Draft

Environmental Assessment Addressing the UH-1N Replacement Beddown

at Kirtland Air Force Base, New Mexico

June 2020

AIR FORCE GLOBAL STRIKE COMMAND

TWENTIETH AIR FORCE

SERVING FREEDOM'S FINEST

PRIVACY ADVISORY

This EA is provided for public comment in accordance with the National Environmental Policy Act (NEPA), the President's Council on Environmental Quality (CEQ) NEPA Regulations (40 CFR Parts 1500–1508), and 32 CFR Part 989, Environmental Impact Analysis Process (EIAP).

The EIAP provides an opportunity for public input on Air Force decision-making, allows the public to offer inputs on alternative ways for the Air Force to accomplish what it is proposing, and solicits comments on the Air Force's analysis of environmental effects.

Public commenting allows the Air Force to make better, informed decisions. Letters or other written or oral comments provided may be published in the EA. As required by law, comments provided will be addressed in the EA and made available to the public. Providing personal information is voluntary. Any personal information provided will be used only to identify your desire to make a statement during the public comment portion of any public meetings or hearings or to fulfill requests for copies of the EA or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of EA; however, only the names of the individuals making comments and specific comments will be disclosed. Personal home addresses and phone numbers will not be published in the EA.

DRAFT FINDING OF NO SIGNIFICANT IMPACT (FONSI)
FOR THE
ENVIRONMENTAL ASSESSMENT
ADDRESSING THE UH-1N REPLACEMENT BEDDOWN
KIRTLAND AIR FORCE BASE, NEW MEXICO

Pursuant to provisions of the National Environmental Policy Act, 42 United States Code Parts 4321–4347, as amended; implementing Council on Environmental Quality Regulations, 40 Code of Federal Regulations (CFR) Parts 1500–1508; and 32 CFR Part 989, *Environmental Impact Analysis Process*, the United States Air Force (USAF) prepared an Environmental Assessment (EA) to address the proposed replacement of Bell UH-1N helicopters with Boeing MH-139 medium lift helicopters at Kirtland Air Force Base (AFB), Bernalillo County, New Mexico. The Vice Chairman Joint Chiefs of the Staff approved replacement of the UH-1N in 2016. This decision was made after it was determined that maintaining the aging UH-1N fleet was becoming costlier and Air Education and Training Command (AETC) would no longer be able to meet its requirement to train aircrew if the aging fleet of UH-1N aircraft are not replaced with a newer state-of-the-art helicopter.

The purpose of the Proposed Action is to replace the aging UH-1N helicopter fleet with an updated helicopter, the MH-139. The aging UH-1Ns are critical assets for 58th Special Operations Wing (SOW), used to train aircrew for weapon site security, missile convoy operations, and emergency evacuation operations. The aging UH-1Ns first entered service over 40 years ago and are nearing the end of their life cycle. Delivery of the new MH-139s would allow 58 SOW at Kirtland AFB to continue providing graduate and refresher aircrew training and continue their current USAF mission. The need for the Proposed Action is to address increased helicopter maintenance costs, resolve reliability deficiencies and enhance mission capability, improve training of military personnel, as well as maintain tactical superiority in operations throughout USAF.

The EA addressing the replacement of Bell UH-1N helicopters with Boeing MH-139 medium lift helicopters at Kirtland AFB, New Mexico, attached hereto and incorporated herein, analyzes the potential impacts of the aircraft replacement. The EA considers all potential impacts of the Proposed Action and the No Action Alternative. The EA also considers cumulative environmental impacts with other projects within the Region of Influence.

PROPOSED ACTION (EA § 2.1, pages 2-1 to 2-5)

The currently fleet of 6 UH-1N primary aircraft inventory (PAI) assigned to 58 SOW would be replaced with 8 PAI and 2 backup aircraft inventory, for a total of 10 MH-139 aircraft. There would be a period of overlap of UH-1N and replacement MH-139 aircraft operating at the installation until all MH-139 aircraft arrive and operations decrease to a steady state. It is anticipated that the six UH-1N helicopters would remain at Kirtland AFB until fiscal year (FY) 2027 before they are completely phased out in FY 2028. Increases in manning for the MH-139 have been mandated by Air Force Global Strike Command (AFGSC). The additional training throughput for the MH-139 drives an increase in flight hours and aircraft assigned.

Current operations would increase by approximately 90 percent from current UH-1N operations by FY 2026 due to the overlap in operations between the UH-1N and MH-139. In FY 2028, the steady state would be a 31 percent increase in MH-139 operations compared to current UH-1N operations. An increase in personnel is also anticipated during the overlap of UH-1N and MH-139 aircraft, which would also decrease to a steady state in FY 2028. However, because of the increase in PAI and BAI, the Proposed Action would result in an increase in personnel from current UH-1N training activities of approximately 6 students and approximately 19 permanent party personnel. In FY 2026 through FY 2027, the highest overlap years, the increase in personnel would be approximately 22 students and approximately 37 permanent party personnel. To support

the beddown and mission of the MH-139 aircraft, it would be necessary to demolish 29,235 square feet of existing facilities and construct 115,576 square feet of new facilities on the installation to provide space for additional personnel and training facilities.

NO ACTION ALTERNATIVE (EA § 2.3.1, page 2-5)

The No Action Alternative was analyzed to provide a baseline of the existing environmental, social, and economic conditions the Proposed Action was compared against. Under the No Action Alternative, the USAF would take no action. Replacement of the aging UH-1N aircraft with modern MH-139 medium lift aircraft at Kirtland AFB would not occur. Demolition and construction for additional personnel and training facilities would not be required. 58 SOW would continue to conduct their mission using the UH-1N aircraft and support facilities. Maintenance costs for the aging UH-1N would continue to increase and AETC would no longer meet its requirement to train aircrew for weapon site security, missile convoy operations, or emergency evacuation operations.

In addition, the UH-1N is not capable of meeting mission requirements at AFGSC and USAF District of Washington and increasing operations/maintenance costs would make it critical for USAF to replace it for the purposes of National Defense. If the UH-1N is not replaced at Kirtland AFB, there would not be a training unit to support the MH-139. The mission support now provided by the UN-1N would eventually fail due to its inability to continue to effectively support this mission.

SUMMARY OF FINDINGS

Based on the scope of the Proposed Action, the following environmental resource areas were eliminated from detailed analysis: land use, geological resources, biological resources, and environmental justice **(EA § 3, pages 3-1 to 3-3)**. Under the Proposed Action, activities would not result in a change in current land use designations. However, visual landscape would be changed due to the proposed demolition and construction of facility additions and parking lots. The Proposed Action would not change or result in impacts to topography of soils, geological hazards, or on regional geological features that would cause an existing geological feature to become unstable.

The Proposed Action would not result in impacts on sensitive wildlife or sensitive habitat at Kirtland AFB or the 42 helicopter landing zones (HLZs) on Bureau of Land Management (BLM)-administered public lands. An EA was prepared in 2019 to analyze the use of BLM-administered public lands for 58 SOW training. Current aircraft activities on BLM-administered public lands include the 42 HLZs used for helicopter (HH-60G Pave Hawk and UH-1N) training and will continue to be used by the MH-139. No federally listed threatened or endangered, proposed, or candidate species, nor officially designated critical habitat occur within the project area at Kirtland AFB or the HLZs on BLM-administered public lands. Additionally, the Proposed Action would not affect species population trends or impact population levels. In addition, disturbed areas would be revegetated following construction.

The Proposed Action would not result in adverse impacts on environmental justice populations from minor noise and traffic experienced by those within 0.5 miles of the project area. An increase of 90 percent in UH-1N/MH-139 aircraft operations would result in an increase of approximately one sortie at any one particular HLZ per week. The Proposed Action would not cause disproportionately high and adverse health or environmental effects on any minority or low income populations within 0.5 miles of the project area.

As a result, USAF anticipates no short- or long-term impacts on land use, geological resources, biological resources, or environmental justice at Kirtland AFB or the HLZs on BLM-administered public lands. Environmental analyses within the EA focused on the following resource areas:

Airspace Management (EA § 3.1, pages 3-3 to 3-5). The Proposed Action would result in a long-term, minor, adverse impact on airspace management. All current airspace designations and management procedures would remain the same. No change or alteration of existing flight routes is proposed. The minor, adverse impact is attributed to a 90 percent increase in helicopter operations from UH-1N and MH-139 aircraft. No impacts on airspace management would results from the proposed transition from the UH-1N to the MH-139. In terms of total operations occurring at the Sunport, the addition of 855 operations is less than 1 percent of total aircraft operations. The minor increase in total operations would have only negligible effects on airspace management in the vicinity of Kirtland AFB and the Sunport. Applying an increase of 90 percent to evaluate the impact during the peak years of operations at the HLZs on BML-administered public lands, would result in an increase of one sortie at any one particular HLZ per week. This level of increase would not create airspace traffic management problems at any of the HLZs and is determined to have no adverse impact on airspace management. Proper scheduling and coordination with FAA would continue to be in practice and any potential adverse impact on airspace management would be eliminated.

Noise (EA § 3.2, pages 3-5 to 3-11). The Proposed Action would result in short- and long-term impacts on the noise environment. A short-term, negligible to minor, adverse impact would result from construction noise during demolition and construction of buildings. Long-term impacts would result from the incremental increase in aircraft operations at the Sunport and HLZs. Construction workers would implement best management practices (BMPs) to reduce adverse noise impacts on sensitive noise receptors as needed. Noise from construction equipment could be managed by ensuring that all equipment has the manufacturer's recommended noise abatement measures installed, and inspecting all construction equipment at periodic intervals to ensure proper maintenance and presence of noise control devices. Because Kirtland AFB is adjacent to the Albuquerque International Sunport and is an active military installation that supports aircraft and live-fire weapons training, the intermittent increase in construction noise would be a fraction of the noise generated routinely on and off the installation. Given the limited amount of noise that heavy equipment would generate, the remote location, and the existing operational noise from aircraft activities, these effects would be less than significant.

Long-term, negligible, adverse impacts would result from an incremental increase in aircraft operations at the Sunport. The sound levels (i.e., effective perceived noise level) from a MH-139 overflight are approximately 3 decibels (dB) less than that of a UH-1N for all operating conditions. The increase in aircraft operations would amount to an overall increase in noise of less than 0.1 A-weighted decibel (dBA) day/night sound level (DNL) at the Sunport.

Long-term, negligible, adverse impacts would be expected to occur within the area adjacent to approach and departure routes. Helicopter operations would increase from 2.6 to 3.1 overflights per day along these routes; however, individual overflights would be approximately 3 dB quieter with the proposed MH-139 aircraft. Helicopter operations could continue to be loud to individuals under the flight path, but not sufficient enough to generate greater than 65 dBA DNL beyond the immediate area. Aircraft activities under these routes, beyond the immediate vicinity of the Sunport, would remain compatible with noise sensitive land uses.

Long-term, negligible, adverse impacts would be expected to occur within areas adjacent to the HLZs on BLM-administered public lands. The locations and training operations at the HLZs utilized by the 58 SOW would remain unchanged. The overall noise environment at these locations would not be perceptibly different when compared to existing conditions. Existing sources of noise at the HLZs would continue to consist primarily of intermittent rotorcraft activities, with ongoing noise such as distant automobiles, and natural sounds such as weather and vegetation noise. Intermittent helicopter operations would be clearly audible to individuals under the flight path, particularly at night; however, air operations at the HLZs would not be sufficient to

generate greater than 65 dBA DNL. Aircraft activities at these locations would remain completely compatible with noise sensitive land uses.

Air Quality (EA § 3.3, pages 3-11 to 3-17). The Proposed Action would result in a short-term, negligible, adverse impact on air quality. Kirtland AFB is within Bernalillo County, New Mexico, which is in attainment status for all criteria pollutants, except carbon monoxide. Emissions of criteria pollutants and greenhouse gases would be directly produced from activities such as operation of heavy equipment, workers commuting daily to and from the project area in their personal vehicles, heavy duty diesel vehicles hauling materials and debris to and from the project area, and ground disturbance. However, such emissions would only be temporary in nature and produced only when construction activities are occurring. The air pollutant of greatest concern is particulate matter, such as fugitive dust. Fugitive dust air emissions would be greatest during the initial site grading and excavation and would vary day to day depending on the work phase, level of activity, and prevailing weather conditions. A fugitive dust control construction permit would be obtained, and a fugitive dust control plan that outlines specific dust control measures that would be implemented during construction would be developed. These BMPs and environmental control measures could reduce uncontrolled particulate matter emissions from a construction site by approximately 50 percent depending upon the number of BMPs and environmental control measures required and the potential for particulate matter air emission.

Estimated air emissions from the Proposed Action can be compared to the 100 tons per year (tpy) de minimis level. Emissions of all criteria pollutants would be well below the 100 tpy threshold. Projected carbon monoxide emissions are 9.60 tpy; therefore, no conformity determination is required for the Proposed Action.

Negligible air emissions would be produced from heating the new building space. The proposed additions to two buildings in the project area would be heated using existing boilers and furnaces within these buildings. Heating the additions would produce negligible new emissions. Newly installed boiler or furnaces in this facility would have a heat capacity below permitting thresholds, and emergency generators are not expected to be needed.

Long-term, negligible, adverse and beneficial impacts on air quality would result from the proposed helicopter flight operations. No changes to the air emissions currently produced from helicopter flight operations would occur until 2024 and 2025 when the MH-139s begin operations. Most pollutants would experience a negligible increase in emissions; however, nitrogen oxides and volatile organic carbons would experience a negligible decrease. Because no single HLZ would bare a disproportionate number of operations, the air emissions produced at each HLZ would be a small fraction of that for Kirtland AFB.

A long-term, negligible, adverse impact on air quality also would result from the addition of personnel (as students and permanent party members) to Kirtland AFB. These new personnel would produce air emissions from their daily commute to and from the installation. A net increase of 37, 59, and 25 permanent party personnel and students would occur for 2024 and 2025, 2026 and 2027, and 2028 and onward, respectively.

Water Resources (EA § 3.4, pages 3-17 to 3-20). The Proposed Action would not result in short- or long-term adverse impacts on floodplains or groundwater at Kirtland AFB or the HLZs on BLM-administered public lands. The anticipated number of personnel to be added to Kirtland AFB is approximately 87 persons by FY 2028. The additional 87 personnel would account for an increase in water demand of 0.03 percent per year by 2028. Groundwater at the HLZs would not be impacted because helicopter training does not involve the use of groundwater. 58 SOW training operations would have no direct effects on surface waters at the HLZs, as creeks, springs, and drainages at the HLZs would not be altered. Although the southeast corner of HLZ 31 is within

the 100-year floodplain, 58 SOW training operations would not affect the natural functions of the floodplain.

The Proposed Action would result in short-term, negligible, adverse impacts on surface waters at Kirtland AFB during demolition and construction. All project activities would be reviewed to ensure proper erosion and sediment control procedures are incorporated into the project design. All ground-disturbing activities would adhere to federal, state, and local regulations, obtain all necessary permits, and comply with all BMPs. The use of water for dust suppression during ground-disturbing activities would be minimal and not cause flooding or move soil particles into stormwater drainage systems. Appropriate stormwater drainage controls would be adhered; therefore, no adverse long-term impacts on surface water are anticipated

Cultural Resources (EA § 3.5, pages 3-20 to 3-24). The Proposed Action would result in short-term, negligible, adverse impacts on cultural resources. Only those properties found eligible for NRHP listing have the potential to be impacted by the proposed demolition and construction; therefore, only one building within the project area, Hangar 1001, was determined eligible within the Area of Potential Effect and was assessed for effects. New construction proposed on land would be approximately 100 feet northeast of Hangar 1001. The alteration would occur in a parking lot that currently does not contribute to the setting of the hangar. Construction would occur within an area of the installation with modern buildings and structures currently visible in the hangar's vicinity to the north. Thus, the overall effect to the setting and overall integrity of Hangar 1001 would not be adverse. The Proposed Action also includes renovation to the interior of Hangar 1001.There are no specific features within the interior of the hangar that have been identified as character-defining and it is characterized as an open space. As all alterations would occur on the interior and would not impact significant character-defining features of the building, the overall effect would not be adverse. Should an inadvertent discovery of human or cultural remains occur during demolition and construction, all project activities shall stop, the Kirtland AFB Cultural Resources Program Manager would be notified, and operational procedures outlined in the ICRMP would be followed.

No short- or long-term impacts on cultural resources would result from the proposed transition from the UH-1N to the MH-139. In addition, no short- or long-term adverse impacts on architectural, 8archaeological, or traditional cultural properties would result from 58 SOW training operations at any of the BLM-administered public lands.

Infrastructure (EA § 3.6, pages 3-24 to 3-29). Because no changes to infrastructure at the HLZs would result from the Proposed Action, no short- or long-term impacts would occur. The Proposed Action would have short- and long-term, negligible to minor, adverse impacts on the transportation system at Kirtland AFB. Short-term, minor, adverse impacts would be expected on traffic patterns on Kirtland AFB. During construction, the number of construction-related vehicles accessing the installation would increase, and installation roadways would be used by haul and delivery trucks; however, transportation is not expected to occur during peak travel times. Early coordination would ensure necessary safety precautions are taken and would allow ample advance notice to affected commuters and personnel. Long-term, negligible, adverse impacts on transportation would result from the increase in personnel at Kirtland AFB. These impacts would be expected to occur as more persons or vehicles would be traveling on the roads or using public transit. Additional personnel would create an increase in traffic passing through the gate system at the installation. It is expected that the current gate system and public transit system would be able to accommodate the small number of additional personnel.

The Proposed Action would have short- and long-term, negligible, adverse impacts on the installation's utility systems. Short-term interruptions to utility systems may occur during the disconnection of buildings proposed for demolition as well as connection of the newly constructed

facilities. Service interruptions could also be experienced should utility lines need to be rerouted outside of the construction area. Construction activities would require minimal amounts of water, primarily for dust suppression. Although water demand would increase slightly from construction activities, this increase would be temporary and would not be expected to exceed existing capacity. Long-term impacts on the electrical system would be negligible. The proposed new construction would be expected to result in additional kilowatt usage due to additional square footage and installation personnel. Long-term impacts on the water supply system would be negligible as water usage would increase by 0.03 percent. Although 87 new personnel would be added to Kirtland AFB under the Proposed Action, this low number would result in negligible impacts on the installation's sanitary sewer/wastewater systems. However, it is anticipated that the electrical supply, natural gas, water supply, sewer/wastewater, and communications systems would be able to accommodate the new facilities and additional personnel without exceeding current capacities.

The Proposed Action would result in long-term, negligible, adverse impacts on the liquid fuel supply system. The addition of MH-139s plus the planned increase in flight operations would increase the demand for liquid fuel. It is anticipated that contractors would be able to keep up with the increased demand of liquid fuel as Kirtland AFB has more than enough capacity to serve current and proposed future needs.

The Proposed Action would have short- and long-term minor, adverse impacts on solid waste management as demolition and construction activities would generate solid wastes. Construction debris would consist primarily of recyclable and reusable building materials such as concrete, metals (e.g., piping and wiring), and removed vegetation. To reduce the amount of waste disposed, materials that could be recycled or reused would be diverted from landfills to the greatest extent possible. Site-generated scrap materials would be separated and recycled off site. Clean fill material, ground-up asphalt, and broken-up cement would be diverted from the landfills and reused whenever possible.

Hazardous Materials and Wastes (EA § 3.7, pages 3-29 to 3-36). The Proposed Action would result in short-term, negligible, adverse impacts on hazardous materials and wastes. Construction personnel would implement standard BMPs, and comply with existing standard operating procedures and applicable federal and state laws governing the use, generation, storage, and transportation of hazardous materials. Construction equipment would be maintained according to manufacturer's specifications and drip mats would be placed under parked equipment as needed. All hazardous and petroleum wastes generated would be handled, stored, and disposed of in accordance with the installation's Hazardous Waste Management Plan and federal, state, and local regulations.

Short-term increases in the generation of hazardous and petroleum wastes would result during the transition period when the total number of aircraft on the installation temporarily increases and long-term increases would result from the two additional PAI in the installation's aircraft fleet and increased aircraft operations.

Short-term, minor, adverse and long-term, negligible to minor, beneficial impacts would occur from proposed demolition and construction. Because of their age, Hangar 1001 and Buildings 924 and 953 within the project area are assumed to contain toxic substances such as asbestos-containing materials (ACM), lead-based paint (LBP), and polychlorinated biphenyls (PCBs). Renovation and demolition of these facilities would result in short-term, minor, adverse impacts. All ACM-, LBP-, and PCB-contaminated debris would be disposed of at a USEPA-approved landfill by certified contractors. Contractors would wear appropriate personal protective equipment and would be required to adhere to all federal, state, and local regulations as well as the installation's management plans for toxic substances. New building construction is not likely

to include the use of these substances because federal policies and laws limit their use in building construction applications. Long-term, negligible to minor, beneficial impacts through renovation and demolition would result from reducing the potential for future human exposure to and reducing the amount of ACMs, LBP, and PCBs to maintain at Kirtland AFB.

It is possible that unknown, potentially hazardous wastes could be discovered or unearthed during ground-disturbing activities. In such cases, construction contractors would immediately cease work, contact appropriate installation personnel, and await sampling and analysis results before taking any further action. Any unknown wastes determined to be hazardous would be managed or disposed of in accordance with applicable laws and regulations.

The Proposed Action would not result in an impact on or from Environmental Restoration Program, Military Munitions Response Program, and Department of Energy Environmental Restoration sites; therefore, the Proposed Action is not expected to result in an impact on or from the Environmental Restoration Program.

Safety (EA § 3.8, pages 3-36 to 3-39). The Proposed Action would result in short- and long-term impacts on the safety of contractors and military personnel. Short-term, negligible, adverse impacts would result on contractor safety. Construction and demolition activities would slightly increase the health and safety risk to personnel within the project area. The selected construction contractor would be required to develop a comprehensive health and safety plan for each individual project containing site-specific guidance and direction to prevent or minimize potential risks. Construction personnel would be responsible for compliance with applicable federal, state, and local safety regulations and would be educated through daily briefings to review daily activities and potential hazards. Project areas would be appropriately delineated and posted with access limited to construction personnel.

No short- or long-term, adverse impacts on public health and safety at Kirtland AFB are expected. Because the proposed demolition and construction would occur within the boundaries of Kirtland AFB, an active military installation that is not open to the public, the Proposed Action would not pose a safety risk to the public or off-installation areas.

Long-term, negligible, adverse impacts on flight safety could be expected under the Proposed Action. Although the MH-139 would be a new aircraft in the USAF fleet, all mission-related activities associated with the Proposed Action would be carried out in accordance with government safety policies and plans. Aircraft maintenance activities similar to those already performed on the UN-1N would continue to be accomplished in accordance with applicable USAF safety regulations, published USAF Technical Orders, and standards prescribed by USAF occupational safety and health requirements. 58 SOW would continue to follow the requirements of the Bird/Wildlife Aircraft Strike Hazard Plan and the semi-annual bird hazard working group to help reduce bird/wildlife incidents at Kirtland AFB and the HLZs.

Socioeconomics (EA § 3.9, pages 3-39 to 3-41). No short- or long-term impacts on socioeconomics would result from 58 SOW training operations at the HLZs on BLM-administered public lands, because the Proposed Action would not result in changes in population, housing, or the economy. The Proposed Action would result in a short- and long-term, negligible, beneficial impact on socioeconomics. Direct and indirect, short-term, beneficial impacts on the local economy of the Albuquerque Metropolitan Statistical Area would result from increased payroll tax revenue and the purchase of construction materials and goods in the area.

Long-term, negligible, beneficial impacts on the local economy would occur from the increase of permanent party personnel and their dependents stationed at Kirtland AFB. The Proposed Action would result in a net increase of 37 permanent party personnel between FY 2024 and FY 2025,

22 students between FY 2026 and FY 2027, and 19 permanent party personnel and 6 students from FY 2028 onward. These increases of personnel at the installation would result in increased purchases of goods and services (e.g., retail, restaurants, and hospitals) in the local community resulting in beneficial impacts on the local economy.

Cumulative Impacts (EA § 4, pages 4-1 to 4-11). USAF has concluded that no significant adverse cumulative impacts would result from activities associated with implementation of the Proposed Action when considered with past, present, and reasonably foreseeable future projects at Kirtland AFB and the region of influence.

CONCLUSION

Based on the description of the Proposed Action as set for in the EA, all activities were found to comply with the criteria or standards of environmental quality and were coordinated with the appropriate federal, state, and local agencies. The attached EA and this FONSI were made available to the public for a 30-day review period. Agencies have been coordinated with throughout the EA development process and their comments were incorporated into the analysis of potential environmental impacts performed as part of the EA as appropriate.

FINDING OF NO SIGNIFICANT IMPACT

Based on my review of the facts and analyses contained in the attached EA, conducted under the provisions of National Environmental Policy Act, Council on Environmental Quality Regulations, and 32 CFR Part 989, I conclude that the Proposed Action would not have a significant environmental impact, either by itself or cumulatively, with other known projects. Accordingly, an Environmental Impact Statement is not required. The signing of this Finding of No Significant Impact completes the environmental impact analysis process.

DAVID S. MILLER, Colonel, USAF
Commander

Date

Attachment: *Environmental Assessment Addressing the UH-1N Replacement Beddown at Kirtland Air Force Base, New Mexico*.

COVER SHEET

DRAFT
ENVIRONMENTAL ASSESSMENT ADDRESSING THE UH-1N REPLACEMENT BEDDOWN AT KIRTLAND AIR FORCE BASE, NEW MEXICO

Responsible Agencies: United States Air Force (USAF), Air Force Global Strike Command (AFGSC), 377th Air Base Wing, Air Education and Training Command (AETC).

Affected Location: Kirtland Air Force Base (AFB), New Mexico.

Report Designation: Draft Environmental Assessment (EA).

Abstract: This EA was developed in conformance with USAF's Environmental Impact Analysis process supporting the replacement of Bell UH-1N helicopters at Kirtland AFB with Boeing MH-139 medium lift helicopters. The Vice Chairman Joint Chiefs of the Staff approved replacement of the UH-1N in 2016. This decision was made after it was determined that maintaining the aging UH-1N fleet was becoming costlier and Air Education and Training Command (AETC) would no longer be able to meet its requirement to train aircrew for weapon site security, missile convoy operations, or emergency evacuation operations if the aging fleet of UH-1N aircraft are not replaced with a newer state-of-the-art helicopter. USAF executed an open bid competition for an off-the-shelf helicopter with minimum requirements conservative enough to allow multiple manufacturers to participate. In September 2018, USAF selected the Boeing MH-139 as the replacement aircraft.

The current fleet of 6 UH-1Ns assigned to the 58th Special Operations Wing (SOW) at Kirtland AFB would be replaced with 8 primary aircraft inventory and 2 backup aircraft inventory for a total of 10 MH-139 aircraft. However, there would be a period of overlap of UH-1N and replacement MH-139 aircraft operating at the installation until all replacement aircraft arrive and operations decrease to a steady-state. Specifically, there would be an increase in the number of sorties flown each year by 58 SOW as part of their training operations. The estimated increase in the annual number of flights would be an increase from the current 945 sorties to 1,800 sorties by fiscal year (FY) 2025 through FY 2026, a 90 percent increase. Sorties after FY 2028 would be reduced to 1,238 sorties annually, which would be an overall increase of 31 percent from the current 945 sorties. Increases in manning for the MH-139 have been mandated by AETC. The additional training throughput for the MH-139 drives the increases in flight hours, aircraft assigned, and additional personnel.

Current training activities at Kirtland AFB would increase from the current total number of students and permanent party personnel of 62 to 99 in the first quarter of FY 2024, and then to 121 in the third quarter of FY 2024 through the fourth quarter of FY 2026. This increase would be due to the overlap in operations between the UH-1N and MH-139. With completion of the transition to the MH-139 helicopter by the first quarter of FY 2027, the steady state for students and permanent party personnel at 58 SOW would be 87.

Delivery of the first MH-139s are scheduled for FY 2024 with the scheduled delivery of six MH-139s. To support the beddown and mission of the MH-139 aircraft, it would be necessary to demolish and construct facilities on the installation to provide space for additional personnel and training facilities.

Under the No Action Alternative, replacement of aging UH-1N aircraft with modern MH-139 medium lift aircraft at Kirtland AFB would not occur. Demolition and construction for additional personnel and training facilities would not be required. 58 SOW would continue to conduct their mission using the UH-1N aircraft and support facilities. Maintenance costs for the aging UH-1N would continue to increase impacting AETC's ability to continue to meet its requirement to train aircrew for weapon site security, missile convoy operations, or emergency evacuation operations while those units would continue to fly the outdated UH-1N. As other units transition to the MH-139 aircraft, the 58 SOW would no longer be able to conduct its mission, since it would not have the correct aircraft to train aircrew.

Written comments and inquiries regarding this document should be directed by mail to the Kirtland AFB National Environmental Policy Act Program Manager, 377 MSG/CEIEC, 2050 Wyoming Boulevard SE, Suite 116, Kirtland AFB, New Mexico 87117-5270, or via email to kirtlandNEPA@us.af.mil. Letters or other written comments provided may be published in the Final EA. Any personal information provided will be kept confidential. Private addresses will be compiled to develop a mailing list for those requesting copies of the Final EA. However, only the names of the individuals making comments and their specific comments will be disclosed. Personal home addresses and phone numbers will not be published in the Final EA.

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APPENDICES

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ACRONYMS AND ABBREVIATIONS

ABCWUA	Albuquerque-Bernalillo County Water Utility Authority
ABW	Air Base Wing
ACAM	Air Conformity Applicability Model
ACM	asbestos-containing materials
ADSL	average daily student load
AEHD-AQD	Albuquerque Environmental Health Department Air Quality Division
AETC	Air Education and Training Command
AFB	Air Force Base
AFGSC	Air Force Global Strike Command
AFI	Air Force Instruction
AFRL	Air Force Research Laboratory
APE	Area of Potential Effect
ATTW	Aircrew Training and Test Wing
BAI	backup aircraft inventory
BASH	Bird/Wildlife Aircraft Strike Hazard
BFF	Bulk Fuels Facility
BLM	Bureau of Land Management
BMP	best management practice
CAC	Corrective Action Complete
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CGP	Construction General Permit
CO	carbon monoxide
CO_2e	carbon dioxide equivalent
CRH	combat rescue helicopter
CTW	Crew Training Wing
CWA	Clean Water Act
dB	decibel
dBA	a-weighted decibel
DNL	day/night sound level
DOD	Department of Defense
DOE	Department of Energy
EA	Environmental Assessment
EESOH-MIS	Enterprise Environmental, Safety, and Occupational Health Management Information System
EISA	Energy Independence Security Act
EO	Executive Order
ER	Environmental Restoration
ERP	Environmental Restoration Program
FAA	Federal Aviation Administration
ft	foot/feet
FY	fiscal year
GHGs	greenhouse gases
HLZ	helicopter landing zone
HWMP	Hazardous Waste Management Plan
ICRMP	Integrated Cultural Resources Management Plan
INM	Integrated Noise Model
IPaC	Information for Planning and Consultation
LATN	Low Altitude Tactical Navigation
LBP	lead based paint
L_{eq}	equivalent sound level
mgd	million gallons per day
MMRP	Military Munitions Response Program
mph	miles per hour
MSA	Metropolitan Statistical Area
MSG	Mission Support Group
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFA	No Further Action
NHPA	National Historic Preservation Act
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NOA	Notice of Availability
NO_x	Nitrogen oxides
NPDES	National Pollution Discharge Elimination System
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
O_3	ozone

OSH	occupational safety and health
OSHA	Occupational Safety and Health Administration
OWS	oil/water separators
PAI	primary aircraft inventory
PCB	polychlorinated biphenyl
PERCHA	Prescribed Endemic Refuge Connected Habitat Area
PJ/CRO	Pararescue/Combat Rescue Officer
PM_{10}	particulate matter less than or equal to 10 microns
$PM_{2.5}$	particulate matter less than or equal to2.5 microns
POL	petroleum, oils, and lubricants
PPE	personal protective equipment
RCRA	Resource Conservation and Recovery Act
RQS	Rescue Squadron Operations
RTI	Regional Training Institute
SF	square feet/foot
SFG	Security Forces Group
SHPO	State Historic Preservation Officer
SMA	Special Mission Aviator
SNL	Sandia National Laboratories
SO_2	sulfur dioxide
SOW	Special Operations Wing
SO_x	sulfur oxides
SPCC	Spill Prevention, Control, and Countermeasures
SWPPP	Stormwater Pollution Prevention Plan
TEAMS	Technical Evaluation Assessment Monitor Site
THPO	Tribal Historic Preservation Officer
tpy	tons per year
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USC	United States Code
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
UTC	Urban Training Compound
UXO	unexploded ordnance
VOC	volatile organic compounds

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1.0 PURPOSE OF AND NEED FOR THE ACTION

1.1 INTRODUCTION

This Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] Part 4321 et seq.) and the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1500–1508). The United States Air Force (USAF) is also required to follow USAF NEPA-implementing regulations, 32 CFR Part 989, as amended.

This section describes the purpose of and need for replacement of the 58 Special Operations Wing (SOW) fleet of Bell UH-1N helicopters at Kirtland Air Force Base (AFB) with Boeing MH-139 medium lift helicopters. This EA addresses several elements associated with the UH-1N replacement. To support the beddown and mission of the MH-139 aircraft, it would be necessary to demolish and construct facilities to provide space for additional personnel and training facilities.

1.2 KIRTLAND AIR FORCE BASE OVERVIEW

Kirtland AFB is in Bernalillo County, southeast of the city of Albuquerque, New Mexico (see **Figure 1-1**). The installation encompasses 51,585 acres with elevations that range from 5,200 to almost 8,000 feet (ft) above mean sea level. The Manzanita Mountains on its eastern boundary rise to over 10,000 ft (KAFB 2018a). The land within the installation is owned by a variety of entities (see **Table 1-1**). USAF controls 44,052 acres of the land within Kirtland AFB. The northwest portion of Kirtland AFB is developed. The remaining portion of the installation is relatively undeveloped and is used for training and testing missions.

Table 1-1. Kirtland AFB Land Ownership

Kirtland AFB Lands	Acres
USAF Fee Owned	25,612
United States Forest Service (USFS) withdrawn to the Department of Defense (DOD)	15,891
Bureau of Land Management (BLM) withdrawn to DOD	2,549
USAF Total (USAF Controlled Lands)	44,052
Department of Energy (DOE) Fee Owned	2,938
USFS withdrawn to DOE	4,595
DOE Total	7,533
GRAND TOTAL	**51,585**

Source: KAFB 2012

Surrounding land uses adjacent to Kirtland AFB include the USFS Cibola National Forest to the northeast and east; the Isleta Pueblo Reservation to the south; Bernalillo County developments to the southwest; residential and business areas of the city of Albuquerque to the west and north; and the Albuquerque International Sunport, hereafter referred to as the Sunport, directly to the northwest.

