potable water supplies. All of the alternative sites would utilize Kirtland AFB's existing water supply. Assuming that the average daily consumptive use of water per person is 70 gallons, the addition of up to 652 staff would increase daily demand at Kirtland AFB by 45,000 gallons per day. Assuming that the staff is present 5 days a week and 52 weeks a year, the total annual water usage from implementation of the Proposed Action would be up to 11.87 million gallons per year. Kirtland AFB consumed approximately 755 million gallons in 2011, and an additional 11.87 million gallons represents a 1.6 percent increase in water use. If water demand proves too great for the on-Base groundwater systems, potable water can be purchased from the City of Albuquerque. The municipal water system of Albuquerque has a total city system capacity of 289 MGD, and the current city usage is less than 40 percent of the total city system capacity (Kirtland AFB 2007). The implementation of the Proposed Action would have less than significant impacts on the potable water system at Kirtland AFB or within the region.

4.2.2.5 Sewage

The Proposed Action (652 additional staff) would increase the Kirtland AFB wastewater load by approximately 45,000 gallons per day, an increase of less than 2 percent. Alternative Sites 1, 2, and 3 are located adjacent to existing sewerage lines. During construction of the new sewage lines, the sewer mains would be inspected and cleaned out in the vicinity of the new construction. Any sewer lines that may have deteriorated or that otherwise may pose problems in the life span of the proposed administrative building complex should be considered for rehabilitation to minimize cost and avoid problems in the future.

The waste load at Alternative Sites 4, 5, and 6 would be managed by on-site septic systems. The increase of 652 new staff would not significantly impact the Kirtland AFB sewage system's capacity to transport and treat sewage.

4.2.2.6 Solid Waste

Construction and demolition waste disposal and recycling is managed by the contractor according to Kirtland AFB solid waste management specifications (Section 01 74 19), and management of operational waste is guided by AFI 32-7042. The contractor is responsible for developing and implementing a construction waste management plan to maximize the materials that could be recycled and reduce the amount of waste disposed of at landfills, to the greatest extent possible. The construction of the proposed administrative building complex could generate up to 2,608 cubic yards of construction waste during the construction period (USEPA 2009b) which would fill up of 0.05% of the remaining capacity of Kirtland AFB's construction and demolition landfill (2010a). The total amount of construction waste would increase if future demolition is necessary.

Operational municipal solid waste would increase due to the addition of 652 new staff. Office workers produce about 2 pounds of paper and corrugated paper waste and 2 pounds of miscellaneous waste such as food scraps, glass, metals, and plastics per day (USEPA 2011c). Kirtland AFB maintains an office curbside recycling program that collects white paper, shredded paper, mixed paper, aluminum beverage cans, plastic beverage containers, and toner cartridges. Considering a worst case scenario of 4 pounds per person per day, the addition of 652 new staff would increase municipal solid waste by 1.3 tons per day (313 tons per year). The City of Albuquerque's Cerro Colorado Landfill collects 1,400 tons of municipal solid waste per day (City of Albuquerque 2013). An increase of less than 0.07 percent of municipal waste from

the Proposed Action would not significantly impact the capacity to manage solid waste on Kirtland AFB or in the local community. The Proposed Action would temporarily increase construction solid waste and increase the operational waste at Kirtland AFB; however, these impacts would be expected to be less than significant.

4.2.2.7 Storm Drainage System

The Proposed Action would add up to 7 acres of impervious area to the municipal stormwater drainage system. New construction designs at Kirtland AFB must comply with Section 438 of the EISA, which requires Federal construction projects that disturb more than 5,000-square-feet of land to maintain or restore predevelopment site hydrology to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of stormwater flow. Upon completion of construction activities, all disturbed areas would be landscaped to reduce stormwater flow over land and increase percolation through the soils. The landscape would be reseeded with turf and native shrubs.

Kirtland AFB MILCON contractors are mandated by Section 438 of the EISA to produce construction designs that would restore the natural hydrology in the region, to the maximum extent technically feasible. The impacts of installing 7 acres of impervious surfaces in the unimproved areas of Kirtland AFB would be less than significant. With the proper vegetative cover, compliance with the EISA, and other environmental measures, direct and indirect impacts on stormwater flow and drainage systems would be less than significant.

4.3 CULTURAL RESOURCES

4.3.1 No Action Alternative

Under the No Action Alternative, no construction would occur; therefore, no impacts on cultural resources would occur.

4.3.2 Proposed Action

Kirtland AFB has conducted a Base-wide archaeological survey, and no cultural resources were found to exist within the APE (within 1 mile of the site) of Alternative Sites 1, 2, and 3; however, cultural resources exist within the APE of Alternative Sites 4, 5, and 6. If Alternative Sites 4, 5, or 6 are chosen Kirtland AFB should initiate consultation with SHPO to avoid impacting cultural resources. If the footprint of the complex could not be adjusted to avoid impacting a cultural

resource, then further consultation with SHPO/THPO shall occur. If archaeological sites cannot be avoided, then mitigation measures shall be developed in accordance with Section 106 of the NHPA.

Typical mitigation measures could include the following:

- Further consultation with the Advisory Council on Historic Preservation
- Development of a Memorandum of Agreement outlining the approach to minimize adverse effects on the resource
- Partial or complete excavation of the resource
- Development and implementation of a mitigation plan to offset the destruction of the resource

Given the fact that all proposed alternative sites have been investigated by the 377 Mission Support Group/Civil Engineering Installation Support Environmental (MSG/CEIE) and would be surveyed again before groundbreaking to avoid impacts on significant cultural resources, as well as the fact that Kirtland AFB has undergone a complete archaeological survey, no additional impacts would be anticipated at the proposed alternative sites (Kirtland AFB 2008a). Should an inadvertent discovery of human or cultural remains be made, all construction shall stop, the Cultural Resource Manager at Kirtland AFB shall be notified, and operational procedures outlined in Section 5.4 of the ICRMP shall be followed (Kirtland AFB 2008a). This would ensure that no adverse impacts would occur on the newly discovered cultural resource. As a result of using the Base-wide siting criteria established by Kirtland AFB and mitigation measures developed in accordance with the NHPA, no impacts on cultural resources are expected from future activities associated with the Proposed Action.

4.4 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

4.4.1 Socioeconomics

4.4.1.1 No Action Alternative

Under the No Action Alternative, no additional construction would take place and the programs currently in effect would continue. As a result, economic benefits from Kirtland AFB employment and local expenditures to the community would remain the same. Under the No Action Alternative, economic benefits of MILCON and Operations and Maintenance construction

associated with the Proposed Action would not be realized, since no new construction would take place.

4.4.1.2 Proposed Action

The Proposed Action would provide a short-term economic benefit to the ROI through the purchase of building materials, rental of construction vehicles, and employment of contractors and other civilian personnel, as well as other construction expenditures.

The proposed administrative building complex would employ up to 652 new staff, which would increase the total number of jobs and population in the area. Economic multipliers and local average salary (\$36,734) from the 2006 Economic Statement (Kirtland AFB 2006) were used to estimate the indirect number of jobs created and their estimated value. The proposed administrative building complex would create up to 652 long-term jobs at Kirtland AFB. The economic multiplier for administrative staff at Kirtland AFB is 1.4 (Kirtland AFB 2006), which would produce an 261 additional jobs in the ROI. The addition of 913 new jobs in the area is estimated to produce \$33.5 million in economic stimulus in the ROI.

The additional personnel and indirect job creation would increase the TPI of the region. It is assumed that the additional civilian personnel would live off-Base. Housing in the ROI is sufficient, and no adverse impacts on housing are expected. Under the Proposed Action, no adverse impacts would occur on socioeconomics in the region. Conversely, as the Proposed Action is constructed, it is expected that beneficial impacts on the local economy would occur.

4.4.2 Environmental Justice

4.4.2.1 No Action Alternative

Under the No Action Alternative, MILCON construction would not take place and the existing infrastructure would service Kirtland AFB mission objectives. As a result, the current Kirtland AFB impacts on low-income or minority populations or children remain the same. Under the No Action Alternative, the impacts on sensitive populations would be less than significant.

4.4.2.2 Proposed Action

The implementation of the Proposed Action could potentially impact the health and safety of sensitive populations occupying the residential neighborhood, school, and hospitals adjacent to Alternative Sites 1 and 2. Construction activities could generate noise emissions that would

temporarily annoy the residents on the west side of Louisiana Boulevard SE. This neighborhood does not contain low-income housing; however, the Wherry Elementary school is located approximately 700 feet northeast of Alternative Site 1, and the Raymond Murphy VA Medical Center is located 1,000 feet northeast of Alternative Site 2. The proposed construction activities would be limited to daylight hours during the workweek, between 8:00 a.m. and 5:00 p.m. on Monday through Friday, and the site would be fenced in and appropriate signs would be posted to reduce any safety risks to the public. While the noise from construction activities may be noticed while it is occurring, its overall duration would be relatively brief and would not be expected to significantly alter the acoustic environment of the region. Due to the temporary nature of the noise emissions, no adverse impacts on the health and safety of the local population are anticipated. Alternative Sites 3, 4, 5, and 6 are not located near residential neighborhoods, schools, or hospitals. There would not be disproportionate effects on low-income, minority populations or children, nor would there be direct or indirect impacts on environmental justice or the safety of children.

4.5 BIOLOGICAL RESOURCES

4.5.1 No Action Alternative

Under the No Action Alternative, no impacts on vegetation, wildlife, or threatened and endangered species would occur.

4.5.2 Proposed Action

4.5.2.1 *Vegetation Communities*

Alternative Sites 1, 2, and 3 are located in the improved areas of Kirtland AFB, and the loss of developed habitat resulting from the proposed construction activities would not significantly impact the integrity of vegetative communities in the area because of the low quality of the habitat, the regional abundance of species observed, and the previously developed nature of the construction sites. Alternative Sites 4 and 6 are located in a grassland vegetative community, while Alternative Site 5 is located in pinyon-juniper woodland community. Due to these habitats being locally and regionally abundant and because of the limited impacts (up to 10 acres) expected, no significant impacts on the vegetative communities at Alternative Sites 4, 5, or 6 would occur.

4.5.2.2 Wildlife

Alternative Sites 1, 2, and 3 are located in developed areas where wildlife typically responds to noise disturbance with short-term avoidance behavior; however, many studies have shown that they eventually become habituated. Construction noise would potentially produce negative impacts by interfering with songbird communication during the breeding or nesting season (NMDGF 2007). Groundbreaking construction activities are planned to occur from November through February to avoid the nesting season of migratory birds. Wildlife species would escape or avoid construction activities and would not be affected. The loss of this habitat would not significantly impact the integrity of wildlife communities in the area because of the low quality of the habitat and the previously developed nature of the construction site. The impacts on wildlife communities at Alternative Sites 1, 2, and 3 would be less than significant.

Construction noise at Alternative Sites 4 and 6 could impact grassland wildlife by producing a startle response in some wildlife, and could interfere with feeding, resting, and even reproduction behavior. However, most of the wildlife species avoid construction activities and developed areas. The loss of this habitat would not significantly impact the integrity of wildlife communities in the area because of the abundance of grassland habitat in the region. The impacts on terrestrial wildlife communities at Alternative Sites 4 and 6 would be less than significant.

Construction noise at Alternative Site 5 would potentially impact pinyon-juniper habitat by producing a startle response, and could interfere with feeding, resting, and even reproduction behavior of wildlife. Most of the wildlife species avoid construction activities and developed areas with human activities and vehicle traffic. The loss of this habitat would not significantly impact the integrity of wildlife communities in the area because of the abundance of pinyon-juniper woodland habitat in the region.

4.5.2.3 Threatened and Endangered and Special Status Species

The northern goshawk, peregrine falcon, gray vireo, western burrowing owl, loggerhead shrike, mountain plover, spotted bat, Townsend's big-eared bat, Gunnison's prairie dog, and slate millipede may occur on Kirtland AFB. Ground disturbances and noise associated with construction may directly or indirectly cause impacts on these Federally and State listed species. The mortality of individuals, habitat removal, and degradation of habitat are impacts that might be associated with construction-related ground-disturbing activities. Noise

associated with the Proposed Action might be of sufficient magnitude to result in behavior modification and the direct loss of individuals and reduce reproductive output within certain ecological settings. Long-term impacts could include the loss of habitat to development and noise disturbances and avoidance due to operational activities.

To avoid contact with the gray vireo, construction-related ground-disturbing activities would take place from November through February to avoid the nesting season of the gray vireo and other protected birds. In addition, prior to construction, a survey of bird species would be conducted at the project site and, if the species is present within the construction area and cannot be avoided, appropriate actions would be taken in compliance with the MBTA, through coordination with USFWS and NMDGF (Kirtland AFB 2012a). Due to the small amount of acreage involved with construction activities under the Proposed Action, as well as the fact that the project corridor would be inspected for gray vireo before construction activities commence, the impacts on gray vireo would be less than significant.

Ground disturbances, possible demolition, and noise associated with construction may directly or indirectly cause impacts on Gunnison's prairie dogs. The mortality of individuals, habitat removal, and damage or degradation of habitat are impacts that might be associated with construction-related ground-disturbing activities. Noise associated with the Proposed Action might be of sufficient magnitude to result in behavior modification and the direct loss of individuals and reduce reproductive output within certain ecological settings. Kirtland AFB has a Gunnison's prairie dog relocation plan, which states that every effort would be made to capture and relocate prairie dogs before ground-disturbing activities. In accordance with this plan, prairie dogs at or near the project site would be trapped and relocated 3 weeks prior to any ground disturbance (Kirtland AFB 2012a). Due to the small amount of acreage involved with construction activities under the Proposed Action, as well as the fact that the project corridor would be inspected for prairie dogs before construction activities commence, the impacts on Gunnison's prairie dogs would be less than significant.

The western burrowing owls prefer disturbed areas with prairie dog burrows, such as those found at Alternative Sites 1 and 2 (Kirtland AFB 2012a). A biological survey would be conducted prior to construction activities, which would indicate whether the owl is present. If the owl is present within the construction area and cannot be avoided, appropriate actions such as

passive relocation would be taken in compliance with the MBTA, through coordination with USFWS and NMDGF (Kirtland AFB 2012a).

A qualified biologist would survey for nesting birds that are Federally and state managed or listed as migratory by USFWS prior to construction. Surveys for western burrowing owls and other special status birds would occur 1 day prior to ground-disturbing activities and the morning of the proposed disturbance. If nesting birds are discovered, appropriate actions would be taken, in compliance with the MBTA, through coordination with USFWS and NMDGF, to relocate the birds (Kirtland AFB 2012a). Relocation should only be attempted during the non-breeding season (California Burrowing Owl Consortium 1993). Construction activities would only commence after the owls or other protected avian species have migrated or have been removed from the area. Thus, impacts on burrowing owls, northern goshawk, peregrine falcon, loggerhead shrike, and mountain plover would be expected to be less than significant.

The spotted bat is listed as threatened by NMDGF, and Townsend's big-eared bat is a Federal species of concern, and both occur in Bernalillo County (NMDGF 2006). If a bat is found roosting within a building scheduled for demolition, NMDGF would be contacted for instruction on dispersal or relocation (Kirtland AFB 2012a). Therefore, impacts on the bat populations would be less than significant.

4.6 EARTH RESOURCES

4.6.1 No Action Alternative

Under the No Action Alternative, impacts on water resources and soils would not change because there would be no new ground disturbance and no new construction at Kirtland AFB.

4.6.2 Proposed Action

4.6.2.1 *Surface Waters*

Construction and possible demolition activities would clear vegetation and disturb soils at the project site, making the area susceptible to erosion during rain events, and the receiving waters could be affected by stormwater runoff and suspended sediments from soil disturbance. Most of the alternative sites are located on level ground; however, Alternative Site 5 is located in the Manzanita Mountains where building architects and landscape designers would have to contend with slopes that have greater erosion potential.

Since the construction area is greater than 1 acre, the contractor would be required to prepare a SWPPP in accordance with the NPDES 2012 CGP. The SWPPP must be provided to the Kirtland AFB water quality section for review. Specific erosion and sedimentation controls, such as silt fences, revegetation, and other BMPs included in the SWPPP, would limit the amount of erosion that occurs on-site and reduce potential impacts on the receiving waters.

Kirtland AFB's MS4 permit requires that all construction activities, regardless of size, implement BMPs to ensure that stormwater pollutants do not enter the stormwater drainage system and that stormwater pollutants are contained within the project area. A SWPPP would identify BMPs, such as protecting stormwater inlets in the project area with hay bales and sandbags, to reduce erosion and runoff from the proposed construction sites.

Construction equipment (e.g., bulldozers, backhoes, dump trucks, cranes) could be stored on-site throughout periods of construction and demolition, and petroleum fuels, oils, and lubricants (POL) could be stored on-site during the project to support contractor vehicles and machinery. No other hazardous materials are anticipated to be stored on-site. Construction personnel would follow appropriate BMPs to protect against potential POL or hazardous material spills. Proper housekeeping, maintenance of equipment, and containment of fuels and other potentially hazardous materials would be conducted to minimize the potential for a release of fluids into groundwater or surface waters. In the event of a spill, procedures outlined in Kirtland AFB's SPCC would be followed to quickly contain and clean up the spill.

EISA Section 438 requirements are independent of stormwater requirements under the CWA. Under the EISA requirements, predevelopment site hydrology must be maintained or restored, to the maximum extent technically feasible, with respect to temperature, rate, volume, and duration of flow. Predevelopment hydrology shall be modeled or calculated using recognized tools and must include site-specific factors such as soil type, ground cover, and ground slope. Site design shall incorporate stormwater retention and reuse technologies such as permeable pavements, cisterns/recycling, and green roofs, to the maximum extent technically feasible.

Incorporation of EISA design measures and the implementation of construction and post-construction stormwater controls would minimize short-term and long-term impacts on surface waters and allow for groundwater recharge. Therefore, direct and indirect impacts on surface water would be less than significant under the Proposed Action.

4.6.2.2 Hydrology and Groundwater

The installation of the proposed administrative building complex could impact the hydrology and groundwater in the region through altered surface flows. However, as mentioned previously, the design of the new facility is required to follow Section 438 of the EISA. If design parameters required in the EISA are implemented at the alternative sites, the impacts on hydrology in the region would be less than significant.

Construction of the proposed facilities would increase demands on regional water supplies during the 5-year construction period. Water would be needed for a variety of construction activities including, but not limited to, drinking water supply for construction crews, wetting construction sites for dust suppression, and concrete mixing. It is anticipated that 4.4 acre-feet of water would be required annually for construction activities for dust suppression and soil compaction over the 5-year construction period (Marin 2009). Construction crews would bring water to the site for personal use and fugitive dust control; portable latrines would collect sanitary waste. The construction of the Proposed Action would have less than significant impacts on available groundwater resources at Kirtland AFB.