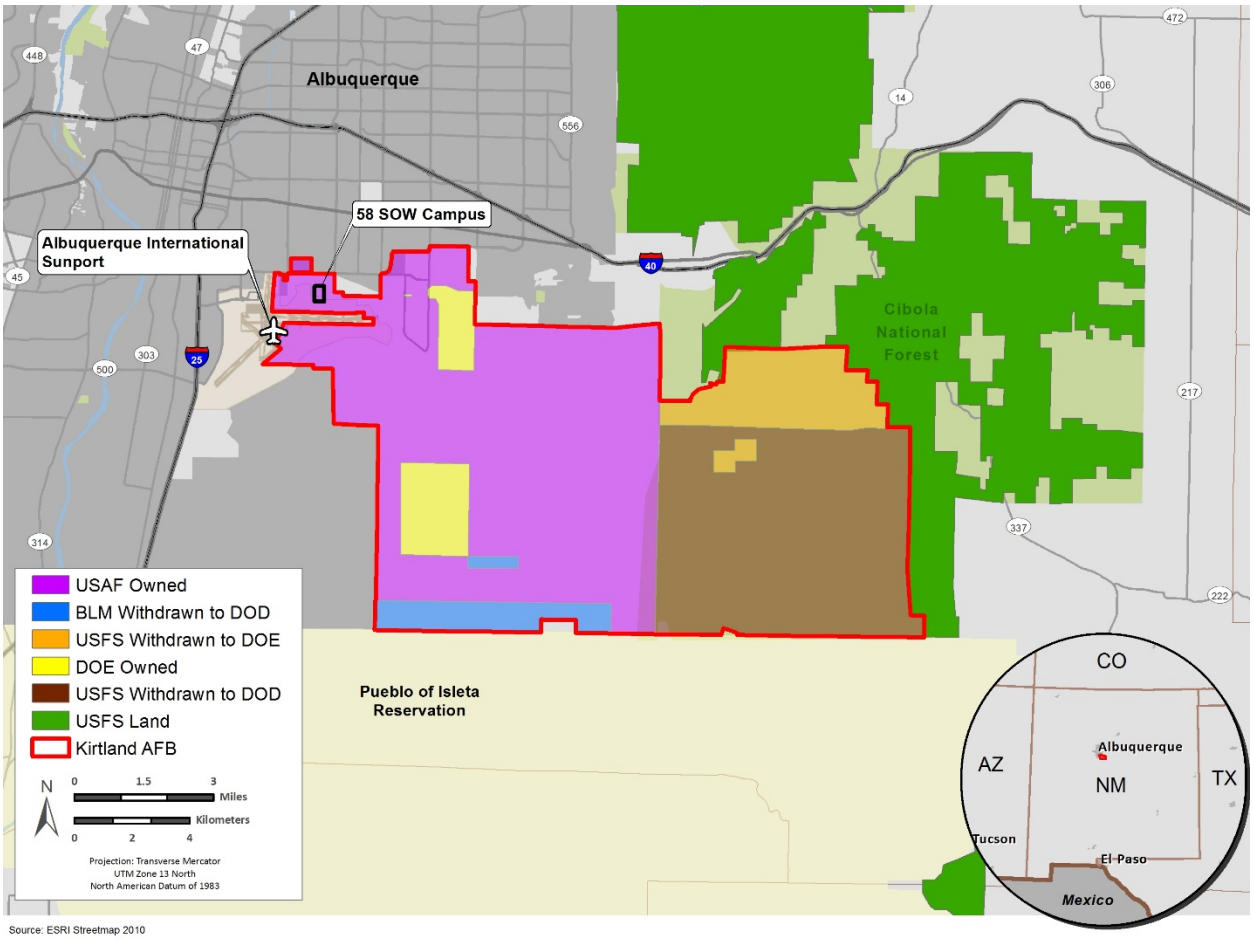


Figure 1-1. Kirtland AFB Vicinity Map with Land Ownership and Withdrawn Area

Kirtland AFB is the sixth largest installation in the USAF. It is operated by the 377th Air Base Wing (ABW), a unit of Air Force Global Strike Command's (AFGSC) 20th Air Force and the host unit at Kirtland AFB. Missions at Kirtland AFB fall into four major categories: research, development, and testing; readiness and training; munitions maintenance; and support to installation operations for more than 100 mission partners. The primary mission of 377 ABW is to execute readiness and support operations for American air power.

Kirtland AFB is a center for research, development, and testing of nonconventional weapons, space and missile technology, laser warfare and much more. Organizations involved in these activities include the Air Force Nuclear Weapons Center, Air Force Operational Test and Evaluation Center, Space and Missile Systems Center, Air Force Inspection Agency, Air Force Safety Center, Air Force Research Laboratory (AFRL), DOE, and Sandia National Laboratories (SNL). In addition, 377 ABW ensures readiness and training of airmen for worldwide duty and operates the airfield for present and future USAF operations, prepares personnel to deploy worldwide on a moment's notice, and keeps the installation secure. Mission partners involved in these activities include the 58 SOW, 150 SOW (New Mexico Air National Guard), and USAF Pararescue School.

1.3 58 SOW AND UH-1N HELICOPTER OVERVIEW

Located at Kirtland AFB since April 1994, 58 SOW's mission is to train warriors, professionalize Airmen, and employ airpower. This mission has existed at Kirtland AFB since 20 February 1976, when the 1550th Aircrew Training and Test Wing (ATTW) moved from Hill AFB. The 1550 ATTW trained helicopter and fixed-wing aircrews. USAF re-designated the unit as the 1550th Combat Crew Training Wing in May 1984, inactivating it in October 1991, and transferring the training mission to the 542nd Crew Training Wing (CTW). USAF then inactivated the 542 CTW in April 1994, transferring the training mission to the 58 SOW (Malloy 2019).

Drawing upon its history and experience with combat search and rescue operations, 58 SOW now serves as a test center and school house for rescue aircrews and technology for USAF. 58 SOW provides undergraduate, graduate, and refresher aircrew training for special operations and personnel rescue by helicopter as well as fixed-wing and tilt-rotor aircraft. 58 SOW utilizes the UH-1N to train aircrew for weapon site security, mission convoy operations, and emergency evacuation operations. 58 SOW trains over 17,000 students per year and operates six different aircraft systems, including two versions of the Bell Huey helicopter (TH-1H and UH-1N), one version of the Sikorksy Pave Hawk helicopter (HH-60G – soon to be updated with the HH-60W), two versions of the Lockheed Martin C-130 Hercules fixed-wing transport (HC-130J and MC-130J), and one version of the Bell Boeing Osprey tilt-rotor transport (CV-22) (Malloy 2019). Use of the UH-1N helicopter is detailed below.

An EA was prepared in 2019 to analyze the use of BLM-administered public lands for helicopter landing zone (HLZ) and opposing force training. Analysis in the BLM EA determined that HLZ use on BLM-administered public lands would not have a significant impact. Current aircraft activities on BLM-administered public lands include 42 HLZs used for helicopter (HH-60G Pave Hawk and UH1-N) training. Flight activities would continue to use established HLZs, flight paths, and installation entry and exit procedures.

Manufactured by Bell Helicopter/Textron Inc., the UH-1N is the military version of the Bell 212, one of the numerous variants of the original "Huey" first designed and flown in 1956. The UH-1N entered USAF inventory in 1970 as a light-lift utility helicopter used to support various missions. The 57.3-ft-long helicopter can be deployed for airlift of emergency security forces, security and surveillance of off-base weapons convoys, distinguished visitor airlift, disaster response operations, civilian search and rescue, medical evacuation, airborne cable inspections, support to aircrew survival school, aerial testing, and routine missile site support and transport. The UH-1N has a crew of three (pilot, co-pilot, and Special Mission Aviator [SMA]) and is capable of flight in instrument and nighttime conditions. When configured for passengers, the UH-1N can seat up to 13 people, but actual passenger loads are dependent on fuel loads and atmospheric conditions (may be less). The medical evacuation configuration can accommodate up to six litters. Without seats or litters, the cabin can carry bulky, oversized cargo. Access to the cabin is through two full-sized sliding doors. At Kirtland AFB, 58 SOW has a current aircraft fleet of six UH-1N primary aircraft inventory (PAI) and no backup aircraft inventory (BAI).

Because the UH-1N helicopters first entered service over 40 years ago, and most of the helicopters currently being used are nearing the end of their life cycle, USAF began searching for a suitable replacement. In September 2018, Boeing was awarded a contract to produce the MH-139 helicopter for USAF. MH-139 helicopters are derived from the Leonardo AW139 and are expected to provide significant upgrades in speed, range, endurance, payload capacity, and survivability. Ten helicopters are scheduled to be delivered to Kirtland AFB between fiscal year (FY) 2024 and FY 2027. The first 6 MH-139s are scheduled to be delivered to 58 SOW in the first

quarter of FY 2024, with delivery of all 10 MH-139s being complete by the fourth quarter of FY 2027. Boeing's contract also includes operations, maintenance, training systems, and support equipment for the MH-139 aircraft (Malloy 2019, Beck 2019).

1.4 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The purpose of the Proposed Action is to replace the aging UH-1N helicopter fleet with an updated helicopter, the MH-139. The aging UH-1Ns are critical assets for 58 SOW, used to train aircrew for weapon site security, missile convoy operations, and emergency evacuation operations. The aging UH-1Ns first entered service over 40 years ago, as discussed in **Section 1.3**, and are nearing the end of their life cycle. Delivery of the new MH-139s would allow 58 SOW at Kirtland AFB to continue providing graduate and refresher aircrew training and continue their current USAF mission.

The need for the Proposed Action is to address increased helicopter maintenance costs, resolve reliability deficiencies and enhance mission capability, improve training of military personnel, as well as maintain tactical superiority in operations throughout USAF. 58 SOW would continue to train all rotary-wing graduate level aircrew for the foreseeable future, to include the MH-139. Increases in manning for the MH-139 have been mandated by AFGSC. The additional training throughput for the MH-139 drives the increases in flight hours and aircraft assigned. As the MH-139 model replaces the UH-1N model throughout the USAF fleet, 58 SOW would need to accept the MH-139 in order to continue training aircrew for those operations. It is anticipated that all UH-1N helicopters at Kirtland AFB would be phased out by FY 2028.

Kirtland AFB is considered the prime location for USAF graduate level vertical lift training. It has all of the required established training assets to include: refueling tracks, high-desert/high-density altitude training, and access to gunnery ranges. Separating the MH-139 from the existing training assets would greatly reduce effectiveness and increase training costs. Further, the helicopter/aircraft maintenance personnel and logistics lines are already in place at Kirtland AFB within the 58 SOW Campus. To support the beddown and mission of the MH-139 aircraft, it would be necessary to make updates to existing facilities or to demolish and construct facilities at an alternative location to provide space for additional personnel and training facilities.

1.5 SCOPE OF THE ENVIRONMENTAL ASSESSMENT

The scope of this EA includes the actions proposed; alternatives considered; a description of the existing environment; and direct, indirect, and cumulative impacts. The scope of the Proposed Action and the range of alternatives to be considered are presented in **Section 2**. USAF NEPA-implementing regulations, 32 CFR Part 989 (as amended), require consideration of the No Action Alternative, which is analyzed to provide the baseline against which the environmental impacts of implementing the range of alternatives addressed can be compared. The EA identifies appropriate measures that are not already included in the Proposed Action or alternatives in order to avoid, minimize, or reduce adverse environmental impacts, if necessary.

USAF regulations under 32 CFR Part 989 provide procedures for environmental impact analysis for the USAF to comply with NEPA and CEQ NEPA regulations. Air Force Policy Directive 32-70, *Environmental Quality*, states USAF will comply with applicable federal, state, and local environmental laws and regulations, including NEPA. If significant impacts are predicted under NEPA, USAF would decide whether to conduct mitigation to reduce impacts below the level of significance, prepare an Environmental Impact Statement, or abandon the Proposed Action. This EA would also be used to guide USAF in implementing the Proposed Action in a manner

consistent with USAF standards for environmental stewardship should the Proposed Action be approved for implementation.

This EA identifies the environmental impacts of the Proposed Action and No Action Alternative on affected resource areas. Per CEQ regulations (40 CFR § 1501.7[a][3]), only those resource areas that apply to the Proposed Action and alternatives are analyzed. The following resource areas are analyzed and discussed for potential impacts: Airspace Management, Noise, Air Quality, Water Resources, Cultural Resources, Infrastructure, Hazardous Materials and Wastes, Safety, and Socioeconomics.

1.6 INTERGOVERNMENTAL COORDINATION/CONSULTATIONS

1.6.1 Interagency and Intergovernmental Coordination and Consultations

Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, as amended by EO 12416, requires federal agencies to provide opportunities for consultation by elected officials of state and local governments that would be directly affected by a federal proposal. In compliance with NEPA, Kirtland AFB notified relevant stakeholders about the Proposed Action and alternatives (see **Appendix A** for all stakeholder coordination materials). The notification process provided these stakeholders the opportunity to cooperate with Kirtland AFB and provide

Per the requirements of Section 106 of the National Historic Preservation Act (NHPA) and implementing regulations (36 CFR Part 800), Section 7 of the Endangered Species Act and implementing regulations (50 CFR Part 17) including the Migratory Bird Treaty Act, findings of effect and a request for concurrence were transmitted to the State Historic Preservation Officer (SHPO) and the US Fish and Wildlife Service (USFWS). A brief summary of comments received is shown below. All correspondence with SHPO and USFWS is included in **Appendix A**.

- ***SHPO.*** During project scoping, a Section 106 letter was sent to the SHPO providing details of the proposed transition from the UH-1N to the MH-139 aircraft and associated demolition and construction to occur at Kirtland AFB.
- ***USFWS.*** The USFWS Information for Planning and Consultation (IPaC) tool listed a total of five threatened, endangered, or candidate species that may be present in the project area at Kirtland AFB. These species are: New Mexico meadow jumping mouse, Mexican spotted owl, southwestern willow flycatcher, yellow-billed cuckoo, and the Rio Grande silvery minnow; however, the project area at Kirtland AFB is outside the critical habitat for all five listed species (USFWS 2020, KAFB 2018a). The IPaC code for this summary is 02ENNM00-2020-SLI-0573.

Scoping letters were provided to relevant federal, state, and local agencies. The agencies were requested to provide information regarding impacts of the Proposed Action on the natural environment or other environmental aspects that they feel should be included and considered in the preparation of this EA. During the scoping period, USAF did not receive responses from any government agencies. All correspondence with federal, state, and local agencies is included in **Appendix A**.

1.6.2 Government to Government Coordination and Consultations

EO 13175, *Consultation and Coordination with Indian Tribal* Governments directs federal agencies to coordinate and consult with Native American tribal governments whose interests may be directly and substantially affected by activities on federally administered lands. Consistent with that EO, *Department of Defense Instruction 4710.02, DOD Interactions with Federally-*

Recognized Tribes, and Air Force Instruction (AFI) 90-2002, *Air Force Interactions with Federally-Recognized Tribes*, federally-recognized tribes that are historically affiliated with the geographic region will be invited to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes. **Appendix A** contains a listing of all Native American tribal governments contacted for comment on the EA.

Scoping letters were sent to Native American tribes whose ancestors were historically affiliated with the land underlying Kirtland AFB, inviting them to consult on the proposed undertakings outlined within this EA. Additionally, USAF verbally contacted the Native American tribes to verify and validate they had no additional concerns. During the scoping period, USAF received one response from the Southern Ute Indian Tribe indicating no adverse effect. All correspondence is included in **Appendix A**.

1.6.3 Public and Agency Review of Draft EA

A Notice of Availability (NOA) for the Draft EA will be published in *The Albuquerque Journal* announcing the availability of the Draft EA. Letters will be provided to relevant federal, state, and local agencies and Native American tribal governments informing them that the Draft EA is available for review. The publication of the NOA will initiate a 30-day comment period. A copy of the Draft EA will be made available for review at the San Pedro Public Library at 5600 Trumbull Avenue SE, Albuquerque, New Mexico 87108. A copy of the Draft EA will also be made available for review online at *http://www.kirtland.af.mil* under the Environment Information tab. If you are unable to access online materials or are still social distancing, please contact the Kirtland AFB NEPA Office at (505) 846-6446 to request a copy be mailed to you. At the closing of the public review period, applicable comments from the general public and interagency and intergovernmental coordination/consultation will be incorporated into the analysis of potential environmental impacts performed as part of the EA, where applicable, and included in **Appendix A** of the Final EA.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

USAF is proposing to replace the aging Bell UH-1N aircraft at Kirtland AFB with the Boeing MH-139 medium lift aircraft. The current fleet of 6 UH-1N PAI assigned to 58 SOW would be replaced with 8 PAI and 2 BAI, for a total of 10 MH-139 aircraft. There would be a period of overlap of UH- 1N and replacement MH-139 aircraft operating at the installation until all MH-139 aircraft arrive and operations decrease to a steady-state. It is expected that the six UH-1N helicopters would remain at Kirtland AFB until FY 2027 before they are completely phased out in FY 2028. Increases in manning for the MH-139 have been mandated by AFGSC. The additional training throughput for the MH-139 drives the increases in flight hours and aircraft assigned.

Table 2-1 presents current and projected flight operations. Current operations would increase by approximately 90 percent from current UH-1N operations by FY 2026 due to the overlap in operations between the UH-1N and MH-139. In FY 2028, the steady state would be a 31 percent increase in MH-139 operations compared to current UH-1N operations. An increase in personnel is also anticipated during the overlap of UH-1N and MH-139 aircraft, which would also decrease to a steady-state in FY 2028. However, because of the increase in PAI and BAI, the Proposed Action would result in an increase in personnel from current UH-1N training activities of approximately 6 students or the average daily student load (ADSL) and approximately 19 permanent party personnel. In FY 2026 through FY 2027, the highest overlap years, the increase in personnel would be approximately 22 students ADSL and approximately 37 permanent party personnel.

Table 2-1. Current and Projected Flight Operations

		Current through December 2023	FY 2024 through FY 2025	FY 2026 through FY 2027	Full Transition Quarter 1 of FY 2028
Aircraft		6 UH-1N	6 UH-1N	4 UH-1N	0 UH-1N
		0 MH-139	6 MH-139	10 MH-139	10 MH-139
Flight Operations (Sorties) Annually		945	1,400	1,800	1,238
Personnel	ADSL	25	25	47	31
	Permanent Party Personnel	37	74	74	56

Source: (Beck 2020)

Table 2-2 compares characteristics of the UH-1N and the MH-139. The MH-139 has a slightly smaller rotor diameter and length; however, its five bladed rotor system would require more hangar space than is required for the same number of UH-1N aircraft. The two bladed rotor system on the UH-1N can be aligned with the aircraft when parked, whereas the five bladed rotor system of the MH-139 would require spacing based on the full circumference of the five bladed system. The height of the MH-139 is approximately 1.5 ft taller than the UH-1N. The overall speed of the MH-139 is 202 miles per hour (mph) compared to the UH-1N at 139.15 mph. The MH-139 also has a greater ceiling altitude and range. Overall, the UH-1N and MH-139 are similar in size, but the MH-139 has updated technology, which improves its performance and effectiveness (Leonardo 2020).

Table 2-2. UH-1N and MH-139 Comparison

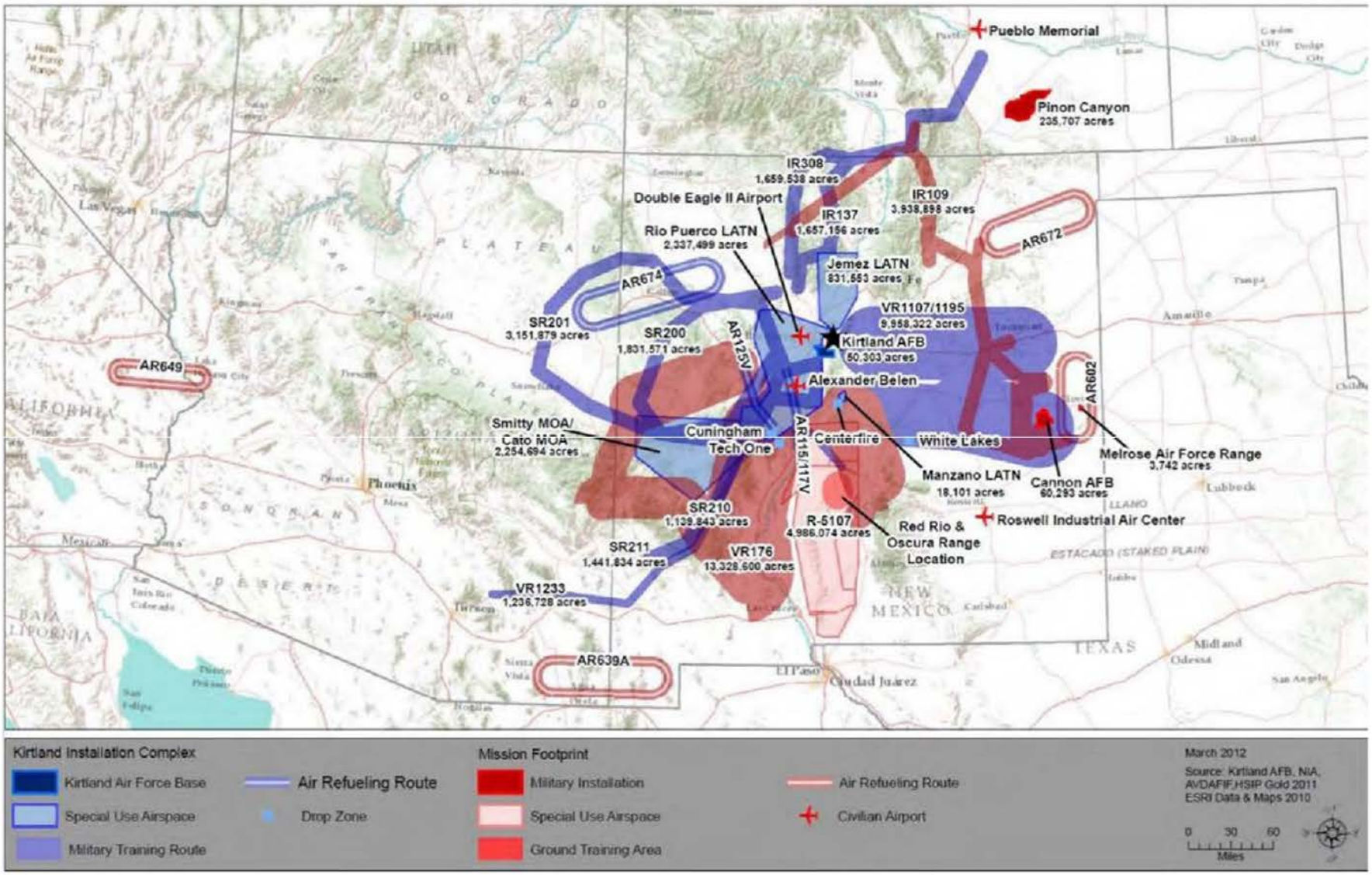
Characteristics	UH-1N	MH-139
Rotor Diameter	48 ft	45.28 ft
Length	57.3 ft	54.63 ft
Height	14.9 ft	16.4 ft
Weight (maximum)	10,500 pounds	14,330 pounds
Speed	139.15 mph	202 mph
Ceiling Altitude	17,300 ft	20,341 ft
Range	286 miles	808 miles
Crew	Three (pilot, co-pilot, and SMA)	Four (pilot, co-pilot, and two SMAs)
Engine	Pratt & Whitney Turbo Twin-Pac T400-CP-400 developing 1,134 horsepower	Two Pratt & Whitney PT6C turboshaft engines developing 1,750 horsepower each driving a five-bladed main rotor and four-bladed tail rotor.
Introduction Date	1971	2022 (projected)

Source: (MF 2018)

Under the Proposed Action, 58 SOW training activities would increase student production with the addition of the Flight Training Unit for the MH-139. Kirtland AFB would have to convert all aircrew from the UH-1N to the MH-139 while also producing initial qualification to new aircrew. Kirtland AFB has a Letter of Agreement with Air Traffic Control and the city of Albuquerque that establishes helicopter arrival and departure routes for efficient management of helicopter traffic at the Sunport. These routes would remain unchanged. **Figure 2-1** presents the 58 SOW mission footprint. Approximately 148,512 air operations (i.e., a single take-off or landing) occur at the Sunport each year, or 407 each day on average. 58 SOW conducts 945 air operations with the UH-1N at the Sunport each year (2.6 each day on average), which accounts for approximately 0.6 percent of the airport-wide operations. The anticipated increase in UH-1N and MH-139 flight operations in FY 2026 through FY 2027 would be 90 percent. This would equate to an increase to 1,800 flight operations per year. By FY 2028, the steady state of 1,238 annual flight operations would be a 31 percent increase with the full transition to the MH-139 helicopter compared to the current UH-1N flight operations. (Beck 2019).

To support the beddown and mission of the MH-139 aircraft, USAF proposes to demolish and construct facilities within the 58 SOW Campus at Kirtland AFB to provide space for additional personnel and training facilities. **Figure 2-2** presents the proposed demolition and construction associated with the Proposed Action. USAF proposes to construct a 35,776 square foot (SF) addition to Building 951, the newly constructed combat rescue helicopters (CRH) simulator facility, and a 4,800 SF addition to Building 957.The addition to Building 951 would include a 120-ft by 60-ft bay room (7,200 SF) and a 90-ft by 40-ft room (3,600 SF) to accommodate MH-139 flight simulators and other training equipment.

The 4,800 SF addition to Building 957 would include areas for functions and personnel displaced by demolition such as registrar office, library, student equipment storage, and night vision goggle storage. Building 953 would be demolished to provide adequate space for the addition to Building 951. Building 924 would be demolished to provide additional parking spaces. Building 924, a 17,287 SF facility, was constructed in 1955 and Building 953, an 11,948 SF facility, was constructed in 1964. Because of their age, it is anticipated that testing and abatement of asbestos-containing material and lead-based paint would be required for the demolition of these buildings. The Proposed Action includes the addition or reconfiguration of parking areas as shown on **Figure 2-2**. Approximately 450 parking spaces, covering an estimated 186,250 SF, would be included to



* VR-1233, Tech One drop zone and White Lakes drop zone no longer exist.

** Sunport helicopter arrival and departure routes are not represented in the image.

Figure 2-1. 58 SOW Mission Footprint

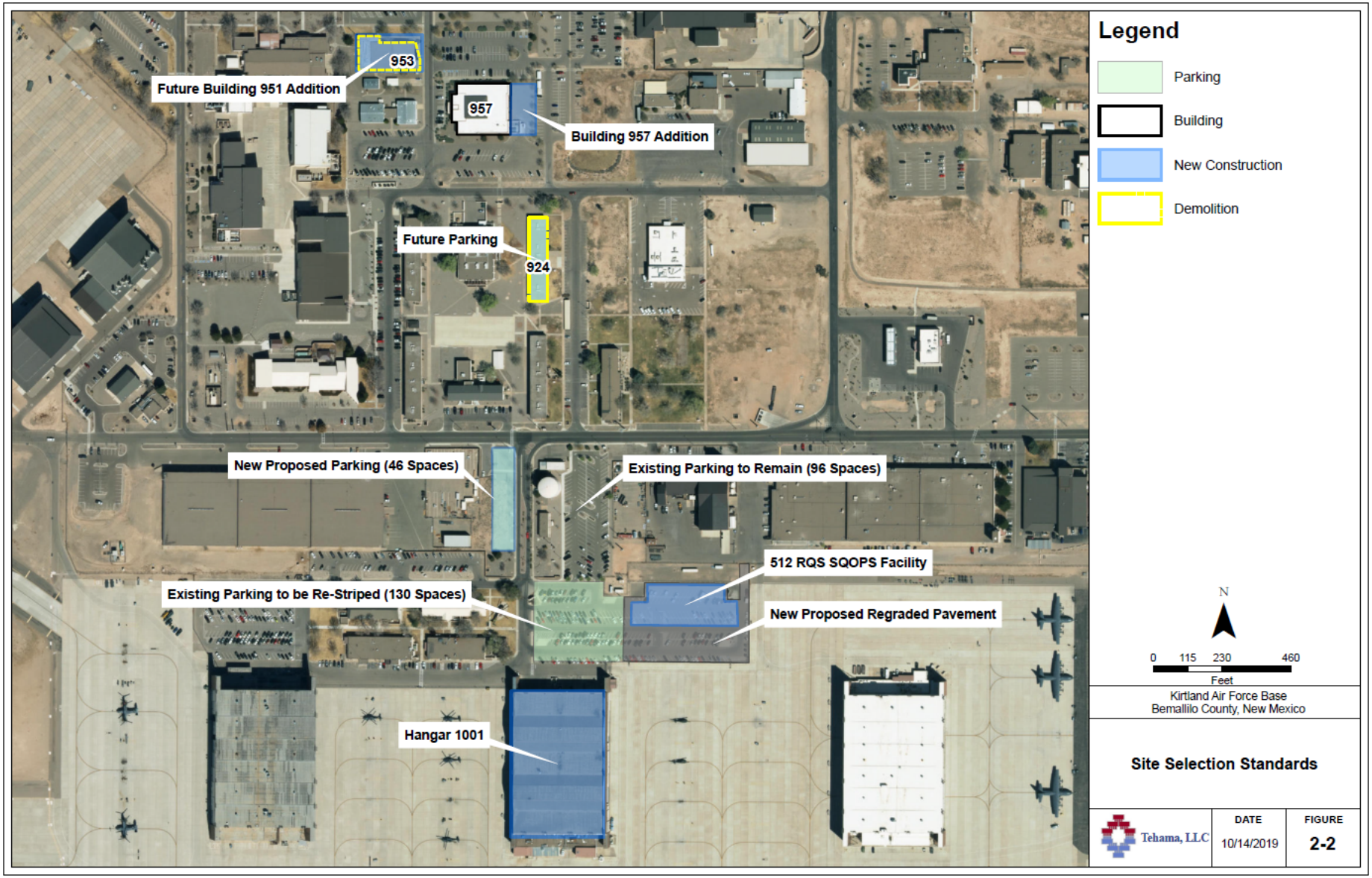


Figure 2-2. Proposed Demolition and Construction Activities at the 58 SOW Campus under the Proposed Action

make up for those displaced during construction and for the proposed additional personnel that the MH-139 beddown would require. This estimate is based on a standard parking dimension per car of 18 ft by 9 ft (162 SF) as recommended by the American Institute of Architects. Drive areas measuring 24 ft in width would be required between parking rows.

In addition, a 75,000 SF facility would be constructed to support helicopter squadron operations for the 512th Rescue Squadron Operations (RQS) and 58th Aircraft Maintenance Squadron. The Aircraft Maintenance Unit would remain in Hangar 1001, but renovations would be required to Island A and B to support helicopter maintenance activities in support of the 512 RQS. All utilities would be protected during construction activities, particularly underground cables in the vicinity of Buildings 924, 953, 954, and 960.

2.2 SELECTION STANDARDS

Selection standards were developed to assist USAF in determining reasonable alternatives and the basis for eliminating any of the alternatives. The following selection standards were developed to be consistent with the purpose of and need for the Proposed Action and to address pertinent mission, environmental, safety, and health factors. These site-selection standards were used to identify reasonable alternatives for analysis in the EA:

- Reduce USAF operations and maintenance costs associated with the UH-1N.
- Keep new helicopters co-located with existing training assets at Kirtland AFB to maximize the effectiveness of 58 SOW.
- Use established helicopter training assets to include: refueling tracks, high-desert/high-density altitude training, and access to HLZs and gunnery ranges.

2.3 DETAILED DESCRIPTION OF THE ALTERNATIVE(S)

2.3.1 No Action Alternative

Under the No Action Alternative, replacement of aging UH-1N aircraft with modern MH-139 medium lift aircraft at Kirtland AFB would not occur. Demolition and construction for additional personnel and training facilities would not be required. 58 SOW would continue to conduct their mission using the UH-1N aircraft and support facilities. Maintenance costs for the aging UH-1N would continue to increase and Air Education and Training Command (AETC) would no longer meet its requirement to train aircrew for weapon site security, missile convoy operations, or emergency evacuation operations.

Additionally, the UH-1N is not capable of meeting mission requirements at AFGSC and USAF District of Washington. In addition, UH-1N operations/maintenance costs would continue to increase, making it critical for USAF to replace it for the purposes of National Defense. If the UH-1N is not replaced at Kirtland AFB, there would not be a training unit to support the MH-139. The mission support now provided by the UH-1N would eventually fail due to its inability to continue to effectively support this mission.

The No Action Alternative would not meet the purpose of and need for the Proposed Action as described in **Section 1.4**; however, the USAF Environmental Impact Analysis Process (32 CFR § 989.8[d]) requires consideration of the No Action Alternative. Therefore, this alternative will be carried forward for detailed analysis in the EA.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

The Vice Chairman Joint Chiefs of the Staff approved replacement of the UH-1N in 2016. Following this decision, USAF executed an open bid competition for an off-the-shelf helicopter with minimum requirements conservative enough to allow multiple manufacturers to participate. In 2018, USAF selected the Boeing MH-139 as the replacement aircraft after considering other helicopters, the Sikorsky UH-60M and Sierra Nevada UH-60A. Strong competition drove down costs for the program, resulting in $0.3 billion cost savings to the taxpayer. The original service cost estimate was $4.1 billion. The total program cost for the UH-1N Replacement Program reflects the exercise of all options and provides for the acquisition and sustainment of up to 84 MH-139 helicopters, training devices, and associated support equipment to replace the legacy UH-1Ns. USAF pursued a full and open competition to deliver increased capabilities to warfighters. This replacement will provide the necessary speed, range, endurance, and carrying capacity needed to meet the requirements of five USAF major commands.

The MH-139, which is smaller and lighter than the UH-60-series, offered a commercial-off-the-shelf airframe that required minimal modifications to perform the missions that USAF presently assigns to its UH-1Ns. The MH-139 is less expensive to purchase, will be more efficient to operate, and over the long term, financially advantageous for USAF to sustain.

Alternatives were discussed for some of the components of the Proposed Action during the preparatory stages of this EA by USAF. However, after considering the purpose of and need for the action and applying the site-selection standards, they were not considered viable alternatives. Selection of a site for the MH-139 mission was cost driven. Relocating to a different base would have been extremely expensive and more time consuming. Preserving the mission of the UH-1N and transition to the MH-139 was the most prudent solution. Maintaining the current location with proximity to the flightline was the obvious and most cost effective approach.

Other locations on Kirtland AFB were considered for beddown of the new MH-139 fleet, but they were deemed unsuitable as they lacked the needed proximity to the flight line. In addition, the construction of new support facilities was cost prohibitive versus remodeling existing facilities and construction of new facilities used by 58 SOW at their current complex on Kirtland AFB.

2.5 COMPARATIVE SUMMARY OF IMPACTS

Table 2-3 presents a summary of the impacts anticipated under the Proposed Action and the No Action Alternative.

1 **Table 2-3. Summary of Potential Impacts**

Affected Resource	Proposed Action	No Action Alternative
Airspace Management	Long-term, minor, adverse impacts on airspace management would occur. No changes to airspace designations, flight routes, or use of training HLZs would occur under the Proposed Action. All sorties would originate and terminate at Kirtland AFB, but training sorties would occur at the 42 HLZs on BLM-administered public lands. Currently, UH-1N training sorties at the HLZs are conducted at a rate of approximately one sortie every 2 weeks. The phase-in of the MH-139 would result in a 90 percent increase in training sorties. The addition of 855 operations is less than 1 percent of the total aircraft operations at the Sunport; therefore, the increase in total operations would have only a negligible effect on airspace management in the vicinity of Kirtland AFB and the Sunport. The 90 percent increase in training sorties at the 42 HLZs on BLM-administered public lands would result in approximately one sortie at each site per week. This level of increase would not create airspace traffic management problems at any of the HLZs and would have no adverse impact on airspace management. Proper scheduling and coordination would continue and any potential adverse impacts on airspace management would be eliminated.	Implementation of the No-Action Alternative would not result in any new or additional impacts.
Noise	Short-term, negligible, adverse impacts on the noise environment from demolition and construction would occur. Construction activities would require the use of heavy equipment generating temporary increases in noise. However, these noise impacts would be temporary in nature, lasting only the length of the construction period, and would occur during the daytime hours of 0700 to 1700. Long-term, negligible, adverse impacts would result from the incremental increase in aircraft operations at the Sunport and HLZs on BLM-administered public lands. Long-term, negligible, adverse impacts would be expected within the area adjacent to approach and departure routes.	Implementation of the No-Action Alternative would not result in any new or additional impacts.
Air Quality	Short- and long-term, negligible, adverse impacts on air quality would occur. Negligible air emissions would be produced during demolition and construction from activities such as operation of heavy equipment, workers commuting daily to and from the project area in their personal vehicles, heavy duty diesel vehicles hauling materials and debris to and from the project area, and ground disturbance. However, such emissions would be temporary in nature and produced only when construction activities occur. Construction activities would incorporate best management practices (BMPs) and environmental control measures (e.g., wetting the ground surface) to minimize fugitive particulate matter air emissions. Additionally, work vehicles are assumed to be well maintained and to use diesel particulate filters to reduce particulate matter air emissions.	Implementation of the No-Action Alternative would not result in any new or additional impacts.

Table 2-3. Summary of Potential Impacts (continued)

Affected Resource	Proposed Action	No Action Alternative
Air Quality (continued)	Long-term, negligible, adverse and beneficial impacts on air quality would result from the proposed increase in helicopter flight operations. Years 2024 through 2027 would result in higher emissions because UH-1N and MH-139 flight operations would occur simultaneously. From 2028 onward, air emissions would be reduced, because the UH-1Ns would be removed from service. Long-term, negligible, adverse impacts on air quality would result from additional personnel at Kirtland AFB. The new personnel would produce air emissions from their daily commute.	
Water Resources	No impacts on floodplains would occur under the Proposed Action. Long-term, negligible, adverse impacts on groundwater at Kirtland AFB would occur. It is anticipated that by FY 2028 an increase of approximately 0.03 percent in water would need to be pumped from the aquifers to supply water to support the additional personnel at the installation. Short-term, negligible, adverse impacts on surface water at Kirtland AFB could occur from demolition and construction. Demolition and construction would be completed in accordance with the Kirtland AFB Stormwater Pollution Prevention Plan (SWPPP) and best management practices BMPs would be in place to protect stormwater drainage from sediment erosion during construction activities.	Implementation of the No-Action Alternative would not result in any new or additional impacts.
Cultural Resources	No impacts on archaeological and traditional cultural properties would result under the Proposed Action. No known archaeological sites exist within the project area at Kirtland AFB; however, should an inadvertent discovery of human or cultural remains occur, all construction activities shall stop and operational procedures outlined in the Integrated Cultural Resources Management Plan (ICRMP) shall be followed. No impacts on architectural, archaeological, and traditional cultural properties at the HLZs on BLM-administered public lands would result under the Proposed Action. No impacts on cultural resources would result from the proposed transition from the UH-1N to the MH-139. Short-term, negligible, adverse impacts on cultural resources at Kirtland AFB could result from construction. Proposed new construction would occur approximately 100 feet northeast of Hangar 1001, which is a National Register of Historic Places (NRHP)-eligible resource. This would occur in a parking lot that does not contribute to the setting of the hangar and within an area of the installation with modern buildings and structures currently visible in the hangar's vicinity to the north. The Proposed Action also includes renovation to the interior of Hangar 1001, with no alteration proposed to the exterior. Therefore, the overall effect to the setting and overall integrity of Hangar 1001 would not be adverse.	Implementation of the No-Action Alternative would not result in any new or additional impacts.

1 **Table 2-3. Summary of Potential Impacts (continued)**

Affected Resource	Proposed Action	No Action Alternative
Infrastructure	Short- and long-term, negligible, adverse impacts on the installation's utility system would occur during and after construction. Service interruptions may be experienced when disconnecting buildings proposed for demolition, connected newly constructed facilities to the installation's utility systems, and rerouting of existing lines. The increase in personnel and square footage would be expected to result in increased usage of the installation's utility systems; however, the increase is not expected to be significant. Additional personnel would result in an increase of 0.03 percent in water usage on the installation's potable water system; however, it is anticipated that the potable water supply system would be able to accommodate the new facilities and personnel without exceeding current capacity. Long-term, negligible, adverse impacts on the liquid fuel supply system would occur. The addition of MH-139s and the proposed 90 percent increase in flight operations would result in an increased demand on the installation's liquid fuel supply system. However, it is assumed the liquid fuel contractors would be able to keep up with the increase in on-base consumption of fuel. Short-term, negligible, adverse impacts on solid waste management are expected as demolition and construction activities would generate solid wastes. Kirtland AFB operates a construction and demolition waste-only landfill that the construction contractor could utilize for disposal of demolition waste that is nonhazardous and not recyclable or reusable.	Implementation of the No-Action Alternative would not result in any new or additional impacts.
Hazardous Materials and Wastes	Short- and long-term, negligible, adverse impacts on hazardous materials and wastes would occur. Short-term increases in the use and storage of hazardous materials and petroleum, oils, and lubricants (POLs) and the generation of hazardous and petroleum wastes would result during the transition period when the total number of aircraft on the installation temporarily increases and long-term impacts would result from the two additional PAI in the installation's aircraft fleet as well as increased aircraft operations. 58 SOW personnel would continue to implement standard BMPs and comply with standard operating procedures and adhere to all federal, state, and local regulations governing the use, storage, and transportation of hazardous materials and petroleum products during operation and maintenance activities. Construction contractors would ensure the handling and storage of any hazardous materials and petroleum products used and hazardous and petroleum wastes generated during demolition and construction is carried out in compliance with applicable federal, state, and local laws and regulations.	Implementation of the No-Action Alternative would not result in any new or additional impacts.

Table 2-3. Summary of Potential Impacts (continued)

Affected Resource	Proposed Action	No Action Alternative
Hazardous Materials and Wastes (continued)	Because of their age, Hangar 1001 and Buildings 924 and 953 are assumed to contain toxic substances such as asbestos-containing material (ACM), lead-based paint (LBP), and polychlorinated biphenyls (PCBs). Surveys for these substances would be completed, as necessary, by a certified contractor prior to renovation and demolition activities to ensure that appropriate measures are taken to reduce potential exposure to, and release of, toxic substances. Contractors would wear appropriate personal protective equipment (PPE) and adhered to all federal, state, and local regulations as well as the installation's management plans for toxic substances. Long-term, negligible to minor, beneficial impacts would result from reducing the potential for future human exposure to and reducing the amount of ACMs, LBP, and PCBs to maintain at Kirtland AFB. No impact on or from Environmental Restoration Program (ERP) sites would occur from construction associated with the Proposed Action.	
Safety	No short- or long-term, adverse, impacts on public health and safety are expected to occur. Short-term, negligible, adverse impacts on the safety of contractors and military personnel could occur from demolition and construction activities. Construction contractors would be required to develop a comprehensive health and safety plan containing site-specific guidance and direction to prevent or minimize potential risks. Contractor personnel would be responsible for compliance with applicable federal, state, and local safety regulations and would be educated through daily safety briefings to review daily activities and potential hazards. Demolition and construction associated with the Proposed Action would slightly increase the health and safety risk to personnel within the project area. However, the project area would be appropriately delineated and posted with access limited to construction personnel. Long-term, negligible to minor, beneficial impacts on the safety of military personnel would be expected. Replacement of the aging UH-1N aircraft with a safer, more reliable MH-139 and associated flight simulators would resolve reliability deficiencies, enhance mission capabilities, and improve training of military personnel throughout the USAF.	Implementation of the No-Action Alternative would not result in any new or additional impacts.

1 **Table 2-3. Summary of Potential Impacts (continued)**

Affected Resource	Proposed Action	No Action Alternative
Safety (continued)	Long-term, negligible, adverse impacts on flight safety could be expected under the Proposed Action. Although the MH-139 would be a new aircraft in the USAF fleet, all mission-related activities associated with the Proposed Action would be carried out in accordance with DOD and USAF safety policies and plans. Aircraft maintenance activities similar to those already performed on the UH-1N would continue to be accomplished in accordance with applicable USAF safety regulations, published USAF Technical Orders, and standards prescribed by the USAF occupational safety and health requirements. With the increase in flight operations at the HLZs, the potential for bird/wildlife aircraft-strike interactions could occur within the HLZs; however, birds at the HLZs have adapted to aircraft operations in the area so the potential would be slight. 58 SOW would continue to follow the requirements of the Bird/Wildlife Aircraft Strike Hazard (BASH) Plan and the semi-annual bird hazard working group to help reduce bird/wildlife incidents at Kirtland AFB, the Sunport, and the HLZs.	
Socioeconomics	Short-term, negligible, beneficial impact on socioeconomics in the vicinity of Kirtland AFB would occur from construction activities. Direct and indirect, beneficial impacts would result from increased payroll tax revenue and the purchase of construction materials and goods in the area. The temporary increase of construction workers at Kirtland AFB would represent a small increase in the total number of persons working on the installation, but no additional facilities would be necessary to accommodate the workforce. Long-term, negligible, beneficial impacts on the local economy would occur from the increase of permanent party personnel and their dependents stationed at Kirtland AFB. No short- or long-term adverse or beneficial impacts on socioeconomics would result from 58 SOW training operations at the HLZs on BLM-administered public lands. No changes in population, housing, or the economy would result within the counties of the HLZs under the Proposed Action.	Implementation of the No-Action Alternative would not result in any new or additional impacts.

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3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section of the EA describes the natural and human environments that exist within Kirtland AFB and the HLZs on BLM-administered public lands, and the consequences of the Proposed Action and No Action Alternative on affected resources within those environments.

Specific criteria for evaluating the potential environmental impacts of the Proposed Action and No Action Alternative are discussed in the following text by resource area. The significance of an action is measured in terms of its context and intensity. The context and intensity of potential environmental impacts are described in terms of duration, the magnitude of the impact, and whether they are adverse or beneficial as summarized below:

- ***Short-term or long-term.*** In general, short-term impacts are those that would occur only with respect to a particular activity, for a finite period, or only during the time required for construction or installation activities. Long-term impacts are those that are more likely to be persistent and chronic.
- ***Significant, moderate, minor, negligible, or no impact.*** These relative terms are used to characterize the magnitude or intensity of an 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. Less than significant impacts are those that would be slight be detectable.
- ***Adverse or beneficial.*** An adverse impact is one having unfavorable or undesirable outcomes on the man-made or natural environment. A beneficial impact is one having positive outcomes on the man-made or natural environment.

Based on the scope of the Proposed Action, resource areas with minimal or no impacts were identified through a preliminary screening process. The following describes those resource areas not being carried forward for detailed analysis, along with the rationale for their elimination.

- ***Land Use***. Land use is not addressed in greater detail in this EA because the Proposed Action would not result in a change in current land use designations within the project area. The project area at Kirtland AFB is within land designated as Flightline District. The Proposed Action is compatible with this designation and would not result in a change in this designation (KAFB 2016). Land use within the HLZs on BLM-administered public lands include grazing, recreation, and right-of-ways. Military training currently performed at the HLZs are authorized by BLM through a right-of-way (BLM 2019). As discussed in **Section 3.1.2.1**, the 90 percent increase in UH-1N/MH-139 operations during the peak years of the MH-139 transition period, would result in the rounded off number of one sortie at any one particular HLZ per week, which is a negligible increase that would not result in an adverse impact on land use within the BLM-administered public lands. No impacts on land use would result from the proposed transition from the UH-1N to the MH-139. As a result, USAF anticipates no short- or long-term impacts on land use at Kirtland AFB or the BLM-administered public lands. Therefore, land use has been eliminated from detailed analysis in this EA.
- ***Geological Resources***. Geological resources are not addressed in greater detail in this EA because the Proposed Action would not result in adverse impacts on regional geology, topography and soils, or geological hazards. The construction area at Kirtland AFB consists of hangars, miscellaneous structures with minimal landscaping, and impervious surfaces such as taxiways, ramps, and parking areas. According to the US Geological Survey, the soils in the area are more susceptible to wind and water erosion (USDA-NRCS

2018). Per federal and state regulations, during demolition and construction, contractors would be required to apply for permitting pertaining to stormwater pollution prevention measures which would likely require wetting for dust control purposes. Soils at three of the HLZs on BLM-administered public lands (6, 22, and 22B) have had minor impacts, exhibiting localized bare areas at the center of these HLZ potentially due to rotor wash resulting in a lack of vegetation in certain areas; however, recreational activities such as off-highway vehicle use within the BLM-administered public lands would likely have a greater impact on soil erosion than training activities under the Proposed Action (BLM 2019). Therefore, geological resources has been eliminated from detailed analysis in this EA.

- ***Biological Resources.*** Biological resources are not addressed in greater detail in this EA because the Proposed Action would not result in adverse impacts on sensitive wildlife or vegetation. Construction under the Proposed Action would occur in the Flightline District at Kirtland AFB, a no tolerance zone for prairie dogs. The project area at Kirtland AFB consists of hangars, miscellaneous structures with minimal landscaping, and impervious surfaces such as taxiways, ramps, and parking areas. It is outside critical habitat for the New Mexico meadow jumping mouse, Mexican spotted owl, southwestern willow flycatcher, yellow-billed cuckoo, and Rio Grande silvery minnow (KAFB 2018a, USFWS 2020). The structures proposed for demolition are not vacant; therefore, the potential for roosting bats is minimal. All structures and associated landscaping would be surveyed by a biologist within 48 hours of proposed demolition to ensure no nesting birds or other animals in the area would be impacted.

  Although the Proposed Action would result in a 90 percent increase in UH-1N/MH-139 flight operations, this increase would result in the rounded off number of one sortie at any one particular HLZ per week, which is a negligible increase in activities at the Sunport or BLM-administered public lands. As outlined in the BLM EA, no federally listed threatened or endangered, proposed, or candidate species, nor officially designated critical habitat occur within the 42 HLZs (BLM 2019). Despite potential impacts to individual wildlife species within the HLZs, if present, the Proposed Action would not affect species population trends or result in population-level impacts to any species, especially when the acreage of affected wildlife habitat is compared to the total acreage in the area of the HLZs. In addition, birds at the HLZs have adapted to aircraft operations in the area. As discussed in the BLM EA, bird/wildlife aircraft strike interactions could occur within the HLZs; however, birds at the HLZs have adapted to aircraft operations in the area so the potential would be slight. In addition, 58 SOW would continue to follow the requirements of the BASH Plan and the semi-annual bird hazard working group to help reduce bird/wildlife incidents at Kirtland AFB, the Sunport, and the HLZs. No impacts on biological resources would result from the proposed transition from the UH-1N to the MH-139. As a result, USAF anticipates no short- or long-term impacts on biological resources. Therefore, biological resources has been eliminated from detailed analysis in this EA.

- ***Environmental Justice***. Environmental justice is not addressed in greater detail in this EA because the proposed action would not result in adverse impacts on environmental justice populations from minor noise and traffic experienced by those within 0.5 miles of the project area. An increase of 90 percent in UH-1N/MH-139 aircraft operations would result in an increase of approximately one sortie at any one particular HLZ per week. The Proposed Action would not cause disproportionately high and adverse health or environmental effects on any minority or low income populations within 0.5 miles of the project area. As a result, USAF anticipates no short- or long-term impacts on

environmental justice areas. Therefore, environmental justice has been eliminated from detailed analysis of this EA.

3.1 AIRSPACE MANAGEMENT

The Federal Aviation Administration (FAA) is responsible for managing national airspace assets through a variety of regulations and procedures. As necessary, the FAA will coordinate with federal (including military), state, and local community aviation entities to determine the best use of these assets. All aircraft are subject to FAA regulations. The regulations for these categories are based on the types of flying activity, volume of traffic, hazard potential, national security, and other factors.

3.1.1 Affected Environment

The Region of Influence (ROI) for the Proposed Action and alternatives includes airspace in and around Kirtland AFB and the Sunport as well as BLM-administered public lands in Sandoval, Valencia, Cibola, Socorro, Guadalupe, and De Baca counties in central and west-central New Mexico. Kirtland AFB uses runways and taxiways owned by the Sunport through a joint-use lease agreement. Flight activities associated with training areas on the installation use both Visual Flight Rules (VFR) and Instrument Flight Rules and occur between 50 and 500 feet above ground level. All flight activities on or around Kirtland AFB require contact with Sunport Air Traffic Control.

Current Operations. Training sorties for the UH-1N aircraft occur at 42 different HLZs, which were analyzed in the BLM EA completed in 2019. The airspace at and within the immediate vicinity of the HLZs is typically Class G airspace controlled by either Albuquerque Terminal Radar Approach Control or the Albuquerque Air Route Traffic Control Center. Although air traffic control has no official authority or responsibility to control air traffic in Class G airspace, pilots have to abide by VFR. 58 SOW aircraft do not accomplish intentional low-level overflight of wildlife, dwellings, or populated areas (BLM 2019).

Current aircraft activities on BLM-administered public lands include 42 HLZs used for helicopter (HH-60G Pave Hawk and UH1-N) training. The HLZs can be grouped into four geographic areas: between 30 and 50 miles northwest of Kirtland AFB in Sandoval County, between 30 and 55 miles west-southwest of Kirtland AFB in Valencia and Cibola counties, between 40 and 45 miles southwest of Kirtland AFB in Socorro County, and between 90 and 110 miles east-southeast of Kirtland AFB in Guadalupe and De Baca counties (BLM 2019).

The Sandoval County group includes HLZs 30, 31, 32, 33, and 34. These HLZs are all within approximately 13 miles of each other in the southwestern corner of the County. The Valencia-Cibola County group includes HLZs 6, 7, 13, 15, 16, 17, 18, 18A, 19, 19A, 19B, 20, 22, 22A, 22B, 23, 24, 27, 28, 29, 36, 37, 37A, 37B, 37C, 37D, 38, 42, N, O, P, Q, and R. These HLZs are all within approximately 13 miles of each other in western Valencia County and eastern Cibola County. The Socorro County group includes HLZs C and D. These HLZs are within approximately 3 miles of each other in northern Socorro County. The Guadalupe and De Baca group includes HLZs CR1 and CR2. These HLZs are within approximately 14 miles of each other in southwestern Guadalupe County and northwestern De Baca County (BLM 2019).

A typical training mission, or sortie, includes approximately 2 hours within the BLM lands, with air land or hover operations occurring in 15-minute intervals (i.e., up to 8 air events per sortie). HH-60G training often involves flight in pairs, or in tandem, with two vehicles taking part in the training exercise; however, the UH1-N is flown solo. Aircrews are trained and evaluated in daytime and nighttime sorties for both basic and advanced aviation. The aircraft remain within

approximately 5 nautical miles of the HLZ when accomplishing training events. The "ground tracks," the actual locations on the ground above which the aircraft fly, can vary for reasons such as different pilot techniques, wind, terrain, and ground objects to be avoided. The ground tracks are typically "box patterns" around the center point of the landing zone. The "box pattern" for the UH-1N extends outward to approximately 2 miles from the center of the HLZ, and the aircraft altitude when flying a pattern is typically 300 feet above ground level (BLM 2019).

3.1.2 Environmental Consequences

3.1.2.1 Proposed Action

The Proposed Action would result in a long-term, minor, adverse impact on airspace management. All current airspace designations and management procedures would remain the same. The minor, adverse impact is attributed to a 90 percent increase in helicopter operations from UH-1N and MH-139 aircraft. Current UH-1N operation numbers are based on 945 annual sorties. Based on information provided in the BLM EA, all sorties originate and terminate at Kirtland AFB, but training sorties for the UH-1N occur at 42 different HLZs. Also based on information provided in the BLM EA, training occurs 48 weeks per year. As a baseline to analyze the impact of increased operations, the total number of current operations (945) was averaged across the 48 training weeks per year and evenly distributed across the 42 HLZs used by the UH-1N. This results in approximately 22.5 sorties at each HLZ annually, or one-half of a sortie per operational training week. Since the use of each HLZ does not necessarily occur every week, a better way to state the baseline average is that any one particular HLZ may be used approximately once every 2 weeks. The MH-139 would continue to use the same HLZs with the same proportional distribution of operations. However, the number of operations would increase over current numbers throughout the phase-in of the MH-139. **Table 3-1** presents a breakdown of the fielding plan for the MH-139 at Kirtland AFB.

Table 3-1. Current and Projected Flight Operations

	Current through FY 2023	FY 2024 through FY 2025	FY 2026 through FY 2027	FY 2028 (full transition)
Aircraft	6 UH-1N	6 UH-1N	4 UH-1N	0 UH-1N
	0 MH-139	6 MH-139	10 MH-139	10 MH-139
Flight Operations (Sorties)	945 Annually	1,400 Annually	1,800 Annually	1,238 Annually

Source: (Beck 2020)

No impacts on airspace management would results from the proposed transition from the UH-1N to the MH-139. The change in number of operations is the only factor to consider in this analysis of airspace because of the following factors:

- No change in airspace designations is proposed
- No change or alteration of existing flight routes is proposed
- No change in the use of training HLZs is proposed.

Therefore, the following discussion of impacts focuses on operational numbers associated with the UH-1N and MH-139 aircraft. To accurately assess the impacts to airspace management, the following discussion will evaluate the impacts in the airspace immediately surrounding Kirtland AFB and the Sunport, and the impacts to airspace around the existing HLZs on BLM-administered public lands where training sorties would occur.

Airspace Management at the Sunport. Based on information provided by the Sunport to the FAA regarding operations at the airfield during the 12-month period ending 31 March 2018, the Sunport reported 148,512 total operations, of which 23,643 operations were military (AIRPORTIQ5010 2020). As shown in **Table 3-1**, at the peak of proposed operations in FY 2026 through FY 2027, 1,800 annual UH-1N and MH-139 operations are projected. This represents 855 additional UH-1N and MH-139 annual operations over the current baseline, or an increase of 90 percent in UH-1N/MH-139 operations annually. In terms of total operations occurring at the Sunport, the addition of 855 operations is less than 1 percent (actual increase is 0.57 percent) of total aircraft operations. Based on training operations occurring 48 weeks per year and 5 training days per week, this amounts to an average of 3.6 additional sorties in the airspace immediately around Kirtland AFB and the Sunport on any given weekday. The minor increase in total operations would have only negligible effects on airspace management in the vicinity of Kirtland AFB and the Sunport. Once the UH-1N is completely phased-out and the 10 MH-139 aircraft assigned to Kirtland AFB are operating in FY 2028 and beyond, the number of annual operations associated with this aircraft is projected to be 1,238. This reduces the magnitude of impact to airspace management, provided all other commercial or military operations do not increase over that time.

Airspace Management at HLZs. The BLM EA denotes that 42 HLZs are specifically designated for helicopter training operations. With a baseline of 945 total annual sorties for the UH-1N, this correlates to an average of 22.5 sorties at the HLZs per year or approximately one sortie at any one particular HLZ every other week (rounded off because you would not experience partial sorties). Applying an increase of 90 percent to evaluate the impact during the peak years of operations, this would result in the rounded off number of one sortie at any one particular HLZ per week. This level of increase would not create airspace traffic management problems at any of the HLZs and is determined to have no adverse impact on airspace management. Proper scheduling and coordination with FAA would continue to be in practice and any potential adverse impact on airspace management would be eliminated.

3.1.2.2 No Action Alternative

Under the No Action Alternative, the proposed replacement of aging UH-1N aircraft with modern MH-139 medium lift aircraft would not occur and the existing conditions discussed in **Section 3.1.1** would remain unchanged. Current flight operations would remain the same as presented in **Table 3-1**.

3.2 NOISE

Human response to noise varies, as do the metrics used to quantify it. Generally, sound can be calculated with instruments that record instantaneous sound levels in decibels (dB). A-weighted decibel (dBA) is the unit used to characterize sound levels that can be sensed by the human ear. "A-weighted" denotes the adjustment of the frequency range to what the average human ear can sense when experiencing an audible event. The threshold of audibility is generally within the range of 10 to 25 dBA for normal hearing. The threshold of pain occurs at the upper boundary of audibility, which is normally in the region of 135 dBA (USEPA 1981a).

Table 3-2 compares common sounds and shows how they rank in terms of auditory impacts. As shown, a library is normally 40 dBA and considered to be very quiet while sewing machine is considered an intrusive noise at 60 dBA. Noise levels can become annoying at 80 dBA and very annoying at 90 dBA. To the human ear, each 10 dBA increase seems twice as loud (USEPA 1981b).

Table 3-2. Sound Levels and Human Response

Outdoor	Sound Level (dBA)	Indoor
Motorcycle	100	Subway train
Tractor	90	Garbage disposal
Noisy restaurant	85	Blender
Downtown (large city)	80	Ringing telephone
Freeway traffic	70	TV audio
Normal conversation	60	Sewing machine
Rainfall	50	Refrigerator
Quiet residential area	40	Library

Source: Harris 1998

Under the Noise Control Act of 1972, the Occupational Safety and Health Administration (OSHA) established workplace standards for noise. The federal government established noise guidelines and regulations for the purpose of protecting citizens from potential hearing damage and from various other adverse physiological, psychological, and social effects associated with noise. According to the US Army, Federal Aviation Administration, and US Department of Housing and Urban Development criteria, residential units and other noise-sensitive land uses are "clearly unacceptable" in areas where noise exposure exceeds 75 dBA, "normally unacceptable" in regions exposed to noise between 65 and 75 dBA, and "normally acceptable" in areas exposed to noise of 65 dBA or less. For outdoor activities, the United States Environmental Protection Agency (USEPA) recommends 55 dBA as the sound level below which there is no reason to suspect that the general population would be at risk from any of the effects of noise (USEPA 1974).

The minimum requirement states that constant noise exposure must not exceed 90 dBA over an 8-hour period. The highest allowable sound level to which workers can be constantly exposed is 115 dBA, and exposure to this level must not exceed 15 minutes within an 8-hour period. These standards limit instantaneous exposure, such as impact noise, to 140 dBA. If noise levels exceed these standards, employers are required to provide hearing protection equipment that will reduce sound levels to acceptable limits. **Table 3-3** provides information on the estimated background noise levels. Equivalent sound level (L_{eq}) is the average sound level over a given period of time.

Table 3-3. Estimated Background Noise Levels

Example Land Use Category	Average Residential Intensity (people per acre)	day/night sound level (DNL)	L_{eq} (dBA)	
			Daytime	Nighttime
Rural or remote	<2	<49	<48	<42
Suburban residential	2	49	48	42
	4	52	53	47
	4.5	52	53	47
Quiet urban residential	9	55	56	50
Quiet commercial, industrial, and normal urban residential	16	58	58	52
	20	59	60	54

Source: ANSI 2013

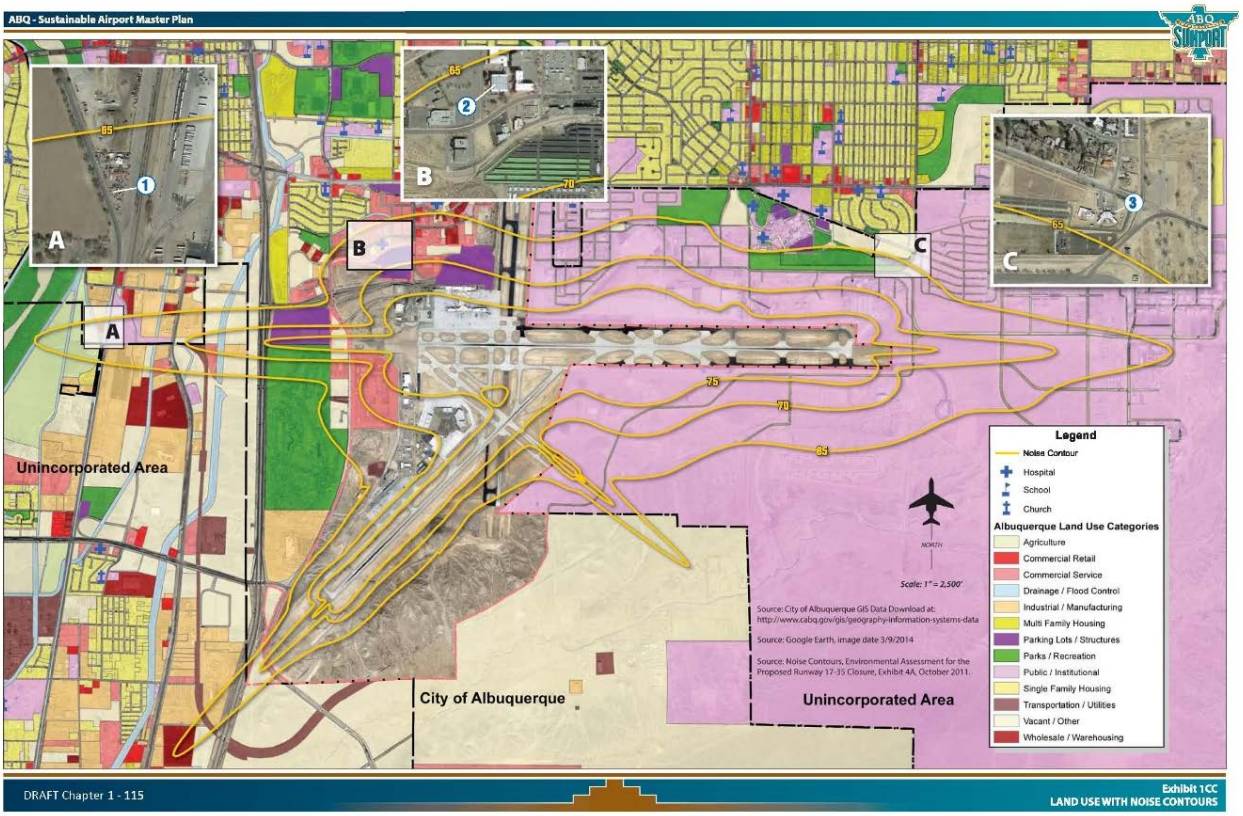


Figure 3-1. Existing Noise Contours - Albuquerque International Sunport

3.2.1 Affected Environment

Integrated Noise Model (INM) is a suite of computer programs adopted by the FAA, which predict noise exposure in the vicinity of an airfield due to aircraft, maintenance, and ground run-up operations. INM was used to calculate the existing DNL noise contours at the Sunport based on the average daily aircraft operations. **Figure 3-1** shows the existing DNL noise contours plotted in 5 dB increments, ranging from 65 to 75 dBA DNL. The existing 65 dBA DNL noise contour extends approximately 1.5 to 2 miles from the ends of both primary runways. DNL 65 dB is the noise level below which all land uses are normally compatible with airfield operations.

Table 3-4 shows the existing air operations at the Sunport. There are approximately 148,512 air operations (i.e., a single take-off or landing) at the Sunport each year, or 407 each day on average. 58 SOW conducts 945 air operations at the Sunport each year (2.6 each day on average) accounting for approximately 0.6 percent of the airport-wide operations. The existing 58 SOW aircraft operations and associated noise are orders of magnitude smaller than those from the commercial aircraft that dominate the overall noise at Sunport.

Table 3-4. Existing Air Operations at the Sunport

	Annual	Average Daily
Total Sunport Operations	148,512	406.9
UH-1N Operations	945	2.6
Percentage	0.6%	0.6%

Source: FAA 2019

The ambient sound environment at Kirtland AFB is affected mainly by USAF and civilian aircraft operations, automotive vehicles, and live-fire weapons. In the heavily developed northwestern portion of the installation, the commercial and military aircraft operations at the Sunport are the primary source of noise. Secondary sources of noise, such as vehicle travel, industrial activities, and military training, also contribute to the louder ambient sound environment of the northwestern portion of the installation compared to other portions of Kirtland AFB. The ambient sound environment of the remaining portions of the installation is quieter because development is less concentrated. Intermittent noises from military training, mainly military vehicles, live-fire weapons, and explosives training, dominate the ambient sound environment of these portions of Kirtland AFB.

Most sensitive noise receptors that could potentially be exposed to noise from installation activities are on or proximate to the northwestern and northern portions of Kirtland AFB. For example, several schools for the city of Albuquerque are on or proximate to the northwestern portion of the installation. There are also several medical centers and hospitals in this region. All Kirtland AFB housing and community functions are within the northwestern portion of the installation, and several residential neighborhoods in the city of Albuquerque are proximate to the northwest and northern boundaries of the installation. No other portions of Kirtland AFB contain or are proximate to sensitive noise receptors (KAFB 2016).

58 SOW has established routing procedures for approaches and departures to and from the airspace surrounding the Sunport. These procedures are outlined though a Letter of Agreement between Kirtland AFB, FAA, and the city of Albuquerque (Sunport), and include established approach and departure routes into and out of the area. Existing sources of noise along these routes are consistent with an active international airport. In the immediate area surrounding the approach and departure routes, the noise is often dominated by intermittent fixed-wing and rotary aircraft overflights, and specifically include 2.6 UH-1N overflights per day on average. Operations, and associated noise, from the use of these routes is included in preparation of the noise contours shown in **Figure 3-1**. Background noise in areas surrounding the routes beyond the immediate vicinity of the airport, ranges from 48 to 60 dBA in the daytime and 42 to 54 dBA at night (ANSI 2013). In general, helicopter operations can be loud to individuals under the flight path, but not sufficient to generate greater than 65 dBA DNL beyond the immediate area. In general, aircraft activities under these routes, beyond the immediate vicinity of the airport, are completely compatible with noise sensitive land uses.

Existing sources of noise at the HLZs on BLM-administered public lands consist of intermittent rotorcraft activities, with ongoing noise such as distant automobiles, and natural sounds such as weather and vegetation noise. Background noise in areas surrounding the HLZs range from 48 to 60 dBA in the daytime, and 42 to 54 dBA at night (ANSI 2013). Intermittent helicopter operations would be clearly audible to individuals under the flight path, particularly at night. However, small air operations at the HLZs are not sufficient to generate greater than 65 dBA DNL beyond the immediate area surrounding the HLZs. Other than Kirtland AFB and the Sunport, 58 SOW UH-1Ns do not normally operate at any large landing zones (e.g., established mid to large airports).