The total water use for the 652 additional staff members is estimated to increase water use by 45,000 gallons per day. In 2011, Kirtland AFB used 755 million gallons of groundwater. The Proposed Action could increase the use of groundwater by 11.87 gallons per year, an increase of 1.6 percent. The total annual allowable groundwater withdrawal granted in Kirtland AFB's Water Rights Agreement with the State of New Mexico is 2 billion gallons per year. The recent improvements to the water distribution system and secure source of groundwater would ensure that the impacts on groundwater in the region would be less than significant.

4.6.2.3 Waters of the U.S.

Implementation of the Proposed Action at any of the proposed alternative sites would not result in a permanent impact on any perennial or intermittent streams, as none are present within the sites. However, there is one ephemeral wash identified as potential waters of the U.S. within Alternative Site 4 (see Figure 3-5). This wash is located in the northwest corner of the site and produces a streambed and bank footprint of 0.07 acre within the project site boundaries. Kirtland AFB is presently requesting a jurisdictional determination from the USACE on whether this wash and many others on Kirtland AFB are waters of the U.S.

If Alternative Site 4 is selected to construct the administrative building complex, the construction engineers would make every effort to avoid disturbing the ephemeral wash (DOD 2010). Section 438 of the EISA requires Kirtland AFB to avoid and minimize impacts on project site drainage features when designing and operating the site. If it is determined that the ephemeral wash is a waters of the U.S. and engineers and construction activities cannot avoid impacting the wash, Kirtland AFB would utilize a Section 404 Nationwide Permit (NWP) 39 to complete the construction activities. A pre-construction notification would be submitted to the District Engineer as per conditions set forth in NWP 39. Additionally, if more than 300-linear-feet of the waters of the U.S. would be filled as part of the Proposed Action, then a request would be submitted to the District Engineer asking for this limit to be waived. In the event that the District Engineer does not waive the 300-linear-foot limit, then Kirtland AFB would prepare and submit an individual permit application. NMED has conditionally certified the use of an NWP 39; therefore, a separate Section 401 Water Quality Certification would not be warranted, unless an individual permit is required. Regardless of which permit is used, the impacts on waters of the U.S. would be less than significant.

4.6.3 Soils

All of the alternative sites are located on soils that are well-drained, fine sandy loam with moderate permeability and slow to medium runoff rates, and are appropriate for engineering or construction uses. No prime farmland soils exist on Kirtland AFB. Five of the alternative sites are located on level ground; however, Alternative Site 5 is located in the Manzanita Mountains where building architects and landscape designers may have to contend with minor slopes (less than 10 percent) that have greater erosion potential.

The Proposed Action would impact approximately 10 acres of soils on Kirtland AFB property. Short-term impacts, such as proposed staging and stockpiling areas, would temporarily impact soils. These areas would be restored to their former condition following construction. Long-term effects on soils would result from the compaction of 10 acres for to the foundation, driveways, and parking lots of the proposed administrative building complex. Erosion BMPs would be employed on sloping ground, near washes, and around the perimeter of the construction site. Considering that the soils at all of the alternative sites are common locally and regionally and there would be no loss of prime farmland, impacts on soils would be less than significant.

4.7 AIR QUALITY

4.7.1 No Action Alternative

Implementation of the No Action Alternative would not change air quality in the region, as no construction would occur.

4.7.2 Proposed Action

4.7.2.1 Air Emissions from Construction Activities

Construction and operational air quality emissions for the Proposed Action would be similar at all of the alternative sites. Temporary and minor increases in air pollution would occur from the use of construction equipment (combustion emissions) and the disturbance of soils (fugitive dust) during possible demolition and construction of the new facilities. A fugitive dust control construction permit is required for projects disturbing 0.75 acre or more of land, as well as the demolition of buildings containing more than 75,000 cubic feet of space (20.11.20 NMAC *Fugitive Dust Control*).

The Fugitive Dust Control regulations also contain a provision for demolition of buildings containing 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 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 would be demolished in order to build a nonresidential structure or building shall file an asbestos notification with the NMED no fewer than 10 calendar days before the start of such activity. Written asbestos content notification is required even if regulated ACM is not or may not be present in such buildings or structures.

Due to the age of a building, LBP may be present on walls, ceilings, and floors. The contractor must consult Kirtland AFB Air Quality Program personnel to determine if sampling and abatement is necessary prior to commencing the proposed demolition of a building. The contractor must ensure that all equipment containing refrigerant is disposed of in compliance with 40 CFR Part 82. Coordination with the staff of the Kirtland AFB Air Quality Program would be required before commencement of any building demolition.

The following paragraphs describe the air emissions estimation methodologies utilized to estimate air emissions produced by construction activities under the Proposed Action.

Fugitive dust emissions were calculated using the emission factor of 0.19 ton per acre per month (Midwest Research Institute 1996), which is a more current standard than the 1985 PM-10 emission factor of 1.2 tons per acre-month presented in AP-42 Section 13 Miscellaneous Sources 13.2.3.3 (USEPA 2001).

The NONROAD2008a model was used to estimate air emissions from construction equipment. It is USEPA's preferred model for estimating emissions from non-road sources (USEPA 2009c). Combustion emission calculations were made for standard construction equipment, such as a backhoe, bulldozer, dump truck, crane, or cement truck. Assumptions were made regarding the total number of days and hours each piece of equipment would be used.

Construction workers would temporarily increase the combustion emissions in the airshed during their commute to and from the project area. Emissions from trucks delivering materials such as cement, fill, and supplies would also contribute to the overall air emissions. Emissions from delivery trucks and construction worker commuters traveling to the job site were calculated using USEPA's preferred on-road vehicle emission model MOVES2010a (USEPA 2009d).

The total air quality emissions from the construction activities were calculated to compare to the *de minimis* threshold levels of the General Conformity Rule. Summaries of the total emissions for construction activities are presented in Table 4-1. Details of the air emissions analyses are presented in Appendix C.

Table 4-1. Total Air Emissions (tons/year) from Construction Activities versus the *de minimis* Threshold Levels

Pollutant	Total (tons/year)	<i>de minimis</i> Thresholds (tons/year) ¹
CO	11.11	100
Volatile Organic Compounds (VOC)	4.28	100
Nitrous Oxides (NOx)	19.25	100
PM-10	13.51	100
PM-2.5	3.04	100
SO ₂	2.25	100

Source: 40 CFR 51.853 and GSRC modeled projections (Appendix C).

(1) Note that Bernalillo County is a maintenance area for carbon monoxide (USEPA 2011b).

Several sources of air pollutants contribute to the overall air impacts of the construction project. The results in Table 4-1 included emissions from:

1. Combustion engines for construction equipment
2. Construction workers commuting to and from work
3. Supply trucks delivering materials to the construction sites
4. Fugitive dust from job site ground disturbances

Operational air emissions refer to air emissions that may occur after the Proposed Action has been constructed and implemented. This would include emissions from boilers, diesel backup generator, additional staff traveling to work and other typical destinations, and delivery trucks furnishing day-to-day supplies. Emissions from automobiles for new staff and delivery trucks were estimated using USEPA's preferred on-road vehicle emission model MOVES2010a (USEPA 2009d). Emissions from generators and boilers were estimated using USEPA AP-42 emission factors. The calculations for air emissions from these operational sources are presented in Appendix C and are summarized in Table 4-2.

Table 4-2. Total Air Emissions (tons/year) from New Stationary Sources and Transportation Activities versus the *de minimis* Threshold Levels

Pollutant	Total (tons/year)	<i>de minimis</i> Thresholds (tons/year) ¹
CO	18.65	100
VOCs	23.00	100
NOx	4.81	100
PM-10	0.42	100
PM-2.5	0.32	100
SO ₂	0.47	100

Source: 40 CFR 51.853 and GSRC modeled projections (Appendix C).

(1) Note that Bernalillo County is a maintenance area for carbon monoxide (USEPA 2011b).

As can be seen in Tables 4-1 and 4-2, air emissions from the Proposed Action do not exceed Federal *de minimis* thresholds. As there are no violations of air quality standards and no conflicts with the SIPs, the impacts on air quality in Bernalillo County from the implementation of the Proposed Action would be less than significant.

4.7.2.2 New Stationary Sources

The boilers and diesel backup generators for the proposed administrative building complex are stationary sources of air emissions and would be permitted under the CAA Title V program. The permits identify pollutants emitted by a source and identify emission limits and standards. A 20.11.41 NMAC Authority to Construct permit would be required for any emergency generators and boilers that are associated with the Proposed Action. The direct and indirect impacts on air quality from the Proposed Action would be less than significant.

4.8 GHG AND CLIMATE CHANGE

4.8.1 No Action Alternative

Under the No Action Alternative, emissions of GHG and impacts on climate change would not occur, as no construction would occur.

4.8.2 Proposed Action

Construction and operational GHG emissions for the Proposed Action would be similar at all of the alternative sites. The NONROAD2008a model was used to estimate GHG emissions from construction equipment. It is USEPA's preferred model for estimating emissions from non-road sources (USEPA 2009c). Emissions from delivery trucks and automobiles of construction worker and future staff traveling to Kirtland AFB were calculated using the USEPA's preferred on-road vehicle emission model MOVES2010a (USEPA 2009d). The total estimated GHG emissions for construction and ongoing operations (commuters, diesel generators, boiler) were estimated to be 7,507 and 21,285 tons per year, respectively. GHG emissions from the Proposed Action do not exceed the Federal *de minimis* threshold levels of 27,557 tons per year. Under the Proposed Action, impacts on GHG emissions and the global and regional climate would be less than significant.

4.9 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

4.9.1 No Action Alternative

The No Action Alternative would not increase the amount of hazardous wastes or materials at Kirtland AFB and would not impact waste management systems.

4.9.2 Proposed Action

4.9.2.1 Construction and Demolition

The contractors would be responsible for the management of hazardous materials and petroleum products, which would be handled in accordance with Federal, state, and USAF regulations. Contractors must report the use of hazardous materials with 377 MSG/CEIE's Environmental, Safety, and Occupational Health Management Information System (ESOH-MIS). If a material that is less hazardous can be used, the Kirtland AFB ESOH-MIS would make these recommendations.

In the event of a spill, the contractors would be responsible for the remediation of hazardous waste in accordance with the Kirtland AFB HWMP, and the Hazardous Materials Emergency Planning and Response Plan outlines the appropriate measures for spill situations. BMPs, such as secondary containment, would be followed to ensure that significant contamination from a spill would not occur.

Kirtland AFB management of construction activities limits the refueling and storage of POL within the temporary staging areas. An SPCC would be in place prior to the start of construction, in case of POL spills, and all personnel would be briefed on the implementation and responsibilities of this plan. An Initial Accumulation Point would be established, and hazardous wastes would be disposed of in coordination with the Kirtland AFB HWMP.

If old buildings are scheduled to be demolished, they could contain ACM. All buildings would be surveyed prior to demolition, and any identified ACM would be separated from the remainder of the demolition materials, as required, and remediated in accordance with Federal, state, and USAF regulations. Sampling for ACM would occur prior to demolition, and ACM would be handled in accordance with the installation's Asbestos Management Plan and disposed of at the Keers Special Waste landfill, the City of Rio Rancho landfill, or another permitted site. Sampling, removal, and disposal of any ACM would be of short duration and would result in less than significant impacts.

If buildings are scheduled for demolition, they could contain LBP. Sampling for LBP would occur prior to demolition, and LBP would be handled in accordance with the installation's Lead-Based Paint Management Plan and disposed of at a hazardous waste disposal facility. In accordance with the Lead-Based Paint Management Plan, any identified LBP would be

separated from the remainder of the demolition materials, as required, and would be remediated in accordance with Federal, state, and USAF regulations. Removal and disposal of any LBP would be of short duration and would result in less than significant impacts.

If buildings are scheduled for demolition, they could contain lights with PCB ballasts. The light fixtures within the buildings would be removed prior to demolition, and would be handled in accordance with Federal and state regulations and the Kirtland AFB HWMP and disposed of at a hazardous waste disposal facility. Removal and disposal of any light ballast would be of short duration and would result in less than significant impacts from PCB-containing materials.

In addition, pad-mounted transformers could be present at any possible demolition site. Those identified as containing PCB would be handled in accordance with Federal and state regulations and the Kirtland AFB HWMP, and the PCB would be disposed of at a hazardous waste disposal facility. Removal and disposal of any PCB associated with the disposal of pad-mounted transformers would be of short duration and would result in less than significant impacts.

The proposed administrative building complex would not be a large producer of hazardous materials; however, a small incremental increase could occur. Under the guidance of the Kirtland AFB HWMP, use and production of hazardous wastes would be minimal. Less than significant impacts on the Pollution Prevention Program at Kirtland AFB would be expected from implementation of the Proposed Action.

4.9.2.2 Operations

The Proposed Action could increase the staff population at Kirtland AFB by 3 percent, and the waste streams are expected to rise accordingly. An increase in the transport, use, or disposal of solid wastes resulting from implementation of the Proposed Action would not result in significant hazards to the public or environment. USAF regulations prohibit the use of ACM, LBP, and PCB for new construction projects. The operation of the proposed building complex would participate in Kirtland AFB's Pollution Prevention Program and other waste management plans at Kirtland AFB. Adherence to these plans, particularly the Hazardous Materials Emergency Planning and Response Plan, would reduce any adverse impacts from an increase of the solid waste stream. BMPs utilized at the construction site would minimize impacts on the natural environment, and the impacts from the operation of the Proposed Action on hazardous waste management at Kirtland AFB would be less than significant.

4.9.2.3 Environmental Restoration Plan

Construction activities could disturb soils near an SWMU site and cause contaminants to migrate and cause harm to the environment and human health. Project activities occurring within or adjacent to an ERP or MMRP site require coordination with the Kirtland AFB ERP.

Alternative Sites 1 and 2 are located in an improved area in the northern portion of Kirtland AFB with nearby SWMUs. All construction activities associated with the Proposed Action would coordinate with the ERP Manager and would avoid ground disturbance at, and immediately adjacent to, ERP sites. Therefore, impacts on the ERP from the Proposed Action at Alternative Sites 1 and 2 would be less than significant.

There are six SWMUs located near the site Alternative Site 3. The old Kirtland Fire Training Area [FT-13] is located 10 feet from the northern boundary of Alternative Site 3. NMED determined the soils at the FT-13 site are at background levels; however, construction contractors should avoid the area to ensure that the soils at the FT-13 site are not disturbed. Two old septic systems are also located near Alternative Site 3, approximately 350 feet north of the boundary. Three more SWMUs are located 1,100 to 1,200 feet northeast of the site. The other SWMU sites are far enough away from construction and operational areas for site disturbance to be unlikely. All construction activities associated with the Proposed Action would coordinate with the ERP Manager and would avoid ground disturbance at, and immediately adjacent to, SWMU sites. Therefore, impacts on the ERP from the Proposed Action at Alternative Site 3 would be less than significant.

Alternative Sites 4, 5, and 6 are located in areas that may have UXO left behind during training exercises. The contractor should coordinate with MMRP's Explosive Ordnance Disposal (EOD) personnel to ensure that unexploded ordnance does not exist at these locations. All project personnel shall attend a 30-minute EOD UXO Awareness Training. Therefore, impacts on the ERP from the Proposed Action on these sites would be less than significant.

Alternative Site 5 is located approximately 0.6 mile northeast of the HERTF and is located in Forest Service Withdrawn Property. The HERTF frequently conducts high-power radio frequency testing and when these tests occur, access roads to the HERTF site would be closed. Prior to siting of the proposed administrative building complex in the Alternative Site 5 area, construction and operation managers would need to consult with the Kirtland AFB 377 ABW

Weapons Safety Office (SEW). The SEW would be able to clarify if the proposed site location is near any suspected or known UXO, discarded military munitions, or munitions constituent contamination. Construction and operation managers would need to consult with 377ABW/SEW to properly manage activities in response to any ongoing or planned explosives testing or munitions siting concerns.

4.10 SAFETY AND OCCUPATIONAL HEALTH

4.10.1 No Action Alternative

The No Action Alternative would not increase the number of personnel or safety risks at Kirtland AFB.

4.10.2 Proposed Action

Construction activities could increase risks to construction workers; however, the construction of the proposed administrative building complex does not pose significant risks to workers beyond those that they could encounter on other construction projects. The construction workers could experience a slight increase in health and safety risks during the construction of the proposed administrative building complex. The contractors would be responsible for compliance with Federal, state, and local health and safety regulations. The impacts on the health and safety of construction workers would be less than significant.

During operations, increases of vehicular traffic could increase the risk of accidents on-Base and on roadways to and from the Base; however, the increase in traffic is expected to be 3 percent on Kirtland AFB roads and much less off-Base. The increase in vehicle traffic would represent a slight impact on the safety of motorists in the region; however, the impact on public safety and health would be less than significant.

4.11 NOISE

4.11.1 No Action Alternative

No construction would be implemented with the selection of this alternative; thus, there would be no noise impacts from construction activities.

4.11.2 Proposed Action

3.11.2.1 Noise Attenuation

As a general rule, noise generated by a stationary noise source, or “point source,” will decrease by approximately 6 dBA over hard surfaces and 9 dBA over soft surfaces for each doubling of the distance. For example, if a noise source produces a noise level of 85 dBA at a reference distance of 50 feet over a hard surface, then the noise level would be 79 dBA at a distance of 100 feet from the noise source, 73 dBA at a distance of 200 feet, and so on. To estimate the attenuation of the noise over a given distance, the following relationship is utilized:

$$\text{Equation 1: } dBA_2 = dBA_1 - 20 \log^{(d_2/d_1)}$$

Where:

dBA_2 = dBA at distance 2 from source (predicted)
 dBA_1 = dBA at distance 1 from source (measured)
 d_2 = Distance to location 2 from the source
 d_1 = Distance to location 1 from the source

Source: California Department of Transportation (Caltrans) 1998

4.11.2.2 Construction Noise

Noise associated with construction of new facilities or demolition of old buildings would come from the use of common construction equipment. Table 4-3 presents noise emission levels for construction equipment expected to be used during the proposed construction activities. Anticipated sound levels at 50 feet from various types of construction equipment range from 76 dBA to 84 dBA, based on data from the Federal Highway Administration [FHWA] (2007).

Table 4-3. A-Weighted (dBA) Sound Levels of Construction Equipment and Modeled Attenuation at Various Distances¹

Noise Source	50 feet	100 feet	200 feet	500 feet	1000 feet
Backhoe	78	72	66	58	51
Crane	81	75	69	61	54
Dump Truck	76	70	64	56	49
Excavator	81	75	69	61	54
Concrete mixer truck	79	73	67	59	52
Bulldozer	84	78	72	64	57
Front-end loader	82	76	70	62	55

Source: FHWA 2007

¹ The dBA at 50 feet is a measured noise emission. The 100- to 1,000-foot results are GSRC modeled estimates.