3.2.2 Environmental Consequences

3.2.2.1 Proposed Action

The Proposed Action would result in short-term, minor and long-term, negligible, adverse impacts on the noise environment. Short-term impacts would result from the use of heavy equipment

during construction. Long-term impacts would result from the incremental increase in aircraft operations at the Sunport. These impacts would not (1) result in the violation of applicable federal, state, or local noise regulation; or (2) create appreciable areas of incompatible land use outside the property boundary of the Sunport. The overall noise environment would not be perceptibly different when compared to existing conditions.

Demolition and Construction. Typical noise levels (dBA at 50 ft) that USEPA has estimated for the main phases of outdoor construction are presented in **Table 3-5**. Individual pieces of heavy equipment typically generate noise levels of 80 to 90 dBA at a distance of 50 ft. With multiple items of equipment operating concurrently, noise levels can be relatively high at locations within several hundred ft of sites using heavy equipment. The zone of relatively high noise typically extends to distances of 400 to 800 ft from the site of major equipment operations.

Table 3-5. Noise Levels Associated with Outdoor Construction

Construction Phase	L_{eq} (dBA)
Ground clearing	84
Excavation, grading	89
Foundations	78
Structural	85
Finishing	89

Source: USEPA 1971

All construction activities would occur within the Sunport property boundary where there are no nearby noise receptors and existing aircraft activities are both frequent and loud. Heavy equipment would be as loud as 52 to 57 dBA at the nearest noise sensitive area is the Veterans Affairs Medical Center, 0.4 miles from the proposed squadron operations building. These levels would blend naturally with daytime background noise at this location. Given the limited amount of noise that heavy equipment would generate, the remote location and the existing operational noise from aircraft activities, these effects would be less than significant. Although these effects would be minor, the following BMPs would be performed to reduce noise impacts:

- Construction activities would primarily occur during normal weekday business hours (0700 to 1700);
- Heavy equipment mufflers would be properly maintained and in good working order; and
- Construction personnel, and particularly equipment operators, would wear adequate personal hearing protection to limit exposure and ensure compliance with the Air Force Occupational Safety and Health Standard 48-20 (USAF 2013).

Helicopter Flight Operations. Long-term, negligible, adverse impacts would result from an incremental increase in aircraft operations at the Sunport. **Table 3-6** presents existing air operations at the Sunport, and those that would occur with the Proposed Action. Approximately 855 more air operations would be flown per year to or from the Sunport under the Proposed Action. This would equate to an average of 2.3 more operations per day, an increase of approximately 90 percent when compared to existing UH-1N operations and an increase of approximately 0.59 percent when compared to existing airport-wide operations.

Table 3-6. Aircraft Operations at the Sunport – Proposed Action

	Overall Aircraft Operations	
	Annual	**Average Daily**
Existing (UH-1N)	945	2.6
Proposed Action (MH-139)	1,800	4.6
Increase In Operations	855	2.3
Percent Increase In 58 SOW Operations	90%	90%
Airport-wide		
Existing	148,512	406.9
Proposed Action	149,367	409.2
Percent Increase In Airport-Wide Operations	0.59%	0.59%

Source: FAA 2019

The sound levels (i.e., effective perceived noise level [EPNL]) from a MH-139 overflight are approximately 3 dB less than that of a UH-1N for all operating conditions (see **Table 3-7**). This is a barely perceivable change in the sound levels, and these two aircraft would be audibly comparable under most operating conditions. In general, it would take a 100 percent increase in air operations of similar aircraft to have even a barely perceptible change to the noise environment (e.g., greater than 3 dBA). Therefore, the 0.59 percent increase in airport-wide operations would be so small when compared to existing conditions it would have no perceptible effect on the overall noise in surrounding areas. This increase in operations would be somewhat offset by the decrease in noise from individual overflights.

Table 3-7. Comparison of UH-1N and MH-139 Noise Levels

Aircraft	**Maximum Weight (pounds)**	**Effective Perceived Noise Level (EPNLdB)**		
		Take-Off	**Overflight**	**Approach**
UH-1N	10,500	93.2	93.4	95.6
MH-139	14,330	90.5	89.8	93.0

Source: EASA 2010 and EASA 2017

In the immediate area surrounding the Sunport, the noise environment would continue to be dominated by aircraft takeoff and landing operations, and the increase in aircraft operations would amount to an overall increase in noise of less than 0.1 dBA DNL at the Sunport. Although there would be a small change in the overall noise environment at the Sunport, noise from individual overflights would, as with existing conditions, continue to generate distinct acoustical events, and have the potential from time-to-time to annoy residents directly under their flight path. These effects would be less than significant.

Long-term, negligible, adverse impacts would be expected to occur within the area adjacent to approach and departure routes. Helicopter operations would increase from 2.6 to 3.1 overflights per day along these routes; however, individual overflights would be approximately 3 dB quieter with the proposed MH-139 aircraft. Noise in the immediate area surrounding the approach and departure routes would continue to be dominated by intermittent fixed-wing and rotary aircraft overflights, and specifically include three MH-139 overflights per day on average. Operations, and associated noise, from the use of these routes would not change the noise contours presented in **Figure 3-1**. Helicopter operations could continue to be loud to individuals under the flight path,

but not sufficient enough to generate greater than 65 dBA DNL beyond the immediate area. Aircraft activities under these routes, beyond the immediate vicinity of the Sunport, would remain compatible with noise sensitive land uses.

Long-term, negligible, adverse impacts would be expected to occur within areas adjacent to the HLZs on BLM-administered public lands. The locations and training operations at the HLZs utilized by the 58 SOW would remain unchanged. The overall noise environment at these locations would not be perceptibly different when compared to existing conditions. Existing sources of noise at the HLZs would continue to consist primarily of intermittent rotorcraft activities, with ongoing noise such as distant automobiles, and natural sounds such as weather and vegetation noise. Intermittent helicopter operations would be clearly audible to individuals under the flight path, particularly at night; however, air operations at the HLZs would not be sufficient to generate greater than 65 dBA DNL. Aircraft activities at these locations would remain completely compatible with noise sensitive land uses.

3.2.2.2 No Action Alternative

Under the No Action Alternative, the proposed replacement of aging UH-1N aircraft with modern MH-139 medium lift aircraft would not occur and the existing conditions discussed in **Section 3.2.1** would remain unchanged. The noise emissions currently produced from UH-1N flight operations are presented **Table 3-7.**

3.3 AIR QUALITY

Air quality is defined by the concentration of various pollutants in the atmosphere at a given location. Under the Clean Air Act (CAA), the six pollutants defining air quality, called “criteria pollutants,” include carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide, ozone (O_3), suspended particulate matter (measured less than or equal to 10 microns in diameter [PM_{10}] and less than or equal to 2.5 microns in diameter [$PM_{2.5}$]), and lead. CO, SO_2, and some particulates are emitted directly into the atmosphere from emissions sources. Nitrogen dioxide, O_3, and some particulates are formed through atmospheric chemical reactions that are influenced by weather, ultraviolet light, and other atmospheric processes. Volatile organic compounds (VOCs) and nitrogen oxides (NO_x) emissions are used to represent O_3 generation because they are precursors of O_3. Since the phase-out of leaded fuels in the 1970s and 1980s, lead emissions have been negligible from the types of emission sources under the Proposed Action. Therefore, lead emissions are not included in this air quality analysis.

The USEPA has established National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50) for criteria pollutants. NAAQS are classified as primary or secondary. Primary standards protect against adverse health effects; secondary standards protect against welfare effects, such as damage to farm crops and vegetation and damage to buildings. Some criteria pollutants have short- and long-term standards. Short-term standards are designed to protect against acute, or short-term, health effects, while long-term standards were established to protect against chronic health effects. The state of New Mexico has established its own ambient air quality standards for the criteria pollutants, which in some cases are more stringent than the NAAQS.

Areas that are and historically have been in compliance with the NAAQS or have not been evaluated for NAAQS compliance are designated as attainment areas. Areas that violate a federal air quality standard are designated as nonattainment areas. Areas that have transitioned from nonattainment to attainment are designated as maintenance areas and are required to adhere to maintenance plans to ensure continued attainment. The maintenance designation can be

removed from an area if the area demonstrates to USEPA it can consistently remain below NAAQS for more than 20 years.

The USEPA General Conformity Rule applies to federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. The emissions thresholds that trigger requirements for a conformity analysis are called *de minimis* levels. *De minimis* levels (in tons per year [tpy]) vary by pollutant and also depend on the severity of the nonattainment status for the air quality management area in question.

The New Mexico Environment Department (NMED) Air Quality Bureau oversees programs for permitting the construction and operation of new or modified stationary source air emissions in the state of New Mexico. The NMED Air Quality Bureau has delegated authority over air quality in Bernalillo County to the Albuquerque Environmental Health Department Air Quality Division (AEHD-AQD). AEHD-AQD has also promulgated fugitive dust control permits and open burn program requirements in the New Mexico Administrative Code (NMAC).

Fugitive Dust Control Regulation. The AEHD-AQD has fugitive dust control requirements in 20.11.20 NMAC, *Fugitive Dust Control*. A fugitive dust control construction permit is required for projects disturbing 0.75 acre or more and the demolition of buildings containing more than 75,000 cubic feet of space. As stated in 20.11.20.12 NMAC, *General Provisions*, each person shall use reasonably available control measures or any other effective control measure during active operations or on inactive disturbed surface areas, as necessary, to prevent the release of fugitive dust, whether or not the person is required by 20.11.20 NMAC to obtain a fugitive dust control permit.

Climate Change and Greenhouse Gases. Global climate change refers to long-term fluctuations in temperature, precipitation, wind, sea level, and other elements of Earth's climate system. Ways in which the Earth's climate system may be influenced by changes in the concentration of various gases in the atmosphere have been discussed worldwide. Of particular interest, greenhouse gases (GHGs) are gas emissions that trap heat in the atmosphere. These emissions occur from natural processes and human activities. Scientific evidence indicates a trend of increasing global temperature over the past century because of an increase in GHG emissions from human activities. The climate change associated with this global warming is predicted to produce negative economic and social consequences across the globe.

3.3.1 Affected Environment

Kirtland AFB is in Bernalillo County, New Mexico, which is within the Albuquerque-Mid Rio Grande Intrastate Air Quality Control Region 152. Albuquerque-Mid Rio Grande Intrastate Air Quality Control Region 152 also includes portions of Sandoval and Valencia counties, New Mexico (NMED 2019). As of April 2019, Bernalillo County is no longer subject to a 20-year CO maintenance plan and is in attainment for all criteria pollutants. As a result, General Conformity applicability analysis is not required (Rocha 2019).

Kirtland AFB manages a number of air quality permits, including 20.11.41 NMAC Construction Permits, 20.11.21 NMAC Open Burn Program permits, 20.11.20 NMAC Fugitive Dust Control permits, and 20.11.40 NMAC Source Registrations, all of which include operating or emissions limits to ensure compliance with the CAA. The 2019 Air Emissions Inventory for Kirtland AFB is presented in **Table 3-8**.

Table 3-8. Calendar Year 2019 Air Emissions Inventory for Kirtland AFB

Actual Emissions	NO_x	VOCs	CO	SO_2	$PM_{2.5}$	PM_{10}
	8.33	26.95	5.04	0.58	0.75	0.75

Source: KAFB 2020a

The only emission sources in Buildings 924 and 953, which are proposed for demolition under the Proposed Action, are natural gas boilers and furnaces used to provide heat. Operation of these boilers and furnaces produce negligible air emissions.

Kirtland AFB currently performs approximately 945 flight operations per year with the UH-1N helicopters. The annual air emissions produced from these helicopter flight operations are provided in **Table 3-9** and have been estimated using the guidance provided in USAF's *Air Emissions Guide for Air Force Mobile Sources, Methods for Estimating Emissions of Air Pollutants for Mobile Sources at US Air Force Installations*, dated August 2018. **Appendix B** contains the supporting calculations.

Table 3-9. Annual Air Emissions from Current UH-1N Flight Operations

Baseline Helicopter Flight Emissions (tpy)							
	NO_x	VOCs	CO	SO_x	PM_{10}	$PM_{2.5}$	CO_2e
UH-1N Operations (945 per year)	0.72	0.50	1.34	0.12	0.04	0.03	367.81

Notes: SO_x = sulfur oxides, CO_2e = carbon dioxide equivalent

Climate Change and Greenhouse Gases. Ongoing global climate change has the potential to increase average temperatures and cause more frequent, intense, and prolonged droughts in the southwest United States including New Mexico (Melillo et al 2014). These changes to regional climate patterns could result in regional changes to flooding frequency, vegetation types, vegetation growth rates, wildfire potential, groundwater depth, and potable water availability.

3.3.2 Environmental Consequences

3.3.2.1 Proposed Action

Demolition and Construction. The demolition and construction activities of the Proposed Action would result in a short-term, negligible, adverse impact on air quality. These activities would produce emissions of criteria pollutants and GHGs from operation of heavy equipment, workers commuting daily to and from the project area in their personal vehicles, heavy duty diesel vehicles hauling materials and debris to and from the project area, and ground disturbance. However, such emissions would only be temporary in nature and produced only when such activities are occurring. For the purposes of this air quality analysis, all demolition and construction is conservatively assumed to occur during calendar year 2021.

The air pollutant of greatest concern is particulate matter, such as fugitive dust. The quantity of uncontrolled fugitive dust emissions from a site is proportional to the area of land being worked and the level of activity. Fugitive dust air emissions would be greatest during the initial site grading and excavation and would vary day to day depending on the work phase, level of activity, and prevailing weather conditions. Particulate matter emissions also would be produced from the combustion of fuels in vehicles and construction equipment.

Demolition and construction activities would incorporate BMPs and environmental control measures (e.g., wetting the ground surface) to minimize fugitive particulate matter air emissions. Additionally, work vehicles are assumed to be well maintained and to use diesel particulate filters to reduce particulate matter air emissions. Construction activities would comply with 20.11.20 NMAC Fugitive Dust Control to control the release of fugitive dust. Because the proposed construction would disturb more than 0.75 acre and the buildings proposed for demolition contain more than 75,000 cubic feet of space, USAF would obtain a fugitive dust control construction permit from AEHD-AQD. Application for the fugitive dust control construction permit would require USAF to develop a fugitive dust control plan, which would outline specific dust control measures that would be implemented during construction. These BMPs and environmental control measures could reduce uncontrolled particulate matter emissions from a construction site by approximately 50 percent depending upon the number of BMPs and environmental control measures required and the potential for particulate matter air emissions. Per 20.11.20.12 NMAC, USAF would use reasonably available fugitive dust control measures during any construction activity associated with the Proposed Action, whether or not a fugitive dust control permit was required.

USAF's Air Conformity Applicability Model (ACAM) was used to estimate the air emissions from demolition and construction. **Table 3-10** summarizes these air emissions, and **Appendix B** contains the ACAM detail report.

Table 3-10. Estimated Air Emissions from Demolition and Construction

Estimated Emissions (2021)	NO_x (tpy)	VOCs (tpy)	CO (tpy)	SO_x (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2e (tpy)
	2.085	1.671	2.122	0.005	2.230	0.087	500.0

Facility Operations. Negligible air emissions would be produced from heating the new building space. The proposed additions to Buildings 951 and 957 would be heated using existing boilers and furnaces within these buildings, and heating the additions would produce negligible new emissions. New air emissions would be produced from heating the proposed 75,000 SF facility; however, these emissions would be negligible because of the limited size of the facility and the boiler or furnace installed in this facility would have a heat capacity below permitting thresholds. Additionally, emergency generators are not expected to be needed for operation of these facilities.

Helicopter Flight Operations. Long-term, negligible, adverse and beneficial impacts on air quality would result from the proposed helicopter flight operations. No changes to the air emissions currently produced from helicopter flight operations (see **Table 3-9**) would occur until 2024 and 2025 when the MH-139s begin operations. During 2024 and 2025, Kirtland AFB would continue to perform approximately 945 flight operations per year with the UH-1Ns but also perform approximately 455 flight operations per year with the MH-139s. Air emissions from helicopter flight operations for 2024 and 2025 are shown in the top 3 rows of **Table 3-11**. During 2026 and 2027, helicopter operations would gradually shift from the UH-1Ns to MH-139s with approximately 562 flight operations per year with the UH-1Ns and approximately 1,800 flight operations per year with the MH-139s. Air emissions from helicopter flight operations for 2026 and 2027 are shown on the middle three rows of **Table 3-11**. From 2028 onward, the UH-1Ns would be removed from service, and all helicopter flight operations would be performed using the MH-139s. Helicopter flight operations would increase to approximately 1,238 per year. Air emissions from helicopter flight operations from 2027 onward are shown in the bottom 3 rows of **Table 3-11.** Most pollutants would experience a negligible increase in emissions; however, NO_x and VOCs would experience a negligible decrease. The air emissions produced from helicopter flight operations have been estimated using the guidance provided in the USAF's *Air Emissions Guide for Air Force Mobile*

Sources, Methods for Estimating Emissions of Air Pollutants for Mobile Sources at US Air Force Installations, dated August 2018. **Appendix B** contains the supporting calculations.

The air emissions presented in **Table 3-11** would occur at Kirtland AFB in Bernalillo County. Some of the helicopter operations at Kirtland AFB would land at HLZs on BLM-administered public lands in Sandoval, Valencia, Cibola, Socorro, Guadalupe, and De Baca counties in central and west-central New Mexico. Because no single HLZ would bare a disproportionate number of operations, the air emissions produced at each HLZ would be a small fraction of that presented in **Table 3-11** for Kirtland AFB. As such, a quantitative analysis of air emissions produced at the HLZs is not necessary.

Table 3-11. Annual Air Emissions from Helicopter Flight Operations (2024 and Later)

Proposed Helicopter Flight Emissions (tpy)							
	NO_x	**VOCs**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**	**CO_2e**
UH-1N Operations (945 per year)	0.72	0.50	1.34	0.12	0.04	0.03	367.81
MH-139 Operations (455 per year)	0.21	0.17	3.18	0.06	0.21	0.07	170.3
2024 and 2025	**0.93**	**0.66**	**4.52**	**0.18**	**0.24**	**0.11**	**538.14**
UH-1N Operations (562 per year)	0.43	0.30	0.80	0.07	0.02	0.02	218.74
MH-139 Operations (1,238 per year)	0.57	0.45	8.66	0.15	0.56	0.20	463.45
2026 and 2027	**1.00**	**0.75**	**9.45**	**0.22**	**0.58**	**0.22**	**682.18**
UH-1N Operations (0 per year)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MH-139 Operations (1,238 per year)	0.57	0.45	8.66	0.15	0.56	0.20	463.45
2028 and Later	**0.57**	**0.45**	**8.66**	**0.15**	**0.56**	**0.20**	**463.45**

Personnel Changes. A long-term, negligible, adverse impact on air quality also would result from the addition of personnel (as students and permanent party members) to Kirtland AFB. These new personnel would produce air emissions from their daily commute to and from the installation. A net increase of 37, 59, and 25 permanent party personnel and students would occur for 2024 and 2025, 2026 and 2027, and 2028 and onward, respectively. The annual air emissions from these additional personnel were calculated using USAF's ACAM and are provided in **Table 3-12**. **Appendix B** contains the ACAM summary report.

Table 3-12. Annual Air Emissions from Additional Personnel

Calendar Year	**NO_x** (tpy)	**VOCs** (tpy)	**CO** (tpy)	**SO_x** (tpy)	**PM_{10}** (tpy)	**$PM_{2.5}$** (tpy)	**CO_2e** (tpy)
2024	0.045	0.050	0.533	<0.001	0.001	0.001	47.5
2025 and 2026	0.068	0.075	0.829	<0.001	0.002	0.001	71.2
2027 and Later	0.051	0.056	0.628	<0.001	0.001	0.001	53.9

Summary. As noted in **Section 3.2.1**, the General Conformity Rule does not apply to the Proposed Action and neither an applicability determination nor a conformity analysis is required. However, for informational purposes, the estimated annual air emissions from the Proposed Action can be compared to the USEPA 100 tpy *de minimis* level. Annual emissions of all criteria pollutants would be well below the 100 tpy threshold, as shown in **Table 3-13**. Therefore, the Proposed Action would not be expected to result in a significant impact on air quality.

Table 3-13. Annual Change in Air Emissions from the Proposed Action

	NO_x (tpy)	VOCs (tpy)	CO (tpy)	SO_x (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2e (tpy)
Baseline Emissions (945 UH-1N Operations)	0.72	0.50	1.34	0.12	0.04	0.03	367.8
2021 (Demolition and Construction)	+2.09	+1.67	+2.12	+0.01	+2.23	+0.09	+500.0
2022 and 2023	No New Emissions						
2024 and 2025 (New Personnel and 455 MH-139 Operations)	+0.28	+0.25	+4.11	+0.06	+0.21	+0.08	+250.1
2026 and 2027 (New Personnel, 1,238 MH-139 Operations, and Remove 383 UH-1N Operations)	+0.39	+0.38	+9.60	+0.10	+0.55	+0.19	+441.7
2028 and Later (New Personnel, 1,238 MH-139 Operations, and Remove 945 UH-1N Operations)	-0.10	+0.01	+7.95	+0.03	+0.52	+0.17	+149.5
Informational Comparison	100	100	100	100	100	100	NA

Key: NA = not applicable

Climate Change and Greenhouse Gases. The Proposed Action would emit approximately 500 tons of CO_2e during the greatest year of GHG emissions (i.e., 2021). By comparison, this amount of CO_2e is approximately the GHG footprint of 96 passenger vehicles driven for one year or 54 homes' energy use for one year (USEPA 2018). As such, this annual emission of GHGs would not meaningfully contribute to the potential effects of global climate change. Therefore, the Proposed Action would not be expected to result in a significant impact on climate change.

Ongoing changes to climate patterns in the southwestern United States are described in **Section 3.2.1**. These climate changes are unlikely to affect USAF's ability to implement the Proposed Action, and the Proposed Action would not appreciably contribute to the regional (i.e., southwestern United States) impacts from global climate change because of insignificant CO_2e emissions.

3.3.2.2 No Action Alternative

Under the No Action Alternative, the proposed replacement of aging UH-1N aircraft with modern MH-139 medium lift aircraft would not occur and the existing conditions discussed in **Section 3.3.1** would remain unchanged. The air emissions currently produced from UH-1N flight operations, shown in **Table 3-13**, would continue to be produced. No air emissions from demolition and construction, additional personnel, or MH-139 flight operations would be produced.

Implementation of the No Action Alternative would not result in any new or additional impacts on air quality.

3.4 WATER RESOURCES

Water resources are natural and man-made sources of water that are available for use by, and for the benefit of, humans and the environment. Water resources relevant to Kirtland AFB's location in New Mexico include groundwater, surface water, floodplains, and wetlands. Evaluation of water resources examines the quantity and quality of the resource and its demand for various purposes and ensures compliance with the Clean Water Act (CWA), 33 USC Part 1251 et seq. (1972).

Groundwater. Groundwater is water that exists in the saturated zone beneath the Earth's surface that collects and flows through aquifers. Groundwater is an essential resource that functions to recharge surface water and is used for drinking, irrigation, and industrial purposes. Groundwater typically can be described in terms of depth from the surface, aquifer or well capacity, water quality, recharge rate, and surrounding geologic formations.

Surface Water. Surface water includes natural, modified, and man-made water confinement and conveyance features above groundwater that may or may not have a defined channel and discernable water flow. These features are generally classified as streams, springs, wetlands, natural and artificial impoundments (e.g., ponds, lakes), and constructed drainage canals and ditches. Stormwater is surface water generated by precipitation events that may percolate into permeable surficial sediments or flow across the top of impervious or saturated surficial areas, a condition known as runoff. Stormwater is an important component of surface water systems because of its potential to introduce sediments and other contaminants that could degrade surface waters, such as lakes, rivers, or streams. Proper management of stormwater flows, which can be intensified by high proportions of impervious surfaces associated with buildings, roads, and parking lots, is important to the management of surface water quality and natural flow characteristics.

Energy Independence Security Act (EISA) Section 438 (42 USC § 17094) establishes into law stormwater design requirements for federal development projects that disturb a footprint of greater than 5,000 square ft. EISA Section 438 requirements are independent of stormwater requirements under the CWA. The project footprint consists of all horizontal hard surface and disturbed areas associated with project development. Under these requirements, pre-development site hydrology must be maintained or restored to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow. Pre-development hydrology would be modeled or calculated using recognized tools and must include site-specific factors, such as soil type, ground cover, and ground slope.

Floodplains. Floodplains are areas of low, level ground, present along rivers, stream channels, or coastal waters that are subject to periodic or infrequent inundation because of rain or melting snow. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, nutrient cycling, water quality maintenance, and provision of habitat for a diversity of plants and animals. Flood potential is evaluated by Federal Emergency Management Agency, which defines the 100-year floodplain as an area within which there is a 1 percent chance of inundation by a flood event in a given year. The risk of flooding is influenced by local topography, the frequencies of precipitation events, the size of the watershed above the floodplain, and upstream development. EO 11988, *Floodplain Management*, requires federal

agencies to determine whether a proposed action would occur within a floodplain and directs them to avoid floodplains to the maximum extent possible wherever there is a practicable alternative.

3.4.1 Affected Environment

Groundwater at Kirtland AFB. Kirtland AFB is within the limits of the Rio Grande Underground Water Basin, which is defined as a natural resources area and designated as a "declared underground water basin" by the state of New Mexico. The average depth to groundwater beneath Kirtland AFB is 450 to 550 ft below ground surface. The Rio Grande Basin's source of groundwater is the Santa Fe Aquifer, which has an estimated 2.3 billion acre-feet of recoverable water. This aquifer is most likely recharged east of the installation in the Manzanita Mountains where the sediment soil materials favor rapid infiltration (KAFB 2018a). The regional aquifer is used for the installation's water supply. Kirtland AFB has a water right that allows it to divert approximately 6,400 acre-feet of water, or approximately 2 billion gallons, per year from the underground aquifer (KAFB 2016). In 2019, Kirtland AFB pumped 2,403 acre-feet (783 million gallons) of water from the regional aquifer and purchased 0.3 acre feet (98,000 gallons) of water from the Albuquerque-Bernalillo County Water Utility Authority (ABCWUA) (KAFB 2020b).

Surface Water at Kirtland AFB. Kirtland AFB is within the Rio Grande watershed. The Rio Grande is the major surface hydrologic feature in central New Mexico, flowing north to south through Albuquerque, approximately 5 miles west of the installation. Surface water resources on Kirtland AFB reflect its dry climate. The average annual rainfall in Albuquerque is 9 inches, with half of the average annual rainfall occurring from July to October during heavy thunderstorms. Surface water generally occurs in the form of stormwater sheet flow that drains into small gullies during heavy rainfall events (KAFB 2018a). Surface water generally flows across the installation in a westerly direction toward the Rio Grande.

The two main surface water drainage channels on Kirtland AFB are the Tijeras Arroyo and the smaller Arroyo del Coyote, which joins the Tijeras Arroyo approximately 1 mile west of the Tijeras Arroyo Golf Course. The Tijeras Arroyo and Arroyo del Coyote are tributaries to the Rio Grande. They flow intermittently during heavy thunderstorms and the spring snowmelt, but most of the water percolates into alluvial deposits or is lost to the atmosphere via evapotranspiration. The Tijeras Arroyo, which is dry for most of the year, is the primary surface channel that drains surface water from Kirtland AFB to the Rio Grande. Precipitation reaches the Tijeras Arroyo through a series of storm drains, flood canals, and small, mostly unnamed arroyos. Nearly 95 percent of the precipitation that flows through the Tijeras Arroyo evaporates before it reaches the Rio Grande. The remaining 5 percent is equally divided between groundwater recharge and runoff (KAFB 2018a). In the developed area of the installation, stormwater drains into small culverts towards Gibson Boulevard along the installation boundary. There are also four detention ponds in the area. Stormwater in the industrial/laboratory areas discharges through surface runoff or through three large culverts that drain toward the Tijeras Arroyo in the south (KAFB 2018a).

Wetlands are considered "waters of the United States" if they are determined to be jurisdictional by the United States Army Corps of Engineers (USACE) and USEPA. There are 10 wetlands supplied by at least 15 naturally occurring springs on Kirtland AFB; however, no Jurisdictional Determinations have been made concerning these water features. There are no natural lakes or rivers on Kirtland AFB; however, six man-made ponds have been created on the Tijeras Arroyo Golf Course.

Kirtland AFB operates under three National Pollutant Discharge Elimination System (NPDES) Permits: the Multi-Sector General Permit for industrial activities, the Municipal Separate Storm

Sewer System permit for stormwater conveyances from installation development, and the Construction General Permit (CGP) for construction projects. CGPs contain guidelines for erosion and sedimentation control, pollution prevention, and stabilization on construction sites of 1 acre or more. When construction projects are not subject to NPDES CGP requirements (i.e., due to the size of the project or a waiver granted), the contractor must still implement appropriate BMPs to minimize stormwater pollutants.

Floodplains at Kirtland AFB. The 100-year floodplain on the installation is associated with the Arroyo del Coyote and Tijeras Arroyo. Arroyo del Coyote and Tijeras Arroyo floods occur infrequently and are characterized by high peak flows, small volumes, and short durations (KAFB 2018a). The project area is not within a floodplain. Therefore, floodplains will not be discussed further.

Water Resources at the HLZs on BLM-administered Public Lands. The BLM EA determined that 58 SOW training operations would not result in an impact on water resources at the HLZs on BLM-administered public lands. Groundwater at the HLZs would not be impacted because helicopter training at the HLZs does not involve the use of groundwater. Dry, ephemeral drainages were observed in HLZs 6, 30, and 31; however, 58 SOW training operations would have no direct effects on surface waters, as creeks, springs, and drainages at the HLZs would not be altered. In addition, although the southeast corner of HLZ 31 is within the 100-year floodplain, 58 SOW training operations would not effect the natural functions of the floodplain (BLM 2019). Therefore, water resources at the HLZs will not be discussed further.

3.4.2 Environmental Consequences

3.4.2.1 Proposed Action

Groundwater at Kirtland AFB. The Proposed Action would not result in short- or long-term adverse impacts on groundwater. The anticipated number of personnel to be added to Kirtland AFB is approximately 87 persons by FY 2028. In 2018, Kirtland AFB pumped 744 million gallons of water from the regional aquifer. The additional 87 personnel would account for an added water demand of 2.8 million gallons per year by 2028, which would equate to an increase of 0.03 percent over current demand.

Surface Water at Kirtland AFB. The Proposed Action would result in short-term, negligible, adverse impacts on surface water during demolition and construction. In accordance with the Kirtland AFB Stormwater Pollution Prevention Plan (SWPPP), project activities would be reviewed to ensure proper erosion and sediment control measures are considered and incorporated into project designs. Appropriate stormwater drainage controls would be adhered; therefore, no adverse long-term impacts on surface water are anticipated. Additionally, should project activities individually or cumulatively disturb 1 acre or more of land, coverage under the 2017 National Pollutant Discharge Elimination System Construction General Permit would be obtained prior to construction. The Construction General Permit requires preparation and implementation of a site-specific SWPPP. All ground-disturbing activities would adhere to federal, state, and local regulations, obtain all necessary permits, and comply with all BMPs listed therein. Post-construction analysis of stormwater should be conducted to evaluate the effectiveness of any new stormwater features such as drains. Stormwater features would need to be integrated into new construction activities to comply with the restrictions on stormwater management promulgated by EISA Section 438. The use of water for dust suppression during ground-disturbing activities would be minimal and not cause flooding or move soil particles into stormwater drainage systems.

3.4.2.2 No Action Alternative

Under the No Action Alternative, the proposed replacement of aging UH-1N aircraft with modern MH-139 medium-lift aircraft would not occur and the existing conditions discussed in **Section 3.4.1** would remain unchanged. No demolition and construction would occur. Implementation of the No Action Alternative would not result in any new or additional impacts on water resources.

3.5 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 NRHP.

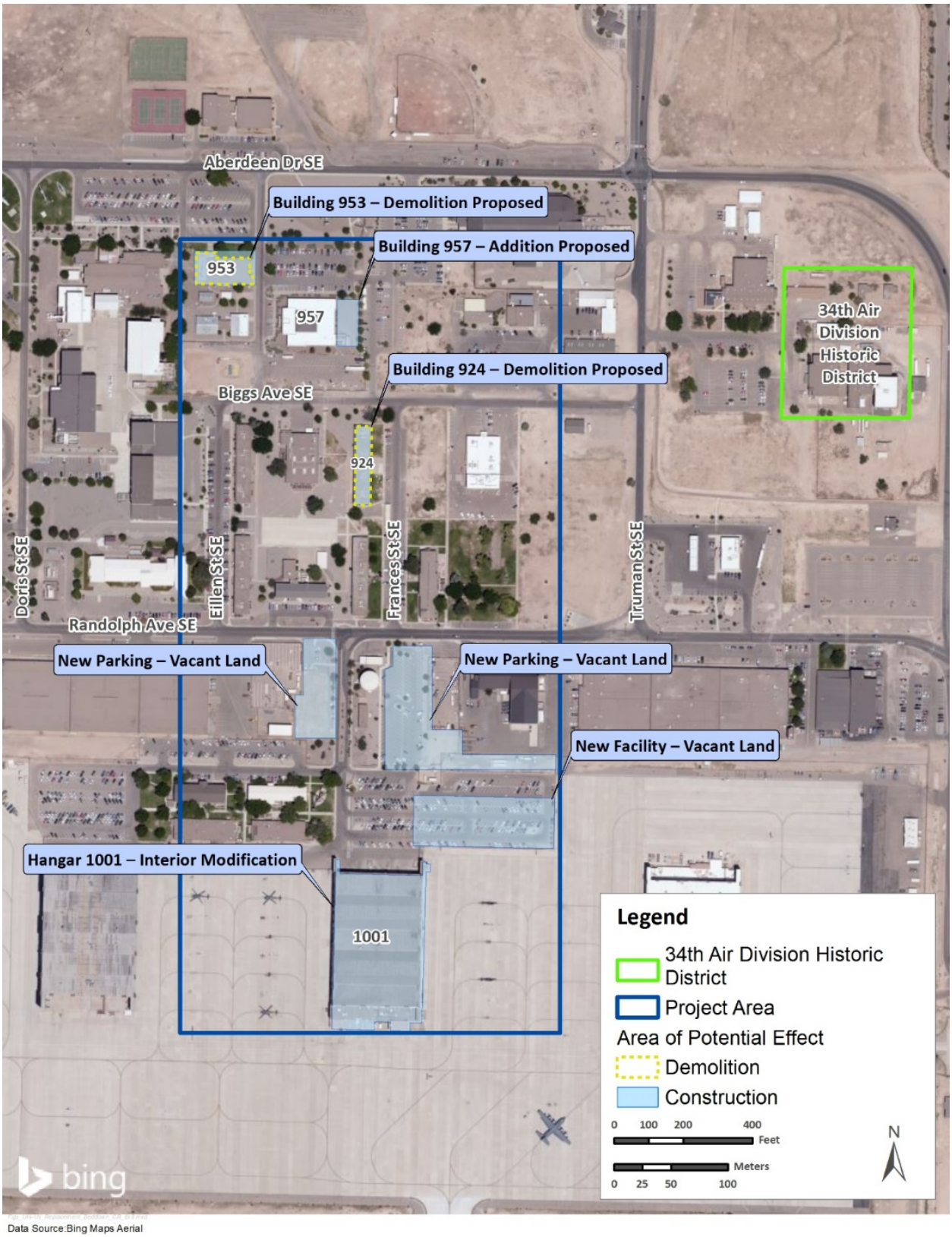
Five classes of historic properties are defined as eligible for listing in the NRHP: buildings, sites, districts, structures, and objects (36 CFR § 60.3). According to the NRHP, a "historic district" possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects that are historically or aesthetically united by plan or physical development.

Under Section 106 of the NHPA, 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 Part 800). Under this process, USAF evaluates the NRHP eligibility of resources within the proposed undertaking's Area of Potential Effect (APE) and assesses the possible effects of the proposed undertaking on prehistoric and historic resources in consultation with the SHPO and other parties. The APE is defined as the geographic area(s) "within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." Title 36 CFR § 60.4 defines the criteria used to establish significance and eligibility for the NRHP. Section 110 of the NHPA requires USAF to complete an inventory of historic properties on its land (36 CFR Parts 60, 63, 78, 79, and 800).

3.5.1 Affected Environment

The APE for the Proposed Action has been defined as all areas of potential direct and indirect effects from construction and does not include any buffer because all potential impacts would occur within the project areas. The APE at Kirtland AFB includes the buildings proposed for demolition, renovation, and the new facility and parking area construction areas (see **Figure 3-2**). The APE at the BLM-administered public lands includes the 42 HLZs used by 58 SOW for training operations.

Architectural Properties at Kirtland AFB. Kirtland AFB has conducted an installation-wide survey of archaeological and cultural resources. A total of 740 archaeological sites were recorded within the boundaries of the installation, and 251 have been determined to be eligible for the NRHP. These sites contain artifacts such as pottery, ground stone, stone tools, and historic artifacts. In addition to artifacts, many of the archaeological sites on Kirtland AFB contain features that include hearths, prehistoric structures, storage pits, historic structures, mines, weapons testing structures, and military training structures. Many of these sites occur within the undeveloped portion of the installation, which is also where many of the training areas exist. It is possible to encounter surface artifacts in these areas, which are protected under the Archaeological Resources Protection Act. The exact locations of these sites are protected and not disclosed to the general population. In addition to archaeological sites, a total of 2,189 facilities have been evaluated for NRHP eligibility, and 271 were found to be eligible (KAFB 2018b).



Data Source:Bing Maps Aerial

Figure 3-2. Demolition and Construction within the APE at Kirtland AFB

Of the 271 facilities evaluated as eligible, only Hangar 1001, which is proposed for interior renovations, is within the APE (Reynolds 2019). No exterior alteration of Hangar 1001 is proposed. No other eligible historic properties are within the APE.

In addition to the 271 facilities evaluated as eligible, Kirtland AFB previously recommended that three of the building complexes are eligible for listing in the NRHP as National Register Historic Districts. These building complexes include the 34th Air Division Historic District, the EMP Simulation Historic District, and the Manzano Base. SHPO concurred with all eligibility recommendations (KAFB 2018b). However, Kirtland AFB is currently in consultation with SHPO to mitigate the 34th Air Division Historic District (Reynolds 2019). None of the previously-identified historic districts are within the project APE. **Table 3-14** presents the eligibility status for properties within the APE.

Table 3-14. Eligibility Status of Properties within the APE at Kirtland AFB

Project Component	Building Number	Date of Construction	NRHP Status
Demolition of Building 953 for Proposed Expansion of Building 951 to Accommodate Flight Simulators	953	1964	Not Eligible
Addition to Accommodate Personnel Space	957	1997	NRHP evaluation not yet required, post-1990 construction
Demolition for Future Parking	924	1955	Not Eligible
New Parking (west area)	N/A	N/A	Vacant Land
New Parking (east area)	N/A	N/A	Vacant Land
New Construction	N/A	N/A	Vacant Land
Future Interior Renovation	1001	1952	Eligible

Sources: KAFB 2000, Reynolds 2019

Kirtland AFB has an ICRMP. The ICRMP is an integral part of the installation's comprehensive plan, and addresses the cultural resources on the installation. 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. The ICRMP provides guidelines and standard operating procedures to non-technical managers and planners in order to comply with the installation's legal responsibilities for the preservation of significant archaeological and historic resources (KAFB 2018b).

Archaeological and Traditional Cultural Properties at Kirtland AFB. Traditional cultural properties and sacred sites are a special class of cultural resources that require specialized expertise in their identification and assessment. Thirty-four federally recognized tribes, both in- and out-of-state, have been identified as having an interest in protecting cultural resources on the installation. At present, there are no known Native American burial grounds or sacred areas on Kirtland AFB (KAFB 2018b). No archaeological or traditional cultural properties are within the APE; therefore, archaeological and traditional cultural properties at Kirtland AFB will not be discussed further.

Architectural, Archaeological, and Traditional Cultural Properties at the HLZs on BLM-administered Public Lands. The 42 HLZs were surveyed for cultural resources during preparation of the BLM EA. The EA determined that no adverse impacts on architectural, archaeological, or traditional cultural properties would result from 58 SOW training operations at

any of the BLM-administered public lands (BLM 2019). Because the Proposed Action would continue to use established flight routes and HLZs on BLM-administered public lands, USAF anticipates no short- or long-term impacts on cultural resources at the HLZs. Therefore, architectural, archaeological, or traditional cultural properties at the HLZs on BLM-administered public lands will not be discussed further.

3.5.2 Environmental Consequences

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

3.5.2.1 Proposed Action

Short-term, negligible, adverse impacts on cultural resources could result from construction associated with the Proposed Action. Four aspects of the Proposed Action would have no potential to impact cultural resources because they would occur outside the boundary of any potential historic district and consist of buildings, structures, or sites that have been determined not eligible for NRHP listing or were constructed after 1990 and have not reached the threshold for NRHP evaluation. Only those properties found eligible for NRHP listing have the potential to be impacted by the proposed demolition and construction; therefore, only those properties determined eligible within the APE were assessed for effects. **Table 3-15** presents the assessment of effects for historic properties within the APE.

Table 3-15. Assessment of Effects to Historic Properties within the APE

Project Component	Building Number	Assessment of Effect
New Construction northeast of Hangar 1001	None – within setting of Hangar 1001	No adverse effect
Future Interior Renovation	Hangar 1001	No adverse effect

Two aspects of the Proposed Action have the potential to adversely impact cultural resources. New construction proposed on land would be approximately 100 feet northeast of Hangar 1001, which is a NRHP-eligible resource. This would constitute an alteration of setting; however, the alteration would occur in a parking lot that currently does not contribute to the setting of the hangar. In addition, the construction would occur within an area of the installation with modern buildings and structures currently visible in the hangar's vicinity to the north. Thus, the overall effect to the setting and overall integrity of Hangar 1001 would not be adverse. The Proposed Action also includes renovation to the interior of Hangar 1001, with no alteration proposed to the exterior. There are no specific features within the interior of the hangar that have been identified as character-defining and it is characterized as an open space. As all alterations would occur on

the interior and would not impact significant character-defining features of the building, the overall effect would not be adverse.

Should an inadvertent discovery of human or cultural remains occur during demolition and construction, all project activities shall stop, the Kirtland AFB Cultural Resources Program Manager would be notified, and operational procedures outlined in the ICRMP would be followed.

No short- or long-term impacts on cultural resources would result from the proposed transition from the UH-1N to the MH-139. Kirtland AFB applied the Criteria of Adverse Effect and has determined the Proposed Action would have no adverse effect on historic properties. Kirtland AFB consulted with the New Mexico SHPO and requested their concurrence with this determination. The installation also consulted with Native American tribes with interest in the Kirtland AFB area.

3.5.2.2 No Action Alternative

Under the No Action Alternative, the proposed replacement of aging UH-1N aircraft with modern MH-139 medium lift aircraft would not occur and the existing conditions discussed in **Section 3.5.1** would remain unchanged. Implementation of the No Action Alternative would not result in new or additional impacts to cultural resources.

3.6 INFRASTRUCTURE

Transportation is defined as the system of roadways, highways, and transit services that are in the vicinity of the installation and could be reasonably expected to be potentially affected by the Proposed Action. Utilities include electrical, natural gas, liquid fuel, water supply, sanitary sewage/wastewater, stormwater handling, and communications systems. Solid waste management primarily relates to the availability of landfills to support a population's residential, commercial, and industrial needs. The infrastructure information in this section was primarily obtained from the 2016 IDP and provides a brief overview of each infrastructure component and comments on its existing general condition. No changes to infrastructure at the HLZs on BLM-administered public lands would result from the Proposed Action; therefore, infrastructure at the HLZs will not be discussed in this EA.

3.6.1 Affected Environment

Transportation at Kirtland AFB. Numerous modes of transportation are available at Kirtland AFB, including air, mass transit, and federal and state highway access. The Sunport, located along the western boundary of the installation, provides commercial and public aviation and military support, particularly for USAF and Air Force Reserve units. The Albuquerque Transit Department, ABQ RIDE, provides and operates public bus services throughout the city. Several bus routes regularly service Kirtland AFB (ABQ RIDE 2019).

There are currently seven gated entrances from the city of Albuquerque to Kirtland AFB including Carlisle Gate, Truman Gate, Maxwell Gate, Gibson Gate, Wyoming Gate, Eubank Gate, Hickam Gate. The Hickam Gate, also known as the Contractor Gate, is the gate used by construction-related vehicles and the gate used for truck inspections. All other gates are entry/egress points for personnel working or living on the installation (KAFB 2016). The Gibson, Wyoming, Carlisle, and Hickam gates currently have restricted hours.

There are approximately 430 miles of paved roads and 230 miles of unpaved roads on Kirtland AFB. Major arterials include Wyoming Boulevard, Gibson Boulevard, and Frost Street. Major east/west routes consist of Hardin Boulevard, Randolph Avenue, and Aberdeen Avenue.

Minor arterials include Pennsylvania Street and 20th Street, which serve the SNL facilities. The primary transportation route to the southern portion of the installation is via Pennsylvania Street (KAFB 2016).

3.6.2 Utility Systems

Electrical System at Kirtland AFB. Kirtland AFB purchases electrical power from the Western Area Power Administration. Electric lines are placed above and below ground, feeding the 20 substations on the installation. The installation's average yearly consumption is approximately 407,010 kilowatt hours (KAFB 2016). There are numerous underground electrical lines within the proposed construction area. Aboveground electrical lines run along Randolph Avenue SE and Aberdeen Drive SE.

Natural Gas and Propane at Kirtland AFB. Natural gas is supplied by Coral Energy and delivered in New Mexico Gas Company pipelines supplying the industrial complex, family housing, and heating plants on the installation. There are approximately 496,000 linear ft of natural gas mains on the installation. Rural portions of the installation do not receive natural gas service and rely on propane, which is delivered to and stored in local propane storage tanks (KAFB 2016). There are numerous underground natural gas lines within the proposed construction area.

Liquid Fuel at Kirtland AFB. Liquid fuels are supplied to Kirtland AFB by contractors. The primary liquid fuels supplied include JP-8 (jet propellant [fuel] – type 8), diesel, and unleaded gasoline. Fuels are purchased in bulk, delivered to the installation by tanker truck, and stored in various-sized storage tanks across the installation. Kirtland AFB has a 3.2-million-gallon storage capacity for liquid fuels. Liquid fuels at Kirtland AFB are primarily used to power military aircraft and ground-based vehicles. According to 2016 IDP, there is more than enough capacity to serve current mission needs as well as potential mission expansions (KAFB 2016). There are no liquid fuel tanks within the proposed construction area.

Water Supply System at Kirtland AFB. Water is supplied to Kirtland AFB by six groundwater wells and two distribution systems that have a collective water-pumping maximum capacity of 8.1 million gallons per day (mgd). The installation pumps an average of 5.5 mgd of treated, potable water through 160 miles of distribution mains (KAFB 2016). There are also approximately 50 miles of non-potable water pipeline serving the Tijeras Golf Course and providing water for fire protection. In 2019, Kirtland AFB pumped a total of 783 million gallons (2,403 acre-feet) of water from these wells. The installation can also purchase water from the ABCWUA to meet demand during peak periods; however, the amount of water purchased from the city has been negligible since 1998. Kirtland AFB purchased 98,000 gallons (0.3 acre feet) of water from ABCWUA in 2019 (KAFB 2020b). There are numerous potable water lines within the proposed construction area.

Sanitary Sewer/Wastewater System at Kirtland AFB. Kirtland AFB does not have its own sewage treatment facility. Instead, the sanitary sewer system on the installation, which consists of approximately 491,000 linear ft of collection mains, transports wastewater to the ABCWUA. The permissible discharge rate for Kirtland AFB is fixed at 70,805,000 gallons per month. The installation discharges an average of approximately 1.4 mgd, or approximately 42 million gallons per month (KAFB 2016). Some facilities in remote areas and other portions of the installation are not serviced by the sanitary sewer system; these facilities use isolated, onsite septic systems to dispose of wastewater. There are numerous sanitary sewer and wastewater lines within the proposed construction area.

Communications System at Kirtland AFB. The communication network on Kirtland AFB was constructed as two separate systems that were later connected to provide redundancy. The main information transfer node is located on the west side of the installation. The Communication Main Switch Facility is located on the east side of the installation. There are numerous communication lines within the proposed construction area as well as a communication tower.

Solid Waste Management at Kirtland AFB. Solid waste generated at Kirtland AFB is collected by a contractor and disposed of at the city of Albuquerque's Cerro Colorado Landfill. The Cerro Colorado Landfill receives approximately 1,775 tpy from Kirtland AFB.

Kirtland AFB operates a construction and demolition waste-only landfill on the installation. This landfill accepts only construction and demolition waste from permitted contractors working on the installation, has a total gross capacity of 10.2 million cubic yards, and has a net waste capacity of 7.2 million cubic yards. As of 30 September 2018, the remaining capacity of this landfill was 2.34 million cubic yards. In 2017 and 2018, an average of 67,825 tons of construction and demolition waste per year was deposited in this landfill (Wheelock 2020). As of June 2012, the recycling of construction and demolition waste at Kirtland AFB has been codified into the Construction Waste Management specification (Section 01 74 19) for all USAF construction and demolition projects on the installation. Green waste generated from land clearing or ground maintenance on the installation is chipped at the Kirtland AFB landfill and reutilized.

Kirtland AFB manages a recycling program to reduce the amount of solid waste sent to landfills. The installation recycles scrap metal under the Qualified Recycling Program and collects corrugated cardboard from over 70 drop-off points across the installation. Per the DOD Strategic Sustainability Performance Plan, the diversion rate goal is 60 percent by FY 2015 and thereafter through FY 2020.

3.6.3 Environmental Consequences

3.6.3.1 Proposed Action

The Proposed Action would result in short- and long-term impacts on infrastructure from the proposed transition from the UH-1N to the MH-139. The impacts associated with demolition and construction at Kirtland AFB are anticipated to be short-term and temporary in nature.

Transportation at Kirtland AFB. The Proposed Action would have short- and long-term, negligible to minor, adverse impacts on the transportation system at Kirtland AFB. Short-term minor impacts would be expected on traffic patterns on Kirtland AFB. Traffic from demolition and construction equipment and personnel would increase during the duration of construction activities. Typical construction BMPs would be adhered to, such as timing construction-related traffic to avoid peak travel hours.

Long-term impacts to transportation would be negligible. Dependent on where the new personnel live, each individual has the option to take mass transit into Kirtland AFB or drive through the seven gated entrances onto Kirtland AFB. It is anticipated that not all new personnel would live in the same area and thus routes taken to and from the 58 SOW Campus would vary. Additionally, students would not be within the area all at once and thus timeframes for entrance and exits would vary. Long-term, negligible, adverse impacts would be expected to occur as more persons or vehicles would be traveling on the roads or using public transit. Additional personnel would create an increase in traffic passing through the gate system at the installation. It is expected that the

current gate system and public transit system would be able to accommodate the small number of additional personnel.

Electrical System at Kirtland AFB. The Proposed Action would have short- and long-term, negligible, adverse impacts on the installation's electrical system. Short-term interruptions to the electrical system may occur during the disconnection of buildings proposed for demolition as well as connection of the newly constructed facilities. Electrical service interruptions could also be experienced should aboveground or underground electrical lines need to be rerouted outside of the construction area.

Long-term impacts to the electrical system would be negligible. The proposed new construction would be expected to result in additional kilowatt usage due to additional square footage and installation personnel. However, it is anticipated that the electrical supply system would be able to accommodate the new facilities and additional personnel.

Natural Gas and Propane at Kirtland AFB. The Proposed Action would have short- and long-term, minor, adverse impacts on the installation's natural gas system. Interruptions to the gas delivery system may occur during the disconnection of buildings proposed for demolition as well as connection of the newly constructed facilities. Natural gas lines may also need to be rerouted during construction or demolition.

Long-term impacts to the natural gas and propane supply would be negligible. It is anticipated that the installation's natural gas system would be able to accommodate the new facilities without exceeding current capacity.

Liquid Fuel at Kirtland AFB. The Proposed Action would result in long-term, negligible, adverse impacts on the liquid fuel supply system. The addition of MH-139s plus the planned increase in flight operations would increase the demand for liquid fuel. Liquid fuels are supplied to Kirtland AFB by contractors. JP-8 is purchased in bulk, delivered to the installation by tanker truck, and stored in various-sized storage tanks across the installation. It is anticipated that contractors would be able to keep up with the increased demand of liquid fuel as Kirtland AFB has more than enough capacity to serve current and proposed future needs.

Water Supply System at Kirtland AFB. The Proposed Action would have short- and long-term, negligible, adverse impacts on the water supply system. Construction activities would require minimal amounts of water, primarily for dust suppression. Additionally, interruption to the water supply system may occur during demolition and construction and water supply lines may need to be rerouted. Although water demand would increase slightly from construction activities, this increase would be temporary and would not be expected to exceed existing capacity.

Long-term impacts to the water supply system would be negligible. Water usage would increase by 0.03 percent as discussed in **Section 3.4.2.1**. Kirtland AFB is allowed to divert up to 6,000 acre-feet (2 billion gallons) of water per year and in 2019 pumped only 2,403 acre-feet (783 million gallons) of water, which is less than half of what is permitted. Therefore, sufficient water resources would be available on the installation to accommodate the proposed increase in personnel and newly constructed facilities without exceeding current capacity.

Sanitary Sewer/Wastewater System at Kirtland AFB. The Proposed Action would have short- and long-term, minor, adverse impacts on the sanitary sewer/wastewater system. Additional facility space would require additional piping to the sanitary sewer/wastewater system currently in place. The current sanitary sewer/wastewater system may need to be rerouted during

construction, which may cause interruptions to the system. Although 87 new personnel would be added to Kirtland AFB under the Proposed Action, this low number would result in negligible impacts on the installation's sanitary sewer/wastewater systems.

Communications System at Kirtland AFB. The Proposed Action would have short-term and long-term, minor, adverse impacts on the communication system during construction. Interruptions to the communication system may occur during the disconnection of buildings proposed for demolition as well as during connection of the newly constructed facilities. Communications lines may also need to be rerouted during construction.

Long-term impacts to the communications system would be negligible. The Proposed Action would not be expected to result in a significant impact on the current communications system.

Solid Waste Management at Kirtland AFB. The Proposed Action would have short-term and long-term minor, adverse impacts on solid waste management as demolition and construction activities would generate solid wastes. Construction debris would consist primarily of recyclable and reusable building materials, such as concrete, and metals (e.g., piping and wiring). All materials that could be recycled or reused would be diverted from landfills whenever possible, reducing the amount of waste disposed. Site-generated scrap materials would be separated and recycled off site. Clean fill material, ground-up asphalt, and broken-up cement would be diverted from the landfills and reused whenever possible. Solid wastes generated by the construction contractor would need to follow all state, local, and federal laws and regulations. Kirtland AFB operates a construction and demolition waste-only landfill that the construction contractor can utilize for disposal of demolition waste that is non-hazardous and not recyclable or reusable. **Table 3-16** presents estimated construction debris that would be generated from demolition and construction.

Table 3-16. Estimated Construction Debris Generated from Demolition and Construction

Project	Total Square Footage	Multiplier (pounds/SF)	Debris Generated	
			(pounds)	(tons)
Building Demolition - Building 953	11,948	158	1,887,784	944
Building Demolition - Building 924	17,287	158	2,731,346	1,366
Pavement Demolition[1]	266,050*	37	9,843,850	4,922
Building Construction - Building 951 Addition	35,776	4.34	155,268	78
Building Construction -Building 957 Addition	4,800	4.34	20,832	10
Building Construction - New Facility	75,000	4.34	325,500	163
Pavement Construction	186,250	1	186,250	93
Interior Renovations - Hangar 1001	Estimated as 1% of total debris	-		75
Total Debris Generated (tons)				7,651

Key: [1] Assume pavement depth of 6 inches and full-depth removal; * Total SF for Pavement Demo = New facility + Pavement Construction + Building 957 Addition
Sources: EPA 2003 and Red-E-Bins 2020

3.6.3.2 No Action Alternative

Under the No Action Alternative, the proposed replacement of aging UH-1N aircraft with modern MH-139 medium lift aircraft would not occur and the existing conditions discussed in **Section**

3.6.1 would remain unchanged. No demolition or construction would occur. Implementation of the No Action Alternative would not result in new or additional impacts to the installation's infrastructure.

3.7 HAZARDOUS MATERIALS AND WASTES

Hazardous materials are defined by 49 CFR § 171.8 as "hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR § 172.101), and materials that meet the defining criteria for hazard classes and divisions" in 49 CFR Part 173. Transportation of hazardous materials is regulated by the US Department of Transportation regulations within 49 CFR Parts 105–180.

Hazardous waste is defined by the Resource Conservation and Recovery Act (RCRA) at 42 USC § 6903(5), as amended by the Hazardous and Solid Waste Amendments, as: "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (a) cause, or significantly contribute to an increase in, mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (b) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed."

A toxic substance is a chemical or mixture of chemicals that may present an unreasonable risk of injury to health or the environment. Toxic substances are addressed separately from other hazardous substances. Toxic substances include asbestos-containing materials (ACMs), lead-based paint (LBP), and polychlorinated biphenyls (PCBs), all of which are typically found in building and utility infrastructure. USEPA is given the authority to regulate these substances by the Toxic Substances Control Act (15 USC Part 53). USEPA has established that any material containing more than one percent asbestos by weight is considered an ACM. ACMs are generally found in building materials such as floor tiles, mastic, roofing materials, pipe wrap, and wall plaster. USEPA implemented bans on various ACMs between 1973 and 1990. LBP was commonly used in building construction prior to its ban in 1978. PCBs are man-made chemicals that persist in the environment and were widely used in buildings materials (e.g., caulk) and electrical products (e.g., light ballasts) prior to its ban in 1979.

DOD developed the ERP to facilitate thorough investigation and cleanup of contaminated sites on military installations (i.e., active installations, installations subject to Base Realignment and Closure, and Formerly Used Defense Sites). The Installation Restoration Program and Military Munitions Response Program (MMRP) are components of the ERP. The Installation Restoration Program required each DOD installation to identify, investigate, and clean up hazardous waste disposal or release sites. MMRP addressed non-operational rangelands that are suspected or known to contain unexploded ordnance (UXO), discarded military munitions, or munitions constituent contamination. A description of ERP activities provides a useful gauge of the condition of soils, water resources, and other resources that might be affected by contaminants. It also aids in the identification of properties and their usefulness for given purposes (e.g., activities dependent on groundwater usage might be restricted until remediation of a groundwater contamination plume has been completed).

DOE's Office of Site Closure is responsible for achieving closure of Environmental Restoration (ER) sites in a manner that is safe, cost-effective, and coordinated with stakeholders. As a facility operated for DOE under the Albuquerque Operations Office, SNL is part of this program. The current investigation being conducted at SNL under the ER program is intended to determine the nature and extent of hazardous and radioactive contamination and to restore sites where such materials pose a threat to human health or the environment.

The Proposed Action would only have the potential for impacts at Kirtland AFB where demolition and construction would occur. Increased aircraft operations at the HLZs would not include impacts to hazardous materials or hazardous wastes. Therefore, **Sections 3.7.1** and **3.7.2** will focus on Kirtland AFB only.

3.7.1 Affected Environment

Hazardous Materials and Petroleum Products at Kirtland AFB. Kirtland AFB has identified 377 MSG/CEIEC as the responsible entity to oversee hazardous material tracking on the installation. Part of their responsibilities are to manage the procurement and use of hazardous materials to support USAF missions, ensure the safety and health of USAF personnel and surrounding communities, and minimize USAF dependence on hazardous materials. Typical hazardous materials used by 58 SOW within the 58 SOW Campus include solvents, paints, adhesives, sealants, POLs, and batteries. Within the project area, hazardous materials are stored and used in Hangar 1001 (Wilson 2019). All hazardous materials used by 58 SOW are authorized under their shop code in the Enterprise Environmental, Safety, and Occupational Health Management Information System (EESOH-MIS). Contractors bringing hazardous materials onto the installation must notify the 377 MSG/CEIEC Hazardous Material Program by submitting a completed Hazardous Material Worksheet and a list of all materials along with their associated Safety Data Sheets.

The installation's Pest Management Plan establishes the strategy and methods for conducting a safe, effective, and environmentally sound integrated pest management program that reduces pollution and other risk factors associated with the use of pesticides (KAFB 2018c). The Kirtland AFB Spill Prevention, Control, and Countermeasures (SPCC) Plan provides operating procedures to prevent spills, control measures to prevent spills from entering surface waters, and countermeasures to contain and cleanup the effects of an oil spill that could impact surface waters (KAFB 2018d).

Hazardous and Petroleum Wastes at Kirtland AFB. USAF maintains a HWMP as directed by AFI 32-7042, *Waste Management*. This plan provides guidance for 377 ABW personnel and mission partners that generate hazardous waste regarding appropriate storage, handling, and disposition. The 377 MSG/CEIEC Hazardous Waste Program is responsible for implementing the hazardous waste management program at Kirtland AFB through waste characterization; establishing collection sites; receiving and processing hazardous waste for turn-in; reporting, tracking logs, and manifesting; spill reporting; regulatory interface; recordkeeping; and hosting and conducting inspections (KAFB 2018e). The HWMP establishes the procedures to comply with applicable federal, state, and local standards for solid waste and hazardous waste management.

Kirtland AFB is a large-quantity generator of hazardous waste (USEPA ID #NM9570024423). Kirtland AFB and DOE/SNL maintain separate RCRA permits for all current operations that generate hazardous waste. Typical wastes generated within the 58 SOW Campus include batteries, rags with solvents, paints, adhesives, sealants, and POLs. Within the project area, hazardous and petroleum waste is generated in Hangar 1001 (Wheelock 2019). All hazardous wastes generated are collected in an initial accumulation point prior to being transferred to the less than 90-day accumulation area for proper disposal.

Toxic Substances at Kirtland AFB. Because Building 957 was constructed in 1997, it is not expected to contain toxic substances. However, Hangar 1001, which was constructed in 1954, and Buildings 924 and 953, which were constructed in 1955 and 1964 respectively, are assumed to contain toxic substances such as ACM and LBP. Fluorescent light ballasts within these

buildings may contain PCBs. All transformers on the installation are self-contained and certified PCB-free (KAFB 2018d).

Environmental Restoration Program at Kirtland AFB. Kirtland AFB has 58 active ERP sites that include known and suspected soil and groundwater contamination associated with landfills, oil/water separators (OWSs), drainage areas, septic systems, fire training areas, and spill areas. Kirtland AFB is working to clean up most sites to residential standards and to obtain No Further Action (NFA) required approval from NMED. Once sites achieve the NFA required approval, they no longer represent constraints for land use and are closed. The active Kirtland AFB ERP sites are in various stages of remediation and some sites, such as the former landfills, may require more than 30 years of monitoring before closure can be obtained (KAFB 2016).

Kirtland AFB has seven active MMRP sites, comprising approximately 3,239 acres. These sites are former impact areas that are primarily along the outer perimeter and center of the installation. The sizes, types of munitions debris, and potential for UXO varies by location (KAFB 2013).

DOE actively manages 11 open ER sites on Kirtland AFB that require or may require corrective action. These sites are on DOE-leased lands and include three groundwater areas of concern and eight solid waste management units. When such sites are no longer active, DOE personnel determine if a site meets NMED criteria for acceptable levels of risk to human health and the environment. If the criteria are met, DOE submits a Corrective Action Complete (CAC) proposal to NMED to modify its RCRA permit accordingly. As necessary, remediation is performed to meet NMED criteria for CAC status (SNL 2017).

There are 27 ERP sites, 2 MMRP sites, and no DOE ER sites within or adjacent to (i.e., within 0.5 mile) the project area. **Table 3-17** and **Figure 3-3** present the status and location of ERP and MMRP sites within a 0.5-mile radius of the project area.

Table 3-17. Status of ERP and MMRP Sites within 0.5-Mile Radius of Project Area

Site No.	Site Title	Site Status	Within/Adjacent to Project Area
ERP Sites			
LF-001	Landfill No. 1	Active	Adjacent
SS-C575	Transient Alert Pad	NFA	Adjacent
SS-062	Building 909 Waste Accumulation Area	NFA	Adjacent
SS-077	Abandoned Railroad Spur	NFA	Adjacent
SS-081	Building 907 Detention Pond and Yard	NFA	Adjacent
SS-082	ALECS Facility	NFA	Adjacent
ST-070B	Building 377 OWS Tank and Drying Rack	CAC	Adjacent
ST-070D	Building 471 OWS	CAC	Adjacent
ST-070E	Buildings 481 and 482 Former OWS	Active	Adjacent
ST-071	Building 1000/1001 OWS	NFA	Within
ST-106	Spill at Bulk Fuels Facility	Active	Adjacent
ST-108	Abandoned JP-4 Fuel Line	NFA	Adjacent
ST-109	Acetone Spill Site	Incorporated into ST-106	Adjacent
ST-217	Building 481 OWS	NFA	Adjacent
ST-218	Building 482 OWS	NFA	Adjacent
ST-220	Paint Shop Storm Drain, Building 1001	Petitioned for NFA	Within
ST-226	Building 1037 OWS	NFA	Adjacent
ST-227	Building 1037 Holding Tank	NFA	Adjacent

Table 3-17. Status of ERP and MMRP Site within 0.5-Mile Radius of Project Area (continued)

Site No.	Site Title	Site Status	Within/Adjacent to Project Area
ERP Sites (continued)			
ST-278	Sanitary Sewer System A	NFA	Adjacent
ST-279	Sanitary Sewer System B	NFA	Adjacent
ST-285	West Storm Sewer System	Petitioned for NFA	Adjacent
ST-286	East Storm Sewer System	Petitioned for NFA	Adjacent
ST-287	Building 525 Septic System	NFA	Adjacent
ST-292	Building 626 Septic System	NFA	Adjacent
ST-325	H-3/H-53 Phase Dock Floor Drains, Building 1000	Petitioned for NFA	Within
ST-331	C-130 Maintenance Shop Storm Sewer, Building 1009	Petitioned for NFA	Adjacent
ST-341	Evaporation Pond/Condensate Tank, Building 1033	NFA	Adjacent
WP-047	Silver Recovery Unit	NFA	Adjacent
MMRP Sites			
ML781	Firing In-Abutment	NFA	Adjacent
TS775	Airfield Skeet Range	NFA	Adjacent

Proposed demolition and construction areas are not within active ERP, MMRP, or DOE ER sites; however, Hangar 1001, which would undergo interior renovations is within ERP Site ST-220. ERP Site ST-220 has been petitioned for NFA. There are three active ERP sites within 0.5 mile of the project area, LF-001, ST-070E, and ST-106. There are no monitoring wells within the project area.

A small portion of Site LF-001, Landfill No. 1, is within the southeastern portion of the 0.5-mile radius. LF-001 was operated as a trench-and-fill landfill from 1951 to 1975. The landfill contains approximately 425,000 cubic yards of municipal waste and up to 175,000 cubic yards of demolition and construction debris. A Corrective Measures Implementation work plan was submitted to NMED in July 2004 to construct an evapotranspiration cover system to minimize percolation through the landfill, leachate production, and potential impacts to groundwater. The evapotranspiration cover was completed in June 2006 and covers 49 acres. A long-term monitoring program was initiated in May 1996, which consists of quarterly gauging of eight monitoring wells and semiannual sampling of four of the wells. The groundwater samples are analyzed for inorganics and volatile organic compounds. No concentrations above USEPA maximum contaminant levels have been observed since the landfill was capped (KAFB 2017a).

ST-070E, Former OWS, Buildings 481 and 482, is approximately 0.25 mile northwest of the proposed new parking area in the southwestern portion of the project area and 0.25 mile west of Building 924, which is proposed for demolition under the Proposed Action. The OWS collected surface water drainage from the tarmac and separated the oily residues from the water prior to discharge to the sanitary sewer. It was identified as a contaminant release site based on visual inspections and samples collected from the OWS in 1990 and 1992. The OWS was removed in 1994, and piping was reconfigured to direct drainage to the sanitary sewer. The concentration of contaminants in groundwater have been below applicable thresholds. The site is currently undergoing remediation with a soil vapor extraction system to treat constituents in the vadose zone (KAFB 2017b).