Construction would involve the use of a bulldozer, which produces a noise emission level of 84 dBA at 50 feet from the source. Assuming the worst case scenario, the noise model (Caltrans 1998) estimates that noise emissions of 84 dBA would have to travel 450 feet before they would attenuate to an acceptable level of 65 dBA. Geographic Information Systems (GIS) were used to determine the number of sensitive noise receptors within 450 feet from the edge of each of the alternative sites. There are no sensitive noise receptors within 450 feet of the Alternative Sites 3, 4, 5, and 6. Approximately six residential noise receptors and one school (Wherry Elementary) may experience temporary noise intrusion equal to or greater than 65 dBA from construction equipment at Alternative Site 1. These homes are located west of Louisiana Boulevard SE, and Wherry Elementary is located approximately 400 feet from the northeast border of the project site. Alternative Site 2 is located approximately 1,000 feet from Raymond Murphy VA Medical Center and should not be adversely impacted by noise from construction activity.

Noise generated by the construction activities would be intermittent and would not exceed a 5-year term, after which noise levels would return to ambient levels. To minimize this impact potential, construction and demolition activities at Alternative Sites 1 and 2 should be limited to daylight hours during the workweek, between 8:00 a.m. and 5:00 p.m. on Monday through Friday. While the noise from construction activities may be noticed while it is occurring, its overall duration would be relatively brief and would not be expected to significantly alter the acoustic environment of the region. Under the Proposed Action, impacts on the noise environment from construction activities adjacent to all the alternative sites would be less than significant.

4.11.2.3 Operation Noise

Due to its proximity to the ABQ runways, Alternative Site 3 is located within the 65 dBA and 70 dBA DNL noise contours. If Kirtland AFB decides to construct an administrative building complex at Alternative Site 3, a noise mitigation plan would be included with the construction plan and noise abatement measures should be implemented in the architectural designs to protect the staff from noise emissions in excess of 65 dBA and to maintain a noise level of 40 dBA inside the building complex. Therefore, the design of buildings shall include installation of noise insulation materials. A number of guidelines and acoustically designed materials are available to the developer to achieve a noise reduction of 30 dBA. The noise insulation options include the following:

- Install specially fabricated sound-reducing windows and window frames
- Add good-quality door seals and gaskets, and install tight-fitting solid core doors with quiet closers
- Consult with an architect about improving wall and roof construction, install blanket insulation above the ceiling to reduce sound transmission over the top of floor to ceiling partitions
- Employ other materials and architectural designs to reduce sound

Alternative Sites 1, 2, 4, 5, and 6 are located outside the ABQ 65 dBA DNL noise contours, and the design of the proposed administrative building complex would not require special architectural features to reduce noise emissions from the airport.

SECTION 5.0
CUMULATIVE EFFECTS AND IRREVERSIBLE AND
IRRETRIEVABLE COMMITMENT OF RESOURCES

5.0 CUMULATIVE EFFECTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

5.1 CUMULATIVE EFFECTS

This section of the Programmatic EA addresses the potential cumulative impacts associated with implementation of the alternatives and other projects/programs planned for the region.

5.1.1 Definition of Cumulative Effects

CEQ defines cumulative impacts as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR 1508.7). The effects of individual minor disturbances and other changes to the environment by humans would accumulate when the frequency of disturbances becomes so high that the ecosystem or human environment has not fully rebounded before another stressful event is introduced. The spatial and temporal crowding of such disturbances can result in cumulative effects. The factors used in this document to determine which resources are cumulatively affected include the following:

- Whether the Proposed Action is one of several similar actions in the same geographic area
- Whether other activities in the area have similar effects on the resource
- Whether the resource is especially vulnerable to incremental effects
- Whether these effects are historically significant for this resource
- Whether other analyses in the area have identified a cumulative effects concern

5.1.2 Past, Present, and Reasonably Foreseeable Actions

Kirtland AFB has been used for military missions since the 1930s and continues to develop as DOD missions, organizations, needs, and strategies evolve. Development and operation of training ranges has impacted thousands of acres, with synergistic and cumulative impacts on soil, wildlife habitats, water quality, and noise. Beneficial effects have also 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 the increased knowledge of the history and prehistory of the region through numerous cultural resources surveys and studies. With continued funding and implementation of Kirtland AFB's Integrated Natural Resources Management Plan, ICRMP, ERP, and Master Plan, adverse impacts due to future and ongoing projects would be avoided or minimized. Table 5-1 presents a summary of the projects at or adjacent to Kirtland AFB examined for cumulative impacts.

Table 5-1. Present and Reasonable Foreseeable Actions at Kirtland AFB

Project Name	Description
Hercules Tanker Recapitalization	The 58 SOW proposed to recapitalize existing Special Operations Force (SOF) tanker aircraft and flight simulators and increase the number of their training fleet. Existing HC/MC-130P/N fixed-wing tanker planes and flight simulators are approaching their service life limits and need to be replaced. The SOF training force would increase by eight tanker planes and one flight simulator. By fiscal year 2023, SOF personnel would increase by 171 and the average daily student population would increase by 37. As part of this project, six military construction projects are planned for the installation totaling 146,440 square feet.
Replacement of Fire Station 3	Kirtland AFB plans to construct a new fire station to replace the Base Fire Station 3. The new Fire Station 3 would be approximately 7,320 square feet. Daily operations consist of housing and classroom proficiency training of up to ten firefighters at any one time. The action also includes the demolition of the existing Fire Station 3 (Building 30116), which is approximately 4,312 square feet. Following demolition, site restoration includes backfill and final grading of the disturbed area to blend with surrounding areas, and seeding as applicable.
Manzano Small Arms Range (formerly Heavy Weapons Range)	The 377 ABW proposes to establish and use a heavy weapons range in the southeastern section of Kirtland AFB, approximately 0.25 mile east of the Starfire Optical Range facilities along Mount Washington Road. The proposed range would 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 2 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.
Construction of 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; 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 would consist of 18-inch Portland cement concrete and would add additional 6-inch asphalt taxiway to the existing taxiway at Pad 5. The new pad would adjoin the existing Pad 5 to minimize enlargement of the clear zone and impacts 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 improved area in the northwestern portion of the installation. The areas include the Visiting Officer Quarters Complex, the Main Enlisted Dormitory Campus, the Noncommissioned Officer Academy, and Dormitory Campus 2. This project would include the demolition of facilities totaling approximately 498,000 square feet and construction of facilities totaling approximately 389,000 square feet, resulting in a decrease of approximately 109,000 square feet of building space on the installation.

Table 5-1, continued

Project Name	Description
Army and Air Force Exchange Service Base Exchange Shopping Center	The Army and Air Force Exchange Service proposes to construct and operate a new 95,421-square-foot Shopping Center on an approximately 2.3-acre developed site 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, retail laundry/dry cleaning, a beauty/barber shop, concession kiosks, five food concepts with a food court, and other similar services. This project would result in an increase of 93,881 square feet of building space on the installation.
Construction of New Military Working Dog Facility	Kirtland AFB proposes to construct a new Military Working Dog facility. The proposed facility would consist of 14 indoor/outdoor kennels, four isolation kennels, storage and staff space, restrooms, food storage room, a covered walkway, and a veterinarian examining room, totaling 8,000 square feet. A parking area with 25 spaces and new access roads would also be constructed as part of the project. Demolition of facilities totaling 2,520 square feet would also be included in this project, resulting in an increase of 5,480 square feet of building space on the installation.
498th Nuclear System Wing Facility	Kirtland AFB proposes to construct a 32,400-square-foot facility to house the newly formed 498th 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 into 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 Boulevard 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 into 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 Boulevard directly west of the Nuclear Weapons Center (Building 20325) and south of the proposed 498th Nuclear Systems Wing facility.
Building Demolition at Kirtland AFB	The 377 ABW proposes to demolish 23 buildings (approximately 105,000 square feet) on Kirtland AFB to make space available for future construction and to fulfill its mission as installation host through better site utilization. None of the buildings proposed for demolition are currently occupied or used by installation personnel. General demolition activities would include removing foundations, floor, wall, ceiling, and roofing materials; removing electrical substations providing power to these facilities; and removing, capping, and rerouting sewer, gas, water, and steam lines outside of the work areas. Equipment such as bulldozers, backhoes, front-end loaders, dump trucks, tractor-trailers, and generators would be required to support the proposed demolition activities.
Security Forces Complex	The 377 ABW proposes to construct, operate, and maintain a 42,500-square-foot security forces 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 security forces complex include a 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 (879 square feet) within the footprint of the security forces complex would be demolished. This project would result in an increase of 41,621 square feet of building space on the installation.

Table 5-1, continued

Project Name	Description
21st Explosive Ordnance Division Expansion	The 21st EOD proposes facility expansion and site improvements for the 21st EOD Weapons of Mass Destruction Company Complex at Kirtland AFB. The 21st EOD currently operates from a 90 acre property leased by the Army within Kirtland AFB. The current site has seven structures, six of which are substandard and do not have adequate fire protection. The 21st EOD proposes to expand this site to a total of 280 acres, add three permanent structures totaling 40,000 square feet, demolish five of the six substandard structures (75,000 square feet), add two temporary storage containers, tie in to nearby utilities, construct water tanks for fire suppression, and construct several concrete pads for training tasks. This project would result in a decrease of 35,000 square feet of building space on the installation.

A summary of the anticipated cumulative impacts associated with the Proposed Action on each of the resources described previously is presented below.

5.1.2.1 Land Use Resources

A significant cumulative impact would occur if any action is inconsistent with adopted land use plans or if the action would substantially alter those resources required for, supporting, or benefiting the current use. The Proposed Action is consistent with Kirtland AFB's General Plan and would affect approximately 10 acres. The other Kirtland AFB actions previously discussed would occupy 8.4 acres of land on the Base. This action, when considered with other potential alterations of land use, would not be expected to result in a significant cumulative adverse effect and would be consistent with the Kirtland AFB Master Plan.

The significance threshold for transportation impacts includes an increase in traffic in excess of the minimum level of service of Kirtland AFB access gates and roads. Additional staff would increase traffic congestion at some of the main access gates during peak hours. However, Kirtland AFB (1999) predicted that on-Base traffic would decline due to the reduction of on-Base homes and apartments for officers and enlisted personnel. Kirtland AFB (1999) also recommended road improvements to reduce congestion at busy intersections and queuing at access gates. These recommendations have been implemented at Kirtland AFB, although commuters occasionally experience congestion (Kirtland AFB 2010b). However, the increases anticipated under the current Proposed Action and when combined with other proposed projects on-Base, would not be expected to exceed the capacity of the transportation corridors; thus, no significant cumulative adverse impacts would be expected.

5.1.2.2 Infrastructure

Cumulative impacts on infrastructure have the potential to cause effects on electrical, central heating, water supply, sewage, stormwater, communications, and solid waste management services. A significant cumulative impact would occur if the long-term demand on infrastructure exceeds the current or projected capacity. The Proposed Action would increase the demand on electrical power, potable water, sewerage, solid waste, stormwater drainage, and communication infrastructure at Kirtland AFB; however, the increase is less than significant. The General Plan addresses the capacity and the need to upgrade all elements of the infrastructure to support additional projects at Kirtland AFB (Kirtland AFB 2010b). Because the Proposed Action would minimally increase infrastructure use on Kirtland AFB, the impacts of the Proposed Action, when considered with potential disturbances from past, present, and reasonably foreseeable actions at Kirtland AFB (see Table 5-1), would not be expected to have a significant cumulative impact on the installation's infrastructure.

5.1.2.3 Cultural Resources

A significant impact on cultural resources would occur if the action directly or indirectly destroys or alters a unique historical or paleontological resource or site, or disturbs any human remains. Kirtland AFB has conducted a Base-wide archaeological survey, and cultural resources exist within the APE of Alternative Sites 4, 5, and 6. If these alternative sites are chosen and the footprint of the complex could not be adjusted to avoid impacting a cultural resource, then further consultation with the SHPO and THPO shall occur. If sites cannot be avoided, then mitigation measures shall be developed in accordance with Section 106 of the NHPA. Consultation with the SHPO and interested parties would follow, if necessary. Therefore, this action, when combined with other existing and proposed projects on Kirtland AFB, would not result in significant cumulative impacts on cultural resources or historic properties.

5.1.2.4 Socioeconomics and Environmental Justice

Significance thresholds for socioeconomic conditions include displacement or relocation of residences or commercial buildings, increases in long-term demands for public services in excess of existing and projected capacities, and disproportionate impacts on minority and low-income families. Construction of the proposed administrative building complex would result in temporary and long-term beneficial impacts on the region's economy. Other existing and proposed construction projects in the area would not result in significant impacts on residential areas, population, or minority or low-income families off-Base. The implementation of the

Proposed Action, when combined with the other projects currently proposed or ongoing at Kirtland AFB, would not result in significant adverse cumulative impacts, but would result in beneficial cumulative impacts.

5.1.2.5 Biological Resources

5.1.2.5.1 Vegetation

The significance threshold for vegetation would include a substantial reduction in ecological processes, communities, or populations that would threaten the long-term viability of a species or result in the substantial loss of a sensitive community that could not be offset or otherwise compensated. The Proposed Action could permanently impact either 10 acres of disturbed vegetation, 10 acres of grasslands, or 10 acres of pinyon-juniper woodlands. The majority of the other Kirtland AFB projects are located in disturbed areas (see Table 5-1). Therefore, when the Proposed Action is combined with other projects discussed in Table 5-1, cumulative impacts on native vegetation communities would be negligible; however, these cumulative impacts would not be significant.

5.1.2.5.2 Wildlife

The significance threshold for wildlife and aquatic resources would include a substantial reduction in ecological processes, communities, or populations that would threaten the long-term viability of a species or result in the substantial loss of a sensitive community that could not be offset or otherwise compensated. Past projects on Kirtland AFB were completed within areas that were degraded from past activities and within areas of sparse vegetation. Most of the land on Kirtland AFB is undeveloped and would be unchanged, even with the Proposed Action and other development projects. Therefore, this proposed project, in conjunction with other past, present, and reasonable foreseeable actions, would have a negligible cumulative impact on regional wildlife populations due to loss of habitat.

5.1.2.6 Sensitive Species and Critical Habitat

A major impact on threatened and endangered species would occur if any action resulted in a jeopardy opinion for any endangered, threatened, or rare species. If any of the alternative sites are chosen for the project site and if the screening criteria outlined in this Programmatic EA are applied to future site selection, no adverse cumulative impacts would occur, as the Proposed Action would have a less than significant effect on any Federally listed or state-listed threatened or endangered species at these sites. Therefore, when the Proposed Action is combined with

other proposed projects on Kirtland AFB, cumulative impacts on sensitive species would be less than significant.

5.1.2.7 *Earth Resources*

A significant cumulative impact would occur if the action exacerbates or promotes long-term erosion, if the soils are inappropriate for the proposed construction, or if there would be a substantial reduction in agricultural production or loss of prime farmland soils. The Proposed Action and actions in the recent past have not reduced, and would not reduce, prime farmland soils or agricultural production. The locations of other past, present, and reasonably foreseeable actions are located on previously disturbed land. These projects require the implementation of a SWPPP and BMPs. The disturbance of 10 acres of soils, when combined with past and proposed projects on Kirtland AFB, would not create significant cumulative adverse impacts, as all construction projects require prescribed erosion controls and stabilization of the disturbed area.

The significance threshold for water resources includes actions that substantially deplete groundwater supplies or interfere with groundwater recharge, substantially alter drainage patterns, or result in the loss of waters of the U.S. that cannot be compensated. The construction associated with the Proposed Action, in combination with the other construction, would increase the stormwater runoff and, without proper erosion and sedimentation control measures, could adversely affect drainage flow and surface water quality. However, implementation of the required SWPPP would reduce erosion and sedimentation during construction to negligible levels and would eliminate post-construction erosion and sedimentation from the site. The same measures have been, and would be, implemented for other construction projects on the Base; therefore, cumulative impacts would not be significant.

5.1.2.8 *Air Quality*

Cumulative impacts on air quality would be considered significant if the action results in a violation of ambient air quality standards, obstructs implementation of an air quality plan, or exposes sensitive receptors to substantial pollutant concentrations. Construction emissions associated with other past, present, and reasonable foreseeable actions would be short-term and minor. Although the AEHD Air Quality Division is under a 20-year SIP to reduce CO emissions, the air quality in Bernalillo County has improved to the extent that, as a result of the 10-year review, AEHD approved a CO Limited Maintenance Plan, which has eliminated the

requirement for General Conformity analyses. The combined emissions from the Proposed Action, when considered with potential emissions from the other actions considered, are not expected to have any significant cumulative impacts on air quality, especially in view of the improvements in Bernalillo County air quality.

5.1.2.9 GHG and Climate Change

Globally, the cumulative increase of GHG would have an overall adverse impact on the earth's climate and on marine and freshwater ecosystems. Other past, present, and reasonably foreseeable actions in the area would not produce significant amounts of GHG, and the emissions from these projects would not exceed the 27,557-ton *de minimis* threshold level to be considered a significant action (CEQ 2010). The combined GHG emissions from the Proposed Action, when combined with potential emissions from the other actions considered, are not expected to have any significant cumulative impacts on climate change or GHG.

5.1.2.10 Hazardous Materials and Waste Management

Significant cumulative impacts would occur if an action created a public hazard, if the site was considered a hazardous waste site that poses health risks, or if the action would impair the implementation of an adopted emergency response or evacuation plan. All past, present, and reasonably foreseeable actions have incorporated, or will incorporate, measures to limit or control hazardous materials and waste into the design and operation plan of the facility to conform with the various Kirtland AFB hazardous waste management plans in place on the Base. 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 impact.

5.1.2.11 Safety and Occupational Health

Safety and occupational health are vulnerable to incremental effects, and if the cumulative actions were to risk the safety and health of the personnel, cumulative impacts would be considered significant. Many of the other past, present, and reasonably foreseeable actions are construction projects with relatively low risk factors. 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 impact.

5.1.2.12 Noise

Actions would be considered to cause significant cumulative impacts if they permanently increase ambient noise levels to over 65 dBA or raise the ambient noise by 3 dBA or greater. The Proposed Action would not significantly increase existing noise contours. Thus, the noise generated by the proposed MILCON action, when considered with the other existing and proposed projects on Kirtland AFB, would not be considered a significant cumulative adverse effect. The reasonable past, present, and reasonably foreseeable actions would result in only temporary increases in ambient noise levels during construction activities.

5.2 ENVIRONMENTAL DESIGN MEASURES

Even though no significant impacts were determined in this environmental analysis, this section of the Programmatic EA describes those measures that would be implemented to reduce or eliminate potential impacts on the human and natural environment. Kirtland AFB has drafted a *Checklist of Environmental Requirements for the Proposed Project*, which outlines compliance issues and recommended BMPs for each resource category that could be affected. These issues and measures are detailed below.

5.2.1 Soil, Vegetation, and Wildlife

Disturbed sites shall be utilized to the maximum extent practicable for construction and construction support activities. Native seeds or plants that are compatible with the enhancement of protected species shall be used, to the extent feasible, to reseed disturbed areas that shall not be landscaped or regularly maintained once construction is complete. Additional environmental protection measures shall include BMPs during construction to minimize or prevent erosion and soil loss. If straw bales are used as part of the BMPs, weed-free and seed-free straw bales are recommended to eliminate the potential for spreading invasive species.