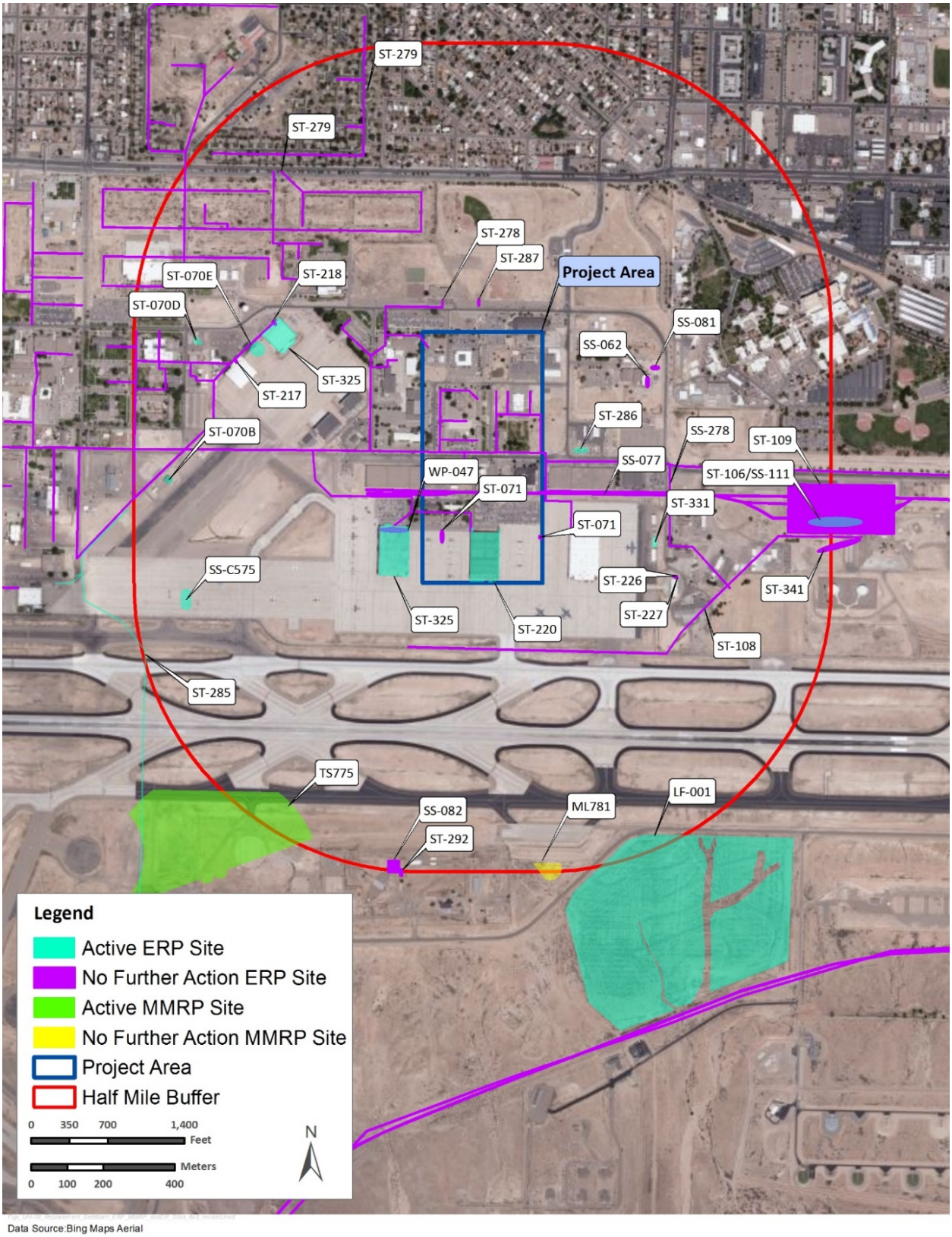


Figure 3-3. ERP and MMRP Sites within 0.5-Mile Radius of the Project Area

ST-106, Fuel Spill at Bulk Fuels Facility (BFF), is approximately 0.5 mile east of Hangar 1001. The BFF and associated infrastructure operated from 1953 until 1999. During facility operation, the fueling area was separated into a tank holding area where bulk shipments of fuel were received and a fuel loading area where fuel trucks were filled. After discovering a fuel leak in subsurface piping at the rail unloading point in 1999, the BFF was removed from service. It was initially believed the leak only affected surface soil within the immediate area; however, through further investigation, it became apparent that the fuel reached the groundwater table. The groundwater plume is in the northwestern portion of the installation, east of the project area.

The groundwater plume is trending north and east, away from the project area and toward the city of Albuquerque. As part of the remediation process, soil vapor extraction units were installed to remediate soil contamination and numerous groundwater and soil vapor monitoring wells were installed on and off the installation to further investigate the extent of the plume. These wells are sampled quarterly as part of the regular sampling schedule performed on the plume (KAFB 2018f). A new full-scale groundwater pump and treat system unit was brought online in December 2016 to remediate dissolved-phase ethylene dibromide in the groundwater. As of November 2018, approximately 500 million gallons of groundwater have been treated and effluent continues to be non-detect for all fuel constituents and meets all Safe Drinking Water Act requirements (USAF and NMED 2018).

3.7.2 Environmental Consequences

3.7.2.1 Proposed Action

Hazardous Materials and Petroleum Products at Kirtland AFB. Short- and long-term, negligible, adverse impacts on hazardous materials and petroleum products are expected to result from the Proposed Action. Short-term increases in the use and storage of hazardous materials and POLs would result during the transition period when the total number of aircraft on the installation temporarily increases and long-term increases would result from the two additional PAI in the installation's aircraft fleet as well as increased aircraft operations. Hazardous materials and POLs would continue to be authorized and obtained under the 58 SOW shop code in EESOH-MIS. 58 SOW personnel would continue to implement standard BMPs; comply with standard operating procedures; and adhere to all federal, state, and local regulations governing the procurement, use, storage, transportation, and disposal of hazardous materials and petroleum products during operation and maintenance activities.

Short-term, negligible to minor, adverse impacts on hazardous materials and petroleum products would result from demolition and construction should any hazardous material or petroleum product be released into the environment. Construction equipment would use small quantities of hazardous materials and POLs such as solvents, hydraulic fluid, oil, antifreeze, and other hazardous materials. Hazardous materials could also be used for minor equipment servicing and repair activities. Under the Proposed Action, construction contractors would ensure the handling and storage of any hazardous materials and POLs is carried out in compliance with applicable federal, state, and local laws and regulations. Implementation of the Proposed Action would adhere to applicable management plans such as the installation's Pest Management Plan and SPCC Plan. The severity of a potential impact from an accidental release would vary based upon the extent of a release and the substance(s) involved.

No storage tanks, hazardous materials, or POL storage areas would be affected under the Proposed Action. Although construction activities under the Proposed Action may require the temporary use of aboveground storage tanks onsite for power generation or equipment fuel, their

use and maintenance would comply with applicable federal, state, and local laws and regulations to include secondary containment. Aboveground storage tanks would be used temporarily and removed from the project area upon project completion. Therefore, the Proposed Action would not be expected to result in a significant impact on hazardous materials management.

Hazardous and Petroleum Wastes at Kirtland AFB. Short-term, negligible, adverse impacts on hazardous and petroleum wastes would occur as wastes are expected to be generated during demolition and construction. Short-term increases in the generation of hazardous and petroleum wastes would result during the transition period when the total number of aircraft on the installation temporarily increases and long-term increases would result from the two additional PAI in the installation's aircraft fleet and increased aircraft operations. Hazardous and petroleum wastes would be handled and disposed of in accordance with the installation's HWMP and federal, state, and local regulations.

Short-term, negligible, adverse impacts on the generation and handling of hazardous and petroleum wastes would result during demolition and construction. Construction would require the use of hazardous materials and petroleum products, which would result in the generation of hazardous wastes and used petroleum products. Implementation of BMPs and environmental protection measures would reduce the potential for an accidental release of hazardous and petroleum wastes. All construction equipment would be maintained according to the manufacturer's specifications and drip mats would be placed under parked equipment as needed. Further, all hazardous and petroleum wastes generated from the Proposed Action would be handled, stored, and disposed of in accordance with the installation's HWMP and all federal, state, and local regulations.

It is possible that unknown hazardous and petroleum wastes could be discovered or unearthed during ground-disturbing activities. In such cases, construction contractors would immediately cease work, contact appropriate installation personnel, and await sampling and analysis results before taking any further action. Any unknown wastes determined to be hazardous would be managed or disposed of in accordance with applicable laws and regulations. Therefore, the Proposed Action would not be expected to result in a significant impact on hazardous and petroleum waste management.

Toxic Substances at Kirtland AFB. Short-term, minor, adverse and long-term, negligible to minor, beneficial impacts would occur from proposed demolition and construction. Because of their age, Hangar 1001 and Buildings 924 and 953 are assumed to contain toxic substances such as ACM, LBP, and PCBs and renovation, and demolition of these facilities would result in short-term, minor, adverse impacts. Surveys for these substances would be completed, as necessary, by a certified contractor prior to renovation and demolition activities to ensure that appropriate measures are taken to reduce potential exposure to, and release of, toxic substances. Contractors would wear appropriate personal protective equipment (PPE) and would be required to adhere to all federal, state, and local regulations as well as the installation's management plans for toxic substances. All ACM-, LBP-, and PCB-contaminated debris would be disposed of at a USEPA-approved landfill. New building construction is not likely to include the use of these substances because federal policies and laws limit their use in building construction applications.

Long-term, negligible to minor, beneficial impacts through renovation and demolition would result from reducing the potential for future human exposure to and reducing the amount of ACMs, LBP, and PCBs to maintain at Kirtland AFB.

Environmental Restoration Program at Kirtland AFB. No impact on the ERP is expected to result from the proposed demolition or construction. The construction area is not within or immediately adjacent to an active ERP, MMRP, or DOE ER site; therefore, the Proposed Action is not expected to result in an impact on or from the ERP.

3.7.2.2 No Action Alternative

Under the No Action Alternative, the proposed replacement of aging UH-1N aircraft with modern MH-139 medium lift aircraft would not occur and the existing conditions discussed in **Section 3.7.1** would remain unchanged. No construction, demolition, or renovation would occur. No impacts on the management of hazardous materials and wastes would be anticipated. However, toxic substances in buildings proposed for demolition or renovation would remain intact and continue to require maintenance by USAF personnel.

3.8 SAFETY

Human health and safety address workers' and public health and safety during and following construction, demolition, and training activities.

Site safety includes implementation of engineering and administrative practices that aim to reduce risks of illness, injury, death, and property damage. The health and safety of onsite military and civilian workers are safeguarded by numerous DOD and military branch-specific requirements designed to comply with standards issued by federal OSHA, USEPA, and state occupational safety and health (OSH) agencies. These standards specify health and safety requirements, the amount and type of training required for workers, the use of PPE, administrative controls, engineering controls, and permissible exposure limits for workplace stressors.

3.8.1 Affected Environment

Contractor Safety at Kirtland AFB. All contractors performing demolition and construction activities at Kirtland AFB are responsible for following federal and state of New Mexico safety regulations and are required to conduct demolition and construction activities in a manner that does not increase risk to workers or the public.

New Mexico is one of several states that administer their own OSH program according to the provision of the federal OSH Act of 1970. The New Mexico Occupational Health and Safety Bureau program has the responsibility of enforcing occupational health and safety regulations within the state of New Mexico. Its jurisdiction includes all private and public entities such as city, county, and state government employees.

Military Personnel and Public Safety at Kirtland AFB. Each branch of the military has its own policies and regulations that act to protect its workers. AFI 91-202, *The US Air Force Mishap Prevention Program,* "establishes mishap prevention program requirements, assigns responsibilities for program elements, and contains program management information." To meet the goals of minimizing loss of USAF resources and protecting military personnel, mishap prevention programs should address groups at increased risk for mishaps, injury or illness; a process for tracking incidents; funding for safety programs; metrics for measuring performance; safety goals; and methods to identify safety BMPs.

Kirtland AFB has its own emergency services department. The emergency services department provides the installation with fire suppression, crash response, rescue, emergency medical response, hazardous substance protection, and emergency response planning and community

health and safety education through the dissemination of public safety information to the installation. The Veterans Affairs Medical Center hospital and the 377th Medical Groups' Outpatient Clinic are the primary military medical facilities at Kirtland AFB. Several other hospitals and clinics, which are devoted to the public, are off-installation in the city of Albuquerque. These facilities include the Heart Hospital of New Mexico, University of New Mexico Hospital, and Kaseman Presbyterian Hospital (Google 2019).

Flight Safety at Kirtland AFB and the HLZs. The primary safety concern associated with military flight operations is the potential for aircraft mishaps (i.e., crashes or crash landings), including those caused by adverse weather events and bird/wildlife aircraft-strikes. Aircraft mishaps are classified as A, B, C, or D. Class A mishaps are the most severe with total property damage of $2 million or more or a fatality or permanent total disability. **Table 3-18** presents Class A mishaps that have involved USAF-operated H-1s (any variant), and UH-1s (any variant) and AW139 helicopters operated by others within the last 5 years. The AW139 was used for this analysis because the MH-139 is derived from the Leonardo AW139, which has been in service for over a decade, and is assumed to have similar reliability and safety features.

Table 3-18. H-1 and AW139 Class A Mishaps within the Last 5 Years

Year	H-1 (Any Variant - USAF-Operated)	UH-1 (All Operators)	AW139 (All Operators)
2016	-	6	-
2017	-	2	1
2018	-	4	1
2019	-	3	1
2020	-	1	-
Total Class A Mishaps	**0**	**16**	**3**

Source: USAF 2019, ASN 2020a, ASN 2020b

The training schedule developed by 58 SOW distributes aircraft flow to HLZs in order to avoid the potential for too many aircraft at an HLZ at the same time. In addition, 58 SOW maintains a log sheet to track the progress of each sortie and aircrews routinely radio with updates on the progress of training sorties and current aircraft positions. These procedures minimize the potential for overcrowding at an HLZ and aircraft collisions.

Collisions between aircraft and birds are an inherent risk. Bird/wildlife aircraft-strikes constitute a safety concern because of the potential for damage to aircraft, injury to aircrews, or local populations if an aircraft strike and subsequent aircraft accident should occur in a populated area. Approximately 22 percent of bird strikes occur in an airport environment and 9 percent during low-level cruise (USAF undated). None of the 58 SOW bird/wildlife-aircraft strikes have occurred at a dropzone or HLZ (Johnson 2020). AFI 91-202 requires that USAF installations supporting a flying mission have a BASH Plan for the installation. The Kirtland AFB BASH Plan provides guidance for reducing bird/wildlife aircraft-strikes in and around areas where flying operations occur. The BASH plan uses data from the Bird Avoidance Model to minimize the potential for bird/wildlife aircraft-strikes and is reviewed and updated annually.

3.8.2 Environmental Consequences

3.8.2.1 Proposed Action

Contractor Safety at Kirtland AFB. Short-term, negligible, adverse impacts on contractor safety would result from demolition and construction. These activities would slightly increase the health and safety risk of personnel within the construction area because demolition and construction activities are inherently hazardous. Workers would be potentially exposed to health and safety hazards from heavy equipment operation; hazardous materials and chemicals use; and working in confined, poorly-ventilated, and noisy environments. The selected construction contractor would be required to develop a comprehensive health and safety plan containing site-specific guidance and direction to prevent or minimize potential risks. The plan would include, at a minimum, emergency response and evacuation procedures; operational manuals; PPE recommendations (e.g., breathing and hearing protection); protocols and procedures for handling, storing, and disposing of hazardous materials and wastes; information on the effects and symptoms of potential exposures; and guidance with respect to hazard identification. Contractor personnel would be responsible for compliance with applicable federal, state, and local safety regulations and would be educated through daily briefings to review daily activities and potential hazards. Therefore, the Proposed Action would not be expected to result in a significant impact on contractor safety.

Military Personnel and Public Safety at Kirtland AFB. Short-term, negligible, adverse and long-term, negligible to minor, beneficial impacts on military personnel safety are expected to result from the Proposed Action. Short-term, negligible, adverse impacts on military personnel could occur during demolition and construction. Construction activities associated with the Proposed Action would comply with all applicable safety requirements and installation-specific protocols and procedures therein. The project area would be appropriately delineated and posted with access limited to construction personnel thereby reducing the impact on military personnel.

Long-term, negligible to minor, beneficial impacts on military personnel safety would be expected. Replacement of the aging UH-1N aircraft with the safer, more reliable MH-139 and associated flight simulators would resolve reliability deficiencies, enhance mission capabilities, and improve training of military personnel throughout the USAF. Even with the increase in fight operations, it is anticipated that the transition to a newer, more reliable aircraft would result in a reduced potential to impact military personnel or public safety.

No short- or long-term, adverse impacts on public health and safety at Kirtland AFB are expected. Because the proposed demolition and construction would occur within the boundaries of Kirtland AFB, an active military installation that is not open to the public, the Proposed Action would not pose a safety risk to the public or off-installation areas. Further, the construction areas would be appropriately delineated and posted with access limited to construction and maintenance personnel.

Flight Safety at Kirtland AFB and the HLZs. Long-term, negligible, adverse impacts on flight safety could be expected under the Proposed Action. Although the MH-139 would be a new aircraft in the USAF fleet, all mission-related activities associated with the Proposed Action would be carried out in accordance with DOD and USAF safety policies and plans. Aircraft maintenance activities similar to those already performed on the UN-1N would continue to be accomplished in accordance with applicable USAF safety regulations, published USAF Technical Orders, and standards prescribed by USAF occupational safety and health requirements. In addition, adherence to industrial-type safety procedures and directives would ensure safe working

conditions. As discussed in the BLM EA, bird/wildlife aircraft-strike interactions could occur within the HLZs; however, the annual increase in sorties per HLZ under the Proposed Action is minor and the potential for bird/wildlife aircraft-strike interactions is likely to remain at current levels when averaged across the 42 HLZs. In addition, birds at the HLZs have adapted to aircraft operations in the area. 58 SOW would continue to follow the requirements of the BASH Plan and the semi-annual bird hazard working group to help reduce bird/wildlife incidents at Kirtland AFB and the HLZs.

3.8.2.2 No Action Alternative

Under the No Action Alternative, the proposed replacement of aging UH-1N aircraft with modern MH-139 medium lift aircraft would not occur and the existing conditions discussed in **Section 3.8.1** would remain unchanged. AETC would not meet its requirements to train aircrews for weapon site security, missile convoy operations, or emergency evacuation operations. If the UH-1N is not replaced at Kirtland AFB, there would not be a training unit to support the MH-139, which would result in a long-term, minor to moderate, adverse impact on the safety of military personnel.

3.9 SOCIOECONOMICS

Socioeconomics is the relationship between economics and social elements such as population levels and economic activity. There are several factors that can be used as indicators of economic conditions for a geographic area such as demographics, unemployment rates, and employment. Data on employment identify gross numbers of employees, employment by industry or trade, and unemployment trends. Data on industrial, commercial, and other sectors of the economy provide baseline information about the economic health of a region.

3.9.1 Affected Environment

Because no changes in population, housing, or the economy would result within the counties where the HLZs are located, the Albuquerque Metropolitan Statistical Area (MSA) is considered the ROI for socioeconomic effects of the Proposed Action. The population of the Albuquerque MSA, defined by the US Census Bureau for the 2010 US Census as Bernalillo, Sandoval, Torrance, and Valencia counties, was 887,077 people. The state of New Mexico's population totaled 2,059,179 in 2010 (USCB 2010a).

The population of Bernalillo County was 662,564 in 2010, representing 32 percent of the total population for the state of New Mexico. The population of Bernalillo County grew 19 percent from 2000 to 2010, while during this same time period Sandoval County experienced a 46.3 percent increase in population, Torrance County experienced a 3.1 percent decrease, and Valencia County grew by 15.7 percent. The growth rate in the Albuquerque MSA from 2000 to 2010 (24.5 percent) was much greater than the growth rates of the state of New Mexico (13.2 percent) and the United States (9.7 percent) over the same period. However, Torrance County was not included in the Albuquerque MSA for the 2000 US Census; therefore, when added to the 2000 US Census data for the Albuquerque MSA this represents a 21.6 percent increase in population. **Table 3-19** presents the 2000 and 2010 population data (USCB 2000, USCB 2010a).

Table 3-19. Population in the ROI as Compared to New Mexico and the United States (2000 and 2010)

Location	2000	2010	Percent Change
United States	281,421,906	308,745,538	9.7%
New Mexico	1,819,046	2,059,179	13.2%
Albuquerque MSA	712,738	887,077	24.5%*
Bernalillo County	556,678	662,564	19.0%
Sandoval County	89,908	131,561	46.3%
Valencia County	66,152	76,569	15.7%
Torrance County	16,911	16,383	-3.1%

Source: USCB 2000, USCB 2010a

Note: *Torrance County was not included in the Albuquerque MSA in the 2000 US Census. When the 2000 population of Torrance County is added to the 2000 population of the Albuquerque MSA, this represents a 21.6 percent increase in population.

Employment Characteristics. The three largest industries in the Albuquerque MSA in terms of percentage of the workforce employed within the industry are the educational services, and health care and social assistance industry (26 percent); the professional, scientific, and management, and administrative and waste management services industry (13 percent); and the retail trade industry (11 percent). The construction industry represents 7 percent of the workforce (USCB 2013–2017). In January 2020, the Bureau of Labor Statistics reported a 4.6 percent unemployment rate in the Albuquerque MSA, while the United States had an unemployment rate of 4 percent (BLS 2020).

Kirtland AFB. During FY 2018, 22,943 individuals were employed by Kirtland AFB, of which 3,336 were active-duty personnel. Direct payroll expenditures from the installation totaled over $2.24 billion. When non-payroll expenditures associated with Kirtland AFB are included, total expenditures exceeded $7.4 billion, with DOD expenditures representing approximately $4.5 billion of that total (KAFB 2019).

HLZs on BLM-administered Public Lands. The BLM EA analyzed the socioeconomic impact on the six counties where the HLZs are located. The EA determined that no adverse or beneficial impacts on socioeconomics would result from 58 SOW training operations at any of the BLM-administered public lands (BLM 2019). Because no changes in population, housing, or the economy would result within these counties with the continued use of the HLZs on BLM-administered public, USAF anticipates no short- or long-term impacts on socioeconomics at the HLZs. Therefore, socioeconomic impacts at the HLZs on the BLM-administered public lands will not be discussed further.

3.9.2 Environmental Consequences

3.9.2.1 Proposed Action

Short- and long-term, negligible, beneficial impacts on socioeconomics would result. Direct and indirect, short-term, negligible, beneficial impacts on the local economy of the Albuquerque MSA would result from construction activities through increased payroll tax revenue and the purchase of construction materials and goods in the area. The proposed construction activities would only require a small number of construction workers; therefore, the existing construction industry within the Albuquerque MSA should adequately provide enough workers to support construction

activities associated with the Proposed Action. The temporary increase of construction workers at Kirtland AFB would represent a small increase in the total number of persons working on the installation. Because the construction workers would be local, no additional facilities (e.g., housing, schools) would be necessary to accommodate the workforce.

Long-term, negligible, beneficial impacts on the local economy would occur from the increase of permanent party personnel and their dependents stationed at Kirtland AFB. The Proposed Action would result in a net increase of 37 permanent party personnel between FY 2024 and FY 2025, 22 students between FY 2026 and FY 2027, and 19 permanent party personnel and six students from FY 2028 onward. These increases of personnel at the installation would result in increased purchases of goods and services (e.g., retail, restaurants, and hospitals) in the local community resulting in beneficial impacts on the local economy. Although the Proposed Action would result in an increase of 19 to 37 permanent party personnel working at Kirtland AFB, it is anticipated that the installation and surrounding area could accommodate the increase.

3.9.2.2 No Action Alternative

Under the No Action Alternative, the proposed replacement of aging UH-1N aircraft with modern MH-139 medium lift aircraft would not occur and the existing conditions discussed in **Section 3.9.1** would remain unchanged. Implementation of the No Action Alternative would not result in any new or additional impacts to socioeconomics.

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4.0 CUMULATIVE IMPACTS

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 future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR § 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time by various agencies (i.e., federal, state, and local) or individuals.

The past, present, and reasonably foreseeable future projects, identified below, make up the cumulative impact scenario for the Proposed Action. The Proposed Action's impacts on the individual resource areas analyzed in **Sections 3.1** through **3.9** are added to the cumulative impact scenario to determine the cumulative impacts of the Proposed Action. In accordance with CEQ guidance, the impacts of past actions are considered in aggregate as appropriate for each resource area without delving into the historical details of individual past actions.

4.1 IMPACT ANALYSIS

4.1.1 Past Actions

Kirtland AFB has been used for military missions since the 1930s and has continuously been developed as DOD missions, organizations, needs, and strategies have evolved. Development and operation of training ranges have impacted thousands of acres with synergistic and cumulative impacts on soil, wildlife habitats, water quality, and noise. Beneficial impacts also have resulted from the operation and management of the installation including increased employment and income for Bernalillo County, the city of Albuquerque, and its surrounding communities; restoration and enhancement of sensitive resources such as Coyote Springs wetland areas; consumptive and nonconsumptive recreation opportunities; and increased knowledge of the history and pre-history of the region through numerous cultural resources surveys and studies.

4.1.2 Present and Reasonably Foreseeable Actions

Kirtland AFB is a large military installation that is continually evolving. Projects that were examined for potential cumulative impacts are included in **Table 4-1**.

Table 4-1. Present and Reasonably Foreseeable Future Actions at Kirtland AFB

Project Name	Description	Potential Relevance to Proposed Action
Military Projects		
New Military Training Activities	USAF proposes to begin firing .50-caliber M107 Barrett sniper rifles and M2 machine guns at Small Arms Range East. An existing building south of Forest Road 44 would be demolished in order to provide line of sight from the firing point to the target array. Approximately 240 acres would be cleared by tree removal and thinning to create firebreaks along Forest Roads 40, 40B, 530B, and 53. Small Arms Range East would continue to be available for training operations and deployment qualification 24 hours a day, 7 days a week. The 377th Security Forces Group (SFG) would begin using the M583A1 parachute illumination round at the M203 Range. This round has a burst height of 500 to 700 feet above ground surface when fired vertically, a candle burn rate of approximately 40 seconds, and an average candlepower of 90,000. The average class using the illumination round would consist of 15 to 30 students, once per month. It is anticipated that an average of 250 to 500 rounds would be dispensed per year. Training would occur during early morning hours, approximately 0300 to 0500, dependent upon coordination with the Federal Aviation Administration and air traffic scheduling. Prior to initial use of this round, firebreaks consisting of cleared paths totaling approximately 8 acres would need to be created. The cleared paths also would be used for emergency vehicle access in case of an accidental fire.	No potential to be in project vicinity; potential for construction overlap
Construction, Operation, and Maintenance of a New Fire Station	USAF proposes to construct, operate, and maintain a new Fire Station south of the intersection of Pennsylvania Street and Powerline Road. The proposed structure would be approximately 7,300 SF in size and one story high with three high-bay drive-through apparatus stalls.	No potential to be in project vicinity; potential for construction overlap
Demolition and Construction of Military Support Facilities	USAF proposes to demolish and construct, operate, and maintain several military personnel support facilities in the northwestern portion of the installation. The areas include the Visiting Officer Quarters, 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 SF and construction of facilities totaling approximately 389,000 SF, resulting in a net decrease of approximately 109,000 SF of building space on the installation. Approximately 36 acres would be impacted by demolition and construction.	No potential to be in project vicinity; potential for construction overlap
Building Demolition at Kirtland AFB	USAF is in the process of demolishing 23 buildings totaling approximately 105,000 SF 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.	No potential to be in project vicinity; potential for construction overlap

Table 4-1. Present and Reasonably Foreseeable Future Actions at Kirtland AFB (continued)

Project Name	Description	Potential Relevance to Proposed Action
Military Projects (continued)		
Security Forces Complex	USAF proposes to construct, operate, and maintain a 42,500 SF security forces complex to provide adequate space and modern facilities to house all 377 SFG administrative and support functions in a consolidated location. The 377 SFG functions that would be transferred to the new security forces complex include an installation 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 SF) within the footprint of the proposed security forces complex would be demolished. This project would result in an increase of 41,621 SF of building space on the installation.	No potential to be in project vicinity; potential for construction overlap
Construct New Military Working Dog Facility	USAF proposes to construct, operate, and maintain a new military working dog facility that consists 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 SF. A parking area with 25 spaces and new access roads also would be constructed as part of the project. Demolition of facilities totaling 2,520 SF would be included in this project, resulting in a net increase of 5,480 SF of building space on the installation.	No potential to be in project vicinity; potential for construction overlap
New Deployable Structures Laboratory	Air Force Research Laboratory (AFRL) proposes to construct a new 4,125 SF high-bay addition to the southeastern corner of Building 472. Proposed new construction would include structural pads on columns and trusses for anchoring an active gravity off-load support frame; high precision environmental controls (temperature and humidity with low air currents); Gantry crane; and optically diffuse wall coatings for the high precision optical motion metrology system (videogrammetry).	No potential to be in project vicinity; potential for construction overlap
Enhanced Use Lease	Kirtland AFB proposes to lease 107 acres of USAF property along Gibson Boulevard to Thunderbird Kirtland Development, Ltd., to develop a research park with office, industrial, laboratory, retail, and hospital facilities.	No potential to be in project vicinity; potential for construction overlap
Navigation Technology Satellite Integration Laboratory	AFRL proposes to construct a 10,000 SF high bay laboratory south of Building 590. The facility would contain office space; Near Field Antenna Range and control room; vault; security vestibule; restrooms; loading dock; and conference, break, storage, communications, and mechanical rooms.	No potential to be in project vicinity; potential for construction overlap
High Power Joint Electromagnetic Non-Kinetic Strike Laboratory	AFRL proposes to construct a 5,000 SF addition to Building 332 to include a heavy laboratory with shielding, a light laboratory, and office space to support new electromagnetics research.	No potential to be in project vicinity; potential for construction overlap

Table 4-1. Present and Reasonably Foreseeable Future Actions at Kirtland AFB (continued)

Project Name	Description	Potential Relevance to Proposed Action
Military Projects (continued)		
Kirtland Exhaust Helium Gas Recovery Facility	AFRL proposes to construct a 3,700 SF facility between Buildings 580 and 581 to recover helium gas exhaust from experiments occurring within these buildings. The recovered gas would be reliquefied for reuse in the laboratories.	Not in project vicinity; potential for construction overlap
Advanced High Powered Electromagnetic Laboratory	AFRL proposes to construct a new 43,000 SF facility near Buildings 322 and 323. The facility would consist of a multi-story office and research complex and would allow for consolidation of personnel and equipment from several facilities throughout the installation. Buildings 324, 326, 906, 907, 908, 910, 911, 912, and 57012 would be demolished under this project.	Not in project vicinity; potential for construction overlap
Renewable Energy Projects	USAF proposes to develop renewable energy projects at Kirtland AFB. The proposed projects would include the installation of various renewable energy technologies installation-wide, up to a 20 megawatt solar photovoltaic array, and rooftop/carport solar photovoltaic systems.	Potential to be in project vicinity; potential for construction overlap
Zia Park Area Development Plan	Zia Park is comprised of land bounded by Gibson Boulevard to the north, Pennsylvania Street to the east, Hardin Boulevard to the south, and Kirtland Road and Louisiana Boulevard to the west. Zia Park encompasses approximately 300 acres of land east of the airfield, in the center of the installation. Within the next five years, the New Mexico Army National Guard's 515th Regional Training Institute (RTI) proposes to relocate from Santa Fe to the area adjacent to the PJ/CRO Campus within Zia Park. The plan for Zia Park also includes the creation of an east-west vehicular connection for the installation in order to establish a cohesive community core. Proposed projects include: relocation of the 515 RTI; expansion of the PJ/CRO Campus; development of vehicular, pedestrian, and bicycle circulation; parking; and community facilities such as the medical/dental clinics, pharmacy, dining facility, unaccompanied housing, outdoor recreational facilities, and a state-of-the art physical fitness center. Proposed activities are projected to occur up to 20 years into the future and would complete the long-term vision for Zia Park.	Not in project vicinity; potential for construction overlap; personnel increase overlap
New Mexico Army National Guard 515th RTI	The New Mexico Army National Guard's 515th RTI proposes to relocate from the Oñate Training Complex in Santa Fe to Kirtland AFB. Construction includes a 366,000 SF main campus in the former Zia Park housing area and a 40-acre maneuver and driver's training course with motor pool and classroom near the Tijeras Arroyo Golf Course. The main campus would include an educational facility, billeting, dining facilities, and associated parking.	Not in project vicinity; potential for construction overlap
Combat Rescue Helicopter Recapitalization	USAF proposes a one-to-one replacement of the existing HH-60G helicopter fleet at Kirtland AFB with the new HH-60W model. Associated projects include construction of a two-story 11,000 SF addition to Building 957, and demolition of Buildings 957 and 960 (8,277 SF) to construct a new 35,973 SF flight simulator facility.	In project vicinity; potential for construction overlap

Table 4-1. Present and Reasonably Foreseeable Future Actions at Kirtland AFB (continued)

Project Name	Description	Potential Relevance to Proposed Action
Military Projects (continued)		
Upgrade Stormwater Drainage System and Arroyo Repair Activities	USAF proposes to develop, upgrade, and maintain storm drainage systems and conduct arroyo erosion repair and damage avoiding measures across the installation. Storm drainage system activities could include constructing stormwater system upgrades and components including cleaning, regrading, ditching, trenching, trench lining, backfilling, bedding, reinforced concrete pipe, culverts, vegetation, rip-rap, drop inlets, and retention and outlet structures. Arroyo repair activities could include excavating, filling, and lining arroyo banks and constructing and repairing box culverts, bank protection, and grade control structures to assist in stabilizing the arroyo bed towards a stable slope.	Potential to be in project vicinity; potential for construction overlap
Non-Military Projects		
ABCWUA Water Treatment Facility	To accommodate future growth in Bernalillo County, the ABCWUA proposes to construct a wastewater treatment plant on Kirtland AFB. This project is proposed to occur between 2027 and 2037 on approximately 60 acres of land near the western boundary of the installation, south of Tijeras Arroyo.	Not in project vicinity; potential for construction overlap
Juan Tabo Hills West	Juan Tabo Hills West is Phase 4 of the Voltera Village community and sits on approximately 25 acres near Juan Tabo Boulevard and the Tijeras Arroyo. Phase 4 would consist of 250 single-family lots.	Not in project vicinity; potential for construction overlap
Sunport South Business Park *(formerly Valle del Sol)*	Sunport South Business Park is a proposed 330-acre business park expected to attract manufacturing, fabrication, warehousing, and distribution centers. It would be multi-modal to include access to the Sunport and an active rail spur. An additional 200 acres would be reserved for bike trails and walking paths. The site is south of the Sunport.	Not in project vicinity; potential for construction overlap
Sunport Boulevard Extension and Woodward Road Improvements	Bernalillo County Public Works Division, in cooperation with the New Mexico Department of Transportation, proposes to extend Sunport Boulevard from its current terminus at I-25 to the Broadway Boulevard/Woodward Road intersection, and improve Woodward Road along its existing alignment from Broadway Boulevard to Second Street. The extension of Sunport Boulevard would consist of a four-lane, median divided urban arterial roadway with bike lanes in each direction. The proposed roadway would be approximately 0.5 mile in length and would contain twin bridges over the South Diversion Channel and Edmunds Street. Improvements to Woodward Road would consist of a three-lane road with two travel lanes, two bike lanes, standard curb and gutter, and sidewalks on both sides of the roadway. The proposed improvements would extend approximately 0.58 mile.	Not in project vicinity; potential for construction overlap

Table 4-1. Present and Reasonably Foreseeable Future Actions at Kirtland AFB (continued)

Project Name	Description	Potential Relevance to Proposed Action
Non-Military Projects (continued)		
Mesa del Sol Master Plan	Mesa del Sol is a 12,900-acre, mixed-use master planned community. It is bound by the Sunport along the northwestern edge, Kirtland AFB on the north and east, the Isleta reservation to the south, and I-25 to the west. The community would be built over 40 years and would cover 9,000 of the 12,900 acres. It is proposed to include 3,200 acres for park and open space, 4,400 acres for residential and supporting retail, 413 acres of office space, and 800 acres for schools including university branches.	Not in project vicinity; potential for construction overlap
Albuquerque International Sunport Projects	Development began on the Destination Sunport project in March 2017. The project will transform approximately 80 acres into space for aviation and aerospace businesses, high tech companies, and retail. The Aviation Center of Excellence is the centerpiece of the development, which also features "The Landing," a 10-acre strip along Gibson Boulevard that will contain retail businesses. Future projects planned for the Sunport over the next 20 years include rehabilitation of various runways, taxiways, and aprons; installation/expansion of aprons and taxiways; removal/closure of taxiways; construction of an Aircraft Rescue Firefighting Facility; removal of the Belly Freight Building; construction of an addition to Concourse B; and construction of a Federal Inspection Services/International Terminal.	Not in project vicinity; potential for construction overlap
Valle de Oro Phase II	The USFWS proposes to conduct restoration, development, and management activities on Valle de Oro National Wildlife Refuge (NWR) in Bernalillo County. The refuge is 570 acres primarily located between 2nd Street SW and the Rio Grande in the South Valley, approximately 3.5 miles southwest of Kirtland AFB. Proposed activities include habitat restoration; construction of a visitor's center, a parking lot, trails, and roads; vegetation and wildlife management; construction and management of Albuquerque Metropolitan Arroyo Flood Control Authority stormwater drainage facilities, including a swale and water quality structures; and, in partnership with Mid-Rio Grande Conservancy District, align the Barr Interior Drain.	Not in project vicinity; potential for construction overlap
Prescribed Endemic Refuge Connected Habitat Area (PERCHA) Project	USFWS, through the Valle de Oro NWR, and in cooperation with Bernalillo County, proposes to develop native habitat areas on county properties within existing county-owned and -maintained drainage facilities. The county and Valle de Oro NWR are working together to establish forage and habitat areas for wildlife with the goal of linking county properties and the South Valley area of Albuquerque with the Valle de Oro NWR, so the PERCHAs are viewed as one whole system of habitat areas. There are approximately 15 PERCHA properties on lands owned by the county, but the initial phase of this project focuses on habitat improvements at the following four properties: approximately eight acres at Los Padillas Community Center, two acres at McEwen Pond, five acres at Mountain View Community Center, and 14 acres at Sanchez Farms.	Not in project vicinity; potential for construction overlap

Table 4-1. Present and Reasonably Foreseeable Future Actions at Kirtland AFB (continued)

Project Name	Description	Potential Relevance to Proposed Action
Non-Military Projects (continued)		
PERCHA Project, (continued)	Habitat improvements include removal of nonnative and invasive vegetation; replanting native wetland and upland grass species; installing songbird and pollinator habitat areas; creating appealing recreation space for city of Albuquerque residents; increasing existing drainage basins; and installing erosion control measures to include revegetation of slopes. Work at the properties is proposed to begin in June 2019 and continue for approximately 5 years.	

4.2 CUMULATIVE IMPACT ANALYSIS BY RESOURCE AREA

4.2.1 Airspace Management

The 90-percent increase in helicopter operations at Kirtland AFB and the HLZs on BLM-administered lands would result in a long-term, minor, adverse impact. No change in airspace designations, flight routes, or use of the training HLZs would occur under the Proposed Action. In terms of total operations occurring at the Sunport, the 90-percent increase in UH-1N and MH-139 aircraft operations would result in the addition of 855 operations, which is less than 1 percent (actual increase is 0.57 percent) of total aircraft operations. The minor increase in total operations at Kirtland AFB would have negligible impacts on airspace management in the vicinity of Kirtland AFB and the Sunport. The 90-percent increase in operations at the 42 HLZs on BLM-administered public lands would result in the rounded off number of one sortie at any one particular HLZ per week. This increase would not create airspace traffic management problems at any of the HLZs and is determined to have no adverse impact on airspace management. Therefore, the Proposed Action, when combined with other past, present, and reasonably foreseeable future projects would not result in significant cumulative impacts on airspace management.

4.2.2 Noise

The noise generated by construction and maintenance activities of the Proposed Action would be intermittent, short-term, and temporary in nature. By adhering to the BMPs listed within this EA and the city of Albuquerque's noise ordinance, the noise impacts generated by the Proposed Action and present and reasonably foreseeable future projects would result in only temporary increases in ambient noise levels during construction. The Proposed Action and present and reasonably foreseeable future projects occur within or adjacent to the Sunport; therefore, noise created by construction would be overcome by the noise generated by commercial and military aircraft overflights. The sound levels from the MH-139 overflight are slightly less than that of the UH-1N for all operating conditions. In addition, increased flight operations when combined with other operations at the Sunport and the HLZs on BLM-administered public lands would result in a negligible impact. Therefore, the Proposed Action, when combined with other past, present, and reasonably foreseeable future projects (see **Table 4-1**), would not result in significant cumulative impacts on sensitive noise receptors or the noise environment at Kirtland AFB or regionally.

4.2.3 Air Quality

Construction and maintenance activities under the Proposed Action would result in low levels of air emissions, well below the *de minimis* threshold limits, would not be regionally significant, and would be short-term and temporary in nature. BMPs outlined in **Section 3.2**, including dust suppression, stabilization of previously disturbed areas, and shutting down machinery and equipment when not in use for extended periods of time, are also consistent with those adhered to within the city of Albuquerque and would minimize impacts. These BMPs are typical measures listed within fugitive dust control construction permits issued by AEHD-AQD, which would be implemented for the Proposed Action and present and reasonably foreseeable future actions. Increased flight operations would result in a slight increase in emissions; however, annual emissions of all criteria pollutants would be well below the USEPA 100 tpy threshold. Therefore, the Proposed Action, when combined with other past, present, and reasonably foreseeable future projects (see **Table 4-1**), would not result in significant cumulative impacts on air quality at Kirtland AFB or regionally.

4.2.4 Water Resources

The Proposed Action would not result in impacts on groundwater or floodplains; however, short-term, negligible adverse impacts could result from ground-disturbing activities associated with demolition and construction. Construction areas associated with the Proposed Action and present and reasonably foreseeable future projects on the installation and within the city of Albuquerque require all construction activities, regardless of size, to implement BMPs to ensure that stormwater pollutants are contained to the maximum extent practical and do not enter storm drainage systems. Project-specific CGPs would be required for project areas larger than 1 acre; therefore, site-specific SWPPPs would be developed and all BMPs outlined therein would be implemented prior to any ground disturbance, thereby reducing any adverse impact on surface waters. Soil disturbance from demolition and construction has the potential to result in a minor disruption of natural drainage patterns, contamination of stormwater discharge, and heavy sediment loading.

The Proposed Action and projects presented in **Table 4-1** would be conducted in accordance with environmental considerations, including implementation of stormwater and erosion control as well as water conservation measures (e.g., using low flow toilets). Increased flight operations would result in no short- or long-term impacts on water resources. Therefore, the Proposed Action, when combined with other past, present, and reasonably foreseeable future projects, would not result in a significant cumulative impact on water resources.

4.2.5 Cultural Resources

The Proposed Action would not result in adverse impacts on archaeological or traditional cultural properties; however, construction associated with two aspects of the Proposed Action have the potential to adversely impact an NRHP-eligible resource, Hangar 1001. However, the overall effect to the setting and overall integrity of Hangar 1001 would not be adverse. Avoidance of known cultural resources sites would be taken into consideration when planning present and reasonably foreseeable future projects on the installation and within the city of Albuquerque. However, if project activities would be conducted adjacent to or could not be adjusted to avoid impacting an archaeological site, then consultation under 36 CFR Part 800 with the SHPO/Tribal Historic Preservation Officer (THPO) would occur, and mitigation measures would be developed in accordance with Section 106 of the NHPA.

Should an inadvertent discovery of human or cultural remains occur on Kirtland AFB, all project activities would stop, the Kirtland AFB Cultural Resources Program Manager would be notified, and operational procedures outlined in the ICRMP would be followed. Should an inadvertent discovery occur within the city of Albuquerque, all project activities would stop and the discovery would be reported to the SHPO for assistance and further guidance. Increased flight operations would result in no short- or long-term impacts on cultural resources. Therefore, the Proposed Action, when combined with other past, present, and reasonably foreseeable future projects (see **Table 4-1**), would not result in a significant cumulative impact on cultural resources.

4.2.6 Infrastructure

The Proposed Action has the potential to adversely impact the following infrastructure: transportation, electrical system, natural gas, water supply system, sanitary sewer/wastewater system, communications system, and solid waste management. These impacts are anticipated to be intermittent, short-term, and temporary in nature. BMPs outlined in **Section 3.6**, to include timing construction-related traffic to avoid peak travel hours and diverting materials that could be recycled or reused from landfills to the greatest extent possible, would further reduce any impacts. These BMPs are typical measures adhered to for construction projects on the installation and

within the city of Albuquerque. The use of liquid fuels (i.e., JP-8) at Kirtland AFB for increased flight operations would result in long-term, negligible to minor, adverse impacts. Renovation and construction of new infrastructure on and off the installation (see **Table 4-1**) would result in long-term, beneficial impacts from improved water conservation, energy efficiency, and improved transportation networks. Therefore, the Proposed Action, when combined with other past, present, and reasonably foreseeable future projects, would not result in a significant cumulative impact on infrastructure.

4.2.7 Hazardous Materials and Waste

The Proposed Action and present and reasonably foreseeable actions on Kirtland AFB and within the city of Albuquerque would result in short- and long-term increases in the use of hazardous materials and petroleum products and generation of waste. BMPs outlined in **Section 3.7**, to include proper vehicle maintenance, proper procurement of hazardous materials, and proper disposal of hazardous wastes, would minimize impacts. The Proposed Action, as well as present and reasonably foreseeable future projects at Kirtland AFB and within the city of Albuquerque (see **Table 4-1**), would incorporate measures to limit or control hazardous materials and wastes into their design and operation plans. Therefore, the Proposed Action, when combined with other past, present, and reasonably foreseeable future projects, would not result in a significant cumulative impact on hazardous materials and wastes.

4.2.8 Safety

No long-term, adverse cumulative impacts on health and safety would be expected from the Proposed Action and present and reasonably foreseeable future projects on the installation and within the city of Albuquerque. Adherence to established procedures, including the use of PPE, fencing project areas and posting signs, and compliance with OSH, DOD, and OSHA standards, would reduce or eliminate short-term health and safety impacts on contractors, military personnel, and the general public. These procedures are typical for construction projects on the installation and within the city of Albuquerque. Although the MH-139 would be a new aircraft in the USAF fleet, all mission-related activities would be carried out in accordance with DOD and USAF safety policies and plans. Aircraft maintenance activities similar to those already performed on the UN-1N would continue to be accomplished in accordance with applicable USAF safety regulations, published USAF Technical Orders, and standards prescribed by USAF occupational safety and health requirements. Because the total annual sorties would remain constant under the Proposed Action, the potential for bird/wildlife aircraft-strike interactions is likely to remain at current levels when averaged across the 42 HLZs because birds at the HLZs have adapted to aircraft operations in the area. 58 SOW would continue to follow the requirements of the BASH Plan and the semi-annual bird hazard working group to help reduce bird/wildlife incidents at Kirtland AFB and the HLZs. In addition, although flight operations would increase under the Proposed Action, replacement of the aging UH-1N aircraft with the MH-139 aircraft would resolve reliability deficiencies, enhance mission capabilities, and improve training of military personnel throughout the USAF. Therefore, the Proposed Action, when combined with other past, present, and reasonably foreseeable future projects (see **Table 4-1**), would not result in a significant cumulative impact on health and safety.

4.2.9 Socioeconomics

The Proposed Action, when combined with other past, present, and reasonably foreseeable actions on Kirtland AFB and within the city of Albuquerque, would continue to result in short-term, beneficial impacts on the region's economy through the purchase of construction materials and providing employment for construction personnel during project activities. Increased flight

operations would result in no short- or long-term impacts on socioeconomics. Therefore, the Proposed Action, when combined with other past, present, and reasonably foreseeable future projects (see **Table 4-1**), would not result in a significant cumulative impact on socioeconomics.

4.3 UNAVOIDABLE ADVERSE IMPACTS

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

Energy. The Proposed Action would require an increase in the use of fossil fuels, a non-renewable natural resource, during demolition, construction, training, and flight operations. The use of non-renewable resources is an unavoidable occurrence, although not considered significant.

Hazardous Materials and Wastes. The use and generation of hazardous materials and wastes during construction, maintenance, and increased aircraft operations would be unavoidable; however, the materials and wastes would be handled in accordance with federal, state, and local policies and would not be expected to result in significant impacts.

4.4 COMPATIBILITY OF THE PROPOSED ACTION WITH THE OBJECTIVES OF FEDERAL, REGIONAL, AND LOCAL LAND USE PLANS, POLICIES, AND CONTROLS

The Proposed Action would occur entirely within government-owned lands and airspace within which USAF currently operates. Activities under the Proposed Action would not differ from current uses of these areas. USAF would continue to follow all requirements related to helicopter operations and maintenance and would therefore be consistent with federal, regional, state, and local land use policies and controls. Demolition and construction associated with the Proposed Action would not be incompatible with any current land uses on Kirtland AFB, would not conflict with any applicable off-installation land use ordinances, and would follow all applicable permitting, building, and safety requirements.

4.5 RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

The relationship between short-term uses and enhancement of long-term productivity from implementation of the Proposed Action is evaluated from the standpoint of short-term effects and long-term effects. Short-term uses of the biophysical components of the human environment include direct construction-related disturbances and direct impacts associated with an increase in population and activity that occurs over a period of less than 5 years. Long-term uses of the human environment include those impacts occurring over a period of more than 5 years, including permanent resource loss.

The Proposed Action would not require short-term resource uses that would result in long-term compromises of productivity. The Proposed Action would not result in intensification of land use at Kirtland AFB or within the surrounding area. Implementation of the Proposed Action would not represent a loss of open space. Therefore, it is anticipated that the Proposed Action would not result in adverse cumulative impacts on land use or aesthetics.

4.6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Irreversible and irretrievable resource commitments are related to the use of non-renewable resources and the impacts that the use of these resources will have on future generations. Irreversible impacts primarily result from use or destruction of a specific resource that cannot be

replaced within a reasonable timeframe (e.g., energy and minerals). The irreversible and irretrievable commitments of resources that would result from implementation of the Proposed Action involve the consumption of material resources used for construction, energy resources, biological resources, and human labor resources. The use of these resources is considered to be permanent.

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

Energy Resources. Energy resources used for the Proposed Action would be irretrievably lost. This includes petroleum-based products (e.g., gasoline, diesel, and JP-8). During construction and maintenance activities, gasoline and diesel would be used for the operation of vehicles and construction equipment. JP-8 would be used for operation of UH-1N and MH-139 aircraft. The volume of fuel throughput would increase with the associated increase in aircraft operations. Consumption of these energy resources would not place a significant demand on their availability in the region; therefore, less than significant impacts would be expected.

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

5.0 LIST OF PREPARERS

Megan Perez-Utter
Tehama, LLC
B.S. Double Major Geology/Anthropology
M.A. Museum Studies with Emphasis in Geology
Years of Experience: 6

Adam Harvey, PE, PPM
Tehama, LLC
B.S. Engineering Physics
M.S. Environmental Science and Engineering
Years of Experience: 34

Phil Dula
Tehama, LLC
B.A. Biology
M.S. Geology
M.B.A.
Years of Experience: 39

Summer Manning,
Tehama, LLC
B.S. Conservation Sciences
Years of Experience: 2

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HDR
General Studies
Years of Experience: 30

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B.S. Environmental Science/Chemistry
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B.S. Architectural History
M.S. Historic Preservation
Years of Experience: 8

Darrell Molzan, PE
HDR
B.S. Civil Engineering
Years of Experience: 36

Steven Peluso, CHMM, CPEA
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B.S. Mechanical Engineering
M.S. Civil/Environmental Engineering
Years of Experience: 30

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6.0 REFERENCES

ABQ RIDE 2019. ABQ RIDE 2019. *ABQ RIDE Bus Routes & Schedule*. Available online: http://www.cabq.gov/transit/bus-routes-and-schedules.

ANSI 2013. American National Standard Institute (ANSI). 2013. American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound. Part 3: Short-term measurements with an observer present. ANSI S12.9-1993 (R2003)/Part 3.

ASN 2020a. Aviation Safety Network (ASN). 2020. ASN Aviation Safety Database results for UH-1 Class A Mishaps. Last updated 28 February 2020. Available online: <https://aviation-safety.net/wikibase>. Accessed 28 February 2020.

ASN 2020b. Aviation Safety Network (ASN). 2020. ASN Aviation Safety Database results for AW139 Class A Mishaps. Last updated 28 February 2020. Available online: <https://aviation-safety.net/wikibase>. Accessed 28 February 2020.

Beck 2019. Beck, Jason. Email correspondence between Martha Garcia, Kirtland AFB NEPA PM, and Major Beck, USAF 58 SOW Chief CRH Integration, requesting assistance in obtaining information regarding the UH-1N helicopter replacement. 9 May 2019 and 16 July 2019.

BLM 2019. Bureau of Land Management (BLM). 2019. *Final Environmental Assessment for BLM Right of Way for 58 SOW Training/Near Kirtland AFB Sandoval, Cibola, Socorro, Guadalupe, and De Baca Counties, New Mexico DOI-BLM-NM-A010-2019-0011-EA*. 20 May 2019.

BLS 2020. Bureau of Labor Statistics (BLS). 2020. *Local Area Unemployment Statistics*. Available online: https://data.bls.gov/data/. Accessed 23 March 2020.

EASA 2010. European Aviation Safety Agency (EASA). 2010. Data Sheet for Noise - AW139.

EASE 2017. European Aviation Safety Agency. 2017. Data Sheet for Noise - UH-1N.

FAA 2019. FAA. 2019. Airport Master Record Albuquerque International Sunport. FAA Form 5010-1. Accessed: 12 March 2019

EPA 2003. EPA. 2003. Estimating 2003, Building Related Construction and Demolition Materials Amounts.

Google 2019. Google Maps. 2019. Available online: http://maps.google.com/.

Harris 1998. Harris, M. Cyril. Handbook of Acoustical Measurements and Noise Control. McGraw-Hill, New York, New York.

HGL 2013. HydroGeoLogic 2013. *Final Remedial Investigation Report Military Muntions Response Program*. March 2013.

Johnson 2020. Johnson, Matthew. 2020. Email conversation between Michelle Bare, HDR, and Major Beck, 58 SOW Flight Safety Officer, regarding bird/wildlife-aircraft strikes and potential to occur at HLZs. 24 March 2020.

KAFB 2000 Kirtland Air Force Base (KAFB). 2000. *Kirtland Air Force Base National Register Evaluation Form: Hangar 1001*. August 2000.

KAFB 2012 KAFB. 2012. *Kirtland Air Force Base Real Estate Management Existing Facilities.*

KAFB 2013 KAFB. 2013. *Kirtland Air Force Base Albuquerque, New Mexico Final Remedial Investigation Report Military Munitions Response Program*. March 2013.

KAFB 2016 KAFB. 2016. *Installation Development Plan Kirtland Air Force Base, New Mexico*. March 2016.

KAFB 2017a KAFB. 2017. *Final Fiscal Year 2016 Long-Term Monitoring and Maintenance Activities Report for Solid Waste Management Unit (SWMU) 6-1, Landfill 1 (LF-001); SWMU 6-2, Landfill 2 (LF-002), and SWMU 6-4, Landfills 4, 5, and 6 (LF-008)*. October 2017.

KAFB 2017b KAFB. 2017. *ST-070E – Oil-Water Separator, ST-219 (SWMU ST-70) Final Well Completion Report.* September 2017.

KAFB 2018a KAFB. 2018. *US Air Force Integrated Natural Resources Management Plan* Kirtland Air Force Base Albuquerque, New Mexico. 16 February 2018.

KAFB 2018b KAFB. 2018. *US Air Force Integrated Cultural Resources Management Plan Kirtland Air Force Base New Mexico*. 28 September 2018.

KAFB 2018c KAFB. 2018. *Pest Management Plan, Kirtland Air Force Base, New Mexico*. October 2018.

KAFB 2018d KAFB. 2018. *Kirtland Air Force Base Albuquerque, New Mexico Spill Prevention Control and Countermeasure Plan*. February 2018.

KAFB 2018e KAFB. 2018. *Kirtland Air Force Base Hazardous Waste Management Plan*. September 2018.

KAFB 2018f KAFB. 2018. *Phase I RCRA Facility Investigation Report Bulk Fuels Facility Release Solid Waste Management Unit St-106/SS-111 Kirtland Air Force Base, New Mexico.* August 2018.

KAFB 2019 KAFB. 2019. *Kirtland Air Force Base 2018 Economic Impact*. October 2019. Available online: https://www.kirtland.af.mil/Portals/52/Economic%20Impact%20Statement%2016 OCT.pdf. Accessed 10 January 2020.

KAFB 2020a KAFB. 2020. Memorandum for submittal of the calendar year 2019 Air Emission Inventory through the State and Local Emissions Inventory System. March 2020.

KAFB 2020b KAFB. 2020. *Annual Consumer Confidence Report on Drinking Water Quality. June 2020.* Available online: https://www.kirtland.af.mil/Portals/52/Complete%202019%20CCR%20%28Final %29.pdf. Accessed 11 June 2020.

Leonardo 2020 — Leonardo. 2020. *How It Compares: Leonardo Helicopters.* Available online: https://nationalsecurityhelicopter.com/how-it-compares/. Accessed 03 March 2020

Malloy 2019 — Malloy, Laura. 2019. Email correspondence between Laura Malloy, Kirtland AFB 58 SOW Historian, and Phil Dula, Tehama LLC, regarding review of 58 SOW historic information. 13 May 2019.

Melillo et al. 2014 — Melillo, Jerry M., Terese (T.C.) Richmond, and Gary W. Yohe, Eds. 2014. *Climate Change Impacts in the United States: The Third National Climate Assessment*. US Global Change Research Program, Chapter 18: Midwest. doi:10.7930/J0Z31WJ2.

MF 2018 — Military Factory (MF). 2018. Boeing MH-139 Multi Mission Medium Lift Military Helicopter, Fact Sheet Technical Specifications. 25 September 2018. Available online: https://www.militaryfactory.com/aircraft/detail.asp?aircraft_id=1907. Accessed 26 June 2019.

NMED 2019 — New Mexico Environment Department (NMED). 2019. *New Mexico Air Quality Control Regions*. Available online: https://www.env.nm.gov/air-quality/nm-air-quality-control-regions/. Accessed 16 September 2019.

Red-E-Bins 2020 — Red-E-Bins. 2020. Debris Calculator. Available online: https://www.redebins.com/debris-calculator/. Accessed 13 March 2020.

Reynolds 2019 — Reynolds, David. 2019. Email communication from David Reynolds (377 MSG/CEIEC Cultural Resources Program Manager) to Leesa Gratreak and Michelle Bare (HDR, Inc.) regarding eligibility status for historic-age buildings in the project area. Email sent 27 September 2019.

Rocha 2019 — Rocha, Dario. 2019. Email communication from Dario Rocha (City of Albuquerque Environmental Health Department) to Virginia Harris (Solutio Environmental Inc.) regarding the end of the 20-year maintenance plan for Bernalillo County. Email sent 12 March 2019.

SNL 2017 — Sandia National Laboratories (SNL). 2017. *Annual Site Environmental Report, Sandia National Laboratories, New Mexico*. SAND2017-8026 R. Available online: https://www.sandia.gov/news/publications/environmental_reports/_assets/documents/2016_ASER_SNL-NM_ALL-Electronic.pdf. September 2017.

USAF undated — US Air Force (USAF). Undated. *Wildlife Strikes by Phase of Operation (Object #1) FY 1995–FY 2016.* Available online: *<https://www.safety.af.mil/Portals/71/documents/Aviation/BASH%20Statistics/USAF%20Wildlife%20Strikes%20by%20Phase%20of%20Operation.pdf>*. Accessed 2 March 2020.

USAF 2013 — USAF 2013. *Occupational Safety and Health Standard 48-20. May 10, 2013. Occupational Noise Hearing Conservation Program.* Available online: *<http://static.e publishing.af.mil/production/1/af_sg/publication/afoshstd48-20/afoshstd48-20.pdf>.*

USAF 2019 USAF. 2019. *H-1 Flight Mishap History (All Rates per 100,000 Flying Hours)*. Updated 1 November 2019. Available online: < <*https://www.safety.af.mil/Portals/71/documents/Aviation/Aircraft%20Statistics/H-1.pdf*>. Accessed 2 March 2020.

USAF and NMED 2018 USAF and NMED. 2018. Kirtland AFB fuel leak presentation presented by Brent Meyer, EA Engineering, Sciences, and Technology, Inc. 15 November 2018.

USCB 2000 United States Census Bureau (USBC). 2000. Profile of General Demographic Characteristics: 2000. Available online: https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml.

USCB 2010a US Census Bureau (USCB). 2010. *Profile of General Population and Housing Characteristics: 2010. 2010 Demographic Profile*. Available online: http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml.

USCB 2010b USCB. 2010. *Selected Economic Characteristics.* Available online: https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml.

USCB 2013-2017 USCB. 2013-2017. *American Fact Finder. Industry by Occupation for the Civilian Employed Population 16 Years and Over*. Available online: http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml.

USEPA 1971 US Environmental Protection Agency (USEPA). 1971. Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances. Washington, DC: s.n., Publication NTID300.1

USEPA 1981a US Environmental Protection Agency. 1981. *Noise Effects Handbook: A Desk Reference to Health and Welfare Effects of Noise*. Office of Noise Abatement and Control. October 1979. Revised July 1981. Available online: http://nonoise.org/epa/Roll7/roll7doc27.pdf.

USEPA 2018 USEPA Greenhouse Gas Reporting Program (GHGRP). 2018. *GRGRP 2013: Waste*. Available online: https://www.epa.gov/ghgreporting/ghgrp-reported-data

Wheelock 2019 Wheelock, Katrina. 2019. Email conversation between Ms. Katrina Wheelock, 377 MSG/CEIE, and Ms. Michelle Bare, HDR, verifying the potential for hazardous and petroleum wastes to be generated within the project area. 19 November 2019.

Wheelock 2020 Wheelock, Katrina. 2019. Email conversation between Ms. Katrina Wheelock, 377 MSG/CEIE, and Ms. Megan Perez-Utter, Tehama, verifying current tonnage tabulations. 19 March 2020

Wilson 2019 Wilson, Deborah. 2019. Phone conversation between Ms. Deborah Wilson, 377 MSG/CEIE, and Ms. Michelle Bare, HDR, verifying the potential for hazardous materials to be stored or used within the project area. 19 November 2019.

APPENDIX A
INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR ENVIRONMENTAL PLANNING AND PUBLIC INVOLVEMENT MATERIALS

Appendix A

Interagency and Intergovernmental Coordination for Environmental Planning and Public Involvement Materials

The 377th Air Base Wing (377 ABW) solicited comments on the Environmental Assessment (EA) by distributing letters (example follows) to potentially interested federal, state, and local agencies; Native American tribes; and other stakeholder groups or individuals. The following is a list of potentially interested parties:

Federal, State, and Local Agencies – Scoping Letter

Ms. Amy Leuders, Southwest Regional Director
US Fish & Wildlife Service
PO Box 1306
Albuquerque NM 87103-1306

Ms. Priscilla J. Avila, Acting Regional Director and Regional Environmental Specialist
Bureau of Indian Affairs
Southwest Regional Office
1001 Indian School Road NW
Albuquerque NM 87104

Ms. Danita Burns, District Manager
Bureau of Land Management
New Mexico State Office
Albuquerque District Office
100 Sun Avenue NE, Suite 330
Pan American Building
Albuquerque NM 87109-4676

Mr. Stephen Spencer,
Regional Environmental Officer
US Department of Interior
Office of Environmental Policy & Compliance - Albuquerque Region
1001 Indian School Road NW, Suite 348
Albuquerque NM 87104

Mr. Terry Biggio, Regional Administrator
Federal Aviation Administration
Southwest Region
10101 Hillwood Parkway
Fort Worth TX 76177-1524

Ms. Pearl Armijo, District Conservationist
Natural Resources Conservation Service
Albuquerque Service Center
100 Sun Avenue NE, Suite 160
Albuquerque NM 87109

Mr. George Macdonell, Chief Environmental Resources Section
US Army Corps of Engineers
4101 Jefferson Plaza NE
Albuquerque NM 87109

Ms. Anne L. Idsal, Regional Administrator
US EPA, Region 6
1445 Ross Avenue
Fountain Pl 12th Floor, Suite 1200
Dallas TX 75202-2733

Ms. Cheryl Prewitt, Regional Environmental Coordinator
US Forest Service
Southwestern Region
333 Broadway Boulevard SE
Albuquerque NM 87102-3407

Ms. Susan Lacy
DOE/NNSA Sandia Field Office
PO Box 5400
Albuquerque NM 87187

Mr. John Weckerle
DOE/NNSA Office of General Counsel
PO Box 5400
Albuquerque NM 87187

The Honorable Martin Heinrich
US Senate
400 Gold Avenue SW, Suite 1080
Albuquerque NM 87102

The Honorable Tom Udall
US Senate
400 Gold Avenue SW, Suite 300
Albuquerque NM 87102

The Honorable Xochitl Torres Small
US House of Representatives
430 Cannon HOB
Washington DC 20515

The Honorable Debra Haaland
US House of Representatives
400 Gold Avenue SW, Suite 680
Albuquerque NM 87102

The Honorable Ben R. Luján
US House of Representatives
1611 Calle Lorca, Suite A
Santa Fe NM 87505

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

Ms. Stephanie Garcia Richard
Commissioner of Public Lands
New Mexico State Land Office
310 Old Santa Fe Trail
Santa Fe NM 87501

Mr. Matt Wunder, Chief Conservation Services
New Mexico Department of Game and Fish
PO Box 25112
Santa Fe NM 87504

Mr. Craig Johnson, Assistant Commissioner of Commercial Resources
New Mexico State Land Office
PO Box 1148
Santa Fe NM 87504

Ms. Jennifer L. Hower
Office of General Counsel & Environmental Policy
New Mexico Environment Department
1190 St. Francis Drive, Suite N4050
Santa Fe NM 87505

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

Ms. Sarah Cottrell Propst, Cabinet Secretary
New Mexico Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive
Santa Fe NM 87505

Development Management/Department Director
Bernalillo County Planning Section
111 Union Square SE, Suite 100
Albuquerque NM 87102

Department Director
City of Albuquerque Planning Department
PO Box 1293
Albuquerque NM 87103

Board of Directors
Mid-Region Council of Governments
809 Copper Avenue NW
Albuquerque NM 87102

Ms. Julie Morgas Baca, Bernalillo County Manager
Bernalillo County Manager's Office
One Civic Plaza NW, 10th Floor
Albuquerque NM 87102

Ms. Alicia Manzano, Director of Communications
City of Albuquerque Office of the Mayor
PO Box 1293
Albuquerque NM 87103

Bernalillo County Board of Commissioners
One Civic Plaza NW, 10th Floor
Albuquerque NM 87102

Jeff Brown, Field Manager
Bureau of Land Management
Rio Puerco Office
100 Sun Avenue, NE
Pan American Building, Suite 330
Albuquerque NM 87109

Socorro Board of County Commissioners
PO Box I
Socorro NM 87801

Valencia Board of County Commissioners
PO Box 1119
Los Lunas NM 87031

Torrance County Commission
PO Box 48
205 S Ninth Street
Estancia NM 87016

Sierra County Commission
855 Van Patten
Truth or Consequences NM 87901

Sandoval County Board of County Commissioners
PO Box 40
Bernalillo NM 87004

Doña Ana County Commissioners
Doña County Government Center
845 N Motel Boulevard
Las Cruces NM 88007

Example Federal, State, and Local Agency Scoping Letter

DEPARTMENT OF THE AIR FORCE
377TH AIR BASE WING (AFGSC)

Colonel David S. Miller, USAF
Commander
377th Air Base Wing
2000 Wyoming Blvd SE
Kirtland Air Force Base NM 87117

Ms. Danita Burns, District Manager
Bureau of Land Management
Albuquerque District Office
100 Sun Avenue NE
Pan American Building, Suite 330
Albuquerque NM 87109-4676

Dear Ms. Burns

In accordance with the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality regulations, and the United States Air Force (USAF) NEPA regulations, the USAF is preparing an Environmental Assessment (EA) to evaluate the proposal to replace the aging Bell UH-1N aircraft at Kirtland Air Force Base (AFB) with the Boeing MH-139 medium lift aircraft. The current force of six UH-1N aircraft, assigned to 58th Special Operations Wing (58 SOW), would be replaced with ten MH-139 aircraft. Flight activities are projected to increase as aircrew and students are converted from one airframe to another. It is anticipated that all UH-1N helicopters would be phased out by 2032. To support the beddown, the Proposed Action includes the demolition of buildings 924 and 953. Removal of 924 allows for the creation of a new parking lot; removal of 953 allows for a 35,776 square foot (SF) addition to building 951 to accommodate three high bay rooms for MH-139 simulators. Additional construction required as part of this Proposed Action includes a 4,800 SF addition to building 957 for office and storage space and a new 75,000 SF facility near hangar 1001 for 512th Rescue Squadron operations.

The purpose of the Proposed Action is to replace the aging UH-1N helicopter fleet with an updated airframe expected to provide significant upgrades in speed, range, endurance, payload capacity, and survivability. The aging UH-1Ns are critical assets for the 58 SOW, used to train aircrew for nuclear weapon site security, nuclear missile convoy operations, and emergency evacuation operations. The Proposed Action is needed to address increased helicopter maintenance costs, resolve reliability deficiencies, enhance mission capability, and improve training of military personnel. Kirtland AFB is considered the prime location for the USAF graduate level vertical lift training. It has all of the required established training assets to include: refueling tracks, high-desert/high-density altitude training, and access to gunnery ranges. Keeping the MH-139 co-located with the existing training assets would maintain a

training synergy for the USAF. Separating the MH-139 from the existing training assets would greatly reduce effectiveness and increase training costs.

If you have additional information regarding impacts of the Proposed Action on the natural environment or other environmental aspects of which we are unaware, we would appreciate receiving such information for inclusion and consideration during the NEPA compliance process. A copy of the Final Description of the Proposed Action and Alternatives for the EA Addressing UH-1N Replacement Beddown at Kirtland AFB is available at http://www.kirtland.af.mil by clicking the "Environment" button at the bottom of the webpage. We look forward to and welcome your participation in this process. Please respond 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 Manager, 377 MSG/CEIEC, 2050 Wyoming Boulevard SE, Suite 116, Kirtland AFB NM 87117, or via email to KirtlandNEPA@us.af.mil.