To avoid impacts on migratory bird species, their young, and their nests, construction shall be timed to avoid the bird breeding season (typically March through August). Alternatively, should the commencement of construction occur during the breeding season, a qualified biologist shall survey the project site immediately before construction. If the survey reveals nesting birds protected by the MBTA, the nests shall be avoided and the birds left undisturbed until the young have fledged. In addition, bird nest prevention methods could be implemented at the project

site prior to nesting season. Before demolition of any buildings, the contractor shall contact the personnel from the Natural Resource Program to schedule a survey of buildings for bats and birds.

5.2.2 Cultural Resources

Contractors must contact staff at the Kirtland AFB Cultural Resource Program before construction or demolition of any buildings. If any cultural resources are discovered during construction or demolition, the Kirtland AFB Cultural Resource Manager shall be notified, and all construction activities shall stop until a qualified archaeologist assesses the significance of the cultural remains. In particular, if human remains or funerary objects are discovered, construction shall immediately cease until the appropriate parties, as required by NAGPRA, are consulted.

5.2.3 Water Resources

Since the proposed construction project occupies an area greater than 1 acre, the contractor shall be required to comply with the CWA NDPES permit process. The contractor must submit a SWPPP as part of the 2012 CGP. The contractor shall submit an electronic Notice of Intent with the SWPPP and CGP to the USEPA. The various permits identify BMPs that shall be implemented before, during, and after construction. In the event the new administrative building complex cannot connect to the Kirtland AFB wastewater system, the new septic system must meet minimum requirements of the NMED Liquid Water Bureau, and the septic system shall be registered with the state. The contractor shall comply with EISA Section 438, which includes design measures to control stormwater runoff from the project site.

5.2.4 Air Quality

Prior to implementing clearing and construction, the contractor is required to obtain and then comply with 20.11.20.14 NMAC *Fugitive Dust Control Construction Permits*. Should demolition be required at older structures, the contractor is required to obtain and comply with Fugitive Dust Control Programmatic Permits and Asbestos Notification (20.11.20.22 NMAC). The contractor shall sample building materials for ACM and LBP. If such materials are detected, the contractor shall implement an abatement program, as necessary, prior to commencing demolition. The contractor shall ensure that all equipment containing refrigerant is disposed of in compliance with 40 CFR Part 82. Coordination with the staff of the Kirtland AFB Air Quality

Program is required. Generators installed as backup emergency power must have a 20.11.41 NMAC Authority to Construct Permit from the AEHD issued before the generator is purchased.

5.2.5 GHG and Climate Change

Environmental design measures to reduce GHG have a certain cost; however, they also constitute an economic benefit by reducing the impacts of climate change and the costs associated with them. GHG reduction practices are grouped into several overarching categories such as transportation, building design and operation, and landscape design. The administration recommends that Federal agencies eliminate waste, recycle, and prevent pollution. Construction BMPs shall be incorporated into the Proposed Action construction plans to reduce energy consumption and GHG emissions, and include the following:

- Recycling and/or salvaging non-hazardous construction and demolition debris (goal of at least 75 percent by weight)
- Using locally sourced or recycled materials for construction materials (goal of at least 20 percent based on costs for building materials, and based on volume for driveway, parking lot, sidewalk, and curb materials)
- Minimizing the amount of concrete for paved surfaces or utilizing a low carbon concrete option
- Developing a plan to efficiently use water for adequate dust control

5.2.6 Hazardous Materials and Waste Management

Construction and demolition activities associated with the Proposed Action may produce hazardous and toxic materials/wastes. If hazardous waste is generated during construction, it shall be managed and disposed of according to Kirtland AFB waste management specifications (Section 01 74 19). The contractor is responsible for composing and implementing a construction waste management plan to maximize the materials that could be recycled and reduce the amount of waste disposed of at landfills to the greatest extent possible.

5.2.7 Noise

To minimize potential impacts on residential neighborhoods from construction noise emissions, construction activities shall be limited to the 8:00 a.m. to 5:00 p.m. work hours on Monday through Friday. Additionally, construction noise emission mitigation techniques include proper training in the use of construction equipment and routine maintenance of construction equipment.

If Kirtland AFB chooses to develop Alternative Site 3, the project planners and engineers shall include a noise mitigation plan as part of the construction plan. The goal is to maintain Acoustics Standards, which is an hourly average sound level of 40 dBA in the proposed administrative building complex. The outdoor noise levels can be as high as 70 dBA, but a reduction of 30 dBA is required to maintain the indoor work areas at a 40 dBA noise level. Therefore, the design of buildings shall include installation of noise insulation materials. A number of guidelines and acoustically designed materials are available to the developer to achieve a noise reduction of 30 dBA.

SECTION 6.0

REFERENCES



6.0 REFERENCES

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SECTION 7.0
LIST OF PREPARERS



7.0 LIST OF PREPARERS

Name	Discipline/Expertise	Experience	Role In Preparing Report
Steve Kolian	Environmental Science	15 years of environmental assessment and remediation experience	Project Manager, Programmatic EA Preparation
Curt Schaeffer	Wildlife Biology	8 years performing NEPA and natural resources studies	Biological Field Survey
Shalise Hadden	Wildlife Biology	3 years performing NEPA and natural resources studies	Biological Field Survey
John Lindemuth	Archaeology	15 years as a professional archaeologist	Cultural Resources Evaluation
Sharon Newman	Geographic Information System (GIS)/Graphics	17 years of GIS analysis	GIS and Graphics
Eric Webb	Biology and Ecology	18 years preparing NEPA documentation and related studies	QA/QC Review
Chris Ingram	Biology and Geology	33 years EA/EIS studies	QA/QC Review
Howard Nass	Forestry and Wildlife	19 years of natural resources studies and NEPA	QA/QC Review
Dennis Peters	Environmental Planning and NEPA	30 years of environmental planning and related studies	QA/QC Review
David Gates	Wildlife Biology	2 years of natural resource studies	QA/QC Review
Jason Glenn	Editor	10 years of editing experience	QA/QC Review
Michael Hodson	Wildlife Biology	9 years of natural resource studies	QA/QC Review
Missy Singleton	Wildlife Biology	3 years of natural resource studies	QA/QC Review

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SECTION 8.0
ACRONYMS AND ABBREVIATIONS



8.0 ACRONYMS AND ABBREVIATIONS

58 SOW	58th Special Operations Wing
377 ABW	377th Air Base Wing
AADT	Average Annual Daily Traffic
AAFES	Army and Air Force Exchange Service
ABQ	Albuquerque International Sunport
ABW	Air Base Wing
ACM	asbestos-containing materials
AEHD	Albuquerque Environmental Health Department
AFB	Air Force Base
AFI	Air Force Instruction
AFMC	Air Force Materiel Command
APE	area of potential effect
AQCB	Albuquerque-Bernalillo County Air Quality Control Board
BEA	Bureau of Economic Analysis
bgs	below ground surface
BMP	Best Management Practice
C	Candidate Species
CAA	Clean Air Act
C & D	construction and demolition
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFC	Chlorofluorocarbons
CFR	Code of Federal Regulations
CGP	Construction General Permit
CH ₄	Methane
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalents
CWA	Clean Water Act
dB	Decibel
dBA	A-Weighted Decibels
D	Delisted
DNL	Day-Night Average Sound Level
DOD	Department of Defense
E	Endangered
EA	Environmental Assessment
EISA	Energy Independence and Security Act
EIAP	Environmental Impact Analysis Process
EO	Executive Order
EOD	Explosive Ordnance Disposal
ERP	Environmental Restoration Program
ESA	Endangered Species Act
ESOH - MIS	Environmental, Safety, and Occupational Health Management Information System
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
GHG	Greenhouse Gases

GIS	Geographic Information System
GSRC	Gulf South Research Corporation
HERTF	High Energy Research and Test Facility
HFC	Hydrochlorofluorocarbons
HUC	Hydrologic Unit Code
HUD	U.S. Department Housing and Urban Development
HWMP	Hazardous Waste Management Plan
I-25	Interstate 25
I-40	Interstate 40
ICRMP	Integrated Cultural Resources Management Plan
IRP	Installation Restoration Program
kV	kilovolt
LBP	lead-based paint
LEED	Leadership in Energy and Environmental Design
MBTA	Migratory Bird Treaty Act
MGD	Million Gallons Per Day
MILCON	Military Construction
MMRP	Military Munitions Response Program
MMT	Million Metric Tons
MS4	Municipal Separate Storm Sewer System
MSG/CEIE	Mission Support Group/Civil Engineering Installation Environmental
MSL	Mean Sea Level
MVA	Megavolt Ampere
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NFA	no further action
NHPA	National Historic Preservation Act
NMAAQS	New Mexico Ambient Air Quality Standards
NMAC	New Mexico Administrative Code
NMDGF	New Mexico Department of Game and Fish
NMED	New Mexico Environment Department
NMNHP	New Mexico National Heritage Program
NO ₂	Nitrogen Dioxide
N ₂ O	Nitrous Oxide
NOx	Nitrous Oxides
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWP	Nationwide Permit
O ₃	Ozone
OSH	Occupational Safety and Health
PCB	polychlorinated biphenyls
PCPI	Per Capita Personal Income
PM-2.5	Particulate Matter (under 2.5 microns)
PM-10	Particulate Matter (under 10 microns)
ppm	parts per million
PNM	Public Service Company of New Mexico
POL	petroleum, oil, and lubricants
RCRA	Resource Conservation and Recovery Act

ROI	Region of Influence
SE	Southeast
SEW	Weapons Safety Office
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO ₂	Sulfur Dioxide
SOC	Species of Concern
SOF	Special Operations Forces
SOP	Standard Operating Procedure
SPCC	Spill Prevention, Control, and Countermeasures Plan
SWMU	Solid Waste Management Unit
SWPPP	Stormwater Pollution Prevention Plan
T	Threatened
THPO	Tribal Historic Preservation Officer
TPI	Total Personal Income
U.S.	United States
USAF	United States Air Force
USACE	United States Army Corps of Engineers
U.S.C.	United States Code
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGBC	United States Green Building Council
USGS	United States Geological Survey
UXO	unexploded ordnance

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APPENDIX A
LIST OF THREATENED AND ENDANGERED SPECIES





Biota Information System
Of *New Mexico*



Providing New Mexico and its wildlife
Year-round **Excellent Service**

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Database Query

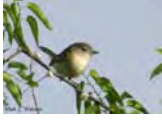
Your **search terms** were as follows:

16 species returned.

Taxonomic Group	# Species	Taxonomic Group	# Species
Fish	1	Mammals	2
Birds	13		

[Export to Excel](#)

Common Name	Scientific Name	Habitat Map	Species Photo (click photo to enlarge)	County	Status
Minnow, Silvery, Rio Grande	Hybognathus amarus	no map		Bernalillo	State NM: Endangered
Black-Hawk, Common	Buteogallus anthracinus anthracinus (NM)	no map		Bernalillo	State NM: Threatened
Cormorant, Neotropic	Phalacrocorax brasilianus	no map		Bernalillo	State NM: Threatened
Eagle, Bald	Haliaeetus leucocephalus alascanus (NM)	no map		Bernalillo	State NM: Threatened
Falcon, Aplomado	Falco femoralis septentrionalis (NM)	no map		Bernalillo	State NM: Endangered
Falcon, Peregrine	Falco peregrinus anatum	no map		Bernalillo	State NM: Threatened
Falcon, Peregrine, Arctic	Falco peregrinus tundrius	no map	no photo	Bernalillo	State NM: Threatened
Flycatcher, Willow,	Empidonax traillii extimus	no map		Bernalillo	State NM:

SW.					Endangered
Hummingbird, Broad-billed	Cynanthus latirostris magicus (NM)	no map		Bernalillo	State NM: Threatened
Hummingbird, White-eared	Hylocharis leucotis borealis (NM)	no map		Bernalillo	State NM: Threatened
Pelican, Brown	Pelecanus occidentalis carolinensis (NM)	no map		Bernalillo	State NM: Endangered
Sparrow, Baird's	Ammodramus bairdii	no map		Bernalillo	State NM: Threatened
Vireo, Bell's	Vireo bellii arizonae (NM,AZ); medius (NM)	no map		Bernalillo	State NM: Threatened
Vireo, Gray	Vireo vicinior			Bernalillo	State NM: Threatened
Bat, Spotted	Euderma maculatum			Bernalillo	State NM: Threatened
Mouse, Jumping, Meadow	Zapus hudsonius luteus (NM,AZ)	no map		Bernalillo	State NM: Endangered

[Close Window](#)



Listed and Sensitive Species in Bernalillo County

Total number of species: 17



Common Name	Scientific Name	Group	Status
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	Bird	Candidate
Gunnison's prairie dog	<i>Cynomys gunnisoni</i>	Mammal	Candidate
New Mexican meadow jumping mouse	<i>Zapus hudsonius luteus</i>	Mammal	Candidate
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	Bird	Endangered
Rio Grande silvery minnow Designated Critical Habitat	<i>Hybognathus amarus</i>	Fish	Endangered
Black-footed ferret ²	<i>Mustela nigripes</i>	Mammal	Endangered
Whooping Crane	<i>Grus americana</i>	Bird	Experimental, Non-essential Population
Mexican spotted owl Designated Critical Habitat	<i>Strix occidentalis lucida</i>	Bird	Threatened

Species of Concern

Species of Concern are included for planning purposes only.

Common Name	Scientific Name	Group	Status
Millipede	<i>Comanchelus chihuanus</i>	Arthropod - Invertebrate	Species of Concern
American peregrine falcon	<i>Falco peregrinus anatum</i>	Bird	Species of Concern
Arctic peregrine falcon	<i>Falco peregrinus tundrius</i>	Bird	Species of Concern
Baird's sparrow	<i>Ammodramus bairdii</i>	Bird	Species of Concern
Black tern	<i>Chlidonias niger</i>	Bird	Species of Concern
Northern goshawk	<i>Accipiter gentilis</i>	Bird	Species of Concern
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	Bird	Species of Concern

Pecos River muskrat	<i>Ondatra zibethicus ripensis</i>	Mammal	Species of Concern
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	Mammal	Species of Concern

Endangered	Any species which is in danger of extinction throughout all or a significant portion of its range.	Threatened	Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
Candidate	Candidate Species (taxa for which the Service has sufficient information to propose that they be added to list of endangered and threatened species, but the listing action has been precluded by other higher priority listing activities).	Proposed	Any species of fish, wildlife or plant that is proposed in the Federal Register to be listed under section 4 of the Act. This could be either proposed for endangered or threatened status.
Experimental, Non-essential Population	A reintroduced population established outside the species' current range, but within its historical range. For purposes of section 7 consultation, this population is treated as a proposed species, except when it is located within a National Wildlife Refuge and National Park, when the population is considered threatened.		
Under Review	Determining whether the status of the species meets the definition of threatened or endangered.		
Species of Concern	Taxa 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. Species of Concern are included for planning purposes only.		

Foot Notes:

- D** Designated Critical Habitat. **P** Proposed Critical Habitat.
- 1** Introduced population. **3** Extirpated in this county.
- 2** Survey should be conducted if project involves impacts to prairie dog towns or complexes of 200-acres or more for the Gunnison's prairie dog (*Cynomys gunnisoni*) and/or 80-acres or more for any subspecies of Black-tailed prairie dog (*Cynomys ludovicianus*). A complex consists of two or more neighboring prairie dog towns within 4.3 miles (7 kilometers) of each other.

APPENDIX B
INTERAGENCY AND PUBLIC CORRESPONDENCE



Appendix B contains a record of correspondence and information communicated to the public and governmental agencies regarding this document: “Programmatic Environmental Assessment for Base-Wide Military Construction Planning at Kirtland Air Force Base, New Mexico”.

The contents of Appendix B include:

- Lists of elected officials, local, state, and Federal Agencies, and tribal governments that received Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) letters.
- Example of IICEP letter sent to elected officials.
- Example of IICEP letter sent to local, state, and Federal agencies.
- Example of IICEP letter sent to tribal governments.
- Example of IICEP letter sent to the state historic preservation office (SHPO).
- Response letter from Mid-Region Council of Governments (MRCOG).
- Response letter from SHPO.
- Response letter from White Mountain Apache Tribe.
- Response letter from the Hopi Indian Tribe.
- Response letter from New Mexico Department of Game and Fish (NMDGF).
- Copies of the notice of availability (NOA) that was published in the Albuquerque Journal on 8 and 9 September 2013.
- A comment and response matrix of all public and governmental comments on PEA.

**Elected Officials
IICEP Letters**

The draft PEA and FONSI access information were sent to the following elected officials:

Senator Martin Heinrich
United States Senate
625 Silver Avenue SW Suite 130
Albuquerque, NM 87102

Senator Tom Udall
United States Senate
219 Central Avenue NW Suite 120
Albuquerque, NM 87102

Representative Steve Pearce
United States House of Representatives
3445 Lambros Loop NE
Los Lunas, NM 87031

Representative Michelle Lujan Grisham
United States House of Representatives
505 Marquette Avenue NW
Albuquerque, NM 87102

Representative Ben Lujan
United States House of Representatives
811 St Michael's Drive Suite 104
Santa Fe, NM 87505

Commissioner Ray Powell
New Mexico State Land Office
310 Old Santa Fe Trail
Santa Fe, NM 87501

Cabinet Secretary John Bemis
New Mexico Energy, Minerals and Natural
Resources Department
1220 South St Francis drive
Santa Fe, NM 87505

Commissioner (5 copies)
Bernalillo County Board of Commissioners
One Civic Plaza NW
10th Floor
Albuquerque, NM 87102

Councilmember (10 copies)
Albuquerque City Councilmembers
One Civic Plaza NW
9th Floor - Room 9087
Albuquerque, NM 87102



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 377TH AIR BASE WING (AFMC)

MAY 21 2013

Colonel John C. Kubinec
377ABW/CC
2000 Wyoming Blvd SE, Suite E-3
Kirtland AFB NM 87117-5000

The Honorable Martin Heinrich
United States Senate
625 Silver Avenue SW, Suite 130
Albuquerque NM 87102

Dear Senator Heinrich

Kirtland Air Force Base (AFB) is preparing a Programmatic Environmental Assessment (EA) addressing the proposed military construction (MILCON), operation, and maintenance of a 150,000-square foot administrative building complex at Kirtland Air Force Base (AFB).

The proposed building complex would be installed on approximately 10 acres of land at one of six alternative sites within Kirtland AFB (see attached figure). The Programmatic EA evaluates the six project sites as alternatives for future MILCON projects and the selection of one of the alternative sites for MILCON would be made during the MILCON design/build phase.

The administrative building complex would be capable of servicing up to 652 staff and would consist of office space, copier rooms, storage rooms, restrooms, break rooms, mail receiving room, and conference rooms. The facility would also be equipped with a 300-kilovolt-ampere, diesel-powered emergency generator to maintain heating and cooling, communications, and other vital systems during power outages. The construction and operation of the new facility would meet guidelines recommended by the U.S. Green Building Council for Leadership in Energy and Environmental Design.