Sincerely

DAVID S. MILLER, Colonel, USAF
Commander

Native American Tribes – Scoping Letter

Governor Brian Vallo
Pueblo of Acoma
PO Box 309
Acoma Pueblo NM 87034

Governor Dwayne Herrera
Pueblo of Cochiti
PO Box 70
Cochiti Pueblo NM 87072

Chairman Timothy L. Nuvangyaoma
Hopi Tribal Council
PO Box 123
Kykotsmovi AZ 86039

Governor Max A. Zuni
Pueblo of Isleta
PO Box 1270
Isleta NM 87022

Governor David M. Toledo
Pueblo of Jemez
PO Box 100
Jemez Pueblo NM 87024

President Levi Pesata
Jicarilla Apache Nation
PO Box 507
Dulce NM 87528

Governor Wilfred Herrera, Jr.
Pueblo of Laguna
PO Box 194
Laguna NM 87026

President Arthur "Butch" Blazer
Mescalero Apache Tribe
PO Box 227
Mescalero NM 88340

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

President Jonathan Nez
Navajo Nation
PO Box 7440
Window Rock AZ 86515

Governor Ron Lavato
Ohkay Owingeh Pueblo
PO Box 1099
San Juan Pueblo NM 87566

Governor Craig Quanchello
Pueblo of Picuris
PO Box 127
Peñasco NM 87553

Governor Joseph M. Talachy
Pueblo of Pojoaque
78 Cities of Gold
Santa Fe NM 87506

Governor Issac Lujan
Pueblo of Sandia
481 Sandia Loop
Bernalillo NM 87004

Governor James Candelaria
Pueblo of San Felipe
PO Box 4339
San Felipe Pueblo NM 87001

Governor Perry Martinez
Pueblo of San Ildefonso
02 Tunyo Po
Santa Fe NM 87506

Governor Timothy Menchego
Pueblo of Santa Ana
2 Dove Road
Santa Ana Pueblo NM 87004

Governor J. Michael Chavarria
Pueblo of Santa Clara
PO Box 580
Española NM 87532

Governor Joseph Aquilar
Pueblo of Santo Domingo
PO Box 9
Santo Domingo Pueblo NM 87052

Governor Richard Aspenwind
Pueblo of Taos
PO Box 1846
Taos NM 87571

Governor Milton Herrera
Pueblo of Tesuque
Route 42 Box 360-T
Santa Fe NM 87506

Chairwoman Gwendena Lee-Gatewood
White Mountain Apache Tribe
PO Box 700
Whiteriver AZ 85941

Governor E. Michael Silvas
Ysleta del Sur Pueblo
117 S Old Pueblo Road
PO Box 17579-Ysleta Station
El Paso TX 79907

Governor Antonia Medina
Pueblo of Zia
135 Capitol Square Drive
Zia Pueblo NM 87053-6013

Governor Val R. Panteah, Sr.
Pueblo of Zuni
PO Box 339
Zuni NM 87327

Chairwoman Lori Gooday-Ware
Fort Sill Apache Tribe of Oklahoma
Route 2, Box 121
Apache OK 73006

Chairman Harold Cuthair Ute
Mountain Ute Tribe
PO Box JJ
Towaoc CO 81334-0248

Chairman Matthew Komalty
Kiowa Tribe of Oklahoma
PO Box 369
Carnegie OK 73015

Chairman William Nelson
Comanche Nation of Oklahoma
PO Box 908
Lawton OK 73502

President Bruce Pratt
Pawnee Nation of Oklahoma
PO Box 470
Pawnee OK 74058

Chairman Terry Rambler
San Carlos Apache Tribe
PO Box 0
San Carlos AZ 85550

Chairwoman Christine Sage
Southern Ute Tribe
PO Box 737
Ignacio CO 81137

President Terri Parton
Wichita and Affiliated Tribes
Wichita Executive Committee
PO Box 729
Anadarko OK 73005

Stanley Herrera, Chapter President
Navajo Nation-Alamo Navajo Chapter
PO Box 827
Magdalena NM 87825

Navajo Nation-Torreon / Star Lake Chapter
PO Box 1024
Cuba NM 87013

Example Tribal Scoping Letter

DEPARTMENT OF THE AIR FORCE
377TH AIR BASE WING (AFGSC)

Colonel David S. Miller, USAF
Commander
377th Air Base Wing
2000 Wyoming Blvd SE
Kirtland Air Force Base NM 87117

Governor E. Michael Silvas
Ysleta del Sur Pueblo
117 S Old Pueblo Road
PO Box 17579
El Paso TX 79907

Dear Governor Silvas

In accordance with the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality regulations, and the United States Air Force (USAF) NEPA regulations, the USAF is preparing an Environmental Assessment (EA) to evaluate the proposal to replace the aging Bell UH-1N aircraft at Kirtland Air Force Base (AFB) with the Boeing MH-139 medium lift aircraft. The current force of six UH-1N aircraft, assigned to 58th Special Operations Wing (58 SOW), would be replaced with ten MH-139 aircraft. Flight activities are projected to increase as aircrew and students are converted from one airframe to another. It is anticipated that all UH-1N helicopters would be phased out by 2032. To support the beddown, the Proposed Action includes the demolition of buildings 924 and 953. Removal of 924 allows for the creation of a new parking lot; removal of 953 allows for a 35,776 square foot (SF) addition to building 951 to accommodate three high bay rooms for MH-139 simulators. Additional construction required as part of this Proposed Action includes a 4,800 SF addition to building 957 for office and storage space and a new 75,000 SF facility near hangar 1001 for 512th Rescue Squadron operations.

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Pursuant to Section 106 of the National Historic Preservation Act (36 Code of Federal Regulations Part 800), the USAF would like to initiate government-to-government consultation to allow you and your designee the opportunity to identify any comments, concerns, and suggestions relevant to the NEPA compliance process concerning the Proposed Action. A copy of the Final Description of the Proposed Action and Alternatives for the EA Addressing UH-1N Replacement Beddown at Kirtland AFB is available at http://www.kirtland.af.mil by clicking the "Environment" button at the bottom of the webpage. As we move forward through this process, we welcome your participation and input. For technical information, please contact my NEPA Program Manager, Ms. Martha E. Garciá, directly at (505) 846-6446 or by email martha.garcia.3@us.af.mil.

Please contact my office at (505) 846-7377 if you would like to meet to discuss the proposed project or proceed with the Section 106 consultation.

Sincerely

DAVID S. MILLER, Colonel, USAF
Commander

Tribal Scoping Response Letter

SOUTHERN UTE INDIAN TRIBE

Southern Ute Cultural & Preservation Department
P.O. Box 737, Mail Stop #73, Ignacio CO 81137
Phone: 970-563-0100 Fax: 970-563-1098

October 11, 2019

Martha E. Garcia
Department of the Air Force
2000 Wyoming Boulevard SE
Kirtland Air Force Base, NM 87117

Dear Ms. Garcia,

I have reviewed your Consultation Request under section 106 of the National Historic Preservation Act regarding the Bell UH-1N Aircraft project and offer the following response as indicated by the box that is checked.

- ☐ NO EFFECT: I have determined that there are no properties of religious and cultural significance to the Southern Ute Indian Tribe that are listed on the National Register within the area of potential effect or that the proposed project will have no effect on any such properties that may be present.
- ☒ NO ADVERSE EFFECT: I have identified properties of cultural and religious significance within the area of effect that I believe are eligible for listing in the National Register, for which there would be no adverse effect as a result of the proposed project.
- ☐ ADVERSE EFFECT: I have identified properties of cultural and religious significance within the area of potential effect (APE) that are eligible for listing in the National Register. I believe the proposed project would cause an adverse effect on these properties.
- ☐ REQUEST FOR ADDITIONAL INFORMATION: The Southern Ute Indian Tribe requests additional information on the planned site for its impact on properties of religious and cultural importance to the Tribe as follows: _____

  Please reply to Cassandra Atencio at catencio@southernute-nsn.gov and Garrett Briggs at gbriggs@southernute-nsn.gov and refer to in future ongoing correspondence with this office.

Sincerely,

Ms. Cassandra Atencio
NAGPRA Coordinator
Southern Ute Cultural Department
Southern Ute Indian Tribe

Call Log for Kirtland AFB UH-1N EA Tribal Scoping Letters

Call Log for Kirtland AFB UH-1N EA Scoping Letters

Tribe	*Date*	*Contact*	*Response*
Pueblo of Acoma	15 October 2019	Left message for the THPO, call was returned from Francine Torivio (Environment Department)	No issues related to cultural resources or traditional cultural properties were identified. No further consultation was requested.
Pueblo of Cochiti	15 October 2019	Spoke with Jeanine Drywater (Governor's Office Administrative Assistant)	Ms. Drywater contacted the Governor and submitted the project information to him.
Pueblo of Cochiti	15 October 2019	Governor Herrera called back and left a voicemail	
Pueblo of Cochiti	16 October 2019	David Reynolds returned the Governor's call and left a voicemail	No response
Pueblo of Cochiti	21 October 2019	David Reynolds returned the Governor's call and left a voicemail	No response
The Hopi Tribe	15 October 2019	Spoke with Ms. Georgie Pongyesva (Cultural Resources Administrative Assistant) and will follow up with Terry Mogart (Legal).	No issues related to cultural resources or traditional cultural properties were identified. No further consultation was requested. If any issues are identified by the Hopi Tribe, Terry Mogart will contact Kirtland AFB.
Pueblo of Isleta	18 October 2019	Emailed Dr. Henry Walt (THPO)	No response
Pueblo of Isleta	30 October 2019	Dr. Henry Walt (THPO) returned call	No issues related to cultural resources or traditional cultural properties were identified. No further consultation was requested.
Pueblo of Jemez	15 October 2019	Spoke with Mr. Chris Toya (THPO)	No issues related to cultural resources or traditional cultural properties were identified. No further consultation was requested. Mr. Toya requested a copy of the Flyover MOU and website.
Pueblo of Jemez	18 October 2019	Emailed Mr. Chris Toya (THPO) the Flyover MOU	No response

Tribe	*Date*	*Contact*	*Response*
Jicarilla Apache Nation	15 October 2019	Spoke with Dr. Blyth (THPO)	No issues related to cultural resources or traditional cultural properties were identified. No further consultation was requested.
Pueblo of Laguna	15 October 2019	Left message for the THPO	No response
Mescalero Apache Tribe	15 October 2019	Spoke with Ms. Ms. Holly Houghton (THPO)	No issues related to cultural resources or traditional cultural properties were identified. No further consultation was requested. The Mescalero Apache Tribe expressed interest in visiting Kirtland AFB at a later date.
Pueblo of Nambe	18 October 2019	Emailed Mr. D. Martinez (Assistant to the Governor). Nambe has previously requested communications with staff to be sent via email.	No response
Navajo Nation	15 October 2019	Spoke with Environment Department staff. The staff left a message for Timothy Begay (THPO).	No response
Ohkay Owingeh	15 October 2019	Left message for Larry Philips (Director of Natural Resources)	No response
Pueblo of Picuris	15 October 2019	Spoke with Levi Lementino (Environment Department)	No issues related to cultural resources or traditional cultural properties were identified. No further consultation was requested. Mr. Lementino requested an electronic copy of EA letters.
Pueblo of Picuris	15 October 2019	Emailed project descriptions to Mr. Levi Lementino (Environment Department)	No response
Pueblo of Pojoaque	15 October 2019	Phone line was out of service	
Pueblo of Sandia	15 October 2019	Left voicemail with Administrative Assistant	No response

Tribe	*Date*	*Contact*	*Response*
Pueblo of San Felipe	15 October 2019	Called Environmental Department and spoke with Administrative Assistant. Left message for Ms. Pinu'u Stout	The THPO no longer works there. No additional response was received.
Pueblo of San Felipe	15 October 2019	Called Environmental Department and left voicemail	No response
Pueblo of San Ildefonso	15 October 2019	Left message for Dr. Brad Vierra (THPO)	No response
Pueblo of Santa Ana	15 October 2019	Spoke with Mr. Joe Pena (Executive Assistant, Governor's Office). Mr. Pena will return call if any issues are identified	No response
Pueblo of Santa Clara	15 October 2019	Left message for Mr. Ben Chavarria (THPO)	No response
Pueblo of Santo Domingo	15 October 2019	Spoke with Ms. Cynthia Naja (Environment Department)	No issues related to cultural resources or traditional cultural properties were identified. No further consultation was requested. Ms. Naja requested electronic files of documents for future projects.
Pueblo of Taos	15 October 2019	Spoke with Governor's Office	No issues related to cultural resources or traditional cultural properties were identified. No further consultation was requested.
Pueblo of Taos	15 October 2019	Left voicemail for Cherylyn Atcity (Environment Department)	No response
Pueblo of Tesuque	15 October 2019	Spoke with Mr. Mark Mitchell (THPO)	No issues related to cultural resources or traditional cultural properties were identified. No further consultation was requested. Mr. Mitchell requested electronic copy of EA
Pueblo of Tesuque	18 October 2019	Emailed EA documentation to Mr. Mark Mitchell (THPO)	No response

Tribe	*Date*	*Contact*	*Response*
White Mountain Apache Tribe			Received letter: No issues related to cultural resources or traditional cultural properties were identified. No further consultation was requested.
Ysleta del Sur Pueblo			Received letter: No issues related to cultural resources or traditional cultural properties were identified. No further consultation was requested.
Pueblo of Zia	16 October 2019	Spoke with Mr. Jesse Young (Environment Department)	No issues related to cultural resources or traditional cultural properties were identified. No further consultation was requested.
Pueblo of Zuni	16 October 2019	Spoke to the THPO's Administrative Assistant. Message was left for the THPO	No response
Ute Mountain Ute Tribe	17 October 2019	Left message for THPO	No response
Fort Sill Apache Tribe of Oklahoma	16 October 2019	Spoke with Ms Jennifer Heminokeky (Environment Department)	No issues related to cultural resources or traditional cultural properties were identified. No further consultation was requested. Ms Jennifer Heminokeky requested electronic copies of EA correspondence
Fort Sill Apache Tribe of Oklahoma	16 October 2019	Emailed Ms. Jennifer Heminokeky (Environment Department) project descriptions	No response
Apache Tribe of Oklahoma	17 October 2019	The phone number did not work	N/A
Apache Tribe of Oklahoma	18 October 2019	Emailed Chairman Bobby Komardley project descriptions	No Response
Kiowa Tribe of Oklahoma	17 October 2019	Left message for Ms. Kellie J. Poolaw (Acting THPO)	No response

Tribe	*Date*	*Contact*	*Response*
Comanche Nation of Oklahoma	17 October 2019	Spoke to Ms. Dana Key (Environment Department)	Ms. Key requested the project documentation be sent to Mr. Villicana. No issues related to cultural resources or traditional cultural properties were identified. No further consultation was requested.
Comanche Nation of Oklahoma	17 October 2019	Emailed Mr. Villicana. project descriptions	No response
Pawnee Nation of Oklahoma	17 October 2019	Left message for Mr. Matt Reed (THPO)	No response
San Carlos Apache Tribe	17 October 2019	Left message for Ms. Vernelda Grant (THPO)	No response
Southern Ute Indian Tribe			Received letter: No issues related to cultural resources or traditional cultural properties were identified. No further consultation was requested.
Wichita & Affiliated Tribes	17 October 2019	Left message for Ms. Mary Botone (Environment Department)	No response

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APPENDIX B
AIR QUALITY SUPPORT DOCUMENTATION

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Instruction 32-7040, Air Quality Compliance And Resource Management; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:
Base: KIRTLAND AFB
State: New Mexico
County(s): Bernalillo
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Replacement of UH-1N Helicopters with MH-139 Helicopters at Kirtland AFB, NM

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2021

e. Action Description:

See Section 2.0 of EA.

f. Point of Contact:
Name: Timothy Didlake
Title: Contractor
Organization: HDR
Email: timothy.didlake@hdrinc.com
Phone Number: 484-612-1124

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable
__X__ not applicable

Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions.

"Air Quality Indicators" were used to provide an indication of the significance of potential impacts to air quality. These air quality indicators are EPA General Conformity Rule (GCR) thresholds (de minimis levels) that are applied out of context to their intended use. Therefore, these indicators do not trigger a regulatory requirement; however, they provide a warning that the action is potentially significant. It is important to note that these indicators only provide a clue to the potential impacts to air quality.

Given the GCR de minimis threshold values are the maximum net change an action can acceptably emit in non-attainment and maintenance areas, these threshold values would also conservatively indicate an actions emissions within an attainment would also be acceptable. An air quality indicator value of 100 tons/yr is used based on the GCR de minimis threshold for the least severe non-attainment classification for all criteria pollutants (see 40 CFR 93.153). Therefore, the worst-case year emissions were compared against the GCR Indicator and are summarized below.

Analysis Summary:

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

2021

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	1.671	100	No
NOx	2.085	100	No
CO	2.122	100	No
SOx	0.005	100	No
PM 10	2.230	100	No
PM 2.5	0.087	100	No
Pb	0.000	25	No
NH3	0.003	100	No
CO2e	500.0		

2022

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.000	100	No
NOx	0.000	100	No
CO	0.000	100	No
SOx	0.000	100	No
PM 10	0.000	100	No
PM 2.5	0.000	100	No
Pb	0.000	25	No
NH3	0.000	100	No
CO2e	0.0		

2023

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.000	100	No
NOx	0.000	100	No
CO	0.000	100	No
SOx	0.000	100	No
PM 10	0.000	100	No
PM 2.5	0.000	100	No
Pb	0.000	25	No
NH3	0.000	100	No
CO2e	0.0		

2024

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.084	100	No
NOx	0.076	100	No
CO	0.929	100	No
SOx	0.001	100	No
PM 10	0.002	100	No
PM 2.5	0.002	100	No
Pb	0.000	25	No

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

NH3	0.005	100	No
CO2e	79.8		

2025

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.084	100	No
NOx	0.076	100	No
CO	0.929	100	No
SOx	0.001	100	No
PM 10	0.002	100	No
PM 2.5	0.002	100	No
Pb	0.000	25	No
NH3	0.005	100	No
CO2e	79.8		

2026

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.133	100	No
NOx	0.121	100	No
CO	1.482	100	No
SOx	0.001	100	No
PM 10	0.003	100	No
PM 2.5	0.003	100	No
Pb	0.000	25	No
NH3	0.008	100	No
CO2e	127.3		

2027

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.133	100	No
NOx	0.121	100	No
CO	1.482	100	No
SOx	0.001	100	No
PM 10	0.003	100	No
PM 2.5	0.003	100	No
Pb	0.000	25	No
NH3	0.008	100	No
CO2e	127.3		

2028

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.056	100	No
NOx	0.051	100	No
CO	0.628	100	No
SOx	0.000	100	No

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

PM 10	0.001	100	No
PM 2.5	0.001	100	No
Pb	0.000	25	No
NH3	0.003	100	No
CO2e	53.9		

2029 - (Steady State)

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.056	100	No
NOx	0.051	100	No
CO	0.628	100	No
SOx	0.000	100	No
PM 10	0.001	100	No
PM 2.5	0.001	100	No
Pb	0.000	25	No
NH3	0.003	100	No
CO2e	53.9		

None of estimated emissions associated with this action are above the GCR indicators, indicating no significant impact to air quality; therefore, no further air assessment is needed.

Timothy T. Didlake

Timothy Didlake, Contractor

27 February 2020

DATE

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location
Base: KIRTLAND AFB
State: New Mexico
County(s): Bernalillo
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: Replacement of UH-1N Helicopters with MH-139 Helicopters at Kirtland AFB, NM

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2021

- Action Purpose and Need:
See Section 1.3 of EA.

- Action Description:
See Section 2.0 of EA.

- Point of Contact
Name: Timothy Didlake
Title: Contractor
Organization: HDR
Email: timothy.didlake@hdrinc.com
Phone Number: 484-612-1124

- Activity List:

	Activity Type	Activity Title
2.	Construction / Demolition	All Construction and Demolition
3.	Personnel	Commutes of New Personnel for 2024 and 2025
4.	Personnel	Commutes of New Personnel for 2026 and 2027
5.	Personnel	Commutes of New Personnel from 2028 onward

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location
County: Bernalillo
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: All Construction and Demolition

- Activity Description:
Construction
Addition to Building 951 = 35,776 ft2
Addition to Building 957 = 4,800 ft2
New helicopter squadron operation facility = 75,000 ft2

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Total New Building Space = 115,576 ft2

New parking pavement = 186,250 ft2
Total New Pavement = 186,250 ft2

Demolition
Building 953 = 11,948 ft2
Building 924 = 17,287 ft2
Total Demolition = 29,235 ft2

Total Site Grading = 331,061 ft2 (All disturbance area)
Total Trenching (5% of New Building Space) = 5,779 ft2

- Activity Start Date
Start Month: 1
Start Month: 2021

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2021

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	1.670846
SO_x	0.005045
NO_x	2.085328
CO	2.122384
PM 10	2.230262

Pollutant	Total Emissions (TONs)
PM 2.5	0.087452
Pb	0.000000
NH_3	0.003029
CO_2e	500.0

2.1 Demolition Phase

2.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 0
Number of Days: 18

2.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 29235
Height of Building to be demolished (ft): 25

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Concrete/Industrial Saws Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0443	0.0006	0.3176	0.3761	0.0170	0.0170	0.0040	58.563
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

2.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (0.00042 * BA * BH) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
0.00042: Emission Factor (lb/ft^3)
BA: Area of Building to be demolished (ft^2)
BH: Height of Building to be demolished (ft)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.2 Site Grading Phase

2.2.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Start Month: 1
Start Quarter: 3
Start Year: 2021

- Phase Duration
Number of Month: 0
Number of Days: 18

2.2.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 331061
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	1	8
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Tractors/Loaders/Backhoes Composite	3	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.2.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Excavators Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0687	0.0013	0.3576	0.5112	0.0158	0.0158	0.0062	119.73
Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e

Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

2.2.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.3 Trenching/Excavating Phase

2.3.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 0
Number of Days: 18

2.3.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 5779
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

- Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.3.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Excavators Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0687	0.0013	0.3576	0.5112	0.0158	0.0158	0.0062	119.73
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

2.3.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.4 Building Construction Phase

2.4.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month: 2
Start Quarter: 4
Start Year: 2021

- Phase Duration

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Number of Month: 9
Number of Days: 0

2.4.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 115576
Height of Building (ft): 25
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	6
Forklifts Composite	2	6
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8
Welders Composite	3	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

2.4.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0845	0.0013	0.6033	0.3865	0.0228	0.0228	0.0076	128.82
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0293	0.0006	0.1458	0.2148	0.0056	0.0056	0.0026	54.462

Generator Sets Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0362	0.0006	0.2977	0.2707	0.0130	0.0130	0.0032	61.074
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890
Welders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0280	0.0003	0.1634	0.1787	0.0088	0.0088	0.0025	25.665

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

2.4.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.5 Architectural Coatings Phase

2.5.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 11
Start Quarter: 3
Start Year: 2021

- Phase Duration
Number of Month: 0
Number of Days: 18

2.5.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 115576
Number of Units: N/A

- Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.5.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

2.5.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area / total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

2.6 Paving Phase

2.6.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 12
Start Quarter: 2

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Start Year: 2021

- Phase Duration
Number of Month: 0
Number of Days: 18

2.6.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 186250

- Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	2	6
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.6.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Excavators Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0687	0.0013	0.3576	0.5112	0.0158	0.0158	0.0062	119.73
Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

2.6.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)

3. Personnel

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Bernalillo
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Commutes of New Personnel for 2024 and 2025

- Activity Description:
37 additional personnel would be added to Kirtland AFB for 2024 and 2025. This total is composed of both new students and permanent party personnel.

- Activity Start Date
Start Month: 1
Start Year: 2024

- Activity End Date
Indefinite: No
End Month: 12
End Year: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.167197
SO_x	0.001114
NO_x	0.152204
CO	1.858853
PM 10	0.003642

Pollutant	Total Emissions (TONs)
PM 2.5	0.003194
Pb	0.000000
NH_3	0.010257
CO_2e	159.6

3.2 Personnel Assumptions

- Number of Personnel

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Active Duty Personnel:	37
Civilian Personnel:	0
Support Contractor Personnel:	0
Air National Guard (ANG) Personnel:	0
Reserve Personnel:	0

- Default Settings Used: Yes

- Average Personnel Round Trip Commute (mile): 20 (default)

- Personnel Work Schedule

Active Duty Personnel:	5 Days Per Week (default)
Civilian Personnel:	5 Days Per Week (default)
Support Contractor Personnel:	5 Days Per Week (default)
Air National Guard (ANG) Personnel:	4 Days Per Week (default)
Reserve Personnel:	4 Days Per Month (default)

3.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	37.55	60.32	0	0.03	0.2	0	1.9
GOVs	54.49	37.73	4.67	0	0	3.11	0

3.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

3.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year

$VMT_P = NP * WD * AC$

VMT_P: Personnel Vehicle Miles Travel (miles/year)
NP: Number of Personnel
WD: Work Days per Year
AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year

$VMT_{Total} = VMT_{AD} + VMT_C + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$

VMT_{Total}: Total Vehicle Miles Travel (miles)
VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)
VMT_C: Civilian Personnel Vehicle Miles Travel (miles)
VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)
VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)
VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year
$V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{Total}: Total Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Personnel On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

4. Personnel

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Bernalillo
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Commutes of New Personnel for 2026 and 2027

- Activity Description:
59 additional personnel would be added to Kirtland AFB for 2026 and 2027. This total is composed of both new students and permanent party personnel.

- Activity Start Date
Start Month: 1
Start Year: 2026

- Activity End Date
Indefinite: No
End Month: 12
End Year: 2027

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.266611
SO_x	0.001777
NO_x	0.242704
CO	2.964117
PM 10	0.005808

Pollutant	Total Emissions (TONs)
PM 2.5	0.005093
Pb	0.000000
NH_3	0.016355
CO_2e	254.6

4.2 Personnel Assumptions

- Number of Personnel
Active Duty Personnel: 59
Civilian Personnel: 0
Support Contractor Personnel: 0
Air National Guard (ANG) Personnel: 0
Reserve Personnel: 0

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Default Settings Used: Yes

- Average Personnel Round Trip Commute (mile): 20 (default)

- Personnel Work Schedule

Active Duty Personnel:	5 Days Per Week (default)
Civilian Personnel:	5 Days Per Week (default)
Support Contractor Personnel:	5 Days Per Week (default)
Air National Guard (ANG) Personnel:	4 Days Per Week (default)
Reserve Personnel:	4 Days Per Month (default)

4.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	37.55	60.32	0	0.03	0.2	0	1.9
GOVs	54.49	37.73	4.67	0	0	3.11	0

4.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

4.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year

$VMT_P = NP * WD * AC$

VMT_P: Personnel Vehicle Miles Travel (miles/year)
NP: Number of Personnel
WD: Work Days per Year
AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year

$VMT_{Total} = VMT_{AD} + VMT_C + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$

VMT_{Total}: Total Vehicle Miles Travel (miles)
VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)
VMT_C: Civilian Personnel Vehicle Miles Travel (miles)
VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)
VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)
VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year

$V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{Total}: Total Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Personnel On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

5. Personnel

5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Bernalillo
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Commutes of New Personnel from 2028 onward

- Activity Description:
25 additional personnel would be added to Kirtland AFB from 2028 onward. This total is composed of both new students and permanent party personnel.

- Activity Start Date
Start Month: 1
Start Year: 2028

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.056485
SO_x	0.000376
NO_x	0.051420
CO	0.627991
PM 10	0.001231

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.001079
Pb	0.000000
NH_3	0.003465
CO_2e	53.9

5.2 Personnel Assumptions

- Number of Personnel
Active Duty Personnel: 25
Civilian Personnel: 0
Support Contractor Personnel: 0
Air National Guard (ANG) Personnel: 0
Reserve Personnel: 0

- Default Settings Used: Yes

- Average Personnel Round Trip Commute (mile): 20 (default)

- Personnel Work Schedule
Active Duty Personnel: 5 Days Per Week (default)

Civilian Personnel:	5 Days Per Week (default)
Support Contractor Personnel:	5 Days Per Week (default)
Air National Guard (ANG) Personnel:	4 Days Per Week (default)
Reserve Personnel:	4 Days Per Month (default)

5.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	37.55	60.32	0	0.03	0.2	0	1.9
GOVs	54.49	37.73	4.67	0	0	3.11	0

5.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.309	000.002	000.239	003.421	000.007	000.006		000.023	00318.896
LDGT	000.374	000.003	000.418	004.700	000.009	000.008		000.024	00411.188
HDGV	000.696	000.005	001.076	015.187	000.021	000.019		000.044	00758.535
LDDV	000.115	000.003	000.139	002.492	000.004	000.004		000.008	00309.094
LDDT	000.250	000.004	000.394	004.238	000.007	000.006		000.008	00438.938
HDDV	000.572	000.013	005.669	001.917	000.170	000.156		000.030	01506.304
MC	002.734	000.003	000.845	013.302	000.027	000.023		000.055	00396.858

5.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year

$VMT_P = NP * WD * AC$

VMT_P: Personnel Vehicle Miles Travel (miles/year)
NP: Number of Personnel
WD: Work Days per Year
AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year

$VMT_{Total} = VMT_{AD} + VMT_C + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$

VMT_{Total}: Total Vehicle Miles Travel (miles)
VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)
VMT_C: Civilian Personnel Vehicle Miles Travel (miles)
VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)
VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)
VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year

$V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{Total}: Total Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Personnel On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

Helicopter Emissions Per Landing-Takeoff Cycle - AFCEC Method

Primary reference is: Air Force Civil Engineer Center (AFCEC). 2018. *Air Emissions Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants for Mobile Sources at U.S. Air Force Installations.* August 2018.

Helicopter Specifications			
Helicopter Model	Engine Model	# Engines	APU Model
UH-1N	T400-CP-400	2	None
MH-139	PT6A-68	2	None

Notes:
UH-1N engine and APU information are from Table 2-5 of AFCEC 2018.
MH-139's engine is actually a PT6C-67C. Per AFCEC's direction, the PT6A-68 engine was used as a surrogate because of an absence of emission factor and fuel flow data for the PT6C-67C engine.

T400-CP-400 Emission Factors, Fuel Flow Rates, and Time in Mode											
No. of Engines on UH-1N	Power Setting	LTO Mode	Fuel Flow (lb. of fuel/hr.)	NO_x (lb./1000lb. of fuel)	SO_x (lb./1000lb. of fuel)	CO (lb./1000lb. of fuel)	VOC (lb./1000lb. of fuel)	PM_{10} (lb./1000lb. of fuel)	$PM_{2.5}$ (lb./1000lb. of fuel)	CO_2e (lb./1000lb. of fuel)	Time in Mode (hr./LTO)
2	Ground Idle	Taxi/Idle-out and -in	136	2.21	1.05	27.94	10.99	0.44	0.40	3,214.59	0.25
2	Flight Idle	Approach	141	2.84	1.05	29.08	8.97	0.41	0.37	3,214.59	0.11
2	Intermediate (Military	Climbout	408	5.91	1.05	0.00	0.00	0.25	0.22	3,214.59	0.08
2	Maximum	Takeoff	1,069	11.51	1.05	0.00	0.22	0.28	0.25	3,214.59	0.04

Notes:
Emission factors and fuel flow rates are from Table 2-8 of AFCEC 2018. SO emission factor for New Mexico is from Table 2-2 of AFCEC 2018.
Time in Mode category is "Military - Helicopter" per Table 2-4 from AFCEC 2018.

PT6A-68 Emission Factors, Fuel Flow Rates, and Time in Mode											
No. of Engines on MH-139	Power Setting	LTO Mode	Fuel Flow (lb. of fuel/hr.)	NO_x (lb./1000lb. of fuel)	SO_x (lb./1000lb. of fuel)	CO (lb./1000lb. of fuel)	VOC (lb./1000lb. of fuel)	PM_{10} (lb./1000lb. of fuel)	$PM_{2.5}$ (lb./1000lb. of fuel)	CO_2e (lb./1000lb. of fuel)	Time in Mode (hr./LTO)
2	Ground Idle	Taxi/Idle-out and -in	156	1.77	1.05	117.85	7.89	3.95	2.16	3,214.59	0.25
2	Flight Idle	Approach	180	1.95	1.05	94.99	1.33	4.18	1.96	3,214.59	0.11
2	Approach	Climbout	449	4.73	1.05	10.91	0.71	3.34	0.70	3,214.59	0.08
2	Max. Continuous	Takeoff	612	8.18	1.05	3.89	0.20	4.20	0.61	3,214.59	0.04

Notes:
Emission factors and fuel flow rates are from Table 2-8 of AFCEC 2018. SO emission factor for New Mexico is from Table 2-2 of AFCEC 2018.
Time in Mode category is "Military - Helicopter" per Table 2-4 from AFCEC 2018.

Landing-Takeoff Cycle Emissions (lb./LTO)							
Helicopter Model	NO_x	SO_x	CO	VOC	PM_{10}	$PM_{2.5}$	CO_2e
UH-1N	1.53	0.25	2.83	1.05	0.08	0.07	778.42
MH-139	0.92	0.24	13.99	0.73	0.90	0.32	748.70

Landing-Takeoff Cycles Per Helicopter Per Year

Helicopter Model	Through 2023 (Baseline)	2024 and 2025	2026 and 2027	2028 and Later
UH-1N	945	945	562	0
MH-139	0	455	1,238	1,238
Total LTOs	**945**	**1,400**	**1,800**	**1,238**

Emissions Results

Total LTO Emissions (ton/yr.)							
	NO_x	SO_x	CO	VOC	PM_{10}	$PM_{2.5}$	CO_2e
UH-1N	*0.72*	*0.12*	*1.34*	*0.50*	*0.04*	*0.03*	*367.81*
MH-139	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Through 2023 (Baseline)	**0.72**	**0.12**	**1.34**	**0.50**	**0.04**	**0.03**	**367.81**
UH-1N	*0.72*	*0.12*	*1.34*	*0.50*	*0.04*	*0.03*	*367.81*
MH-139	*0.21*	*0.06*	*3.18*	*0.17*	*0.21*	*0.07*	*170.33*
2024 and 2025	**0.93**	**0.18**	**4.52**	**0.66**	**0.24**	**0.11**	**538.14**
UH-1N	*0.43*	*0.07*	*0.80*	*0.30*	*0.02*	*0.02*	*218.74*
MH-139	*0.57*	*0.15*	*8.66*	*0.45*	*0.56*	*0.20*	*463.45*
2026 and 2027	**1.00**	**0.22**	**9.45**	**0.75**	**0.58**	**0.22**	**682.18**
UH-1N	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
MH-139	*0.57*	*0.15*	*8.66*	*0.45*	*0.56*	*0.20*	*463.45*
2028 and Later	**0.57**	**0.15**	**8.66**	**0.45**	**0.56**	**0.20**	**463.45**