Kirtland AFB used a subtractive analysis method to select six alternative sites; Kirtland AFB staff surveyed installation property and avoided sites that contained wetlands, threatened or endangered species habitat, or other environmental concerns. This approach reduces the probability of constructing buildings in areas that could result in undesirable environmental impacts, thereby eliminating unsuitable locations from consideration.

Cultural resources have been located through previous surveys within the Area of Potential Effect (APEs) of the proposed six alternatives. Due to the fact that these six alternatives are not funded nor are they proposed for construction any time soon, the Kirtland AFB Cultural Resource Manager recommends pursuing National Historic Preservation Act 1966, as amended, (NHPA) Section 106 consultation for each individual action. When Kirtland AFB receives

MILCON funds for any of these proposed projects the Installation Commander will initiate the required consultation for that specific project.

This Programmatic EA is being prepared in accordance with the National Environmental Policy Act (NEPA) (42 USC §§ 4371 et.seq.), the Council on Environmental Quality NEPA implementing regulations (40 CFR Parts 1500-1508), and the Air Force NEPA regulation (32 CFR Part 989). The Programmatic EA will evaluate the potential impacts of the proposed action and alternatives, to include the no action alternative, on humans and the natural environment. Additionally, Executive Order 12372, Intergovernmental Review of Federal Programs, requires federal agencies to solicit other federal agency participation in the NEPA process.

Accordingly, I am requesting your participation in the review and comment process. Copies of the Draft Programmatic EA and the proposed Finding of No Significant Impact are available at <http://www.kirtland.af.mil> under the environmental issues tab.

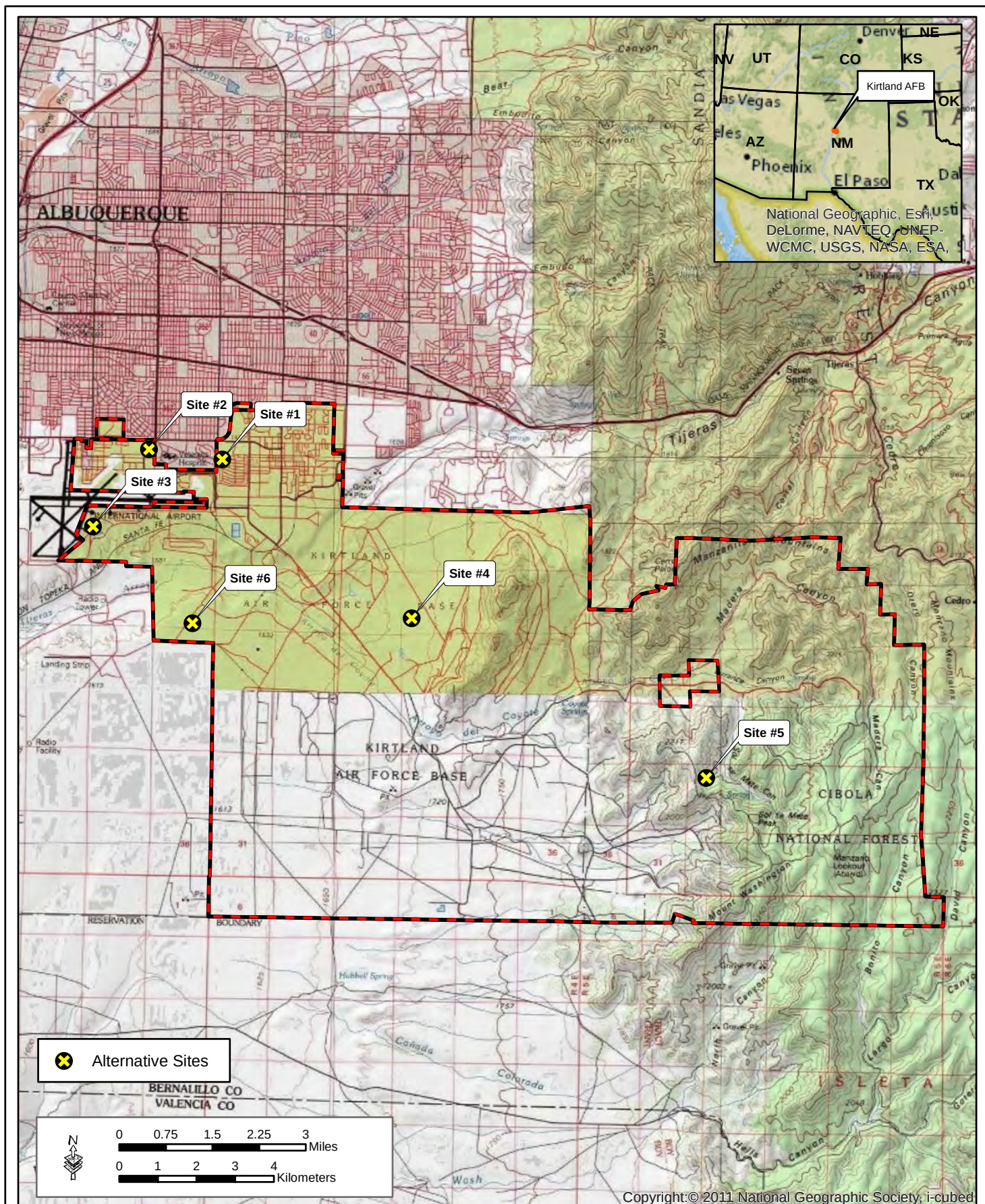
If you have additional information regarding impacts of the proposed action to the natural environment or other aspects of which we are unaware, we would appreciate receiving such information for inclusion and consideration during the NEPA process. We look forward to and welcome your participation in this NEPA process. Please provide your written comments on the Draft Programmatic EA or other information regarding this specific action within 30 days of receipt of this letter to ensure your concerns are adequately addressed in the EA.

Please send your written responses to the NEPA Program, Ms. Martha Garcia, 377 MSG/CEIE, 2050 Wyoming Boulevard SE, Suite 125, Kirtland AFB NM 87117, or via email to nepa@kirtland.af.mil.

Sincerely


JOHN C. KUBINEC, Colonel, USAF
Commander

Attachment:
Location Figure of Alternative Project Sites



Attachment. Location of Six Alternative Project Sites on Kirtland AFB Property

**Local, State, and Federal Agency
IICEP Letters**

The draft PEA and FONSI access information were sent to the following local, state, and Federal agencies:

Mr. Matt Wunder, Chief
Conservation Services
New Mexico Dept. of Game and Fish
1 Wildlife Way
Santa Fe, NM 87507

Mr. Bill Walker, Regional Director
Bureau of Indian Affairs
Southwest Regional Office
1001 Indian School Road NW
Albuquerque, NM 87104

Ms. Peg Sorenson
Southwestern Region NEPA Coordinator
U.S. Forest Service
Ecosystem Analysis and Planning,
Watershed, and Air Management
333 Broadway Boulevard SE
Albuquerque, NM 87102

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

Mr. Tim Tandy
Federal Aviation Administration
Southwest Region Regional Office
2601 Meacham Boulevard
Fort Worth, TX 76137

Mr. Ron Curry
Regional Administrator
U.S. Environmental Protection Agency,
Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202

Mr. Ed Singleton
District Manager
Bureau of Land Management New Mexico
State Office Albuquerque District Office
435 Montañño Road NE
Albuquerque, NM 87107

Bernalillo County Manager
Bernalillo County Manager's Office
One Civic Plaza, NW
10th Floor
Albuquerque, NM 87102

Ms. Dayna Gardner
Director of Communications
City of Albuquerque Office of the Mayor
One Civic Plaza, NW
11th Floor
Albuquerque, NM 87102

Mr. Jeff M. Witte
Director/Secretary
New Mexico Department of Agriculture
3190 S. Espina
Las Cruces, NM 88003

Board of Directors
Mid Region Council of Governments

Ms. Julie Alcon
Chief of Environmental Resources Section

809 Copper Avenue NW
Albuquerque, NM 87102

Mr. Morgan Nelson
Office of Planning and Performance
New Mexico Environment Department
1190 St. Francis Drive, Suite N4050
Santa Fe, NM 87505

Dr. Benjamin Tuggle, Regional Director
U.S. Fish and Wildlife Service
Southwest Regional Office
500 Gold Avenue SW
Albuquerque, NM 87102

U.S. Army Corps of Engineers
4101 Jefferson Plaza NE
Albuquerque, NM 87109

Mr. Jeff Robbins
NNSA Service Center/Albuquerque
KAFB East, Building 401
PO Box 5400
Albuquerque, NM 87185

Dr. Jeff Pappas, Director
New Mexico Historic Preservation Division
New Mexico Office of Cultural Affairs
407 Galisteo Street, Suite 236
Santa Fe, NM 87501



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 377TH AIR BASE WING (AFMC)

MAY 21 2013

Colonel John C. Kubinec
377ABW/CC
2000 Wyoming Blvd SE, Suite E-3
Kirtland AFB NM 87117-5000

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U.S. Fish and Wildlife Service
Southwest Regional Office
500 Gold Avenue SW
Albuquerque NM 87102

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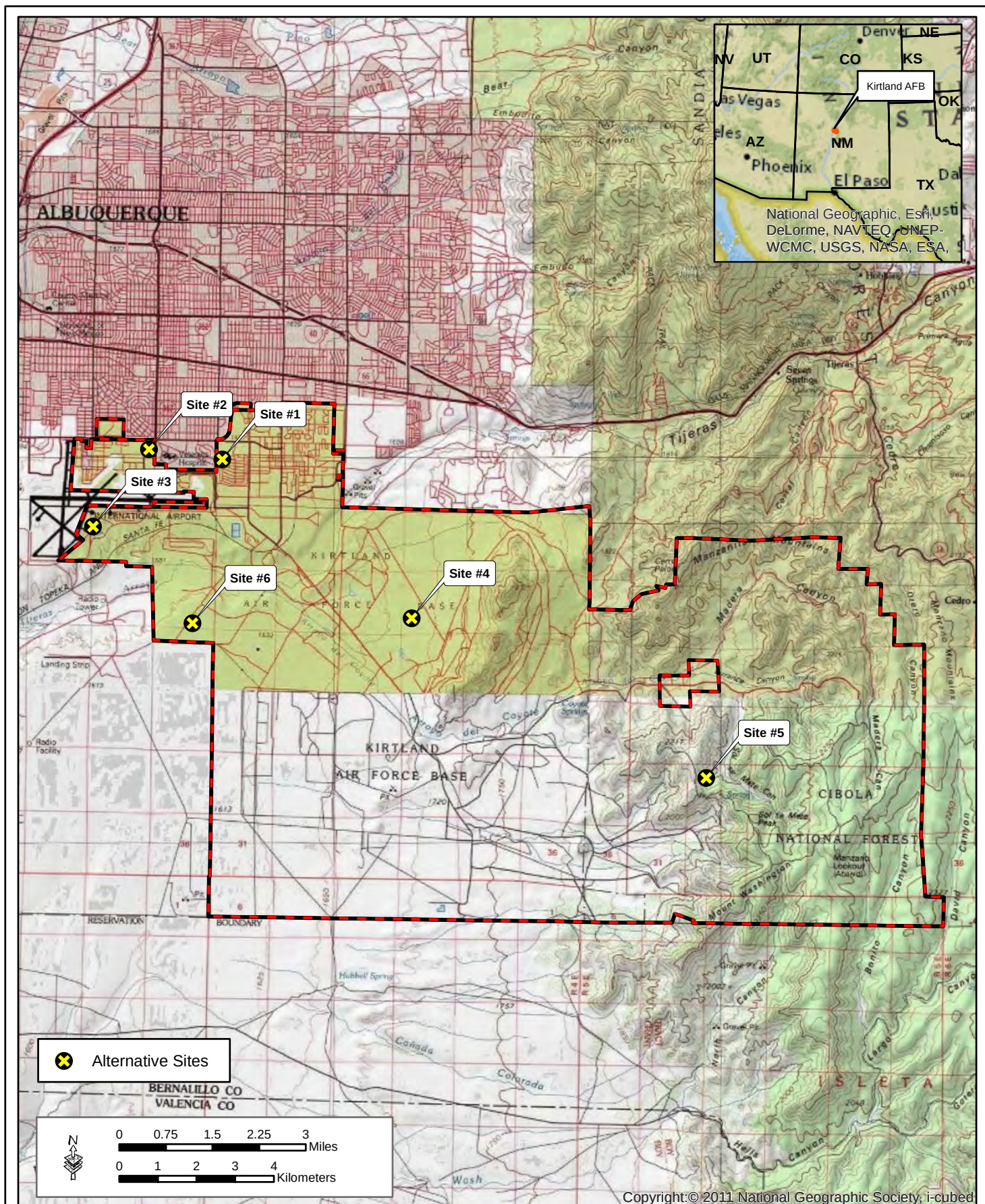
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Sincerely


JOHN C. KUBINEC, Colonel, USAF
Commander

Attachment:
Location Figure of Alternative Project Site



Attachment. Location of Six Alternative Project Sites on Kirtland AFB Property



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 377TH AIR BASE WING (AFMC)

MAY 21 2013

Colonel John C. Kubinec
377ABW/CC
2000 Wyoming Blvd SE, Suite E-3
Kirtland AFB NM 87117-5000

Dr. Jeff Pappas
State Historic Preservation Officer
Department of Cultural Affairs
Historic Preservation Division
Bataan Memorial Building
407 Galisteo Street Suite 236
Santa Fe NM 87501

Dear Dr. Pappas

Kirtland Air Force Base (AFB) is preparing a Programmatic Environmental Assessment (EA) addressing the proposed military construction (MILCON), operation, and maintenance of a 150,000-square-foot administrative building complex.

The proposed building complex would be installed on approximately 10 acres of land at one of six alternative sites within Kirtland AFB (see attached figure). The Programmatic EA evaluates the six project sites as alternatives for future MILCON, and the selection of one of the alternative sites for MILCON would be made during the MILCON design/build phase.

Kirtland AFB used a subtractive analysis method to select the six alternative sites; Kirtland AFB staff surveyed installation property and avoided sites that contained wetlands, threatened or endangered species habitat, or other environmental concerns. This approach reduces the probability of constructing buildings in areas that could result in undesirable environmental impacts, thereby eliminating unsuitable locations from consideration.

Cultural resources have been located through previous surveys within the APEs of the proposed six alternatives. Due to the fact that these six alternatives are not funded nor are they proposed for construction any time soon, Kirtland AFB cultural resources recommends pursuing National Historic Preservation Act 1966 (NHPA), as amended, Sec 106 consultation for each individual action. When Kirtland AFB receives MILCON funds for any of these proposed projects the Cultural Resource Manager will execute the required consultation for that specific project.

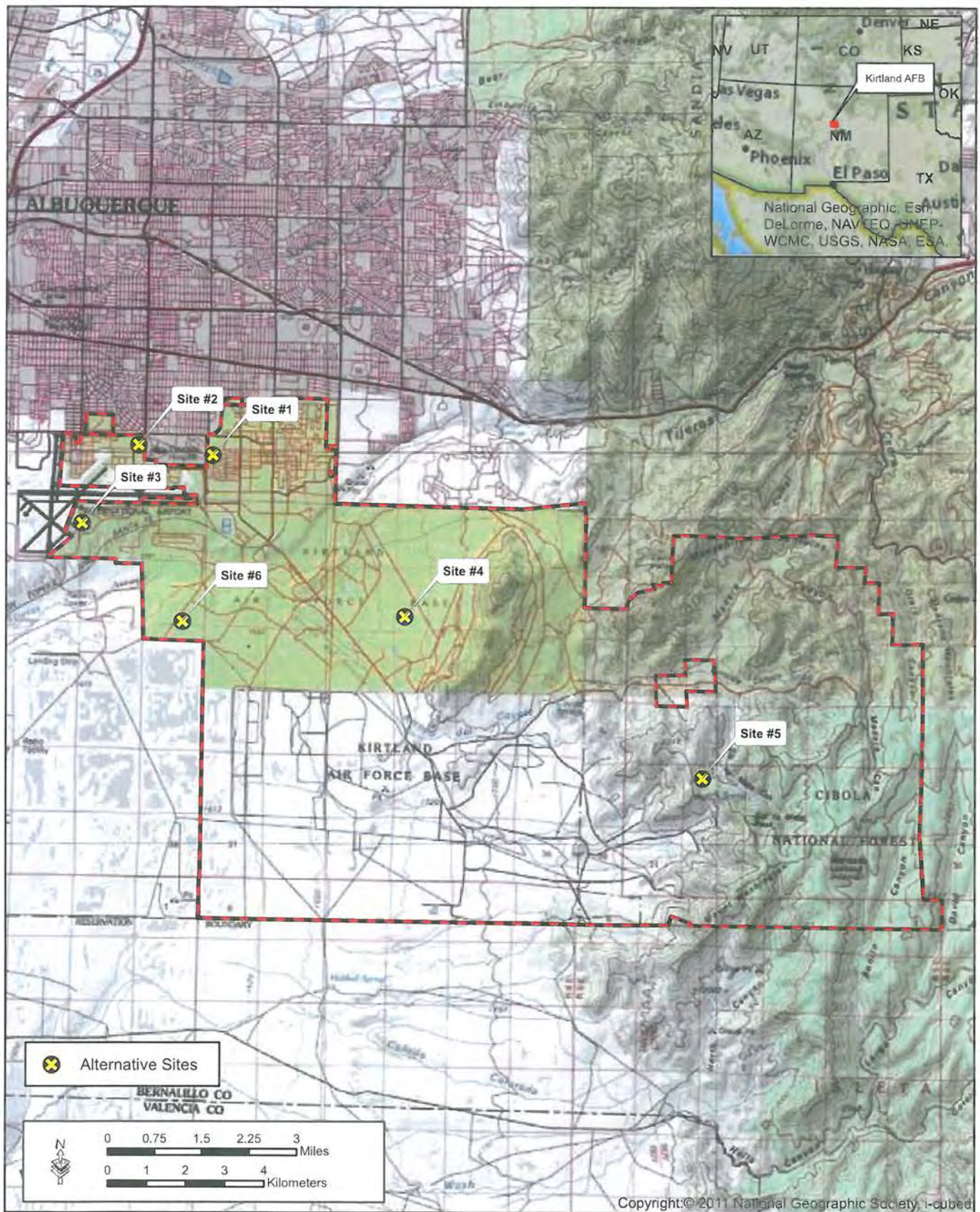
We appreciate your review of this information and would be happy to answer any questions you may have. If you have any questions or require further information, please do not hesitate to contact Mr. Dustin Akins at 846-0226.

Sincerely



JOHN C. KUBINEC, Colonel, USAF
Commander

Attachment:
Location Figure of Alternative Project Sites



Attachment. Location of Six Alternative Project Sites on Kirtland AFB Property



April 2012

**Tribal Government
IICEP Letters**

The draft PEA and FONSI access information were sent to the following Native American Tribes:

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

Governor E. Paul Torres
Pueblo of Isleta
PO Box 1270
Isleta Pueblo, NM 87022

President Ben Shelly
The Navajo Nation
PO Box 9000
Window Rock, AZ 86515

Chairman LeRoy N. Shingoitewa
Hopi Tribal Council
PO Box 123
Kykotsmovi, AZ 86039

Governor Frank Paiz
Ysleta del Sur Pueblo
117 S Old Pueblo Road (PO Box 17579)
El Paso, TX 79907

Governor Myron Armijo
Pueblo of Santa Ana
2 Dove Road
Santa Ana Pueblo, NM 87004

Governor Vincent Toya, Sr.
Pueblo of Jemez
PO Box 100
Jemez Pueblo, NM 87024

Director Rob Corabi
Eight Northern Indian Pueblos Council
PO Box 969
San Juan Pueblo, NM 87566

Speaker Johnny Naize
Navajo Nation Council, Office of the
Speaker
PO Box 3390
Window Rock, AZ 86515

Governor Phillip A. Perez
Pueblo of Nambe
Route 1 Box 117-BB
Santa Fe, NM 87506

Governor Arlen P. Quetawki, Sr.
Pueblo of Zuni
PO Box 339
Zuni, NM 87327

Governor Felix Tenorio, Jr.
Pueblo of Santo Domingo
PO Box 99
Santo Domingo Pueblo, NM 87052

Governor Mark Mitchell
Pueblo of Tesuque
Route 42 Box 360-T
Santa Fe, NM 87506

Chairman Chandler Sanchez
All Indian Pueblo Council
2401 12th Street NW
Albuquerque, NM 87103

President Alfredo La Paz
Mescalero Apache Tribe
PO Box 227
Mescalero, NM 88340

Governor Richard B. Luarkie
Pueblo of Laguna
PO Box 194
Laguna Pueblo, NM 87026

Governor Victor Montoya
Pueblo of Sandia
481 Sandia Loop
Bernalillo, NM 87004

Chairman Ronnie Lupe
White Mountain Apache Tribe
PO Box 700
White River, AZ 85941

Director James Roger Madalena
Five Sandoval Indian Pueblos
1043 Highway 313
Bernalillo, NM 87004

Governor Richard Mermejo
Pueblo of Picuris
PO Box 127
Penasco, NM 87553

President Ty Vicenti
Jicarilla Apache Nation
PO Box 507
Dulce, NM 87528

Governor George Rivera
Pueblo of Pojoaque
78 Cities of Gold Road
Santa Fe, NM 87506

Governor Harold Reid
Pueblo of Zia
135 Capitol Square Drive
Zia Pueblo, NM 87053-6013

Governor Gregg Shativa
Pueblo of Acoma
PO Box 309
Acoma, NM 87034

Governor J. Bruce Tafoya
Pueblo of Santa Clara
PO Box 580
Española, NM 87532

Governor Terry L. Aguilar
Pueblo of San Ildefonso
Route 5 Box 315-A
Santa Fe, NM 87506

Governor Jimmy Cimarron
Pueblo of San Felipe
PO Box 4339
San Felipe Pueblo, NM 87001

Governor J. Leroy Arquero
Pueblo of Cochiti
PO Box 70
Cochiti Pueblo, NM 87072

Governor Ernesto C. Luhan
Pueblo of Taos
PO Box 1846
Taos, NM 87571



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 377TH AIR BASE WING (AFMC)

MAY 21 2013

Colonel John C. Kubinec
377 ABW/CC
2000 Wyoming Blvd SE, Suite E-3
Kirtland AFB NM 87117-5000

President Frederick Chino, Sr.
Mescalero Apache Tribe
PO Box 227
Mescalero NM 88340

Dear President Chino

Kirtland Air Force Base (AFB) is preparing a Programmatic Environmental Assessment (PEA) addressing the proposed military construction (MILCON), operation, and maintenance of a 150,000-square-foot administrative building complex. The building complex would be installed at one of six alternative sites (see attached figure).

The proposed building complex would be installed on approximately 10 acres of land at one of the six alternative sites within Kirtland AFB (see attached figure). The PEA evaluates the six project sites as alternatives for future MILCON, and the selection of one of the alternative sites for MILCON would be made during the MILCON design/build phase.

Kirtland AFB used a subtractive analysis method to select the six alternative sites; Kirtland AFB staff surveyed installation property and avoided sites that contained wetlands, threatened or endangered species habitat, or other environmental concerns. This approach reduces the probability of constructing buildings in areas that could result in undesirable environmental impacts, thereby eliminating unsuitable locations from consideration.

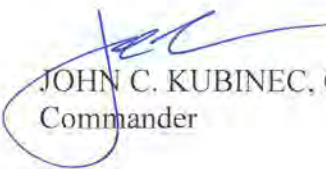
The administrative building complex would be capable of servicing up to 652 staff and would consist of office space, copier rooms, storage rooms, restrooms, break rooms, mail receiving room, and conference rooms. The facility would also be equipped with a 300-kilovolt-ampere, diesel-powered emergency generator to maintain heating and cooling, communications, and other vital systems during power outages. The construction and operation of the new facility would meet guidelines recommended by the U.S. Green Building Council for Leadership in Energy and Environmental Design.

Pursuant to the NHPA (16 USC § 470 et seq.; 36 CFR § 800.2 through 800.4 and Executive Order 13175), the Air Force would like to initiate Government to Government consultation concerning the proposed project to allow you the opportunity to identify any

comments, concerns and/or suggestions that you might have. As we move forward through this process, we welcome your participation and input.

Please contact my office at (505) 846-4116 if you would like to meet to discuss the proposed project and/or proceed with Section 106 consultation.

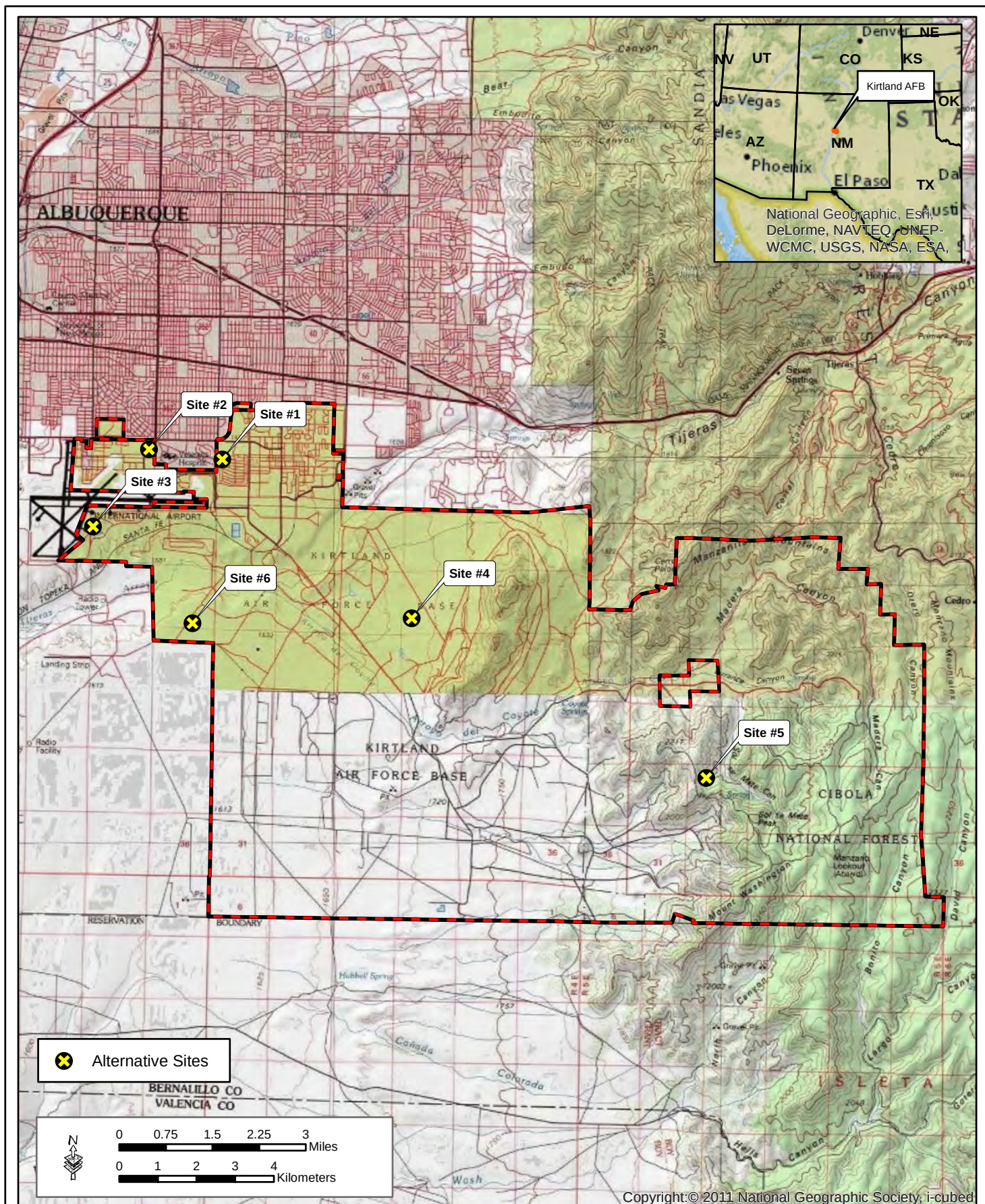
Sincerely



JOHN C. KUBINEC, Colonel, USAF
Commander

Attachment:

Location Figure of Alternative Project Sites



Attachment. Location of Six Alternative Project Sites on Kirtland AFB Property



Mid-Region Council of Governments

Philip Gasteyer
Chair, Board of Directors
Mayor, Village of Corrales

September 13, 2013

Dewey V. Cave
Executive Director

MEMBER GOVERNMENTS

City of Albuquerque
Albuquerque Public Schools
Albuquerque Metropolitan
Arroyo Flood Control
Authority
City of Belen
Bernalillo County
Town of Bernalillo
Village of Bosque Farms
Village of Corrales
Village of Cuba
Town of Edgewood
Village of Encino
Town of Estancia
Village of Jemez Springs
Village of Los Lunas
Los Lunas Schools
Village of Los Ranchos
de Albuquerque
Middle Rio Grande
Conservancy District
City of Moriarty
Town of Mountainair
Town of Peralta
City of Rio Rancho
Rio Rancho Public Schools
Sandoval County
Southern Sandoval
County Arroyo Flood
Control Authority
Village of Tijeras
Torrance County
Valencia County
Village of Willard

NEPA Program Manager
Ms. Martha Garcia
377 MSG/CEIE
2050 Wyoming Boulevard SE Suite 126
Kirtland AFB NM 87117

Re: MILCON

Dear Ms. Martha Garcia:

On behalf of the Mid-Region Council of Governments (MRCOG), I would like to give my support for the proposed military construction, operation, and maintenance of a 150,000-square foot administrative building complex at Kirtland Air Force Base.

It is my understanding that the proposal would support ongoing priorities and activities within the boundaries of the Kirtland Air Force Base. At this time the MRCOG does not anticipate major impacts. However, as part of the Joint Land Use Study (JLUS) implementation plan and subsequent memorandums of understanding (MOUs), the KAFB should notify the City of Albuquerque Planning Department, the Bernalillo County Planning Department, and the Isleta Pueblo as to the MILCON proposal.

The mission of the Kirtland Air Force is very important in this region and the MRCOG communities. This proposal for construction in no way conflicts with local or regional plans.

Please let me know if my staff or I can support you further.

Sincerely,

Dewey V. Cave
Executive Director

DC/DW



STATE OF NEW MEXICO
DEPARTMENT OF CULTURAL AFFAIRS
HISTORIC PRESERVATION DIVISION

Susana Martinez
Governor

BATAAN MEMORIAL BUILDING
407 GALISTEO STREET, SUITE 236
SANTA FE, NEW MEXICO 87501
PHONE (505) 827-6320 FAX (505) 827-6338

September 17, 2013

Dustin Akins
2050 Wyoming Blvd. SE
Building 20685
Suite 123
Kirtland AFB 87117

Re: MILCON Programmatic EA

Dear Mr. Akins,

Thank you for informing the New Mexico State Historic Preservation Officer (SHPO) of the Programmatic Environmental Assessment (EA) that is being developed for the proposed construction of an administrative building complex. I am writing to follow-up on our September 17, 2013 phone, which concerned compliance with Section 106 of the National Historic Preservation Act (NHPA).

From our discussion and the information in the consultation letter that the project's area of potential effect (APE) has not been identified, and will be selected from one of several alternatives. Please notify our office when a draft EA been posted so that I can review the cultural resources section of the document. Under the circumstances, however, it is appropriate for Kirtland and the SHPO to enter into a programmatic agreement (PA) to allow a phased process of identification and evaluation or to defer identification and evaluation until the precise location of the facility is identified per 36 CFR 800.4 *Identification of Historic Properties*.

I am looking forward to working with you on this, and future consultations. If you have any questions or comments please feel free to call me directly at (505) 827-4225 or email me at bob.estes@state.nm.us.

Sincerely,

A handwritten signature in blue ink that reads "Bob Estes".

Bob Estes

HPD log 97671



White Mountain Apache Tribe

Office of Historic Preservation

PO Box 507

Fort Apache, AZ 85926

Ph: (928) 338-3033 Fax: (928) 338-6055

To: John C. Kubinec, Colonel, USAF Commander

Date: September 12, 2013

Project: Programmatic EA for Base-Wide Military Construction, Kirtland Air Force Base, NM.

.....
The White Mountain Apache Tribe Historic Preservation Office appreciates receiving information on the proposed project, September 9, 2013. In regards to this, please attend to the following checked items below.

► ***There is no need to send additional information unless project planning or implementation results in the discovery of sites and/or items having known or suspected Apache Cultural affiliation.***

N/A - The proposed project is located within an area of probable cultural or historical importance to the White Mountain Apache tribe (WMAT). As part of the effort to identify historical properties that maybe affected by the project we recommend an ethno-historic study and interviews with Apache Elders. The tribe's ***Cultural Heritage Resource Director Mr. Ramon Riley*** may be contacted at (928) 338-3033 for further information should this become necessary.

► Please refer to the attached additional notes in regards to the proposed project:

We have received and reviewed information regarding Kirtland Air Force Base proposed construction, operation, and maintenance of an administration building complex at one of six alternative sites, Albuquerque, New Mexico, and we have determined the propose projects will **not have an effect** on the White Mountain Apache tribe's (WMAT) historic properties and/or traditional cultural properties. Regardless, any/all ground disturbing activities should be monitored **if** there are reasons to believe that there are human remains and/or funerary objects are present, and if such remains and/or objects are encountered all project activities should cease and the appropriate tribal affiliation notified to evaluate the situation.

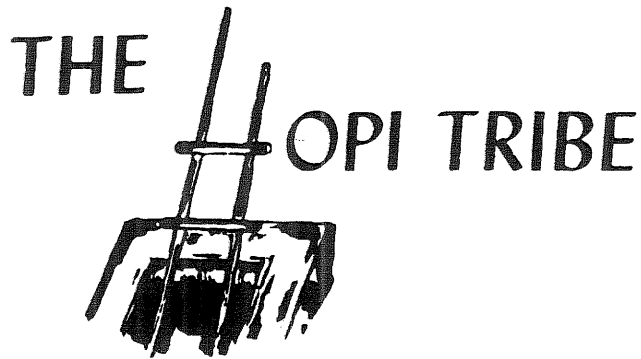
Thank you. We look forward to continued collaborations in the protection and preservation of place of cultural and historical significance.

Sincerely,

Mark T. Altaha

White Mountain Apache Tribe

Historic Preservation Office



LeRoy N. Shingoitewa
CHAIRMAN

Herman G. Honanie
VICE-CHAIRMAN

October 7, 2013

Colonel John C. Kubinec, Commander
Department of the Air Force, Headquarters 377th Air Base Wing (AFMC)
377 ABW/CC
2000 Wyoming Blvd., SE, Suite E-3
Kirtland AFB, NM 87117-5000

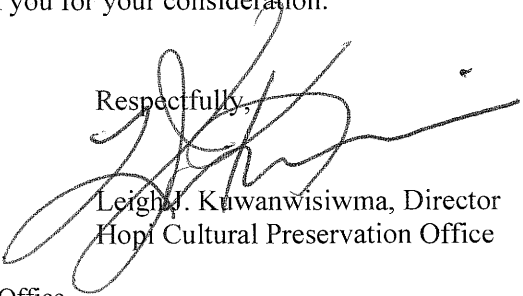
Dear Colonel Kubinec,

This letter is in response to your correspondence regarding Kirtland Air Force Base preparing a Programmatic Environmental Assessment addressing the proposed military construction, operation and maintenance of an administrative building complex. The Hopi Tribe claims cultural affiliation to the prehistoric cultural groups in New Mexico. The Hopi Cultural Preservation Office supports the identification and avoidance of prehistoric archaeological sites, and we consider the prehistoric archaeological sites of our ancestors to be "footprints" and Traditional Cultural Properties. Therefore, we appreciate the Department of the Air Force's continuing solicitation of our input and your efforts to address our concerns.

The Hopi Cultural Preservation Office has reviewed the Programmatic Environmental Assessment and we understand six 10 acre sites have been identified as alternatives. We also understand a base wide cultural resources survey identified and recorded more than 660 archaeological sites, and that two National Register eligible sites are identified within the area of potential effect for Alternative 4, five National Register eligible sites are identified within the area of potential effect for Alternative 5, and two National Register eligible sites are identified within the area of potential effect for Alternative 6.

We request consultation on any proposal that has the potential to adversely affect prehistoric cultural resources in New Mexico. Therefore, if these sites cannot be avoided we request continuing consultation on this proposal including being provided with a copy of the draft treatment plan for review and comment. Should you have any questions or need additional information, please contact Terry Morgart at tmorgart@hopi.nsn.us. Thank you for your consideration.

Respectfully,



Leigh J. Kuwanwisiwma, Director
Hopi Cultural Preservation Office

xc: New Mexico State Historic Preservation Office

GOVERNOR
Susana Martinez



DIRECTOR AND SECRETARY
TO THE COMMISSION
James S. Lane, Jr.

DEPUTY DIRECTOR
Daniel E. Brooks

STATE OF NEW MEXICO DEPARTMENT OF GAME & FISH

One Wildlife Way, Santa Fe, NM 87507
Post Office Box 25112, Santa Fe, NM 87504
Tel: (505) 476-8000 | Fax: (505) 476-8123
For information call: (888) 248-6866

www.wildlife.state.nm.us

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Alto

RALPH RAMOS
Las Cruces

October 10, 2013

Ms. Martha Garcia, NEPA Program
377 MSG/CEIE
2050 Wyoming Blvd. SE, Suite. 125
Kirtland AFB, NM 87117

RE: Kirtland AFB Base-wide Military Construction Programmatic Draft EA; NMDGF No. 16010

Dear Ms. Garcia:

The Department of Game and Fish (Department) has reviewed the above-referenced project, which proposes to construct a 150,000 square foot administrative building complex at one of six proposed sites on Kirtland AFB.

Proposed site number 5 occurs on the east side of Kirtland AFB in the Cibola National Forest withdrawal area in pinyon-juniper foothills nesting habitat for the state-listed gray vireo. This site is the furthest proposed site from existing base developments, and presumably would be the most expensive site to develop, requiring paved road, power, and sewer development.

Of the six proposed sites, development of site 5 would have the most adverse impact on wildlife, such as the gray vireo from habitat loss and fragmentation. Proposed mitigation of construction during the non-nesting period will not adequately address impacts of the development of a 100,000 square foot building that will support 652 staff, vehicle access, noise and light disturbance to surrounding habitat in the undeveloped eastern foothills area of the base. Therefore, the Department recommends selection of one of the other five proposed sites for development of the administrative building. With selection of one of the five other proposed sites and proposed mitigation to relocate Gunnison's prairie dogs and burrowing owls found in these areas, the Department does not anticipate adverse effects to wildlife or important wildlife habitats from implementation of this project.

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

Sincerely,

Matt Wunder Ph.D.
Chief, Division of Ecological and Environmental Planning

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0030 Lost & Found

LOST TENT, MARMO, inside a purple bag, tent is yellow with firm, by railroad tracks on Montano or San Antonio Highway. Part of a Purple Harley Davidson vest hanging, on Thurs Aug 29 around 10am. Please call 948-0882 w/any info

0031 Pets Lost & Found

FOUND BLACK SUNNY RABBIT in Heritage Hills park near Ventura/Harper. Call 857-0210

FOUND: small black terrier, Ventura Ranch Area. Call to identify: 321-6275

NOTICE

INFORMATION REGARDING ADVERTISERS NAME, ADDRESS AND PHONE NUMBERS THAT ARE PUBLISHED IN THE ALBUQUERQUE JOURNAL IS CONFIDENTIAL AND WILL NOT BE DISCLOSED TO ANY INDIVIDUAL, CITY, STATE OR GOVERNMENT AGENCY.

0031 Pets Lost & Found

FOUND: black and white, white miniature poodle. Wearing collar & leash. 93 on Kentucky St NE, Louisiana & Candalaria area. 505-830-2496

LOST: Monty/Eldorado, area found Jack Russell Terrier. Call to identify 505-832-4023 or 505-918-9633

LOST: 8YR OLD ANITA IN SE. Ab. on 85, microchipped, no collar, grey white markings on chest & neck. 505-265-1569

LOST: black Cocker-Poodle with collar, "Bruno", Alameda/Rio Grande Blvd. Santa's best friend. REWARD! Call 505-715-4140

LOST: Cat, Spain & Morris Ralph 10yrs old, orange & sunny stripes because of weight loss. Please call 432-0142. Mailed since 8/5/13

LOST: Chihuahua Female, white & brown spots, approx. 10yrs old, short hair. Ab. on 85, microchipped. Call 505-715-4140

LOST: dog small Brown Cocker Spaniel Female, no collar, Grand/Indian School area on Mon 9/2. Pk 29 709-0052 if found.

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LOST: German Shepherd X 9y, near Indian School/Gardner, reddish brown with black, black ear tips, chip collar. Vial for end of 2nd SW. REWARD 12-24-2022, 710-8809

0031 Pets Lost & Found

LOST: German Shepherd Male, white & black, chip collar, tag ID tag, Brown collar. Vial for end of 2nd SW. REWARD 12-24-2022, 710-8809

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0031 Pets Lost & Found

LOST: Gray Tabby, named Mia, female, 5yrs old, last seen Sept 1 9408 Tandan Dr. NE Microchipped. Loved Family pet. 505-6658

LOST: male Tabby cat, "Boat", beautiful affectionate, neutered, declawed, in Los Ranchos, on 91, Reward. 505-363-4741, 681-6272

LOST: Poodle, M. black, lion cut, long curly hair, black collar with tags, no chip. LOST NW Animal Clinic, Alameda, 830, 385-9132

LOST: SHIH-TZU, WHITE, WITAN SPARKING, MALE, LOST MORRIS MONTGOMERY, REWARD 915-549-1996, 915-549-4810

LOST: Silky Yorkshire Terrier 7yrs old, spayed, bump on stomach, not very healthy on meds. Candalaria/Curtis. 505-907-1572

LOST: 8YR OLD ANITA IN SE. Ab. on 85, microchipped, no collar, grey white markings on chest & neck. 505-265-1569

LOST: black Cocker-Poodle with collar, "Bruno", Alameda/Rio Grande Blvd. Santa's best friend. REWARD! Call 505-715-4140

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0045 Special Notices

ADVF is so excited to inform you that on Friday September 6th from 6:30 to 8:00 P.M. we will start a new ministry reaching out to the young men & women in our community. The event will be FREE, it will be a night of encouragement, music, food & lots of fun. Guest speaker Mr. Frederick B. Davis Sr., Job Corps CACTS Director will be discussing career orientation. We will also share the Word of God. Please join us at North Domingo Plaza Multigenerational Center located at 7521 Camel Ave NE, Albuquerque, NM 87104. Anyone is welcome from teens to parents.

was robbed/jacked/nugget by security employees local casino 9-29-07 My Story next

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Profitable, highly regulated, SUNBELT BUSINESS ADVISORS

BUSINESS FOR SALE: Established Mobile Auto Glass Company

WITH PLANS TO expand throughout New Mexico, we're now looking for great people that would like to join in our success & own a quality business.

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JOIN us for a free open conference. Learn about the power of ADVOCARE the opportunity products. Business Opportunity mfg. Fr. Sep. 6, 8:30 Courtland Marriott-5150 Journal Center Blvd. Product Business Training: Sat. Sep. 7, 8:30 Standridge Suites, 5917 Bryan Ave. Lorraine 623.687.0902

LOVE ANIMALS? THEN YOU WILL LOVE THIS BUSINESS!

MANUFACTURING CO

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The Burns School at the University of Denver is proud to announce "ELM on the Road" FOR: Landmen, Land Techs, Lease Title Analysts, Division Order Analysts, Attorneys, Accountants, Financial Advisors and Investors, Mineral, Royalty and Surface Owners, Operators and others interested in the growing energy industry.

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ABQ JOURNAL

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Lost & Found

MARLOT, inside a tent is yellow wired, white tracks on down 4th/Freeway, up to Harley Davidson, on Thru on down 10th, inside call 382 Willy info

Lost & Found

CK BUNNY RABBIT in Hills park near per. Call 857-0210
1 male, white miniature, collar & leash, 5 N.E. Louisiana area. 505-830-2498

Lost & Found

lady Edgewood area upen tent. Call to 32-4023 or 505-918-39 Area. Call to 505-918-39

Lost & Found

OLD AKITA IN SE, microchipped, by wildlife medicine, 505-265-1639

Lost & Found

Jockey/Poodle w/leash and "Alcatraz" dog. Send best friend. Call 505-710-4140.

Lost & Found

ain & Morris Ralph is a dog & puppy, please weight loss. Please. Missed since 8/30

Lost & Found

ua Female, white w/ grey, 10yrs old, sh/zi, sun Jan 13, 505-255-5032

Lost & Found

mail Brown Cocker also, no collars, school area on 729-0552 if found.

Lost & Found

ker Spornal X, 9/1, choco/Guard, red/wh, 10x ear tip, cho 4130-505-603-0706

Lost & Found

1 Ship/Male/Dorner has tag ID 123, Brown, 1st end of 2nd SW, 242-2622, 710-8809

Lost & Found

ebby, named Mita, 2nd, last seen Sept 1, Dr. NE Microchipped, 505-6658

Lost & Found

Tabby cat, "Boaz" adeline, insured, 20 Rancho, on 911, 853-4741, 681-6272

Lost & Found

M. black, lion cut, 3rd, 10x collar who 3, Last NW Animal, 8, 830, 365-9132

0031 Pets Lost & Found

LOST Silky Yorkshire Terrier 7yrs old, spayed, bump on stomach, not very healthy on meds. Candace/Candace, 505-907-1372

0039 Personals

LOST Sun-Cone Bird Red around the head, Sun Yellow/Dark Green, wearing bracelet around ankle. Coal area Howard \$100, 264-6798

0045 Special Notices

MEET Gay & B MEN Browse & Reply FREE! 258-1111, Code 5502, 15+

0045 Special Notices

ACTF is so excited to inform you that on Friday September 13th from 6:30 to 8:30 P.M. we will start a new ministry reaching out to the young men & women in our community. The event will be FREE. It will be a night of encouragement, music, food & lots of fun. Guest Speaker Mr. Patrick D. Davis, Jr. JAB COPE GATICS Director will be discussing career orientation. We will also share the Word of God. Please join us at North Domingo Baca Multicultural Center located at 7521 Camel Ave NE, Albuquerque, NM. Anyone is welcome from teens to parents

0100 Drivers

CDL A Truck Driver Training, Day, Evening, Weekend Classes www.cdlatraining.com 888-5182/2705 Princeton NE

0100 Drivers

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0125 Management

CVB SALES MANAGER
Responsible for sales and collection of gross and individual travel through lead generation, trade show attendance, sales correspondence and familiarization tours and all maintenance of records. The City of Santa Fe offers competitive compensation and a generous benefit package including excellent retirement program, medical/dental life insurance, paid holidays, generous vacation and sick leave. For detailed information on this position or to apply online, visit our website at www.santafelife.com. Position closes 9/18/13

0130 Medical-Clerical

FT Front Desk Receptionist medical insurance verification, authorization experience preferred but not required. Basic office skills required. Please view job description online. Apply online @ www.paradigmnm.com. No phone calls please.

0140 Misc Employment

FT Physical Therapy Assistant for Los Lunas clinic only. Please view job description & apply at www.paradigmnm.com. No phone calls please.

0140 Misc Employment

Service Porter for Lamy Miller Hyattsville. Must have clean driving record. 58hr week. Apply 9820 Coors NW or call 505-792-7000

0140 Misc Employment

Grand New Openings CUSTOMER SERVICE SALES REPS NEEDED. MUST BE NEAT IN APPEARANCE AND HAVE GOOD COMMUNICATION SKILLS. Entry levels-1800-2400 a year. No exp. req. policy. Call 505-831-8072 or apply online at DPSCHAMPOINS.COM

0145 PT Employment

HOUSECLEANERS Mon-Fri Days. Car Required. Up to \$9.50/hr. Paid mileage. Paid travel. Call 344-9880

0150 Prof-Degreed

Therapist
Part-Time Work
10-20 hours wk
Specified hours flexible
Well established non-profit, with a great work atmosphere is looking for the services of a Master's level therapist in treatment foster care program. You will work with a great team and use your firsthand knowledge of trauma-informed therapy and family therapy approaches in your day to day work. Bilingual is a plus but not necessary. Must have 2 years direct service experience working with children/adolescents. 40 hour training required and will be necessary for children's medicine. Must be licensed as LPC, LPC, LMSW, LSW or LMFT. Please Fax your confidential letter of interest to HR: 505-994-0384.

0150 Prof-Degreed

Treatment Coordinator
Full-Time, Supervisory Position
Rewarding work atmosphere
Benefits: Casual Dress, Friendly, Small Tight-Knit Team Environment, Rewarding Relationships with Families, Potential for Regular Raises, Weekly Staff Lunches, Presbycym Healthcare
Well established non-profit with a great work atmosphere is looking for a Treatment Coordinator to work with Treatment Foster Parents and Treatment Foster Children. Salary is competitive.
Requirements:
•Two years experience working with children with behavior problems.
•Bachelor's degree in a human services field.
•Solid references and clean criminal checks.
Email confidential resume to: christina@presbycym.com or fax to: 505-994-0384

0150 Prof-Degreed

Treatment Foster Parent
Are you interested in making a difference in a child's life?
Red Mountain Family Services, Inc. is a well established non-profit, located in Rio Rancho, New Mexico, and is currently recruiting and training families for this rewarding and challenging job.
The difference you can make in the life of these children is endless and worth the requirements to become a foster treatment parent.
Requirements: To become a foster parent one must pass a home study and criminal check process and one must be able to provide therapeutic care in your home. Our salary is very competitive.
For more information please call: (505) 994-0384 and ask for Rachel Montoya at extension 27

0150 Prof-Degreed

Program Supervisor
Full-Time Position
Positive work environment
Well established non-profit with a great work atmosphere is looking for a independently Licensed Therapist to use their clinical & administrative experience to supervise 6 treatment coordinators at Red Mountain Family Services, Inc. Treatment Foster Care Program. Must have two years experience working with children and their families. Must have a New Mexico clinical license at an LPC, LSW or LMFT. Must have solid references and cleared criminal checks. Email confidential resume to: christina@presbycym.com or confidential fax resume to: (505) 994-0384

0150 Prof-Degreed

Security Guards
US Security Associates Inc.
S100 Sign On Bonus With Valid Guard Card
US Security Associates is hiring Security Officers that have a current & valid guard card to work days, weekends & nights in the Albuquerque area. Must pass a criminal background & drug test. Uniforms & job site training are provided. Apply in person: 1224 Pennsylvania NE, Ste D between 9am-3pm Mon-Fri. EEOE AAP

0200 Trades

FIELD WELDERS needed, must certify & travel, reliable transportation required. Apply in person D & R Tank 1210 Prosperity SE 87105

0200 Trades

WWM Division Director
(2014-037)
The City of Santa Fe is seeking a WWM Division Director to perform a variety of professional managerial and supervisory duties related to planning, organizing, directing, and controlling the overall management and operations of the city wastewater treatment facility, laboratory operations, collection system, engineering functions and industrial pre-treatment program. Position closes 9/22/13. The City of Santa Fe offers competitive compensation and a generous benefit package including excellent retirement program, medical/dental life insurance, paid holidays, generous vacation and sick leave. For detailed information on this position or to apply online, visit our website at: www.santafelife.com

0200 Trades

ROOFERS - Hiking Commercial installers & SERVICE TECHS. Must be experienced. Call Bob 888-6811

0200 Trades

South Valley Pallet Mfg Plant looking for FT person for equipment repair & maintenance. Self motivated. Electrical knowledge a must. Apply at 3524 Broadway SE, Ste. N of Rio Rancho. www.rvpallet.com

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BUSINESS FOR SALE: Established Mobile Auto Glass Company with national franchise support. No experience necessary. Training inc. purchases. All tools, equip. & a company van. Kelly 400-967-6884

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Comment Response Matrix
Draft EA Public Comments for Programmatic Environmental Assessment for
Base-Wide Military Construction Planning at
Kirtland Air Force Base, New Mexico
Public Comment Period 8 September to 9 October 2013

Kirtland AFB, NM

Reviewer Names: Martha Garcia
 Reviewer Agency/Organization: USAF 377 MSG/CEIE
 Reviewer Telephone Number: 505-846-6446
 Reviewer Mailing Address: 2050 Wyoming Blvd SE Kirtland AFB NM 87117
 Reviewer e-mail Address: Martha.Garcia.ctr@kirtland.af.mil

#	Date Submitted	Commenter	Comment	Response to Comment
1.	9/13/13	Dewey Cave, Executive Director Mid-Region Council of Governments	At this time the Mid-Region Council of Governments (MRCOG) does not anticipate major impacts. However, as part of the Joint Land Use Study (JLUS) implementation plan and subsequent memorandums of understanding (MOUs), the KAFB should notify the City of Albuquerque Planning Department, the Bernalillo County Planning Department, and Isleta Pueblo [Planning Department] as to the MILCON proposal.	Thank you for your comment. A JLUS MOU is currently in the Draft Phase, so formal notification under it did not occur during the IICEP Process. However, the Bernalillo County Zoning, Building, Planning Department was notified via the letter sent to the Bernalillo County Manager's Office. Kirtland AFB NEPA Program Manager spoke with a representative at this office on 17 Apr 13. The representative stated that if the Kirtland AFB NEPA Program were to send letters to the Manager, the Manager's Office would distribute the letter to the appropriate departments.

#	Date Submitted	Commenter	Comment	Response to Comment
2.	9/17/13	Bob Estes, State of New Mexico Department of Cultural Affairs Historic Preservation Division	Please notify our office when a draft EA [has] been posted so that I can review the cultural resources section of the document. Under the circumstances, however, it is appropriate for Kirtland and the SHPO to enter into a Programmatic Agreement (PA) to allow a phased process of identification and evaluation or to defer identification and evaluation until the precise location of the facility is identified per 36 CFR 800.4 <i>Identification of Historic Properties</i> .	Thank you for your comment. This is a Programmatic EA for base-wide military construction planning at Kirtland AFB, and meant to assess six different environments on the installation. No actual construction is proposed at this time. Any site selections and proposed construction would be assessed through Kirtland AFB's Environmental Impact Analysis Process on a case by case basis. As stated in Section 2.1, prior to selection the of a construction site, the site would be surveyed for cultural resources and consultation with the SHPO initiated at this time. If the chosen site contains cultural resources, the footprint of the building would be adjusted to avoid impacting the cultural resource. If the footprint could not be adjusted, then the Kirtland AFB Cultural Resources Office would initiate further consultation with the SHPO to develop mitigation measures. As stated in Section 4.3.2, should an inadvertent discovery of human or cultural remains be made, all construction shall stop, the Cultural Resources Office at Kirtland AFB shall be notified, and operational procedures outlined in Section 5.4 of the ICRMP shall be followed. This would ensure that no adverse impacts would occur to the newly discovered cultural resource.
3.	9/12/13	Mark T. Altaha, White Mountain Apache Tribe Historic Preservation Office	We have received and reviewed information regarding Kirtland Air Force Base proposed construction , operation, and maintenance of an administration building complex at one of six alternative sites, Albuquerque, New Mexico, and we have determined the propose projects will not have an effect on the White Mountain Apache tribe's (WMAT) historic properties and/or traditional cultural properties. Regardless, any/all ground disturbing activities should be monitored if there are reasons to believe that there are human remains and/or funerary objects are present, and if such remains and/or objects are encountered all project activities should cease and the appropriate tribal affiliation notified to evaluate the situation.	Thank you for your comment. Ground disturbing activities on Kirtland AFB are monitored for human remains or funerary objects when activities are occurring near a known site. For ground disturbing activities not near a known site, contractors are made aware of the Kirtland AFB Cultural Resource Program's operational procedures for inadvertent discoveries. Should an inadvertent discovery of human or cultural remains be made, all construction shall stop, and the Cultural Resources Office at Kirtland AFB shall be notified immediately. The Kirtland AFB Cultural Resources Program Office would then notify the appropriate Tribal Governments.

#	Date Submitted	Commenter	Comment	Response to Comment
4.	10/7/2013	Leigh J. Kuwanwiswina, Director, Hopi Cultural Preservation Office	The Hopi Cultural Preservation Office reviewed the Programmatic Environmental Assessment and we understand six 10 acre sites have been identified as alternatives. We also understand base-wide cultural resources survey identified and recorded more than 660 archaeological sites, and that two National Register eligible sites are identified with the area of potential effect for Alternative 4, five National Register eligible sites are identified within the area of potential effect for Alternative 5, and two National Register eligible sites are identified within the area of potential effect for Alternative 6. We request consultation on any proposal that has the potential to adversely affect prehistoric cultural resources in New Mexico. Therefore, if these sites cannot be avoided we request continuing consultation on this proposal including being provided with a copy of the draft treatment plan for review and comment.	Thank you for your comment. We agree that Alternative Sites 4, 5, and 6 have the potential to adversely affect historic properties. Additional consultation would be conducted with the Hopi Cultural Preservation Office if any of these alternatives are selected or if it is determined that there is a potential to adversely affect cultural resources resulting from future construction projects. Any draft treatment plans that may be developed as part of this proposal will be sent to the Hopi Cultural Preservation Office for their review.

APPENDIX C
AIR QUALITY CALCULATIONS



CALCULATION SHEET-COMBUSTION EMISSIONS-CONSTRUCTION

Assumptions for Combustion Emissions					
Type of Construction Equipment	Num. of Units	HP Rated	Hrs/day	Days/yr	Total hp-hrs
Water Truck	1	300	8	260	624,000
Diesel Road Compactors	1	100	8	30	24,000
Diesel Dump Truck	1	300	8	30	72,000
Diesel Excavator	1	300	8	30	72,000
Diesel Hole Trenchers	1	175	8	60	84,000
Diesel Bore/Drill Rigs	1	300	8	60	144,000
Diesel Cement & Mortar Mixers	1	300	8	60	144,000
Diesel Cranes	1	175	8	260	364,000
Diesel Graders	3	300	8	15	108,000
Diesel Tractors/Loaders/Backhoes	1	100	8	260	208,000
Diesel Bulldozers	1	300	8	30	72,000
Diesel Front-End Loaders	1	300	8	30	72,000
Diesel Forklifts	2	100	8	260	416,000
Diesel Generator Set	2	40	8	260	166,400

Emission Factors ¹						
Type of Construction Equipment	VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	PM-10 g/hp-hr	PM-2.5 g/hp-hr	SO ₂ g/hp-hr
Water Truck	0.440	2.070	5.490	0.410	0.400	0.740
Diesel Road Compactors	0.370	1.480	4.900	0.340	0.330	0.740
Diesel Dump Truck	0.440	2.070	5.490	0.410	0.400	0.740
Diesel Excavator	0.340	1.300	4.600	0.320	0.310	0.740
Diesel Trenchers	0.510	2.440	5.810	0.460	0.440	0.740
Diesel Bore/Drill Rigs	0.600	2.290	7.150	0.500	0.490	0.730
Diesel Cement & Mortar Mixers	0.610	2.320	7.280	0.480	0.470	0.730
Diesel Cranes	0.440	1.300	5.720	0.340	0.330	0.730
Diesel Graders	0.350	1.360	4.730	0.330	0.320	0.740
Diesel Tractors/Loaders/Backhoes	1.850	8.210	7.220	1.370	1.330	0.950
Diesel Bulldozers	0.360	1.380	4.760	0.330	0.320	0.740
Diesel Front-end Loaders	0.380	1.550	5.000	0.350	0.340	0.740
Diesel Forklifts	1.980	7.760	8.560	1.390	1.350	0.950
Diesel Generator Set	1.210	3.760	5.970	0.730	0.710	0.810
						536.000
						536.200
						536.000
						536.300
						535.800
						529.700
						529.700
						530.200
						536.300
						691.100
						536.300
						536.200
						690.800
						587.300

CALCULATION SHEET-COMBUSTION EMISSIONS-CONSTRUCTION

1. Emission factors (EF) were generated using USEPA's preferred model for nonroad sources, the NONROAD2008 model. Emissions were modeled for the 2007 calendar year. The VOC EFs include exhaust and evaporative emissions. The VOC evaporative components included in the NONROAD2008 model are diurnal, hotsoak, running loss, tank permeation, hose permeation, displacement, and spillage. The construction equipment age distribution in the NONROAD2008 model is based on the population in U.S. for the 2007 calendar year.

Emission Calculations								
Type of Construction Equipment	VOC tons/yr	CO tons/yr	NOx tons/yr	PM-10 tons/yr	PM-2.5 tons/yr	SO ₂ tons/yr	CO ₂ tons/yr	
Water Truck	0.303	1.423	3.775	0.282	0.275	0.509	368.579	
Diesel Road Paver	0.010	0.039	0.130	0.009	0.009	0.020	14.181	
Diesel Dump Truck	0.035	0.164	0.436	0.033	0.032	0.059	42.528	
Diesel Excavator	0.027	0.103	0.365	0.025	0.025	0.059	42.552	
Diesel Hole Cleaners/Trenchers	0.047	0.226	0.538	0.043	0.041	0.069	49.598	
Diesel Bore/Drill Rigs	0.095	0.363	1.135	0.079	0.078	0.116	84.057	
Diesel Cement & Mortar Mixers	0.097	0.368	1.155	0.076	0.075	0.116	84.057	
Diesel Cranes	0.176	0.521	2.294	0.136	0.132	0.293	212.678	
Diesel Graders	0.042	0.162	0.563	0.039	0.038	0.088	63.828	
Diesel Tractors/Loaders/Backhoes	0.424	1.882	1.655	0.314	0.305	0.218	158.411	
Diesel Bulldozers	0.029	0.109	0.378	0.026	0.025	0.059	42.552	
Diesel Front-end Loaders	0.030	0.123	0.397	0.028	0.027	0.059	42.544	
Diesel Forklift	0.908	3.557	3.924	0.637	0.619	0.436	316.685	
Diesel Generator Set	0.222	0.689	1.095	0.134	0.130	0.149	107.695	
Total Emissions	2.444	9.732	17.839	1.862	1.810	2.246	1629.947	

Conversion factors	
Grams to tons	1.102E-06

MOVES2010a MODEL ON-ROAD TRANSPORTATION AIR EMISSIONS-
DELIVERY MATERIALS AND COMMUTING DURING CONSTRUCTION ACTIVITIES

MOVES 2010a					
Source	Fuel type	Number of vehicles	Miles traveled per day	Days of travel per year	Miles traveled per year
Passenger cars	Gasoline	20	20	260	104,000
Passenger truck	Gasoline	20	20	260	104,000
Light commercial truck	Diesel	2	20	260	10,400
Short-haul truck	Diesel	4	120	260	124,800
Long-haul truck	Diesel	1	80	260	20,800

Emission Factors (MOVES 2010a Emission Rates) ¹							
Source	VOC (g/mile)	CO (g/mile)	NOx (g/mile)	PM-10 (g/mile)	PM-2.5 (g/mile)	SO ₂ (g/mile)	CO ₂ and CO ₂ Equivalents (g/mile)
Passenger cars	8.497	2.892	0.576	0.019	0.018	0.005	320
Passenger truck	3.645	5.449	1.168	0.027	0.025	0.007	439
Light commercial truck	4.460	2.158	2.986	0.164	0.190	0.005	609
Short-haul truck	2.438	2.273	6.095	0.270	0.313	0.007	929
Long-haul truck	2.519	3.610	14.776	0.625	0.726	0.016	2,020

Total Emission for On-Road Construction Activities (tons/year)							
Source	VOC	CO	NOx	PM-10	PM-2.5	SO ₂	CO ₂ and CO ₂ Equivalents
Passenger cars	0.974	0.331	0.066	0.002	0.002	0.001	37
Passenger truck	0.418	0.624	0.134	0.003	0.003	0.001	50
Light commercial truck	0.051	0.025	0.034	0.002	0.002	0.000	7
Short-haul truck	0.335	0.313	0.838	0.037	0.043	0.001	128
Long-haul truck	0.058	0.083	0.339	0.014	0.017	0.000	46
Total	1.836	1.376	1.411	0.059	0.067	0.003	268

Key:

Short-haul trucks category include trucks such as dump trucks and cement trucks.

Long-haul trucks category includes trucks such as semi-trailer (18 wheeler).

1. Emission factors were generated by USEPA preferred model MOVES2010a. MOVES simulates daily motor vehicle operations and produces emission rates. MOVES emission rates include sources from engine combustion, tire wear, brake wear, evaporative fuel permeation, vapor venting and leaking (running and parking), and crankcase loss. Emission rates are daily averages for each of the criteria pollutants. The averages are from a combination of vehicle operations such as: stop and go, highway travel, acceleration at on-ramps, parking, start-up, extended idle, etc.

MOVES 2010a					
Source	Fuel type	Number of vehicles	Miles traveled per day	Days of travel per year	Miles traveled per year
Passenger cars	Gasoline	326	20	260	1,695,200
Passenger truck	Gasoline	326	20	260	1,695,200
Light commercial truck	Diesel	2	20	260	10,400
Short-haul truck	Diesel	2	20	260	10,400
Long-haul truck	Diesel	2	20	260	10,400

Emission Factors (MOVES 2010a Emission Rates) ¹							
Source	VOC (g/mile)	CO (g/mile)	NOx (g/mile)	PM-10 (g/mile)	PM-2.5 (g/mile)	SO ₂ (g/mile)	CO ₂ and CO ₂ Equivalents (g/mile)
Passenger cars	8.497	2.892	0.576	0.019	0.018	0.005	320
Passenger truck	3.645	5.449	1.168	0.027	0.025	0.007	439
Light commercial truck	4.460	2.158	2.986	0.164	0.190	0.005	609
Short-haul truck	2.438	2.273	6.095	0.270	0.313	0.007	929
Long-haul truck	2.519	3.610	14.776	0.625	0.726	0.016	2,020

Total Emission for On-Road Commuter Activities (tons/year)							
Source	VOC	CO	NOx	PM-10	PM-2.5	SO ₂	CO ₂ and CO ₂ Equivalents
Passenger cars	15.87	5.40	1.08	0.04	0.03	0.01	598
Passenger truck	6.81	10.18	2.18	0.05	0.05	0.01	821
Light commercial truck	0.05	0.02	0.03	0.00	0.00	0.00	7
Short-haul truck	0.03	0.03	0.07	0.00	0.00	0.00	11
Long-haul truck	0.03	0.04	0.17	0.01	0.01	0.00	23
Total	22.79	15.67	3.53	0.10	0.09	0.02	1,459

Key:

Short-haul trucks category includes trucks such as dump trucks and cement trucks.

Long-haul trucks category includes trucks such as semi-trailers (18 wheelers).

1. Emission factors were generated by the USEPA-preferred model MOVES2010a. MOVES simulates daily motor vehicle operations and produces emission rates. MOVES emission rates include sources from engine combustion, tire wear, brake wear, evaporative fuel permeation, vapor venting and leaking (running and parking), and crankcase loss. Emission rates are daily averages for each of the criteria pollutants. The averages are from a combination of vehicle operations such as stop and go, highway travel, acceleration at on-ramps, parking, start-up, extended idle, etc.

BACK-UP DIESEL GENERATORS

Assumptions for Combustion Emissions					
Type of Construction Equipment	Num. of Units	hp	Hrs/day	Days/yr	hp/hr
Diesel Generator	2	600	4	24	115,200

Emission Factors (lb/hp-hr)						
Type of Construction Equipment	VOC	CO	NOx	PM-10	PM-2.5	CO ₂
Diesel Generator	0.000705	0.0055	0.024	0.00154	0.00082	1.16

Emission Calculations (tons/yr)						
Type of Construction Equipment	VOC	CO	NOx	PM-10	PM-2.5	CO ₂
Diesel Generator	0.0368	0.2874	1.2541	0.0805	0.0428	60.6145

Conversion factors	
lbs to metric ton	0.000453592

1. Emission factors (EF) were based on AP-42 Stationary Internal Combustion Sources. Table 3.4-1. Gaseous Emission Factors for Large Stationary Diesel and All Stationary Dual-Fuel Engines. Uncontrolled emission factors were used.

NATURAL GAS BOILERS

Assumptions for Combustion Emissions					
Type of Construction Equipment	Num. of Units	MMBtu/hr	Hrs/day	Days/yr	MMBtu/yr
Boiler	1	50	16	90	72,000

Emission Factors (lb/10^6 scf)							
Type of Construction Equipment	VOC	CO	NOx	PM-10	PM-2.5	SO ₂	CO ₂
Boiler	5.5	84	0.64	7.6	5.7	0.6	120,000

Converted Emission Factors (lbs/MMBtu)							
Type of Construction Equipment	VOC	CO	NOx	PM-10	PM-2.5	SO ₂	CO ₂
Boiler	0.01	0.08	0.00	0.01	0.01	0.001	117.65

Emission Calculations (tons/yr)							
Type of Construction Equipment	VOC	CO	NOx	PM-10	PM-2.5	SO ₂	CO ₂
Boiler	0.18	2.69	0.02	0.24	0.18	0.02	3,842

Conversion factors	
lb/^6 to MMBtu/10^6	1020
lbs to metric ton	0.000453592

1. Emission factors (EF) were based on USEPA's AP-42 Section 1.4 Natural Gas Combustion. Table 1.4-1 and Table 1.4-2.

CALCULATION SHEET-FUGITIVE DUST-CONSTRUCTION

Assumptions for Combustion Emissions

Construction Fugitive Dust Emission Factors

	Emission Factor	Units	Source
General Construction Activities	0.19 ton PM-10/acre-month	MRI 1996; EPA 2001; EPA 2006	
New Road Construction	0.42 ton PM-10/acre-month	MRI 1996; EPA 2001; EPA 2006	

PM-2.5 Emissions

PM-2.5 Multiplier 0.10 (10% of PM-10 emissions assumed to be PM-2.5) EPA 2001; EPA 2006

Control Efficiency

0.50 (assume 50% control efficiency for PM-10 and PM2.5 emissions) EPA 2001; EPA 2006

Project Assumptions

Construction Area (0.19 ton PM-10/acre-month)

Duration of Soil Disturbance in Project	12 months	Conversion Factors	0.000022957 acres per foot
Length	0 miles		5280 feet per mile
Length (converted)	0 feet		
Width	0 feet		
Area	10.00 acres		

Staging Areas

Duration of Construction Project	12 months
Length	0 miles
Length (converted)	0 feet
Width	0 feet
Area	2.00 acres

Project Emissions (tons/year)			
	PM-10 uncontrolled	PM-10 controlled	PM-2.5 uncontrolled PM-2.5 controlled
Construction Area (0.19 ton PM-10/a	22.80	11.40	2.28 1.14
Staging Areas	0.38	0.19	0.04 0.02
Total	23.18	11.59	2.32 1.16

References:

- USEPA 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999*. EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.
- USEPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants*. Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.
- MRI 1996. *Improvement of Specific Emission Factors (BACM Project No. 1)*. Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March 29, 1996.

Assumptions for Fugitive Emissions

General Construction Activities Emission Factor

0.19 ton PM-10/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The area-based emission factor for construction activities is based on a study completed by the Midwest Research Institute (MRI) Improvement of Specific Emission Factors (BACM Project No. 1), March 29, 1996. The MRI study evaluated seven construction projects in Nevada and California (Las Vegas, Coachella Valley, South Coast Air Basin, and the San Joaquin Valley). The study determined an average emission factor of 0.11 ton PM-10/acre-month for sites without large-scale cut/fill operations. A worst-case emission factor of 0.42 ton PM10/acre-month was calculated for sites with active large-scale earth moving operations. The monthly emission factors are based on 168 work-hours per month (MRI 1996). A subsequent MRI Report in 1999, Estimating Particulate Matter Emissions from Construction Operations, calculated the 0.19 ton PM10/acre-month emission factor by applying 25% of the large-scale earthmoving emission factor (0.42 ton PM-10/acre-month) and 75% of the average emission factor (0.11 ton PM-10/acre-month).

The 0.19 ton PM-10/acre-month emission factor is referenced by the EPA for non-residential construction activities in recent procedures documents for the National Emission Inventory (EPA 2001; EPA 2006). The 0.19 ton PM10/acre-month emission factor represents a refinement of EPA's original AP-42 area-based total suspended particle (TSP) emission factor in Section 13.2.3 Heavy Construction Operations. In addition to the EPA, this methodology is also supported by the South Coast Air Quality Management District and the Western Regional Air Partnership (WRAP) which is funded by the EPA and is administered jointly by the Western Governor's Association and the National Tribal Environmental Council. The emission factor is assumed to encompass a variety of non-residential construction activities including building construction (commercial, industrial, institutional, governmental), public works, and travel on unpaved roads. The EPA National Emission Inventory documentation assumes that the emission factors are uncontrolled and recommends a control efficiency of 50% for PM10 and PM2.5 in PM nonattainment areas.

New Road Construction Emission Factor

0.42 ton PM-10/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The emission factor for new road construction is based on the worst-case conditions emission factor from the MRI 1996 study described above (0.42 tons PM-10/acre-month). It is assumed that road construction involves extensive earthmoving and heavy construction vehicle travel resulting in emissions that are higher than other general construction projects. The 0.42 ton PM10/acre-month emission factor for road construction is referenced in recent procedures documents for the EPA National Emission Inventory (EPA 2001; EPA 2006).

PM-2.5 Multiplier 0.10

PM-2.5 emissions are estimated by applying a particle size multiplier of 0.10 to PM10 emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

Control Efficiency for PM-10 and PM-2.5 0.50

The EPA National Emission Inventory documentation recommends a control efficiency of 50% for PM-10 and PM-2.5 in PM nonattainment areas. Wetting controls will be applied during project construction (EPA 2006).

References:

EPA 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999*. EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.

EPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants*. Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.

MRI 1996. *Improvement of Specific Emission Factors (BACM Project No. 1)*. Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March 29, 1996.

CALCULATION SHEET-SUMMARY OF EMISSIONS

Assumptions for Combustion Emissions										
Emission Source	VOC	CO	NOx	PM-10	PM-2.5	SO ₂	CO ₂	CO ₂ Equivalents	Total CO ₂	
Combustion Emissions	2.44	9.73	17.84	1.86	1.81	2.25	1629.95	5,609	7,239	
Construction Site-Fugitive PM-10	NA	NA	NA	11.59	1.16	NA	NA	NA	NA	
Construction Workers Commuter & Trucking	1.84	1.38	1.41	0.06	0.07	0.00	268.14	NA	NA	268
Total Emissions-CONSTRUCTION	4.28	11.11	19.25	13.51	3.04	2.25	1,630	5,609	7,507	
Diesel Generators	0.04	0.29	1.25	0.08	0.04	0.42	61	NA	NA	61
Natural Gas Boilers	0.18	2.69	0.02	0.24	0.18	0.02	3,842	NA	NA	3,842
Operational Emissions	22.79	15.67	3.53	0.10	0.09	0.02	NA	1,459	1,459	
Total Operational Emissions	23.00	18.65	4.81	0.42	0.32	0.47	3,903	1,459	5,362	
<i>De minimis</i> Threshold (1)	100	100	100	70	100	100	NA	NA	NA	25,000

1. Note that Bernalillo County is a maintenance area for CO (USEPA 2010b).

Carbon Equivalents	
N ₂ O or NOx	311
Methane or VOCs	25

Source: EPA 2010 Reference, Tables and Conversions, Inventory of U.S. Greenhouse Gas Emissions and Sinks; <http://www.epa.gov/climatechange/emissions/usinventoryreport.html>

